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Connecting Emerging COVID-19 Data to Insured Claims

April 23, 2020 Update

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Caveat and Disclaimer

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Connecting Emerging COVID-19 Data to Insured Claims

Updates since initial 4/15/2020 release

<u>April 16, 2020 Updates</u>

- Comparing past influenza (flu) seasons – average deaths across flu seasons of 19,400 corrected to 190,400.
- Figure 6 and commentary – flu/pneumonia deaths updated to remove flu/pneumonia deaths that also included a COVID-19 cause of death.

<u>April 23, 2020 Updates</u>

- Section 3 - Burden of Season Influenza in U.S. added.
- All graphs in sections 4 and 5 updated with COVID-19 data available as of April 22, 2020. Pneumonia deaths removed from Figure 7.
- Section 6 - Similarities Between COVID-19 and Flu Related to Hospitalized Insured Individuals added.

Section 1 - Introduction

Over the past month, the evolution of the COVID-19 pandemic has raised questions on how this outbreak will impact life insurance industry claims. Data on deaths and hospitalization rates are reported throughout the media, but is often in an aggregated form and not at a level that is useful for actuaries. Data by factors such as by age, gender, and other factors are emerging, but lags the data reported on the nightly news. Until this more detailed data on COVID-19 becomes readily available, other publicly available data may prove useful to compare to and benchmark against emerging COVID-19 data for the purpose of estimating future insurance claims.

Data on past influenza (flu) seasons are available and can be compared to the emerging COVID-19 data. This comparison, along with information on the impact of past flu seasons on an insurer's block, can be used to get a sense of how this pandemic will likely impact their future insurance claims. In addition, the relationship between U.S. population mortality and insured mortality may be useful in providing a connection between U.S. population influenza data, emerging COVID-19 data, and life insurance claims. This report uses various insured data and publicly available U.S. population data to give the reader a sense of the information that is readily available to help determine a connection between emerging COVID-19 data, past influenza data – including characteristics of hospitalized individuals, and existing population and insured mortality.

This report pulls emerging U.S. COVID-19 hospitalization data and deaths obtained from the Centers for Disease Control and Prevention's (CDC) COVIDView, a Weekly Surveillance Summary of U.S. COVID-19 activity[1], and compares it to data from past U.S. influenza seasons obtained from the CDC's Flu Activity and Surveillance webpage[2]. Deaths from pneumonia are included with influenza deaths in the flu surveillance because some deaths due to pneumonia impact influenza death and mortality trends.[3] The COVID-19 deaths shown in this report are provisional counts[4] based on the current flow of mortality data in the CDC's National Vital Statistics System (NVSS) and may differ from other published sources, as data are currently lagging by an average of one to two weeks. It can take several weeks for death certificate records to be submitted by the states to the CDC's National Center for Health Statistics (NCHS) and to be processed, coded, and tabulated for the NVSS. Flu and pneumonia deaths from the flu surveillance are provided with the COVID-19 deaths from the COVID-19 surveillance for comparison purposes in sections 2, 4, and 5 of this report. Section 3 contains another view of flu statistics based on the CDC's estimates of the flu 'burden'.

When looking at hospitalizations, a clear pattern of co-morbidities becomes apparent in those diagnosed with COVID-19. These patterns are quite similar to those found in the hospitalization data from past flu seasons. Section 6 uses data for insured individuals with private commercial and Medicare advantage insurance policies who were hospitalized with the flu from the Health Care Cost Institute (HCCI)[5], to demonstrate the similarities in these co-morbidities and distributions by age group between the flu and COVID-19.

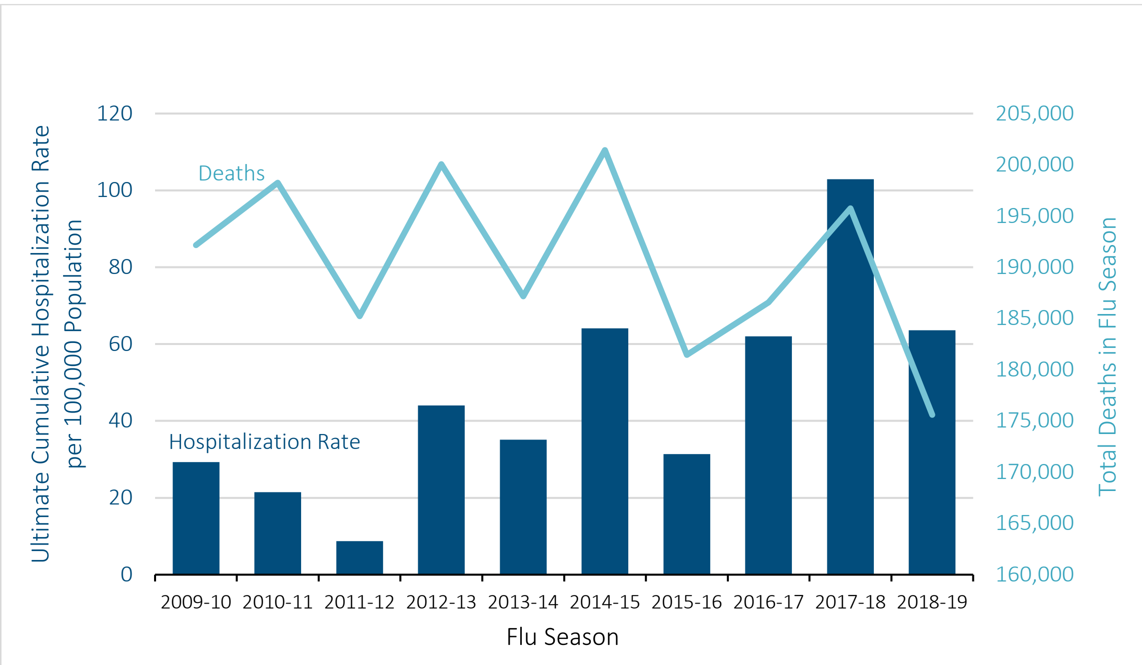
This report also provides U.S. population mortality data for county level income quintiles in section 7. The relationships between the quintile mortality rates and the total population mortality rates can be used to tie U.S. population influenza deaths to insured populations, assuming the income level of the insureds is known. In addition, data from the American Council of Life Insurers (ACLI) and SCOR Reinsurance Company are included to provide another set of information to benchmark population data against insured data and can be found in section 8.

