

Analysis of the IHME COVID 19 Forecasting Model – July 21st Update

ALLEN M. FEATHERSTONE, JONATHAN FEATHERSTONE, AND JULIA MADDOCK

KANSAS STATE UNIVERSITY



KANSAS STATE | Agricultural Economics
UNIVERSITY

Outline

- ❖ One revision to IHME model since July 14th
- ❖ A look at projected death through August 4th
- ❖ A look at infections
- ❖ Trend in death totals
- ❖ Distribution of daily deaths compared to the March 26th model
 - ❖ Focus on the 8 persons per million switch point
 - ❖ 90th percentile for governments taking action
- ❖ Cumulative deaths compared to the March 26th model



KANSAS STATE | Agricultural Economics
UNIVERSITY

Introduction

- The COVID 19 virus is having a major effect on the economy with an unemployment rate of 11%
- Since the middle of March, more than 51 million U.S. workers filed for unemployment due to the shut down a significant share of the economy
- The Institute for Health Metrics and Evaluation (IHME) at the University of Washington is playing a large role in the formation of policy
 - The data used in this analysis is sourced from <http://www.healthdata.org/covid>
- It is important to document and understand the ex-post performance of the model and the periodic revisions that are made to that model
- Actual Deaths are from <https://covidtracking.com/>
- This is an update of the July 14th discussion



KANSAS STATE
UNIVERSITY | Agricultural Economics

The IHME Modeling Approach

- Revised the death model
- Use a spline function to log cumulative deaths versus log cumulative cases
- Death predictions made based on cases over time
- Unsmoothed daily deaths and the predicted daily deaths used to fit a spline
- Sample standard deviation developed using 1,000 draws from the residuals
- Provide estimates based upon what is expected to happen, mandates easing, and estimates with 95% wearing masks
- Expected to happen assumes easing occurs until a threshold of a daily death rate of 8 per million
- Paper is still in the peer review process



KANSAS STATE
UNIVERSITY | Agricultural Economics

Projected August 4th Deaths from the March 26th, June 29th, July 6th, and July 14th Models

	3/26	6/29	7/6	7/14		3/26	6/29	7/6	7/14
Alabama	1,732	1,395	1,572	1,501	Hawaii	390	21	18	21
Alaska	129	14	14	22	Idaho	84	105	106	144
Arizona	1,613	3,111	3,137	3,261	Illinois	2,360	7,936	7,809	7,606
Arkansas	762	513	437	429	Indiana	940	2,760	2,806	2,848
California	4,306	8,167	9,109	10,509	Iowa	138	793	787	852
Colorado	2,151	1,854	1,781	1,818	Kansas	687	343	366	331
Connecticut	378	4,487	4,479	4,389	Kentucky	605	670	719	776
Delaware	827	557	556	530	Louisiana	1,897	3,822	3,752	3,893
Florida	6,766	6,006	6,293	6,864	Maine	3,013	114	117	124
Georgia	2,777	3,982	3,301	3,495	Maryland	1,171	3,390	3,477	3,602



KANSAS STATE
UNIVERSITY | Agricultural Economics

Projected August 4th Deaths from the March 26th, June 29th, July 6th, and July 14th Models

	3/26	6/29	7/6	7/14		3/26	6/29	7/6	7/14
Massachusetts	1,782	8,868	9,201	8,859	New Mexico	514	660	650	698
Michigan	2,862	6,375	6,481	6,664	New York	15,546	32,566	31,727	33,209
Minnesota	2,146	1,711	1,726	1,636	North Carolina	1,721	1,797	1,706	1,799
Mississippi	2,292	1,507	1,557	1,720	North Dakota	171	86	89	117
Missouri	1,055	1,367	1,326	1,282	Ohio	1,203	3,515	3,725	3,494
Montana	282	29	22	47	Oklahoma	1,149	447	466	521
Nebraska	424	380	386	290	Oregon	469	301	271	312
Nevada	568	684	693	928	Pennsylvania	1,579	7,395	7,647	7,376
New Hampshire	351	523	470	416	Rhode Island	306	1,137	1,101	1,006
New Jersey	2,096	15,713	15,943	16,450	South Carolina	1,043	1,033	1,420	1,563



KANSAS STATE
UNIVERSITY | Agricultural Economics

Projected August 4th Deaths from the March 26th, June 29th, July 6th, and July 14th Models

	3/26	6/29	7/6	7/14		3/26	6/29	7/6	7/14
South Dakota	204	147	143	137	Virginia	2,053	2,024	2,446	2,402
Tennessee	1,067	1,028	1,003	1,125	Washington	1,670	1,563	1,559	1,641
Texas	4,150	4,712	4,504	6,530	West Virginia	543	116	106	104
Utah	502	264	247	365	Wisconsin	1,309	1,014	995	880
Vermont	95	62	58	56	Wyoming	132	21	18	21
United States	82,141	147,693	148,934	155,263					



KANSAS STATE | Agricultural Economics
UNIVERSITY

IHME Model Prediction Changes from July 14th

- The model revision released on July 14th increased the cumulative expected death in 28 states from the July 6th model
 - Increases in Alaska, Arizona, California, Florida, Georgia, Hawaii, Idaho, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Nevada, New Jersey, New Mexico, New York, North Dakota, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Washington, Wyoming
- The model revision released on July 14th has higher cumulative expected death in 28 states and lower cumulative expected death in 22 states compared to the original model
 - Increases in Arizona, California, Connecticut, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Missouri, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia



KANSAS STATE | Agricultural Economics
UNIVERSITY

COVID-19 Cases Percent of Population

	7/6	7/21		7/6	7/21		7/6	7/21
Alabama	0.93%	1.43%	Hawaii	0.08%	0.10%	Massachusetts	1.60%	1.65%
Alaska	0.16%	0.28%	Idaho	0.48%	0.85%	Michigan	0.74%	0.83%
Arizona	1.44%	2.04%	Illinois	1.18%	1.30%	Minnesota	0.69%	0.84%
Arkansas	0.81%	1.15%	Indiana	0.72%	0.86%	Mississippi	1.08%	1.53%
California	0.72%	1.03%	Iowa	1.02%	1.25%	Missouri	0.42%	0.61%
Colorado	0.60%	0.70%	Kansas	0.58%	0.81%	Montana	0.12%	0.25%
Connecticut	1.32%	1.35%	Kentucky	0.39%	0.54%	Nebraska	1.04%	1.18%
Delaware	1.27%	1.41%	Louisiana	1.47%	2.08%	Nevada	0.77%	1.22%
Florida	1.00%	1.72%	Maine	0.26%	0.28%	New Hampshire	0.44%	0.46%
Georgia	0.95%	1.40%	Maryland	1.16%	1.32%	New Jersey	2.00%	2.06%

Data from <https://www.worldometers.info/coronavirus/country/us/> July 21, 2020



KANSAS STATE
UNIVERSITY | Agricultural Economics

COVID-19 Cases Percent of Population

	7/6	7/21		7/6	7/21
New Mexico	0.65%	0.82%	South Dakota	0.81%	0.91%
New York	2.18%	2.24%	Tennessee	0.78%	1.20%
North Carolina	0.73%	0.98%	Texas	0.76%	1.22%
North Dakota	0.51%	0.68%	Utah	0.81%	1.09%
Ohio	0.50%	0.66%	Vermont	0.20%	0.22%
Oklahoma	0.44%	0.69%	Virginia	0.78%	0.93%
Oregon	0.25%	0.36%	Washington	0.50%	0.65%
Pennsylvania	0.75%	0.84%	West Virginia	0.20%	0.29%
Rhode Island	1.62%	1.70%	Wisconsin	0.56%	0.76%
South Carolina	0.92%	1.42%	Wyoming	0.30%	0.39%

Data from <https://www.worldometers.info/coronavirus/country/us/> July 21, 2020



KANSAS STATE
UNIVERSITY | Agricultural Economics

COVID-19 Case Summary

- The U.S. infection rate was 0.93% as of July 6th
- The U.S. infection rate is 1.07% as of July 14th
- The U.S. infection rate is 1.21% as of July 21st
- The state range of infection rates is 2.24% for New York to 0.10% for Hawaii
- Twenty-three states have had an infection rate greater than 1% (up from seventeen)
- Twenty-seven states have had an infection rate of less than 1%



KANSAS STATE
UNIVERSITY | Agricultural Economics

Trend Analysis in Daily Death since June

	6/1 – 6/29	6/22 – 7/21		6/1 – 6/29	6/22 – 7/21		6/1 – 6/29	6/22 – 7/21
Alabama	0.01	0.27	Hawaii	0.01	0.02	Massachusetts	-1.81	-0.51
Alaska	0.01	-0.01	Idaho	0.00	0.10	Michigan	-0.34	-0.08
Arizona	0.41	2.08	Illinois	-2.53	-0.78	Minnesota	-0.61	-0.10
Arkansas	0.13	0.06	Indiana	-0.59	-0.09	Mississippi	-0.03	0.07
California	0.03	1.33	Iowa	-0.35	0.13	Missouri	-0.05	0.08
Colorado	-0.30	-0.18	Kansas	-0.07	0.01	Montana	0.00	0.04
Connecticut	-0.52	-0.10	Kentucky	-0.09	0.02	Nebraska	0.00	-0.04
Delaware	-0.11	0.01	Louisiana	-0.39	0.44	Nevada	-0.07	0.37
Florida	-0.05	3.22	Maine	-0.04	0.01	New Hampshire	-0.10	-0.11
Georgia	-0.57	0.47	Maryland	-0.51	-0.18	New Jersey	7.32	-10.09



KANSAS STATE
UNIVERSITY | Agricultural Economics

Trend Analysis in Daily Death since June

	6/1 – 6/29	6/22 – 7/21		6/1 – 6/29	6/22 – 7/21
New Mexico	-0.12	0.07	South Dakota	0.02	-0.01
New York	-1.78	-0.29	Tennessee	-0.02	0.28
North Carolina	-0.19	0.16	Texas	0.33	3.82
North Dakota	-0.06	-0.01	Utah	-0.01	0.11
Ohio	-0.89	0.15	Vermont	0.00	0.00
Oklahoma	0.00	0.05	Virginia	0.03	-0.38
Oregon	0.00	0.09	Washington	0.03	-0.07
Pennsylvania	-1.51	-0.48	West Virginia	-0.03	0.00
Rhode Island	-0.14	-0.19	Wisconsin	-0.11	0.00
South Carolina	0.02	0.90	Wyoming	-0.01	0.02



KANSAS STATE
UNIVERSITY | Agricultural Economics

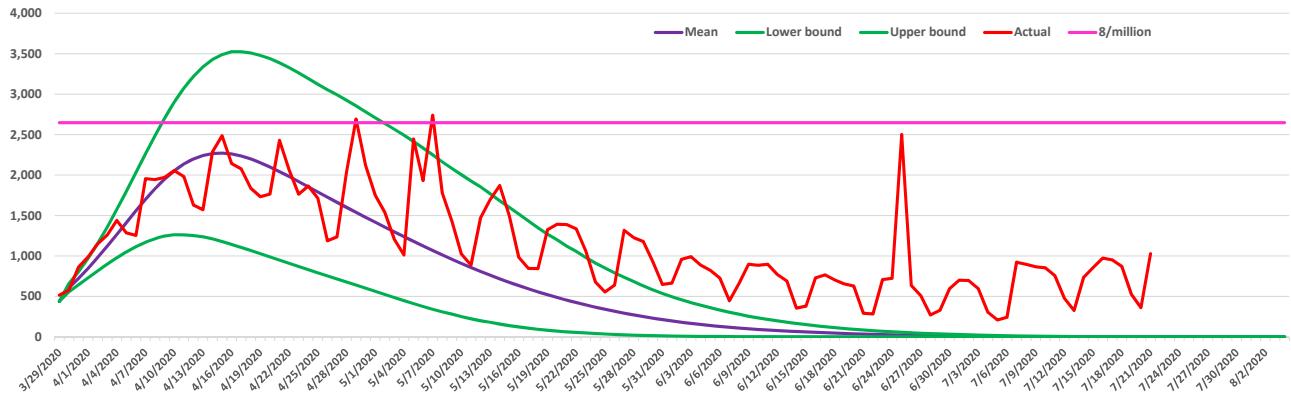
Trend Analysis Summary

- The U.S. has experienced a **5.69 decrease** per day from June 1 – June 29 and **0.74 increase** per day from June 22 – July 21.
- From the June 1 to June 29 period to the June 22 to July 21 period, nine states have seen a lowering in the trend of death
 - Alaska, Arkansas, Nebraska, New Hampshire, New Jersey, Rhode Island, South Dakota, Virginia, Washington
- Since June 22, 19 States have had a decrease in daily death of greater than 0.01 per day (down from 32)
- Since June 22, 28 States have had an increase in daily death of greater than 0.01 per day (up from 12)
- Since June 22, 3 States have had a 0.00 increase/decrease in death per day



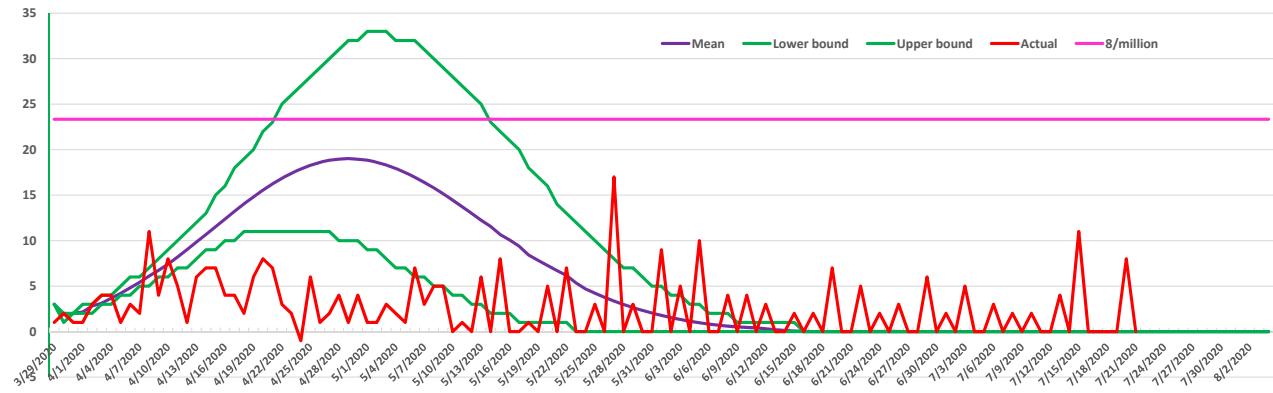
KANSAS STATE
UNIVERSITY | Agricultural Economics

U.S. COVID 19 Daily Death Projections March 26



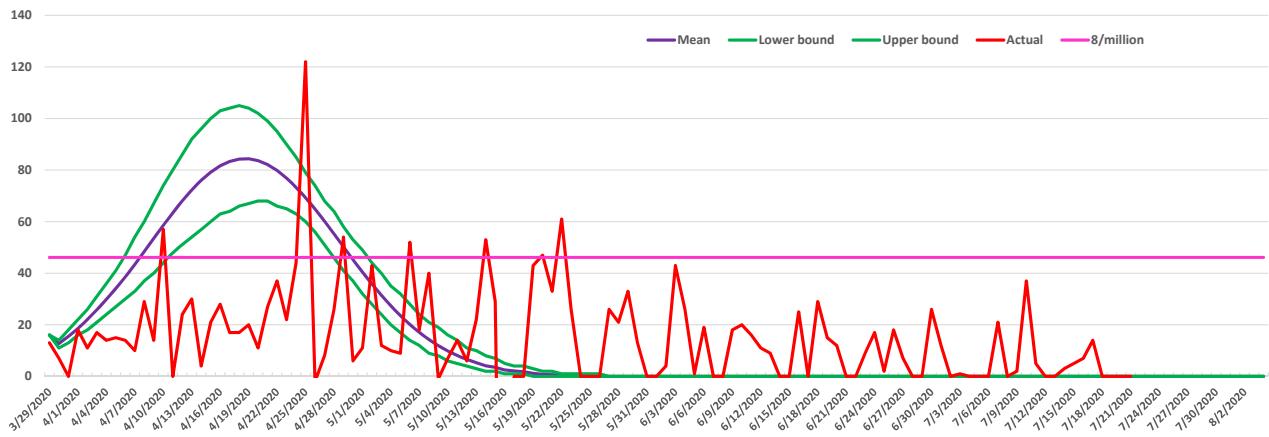
KANSAS STATE | Agricultural Economics
UNIVERSITY

