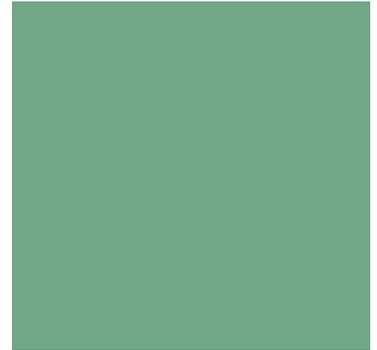
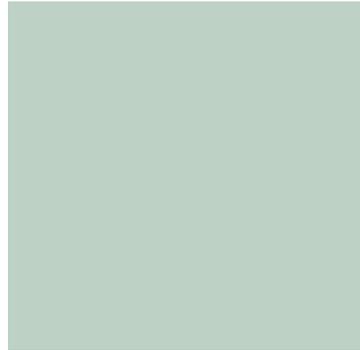
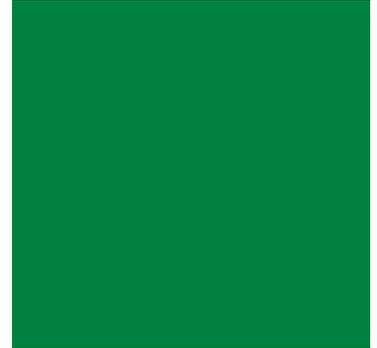
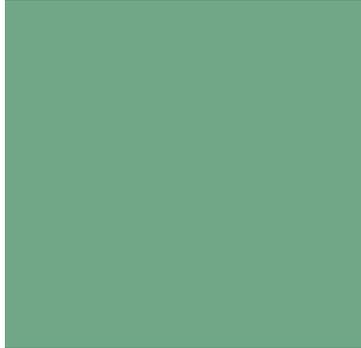




 **MANAGED CARE  
DIGEST SERIES®**



# TYPE 2 DIABETES REPORT™ LEHIGH VALLEY BUSINESS COALITION ON HEALTHCARE

*With a Focus on How Cardiovascular Conditions Can Impact Diabetes Care*

**8th Edition**

## INTRODUCTION

Sanofi U.S. (Sanofi), in conjunction with the Lehigh Valley Business Coalition on Healthcare (LVBCH), is pleased to present the eighth edition of the **LVBCH Type 2 Diabetes Report™** for 2020, an overview of key demographic, utilization, pharmacotherapy, and charge measures for Type 2 diabetes patients, as well as a focus on how cardiovascular conditions can impact diabetes care. The report also provides national benchmarks that can help providers and employers identify opportunities to better serve the needs of their patients. All data are drawn from the Sanofi **Managed Care Digest Series®**.

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. Data in this report may have been restated from prior years to account for updates to methodology and patient samples.

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.

Through collective employer action and partnerships with providers/payers, LVBCH strives to improve the delivery, cost, and quality of health care in our communities. For a list of organizations, please visit [www.lvbch.com](http://www.lvbch.com). The role of LVBCH is to help make these data more widely available to interested parties.

## CONTENTS

Patient Demographics .....	3-4	Diabetes and Cardiovascular Disease.....	9-10
Use of Services.....	5	Acute Coronary Syndromes/Stroke .....	11
Pharmacotherapy .....	6-7	Additional Information.....	12-15
Persistence .....	8	Methodology/A1c Levels.....	16

## CONTACTS

**Carl J. Seitz, Jr.**  
*President*  
 LVBCH  
 60 West Broad Street, Suite 306  
 Bethlehem, PA 18018  
 P. 610-317-0130 | F. 610-317-0142

**Amanda Marie Greene**  
*RN, BSN, MCHES*  
*Director of Operations*  
 LVBCH  
 60 West Broad Street, Suite 306  
 Bethlehem, PA 18018  
 P. 610-317-0130 | F. 610-317-0142

**Jeff Miller**  
*Regional Account Director*  
 Sanofi  
 P. 302-547-6898  
 E. [Jeff.Miller@sanofi.com](mailto:Jeff.Miller@sanofi.com)

Email: For general questions or inquiries, please send an email to: [lvbch@lvbch.com](mailto:lvbch@lvbch.com)



Provided by: Sanofi U.S., Bridgewater, NJ  
 Developed and produced by: © 2020 Forte Information Resources LLC | Denver, CO | [forteinformation.com](http://forteinformation.com)  
 Data provided by: IQVIA, Durham, NC

## DISTRIBUTION OF TYPE 2 DIABETES PATIENTS, BY AGE, 2017-2019

MARKET	0-17			18-35			36-64			65-79			80+		
	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019
Allentown	0.3%	0.2%	0.3%	1.6%	1.7%	2.0%	38.3%	38.6%	39.7%	42.4%	42.3%	42.0%	17.5%	17.2%	16.0%
Harrisburg	0.3	0.3	0.3	1.3	1.2	1.1	29.0	28.1	29.3	47.8	48.8	48.8	21.6	21.7	20.6
Reading	0.3	0.3	0.2	1.8	1.8	1.5	38.3	38.0	33.1	41.4	41.7	44.9	18.3	18.2	20.3
Scranton	0.4	0.3	0.3	1.4	1.4	1.5	31.1	30.5	30.6	46.5	47.1	47.1	20.6	20.7	20.5
<b>Pennsylvania</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>1.6</b>	<b>1.6</b>	<b>1.6</b>	<b>34.9</b>	<b>34.6</b>	<b>34.1</b>	<b>44.8</b>	<b>45.3</b>	<b>46.0</b>	<b>18.3</b>	<b>18.2</b>	<b>18.1</b>
<b>NATION</b>	<b>0.3%</b>	<b>0.3%</b>	<b>0.3%</b>	<b>1.9%</b>	<b>1.9%</b>	<b>1.9%</b>	<b>40.5%</b>	<b>39.6%</b>	<b>38.8%</b>	<b>42.2%</b>	<b>43.0%</b>	<b>43.7%</b>	<b>15.1%</b>	<b>15.3%</b>	<b>15.4%</b>

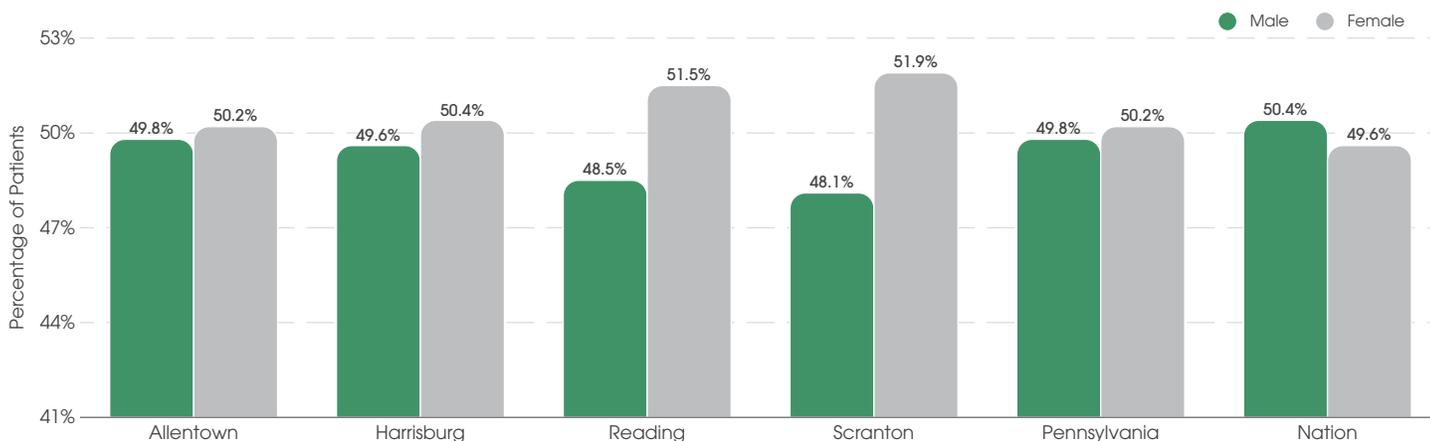
## DISTRIBUTION OF TYPE 2 DIABETES PATIENTS, BY DURATION OF DISEASE, 2018-2019

MARKET	<5 Years		≥5 Years	
	2018	2019	2018	2019
Allentown	41.3%	40.0%	58.7%	60.0%
Harrisburg	37.2	35.0	62.8	65.0
Reading	30.9	26.5	69.1	73.5
Scranton	37.0	32.5	63.0	67.5
<b>Pennsylvania</b>	<b>36.8</b>	<b>33.8</b>	<b>63.2</b>	<b>66.3</b>
<b>NATION</b>	<b>39.2%</b>	<b>35.0%</b>	<b>60.8%</b>	<b>65.0%</b>

### HARRISBURG, READING HAVE HIGH SHARES OF T2DM PATIENTS WITH A1c >9.0%

Commercial Type 2 diabetes mellitus (T2DM) patients in both Harrisburg (14.4%) and Reading (13.7%) were more likely than their peers across Pennsylvania (12.9%) or the nation (13.2%) to have an A1c level greater than 9.0% in 2019. From 2017 to 2019, the share of patients in this highest A1c level range declined in four of the five profiled Pennsylvania Commonwealth and local markets (Harrisburg excepted).

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



NOTE: Throughout this report, the Allentown market includes Bethlehem and Easton, and parts of New Jersey; the Harrisburg market includes Carlisle; the Scranton market includes Wilkes-Barre and Hazleton. An n/a indicates that data were not available.

## PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY PAYER, 2018-2019

MARKET	Commercial Insurance <sup>1</sup>		Medicare		Medicaid <sup>2</sup>	
	2018	2019	2018	2019	2018	2019
Allentown	37.4%	38.7%	47.5%	44.6%	14.5%	16.6%
Harrisburg	34.4	36.1	59.0	56.9	6.1	6.8
Reading	39.5	37.1	49.4	52.7	10.6	10.1
Scranton	37.6	38.9	55.3	54.5	6.3	6.5
<b>Pennsylvania</b>	<b>34.4</b>	<b>34.4</b>	<b>52.4</b>	<b>52.2</b>	<b>12.6</b>	<b>13.1</b>
<b>NATION</b>	<b>38.5%</b>	<b>38.7%</b>	<b>48.3%</b>	<b>48.7%</b>	<b>12.7%</b>	<b>12.4%</b>

## PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH VARIOUS COMPLICATIONS, OVERALL VS. LONG-ACTING BASAL CATEGORY 1 AND CATEGORY 2, 2018-2019<sup>3</sup>

MARKET	Cardiovascular Disease						Stroke					
	Overall		Cat. 1		Cat. 2		Overall		Cat. 1		Cat. 2	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	37.0%	35.2%	38.0%	32.8%	33.3%	27.1%	4.2%	4.2%	5.1%	4.1%	n/a	4.8%
Harrisburg	35.9	32.9	31.4	30.0	24.2	30.1	4.3	4.8	4.1	3.9	n/a	n/a
Reading	44.9	40.7	41.4	37.7	36.8	31.2	4.5	4.6	4.7	4.0	n/a	n/a
Scranton	41.7	41.6	39.8	38.7	37.7	35.7	3.7	3.7	3.9	3.6	3.1	2.7
<b>Pennsylvania</b>	<b>39.8</b>	<b>39.2</b>	<b>37.1</b>	<b>35.1</b>	<b>33.9</b>	<b>31.5</b>	<b>4.5</b>	<b>4.6</b>	<b>4.5</b>	<b>4.3</b>	<b>2.8</b>	<b>2.8</b>
<b>NATION</b>	<b>38.5%</b>	<b>38.7%</b>	<b>34.8%</b>	<b>34.0%</b>	<b>32.0%</b>	<b>31.6%</b>	<b>4.2%</b>	<b>4.2%</b>	<b>4.1%</b>	<b>4.2%</b>	<b>2.9%</b>	<b>2.8%</b>

## PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH VARIOUS COMPLICATIONS, OVERALL VS. LONG-ACTING BASAL CATEGORY 1 AND CATEGORY 2, 2018-2019<sup>3</sup>

MARKET	Chronic Kidney Disease						Hypoglycemia					
	Overall		Cat. 1		Cat. 2		Overall		Cat. 1		Cat. 2	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	15.5%	19.8%	18.3%	24.7%	13.1%	19.2%	3.0%	3.5%	5.9%	4.6%	4.8%	7.0%
Harrisburg	20.9	20.4	24.7	21.5	22.6	14.3	2.8	2.1	3.7	n/a	n/a	n/a
Reading	15.6	16.9	22.3	19.7	16.2	14.3	2.7	3.1	5.2	4.0	n/a	n/a
Scranton	15.2	16.8	20.2	20.6	17.2	17.1	2.1	1.7	3.4	4.0	4.3	4.3
<b>Pennsylvania</b>	<b>18.2</b>	<b>19.7</b>	<b>20.0</b>	<b>20.6</b>	<b>16.4</b>	<b>17.8</b>	<b>2.7</b>	<b>2.9</b>	<b>4.0</b>	<b>4.1</b>	<b>3.7</b>	<b>4.1</b>
<b>NATION</b>	<b>19.3%</b>	<b>20.0%</b>	<b>19.9%</b>	<b>19.9%</b>	<b>17.3%</b>	<b>17.5%</b>	<b>2.8%</b>	<b>3.0%</b>	<b>4.4%</b>	<b>4.6%</b>	<b>4.0%</b>	<b>4.5%</b>

## PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS, BY ACTUAL COMORBIDITY, 2018-2019<sup>4</sup>

MARKET	Depression		Hyperlipidemia		Hypertension		Obesity	
	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	15.5%	16.0%	64.7%	64.2%	79.6%	79.6%	37.8%	41.5%
Harrisburg	14.3	14.0	58.7	56.9	81.2	81.5	34.2	33.3
Reading	13.5	11.3	76.4	69.9	81.5	78.0	30.0	28.1
Scranton	11.9	11.1	61.4	59.3	78.8	81.3	37.8	38.2
<b>Pennsylvania</b>	<b>12.2</b>	<b>12.5</b>	<b>66.9</b>	<b>65.9</b>	<b>78.6</b>	<b>79.0</b>	<b>35.2</b>	<b>36.5</b>
<b>NATION</b>	<b>11.4%</b>	<b>11.4%</b>	<b>67.5%</b>	<b>66.8%</b>	<b>80.6%</b>	<b>80.6%</b>	<b>28.5%</b>	<b>29.3%</b>

Data source: IGVIA © 2020

<sup>1</sup> Includes HMOs, PPOs, point-of-service plans, and exclusive provider organizations.

<sup>2</sup> Medicaid includes fee-for-service and managed care.

<sup>3</sup> 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.

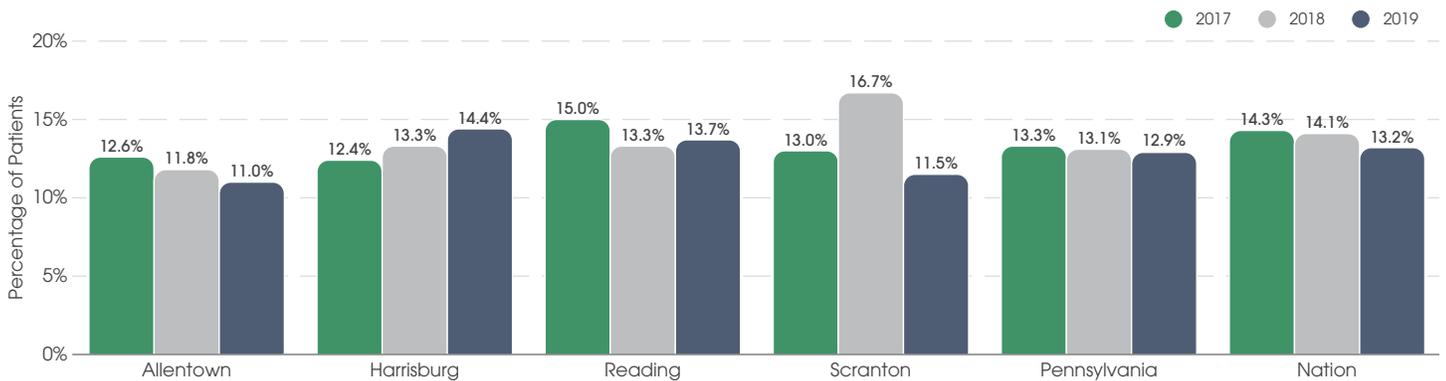
<sup>4</sup> A comorbidity is a condition a patient with diabetes may also have, which may not be directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with diabetes. Comorbidities of diabetes include, but are not limited to, depression, hyperlipidemia, hypertension, knee osteoarthritis, obesity, pneumonia, and rheumatoid arthritis.

NOTE: "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.

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

MARKET	A1c Test <sup>1</sup>			Blood Glucose Test			Ophthalmologic Exam			Serum Cholesterol Test			Urine Microalbumin Test		
	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019
Allentown	84.5%	86.4%	88.2%	88.8%	89.5%	89.1%	54.0%	52.9%	54.8%	75.8%	76.5%	76.4%	45.2%	46.4%	46.7%
Harrisburg	86.8	87.6	88.9	90.0	90.3	90.3	60.0	59.6	61.2	76.2	78.1	78.7	48.6	50.1	48.6
Reading	90.4	91.2	87.8	88.6	88.8	88.8	77.0	77.8	72.5	74.5	76.0	75.7	44.5	44.8	45.3
Scranton	84.0	86.8	87.1	88.6	89.8	89.8	59.1	60.9	63.2	74.7	75.5	75.3	44.9	46.0	45.1
<b>Pennsylvania</b>	<b>86.8</b>	<b>88.3</b>	<b>88.6</b>	<b>89.8</b>	<b>90.5</b>	<b>90.7</b>	<b>52.2</b>	<b>53.0</b>	<b>53.0</b>	<b>76.8</b>	<b>78.0</b>	<b>78.3</b>	<b>48.4</b>	<b>49.6</b>	<b>49.5</b>
<b>NATION</b>	<b>89.6%</b>	<b>90.1%</b>	<b>90.5%</b>	<b>92.3%</b>	<b>92.7%</b>	<b>92.8%</b>	<b>42.7%</b>	<b>43.0%</b>	<b>42.6%</b>	<b>80.6%</b>	<b>80.4%</b>	<b>80.4%</b>	<b>50.2%</b>	<b>50.5%</b>	<b>49.8%</b>

## PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH AN A1c LEVEL >9.0%, 2017-2019<sup>1</sup>



## COMPOSITE A1c LEVELS FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, BY DURATION OF DISEASE, 2018-2019<sup>1</sup>

MARKET	<5 Years		≥5 Years	
	2018	2019	2018	2019
Allentown	7.00%	7.03%	7.41%	7.37%
Harrisburg	7.34	7.25	7.48	7.38
Reading	6.94	7.15	7.58	7.62
Scranton	7.39	7.09	7.46	7.44
<b>Pennsylvania</b>	<b>7.19</b>	<b>7.20</b>	<b>7.44</b>	<b>7.44</b>
<b>NATION</b>	<b>7.16%</b>	<b>7.13%</b>	<b>7.47%</b>	<b>7.43%</b>

## PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING LONG-ACTING BASAL CATEGORY 1 VS. CATEGORY 2 WITH AN A1c LEVEL ≤7.0% OR >9.0%, 2017 AND 2019<sup>1</sup>

MARKET	≤7.0% <sup>2</sup>						>9.0% <sup>3</sup>					
	Category 1			Category 2			Category 1			Category 2		
	2017	2019	% Point Change	2017	2019	% Point Change	2017	2019	% Point Change	2017	2019	% Point Change
Pennsylvania	23.4%	25.2%	1.8	20.4%	23.8%	3.4	34.7%	32.3%	-2.5	36.8%	31.7%	-5.2
<b>NATION</b>	<b>25.7%</b>	<b>26.4%</b>	<b>0.7</b>	<b>22.2%</b>	<b>25.4%</b>	<b>3.2</b>	<b>30.5%</b>	<b>28.4%</b>	<b>-2.1</b>	<b>33.0%</b>	<b>27.2%</b>	<b>-5.8</b>

Data source: IQVIA © 2020

<sup>1</sup> The A1c test measures the average blood sugar 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.