Section 2 - Comparing Past Flu Seasons

Each flu season is unique. The total number of deaths and cumulative hospitalization rates provides an indication of the severity of each season. Figure 1 contains a comparison of the number of total deaths and cumulative hospitalization rate for the 10 flu seasons ending in 2010 through 2019. A flu season in the U.S. is measured by week and typically begins in week 40 of a calendar year and goes through week 39 of the following calendar year. Deaths over these 10 flu seasons have averaged 190,400 per season and have ranged between 175,600 and 201,400. The ultimate cumulative hospitalization rate has averaged 46.3 per 100,000 and ranged between 8.7 and 102.9 per 100,000 over these 10 seasons.

Figure 1

INFLUENZA AND PNEUMONIA HOSPITALIZATIONS AND DEATHS BY FLU SEASON – TOTAL U.S. POPULATION



Data source: CDC

Subsequent sections of this report will focus on the 2009-2010, 2011-2012, 2014-2015, and 2017-2018 flu seasons. These four flu seasons were chosen because of their relative range in hospitalizations and deaths. The 2009-2010 pandemic had a relatively low number of hospitalizations and the number of deaths was ranked fifth in terms of number of deaths among these 10 flu seasons. The 2011-2012 season was relatively mild in terms of hospitalizations and deaths. The 2014-2015 and 2017-2018 seasons were relatively severe, both in terms of hospitalizations and deaths.

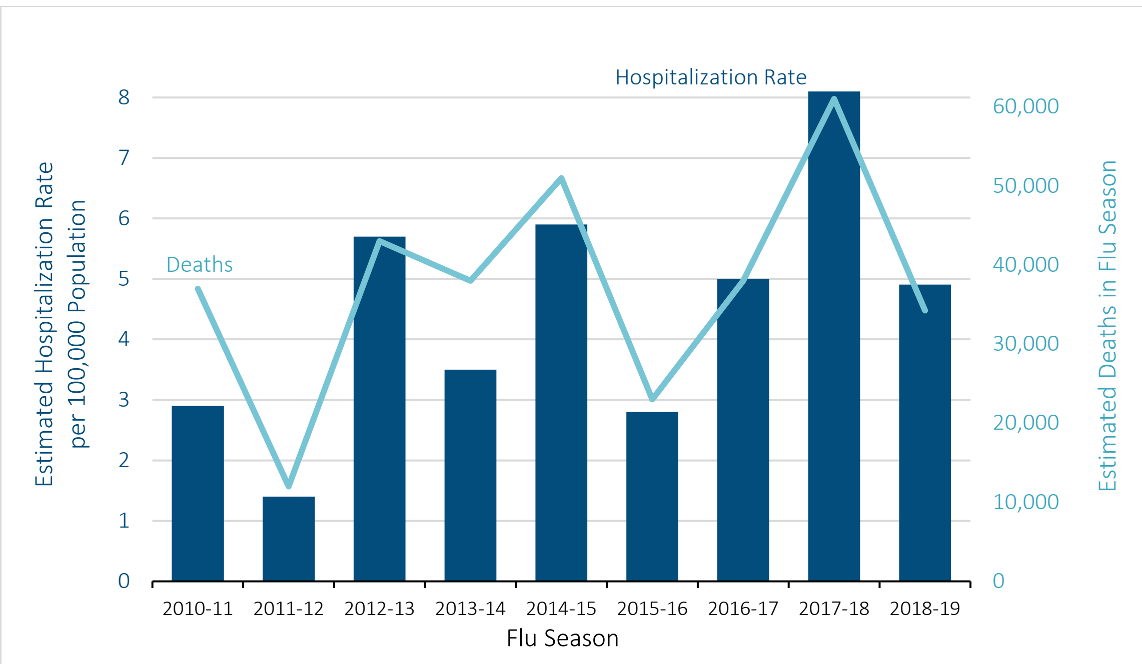
Section 3 - Burden of Season Influenza in the U.S.

In addition to the data available from the various surveillance systems, the CDC completes estimates of the burden of flu in the U.S. in terms of flu-associated illnesses, medical visits, hospitalizations, and deaths in a given flu season. Models are used to develop these estimates as opposed to flu surveillance systems because these surveillance systems do not capture every flu-related illness, medical visit, hospitalization or death in the U.S.[6] Estimates of the burden of flu in the U.S. help to demonstrate the true burden of the disease.

Figure 2 shows the CDC's estimates of hospitalizations and deaths by flu season. Additional data is available by age group for each flu season on the CDC website. These estimates are much lower than the numbers shown in other sections of this report because these estimates are for flu only, whereas the values in the other sections are based on flu and pneumonia deaths from the CDC surveillance data. Comparisons to COVID-19 estimates will likely not be possible for some time. As of the date of this publication, the 2019-2020 season estimate is not yet available and the 2017-2018 and 2018-2019 estimates are still considered preliminary.