Kansas COVID 19 Daily Death Projections March 26



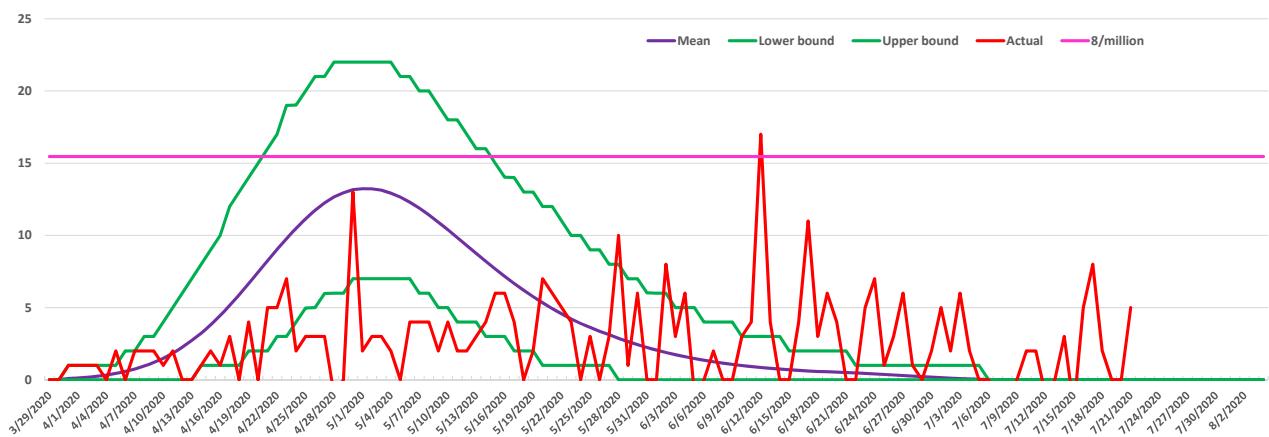
KANSAS STATE | Agricultural Economics
UNIVERSITY

Colorado COVID 19 Daily Death Projections March 26



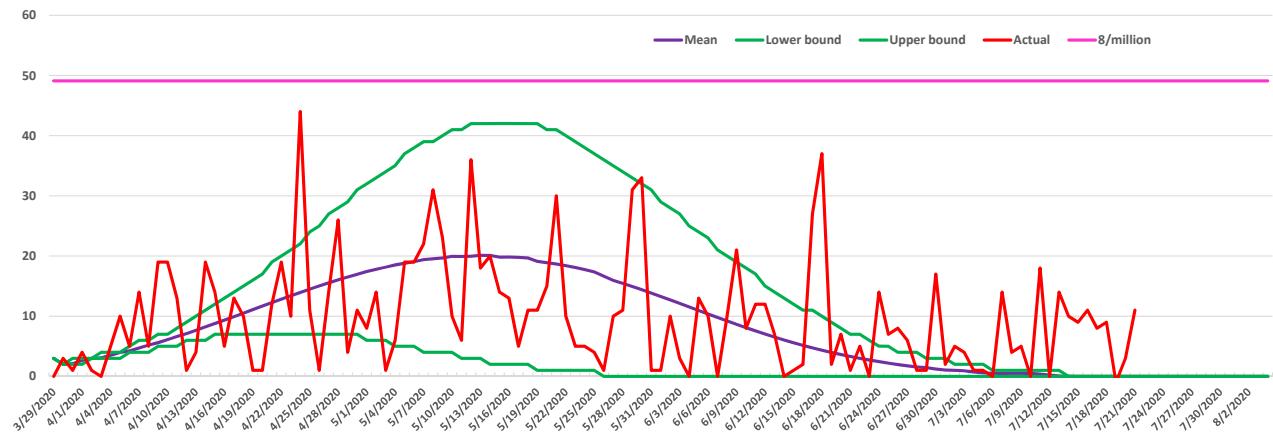
KANSAS STATE
UNIVERSITY | Agricultural Economics

Nebraska COVID 19 Daily Death Projections March 26



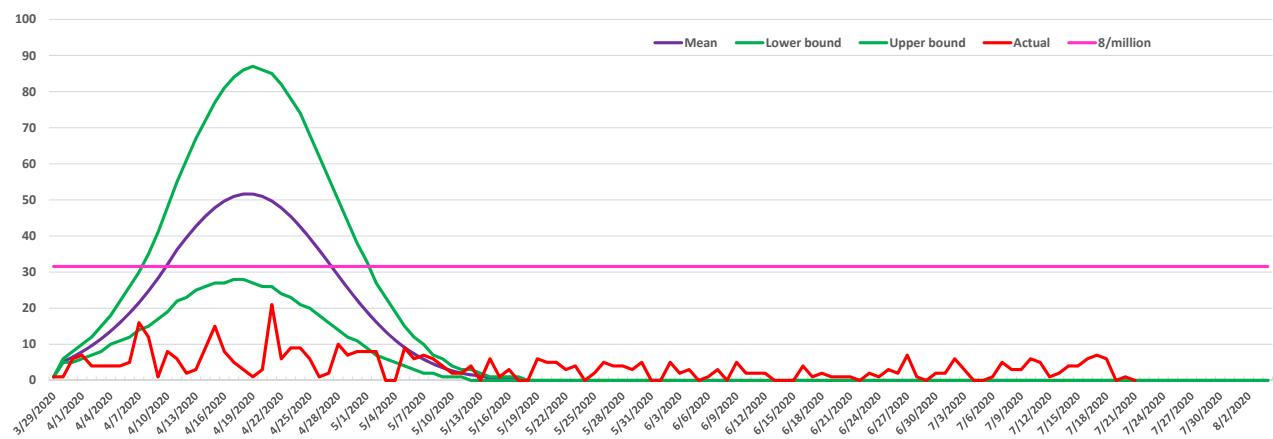
KANSAS STATE
UNIVERSITY | Agricultural Economics

Missouri COVID 19 Daily Death Projections March 26



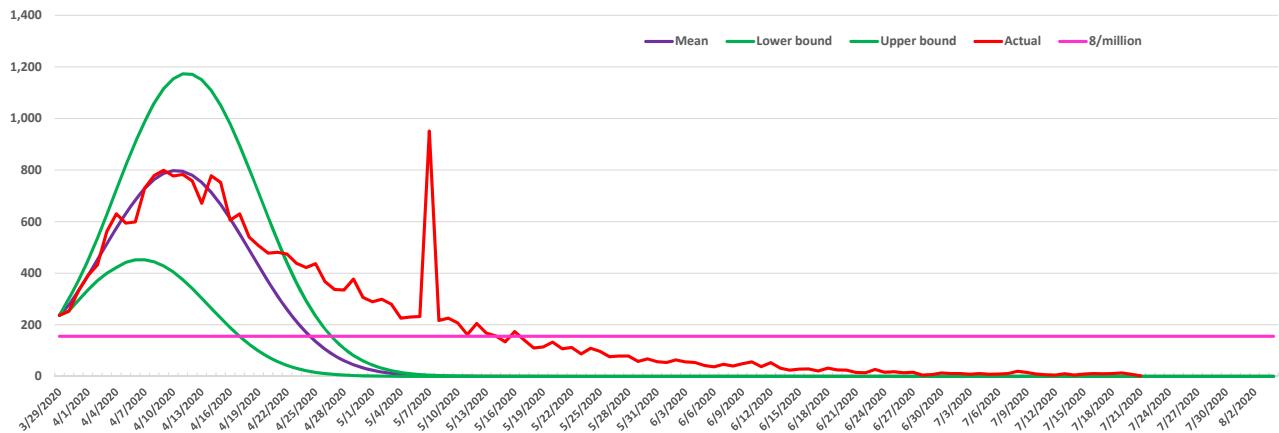
KANSAS STATE
UNIVERSITY | Agricultural Economics

Oklahoma COVID 19 Daily Death Projections March 26



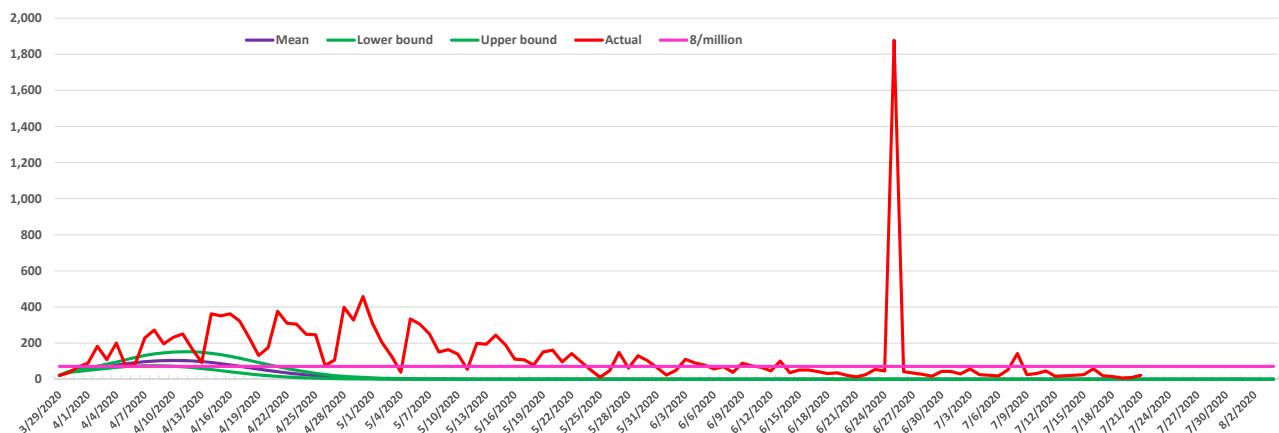
KANSAS STATE
UNIVERSITY | Agricultural Economics

New York COVID 19 Daily Death Projections March 26



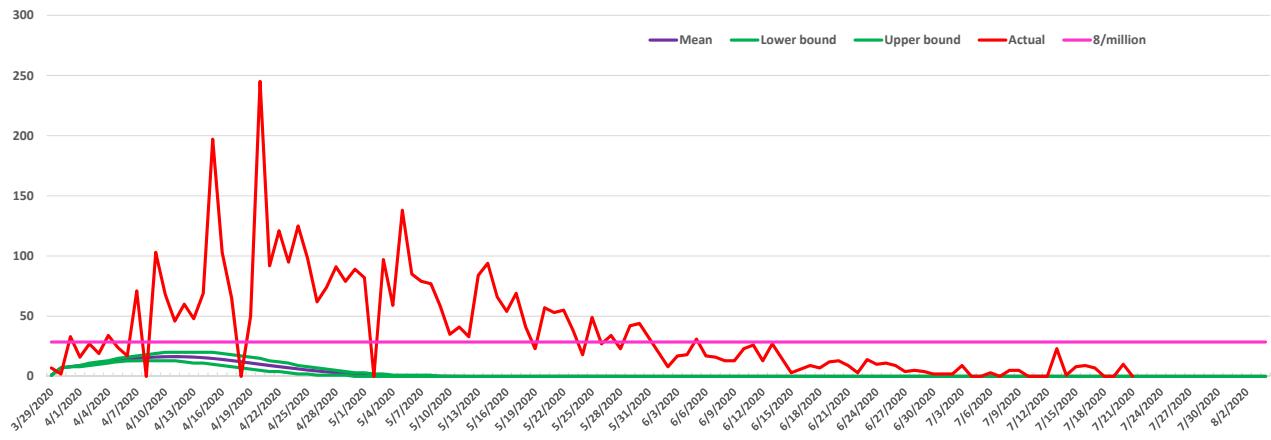
KANSAS STATE
UNIVERSITY | Agricultural Economics

New Jersey COVID 19 Daily Death Projections March 26



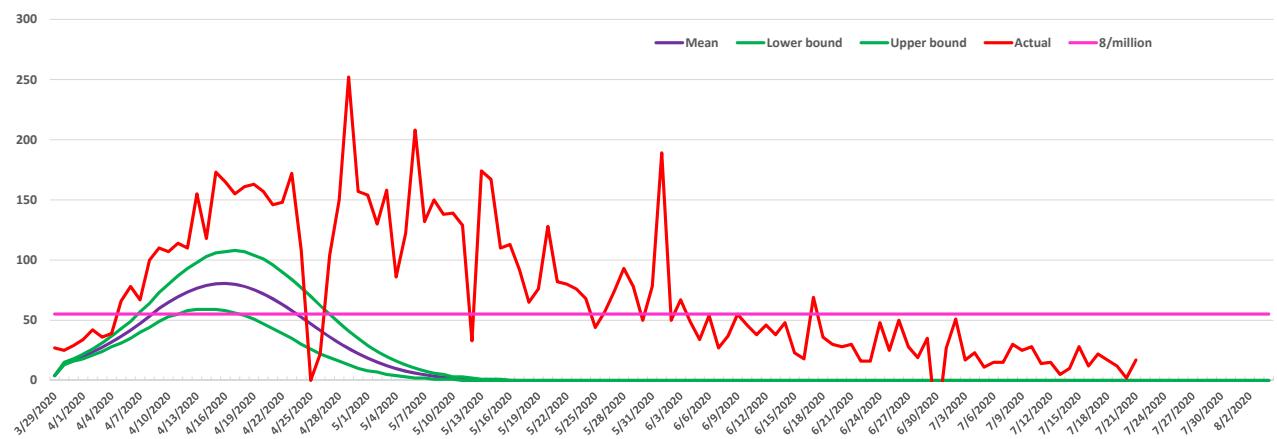
KANSAS STATE
UNIVERSITY | Agricultural Economics

Connecticut COVID 19 Daily Death Projections March 26



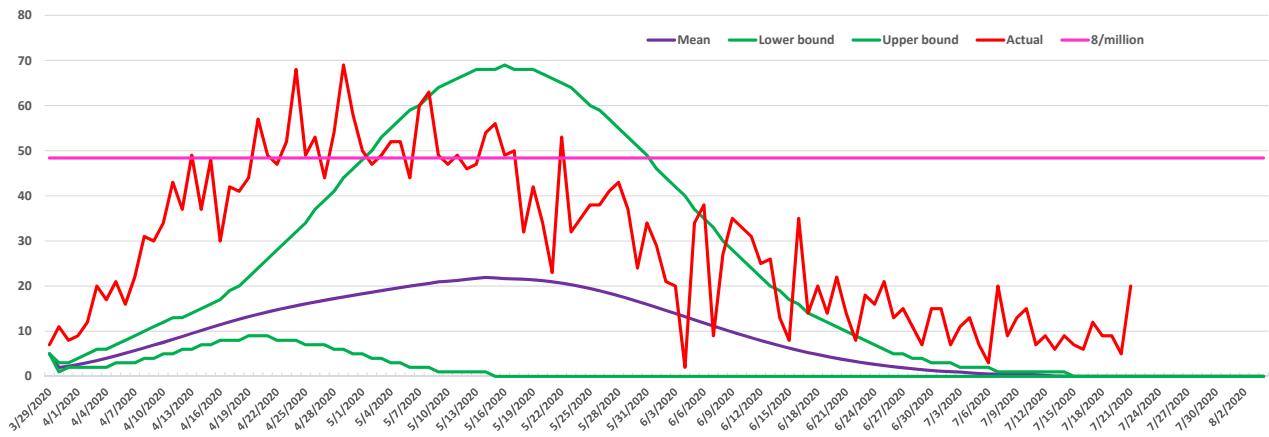
KANSAS STATE
UNIVERSITY | Agricultural Economics

