



The COVID-19 Pandemic: Insights and Implications for Insurers

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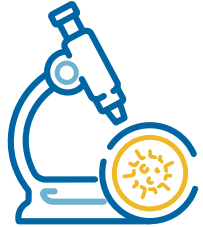
Research Highlights

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Challenges

Evolving landscape of data and expert guidance



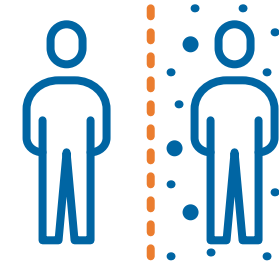
Procedural Changes

- Limiting tests to hospitals
- Counting probable cases and deaths, not just confirmed



Under-/Overcounting

- Only counting hospitalized COVID-19 deaths
- Dying from another cause while also having COVID-19



Government Interventions

- Societal changes impact mortality experience
- These changes impact expert model projections

Research Approach



Wide-Ranging Expertise

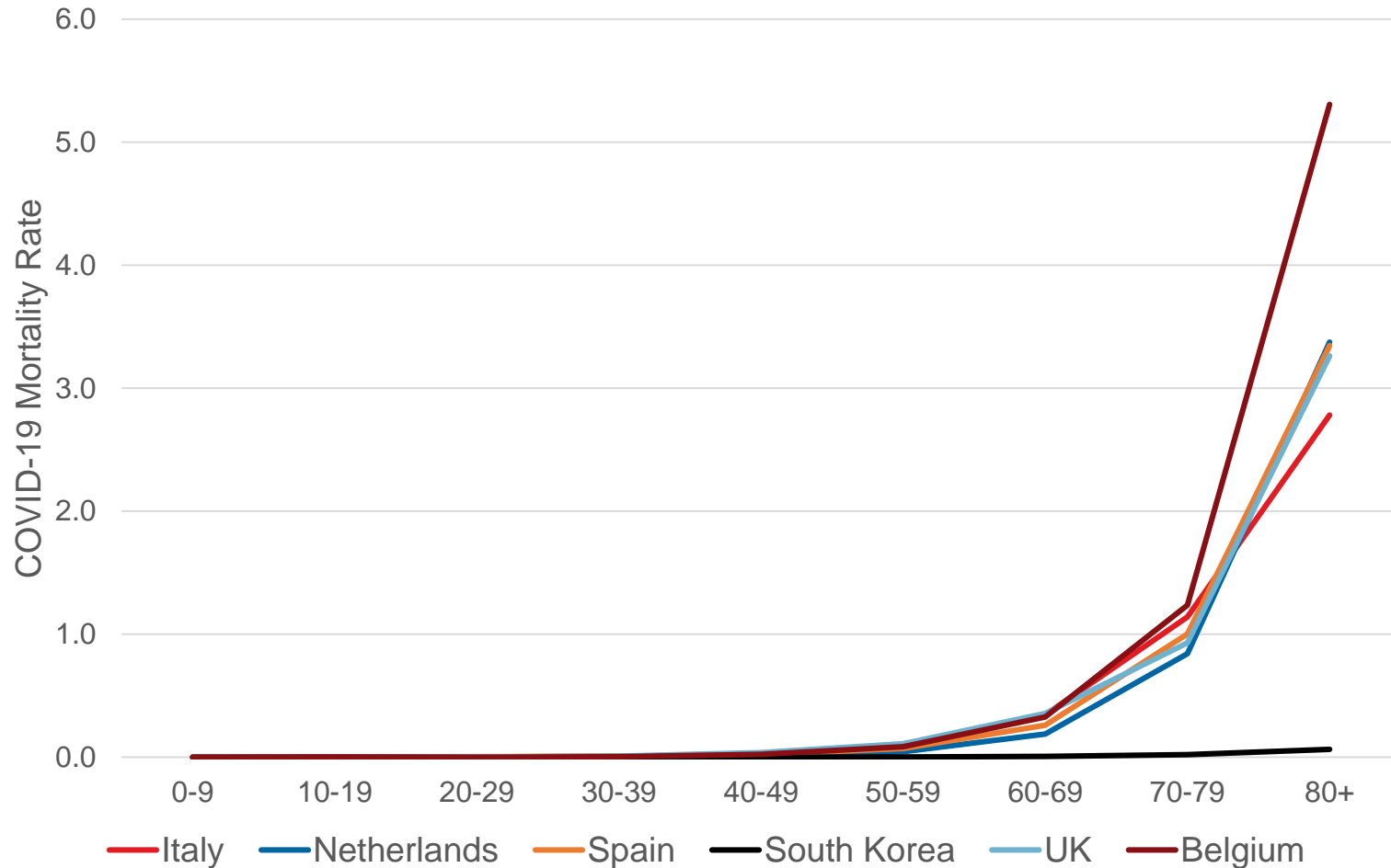
- Epidemiological
- Actuarial
- Advanced analytics



