



## Hospital Admissions for Influenza and Associated Costs

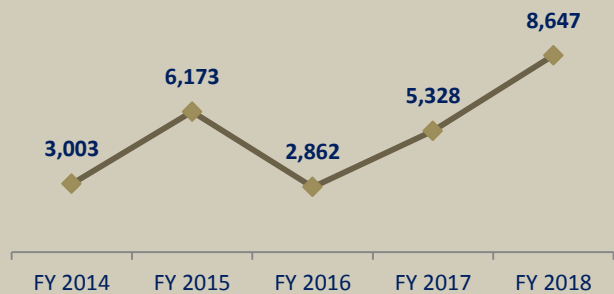
This financial brief examines hospitalizations for influenza (the “flu”) among Pennsylvania residents, with specific focus on older residents and children—two segments of the population at high risk of developing influenza-related complications that can result in hospitalization. Included are residents who were admitted to a Pennsylvania general acute care hospital in fiscal year (FY) 2018 (July 1, 2017 through June 30, 2018). Costs were estimated using hospital payment data received from the Centers for Medicare and Medicaid Services and the Pennsylvania Department of Human Services.



There were 8,647 hospital admissions for influenza among Pennsylvania residents of all ages in FY 2018—a 62% increase from

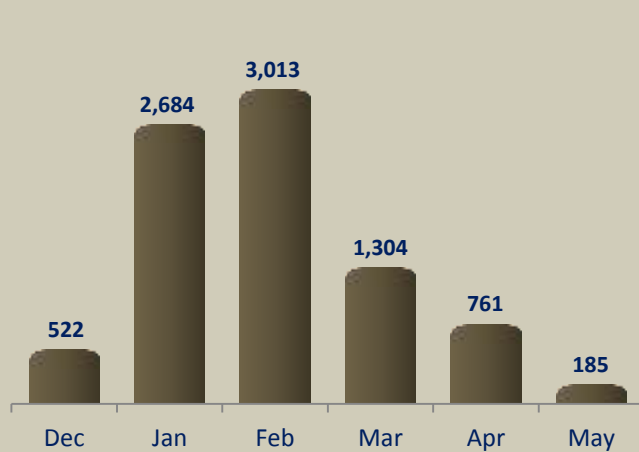
FY 2017. There was substantial variation in the number of influenza hospital admissions in recent years—similar to national trends.<sup>1</sup>

Number of Influenza Hospitalizations



Number of Influenza Hospitalizations by Month

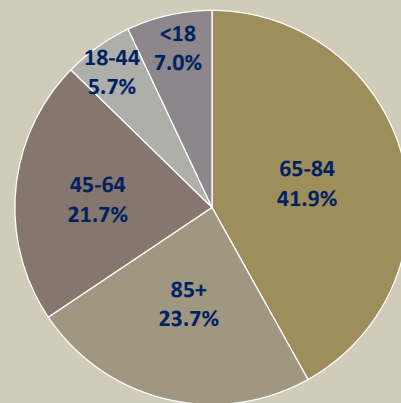
FY 2018



The majority of influenza hospitalizations in FY 2018 (8,469 cases or 98%) occurred during the 6-month period December 2017 to May 2018.

Percent of Influenza Hospitalizations by Age

FY 2018



Most influenza hospitalizations were for patients aged 65 and older (5,671 cases or 65.6% of all cases).

<sup>1</sup>Centers for Disease Control and Prevention. Website. [www.cdc.gov/flu/about/burden/](http://www.cdc.gov/flu/about/burden/) Accessed February 28, 2019.

## Influenza Patients Aged 65 and Older

People aged 65 and older are at high risk of developing influenza-related complications that can result in hospitalization.<sup>2</sup> On average, influenza patients aged 65 and older stayed in the hospital longer and had higher in-hospital mortality and readmission rates.

4.6  
days

Influenza patients aged 65 and older stayed in the hospital an average of 4.6 days, compared to 3.6 days for younger patients.