<sup>2</sup> Positive percent change in this group indicates an increase, from 2016 to 2018, in the percentage of patients with A1c levels at or below 7.0%.

<sup>3</sup> Negative percent change in this group indicates a reduction, from 2016 to 2018, in the percentage of patients with A1c levels above 9.0%.

NOTE: "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. Some data were unavailable for the selected markets.

## PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS INSULIN AND COMBINATION THERAPIES, 2018-2019<sup>1</sup>

MARKET	Any Insulin Products		Long-Acting Basal Category 1		Long-Acting Basal Category 2		Fixed Ratio (Long-Acting Insulin/ GLP-1 RA)		Free Ratio (Variable Long-Acting Insulin + GLP-1 RA)		Rapid-Acting Insulin	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	30.2%	31.3%	18.6%	18.5%	6.8%	7.3%	0.7%	0.9%	4.8%	6.7%	10.9%	12.1%
Harrisburg	30.3	29.8	17.9	17.4	5.5	5.8	0.5	0.7	4.9	6.6	12.1	11.7
Reading	26.3	29.3	16.1	17.5	6.3	6.8	0.4	0.5	4.0	5.8	11.2	13.1
Scranton	25.9	25.8	14.9	14.0	7.0	7.3	0.6	0.7	5.7	6.9	11.1	11.2
<b>Pennsylvania</b>	<b>28.4</b>	<b>28.6</b>	<b>16.6</b>	<b>16.1</b>	<b>6.6</b>	<b>6.8</b>	<b>0.7</b>	<b>0.9</b>	<b>5.4</b>	<b>6.6</b>	<b>12.0</b>	<b>12.3</b>
<b>NATION</b>	<b>27.3%</b>	<b>27.5%</b>	<b>16.8%</b>	<b>16.1%</b>	<b>6.1%</b>	<b>6.9%</b>	<b>0.8%</b>	<b>0.9%</b>	<b>5.2%</b>	<b>6.4%</b>	<b>10.5%</b>	<b>10.6%</b>

## PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH AN A1c LEVEL >9.0% RECEIVING VARIOUS INSULIN AND COMBINATION THERAPIES, 2018-2019<sup>1,2</sup>

MARKET	Any Insulin Products		Long-Acting Basal Category 1		Long-Acting Basal Category 2		Fixed Ratio (Long-Acting Insulin/ GLP-1 RA)		Free Ratio (Variable Long-Acting Insulin + GLP-1 RA)		Rapid-Acting Insulin	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	43.0%	51.1%	24.8%	25.0%	17.4%	18.5%	n/a	n/a	8.3%	13.0%	14.9%	23.9%
Scranton	51.2	52.3	29.9	24.1	14.7	20.0	1.4%	2.6%	11.5	17.1	22.7	22.9
<b>Pennsylvania</b>	<b>52.4</b>	<b>51.0</b>	<b>30.8</b>	<b>28.4</b>	<b>13.4</b>	<b>13.8</b>	<b>1.5</b>	<b>1.9</b>	<b>8.4</b>	<b>12.2</b>	<b>23.2</b>	<b>22.4</b>
<b>NATION</b>	<b>50.5%</b>	<b>49.8%</b>	<b>31.4%</b>	<b>29.4%</b>	<b>12.5%</b>	<b>13.6%</b>	<b>2.0%</b>	<b>2.1%</b>	<b>9.1%</b>	<b>11.1%</b>	<b>19.6%</b>	<b>19.4%</b>

## PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS NON-INSULIN ANTIDIABETIC THERAPIES, 2018-2019<sup>1</sup>

MARKET	Any Non-Insulin Antidiabetic Product		Biguanides		DPP-4 Inhibitors		GLP-1 RAs		Insulin Sensitizing Agents		SGLT-2 Inhibitors	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2-18	2019
Allentown	92.0%	92.1%	62.5%	63.0%	15.2%	15.2%	12.8%	16.0%	3.4%	4.1%	15.9%	17.6%
Harrisburg	91.3	92.1	65.7	67.1	13.8	13.0	13.2	16.5	5.9	6.1	12.8	16.0
Reading	93.7	92.7	67.1	64.7	13.7	14.1	11.6	15.6	3.3	3.7	18.4	18.8
Scranton	93.9	94.4	68.6	68.8	16.1	15.5	15.7	19.2	6.0	6.3	15.2	18.2
<b>Pennsylvania</b>	<b>92.7</b>	<b>93.0</b>	<b>67.5</b>	<b>67.5</b>	<b>14.3</b>	<b>13.5</b>	<b>14.6</b>	<b>17.7</b>	<b>4.9</b>	<b>5.0</b>	<b>14.8</b>	<b>17.0</b>
<b>NATION</b>	<b>93.8%</b>	<b>93.9%</b>	<b>69.5%</b>	<b>69.6%</b>	<b>12.6%</b>	<b>11.8%</b>	<b>14.8%</b>	<b>18.2%</b>	<b>6.5%</b>	<b>6.6%</b>	<b>14.1%</b>	<b>15.9%</b>

Data source: IQVIA © 2020

**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.

<sup>1</sup> Patients who filled prescriptions for any insulin products may have also filled prescriptions for products in the non-insulin category, and vice versa.

<sup>2</sup> 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 Harrisburg and Reading.

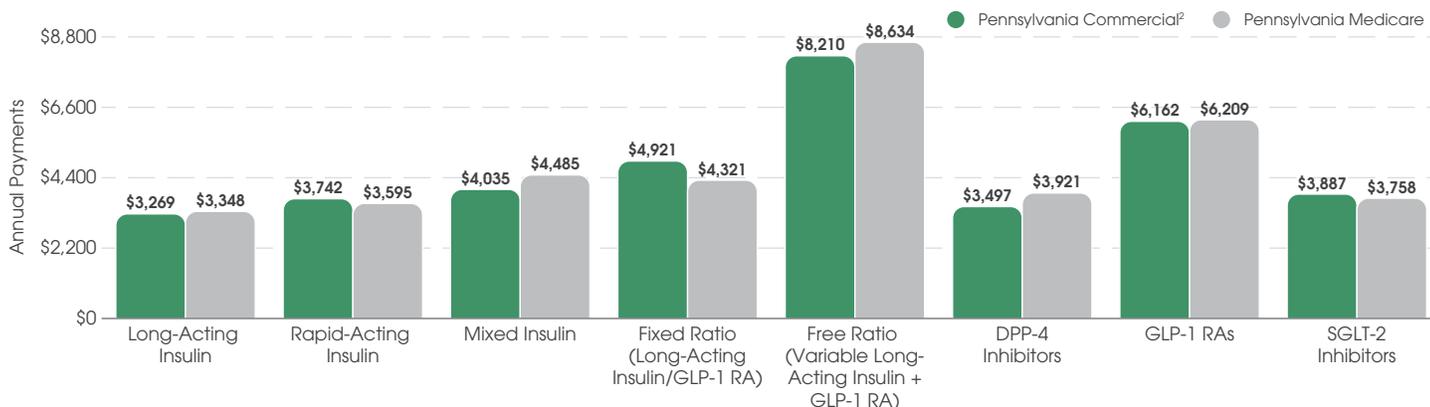
**PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS COMBINATION THERAPIES, 2018-2019**

MARKET	Use of 1 Product		Use of 2 Products						Use of 3 Products					
	Use of 1 Non-Insulin Product		Use of 2 Non-Insulin Products		Use of 2 Products: 1 Insulin, 1 Non-Insulin		Use of 2 Insulin Products		Use of 3 Non-Insulin Products		Use of 3 Products: 1 Insulin, 2 Non-Insulin		Use of 3 Products: 2 Insulin, 1 Non-Insulin	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	38.3%	38.1%	4.6%	4.6%	20.2%	19.3%	6.3%	6.6%	10.9%	11.0%	8.1%	7.9%	6.6%	7.5%
Harrisburg	37.4	37.3	4.9	4.7	21.5	21.6	6.0	6.1	10.4	10.9	7.2	7.4	7.3	7.0
Reading	40.3	38.1	4.2	4.8	23.4	21.7	5.7	5.6	9.8	10.4	6.3	7.2	7.1	8.1
Scranton	39.7	38.3	4.0	3.8	22.0	22.7	5.4	5.3	11.7	12.5	7.3	7.4	6.7	6.8
<b>Pennsylvania</b>	<b>38.3</b>	<b>37.9</b>	<b>4.6</b>	<b>4.5</b>	<b>22.2</b>	<b>22.0</b>	<b>5.7</b>	<b>6.0</b>	<b>10.6</b>	<b>11.0</b>	<b>7.1</b>	<b>7.2</b>	<b>7.4</b>	<b>7.5</b>
<b>NATION</b>	<b>39.3%</b>	<b>39.1%</b>	<b>3.8%</b>	<b>3.7%</b>	<b>22.6%</b>	<b>22.4%</b>	<b>6.0%</b>	<b>6.2%</b>	<b>10.4%</b>	<b>10.5%</b>	<b>7.3%</b>	<b>7.4%</b>	<b>6.9%</b>	<b>6.9%</b>