Data

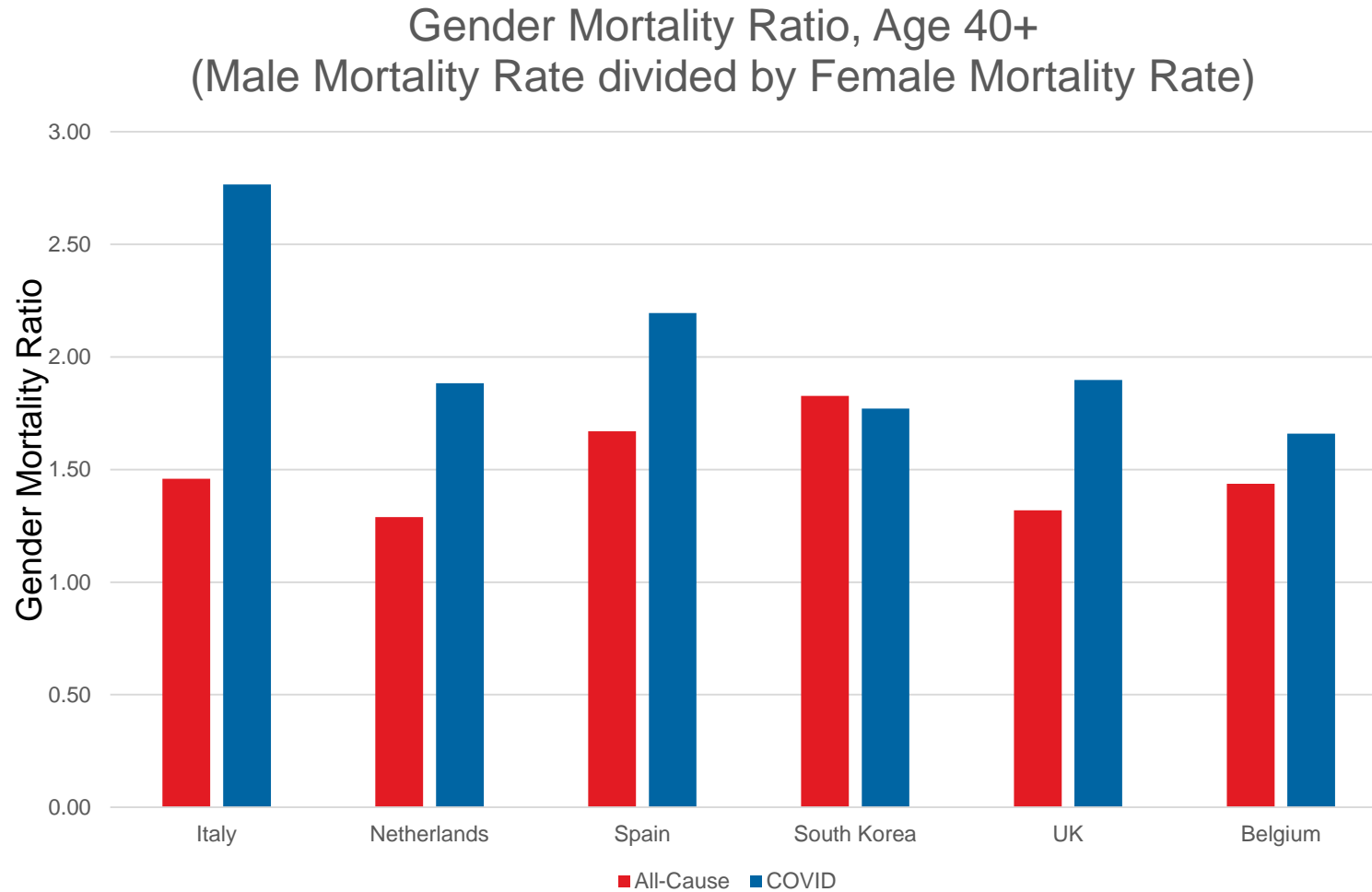
- Government data
- Academic institutions
- Scientific literature

COVID-19 Mortality Rate by Age for Select Countries



- The COVID-19 mortality rate is much higher (roughly 20 times greater) for people over age 60 compared those under age 60
- The age shape of COVID-19 mortality experience is very different from that of previous pandemics