1.7%

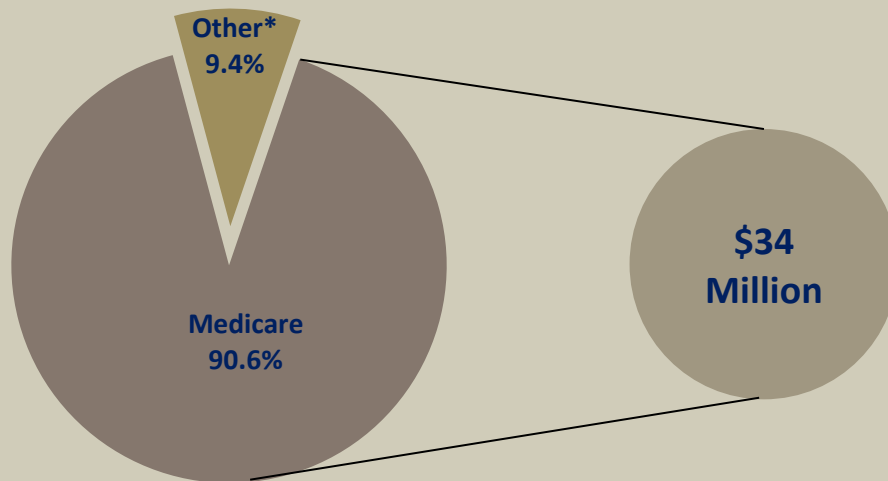
1.7% of influenza patients aged 65 and older died in the hospital, compared to 0.4% of younger patients.

12.6%

12.6% of influenza patients aged 65 and older were readmitted to the hospital within 30-days, compared to 10.4% of younger patients.

Medicare was the primary payer for 90.6% of influenza hospitalizations for patients aged 65 and older, amounting to an estimated \$34 million in hospital payments.

### Influenza Patients Aged 65 & Older



\*Other insurance or no insurance

Calculated by applying the average Medicare fee-for-service payment for influenza patients aged 65 and older (FY 2017 data) to Medicare influenza patients aged 65 and older in FY 2018, and adjusting for case mix.

<sup>2</sup>Centers for Disease Control and Prevention. Website. [www.cdc.gov/flu/about/disease/high\\_risk.htm](http://www.cdc.gov/flu/about/disease/high_risk.htm) Accessed February 28, 2019.

## Influenza Patients Under Age 18

Children are also at high risk of developing influenza-related complications that can result in hospitalization, especially those under age 5 and those under age 18 with chronic health problems such as asthma or diabetes.<sup>2</sup>

In FY 2018, there were 604 Pennsylvania children under age 18 hospitalized for influenza, representing 7.0% of all influenza hospitalizations.

2.5  
days

On average, influenza patients under age 18 stayed in the hospital 2.5 days.

21%

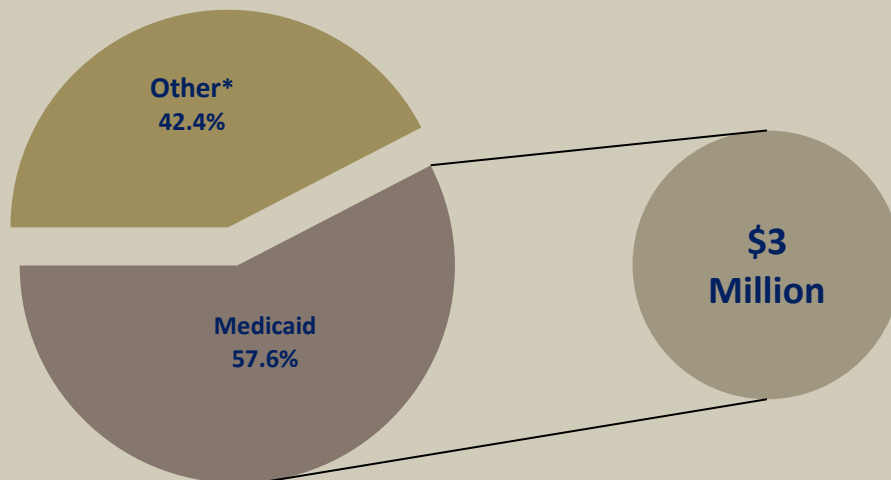
About 21% of influenza patients under age 18 live in high poverty areas (areas where 30% or more of the population lives in poverty).

60%

Of the 604 children hospitalized for influenza, 362 (60%) were under age 5.

Medicaid was the primary payer for 57.6% of influenza hospitalizations for patients under age 18, amounting to an estimated \$3 million in hospital payments.