**ANNUAL PAYMENTS PER COMMERCIAL TYPE 2 DIABETES PATIENT RECEIVING VARIOUS COMBINATION THERAPIES, 2018-2019<sup>1</sup>**

MARKET	Use of 1 Product		Use of 2 Products						Use of 3 Products					
	Use of 1 Non-Insulin Product		Use of 2 Non-Insulin Products		Use of 2 Products: 1 Insulin, 1 Non-Insulin		Use of 2 Insulin Products		Use of 3 Non-Insulin Products		Use of 3 Products: 1 Insulin, 2 Non-Insulin		Use of 3 Products: 2 Insulin, 1 Non-Insulin	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	\$1,002	\$1,176	\$6,201	\$6,105	\$2,861	\$3,211	\$5,389	\$5,475	\$5,438	\$5,608	\$7,248	\$7,935	\$8,993	\$9,979
Harrisburg	776	1,003	6,261	6,941	2,380	2,616	4,488	6,351	4,593	4,990	6,981	7,464	8,513	9,518
Reading	1,020	1,212	6,146	6,450	3,190	3,642	4,889	5,070	6,115	6,213	7,249	8,175	9,069	9,196
Scranton	1,066	1,280	7,568	8,741	3,237	3,798	6,209	7,447	5,705	6,672	8,287	9,466	10,989	11,922
<b>Pennsylvania</b>	<b>973</b>	<b>1,153</b>	<b>6,819</b>	<b>7,307</b>	<b>2,821</b>	<b>3,267</b>	<b>5,457</b>	<b>6,045</b>	<b>5,387</b>	<b>5,862</b>	<b>7,350</b>	<b>8,074</b>	<b>9,347</b>	<b>9,999</b>
<b>NATION</b>	<b>\$944</b>	<b>\$1,122</b>	<b>\$6,996</b>	<b>\$7,396</b>	<b>\$2,547</b>	<b>\$2,936</b>	<b>\$5,213</b>	<b>\$5,798</b>	<b>\$5,025</b>	<b>\$5,432</b>	<b>\$7,021</b>	<b>\$7,739</b>	<b>\$9,312</b>	<b>\$9,965</b>

**ANNUAL PAYMENTS PER TYPE 2 DIABETES PATIENT RECEIVING VARIOUS INSULIN AND NON-INSULIN ANTIDIABETIC THERAPIES, BY PAYER, PENNSYLVANIA, 2019<sup>1</sup>**



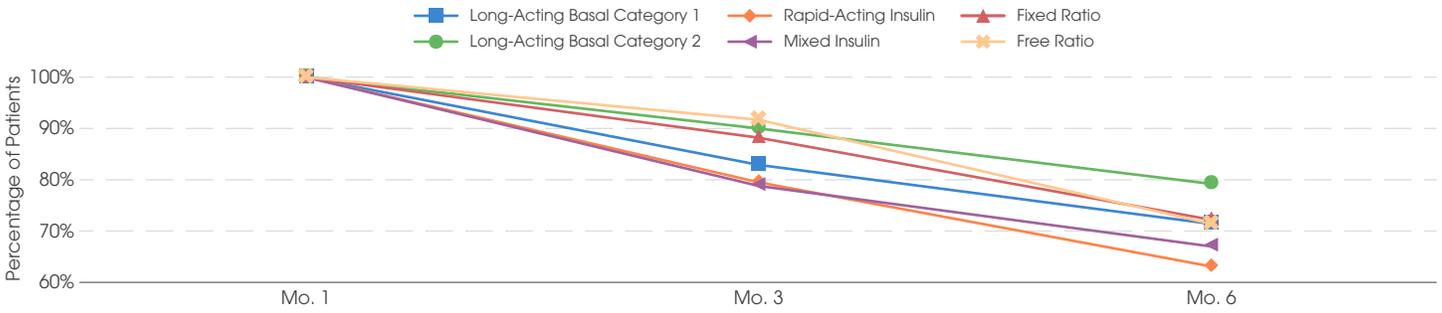
Data source: IQVIA © 2020

<sup>1</sup> 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.

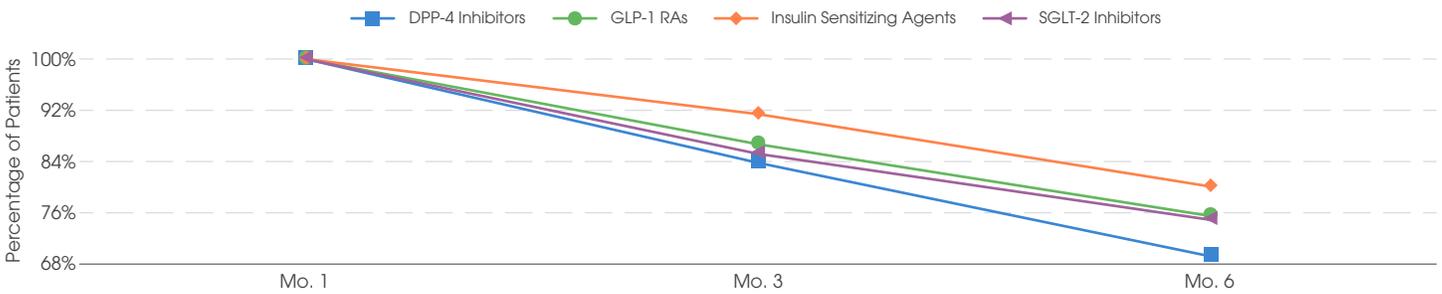
<sup>2</sup> Includes HMOs, PPOs, point-of-service plans, and exclusive provider organizations.

NOTE: "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.

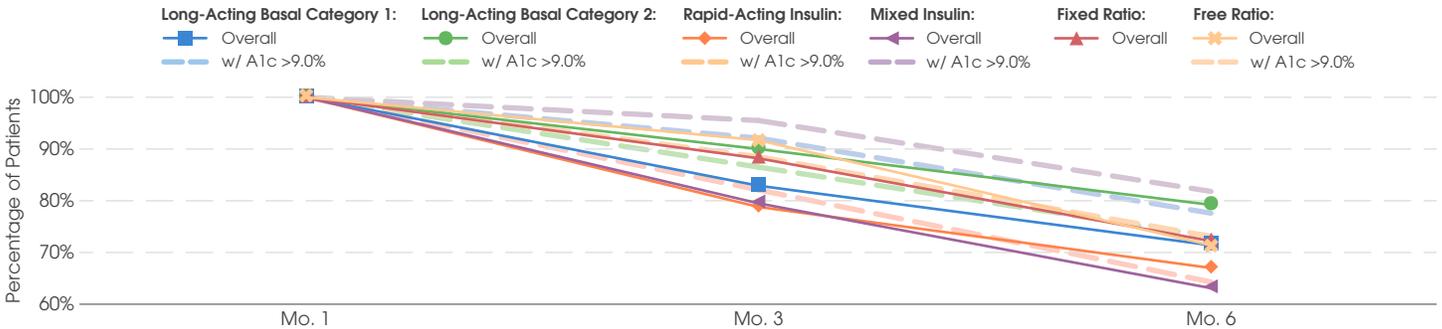
**PERSISTENCY: COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS INSULIN THERAPIES, PENNSYLVANIA, 2019**



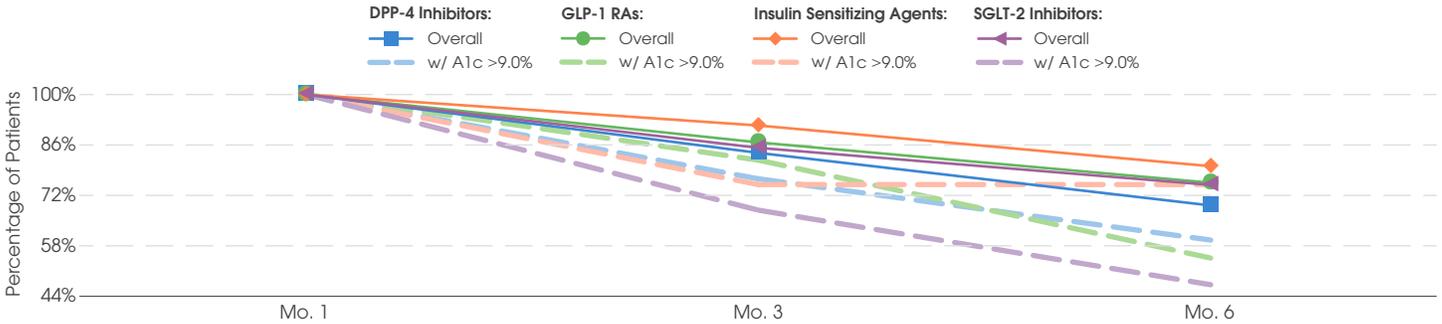
**PERSISTENCY: COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS NON-INSULIN ANTIDIABETIC THERAPIES, PENNSYLVANIA, 2019**



**PERSISTENCY: COMMERCIAL TYPE 2 DIABETES PATIENTS, OVERALL VS. WITH AN A1c LEVEL >9.0%, VARIOUS INSULIN THERAPIES, PENNSYLVANIA, 2019<sup>1</sup>**