Figure 2

INFLUENZA ESTIMATED HOSPITALIZATIONS AND DEATHS BY FLU SEASON – TOTAL U.S. POPULATION



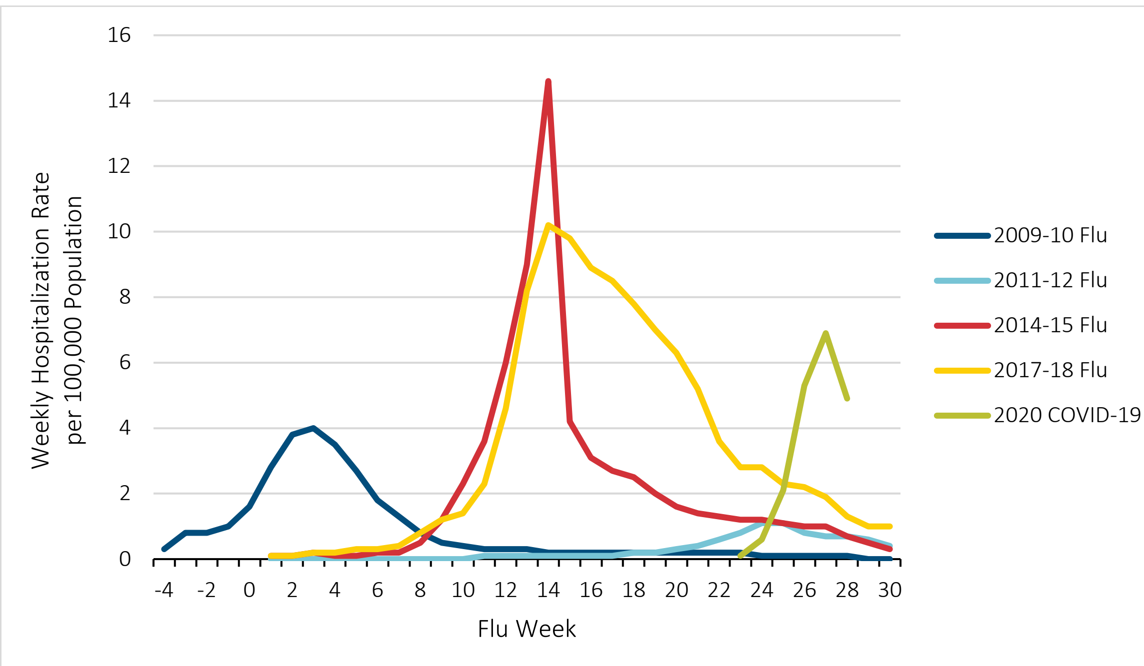
Section 4 - Hospitalizations of Past Flu Seasons vs. Emerging COVID-19 Data

Each influenza outbreak can differ by the time of year it will peak and the severity by age group. Figure 3 shows the weekly hospitalization rate for the total U.S. population for the four highlighted flu seasons. A flu season in the U.S. is measured by week and typically begins in week 40 of a calendar year through week 39 of the following calendar year. Week 40 in a calendar year will be the first flu week.

The 2009-2010 season was unusual in that it peaked early in flu week three, whereas the 2011–2012 flu-season peaked in flu week 24. The 2014-2015 season's peak was quite severe at a rate of 14.6 per 100,000 hospitalizations in week 14, but dropped off quickly the following week. The 2017-2018 season also peaked in week 14 at a rate of 10.2 and dropped off slowly over the next eight weeks.

Results for the COVID-19 season have also been added to this graph and are available through April 11 or flu week 28. These results begin to appear in flu week 23, but because of the lag in reported data, this data may be updated in future weeks. The trend in COVID-19 hospitalizations is quite steep through week 27 and has already surpassed the peak hospitalization rate of the 2009-2010 pandemic. In week 27, the weekly hospitalization rate across all ages was 6.9 hospitalizations per 100,000, about one-half of the peak weekly rate in the 2014-2015 season. Although week 28 shows a drop, this is likely due to the lag in data and should not be used to indicate any pattern or trend.

Figure 3
WEEKLY HOSPITALIZATION RATE BY FLU SEASON – TOTAL U.S. POPULATION



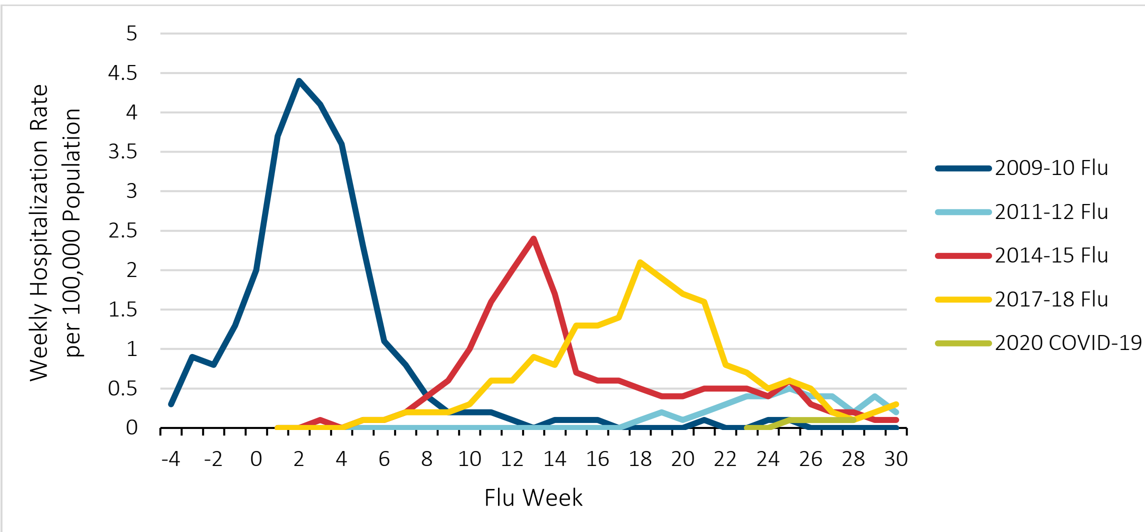
Data source: CDC

Weekly hospitalization rates also vary by age group as shown in Figure 4 for age group 5-17 and Figure 5 for age group 65-74. The 2009-2010 pandemic was unusual in that it impacted younger people more than other flu seasons. The 2009-2010 season also started earlier than the other highlighted seasons. Adjusting for the differences in the scales of the y-axis in the 2009-2010 season, the number of deaths for ages 65-74 was in the same magnitude as the 5-17 age group. The 2011-2012 flu season was mild for both younger and older age groups relative to other seasons.

Emerging data on the COVID-19 pandemic has been included and indicates that older people are at greater risk of hospitalization than younger people. In week 27, the weekly hospitalization rate for ages 65-74 was 16.3 hospitalizations per 100,000, about one-half of the peak weekly rate in the 2014-2015 season. To date, younger age groups appear to be impacted by COVID-19 less than other flu seasons but, again, data is just emerging.