Massachusetts COVID 19 Daily Death Projections March 26



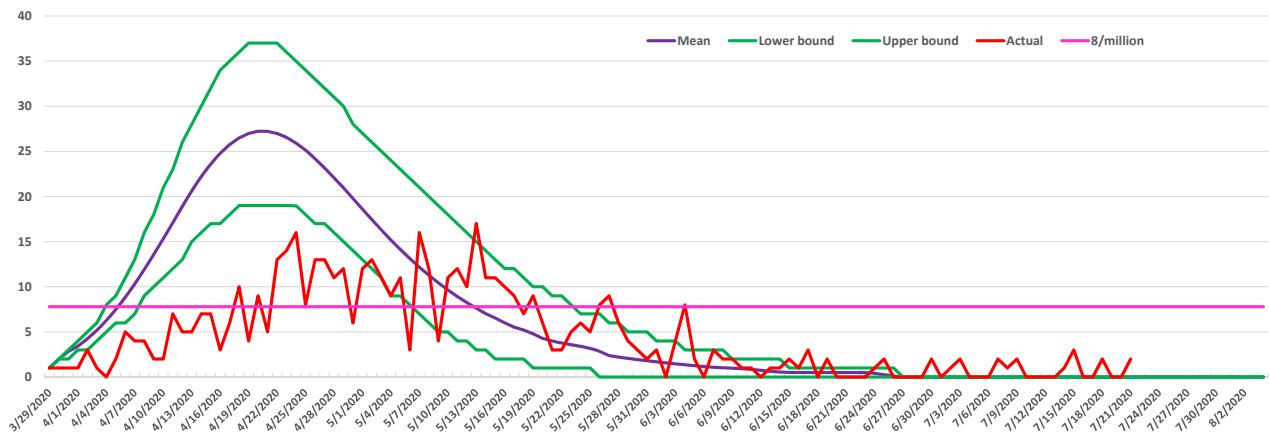
KANSAS STATE
UNIVERSITY | Agricultural Economics

Maryland COVID 19 Daily Death Projections March 26



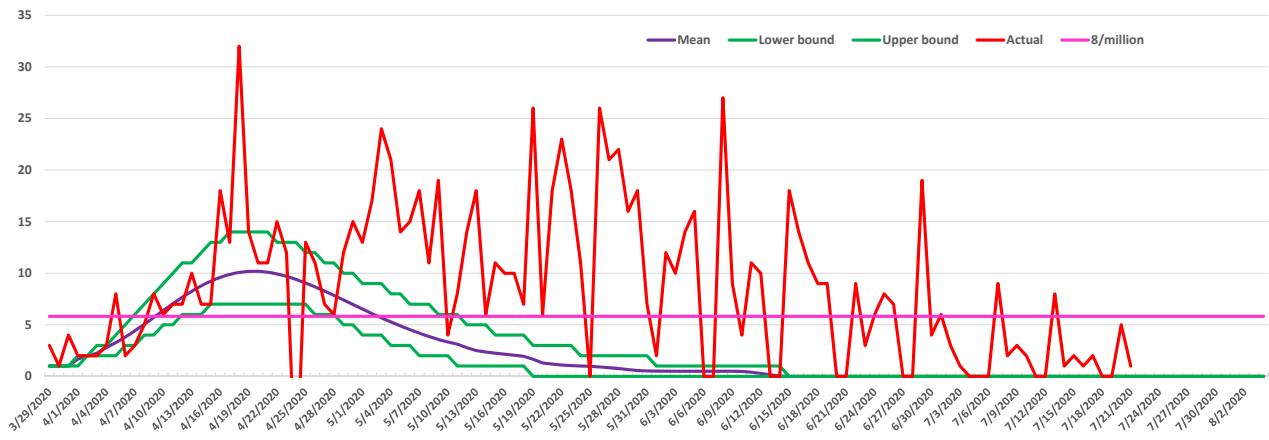
KANSAS STATE
UNIVERSITY | Agricultural Economics

Delaware COVID 19 Daily Death Projections March 26



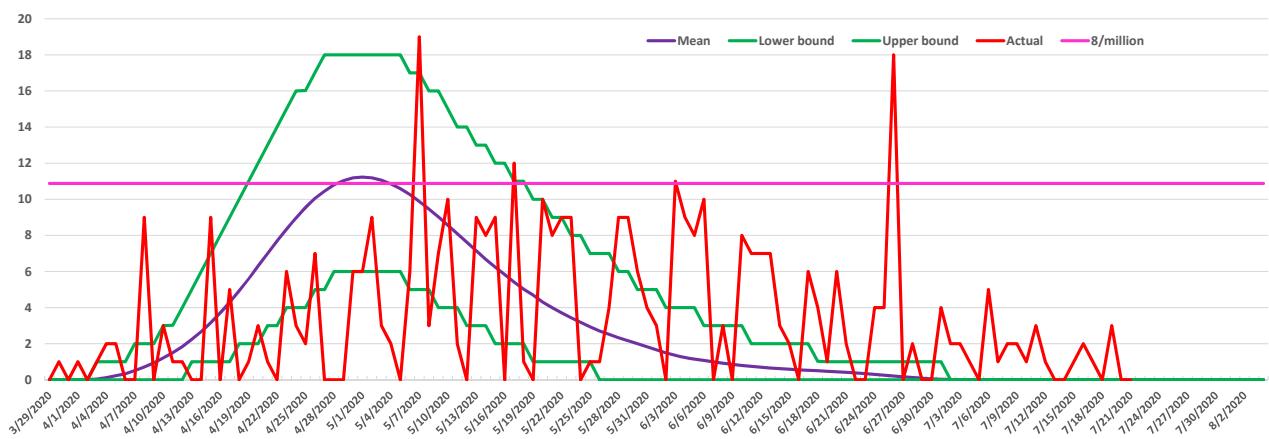
KANSAS STATE
UNIVERSITY | Agricultural Economics

Rhode Island COVID 19 Daily Death Projections March 26



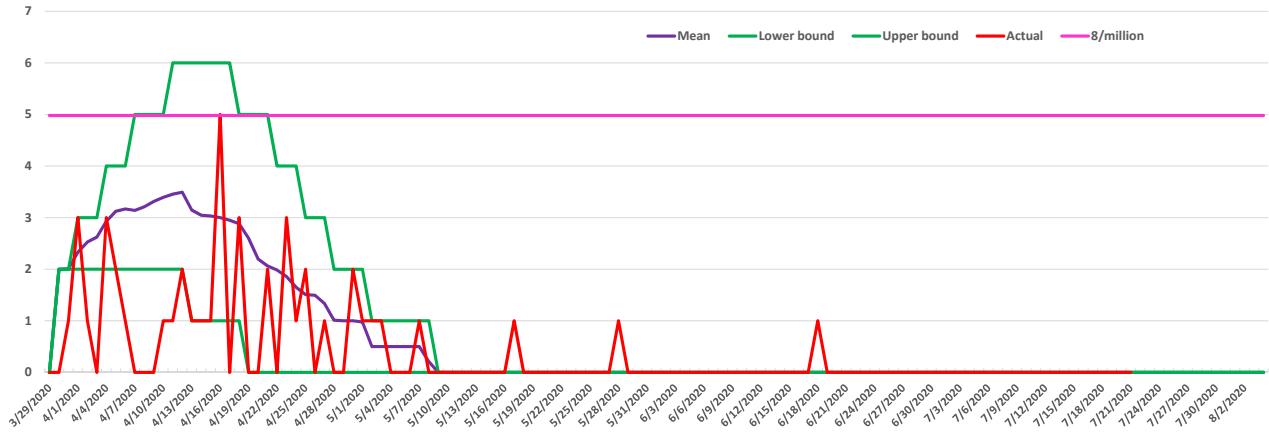
KANSAS STATE
UNIVERSITY | Agricultural Economics

New Hampshire COVID 19 Daily Death Projections March 26



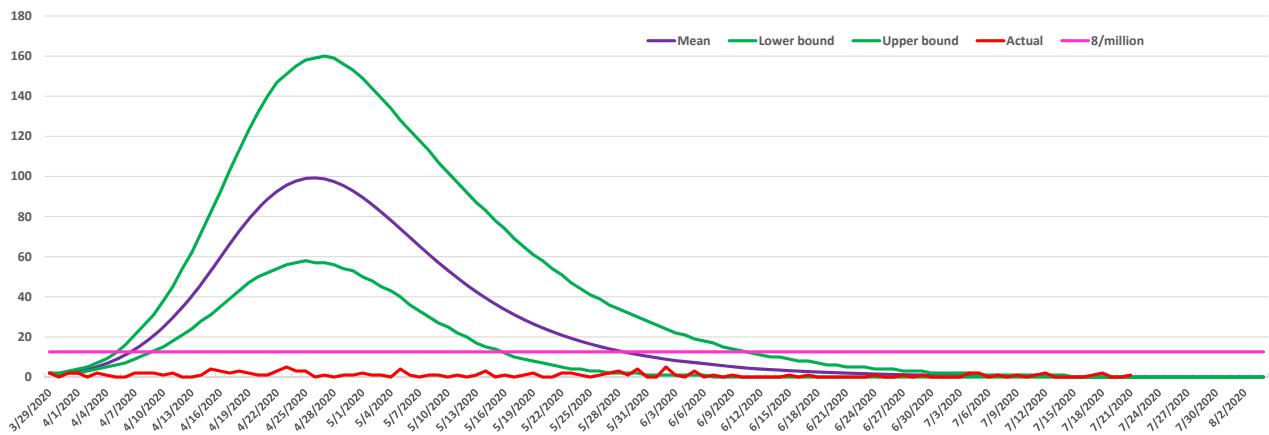
KANSAS STATE
UNIVERSITY | Agricultural Economics

Vermont COVID 19 Daily Death Projections March 26



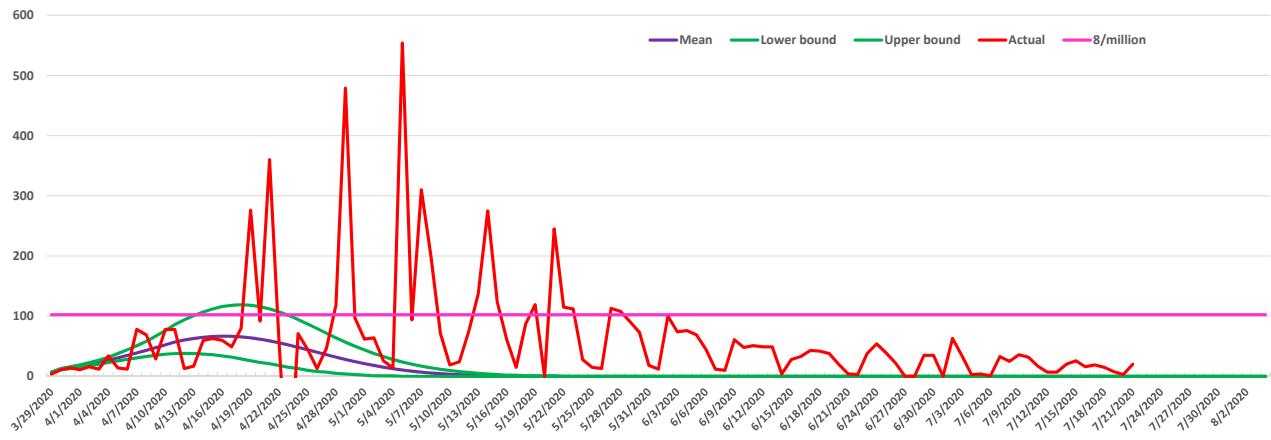
KANSAS STATE
UNIVERSITY | Agricultural Economics

Maine COVID 19 Daily Death Projections March 26



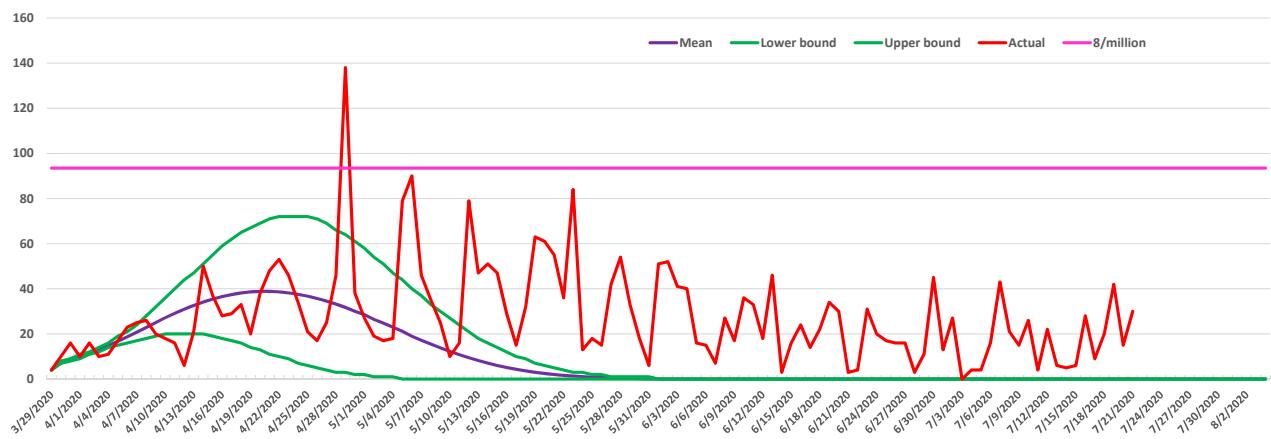
KANSAS STATE
UNIVERSITY | Agricultural Economics

Pennsylvania COVID 19 Daily Death Projections March 26



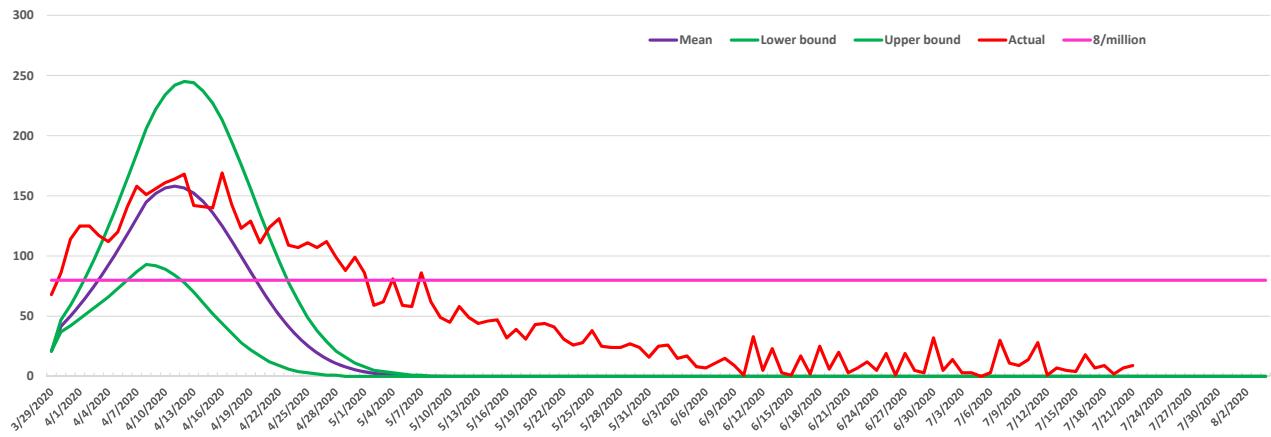
KANSAS STATE
UNIVERSITY | Agricultural Economics

