

Trends in incidence and economic burden of pneumonia in the United States from 2016-2021

Sarah Bandy^{1,2}, Julie Mercer^{1,2}, Justina Lipscomb^{1,2}, Jim Koeller^{1,2}, Chanhyun Park¹, Grace Lee^{1,2}

¹The University of Texas at Austin, College of Pharmacy, Austin, Texas, USA ²The University of Texas Health at San Antonio, School of Medicine, San Antonio, Texas, USA

Background

- Despite available prevention measures, **pneumonia remains one of the leading causes of hospitalization** in the US.¹
- Previous studies have observed slight decreased in healthcare utilization due to pneumonia over the last decade, although **costs remain substantial**.²
- Increased cost for pneumonia care have historically been associated with those that are considered higher risk (i.e., those 65 years and older and those with chronic or immunocompromising conditions).³
- There is currently a lack of contemporary incidence and costs for pneumonia care in the United States.

Objective

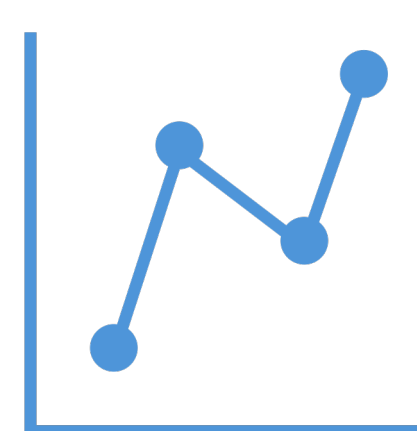
The purpose of this study was to examine trends in United States inpatient healthcare utilization and economic burden for pneumonia care from 2016 to 2021 compared to other common respiratory illnesses.

Methods

We assessed the **Agency for Healthcare Research and Quality's Medical Expenditure Panel Survey (MEPS)** data, which collects data from members of sample households from communities across the US



These data can be used to produce nationally representative estimates of medical conditions, use of medical care services, charges, and payments, etc.



We examined total cases and mean expenditure per person with care for pneumonia and compared its trends to influenza and COVID-19



Estimated rates per 100 persons with 95% confidence intervals (CI) reported; weighting and complex sampling procedures were applied