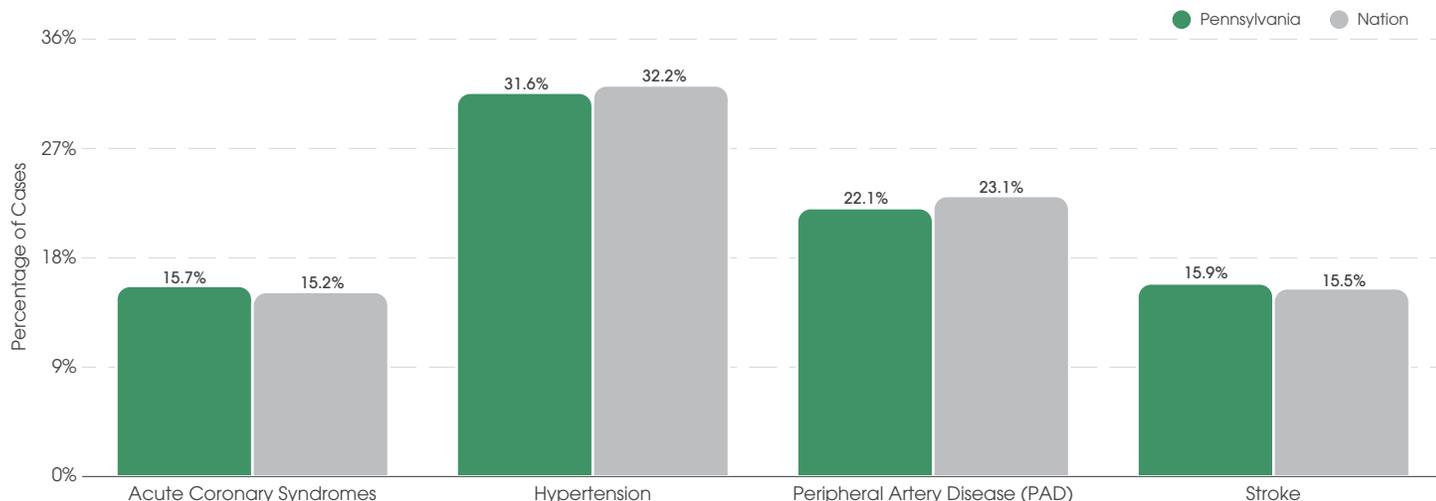
**PERSISTENCY: COMMERCIAL TYPE 2 DIABETES PATIENTS, OVERALL VS. WITH AN A1c LEVEL >9.0%, VARIOUS NON-INSULIN ANTIDIABETIC THERAPIES, PENNSYLVANIA, 2019<sup>1</sup>**



Data source: IQVIA © 2020

<sup>1</sup> 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: "Persistence" 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. Persistence 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). "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. "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. Some data were unavailable for Pennsylvania.

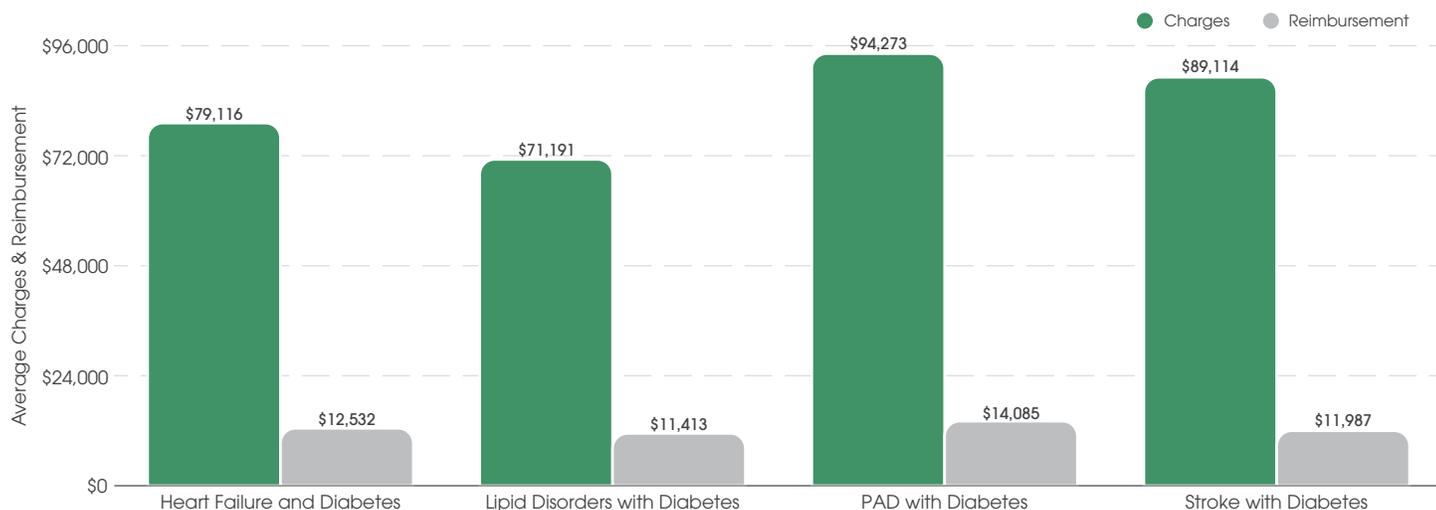
## PERCENTAGE OF ALL-PAYER INPATIENT CASES WITH A SECONDARY DIAGNOSIS OF TYPE 2 DIABETES, BY FOUR PRIMARY CARDIOVASCULAR DIAGNOSES, 2018<sup>1</sup>



## INPATIENT FACILITY CHARGES PER YEAR FOR TYPE 2 DIABETES PATIENTS, OVERALL VS. WITH CARDIOVASCULAR DISEASE, BY PAYER, 2019<sup>2,3</sup>

MARKET	Commercial <sup>4</sup>		Medicare	
	Overall	w/ Cardiovascular Disease	Overall	w/ Cardiovascular Disease
Allentown	\$67,057	\$80,203	\$69,444	\$72,950
Harrisburg	53,856	n/a	41,874	56,577
Reading	36,771	n/a	70,724	n/a
<b>Pennsylvania</b>	<b>58,725</b>	<b>64,063</b>	<b>58,667</b>	<b>61,411</b>
<b>NATION</b>	<b>\$47,435</b>	<b>\$50,985</b>	<b>\$50,630</b>	<b>\$53,983</b>

## MEDICARE CHARGES AND REIMBURSEMENT PER INPATIENT CASE, PENNSYLVANIA, 2018



Data source: IQVIA © 2020

<sup>1</sup> Data include cases of Type 2 diabetes with no complications or Type 2 diabetes with diabetic chronic kidney disease.

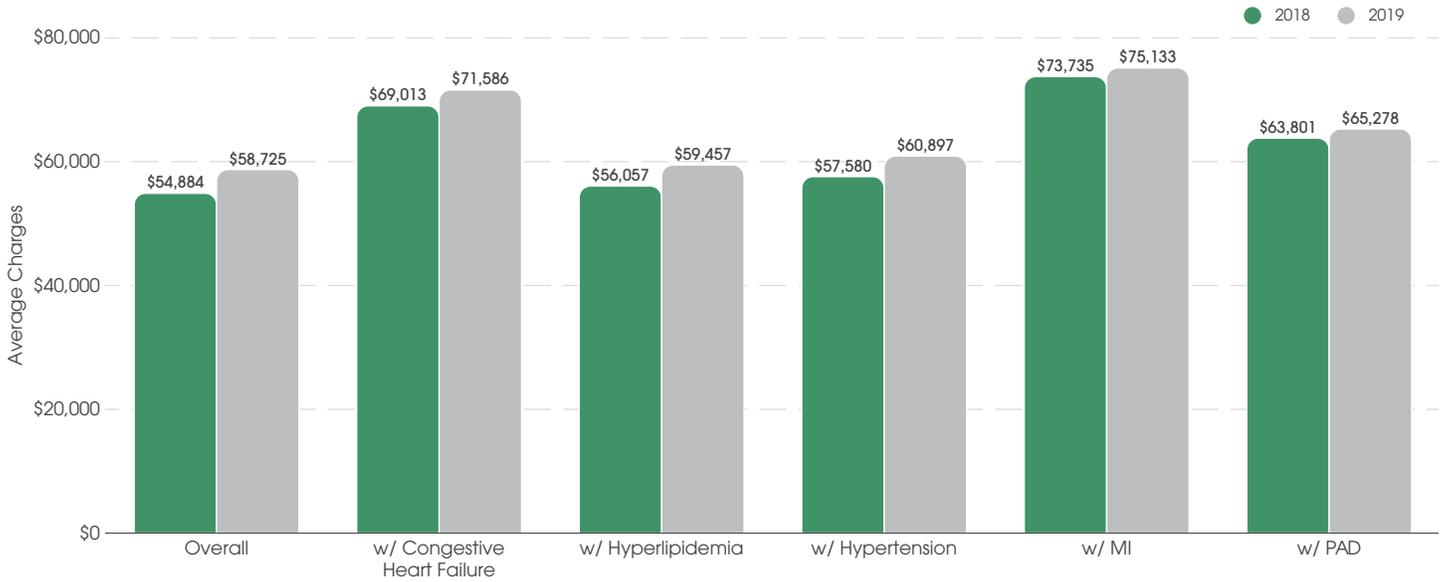
<sup>2</sup> Data reflect the charges generated for diabetes patients by the facilities that delivered care. The data also reflect the average amounts charged, not the amounts paid.

<sup>3</sup> 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.

<sup>4</sup> Includes HMOs, PPOs, point-of-service plans, and exclusive provider organizations.