Ohio COVID 19 Daily Death Projections March 26



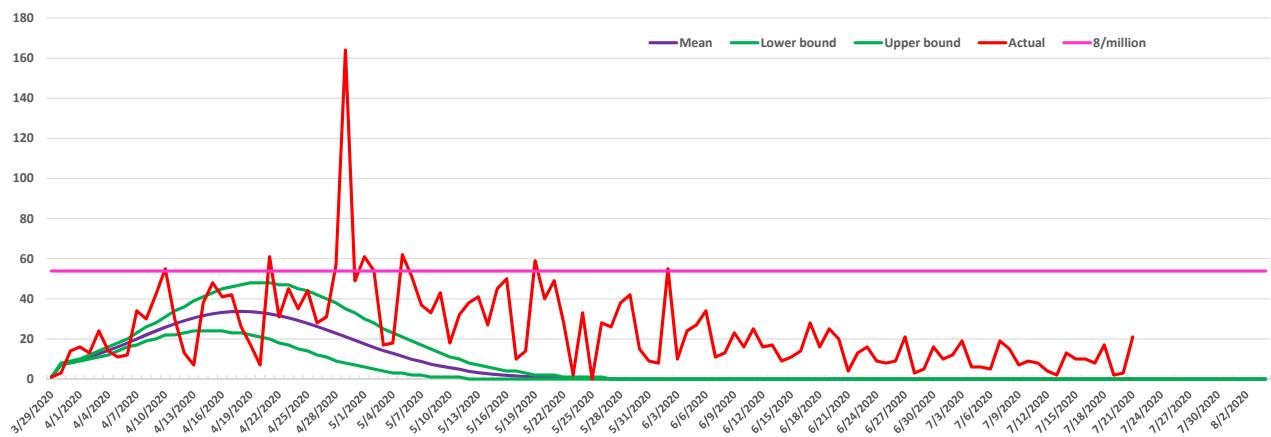
KANSAS STATE
UNIVERSITY | Agricultural Economics

Michigan COVID 19 Daily Death Projections March 26



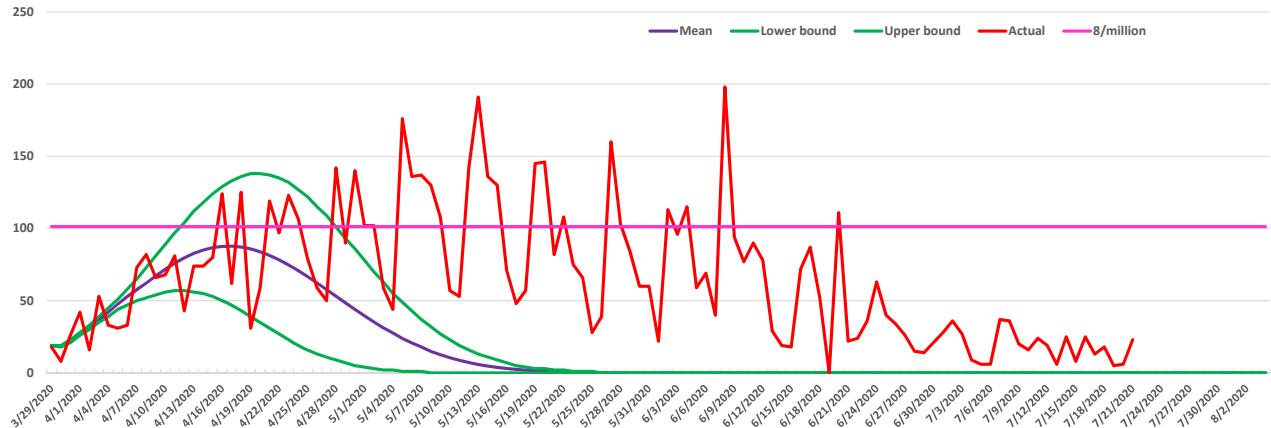
KANSAS STATE
UNIVERSITY | Agricultural Economics

Indiana COVID 19 Daily Death Projections March 26



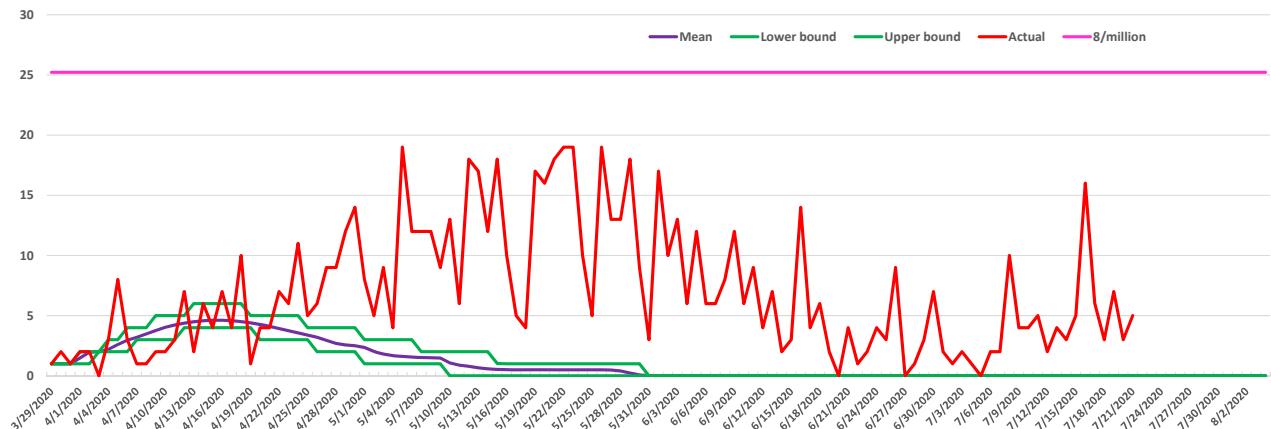
KANSAS STATE
UNIVERSITY | Agricultural Economics

Illinois COVID 19 Daily Death Projections March 26



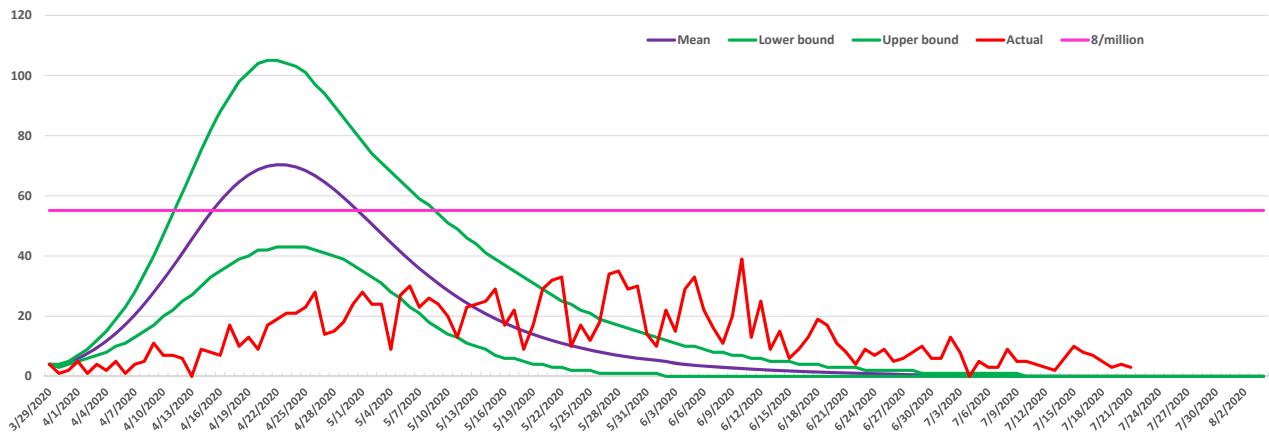
KANSAS STATE
UNIVERSITY | Agricultural Economics

Iowa COVID 19 Daily Death Projections March 26



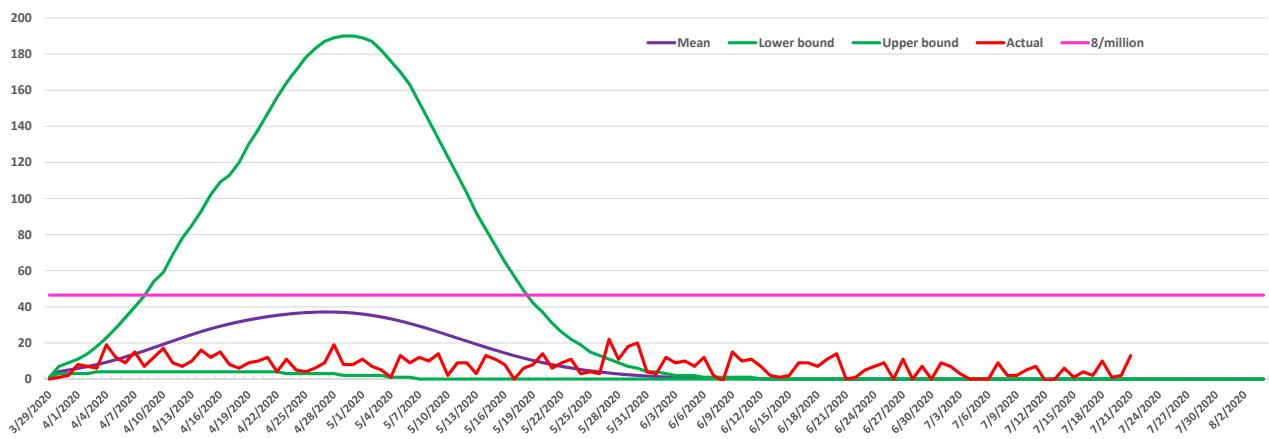
KANSAS STATE
UNIVERSITY | Agricultural Economics

Minnesota COVID 19 Daily Death Projections March 26



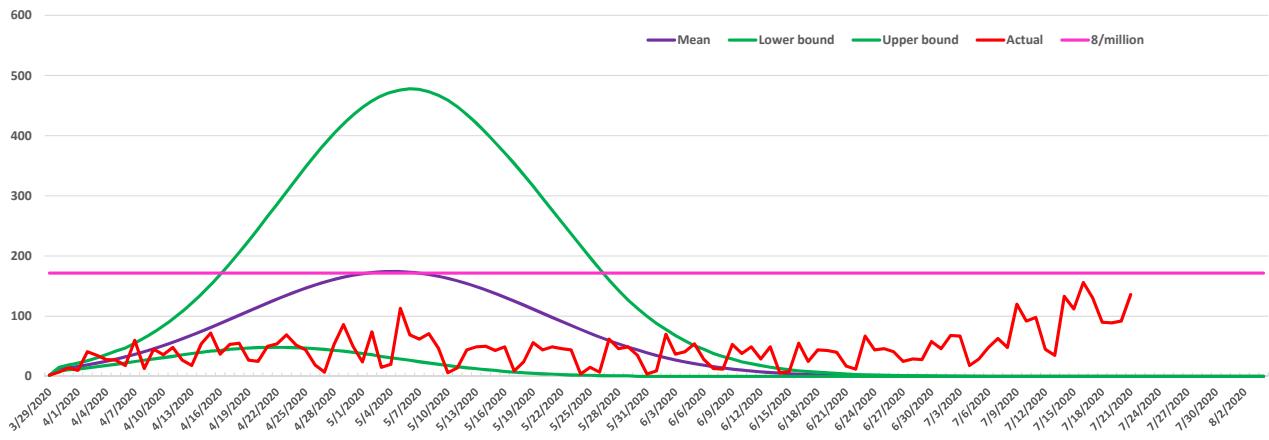
KANSAS STATE
UNIVERSITY | Agricultural Economics

Wisconsin COVID 19 Daily Death Projections March 26



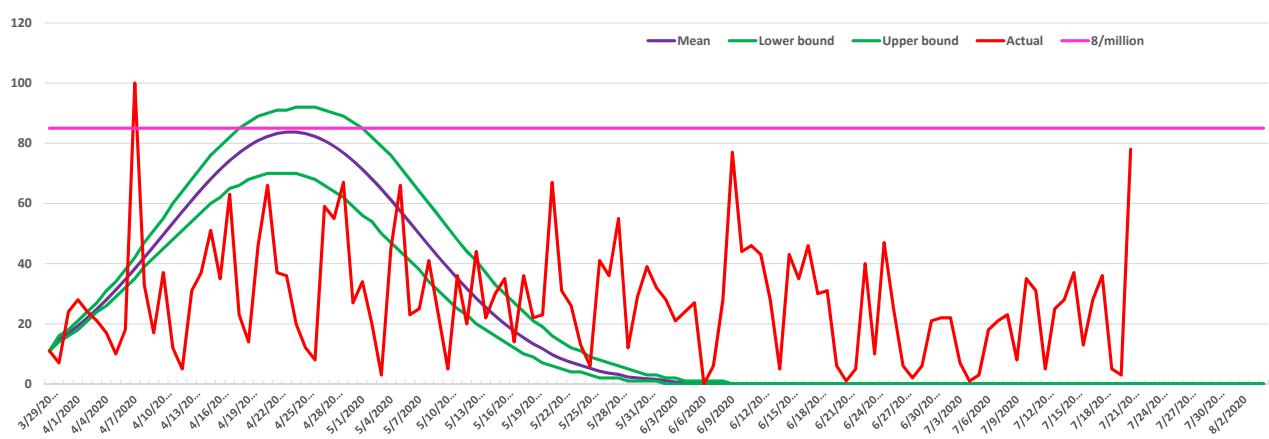
KANSAS STATE
UNIVERSITY | Agricultural Economics

Florida COVID 19 Daily Death Projections March 26



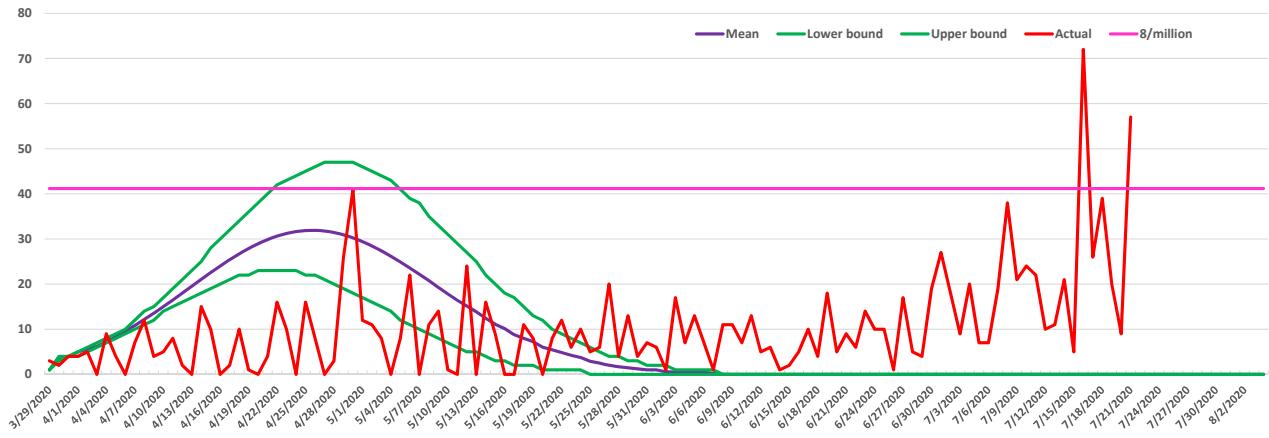
KANSAS STATE
UNIVERSITY | Agricultural Economics