### Influenza Patients under Age 18

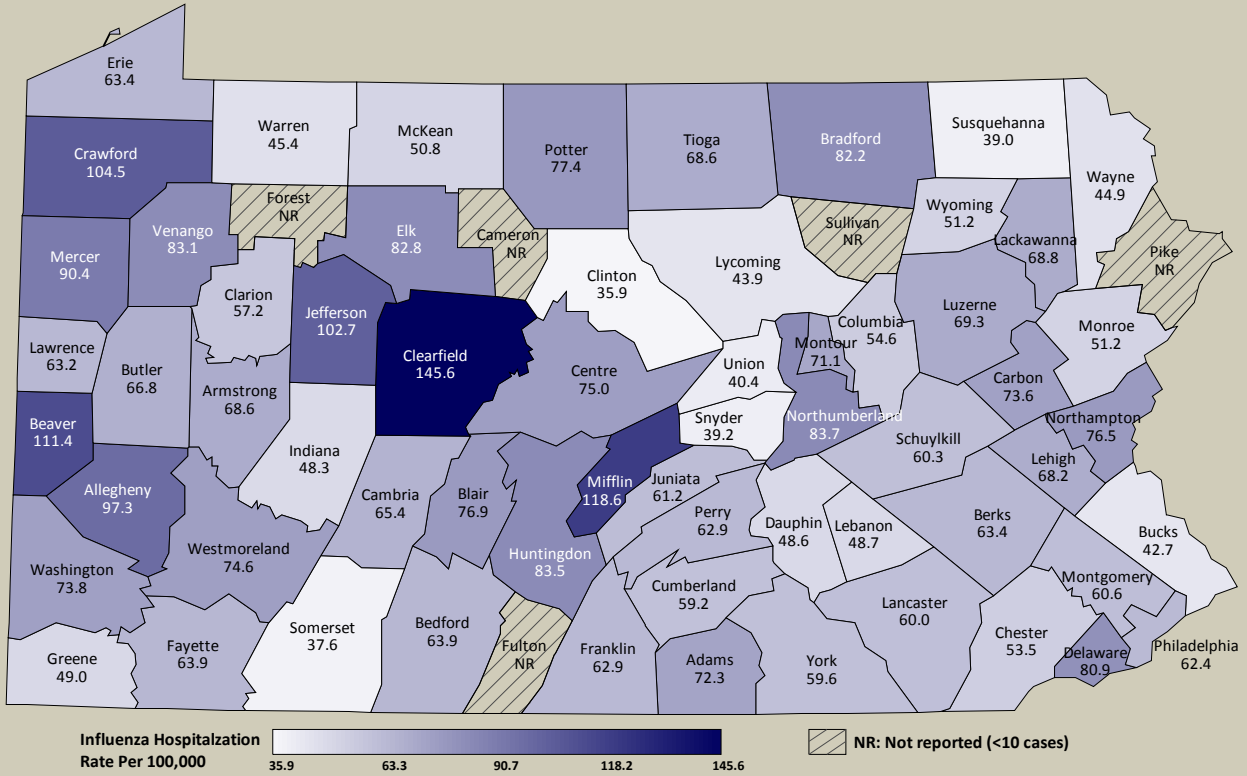


\*Other insurance or no insurance

Calculated by applying the average Medicaid payment for influenza patients under age 18 (calendar year 2016 data) to Medicaid influenza patients under age 18 in FY 2018.

<sup>2</sup>Centers for Disease Control and Prevention. Website. [www.cdc.gov/flu/about/disease/high\\_risk.htm](http://www.cdc.gov/flu/about/disease/high_risk.htm) Accessed February 28, 2019.

## Influenza Hospitalization Rate per 100,000 County Residents, FY 2018



**Statewide Rate: 67.5 Influenza Hospitalizations per 100,000 Residents**

*Note that higher rates for some counties might be dependent on larger numbers of residents with high risk characteristics (e.g., factors related to age). County rates were not adjusted for these population differences so that important effects of these patient characteristics were not masked by such adjustment.*

### About PHC4

Created by the PA General Assembly in 1986, the PA Health Care Cost Containment Council (PHC4) is an independent state agency charged with collecting, analyzing and reporting information that can be used to improve the quality and restrain the cost of health care in the state. Today, PHC4 is a recognized national leader in public health care reporting. PHC4 is governed by a 25-member board of directors, representing business, labor, consumers, health care providers, insurers and state government.