NOTE: Throughout this report, unless otherwise specified, hospital case data include primary and secondary diagnoses. Secondary diagnoses and charges and reimbursement data come from IQVIA's Hospital Procedure & Diagnosis (HPD) database. Hospital 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.

## INPATIENT FACILITY CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, OVERALL VS. WITH COMMON CO-OCCURRING CONDITIONS, PENNSYLVANIA, 2018-2019<sup>1,2</sup>



## OUTPATIENT FACILITY CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, OVERALL VS. WITH COMMON CO-OCCURRING CONDITIONS, 2019<sup>1,2</sup>

MARKET	Overall	w/ Congestive Heart Failure	w/ Hyperlipidemia	w/ Hypertension	w/ MI	w/ PAD
Pennsylvania	\$24,087	\$42,660	\$25,760	\$27,359	\$57,254	\$35,260
NATION	\$13,720	\$20,862	\$13,716	\$14,723	\$23,783	\$19,911

## INPATIENT PROFESSIONAL CHARGES PER YEAR FOR TYPE 2 DIABETES PATIENTS, OVERALL VS. WITH CARDIOVASCULAR DISEASE, BY PAYER, 2019<sup>3,4</sup>

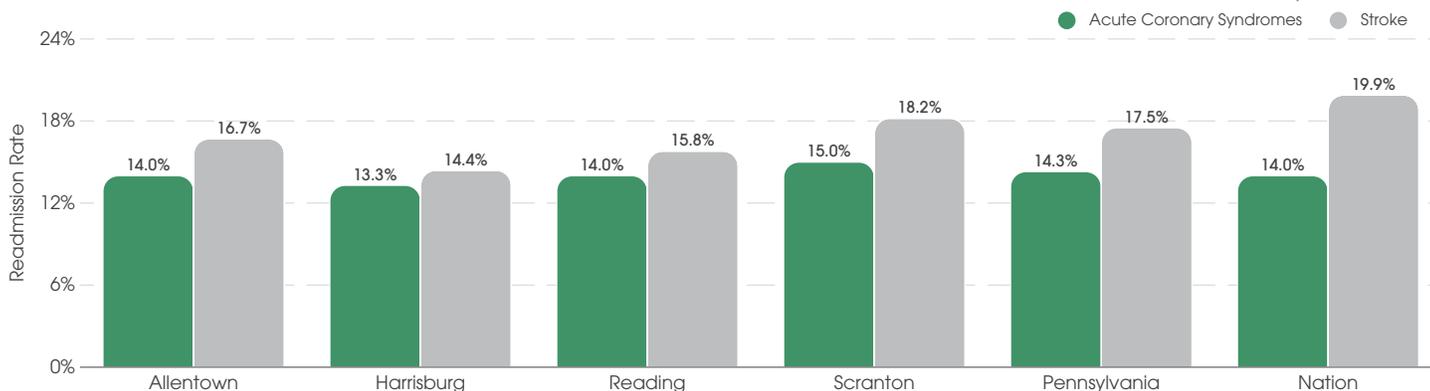
MARKET	Commercial <sup>5</sup>		Medicare	
	Overall	w/ Cardiovascular Disease	Overall	w/ Cardiovascular Disease
Allentown	\$4,623	\$5,901	\$4,504	\$5,561
Harrisburg	3,163	3,997	4,176	5,049
Reading	4,523	5,116	3,685	3,961
Scranton	4,248	4,970	3,923	4,585
<b>Pennsylvania</b>	<b>3,524</b>	<b>4,227</b>	<b>3,850</b>	<b>4,498</b>
<b>NATION</b>	<b>\$4,132</b>	<b>\$4,976</b>	<b>\$4,592</b>	<b>\$5,459</b>

<sup>1</sup> 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. Data source: IQVIA © 2020  
<sup>2</sup> 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.  
<sup>3</sup> Professional charges are those generated by the providers delivering care to patients with diabetes in various settings.  
<sup>4</sup> 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.  
<sup>5</sup> Includes HMOs, PPOs, point-of-service plans, and exclusive provider organizations.  
 NOTE: Some data were unavailable for the selected markets.

## AVERAGE LENGTH OF STAY (DAYS) AND CHARGES PER ALL-PAYER PRIMARY INPATIENT ACUTE CORONARY SYNDROMES CASE, 2017-2018

MARKET	Average Length of Stay		Average Charges <sup>1</sup>	
	2017	2018	2017	2018
Allentown	4.2	4.0	\$132,294	\$129,762
Harrisburg	5.2	4.4	82,284	98,031
Reading	4.3	4.0	76,364	85,665
Scranton	4.8	4.3	78,559	93,044
<b>Pennsylvania</b>	<b>4.6</b>	<b>4.2</b>	<b>91,546</b>	<b>95,323</b>
<b>NATION</b>	<b>4.7</b>	<b>4.2</b>	<b>\$88,080</b>	<b>\$90,388</b>

## 30-DAY ALL-PAYER HOSPITAL READMISSION RATES FOR ACUTE CORONARY SYNDROMES OR STROKE, 2018



## AVERAGE LENGTH OF STAY (DAYS) AND CHARGES PER ALL-PAYER PRIMARY INPATIENT STROKE CASE, 2018

MARKET	Average Length of Stay	Average Charges <sup>1</sup>
Allentown	5.3	\$121,722
Harrisburg	5.3	63,419
Reading	4.7	65,827
Scranton	4.6	57,655
<b>Pennsylvania</b>	<b>4.6</b>	<b>73,008</b>
<b>NATION</b>	<b>4.9</b>	<b>\$63,923</b>

## EMERGENCY DEPARTMENT PROFESSIONAL CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, OVERALL VS. WITH STROKE, 2018-2019<sup>2,3</sup>

MARKET	Overall		w/ Stroke	
	2018	2019	2018	2019
Allentown	\$1,166	\$1,157	\$1,891	\$1,907
Harrisburg	1,362	1,207	2,175	1,472
Reading	1,223	1,736	1,789	2,217
<b>Pennsylvania</b>	<b>1,213</b>	<b>1,309</b>	<b>1,629</b>	<b>1,696</b>
<b>NATION</b>	<b>\$1,609</b>	<b>\$1,748</b>	<b>\$2,254</b>	<b>\$2,413</b>

Data source: IQVIA © 2020

<sup>1</sup> Charge data are per-case averages for patients with a particular diagnosis of interest. 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.

<sup>2</sup> Professional charges are those generated by the providers delivering care to patients with diabetes in various settings.

<sup>3</sup> 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: Average length of stay and charge data come from IQVIA's Hospital Procedure & Diagnosis (HPD) database. Hospital 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. Data for acute coronary syndromes and stroke in 2018 vary from previous years due to changes in the ICD-10 codes.

## NUMBER OF ALL-PAYER INPATIENT AND OUTPATIENT DIABETES MELLITUS CASES PER HOSPITAL PER YEAR, 2017-2018

MARKET	Inpatient		Outpatient	
	2017	2018	2017	2018
Allentown	2,248.3	2,177.1	10,904.8	10,434.6
Harrisburg	3,886.0	3,987.5	30,906.8	27,474.3
Reading	2,638.0	2,738.7	23,101.0	22,195.0
Scranton	2,103.6	2,126.0	20,161.3	19,765.1
<b>Pennsylvania</b>	<b>1,723.0</b>	<b>1,675.1</b>	<b>12,273.6</b>	<b>11,560.6</b>
<b>NATION</b>	<b>1,428.8</b>	<b>1,425.4</b>	<b>9,294.2</b>	<b>8,944.8</b>

## NUMBER OF INPATIENT AND OUTPATIENT DIABETES MELLITUS CASES PER HOSPITAL PER YEAR, BY PAYER, 2018

MARKET	Inpatient		Outpatient	
	Medicare	Non-Medicare <sup>1</sup>	Medicare	Non-Medicare <sup>1</sup>
Allentown	1,330.3	846.8	4,688.3	5,746.3
Harrisburg	2,060.3	1,927.3	9,693.3	17,781.0
Reading	1,558.7	1,180.0	8,959.0	13,236.0
Scranton	1,343.3	782.7	8,934.1	10,831.0
<b>Pennsylvania</b>	<b>906.7</b>	<b>768.4</b>	<b>4,522.9</b>	<b>7,037.6</b>
<b>NATION</b>	<b>761.5</b>	<b>663.9</b>	<b>3,620.1</b>	<b>5,324.7</b>

## AVERAGE LENGTH OF STAY (DAYS) AND CHARGES PER ALL-PAYER PRIMARY INPATIENT DIABETES MELLITUS CASE, 2017-2018

MARKET	Average Length of Stay		Average Charges <sup>2</sup>	
	2017	2018	2017	2018
Allentown	7.7	5.5	\$64,427	\$57,910
Harrisburg	6.7	5.4	n/a	\$29,952
Reading	7.7	5.6	37,109	\$36,810
Scranton	7.0	5.2	n/a	\$35,906
<b>Pennsylvania</b>	<b>6.6</b>	<b>5.3</b>	<b>42,049</b>	<b>\$43,060</b>
<b>NATION</b>	<b>6.6</b>	<b>5.2</b>	<b>\$37,768</b>	<b>\$38,532</b>

## EMERGENCY DEPARTMENT PERCENTAGE OF ALL-PAYER OUTPATIENT CASES, 2018



Data source: IQVIA © 2020

<sup>1</sup> Non-Medicare includes commercial insurance, Medicaid, and all other non-Medicare payers. Non-Medicare may also include some commercial Medicare Advantage plans.