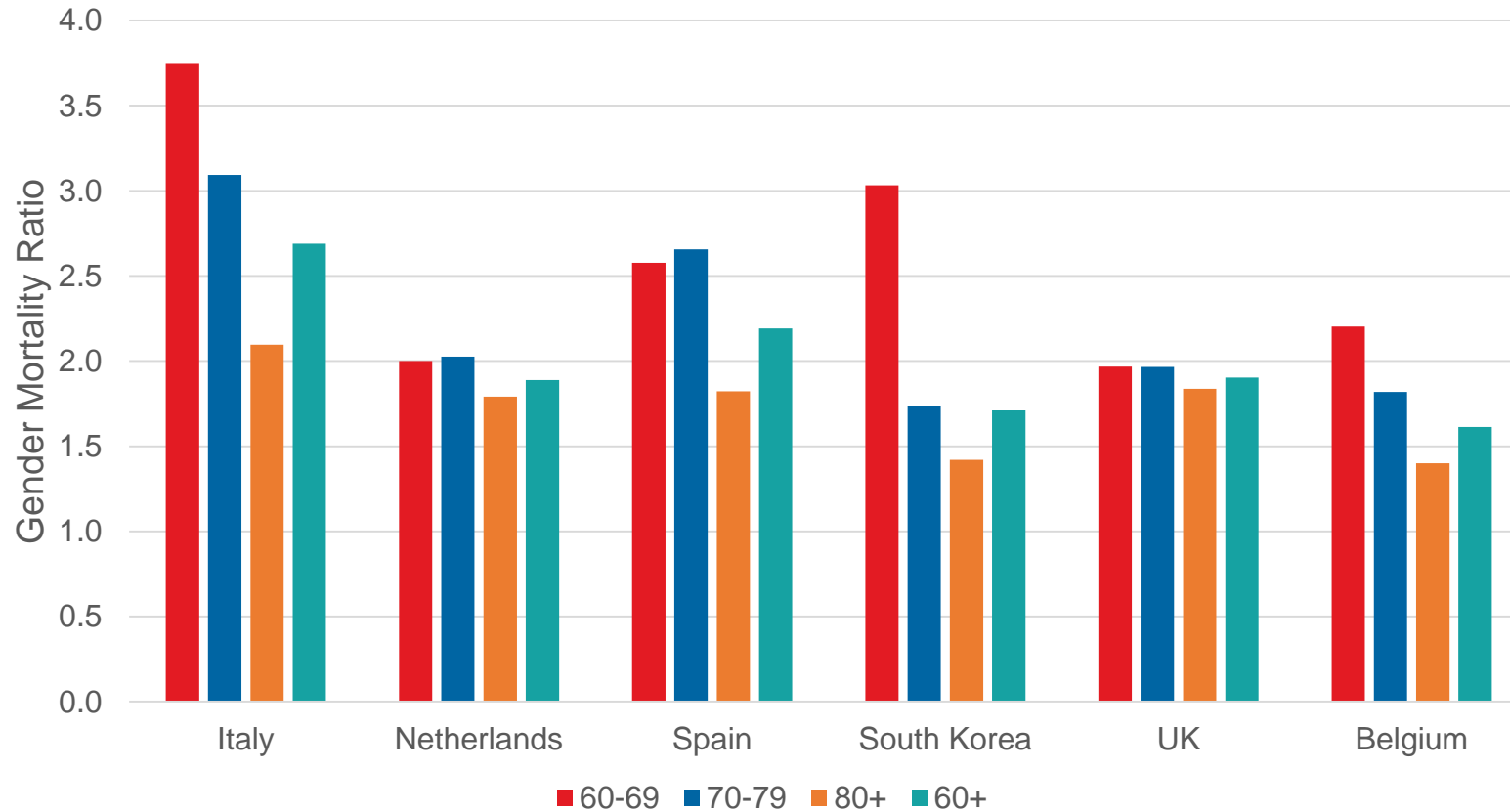
All-Cause and COVID-19 Mortality Differences by Gender



- The COVID-19 Gender Mortality Ratio (GMR) is generally higher than the all-cause GMR, suggesting that there is a bigger sex differential in COVID-19 than in all-cause mortality
- Possible explanations for worse male COVID-19 experience:
 - Lifestyle
 - Behavioral
 - Biological