Figures and Results

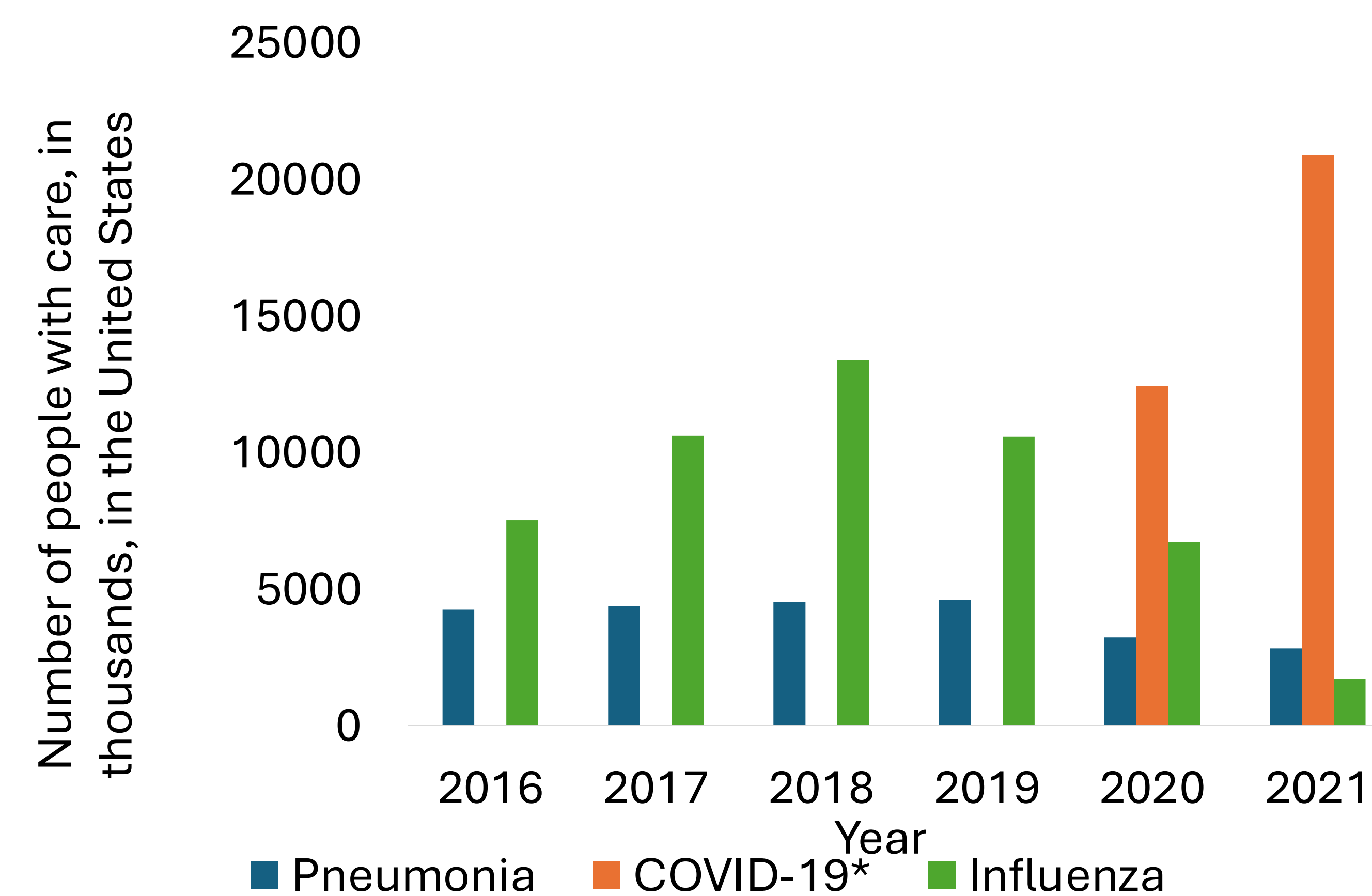


Figure 1: Incidence of pneumonia, COVID-19, and influenza in the United States from 2016 to 2021.

*No incidence of COVID-19 was recorded until its emergence in the United States in 2020.