<sup>2</sup> 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: Case counts, average length of stay, and charge data come from IQVIA's Hospital Procedure & Diagnosis (HPD) database. Hospital 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 INPATIENT CHARGES PER YEAR FOR TYPE 2 DIABETES PATIENTS, BY PAYER, 2018-2019 <sup>1</sup>						
MARKET	Commercial Insurance <sup>2</sup>		Medicare		Medicaid <sup>3</sup>	
	2018	2019	2018	2019	2018	2019
Allentown	\$4,168	\$4,623	\$4,317	\$4,504	\$3,932	\$4,337
Harrisburg	3,389	3,163	4,321	4,176	5,219	5,094
Reading	4,762	4,523	5,990	3,685	4,839	3,465
Scranton	3,782	4,248	3,323	3,923	2,269	2,683
<b>Pennsylvania</b>	<b>3,433</b>	<b>3,524</b>	<b>3,839</b>	<b>3,850</b>	<b>4,214</b>	<b>4,315</b>
<b>NATION</b>	<b>\$4,064</b>	<b>\$4,132</b>	<b>\$4,534</b>	<b>\$4,592</b>	<b>\$4,717</b>	<b>\$4,864</b>

PROFESSIONAL CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, BY SETTING, 2018-2019 <sup>1</sup>										
MARKET	Ambulatory Surgery		Emergency Department		Inpatient		Outpatient		Office/Clinic	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	\$2,445	\$2,651	\$1,166	\$1,157	\$4,168	\$4,623	\$1,536	\$1,707	\$1,724	\$1,791
Harrisburg	1,685	1,679	1,362	1,207	3,389	3,163	1,479	1,421	1,642	1,805
Reading	2,255	2,753	1,223	1,736	4,762	4,523	1,281	1,730	1,812	2,051
Scranton	2,721	2,860	1,304	1,277	3,782	4,248	1,339	1,440	1,943	1,987
<b>Pennsylvania</b>	<b>2,284</b>	<b>2,350</b>	<b>1,213</b>	<b>1,309</b>	<b>3,433</b>	<b>3,524</b>	<b>1,322</b>	<b>1,391</b>	<b>1,642</b>	<b>1,667</b>
<b>NATION</b>	<b>\$2,905</b>	<b>\$3,027</b>	<b>\$1,609</b>	<b>\$1,748</b>	<b>\$4,064</b>	<b>\$4,132</b>	<b>\$1,625</b>	<b>\$1,651</b>	<b>\$2,227</b>	<b>\$2,237</b>

PROFESSIONAL INPATIENT CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, OVERALL VS. WITH HYPOGLYCEMIA, 2018-2019 <sup>1,4</sup>				
MARKET	Overall		w/ Hypoglycemia	
	2018	2019	2018	2019
Allentown	\$4,168	\$4,623	\$6,045	\$5,970
Harrisburg	3,389	3,163	4,108	3,143
Reading	4,762	4,523	7,404	7,444
Scranton	3,782	4,248	4,754	7,613
<b>Pennsylvania</b>	<b>3,433</b>	<b>3,524</b>	<b>4,974</b>	<b>5,429</b>
<b>NATION</b>	<b>\$4,064</b>	<b>\$4,132</b>	<b>\$5,798</b>	<b>\$5,914</b>

PROFESSIONAL INPATIENT CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, BY ACTUAL COMPLICATION, 2018-2019 <sup>1,4</sup>										
MARKET	Cardiovascular Disease		Nephropathy		Neuropathy		PAD		Retinopathy	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Allentown	\$5,042	\$5,901	\$4,821	\$5,679	\$4,547	\$5,653	\$5,627	\$6,341	\$4,606	\$4,824
Harrisburg	4,097	3,997	3,936	3,691	3,891	3,932	4,008	4,004	3,648	3,035
Reading	5,687	5,116	5,982	5,286	5,821	5,160	6,110	5,456	4,731	4,062
Scranton	4,616	4,970	4,627	5,386	4,585	4,965	4,879	5,466	3,670	4,245
<b>Pennsylvania</b>	<b>4,055</b>	<b>4,227</b>	<b>4,169</b>	<b>4,257</b>	<b>3,873</b>	<b>4,019</b>	<b>4,322</b>	<b>4,452</b>	<b>3,522</b>	<b>3,598</b>
<b>NATION</b>	<b>\$4,882</b>	<b>\$4,976</b>	<b>\$5,089</b>	<b>\$5,129</b>	<b>\$4,830</b>	<b>\$4,914</b>	<b>\$5,383</b>	<b>\$5,416</b>	<b>\$4,345</b>	<b>\$4,410</b>

Data source: IQVIA © 2020

<sup>1</sup> Professional charges are those generated by the providers delivering care to patients with diabetes in various settings.

<sup>2</sup> Includes HMOs, PPOs, point-of-service plans, and exclusive provider organizations.

<sup>3</sup> Medicaid includes fee-for-service and managed care.

<sup>4</sup> 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.

## AVERAGE ANNUAL PAYMENTS PER TYPE 2 DIABETES PATIENT RECEIVING VARIOUS INSULIN AND COMBINATION THERAPIES, BY PAYER, 2019<sup>1</sup>

MARKET	Long-Acting Basal Category 1			Long-Acting Basal Category 2			Fixed Ratio (Long-Acting Insulin/GLP-1 RA)			Free Ratio (Variable Long-Acting Insulin + GLP-1 RA)			Rapid-Acting Insulin		
	Comm. Ins. <sup>2</sup>	Medi-care	Medi-caid <sup>3</sup>	Comm. Ins. <sup>2</sup>	Medi-care	Medi-caid <sup>3</sup>	Comm. Ins. <sup>2</sup>	Medi-care	Medi-caid <sup>3</sup>	Comm. Ins. <sup>2</sup>	Medi-care	Medi-caid <sup>3</sup>	Comm. Ins. <sup>2</sup>	Medi-care	Medi-caid <sup>3</sup>
Allentown	\$2,561	\$3,047	\$2,096	\$3,714	\$3,975	\$2,465	\$4,395	\$3,751	\$5,579	\$7,655	\$8,888	\$5,560	\$3,307	\$3,725	\$2,382
Harrisburg	2,894	3,375	2,095	4,184	4,155	1,644	5,212	3,005	n/a	7,961	9,091	7,231	3,569	3,745	2,413
Reading	2,483	2,824	1,794	3,992	3,377	2,697	4,345	2,833	n/a	7,694	7,628	5,361	3,672	3,630	2,230
Scranton	3,361	3,417	2,358	4,302	4,333	3,326	5,718	5,392	5,162	9,560	10,240	6,289	4,367	4,088	3,390
<b>Pennsylvania</b>	<b>2,813</b>	<b>3,031</b>	<b>2,158</b>	<b>4,018</b>	<b>3,958</b>	<b>2,774</b>	<b>4,921</b>	<b>4,321</b>	<b>3,732</b>	<b>8,210</b>	<b>8,634</b>	<b>6,117</b>	<b>3,742</b>	<b>3,595</b>	<b>2,587</b>
<b>NATION</b>	<b>\$2,830</b>	<b>\$3,053</b>	<b>\$2,357</b>	<b>\$3,843</b>	<b>\$3,694</b>	<b>\$3,555</b>	<b>\$4,321</b>	<b>\$3,767</b>	<b>\$3,115</b>	<b>\$7,872</b>	<b>\$8,258</b>	<b>\$5,841</b>	<b>\$3,541</b>	<b>\$3,281</b>	<b>\$2,565</b>

## AVERAGE ANNUAL PAYMENTS PER COMMERCIAL TYPE 2 DIABETES PATIENT RECEIVING VARIOUS INSULIN AND COMBINATION THERAPIES, 2019<sup>1</sup>

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)	GLP-1 RAs	DPP-4 Inhibitors	SGLT2 Inhibitors
Allentown	\$2,997	\$3,307	\$3,218	\$4,395	\$7,655	\$5,905	\$3,256	\$3,798
Harrisburg	3,257	3,569	3,313	5,212	7,961	5,611	3,376	3,857
Reading	3,032	3,672	2,917	4,345	7,694	5,939	3,517	3,929
Scranton	3,802	4,367	5,169	5,718	9,560	6,756	3,759	4,090
<b>Pennsylvania</b>	<b>3,269</b>	<b>3,742</b>	<b>4,035</b>	<b>4,921</b>	<b>8,210</b>	<b>6,162</b>	<b>3,497</b>	<b>3,887</b>
<b>NATION</b>	<b>\$3,259</b>	<b>\$3,541</b>	<b>\$3,657</b>	<b>\$4,321</b>	<b>\$7,872</b>	<b>\$5,897</b>	<b>\$3,389</b>	<b>\$3,748</b>

## AVERAGE ANNUAL OUT-OF-POCKET COSTS PER COMMERCIAL TYPE 2 DIABETES PATIENT RECEIVING VARIOUS INSULIN AND COMBINATION THERAPIES, 2019<sup>1</sup>

MARKET	Long-Acting Insulin	Rapid-Acting Insulin	Mixed Insulin	Fixed Ratio (Long-Acting Insulin/GLP-1 RA)	GLP-1 RAs	DPP-4 Inhibitors	SGLT2 Inhibitors
Allentown	\$303	\$231	\$212	\$146	\$273	\$306	\$247
Harrisburg	277	225	270	159	274	272	295
Reading	277	219	206	124	287	319	275
Scranton	156	136	197	214	167	185	156
<b>Pennsylvania</b>	<b>254</b>	<b>198</b>	<b>241</b>	<b>200</b>	<b>270</b>	<b>279</b>	<b>249</b>
<b>NATION</b>	<b>\$247</b>	<b>\$173</b>	<b>\$215</b>	<b>\$219</b>	<b>\$260</b>	<b>\$270</b>	<b>\$227</b>

Data source: IQVIA © 2020

<sup>1</sup> 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.