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**Table 1. Influenza Hospitalizations – Rate per 100,000 County Residents (All Ages), FY 2018**

|            | Number of Influenza Hospitalizations | Hospitalization Rate per 100,000 Residents |
|------------|--------------------------------------|--|
| Statewide  | 8,647                                | 67.5                                       |
| Adams      | 74                                   | 72.3                                       |
| Allegheny  | 1,190                                | 97.3                                       |
| Armstrong  | 45                                   | 68.6                                       |
| Beaver     | 185                                  | 111.4                                      |
| Bedford    | 31                                   | 63.9                                       |
| Berks      | 265                                  | 63.4                                       |
| Blair      | 95                                   | 76.9                                       |
| Bradford   | 50                                   | 82.2                                       |
| Bucks      | 268                                  | 42.7                                       |
| Butler     | 125                                  | 66.8                                       |
| Cambria    | 87                                   | 65.4                                       |
| Cameron    | NR                                   | NR   |
| Carbon     | 47                                   | 73.6                                       |
| Centre     | 122                                  | 75.0                                       |
| Chester    | 278                                  | 53.5                                       |
| Clarion    | 22                                   | 57.2                                       |
| Clearfield | 116                                  | 145.6                                      |
| Clinton    | 14                                   | 35.9                                       |
| Columbia   | 36                                   | 54.6                                       |
| Crawford   | 90                                   | 104.5                                      |
| Cumberland | 148                                  | 59.2                                       |
| Dauphin    | 134                                  | 48.6                                       |
| Delaware   | 457                                  | 80.9                                       |
| Elk        | 25                                   | 82.8                                       |
| Erie       | 174                                  | 63.4                                       |
| Fayette    | 84                                   | 63.9                                       |
| Forest     | NR                                   | NR   |
| Franklin   | 97                                   | 62.9                                       |
| Fulton     | NR                                   | NR   |
| Greene     | 18                                   | 49.0                                       |
| Huntingdon | 38                                   | 83.5                                       |
| Indiana    | 41                                   | 48.3                                       |
| Jefferson  | 45                                   | 102.7                                      |

|                | Number of Influenza Hospitalizations | Hospitalization Rate per 100,000 Residents |
|----------------|--------------------------------------|--|
| Juniata        | 15                                   | 61.2                                       |
| Lackawanna     | 145                                  | 68.8                                       |
| Lancaster      | 326                                  | 60.0                                       |
| Lawrence       | 55                                   | 63.2                                       |
| Lebanon        | 68                                   | 48.7                                       |
| Lehigh         | 250                                  | 68.2                                       |
| Luzerne        | 220                                  | 69.3                                       |
| Lycoming       | 50                                   | 43.9                                       |
| McKean         | 21                                   | 50.8                                       |
| Mercer         | 101                                  | 90.4                                       |
| Mifflin        | 55                                   | 118.6                                      |
| Monroe         | 86                                   | 51.2                                       |
| Montgomery     | 501                                  | 60.6                                       |
| Montour        | 13                                   | 71.1                                       |
| Northampton    | 232                                  | 76.5                                       |
| Northumberland | 77                                   | 83.7                                       |
| Perry          | 29                                   | 62.9                                       |
| Philadelphia   | 986                                  | 62.4                                       |
| Pike           | NR                                   | NR   |
| Potter         | 13                                   | 77.4                                       |
| Schuylkill     | 86                                   | 60.3                                       |
| Snyder         | 16                                   | 39.2                                       |
| Somerset       | 28                                   | 37.6                                       |
| Sullivan       | NR                                   | NR   |
| Susquehanna    | 16                                   | 39.0                                       |
| Tioga          | 28                                   | 68.6                                       |
| Union          | 18                                   | 40.4                                       |
| Venango        | 43                                   | 83.1                                       |
| Warren         | 18                                   | 45.4                                       |
| Washington     | 153                                  | 73.8                                       |
| Wayne          | 23                                   | 44.9                                       |
| Westmoreland   | 263                                  | 74.6                                       |
| Wyoming        | 14                                   | 51.2                                       |
| York           | 266                                  | 59.6                                       |

NR: Not reported due to low volume.