Georgia COVID 19 Daily Death Projections March 26



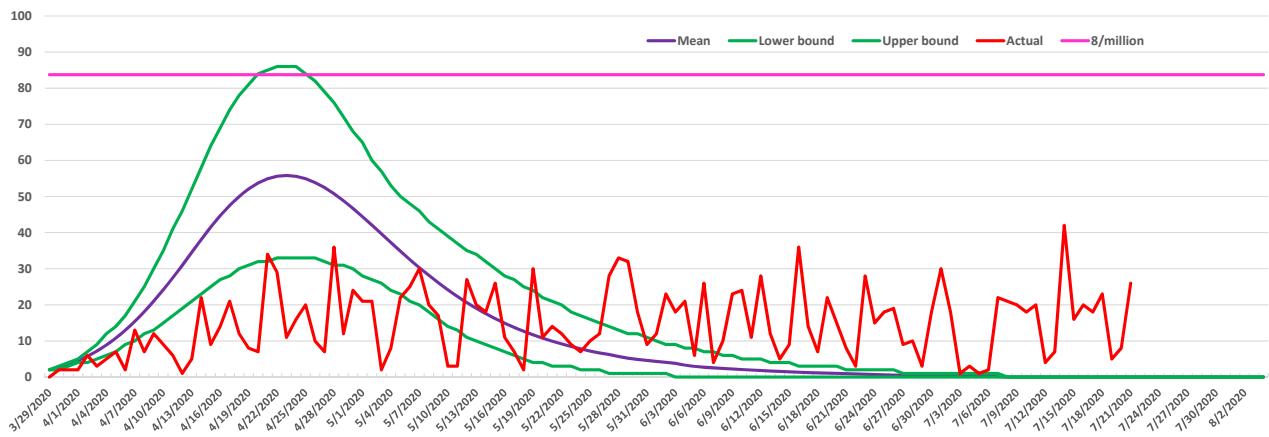
KANSAS STATE
UNIVERSITY | Agricultural Economics

South Carolina COVID 19 Daily Death Projections March 26



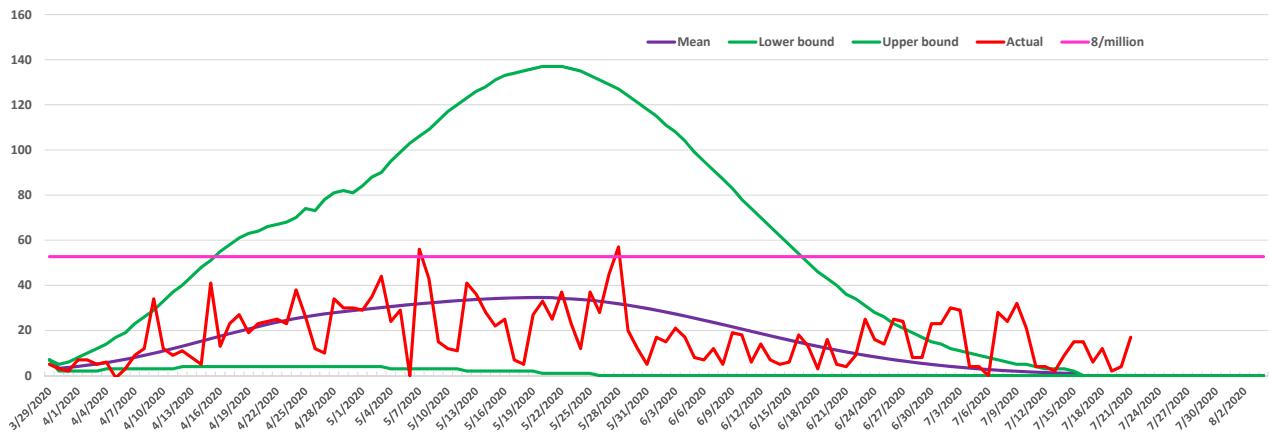
KANSAS STATE
UNIVERSITY | Agricultural Economics

North Carolina COVID 19 Daily Death Projections March 26



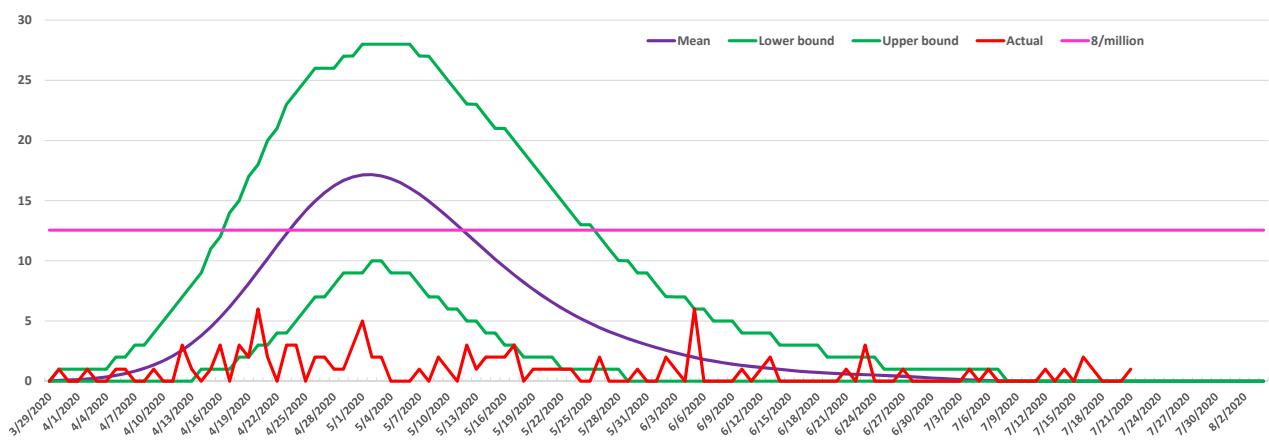
KANSAS STATE
UNIVERSITY | Agricultural Economics

Virginia COVID 19 Daily Death Projections March 26



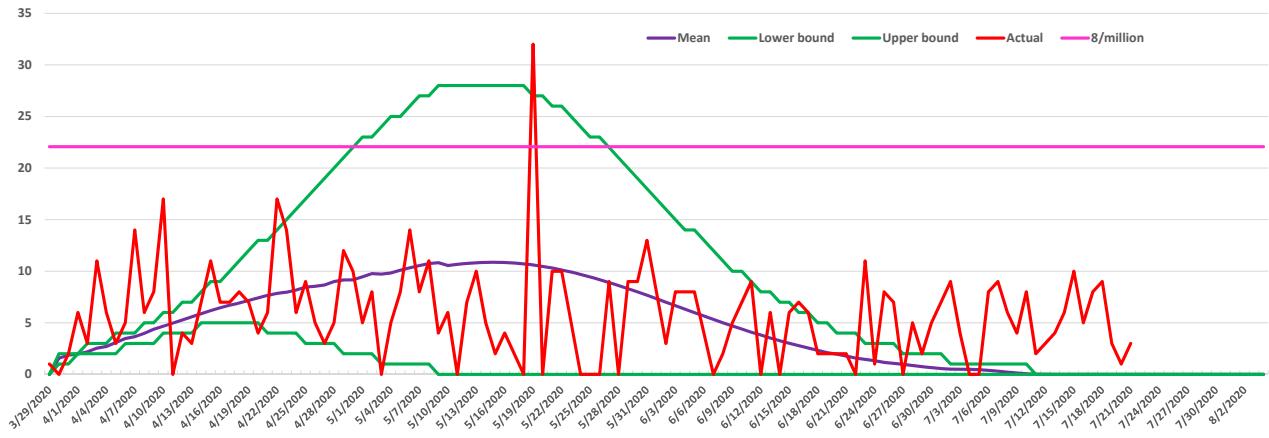
KANSAS STATE
UNIVERSITY | Agricultural Economics

West Virginia COVID 19 Daily Death Projections March 26



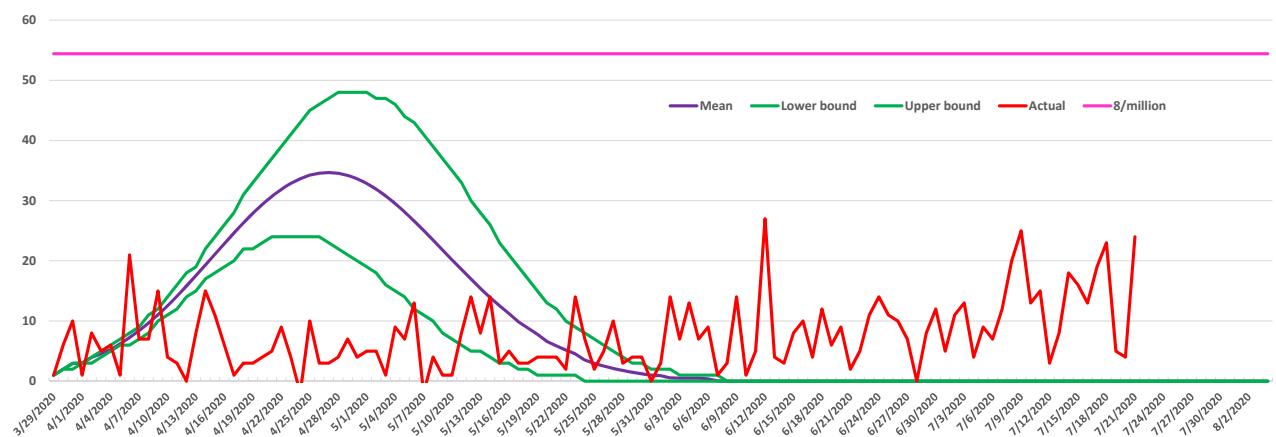
KANSAS STATE
UNIVERSITY | Agricultural Economics

Kentucky COVID 19 Daily Death Projections March 26



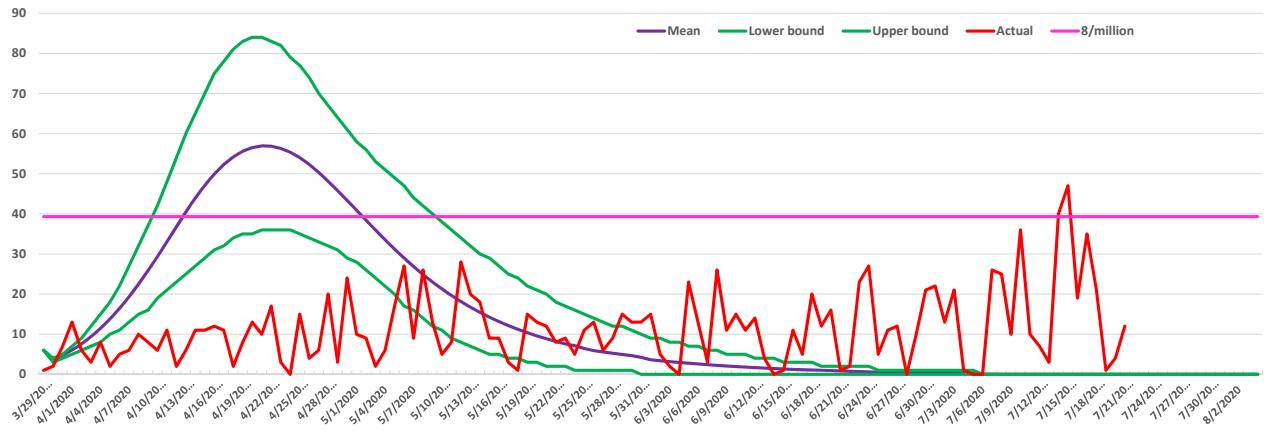
KANSAS STATE
UNIVERSITY | Agricultural Economics

Tennessee COVID 19 Daily Death Projections March 26



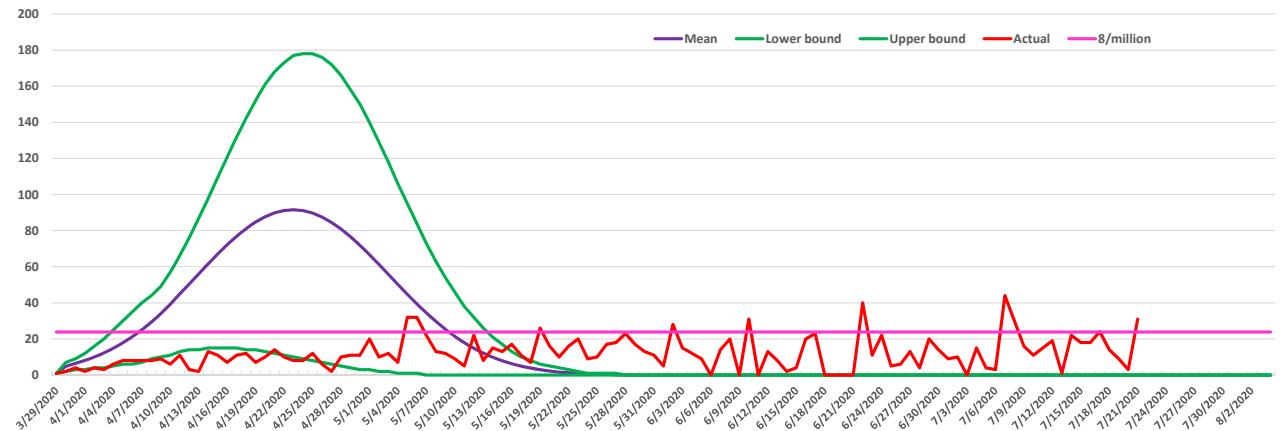
KANSAS STATE
UNIVERSITY | Agricultural Economics

Alabama COVID 19 Daily Death Projections March 26



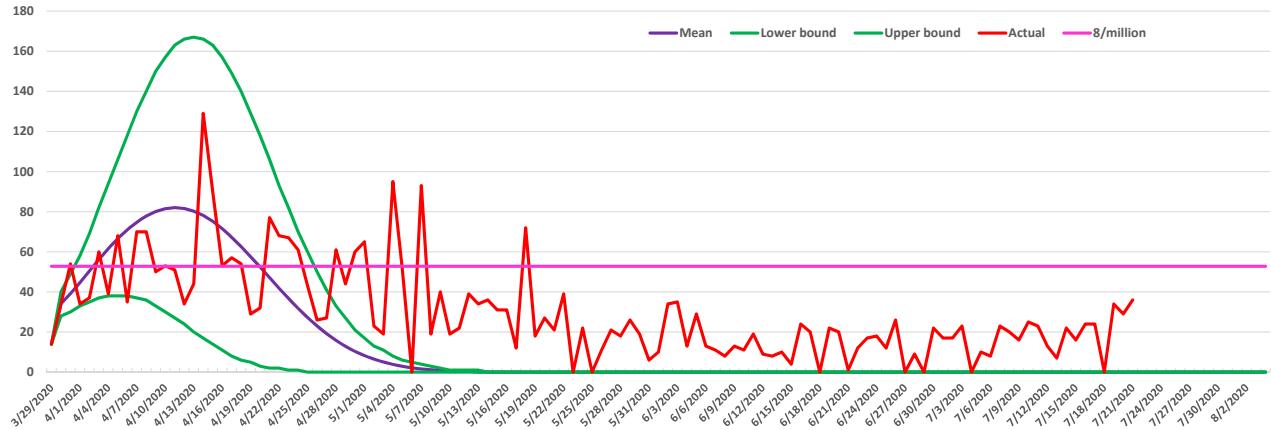
KANSAS STATE
UNIVERSITY | Agricultural Economics