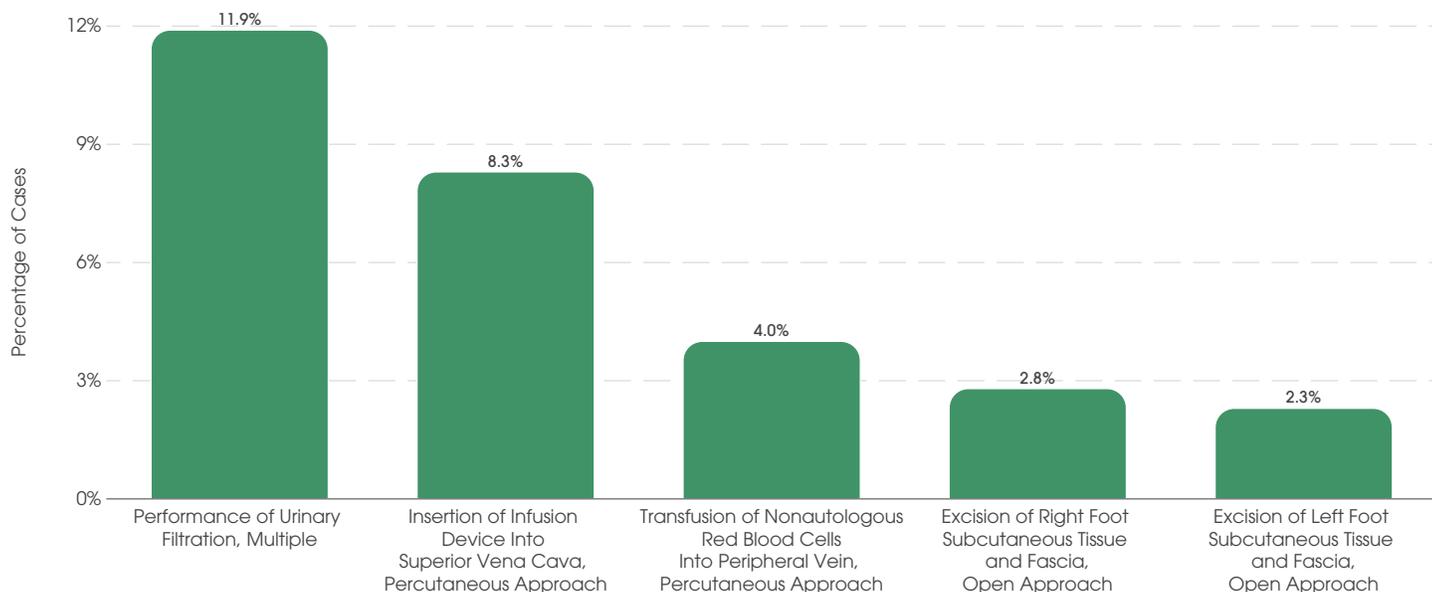
<sup>2</sup> Includes HMOs, PPOs, point-of-service plans, and exclusive provider organizations.

<sup>3</sup> Medicaid includes fee-for-service and managed care.

<sup>4</sup> Patients who filled prescriptions for any insulin products may have also filled prescriptions for products in the non-insulin category, and vice versa.

NOTE: "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. "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.

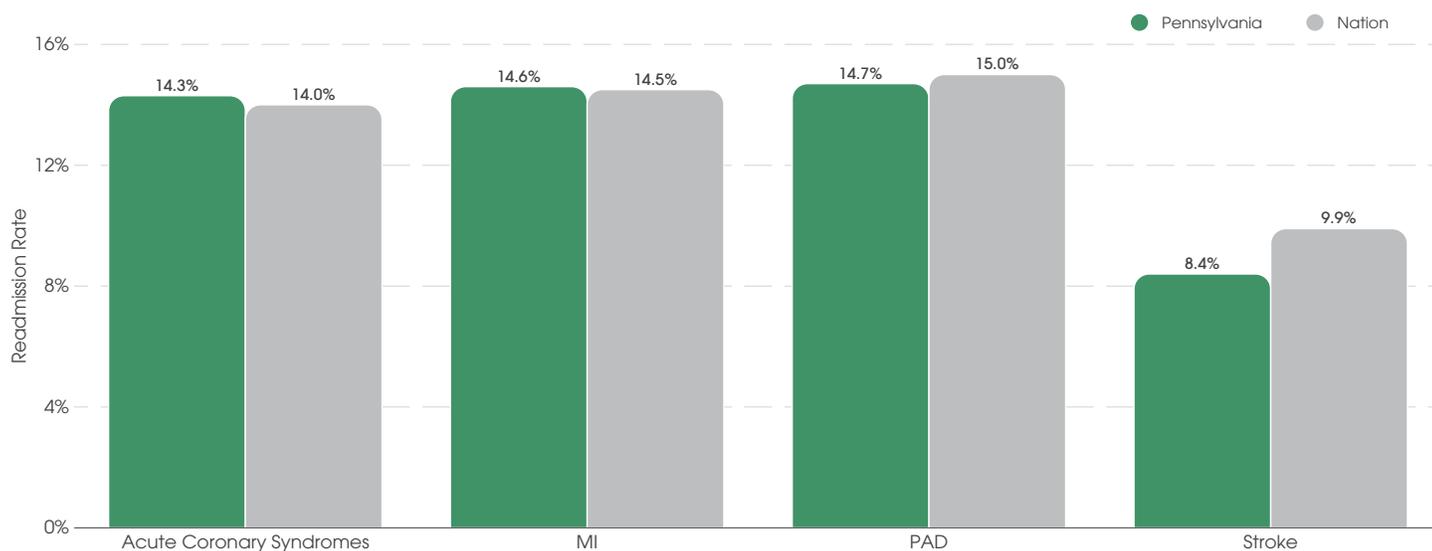
COMMON PROCEDURES FOR ALL-PAYER CASES TREATING A PRIMARY DIAGNOSIS OF DIABETES MELLITUS, PENNSYLVANIA, 2018



READMISSION RATES FOR ALL-PAYER PATIENTS DIAGNOSED WITH TYPE 2 DIABETES, BY TYPE OF THERAPY, 2017-2019<sup>1</sup>

MARKET	Three-Day Readmissions			30-Day Readmissions		
	Long-Acting Basal Category 1	Long-Acting Basal Category 2	Three Non-Insulin Antidiabetic Products	Long-Acting Basal Category 1	Long-Acting Basal Category 2	Three Non-Insulin Antidiabetic Products
NATION	7.4%	4.8%	14.7%	20.0%	17.4%	30.8%

30-DAY READMISSION RATES FOR ALL-PAYER PATIENTS WITH SELECT CARDIOVASCULAR CONDITIONS, 2018



Data source: IQVIA © 2020

<sup>1</sup> Figures reflect the percentages of Type 2 diabetes patients who were readmitted to an inpatient facility in the three-year period between 2017 and 2019. These percentages include patients who filled multiple prescriptions. Readmissions are not necessarily due to Type 2 diabetes. Readmissions data are available down to the national level only.  
 NOTE: Procedure data come from IQVIA's Hospital Procedure & Diagnosis (HPD) database. Hospital 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. "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.

**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.

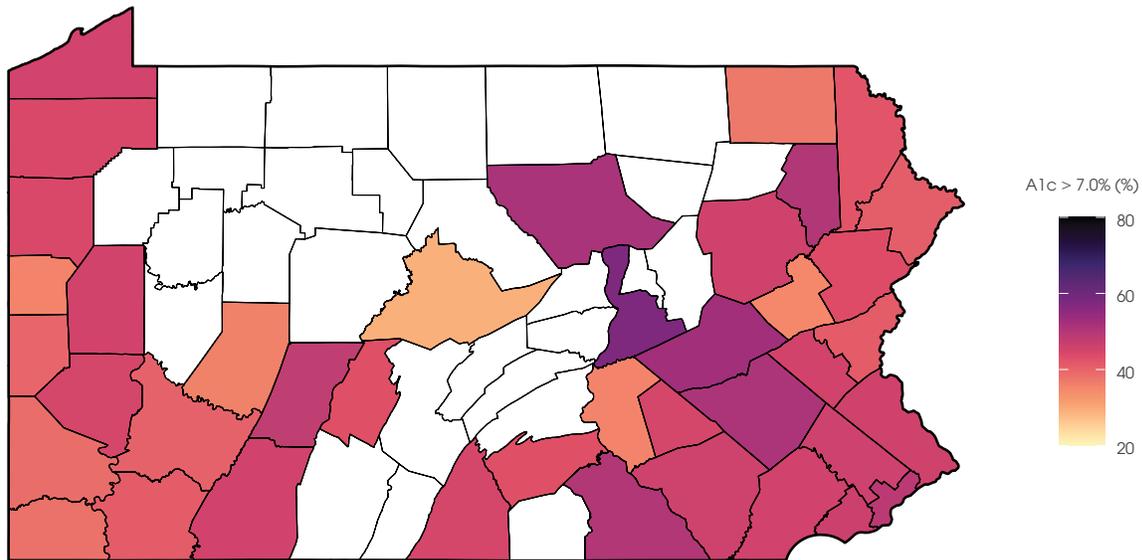
Proprietary lab data derive from one of the largest independent commercial lab companies in the U.S. Patient information is de-identified, matched, and linked with other patient data assets (e.g., medical claims data). The most common attributes used are the de-identified patient ID, observation date,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

**PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH AN A1c >7.0%, 2019<sup>1</sup>**



Data source: IQVIA © 2020

<sup>1</sup> 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.