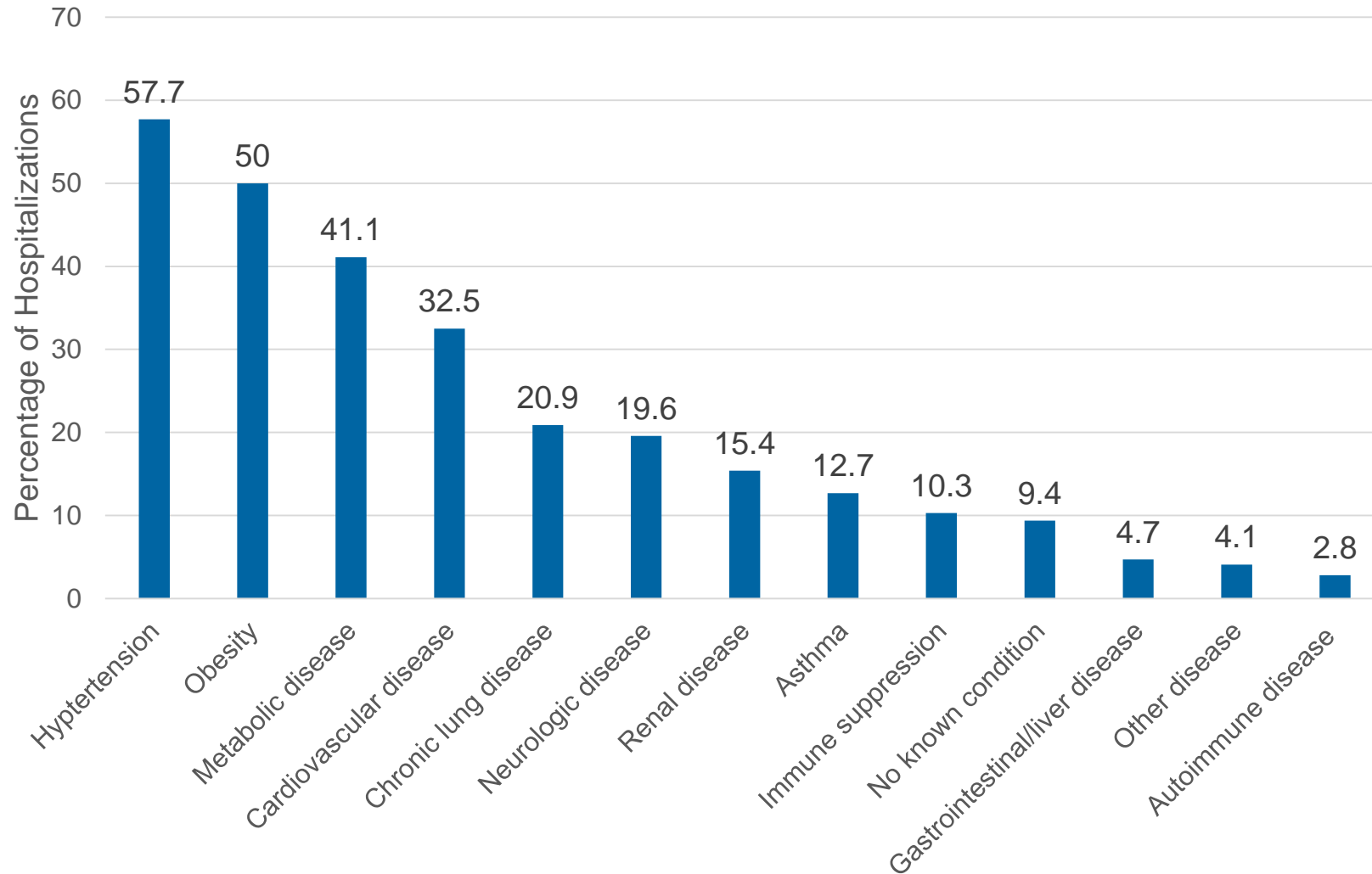
COVID-19 Gender Mortality Ratios by Age Group

COVID-19 Gender Mortality Ratios, Age 60+
(Male Mortality Rate divided by Female Mortality Rate)