Mississippi COVID 19 Daily Death Projections March 26



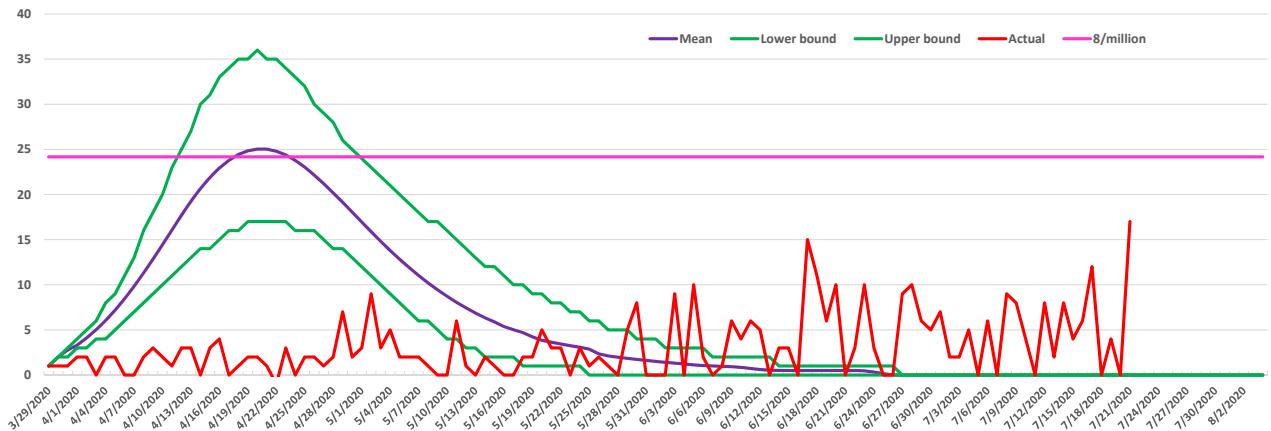
KANSAS STATE
UNIVERSITY | Agricultural Economics

Louisiana COVID 19 Daily Death Projections March 26



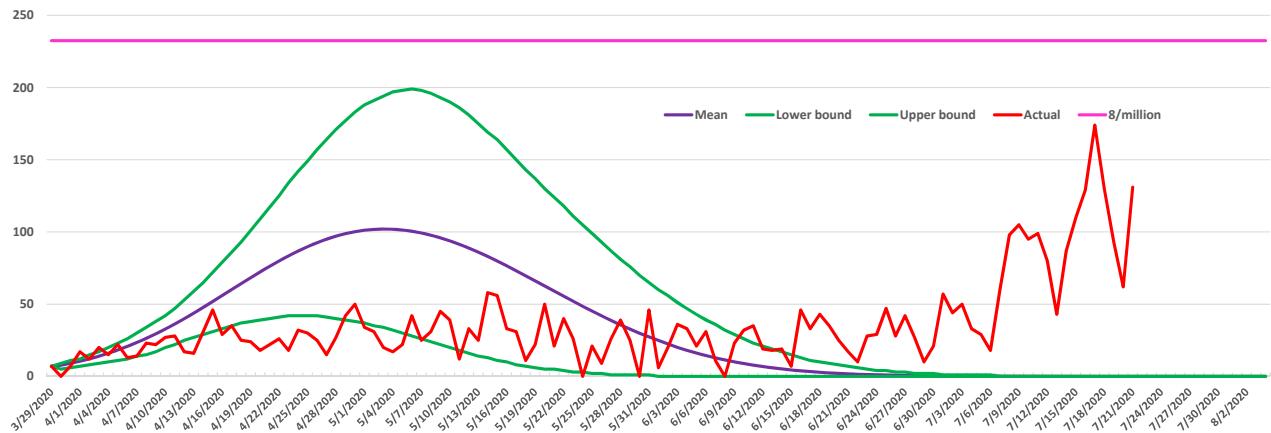
KANSAS STATE
UNIVERSITY | Agricultural Economics

Arkansas COVID 19 Daily Death Projections March 26



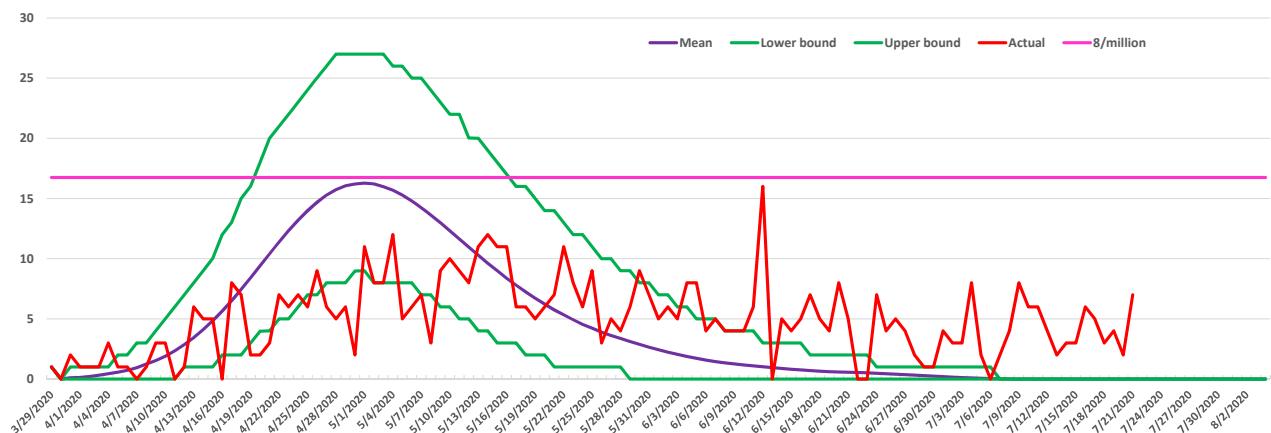
KANSAS STATE
UNIVERSITY | Agricultural Economics

Texas COVID 19 Daily Death Projections March 26



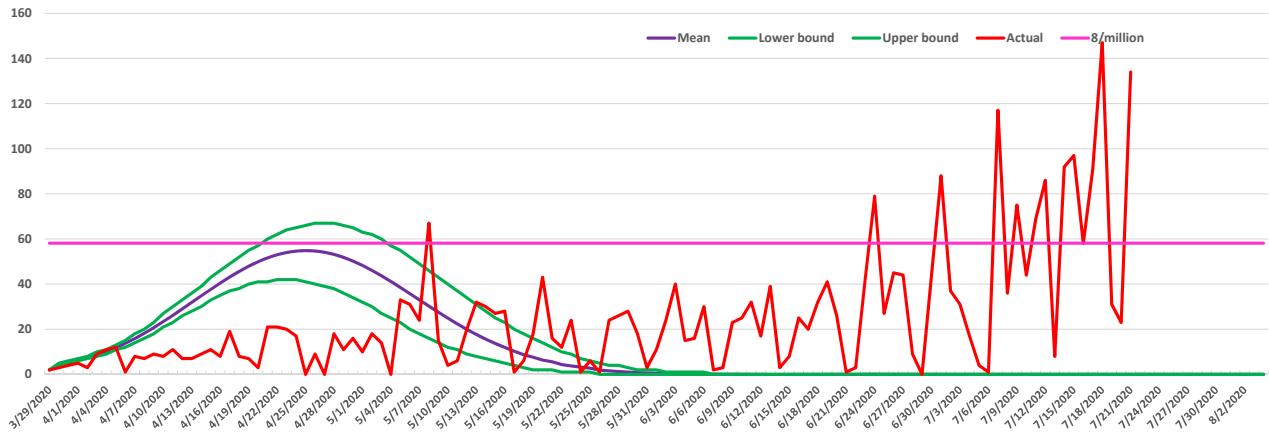
KANSAS STATE
UNIVERSITY | Agricultural Economics

New Mexico COVID 19 Daily Death Projections March 26



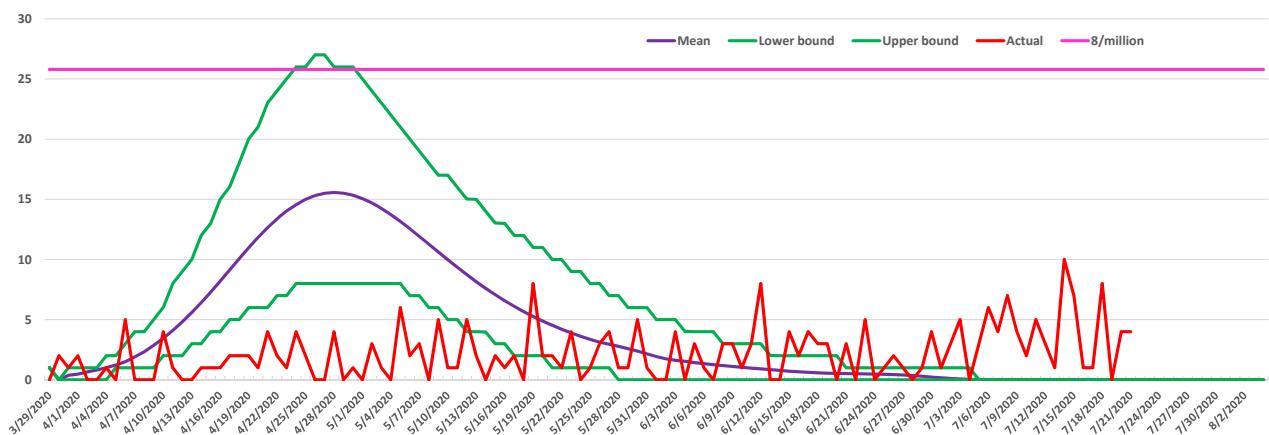
KANSAS STATE
UNIVERSITY | Agricultural Economics

Arizona COVID 19 Daily Death Projections March 26



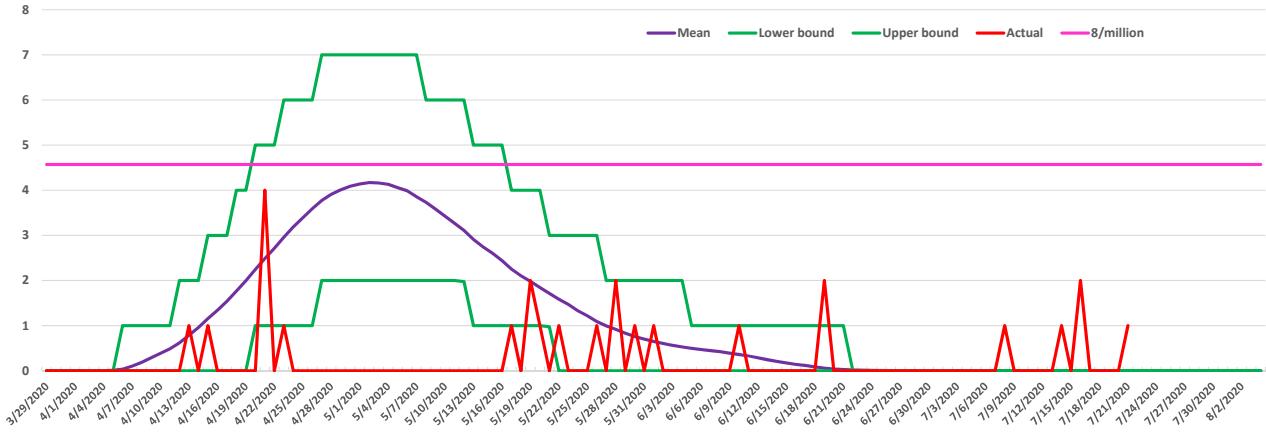
KANSAS STATE
UNIVERSITY | Agricultural Economics

Utah COVID 19 Daily Death Projections March 26



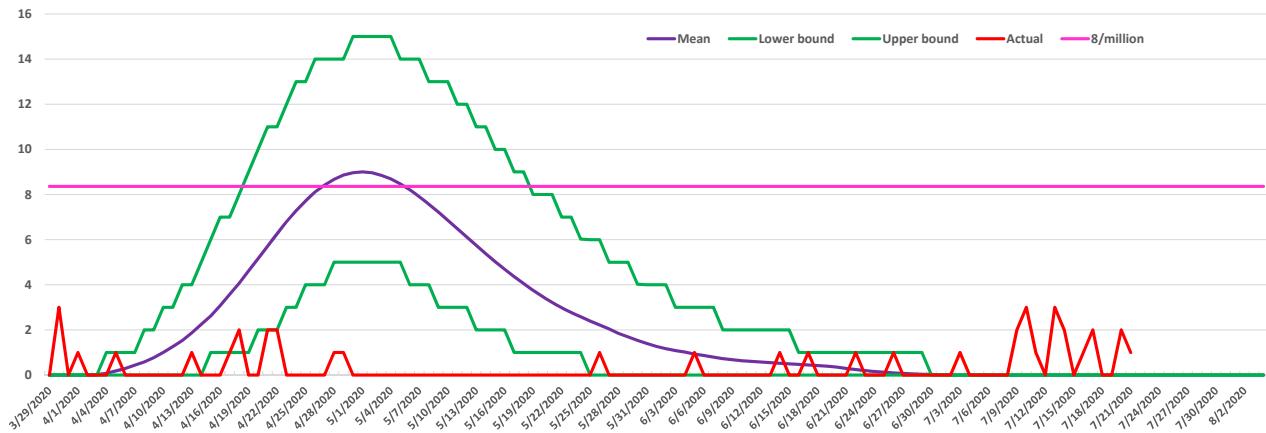
KANSAS STATE
UNIVERSITY | Agricultural Economics

Wyoming COVID 19 Daily Death Projections March 26



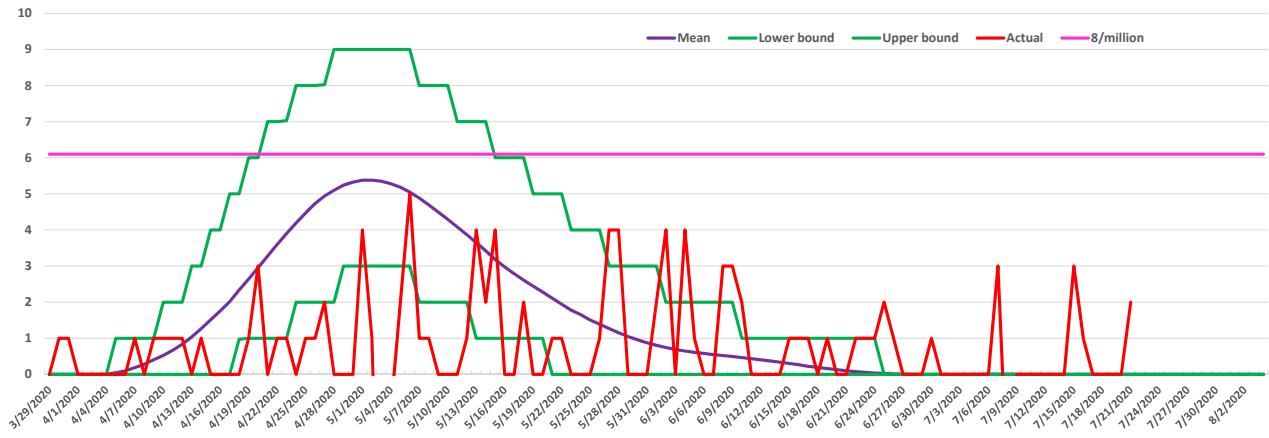
KANSAS STATE
UNIVERSITY | Agricultural Economics