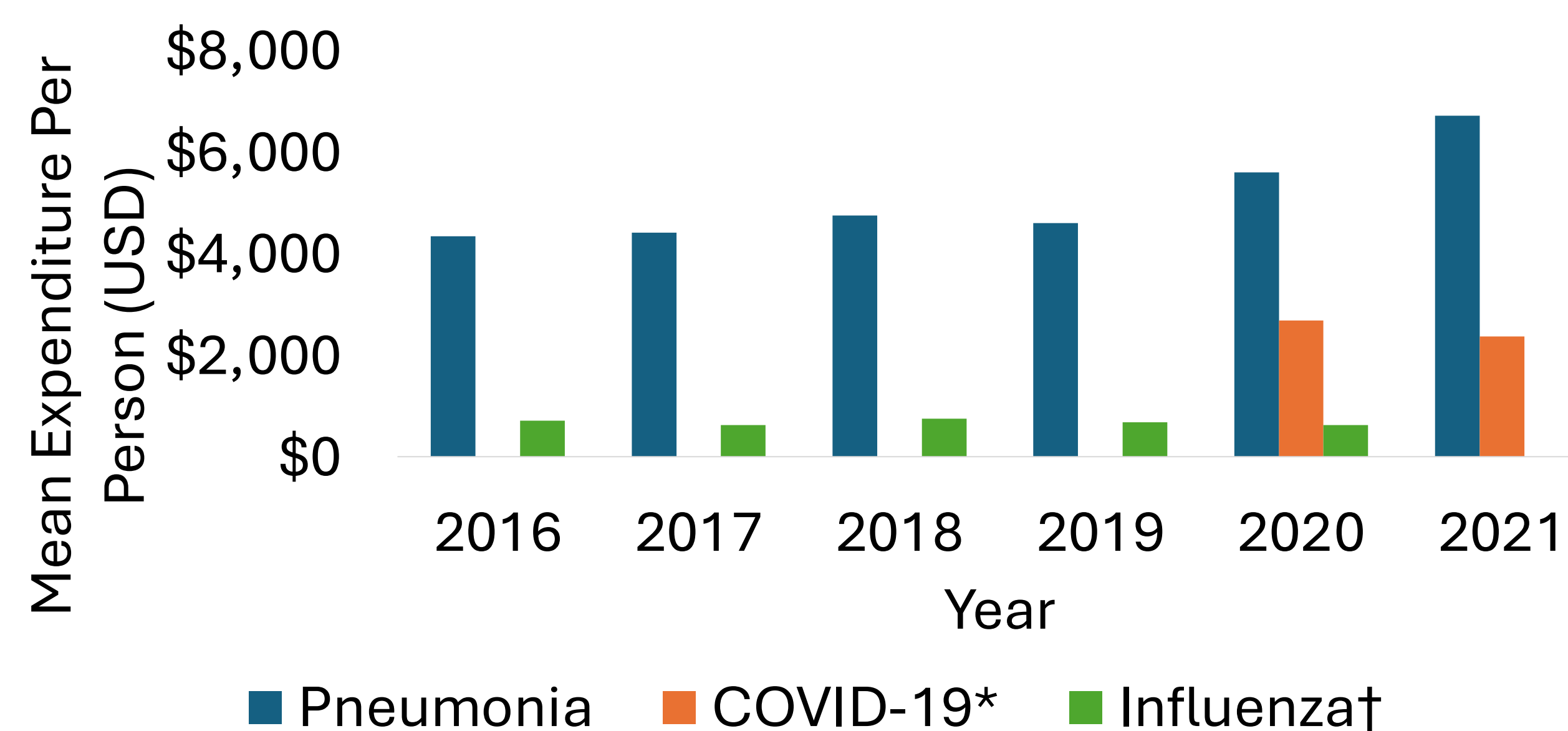


Figure 3: Mean expenditure per person for pneumonia, COVID-19, and influenza in the United States from 2016 to 2021.

*No incidence of COVID-19 was recorded until its emergence in the United States in 2020.

†Cases of influenza may not have been captured in 2021 due to lower number of cases and due to over-the-counter expenses and phone contacts with medical providers, which are not included in MEPS total expenditure estimates.

- Total cases of pneumonia and influenza decreased by 33% and 77% respectively from 2016-2021 (**Fig 1**)
- Cases of COVID-19 emerged in 2020 and increased 46% in 2021 (**Fig 1**)
- In 2021, there were 2.8 cases per 1,000 persons of pneumonia, 1.7 cases per 1,000 persons of influenza, and 20.9 cases per 1,000 persons of COVID-19 (**Fig 1**)
- Total expenditure for pneumonia remained stable from 2016 to 2021 (\$18 billion annually) (**Fig 2**)
- In 2020, the **mean cost of pneumonia was 2-times higher** than COVID-19 (\$5,596 vs \$2,678) (**Fig 3**)