Figure 4

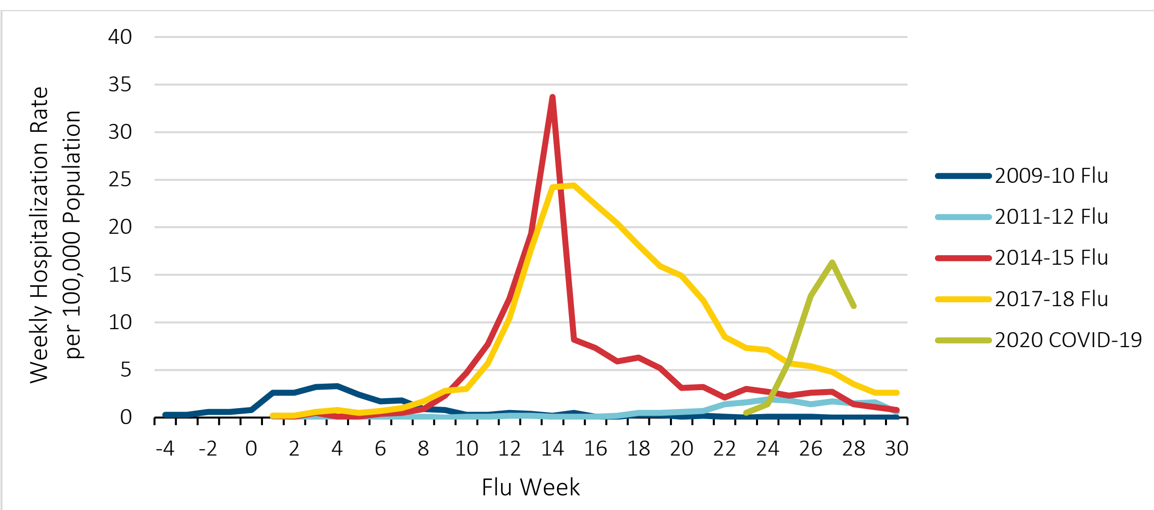
WEEKLY HOSPITALIZATION RATE BY FLU SEASON – AGES 5-17



Data source: CDC

Figure 5

WEEKLY HOSPITALIZATION RATE BY FLU SEASON – AGES 65-74



Data source: CDC

Section 5 - Deaths from Past Flu Seasons vs. Emerging COVID-19 Data

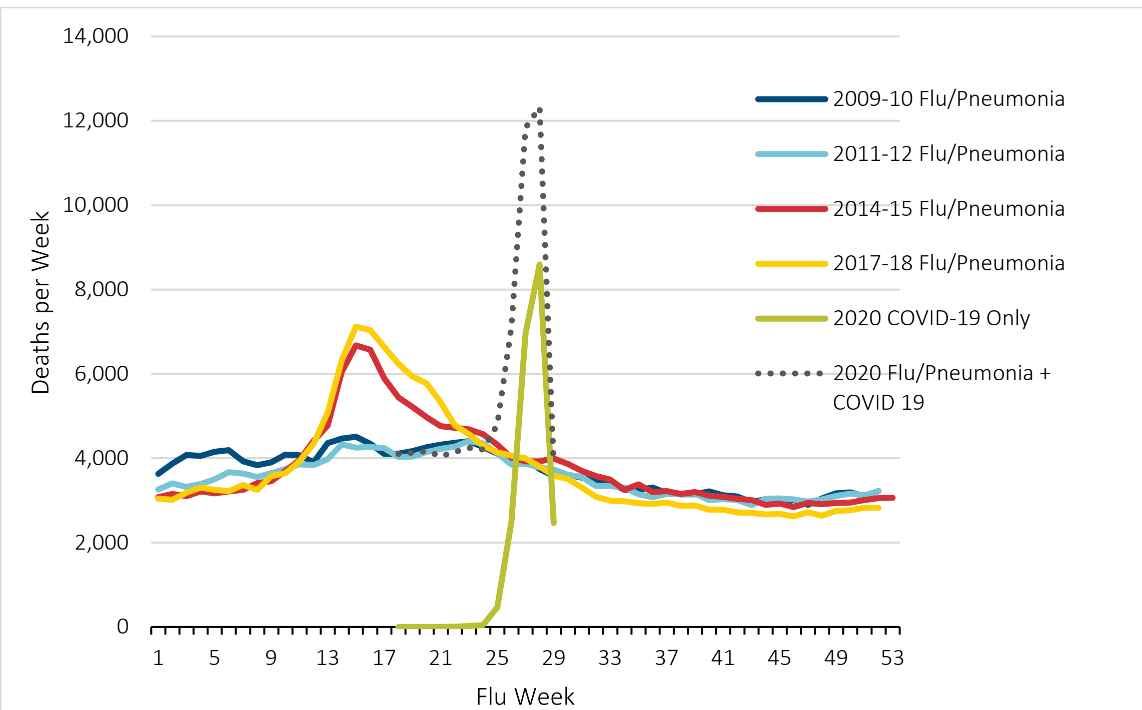
When looking at deaths, each flu season can vary by timing within the flu season and by severity. Figure 6 shows the weekly deaths for the total U.S. population for the four highlighted flu seasons. A flu season in the U.S. is measured by week and typically begins in week 40 of a calendar year through week 39 in the following calendar year. Week 40 in a calendar year will be the first flu week.

Deaths in the 2014-2015 and 2017-2018 flu seasons peaked in week 14, increasing by about 25% over the prior week. The week over week increases in the 2009-2010 and 2011-2012 seasons were much lower, with the largest increase of 8.8% occurring in week 14 of the 2011-2012 season.

Results for the COVID-19 deaths and 2020 flu/pneumonia deaths captured on April 22, through flu week 29 or April 18, have been added to this graph. Flu/pneumonia deaths are included to provide context for understanding the completeness of COVID-19 mortality data and related trends. Deaths due to COVID-19 may be misclassified as flu or pneumonia deaths and the increase in flu/pneumonia deaths may be an indicator of excess COVID-19 related mortality. Weekly death data for COVID-19 increased greatly in weeks 26 and 27. In flu week 28, the total flu/pneumonia plus COVID-19 deaths equaled 12,315, greatly surpassing the 2017-2018 flu season weekly high. Note, the death counts are lagged by 1-2 weeks. The NVSS updates death counts as the NCHS receives more death certificate information. Although the graph shows a drop-off in flu/pneumonia/COVID-19 deaths in week 29, this is likely due to the lag in data and should not be used to indicate any pattern or trend.