Montana COVID 19 Daily Death Projections March 26



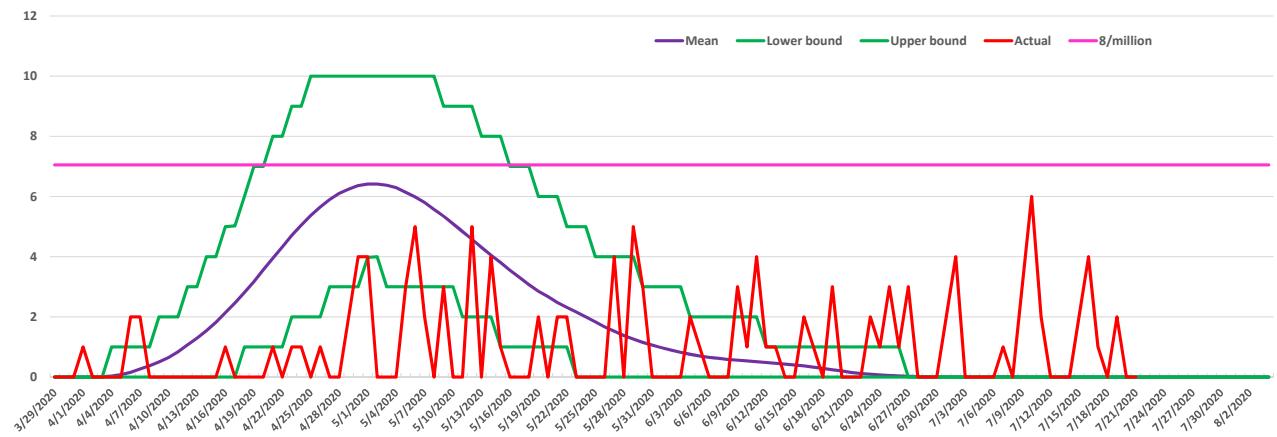
KANSAS STATE
UNIVERSITY | Agricultural Economics

North Dakota COVID 19 Daily Death Projections March 26



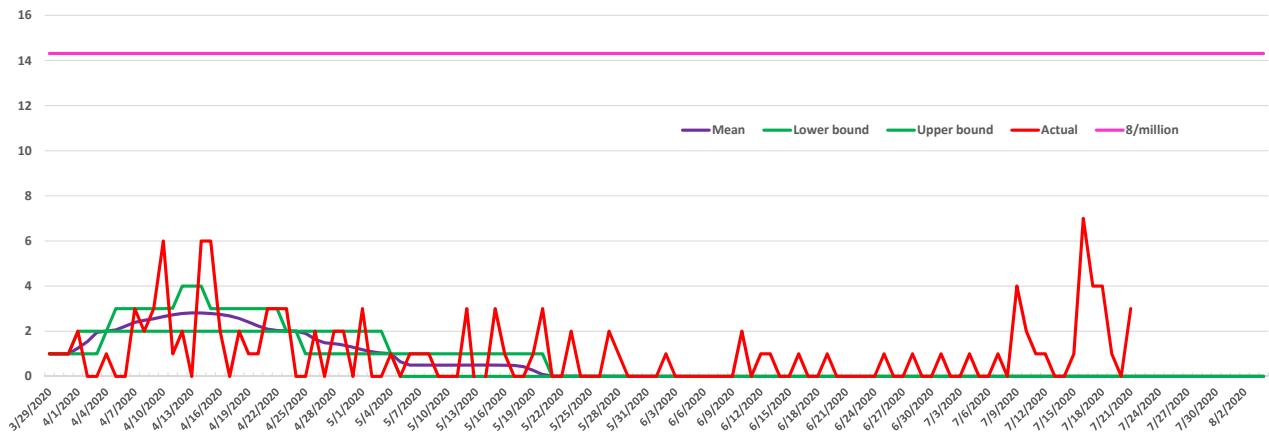
KANSAS STATE
UNIVERSITY | Agricultural Economics

South Dakota COVID 19 Daily Death Projections March 26



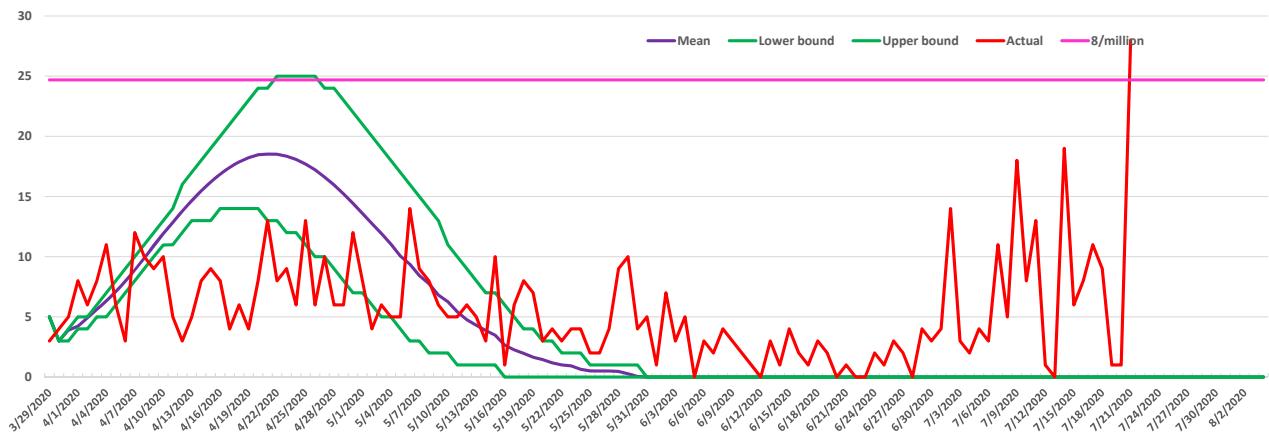
KANSAS STATE
UNIVERSITY | Agricultural Economics

Idaho COVID 19 Daily Death Projections March 26



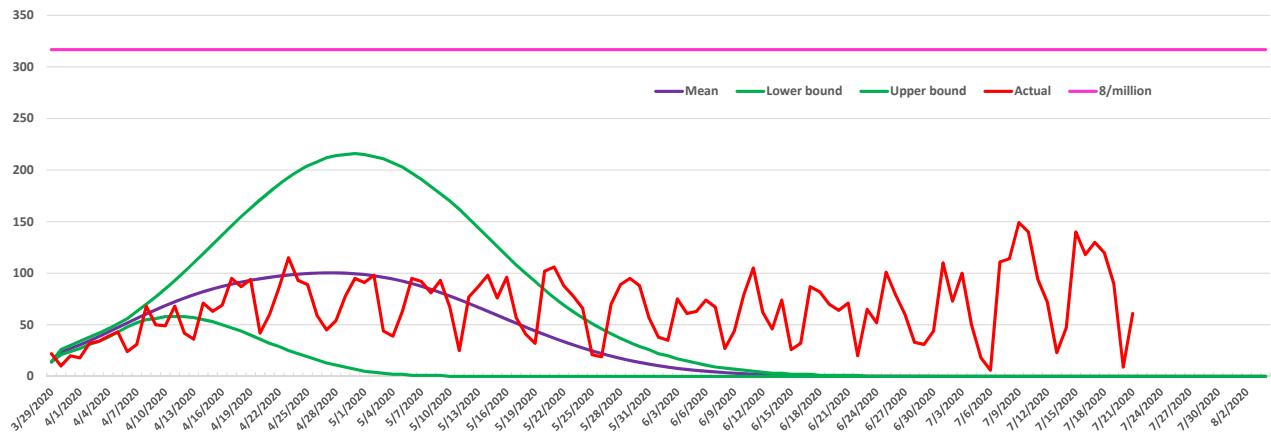
KANSAS STATE
UNIVERSITY | Agricultural Economics

Nevada COVID 19 Daily Death Projections March 26



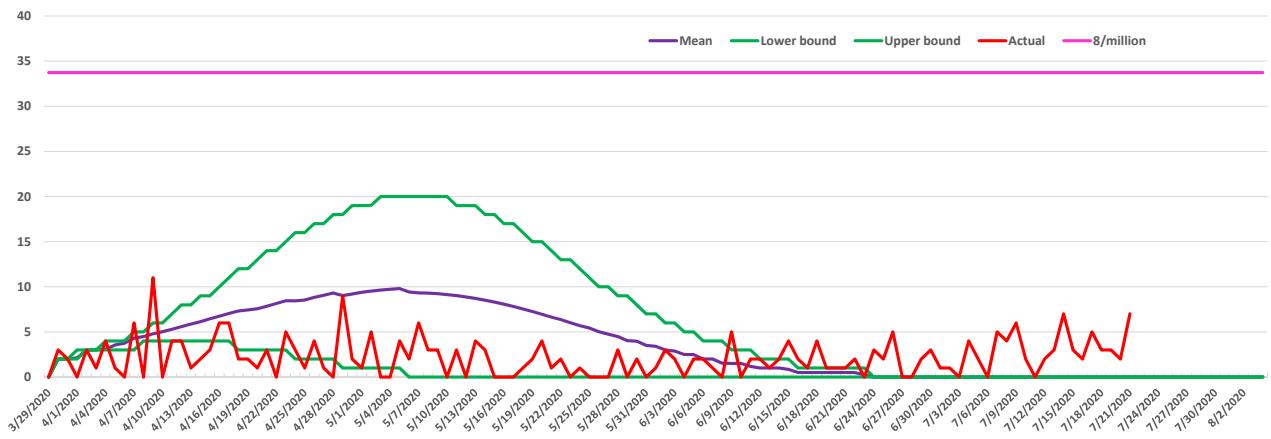
KANSAS STATE
UNIVERSITY | Agricultural Economics

California COVID 19 Daily Death Projections March 26



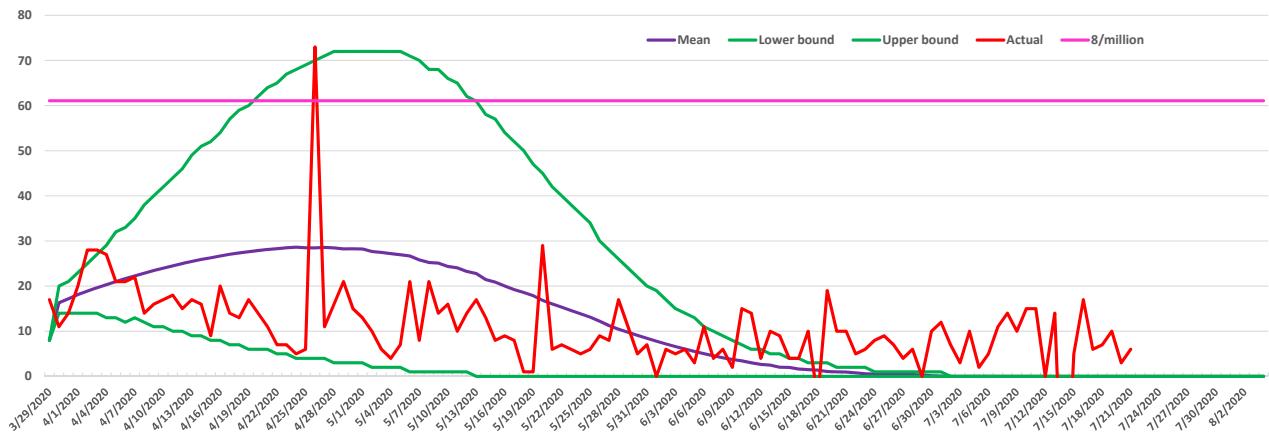
KANSAS STATE
UNIVERSITY | Agricultural Economics

Oregon COVID 19 Daily Death Projections March 26



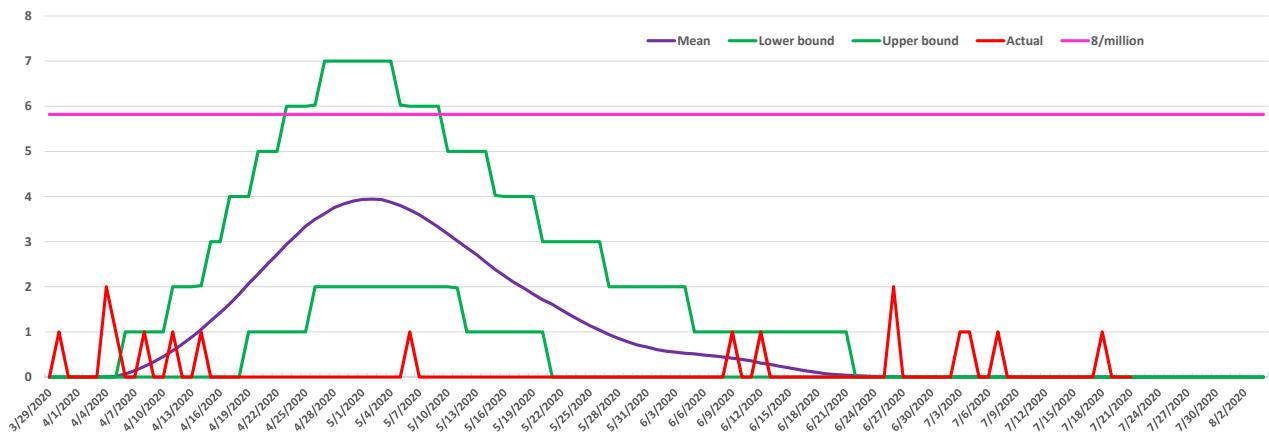
KANSAS STATE
UNIVERSITY | Agricultural Economics

Washington COVID 19 Daily Death Projections March 26



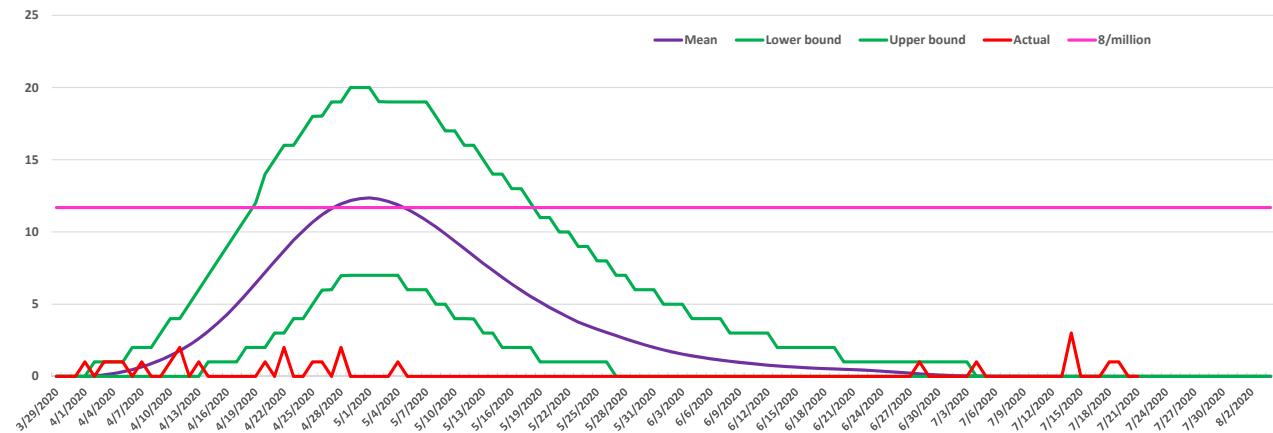
KANSAS STATE
UNIVERSITY | Agricultural Economics