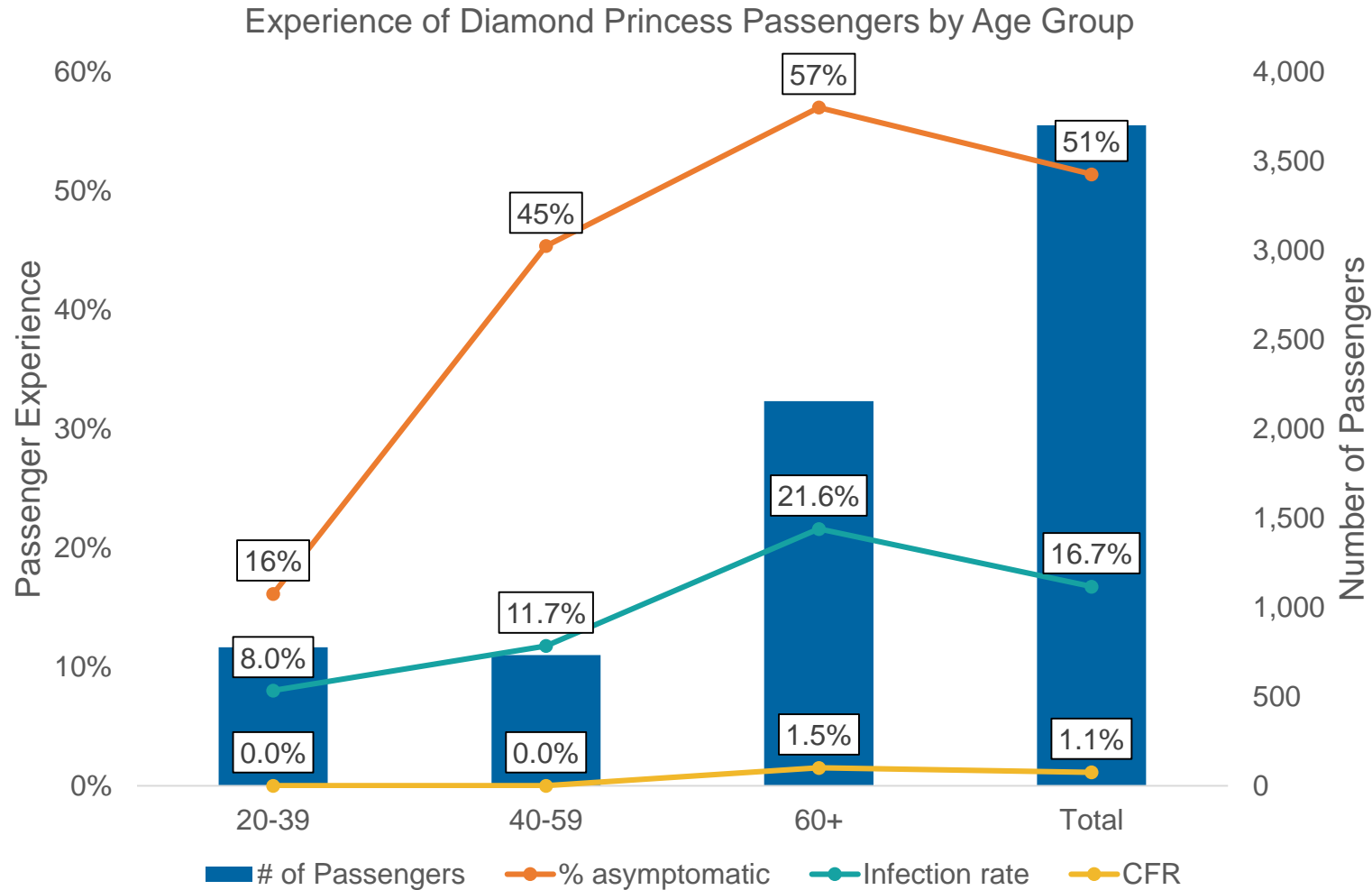
- Male COVID-19 mortality experience is typically about twice the COVID-19 mortality experience of females
- The differences are more pronounced at ages 60-69 than at older ages

U.S. COVID-19 Hospitalizations with Underlying Medical Conditions



- According to the U.S. CDC, the majority of COVID-19-related hospitalized patients have an underlying medical condition
- Nearly 90% of COVID-19-related hospital admissions in the U.S. involve co-morbidities

COVID-19 Experience of Diamond Princess Passengers by Age Group



The *Diamond Princess* cruise ship offers a rare opportunity to understand features of the virus that are hard to investigate in the wider population

- Represents experience from affluent, generally healthy people
- All passengers were tested, allowing for analysis of:
 - Asymptomatic prevalence
 - Estimates of Infection Fatality Rates
- Over half of the passengers were aged 60+ and this was the only age group that experienced deaths; many who died had underlying health conditions

Data Sources

Country	Source	Date
Italy	Epicentro - Higher Institute of Health	4.23.2020
Netherlands	National Institute for Public Health and the Environment	4.29.2020
South Korea	Korea Center for Disease Control and Prevention	4.29.2020
Spain	Ministry of Health, Consumption and Social Welfare	4.29.2020
United Kingdom	Office for National Statistics	4.17.2020
Belgium	Belgian Scientific Institute of Public Health, Sciensano	4.28.2020
U.S.	Centers for Disease Control and Prevention	4.25.2020
Diamond Princess	https://cmmid.github.io/topics/covid19/diamond_cruise_cfr_estimates.html	3.23.2020

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