Figure 6

WEEKLY DEATHS BY FLU SEASON – TOTAL POPULATION

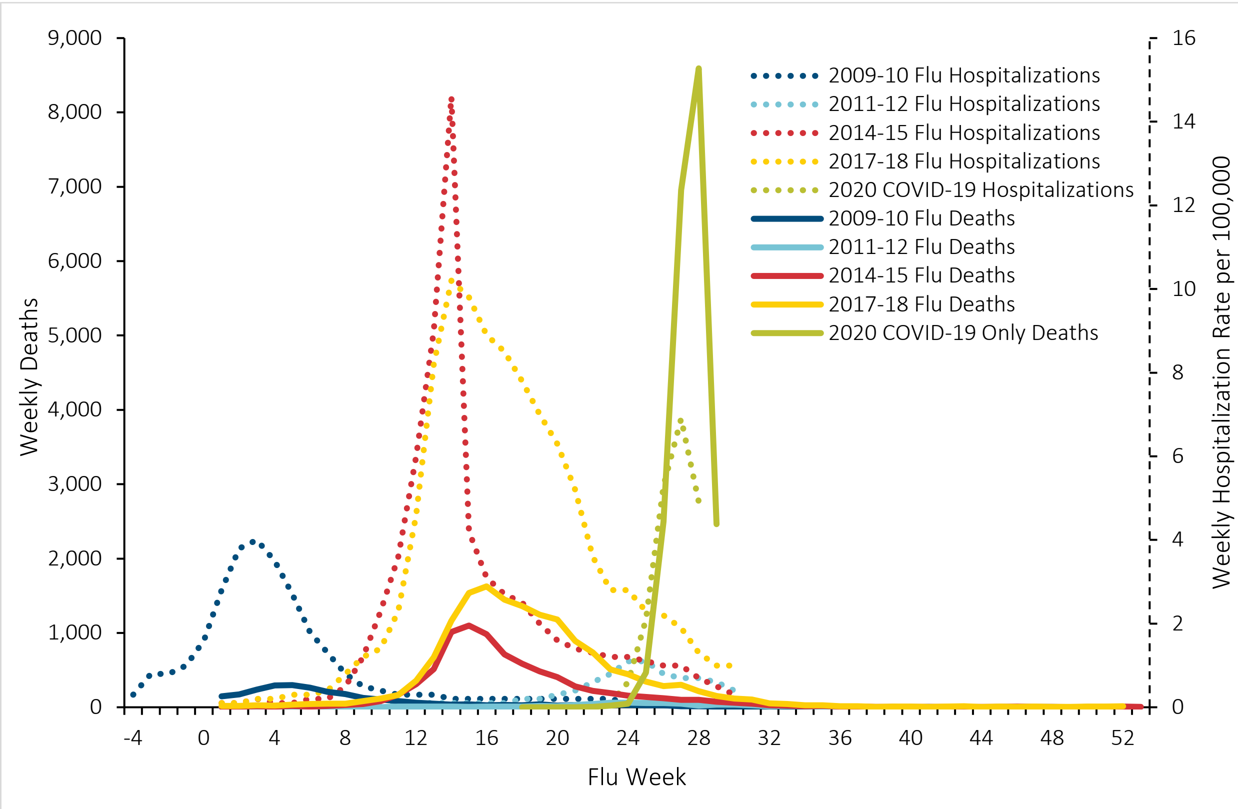


Data source: CDC

Figure 7 combines the weekly flu deaths and hospitalization rates for the four highlighted flu seasons. Unlike Figure 6, deaths here exclude pneumonia deaths. Hospitalizations were a leading indicator of deaths in flu seasons 2014-2015, and 2017-2018 and for COVID-19. For the 2009-2010 season, there appears to be a slight rise in deaths following the spike in hospitalizations. The ratio of highest weekly deaths to the highest weekly hospitalization rate for COVID-19 is 16 times the similar ratio for the 2014-2015 season.

Figure 7

WEEKLY HOSPITALIZATION RATES AND DEATHS BY FLU SEASON – TOTAL POPULATION



Data source: CDC

Section 6 - Similarities Between COVID-19 and Flu Related to Hospitalized Insured Individuals

As experience for COVID-19 emerges, there is a clear pattern of those who are affected by this disease, particularly those who end up hospitalized. It's interesting to note that those characteristics line up fairly well when it comes to past hospitalizations related to influenza. Two main areas of comparison that will be explored are commonalities of co-morbidities for hospitalized insured individuals with private commercial and Medicare advantage insurance policies, and distributions of hospitalizations by age and gender.

According to a recent study conducted by doctors at NYU using data from New York Hospitalizations, individuals with obesity and diabetes have a significantly higher risk of being hospitalized due to COVID-19. Another significant factor was determined to be age, where individuals over the age of 65 had a significantly higher chance of hospitalization than those under 65.[7]

Similarly, a study conducted on COVID-19 patients in China showed that a patient's age played a significant factor in determining severity. Patients were split into groupings that were categorized as mild and severe. Severe COVID-19 cases had an average age of 63, while mild cases had an average age of 38. Also, 59% of severe patients were over 65. Finally, 85.5% of the "severe" cases in the study had diabetes or cardiovascular disease.[8]

When examining past flu data, there are a lot of similarities in the above patterns. HCCI flu data was gathered from 2013 – 2017, which shows similar patterns to COVID-19.

Table 1 below shows the relative prevalence of several different co-morbidities for populations 65 and over and those under 65. As Table 1 indicates, there are some strong correlations with co-morbidities, particularly among the 65 and older patients. The only cases where under 65 prevalence is significantly stronger occurs with obesity and asthma.[9]

Table 1
COMMON CO-MORBID CHRONIC CONDITIONS FOR HOSPITALIZED INFLUENZA PATIENTS FROM 2015-2017

Disease Category	Condition	Prevalence 65 +	Prevalence < 65
Cardiovascular	Hypertension	69.2%	36.9%
Cardiovascular	Heart Disease	56.6%	22.1%
Metabolic	Diabetes	30.3%	19.9%
Metabolic	Obesity	12.1%	18.2%
Respiratory	COPD	29.9%	16.5%
Respiratory	Asthma	8.6%	19.9%
Genitourinary	Kidney Disease	33.0%	18.3%
Genitourinary	Urinary Disorders	9.4%	4.5%
Cancer	Cancer	29.5%	30.8%
Other	Anemia	14.4%	12.0%
Other	Brain Disorders	7.6%	2.9%
Other	Muscle Disorders	6.5%	2.7%

The factors above all relate to chronic conditions. There were several other acute conditions which were present at admission and contributed to these flu-related hospitalizations. The main ones were: electrolyte imbalance, respiratory failure, pneumonia, and sepsis. The prevalence of these conditions for each age category can be shown in Table 2 below. It should be noted that the frequency of those conditions was fairly similar by age group, although slightly more prevalent in the younger ages overall.