**Table 2. Medicare Fee-for-Service Payments for County Residents Hospitalized for Influenza, FY 2017 Data**

|            | Medicare Fee-for-Service Beneficiaries Only |                 |                |
|------------|---|-----------------|----------------|
|            | Number of Hospitalizations                  | Average Payment | Total Payments |
| Statewide  | 2,075                                       | \$6,422         | \$13,325,319   |
| Adams      | 22  | \$4,706         | \$103,543      |
| Allegheny  | 190   | \$6,727         | \$1,278,141    |
| Armstrong  | 11  | \$5,808         | \$63,890       |
| Beaver     | 26  | \$6,482         | \$168,525      |
| Bedford    | NR  | NR              | NR             |
| Berks      | 92  | \$7,346         | \$675,794      |
| Blair      | 16  | \$8,917         | \$142,664      |
| Bradford   | 17  | \$5,308         | \$90,229       |
| Bucks      | 77  | \$5,343         | \$411,410      |
| Butler     | 16  | \$4,035         | \$64,559       |
| Cambria    | 13  | \$6,695         | \$87,033       |
| Cameron    | NR  | NR              | NR             |
| Carbon     | 24  | \$6,842         | \$164,202      |
| Centre     | 16  | \$4,902         | \$78,424       |
| Chester    | 98  | \$6,632         | \$649,903      |
| Clarion    | 12  | \$5,712         | \$68,545       |
| Clearfield | 13  | \$6,081         | \$79,057       |
| Clinton    | NR  | NR              | NR             |
| Columbia   | NR  | NR              | NR             |
| Crawford   | 13  | \$6,233         | \$81,026       |
| Cumberland | 33  | \$5,588         | \$184,403      |
| Dauphin    | 24  | \$7,604         | \$182,484      |
| Delaware   | 124   | \$7,269         | \$901,376      |
| Elk        | NR  | NR              | NR             |
| Erie       | 35  | \$6,694         | \$234,285      |
| Fayette    | 12  | \$5,406         | \$64,872       |
| Forest     | NR  | NR              | NR             |
| Franklin   | 33  | \$6,010         | \$198,317      |
| Fulton     | NR  | NR              | NR             |
| Greene     | NR  | NR              | NR             |
| Huntingdon | 11  | \$5,481         | \$60,287       |
| Indiana    | NR  | NR              | NR             |
| Jefferson  | NR  | NR              | NR             |

|                | Medicare Fee-for-Service Beneficiaries Only |                 |                |
|----------------|---|-----------------|----------------|
|                | Number of Hospitalizations                  | Average Payment | Total Payments |
| Juniata        | NR  | NR              | NR             |
| Lackawanna     | 34  | \$4,795         | \$163,047      |
| Lancaster      | 110   | \$5,864         | \$644,989      |
| Lawrence       | 20  | \$5,988         | \$119,764      |
| Lebanon        | NR  | NR              | NR             |
| Lehigh         | 82  | \$6,118         | \$501,698      |
| Luzerne        | 48  | \$5,942         | \$285,222      |
| Lycoming       | NR  | NR              | NR             |
| McKean         | NR  | NR              | NR             |
| Mercer         | 18  | \$4,954         | \$89,175       |
| Mifflin        | 17  | \$6,491         | \$110,345      |
| Monroe         | 48  | \$5,222         | \$250,648      |
| Montgomery     | 162   | \$5,887         | \$953,717      |
| Montour        | NR  | NR              | NR             |
| Northampton    | 100   | \$5,651         | \$565,109      |
| Northumberland | 14  | \$6,449         | \$90,289       |
| Perry          | NR  | NR              | NR             |
| Philadelphia   | 190   | \$9,806         | \$1,863,095    |
| Pike           | NR  | NR              | NR             |
| Potter         | NR  | NR              | NR             |
| Schuylkill     | 29  | \$7,315         | \$212,144      |
| Snyder         | NR  | NR              | NR             |
| Somerset       | 13  | \$5,073         | \$65,955       |
| Sullivan       | NR  | NR              | NR             |
| Susquehanna    | NR  | NR              | NR             |
| Tioga          | NR  | NR              | NR             |
| Union          | NR  | NR              | NR             |
| Venango        | 23  | \$4,708         | \$108,291      |
| Warren         | NR  | NR              | NR             |
| Washington     | 35  | \$4,690         | \$164,161      |
| Wayne          | NR  | NR              | NR             |
| Westmoreland   | 40  | \$5,033         | \$201,323      |
| Wyoming        | NR  | NR              | NR             |
| York           | 62  | \$5,656         | \$350,685      |

NR: Not reported due to low volume.

Other costs associated with influenza include physician services and visits to the emergency department. Data from the Centers for Medicare and Medicaid Services shows that payments for Medicare fee-for-service enrollees (about 59% of Medicare enrollees), amounted to an estimated **\$1.4 million** for physician services and **\$1.1 million** for emergency department visits (based on FY 2017 data, July 1, 2016-June 30, 2017).

