

Table 4: Pandemic, Modeled Distribution⁵⁵

CFR	Attack rate	Fatalities	Illnesses	Direct economic loss (2011\$ billion)	Probability of exceedance (fatalities)
20.0%	0.020%	12,300	61,400,000	54.3	0.989
22.4%	0.020%	13,800	68,800,000	60.9	0.967
25.1%	0.020%	15,400	77,200,000	68.3	0.944
28.2%	0.020%	17,300	86,500,000	76.6	0.922
31.6%	0.020%	19,400	97,000,000	85.9	0.900
20.0%	0.036%	21,800	61,400,000	56.8	0.878
22.4%	0.036%	24,500	68,800,000	63.7	0.856
25.1%	0.036%	27,400	77,200,000	71.4	0.833
28.2%	0.036%	30,800	86,500,000	80.0	0.811
31.6%	0.036%	34,500	97,000,000	89.7	0.789
20.0%	0.06%	38,800	61,400,000	62.4	0.767
22.4%	0.06%	43,500	68,800,000	70.0	0.744
25.1%	0.06%	48,800	77,200,000	78.4	0.722
28.2%	0.06%	54,700	86,500,000	87.9	0.700
31.6%	0.06%	61,400	97,000,000	98.6	0.678
20.0%	0.11%	69,100	61,400,000	72.4	0.656
22.4%	0.11%	77,400	68,800,000	81.2	0.633
25.1%	0.11%	86,800	77,200,000	91.0	0.611
28.2%	0.11%	97,300	86,500,000	102	0.589
31.6%	0.11%	109,000	97,000,000	114	0.567
20.0%	0.20%	123,000	61,400,000	89.6	0.544
22.4%	0.20%	138,000	68,800,000	100	0.522
25.1%	0.20%	154,000	77,200,000	113	0.500
28.2%	0.20%	173,000	86,500,000	126	0.478
31.6%	0.20%	194,000	97,000,000	142	0.456
20.0%	0.36%	218,000	61,400,000	119	0.433
22.4%	0.36%	245,000	68,800,000	134	0.411
25.1%	0.36%	274,000	77,200,000	150	0.389
28.2%	0.36%	308,000	86,500,000	168	0.367
31.6%	0.36%	345,000	97,000,000	188	0.344
20.0%	0.63%	388,000	61,400,000	170	0.322
22.4%	0.63%	435,000	68,800,000	190	0.300
25.1%	0.63%	488,000	77,200,000	213	0.278
28.2%	0.63%	547,000	86,500,000	239	0.256
31.6%	0.63%	614,000	97,000,000	268	0.233
20.0%	1.12%	691,000	61,400,000	257	0.211
22.4%	1.12%	774,000	68,800,000	288	0.189
25.1%	1.12%	868,000	77,200,000	323	0.167
28.2%	1.12%	973,000	86,500,000	362	0.144
31.6%	1.12%	1,090,000	97,000,000	406	0.122
20.0%	2.00%	1,230,000	61,400,000	408	0.100
22.4%	2.00%	1,380,000	68,800,000	457	0.078
25.1%	2.00%	1,540,000	77,200,000	513	0.056
28.2%	2.00%	1,730,000	86,500,000	575	0.033
31.6%	2.00%	1,940,000	97,000,000	644	0.011

⁵⁵ Median (the SNRA best estimate) and approximate 5th and 95th percentile intervals are highlighted.

Climate Change and National Preparedness

Scientific evidence indicates the climate is changing and significant economic, social, and environmental impacts are expected as a result. Climate change is an increasingly significant factor in assessing and managing risks and vulnerabilities to extreme events. Over the past 50 years, much of the U.S. experienced increases in prolonged periods of excessively high temperatures, heavy precipitation, and, in some regions, severe floods and droughts.³⁷ The best available scientific data indicates these trends will continue and will likely have further cascading effects on human health, infrastructure, and the economy.³⁸

Primary Impacts

The impacts of climate change will vary across the Nation, but the following are examples of critical anticipated shifts in the frequency, intensity, and/or geographic range of natural hazards:

- Increasing heavy precipitation events will contribute to flash floods and urban floods.³⁹
- Average global sea level has risen by approximately eight inches since reliable record keeping began in 1880 and is projected to rise another one to four feet by 2100.⁴⁰
- Western forests in the U.S. will be more frequently affected by large and intense fires.⁴¹
- The frequency and intensity of heat waves will continue to increase.⁴²
- Higher temperatures cause faster evaporation rates, which may lead to drought conditions even when there is no decrease in precipitation.⁴³
- Over the last three to five decades, the heaviest rainfall events have become heavier and more frequent,⁴⁴ and these are projected to continue in most of the U.S.,⁴⁵ and
- Although many contributing factors make hurricanes difficult to predict, most models project an overall increase in the frequency of the strongest (Category 4 and 5) hurricanes by the end of the century.⁴⁶

Due to the complexity of climatological forecasting and the myriad anticipated impacts, some uncertainty remains about the magnitude and types of future changes to natural hazards. It is clear, however, that increasing frequency, intensity, and impacts of hazards due to climate

³⁷ NCA3 Highlights,” *Climate Change Impacts in the United States: The Third National Climate Assessment: Highlights*” <http://nca2014.globalchange.gov/Highlights>, Pg. 24

³⁸ NCA3 Highlights, Pgs. 12–14

³⁹ U.S. Third National Climate Assessment (NCA3), “*Climate Change Impacts in the United States The Third National Climate Assessment*,” U.S. Global Change Research Program, May 2014 <http://nca2014.globalchange.gov/report>, Pg. 75

⁴⁰ NCA3, Pg. 66

⁴¹ NCA3, Pg. 192

⁴² NCA3, Pg. 64

⁴³ NCA3 Highlights, Pg. 24

⁴⁴ NCA3 Highlights, Pg. 25

⁴⁵ NCA3, Pg. 37

⁴⁶ NCA3, Pg. 41

Climate Change and National Preparedness

Scientific evidence indicates the climate is changing and significant economic, social, environmental, and national security impacts are expected as a result. **As stated in the 2015 National Security Strategy, climate change is an urgent and growing threat to our national security, contributing to increased natural disasters, refugee flows, and conflicts over basic resources like food and water.**³⁸ Climate change is an increasingly significant factor in assessing and managing risks and vulnerabilities to extreme events. Over the past 50 years, much of the United States experienced increases in prolonged periods of excessively high temperatures, heavy precipitation, and, in some regions, severe floods and droughts.³⁹ The best available scientific data indicates these trends will continue and will likely have further cascading effects on human health, infrastructure, and the economy.⁴⁰

Primary Impacts

The impacts of climate change will vary across the Nation, but the following are examples of critical anticipated shifts in the frequency, intensity, and/or geographic range of natural hazards:

- Increasing heavy precipitation events will contribute to flash floods and urban floods;⁴¹
- Average global sea level has risen by approximately eight inches since reliable record keeping began in 1880 and is projected to rise another one to four feet by 2100;⁴²
- Western forests in the United States will be more frequently affected by large and intense fires;⁴³
- The frequency and intensity of heat waves will continue to increase;⁴⁴
- Higher temperatures cause faster evaporation rates, which may lead to drought conditions even when there is no decrease in precipitation;⁴⁵
- Over the last three to five decades, the heaviest rainfall events have become heavier and more frequent,⁴⁶ and these are projected to continue in most of the United States;⁴⁷ and

³⁸ *National Security Strategy*, February 2015,

https://www.whitehouse.gov/sites/default/files/docs/2015_national_security_strategy_2.pdf.

³⁹ NCA3 Highlights, “*Climate Change Impacts in the United States: The Third National Climate Assessment: Highlights*” <http://nca2014.globalchange.gov/Highlights>, Pg. 24

⁴⁰ NCA3 Highlights, Pgs. 12–14

⁴¹ U.S. Third National Climate Assessment (NCA3), “*Climate Change Impacts in the United States The Third National Climate Assessment*,” U.S. Global Change Research Program, May 2014

<http://nca2014.globalchange.gov/report>, Pg. 75

⁴² NCA3, Pg. 66

⁴³ NCA3, Pg. 192

⁴⁴ NCA3, Pg. 64

⁴⁵ NCA3 Highlights, Pg. 24

⁴⁶ NCA3 Highlights, Pg. 25

⁴⁷ NCA3, Pg. 37