Table 2

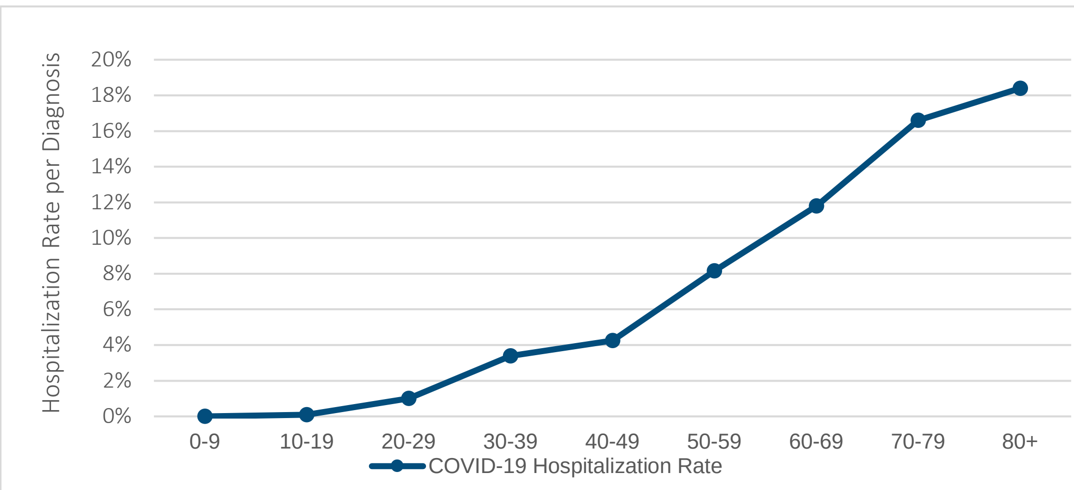
COMMON CO-MORBID ACUTE CONDITIONS FOR HOSPITALIZED INFLUENZA PATIENTS FROM 2015-2017

Acute Conditions	Prevalence 65 +	Prevalence < 65
Electrolyte Imbalance	39.8%	40.7%
Respiratory Failure	30.9%	27.3%
Pneumonia	14.3%	17.0%
Sepsis	1.7%	3.9%

In addition to co-morbidities, there was a strong prevalence towards greater hospitalization at higher ages. A study conducted by The Lancet showing hospitalization data from China from January – February 2020 indicates a rather steep slope for age-dependent hospitalization. Figure 8 below shows this sharp observed increasing trend with age.[10]

Figure 8

COVID-19 HOSPITALIZATION RATE BY AGE

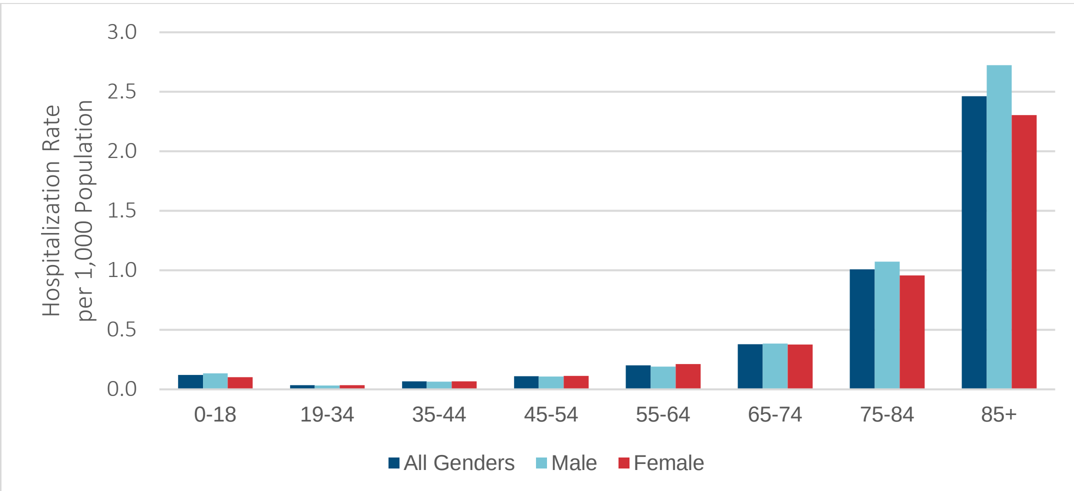


Data source: The Lancet

Just like with co-morbidities, a similar pattern is evident with flu data collected from 2013-2017 using HCCI data. Although the data in Figure 9 below is for a total population, rather than an underlying population with a flu diagnosis, it indicates a significantly greater chance of hospitalization due to the flu at higher ages.[11]

Figure 9

HOSPITAL ADMISSION RATE PER THOUSAND MEMBERS DUE TO INFLUENZA 2013-2017



Data source: HCCI

Finally, influenza hospitalizations are also slightly more prevalent in male populations than female populations.

In conclusion, there are many similarities between the flu and COVID-19 as they relate to hospitalization. Individuals with flu hospitalizations have higher incidences of co-morbidities and are significantly skewed towards the aged, just as they appear to be with COVID-19.