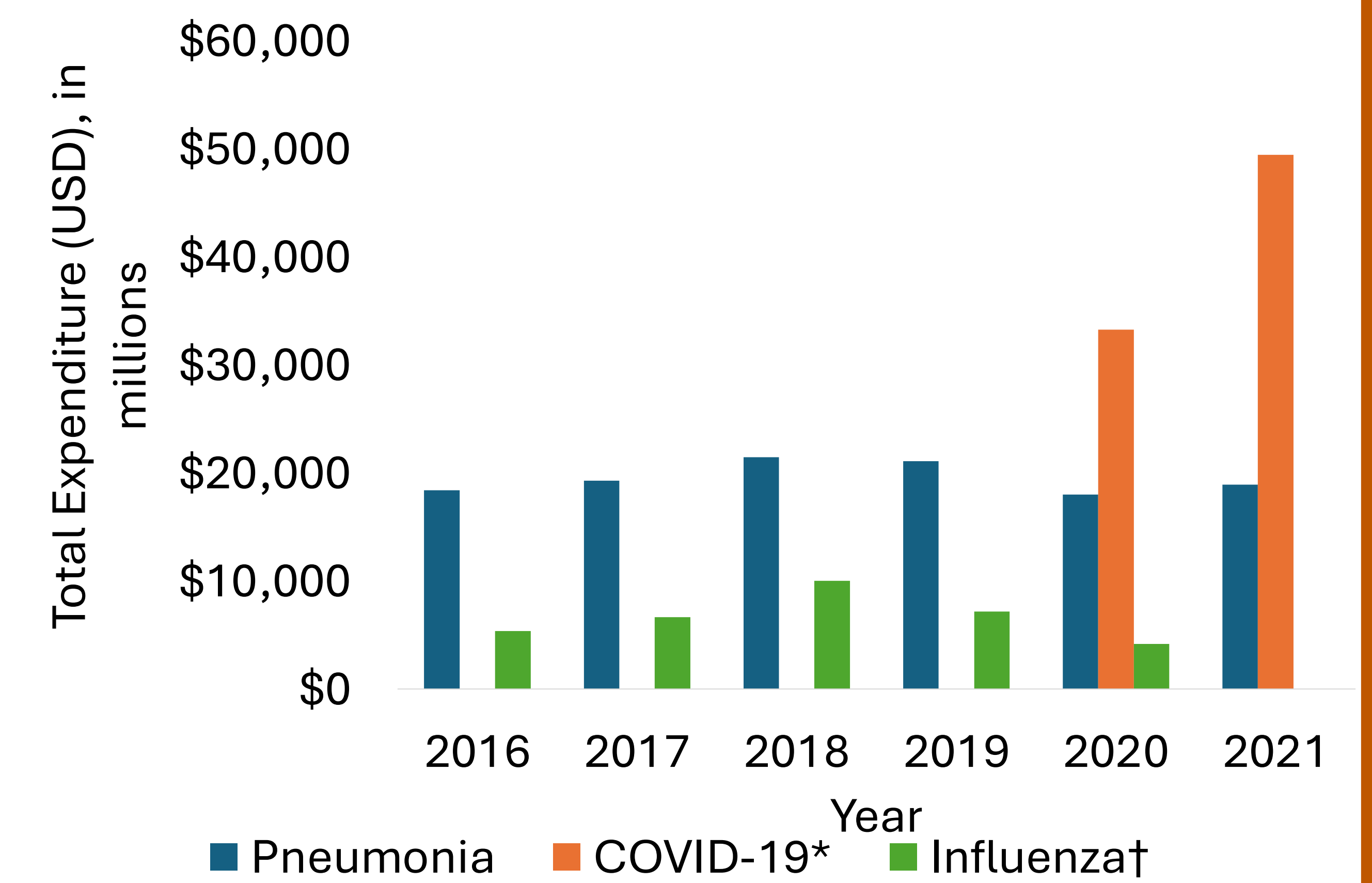


Figure 2: Total expenditure of pneumonia, COVID-19, and influenza in the United States from 2016 to 2021.

*No incidence of COVID-19 was recorded until its emergence in the United States in 2020.

†Cases of influenza may not have been captured in 2021 due to lower number of cases and due to over-the-counter expenses and phone contacts with medical providers, which are not included in MEPS total expenditure estimates.

Limitations

- This study was subject to non-response bias, where those who did not respond may have different vaccine behaviors than those that responded.
- Data in this study relied on self-reported vaccine status via telephone, therefore, not validated through electronic medical records.

Conclusion

While total cases of pneumonia and influenza decreased from 2016 to 2021 amidst the pandemic, the mean cost of care increased. In 2021, the total cost for pneumonia care was \$18.9 billion in addition to the \$49.4 billion from COVID-19. Further research is needed to explore the drivers underlying the economic burden for pneumonia.

References

- Salah HM, et al. Causes of hospitalization in the USA between 2005 and 2018. doi:10.1093/ehjopen/oeab001
- Tong S, et al., BMC Health Services Research. 2018;18(715)
- Weycker D, et al., BMC Health Services Research. 2016;16(182)
- Agency for Healthcare Research and Quality. Mean expenditure per person, United States, 2016 to 2021. Medical Expenditure Panel Survey.