Section 7 - U.S. Influenza and Pneumonia Population Data by County Level Quintiles

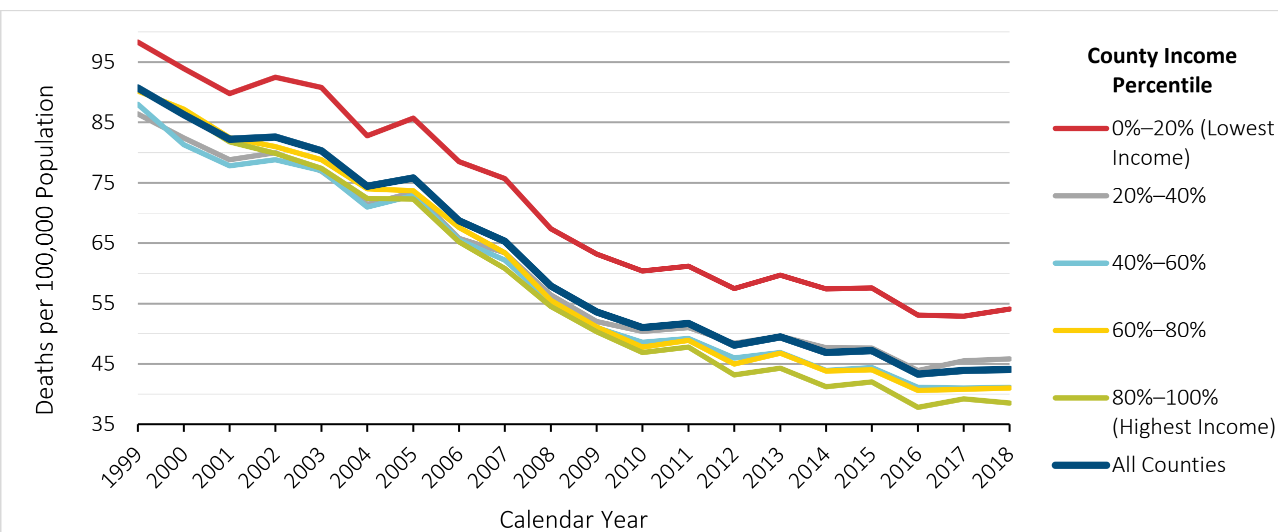
Research has shown that mortality experience varies by socioeconomic status. Using county level U.S. population mortality experience from the CDC[12] and median household income data by county from the U.S. Census Bureau's Small Area Income and Poverty Estimates Program[13], historical mortality results by county level income group can be obtained. It should be noted that not all counties are homogeneous in terms of income level. Some large counties have large variations of income. Regardless, mortality shown by county income groupings may provide an indication of the variation of mortality by various income levels. Table 3 indicates the range of median household income levels of U.S. counties grouped into quintiles.

Table 3
MEDIAN HOUSEHOLD COUNTY LEVEL INCOME RANGES BY PERCENTILE GROUP[14]

Percentile Group	Low Income	High Income
0–20th Percentile	19,021	42,289
20th–40th Percentile	42,289	47,621
40th–60th Percentile	47,621	54,728
60th–80th Percentile	54,728	63,854
80th–100th Percentile	63,854	112,891

Figure 10 demonstrates how flu and pneumonia death rates in the U.S. have varied historically by the five county level income percentile groups in Table 3. U.S. counties were ranked based on median household income. The 80%–100% group represents the quintile of counties with the highest income and the 0%–20% group is the quintile of counties with the lowest income. The bottom income quintile (0%–20%) has had significantly higher mortality, ranging from 8.4% to 22.7% higher, than the total population. The other quintile groups have clustered together, and their rank order has shifted over time. However, the top income quintile (80%–100%) has had the lowest mortality rates since 2005 and has ranged from 0.2% higher to 12.7% lower than the total population.

Figure 10
U.S. POPULATION DEATHS FROM FLU AND PNEUMONIA BY COUNTY INCOME PERCENTILE



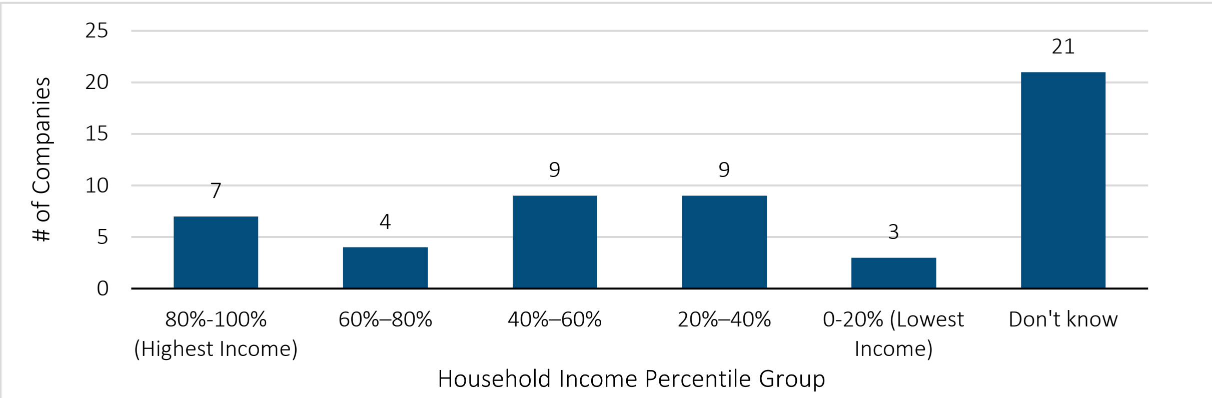
Data source: CDC

Insurers who can segment their policyholders into various income level groupings may be able to make use of U.S. population mortality data, shown in Figure 10, to benchmark their own flu/pneumonia experience.

A survey completed by the SOA, LIMRA, Oliver Wyman, and the American Council of Life Insurers (ACLI)[15] asked insurance companies for the estimated median household income range of their life insurance policyholders. Results varied across the board as shown in Figure 11 and indicates that each insurer needs to consider its own block of business if using population mortality for projecting COVID-19 impacts.

Figure 11

U.S. POPULATION DEATHS FROM FLU AND PNEUMONIA BY COUNTY INCOME PERCENTILE



Section 8 - Insured Mortality Compared to Population Mortality

In addition, it can be helpful to get an overall sense of full U.S. population mortality compared to how many of those deaths may drive an individual life insurance claim. In recent years, the number of deaths that have been annually recorded across the entire United States has eclipsed a count of 2.8 million. The strict number of recorded deaths has grown every year since 2009 as the U.S. population increases at a pace faster than overall crude mortality improvement. Age-adjusted mortality, computed by using techniques that standardize the counts of exposures of the population using a common census date, has seen some fluctuations in the degree of improvement over the last decade. Some recent years have seen examples of overall age-adjusted mortality disimprovement and small reductions in period life expectancy.

Clearly, however, not all people in the U.S. population are covered by individual life insurance policies. Many people may not purchase an individual policy due to the cost of the product relative to their income or wealth levels or covering the risk of premature death may not be a first priority. Others may desire to purchase the product but are not in a health condition needed to qualify through individual life insurance underwriting examinations.

By studying recent U.S. life insurance industry data and comparing the results to population mortality trends, the relative levels of mortality can be compared. Table 4 shows recent historical statistics on mortality that has evolved from death claims in U.S. life insurers' individual life lines of business, along with data from the full U.S. population. Note that, in both cases, the mortality rates are not age-adjusted, with crude rates more simply done as the division of observed death information into exposure amounts. Claim amounts and face amounts are used for the industry data instead of claim counts in order to mitigate the cases where one person would count multiple times if they owned more than one individual life policy.

Table 4

INDIVIDUAL LIFE INSURANCE AND POPULATION MORTALITY IN THE UNITED STATES[16][17]

Year	Estimated Individual Life Death Claims (Millions)	Estimated Individual Life Face Amount Exposure (Millions)	Estimated Individual Life Crude Mortality Rate per 100,000 (A)	Population Deaths (Millions)	Population Exposure (Millions)	Population Crude Mortality Rate per 100,000 (B)	(A) / (B)
2009	$38,306	$10,289,417	372.3	2.44	306.77	794.50	46.9%
2010	$39,045	$10,403,986	375.3	2.47	308.75	799.50	46.9%
2011	$41,869	$10,738,509	389.9	2.52	311.59	807.30	48.3%
2012	$43,109	$11,104,319	388.2	2.54	313.91	810.20	47.9%
2013	$43,405	$11,290,289	384.4	2.60	316.13	821.50	46.8%
2014	$46,419	$11,595,684	400.3	2.63	318.86	823.70	48.6%
2015	$52,436	$12,084,040	433.9	2.71	321.42	844.00	51.4%
2016	$54,214	$12,166,850	445.6	2.74	323.13	849.30	52.5%
2017	$54,960	$11,959,400	459.6	2.81	325.72	863.80	53.2%
2018	$56,749	$12,023,849	472.0	2.84	327.17	867.80	54.4%

Table 4 shows that, in recent history, insured mortality may generally be observed somewhere in the 45%-55% range of overall population mortality. Of course, factors such as the age and gender composition of both groups over time will certainly affect these annual results and overall trends. The information also helps to show the presence of selection in the insured lives as individual life underwriting will create an insured cohort that is identified as healthy at issue, with a general income level that would need protection against premature death and also be able to pay for the recurring expense of the individual life insurance policy.

The causes of death within the individual life insured cohort and the general U.S. population can vary quite a bit as well. Table 5 shows data from a recent Scor Reinsurance study[18] of individual life claims compared to the full population. Insured lives have relatively higher proportions of claims for diseases that cause mortality across broad spectrums of socioeconomic classes more equally, such as cancer. Diseases such as respiratory disease, influenza, and pneumonia have a mortality profile that is higher for low socioeconomic classes and has relatively lower proportions of claims in the insured individual life population.

Table 5

PERCENTAGE OF DEATHS FOR AGES 55-89, 2010-2015

Selected Causes of Death	Population Proportion of Total Claims, Male	Population Proportion of Total Claims, Female	Individual Life Proportion of Total Claims, Male	Individual Life Proportion of Total Claims, Female
Circulatory System Disease	33.3%	33.0%	25.9%	22.1%
Cancer	26.4%	21.9%	38.7%	44.4%
Respiratory System Disease, Influenza and Pneumonia	10.8%	11.0%	6.8%	7.5%

These trends help associate general industry relationships of population mortality to insured mortality, as well as some of the socioeconomic levels and trends that can occur within respiratory diseases. Together, these trends may help actuaries gain an improved understanding of how respiratory death patterns may play out within a specific insurer's book of business.

End Notes

[1] Centers for Disease Control and Prevention. *https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview.html.* Accessed 4/22/2020.
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[14] Ibid.
[15] Campion, Scott, et. al. (2020, April 13). "COVID-19 Mortality Modeling Survey Summary of Results." *https://www.soa.org/resources/research-reports/2020/covid-19-pulse-surveys/.*
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About The Society of Actuaries

With roots dating back to 1889, the Society of Actuaries (SOA) is the world's largest actuarial professional organizations with more than 31,000 members. Through research and education, the SOA's mission is to advance actuarial knowledge and to enhance the ability of actuaries to provide expert advice and relevant solutions for financial, business and societal challenges. The SOA's vision is for actuaries to be the leading professionals in the measurement and management of risk.

The SOA supports actuaries and advances knowledge through research and education. As part of its work, the SOA seeks to inform public policy development and public understanding through research. The SOA aspires to be a trusted source of objective, data-driven research and analysis with an actuarial perspective for its members, industry, policymakers and the public. This distinct perspective comes from the SOA as an association of actuaries, who have a rigorous formal education and direct experience as practitioners as they perform applied research. The SOA also welcomes the opportunity to partner with other organizations in our work where appropriate.

The SOA has a history of working with public policymakers and regulators in developing historical experience studies and projection techniques as well as individual reports on health care, retirement and other topics. The SOA's research is intended to aid the work of policymakers and regulators and follow certain core principles:

Objectivity: The SOA's research informs and provides analysis that can be relied upon by other individuals or organizations involved in public policy discussions. The SOA does not take advocacy positions or lobby specific policy proposals.

Quality: The SOA aspires to the highest ethical and quality standards in all of its research and analysis. Our research process is overseen by experienced actuaries and nonactuaries from a range of industry sectors and organizations. A rigorous peer-review process ensures the quality and integrity of our work.

Relevance: The SOA provides timely research on public policy issues. Our research advances actuarial knowledge while providing critical insights on key policy issues, and thereby provides value to stakeholders and decision makers.

Quantification: The SOA leverages the diverse skill sets of actuaries to provide research and findings that are driven by the best available data and methods. Actuaries use detailed modeling to analyze financial risk and provide distinct insight and quantification. Further, actuarial standards require transparency and the disclosure of the assumptions and analytic approach underlying the work.

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