Alaska COVID 19 Daily Death Projections March 26



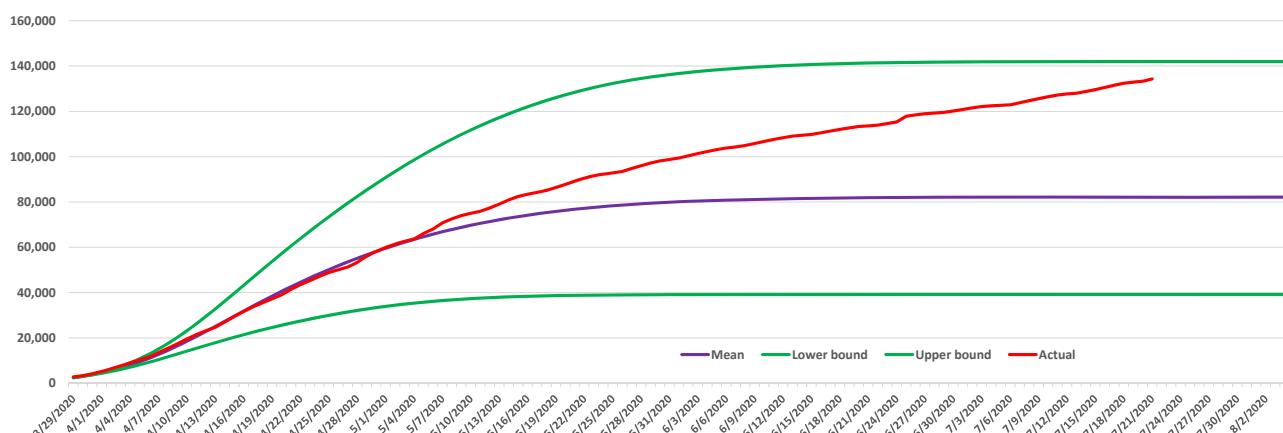
KANSAS STATE
UNIVERSITY | Agricultural Economics

Hawaii COVID 19 Daily Death Projections March 26



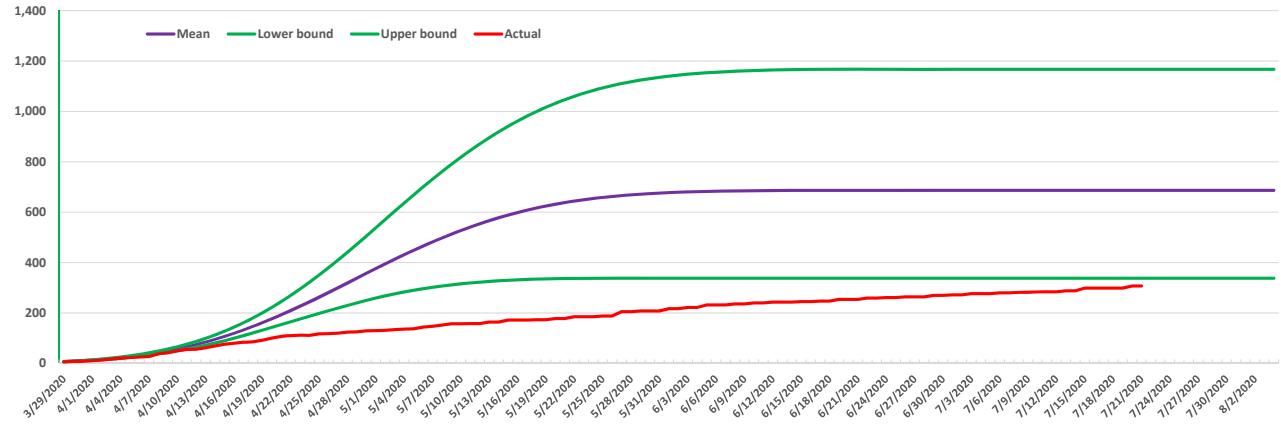
KANSAS STATE
UNIVERSITY | Agricultural Economics

U.S. COVID 19 Cumulative Death Projections



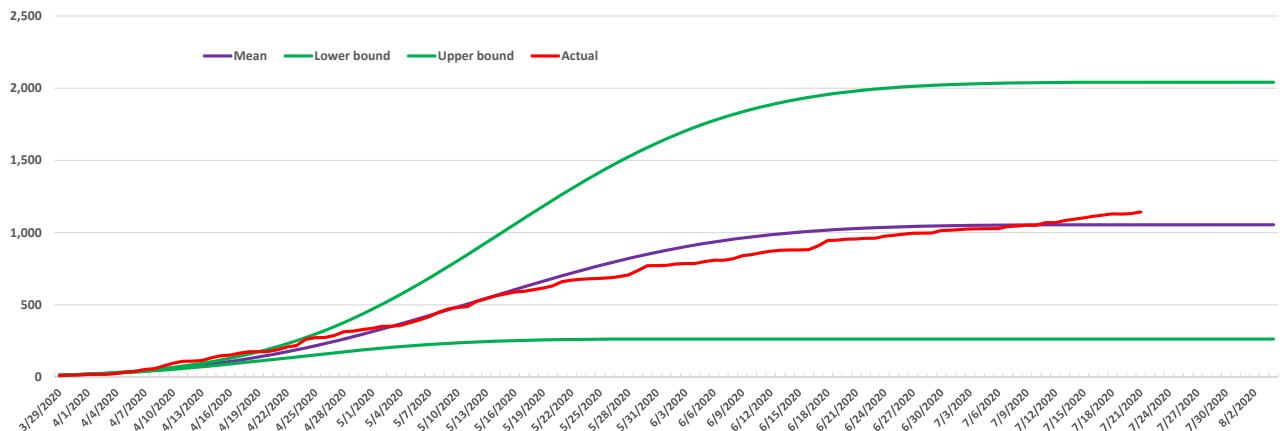
KANSAS STATE
UNIVERSITY | Agricultural Economics

Kansas COVID 19 Cumulative Death Projections



KANSAS STATE
UNIVERSITY | Agricultural Economics

Missouri COVID 19 Cumulative Death Projections March 26



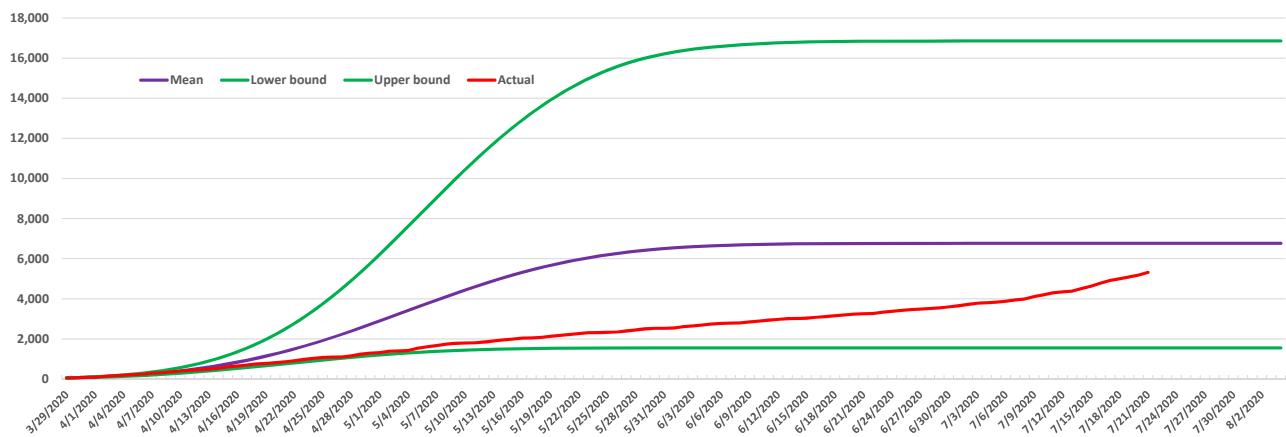
KANSAS STATE
UNIVERSITY | Agricultural Economics

New York COVID 19 Cumulative Death Projections



KANSAS STATE
UNIVERSITY | Agricultural Economics

Florida COVID 19 Cumulative Death Projections March 26



KANSAS STATE
UNIVERSITY | Agricultural Economics

Cumulative Death Projections

- Comparing July 6th Cumulative deaths with the original IMHE projections
- Fifteen states are above the mean and above the 95% confidence interval
 - Arizona, Connecticut, Idaho, Illinois, Indiana, Iowa, Louisiana, Maryland, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania, Rhode Island
- Nine states are above the mean but within the 95% confidence interval
 - California, Georgia, Kentucky, Missouri, New Mexico, Nevada, New Hampshire, South Carolina, Texas
- Fifteen states are below the mean but within the 95% confidence interval
 - Alabama, Florida, Minnesota, Mississippi, Nebraska, North Carolina, North Dakota, Oregon, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, Wisconsin
- Eleven states are below the mean and below the 95% confidence interval
 - Alaska, Arkansas, Colorado, Delaware, Hawaii, Kansas, Maine, Montana, Oklahoma, West Virginia, Wyoming



KANSAS STATE | Agricultural Economics
UNIVERSITY

Concluding Thoughts

- The distribution of death by age group for COVID 19 continues to be similar to the distribution of death from all causes
- The U.S. COVID-19 infection rate is 1.21% of the population
- Since June 22 the trend analysis in daily death has been an increase of 0.74 deaths
- Using IHME's metric of 8 deaths per million as a indicator for reduced economic activity, only five states are above that metric during the last week; Alabama, Arizona, Mississippi, Nevada, and South Carolina
- Nineteen states have had a decreasing trend for daily deaths, twenty-eight have experienced an increasing trend
- The U.S. Cumulative Death Total through July 21st is above the mean but within the 95% confidence band



KANSAS STATE | Agricultural Economics
UNIVERSITY

Kansas COVID Deaths by Age Group

Age Group	Number of Deaths	Percent of COVID Deaths	2018 Mortality Rates
25-34	3	1.0%	1.8%
35-44 years	6	2.0%	2.5%
45-54 years	15	4.9%	4.8%
55-64 years	44	14.3%	12.8%
65-74 years	62	20.2%	18.2%
75-84 years	70	22.8%	23.4%
85+ years	107	34.9%	34.2%
Total	307	100%	97.6%

<https://www.coronavirus.kdheks.gov/160/COVID-19-in-Kansas>, July 21, 2020

https://www.kdheks.gov/phi/AS_Tables/AS_2018_Tables_and_Figures/general_mortality/Table_E4.pdf, July 21, 2020



KANSAS STATE UNIVERSITY | Agricultural Economics

U.S. COVID Deaths by Age Group

Age Group	Number of Deaths	Percent of COVID Deaths	2017 Mortality Rates
15-24 years	190	0.1%	0.2%
25-34 years	935	0.7%	1.1%
35-44 years	2,411	1.9%	2.1%
45-54 years	6,566	5.0%	6.0%
55-64 years	15,880	12.3%	13.2%
65-74 years	27,167	20.9%	18.9%
75-84 years	34,399	26.4%	23.4%
85+ years	42,666	32.8%	31.2%
Total	121,374	99.97%	98.87%

<https://data.cdc.gov/NCHS/Provisional-COVID-19-Death-Counts-by-Sex-Age-and-S/9bhg-hcku>, July 21, 2020



KANSAS STATE UNIVERSITY | Agricultural Economics

Kansas COVID and General Mortality by Age Group

Age Group	COVID Deaths	COVID Deaths per 1000	2018 Mortality Rate per 1000
Under 1 year	0	0.00	6.3
1-24 years	0	0.00	1.2
25-34 years	3	0.01	1.3
35-44 years	6	0.02	1.9
45-54 years	15	0.04	3.9
55-64 years	44	0.12	9.3
65-74 years	62	0.24	18.9
75-84 years	70	0.52	47.5
85+ years	107	1.63	142.1

<https://www.coronavirus.kdheks.gov/160/COVID-19-in-Kansas>, July 21, 2020

https://www.kdheks.gov/phi/AS_Tables/AS_2018_Tables_and_Figures/general_mortality/, July 21, 2020



AgManager.info

KANSAS STATE
UNIVERSITY

Agricultural Economics

U.S. COVID and General Mortality by Age Group

Age Group	COVID Deaths	COVID Deaths per 1000	2018 Mortality Rate per 1000
Under 1 year	11	0.00	5.67
1-14 years	25	0.00	0.17
15-24 years	190	0.00	0.74
25-34 years	935	0.02	1.33
35-44 years	2,411	0.06	1.95
45-54 years	6,566	0.15	4.02
55-64 years	15,880	0.38	8.86
65-74 years	27,167	0.92	17.91
75-84 years	34,399	2.34	44.73
85+ years	42,666	6.60	135.74

<https://data.cdc.gov/NCHS/Provisional-COVID-19-Death-Counts-by-Sex-Age-and-S/9bhg-hcku>, July 21, 2020

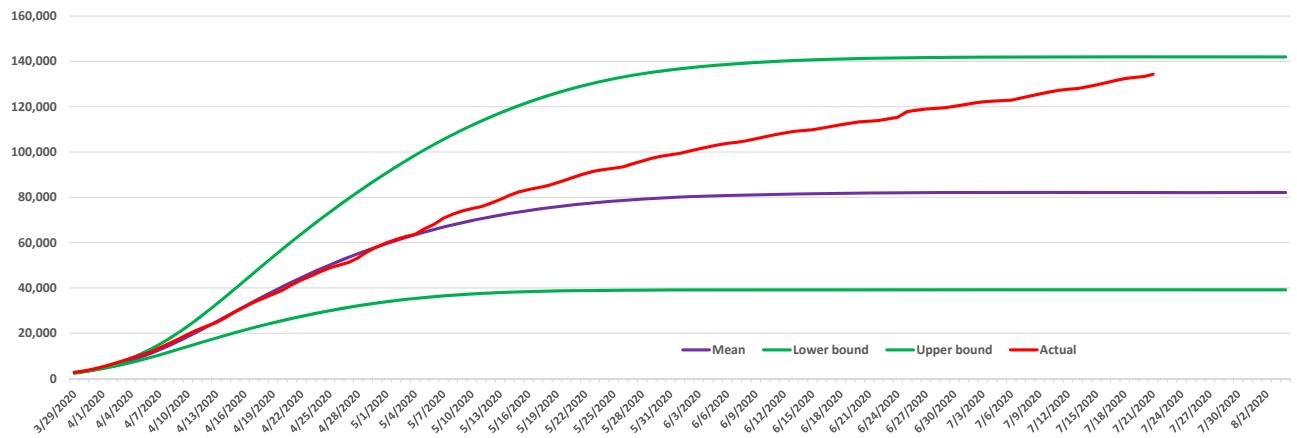


AgManager.info

KANSAS STATE
UNIVERSITY

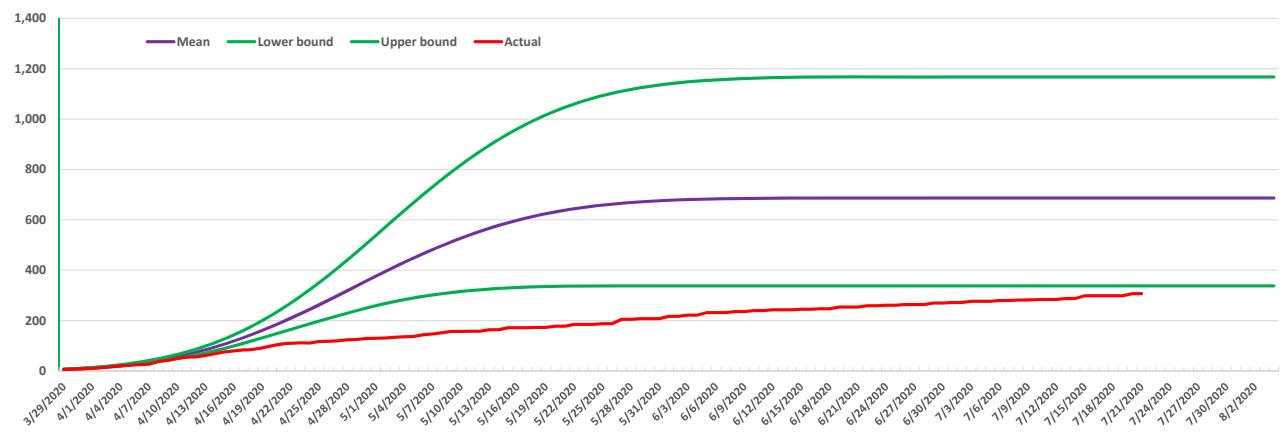
Agricultural Economics

U.S. COVID 19 Cumulative Death Projections



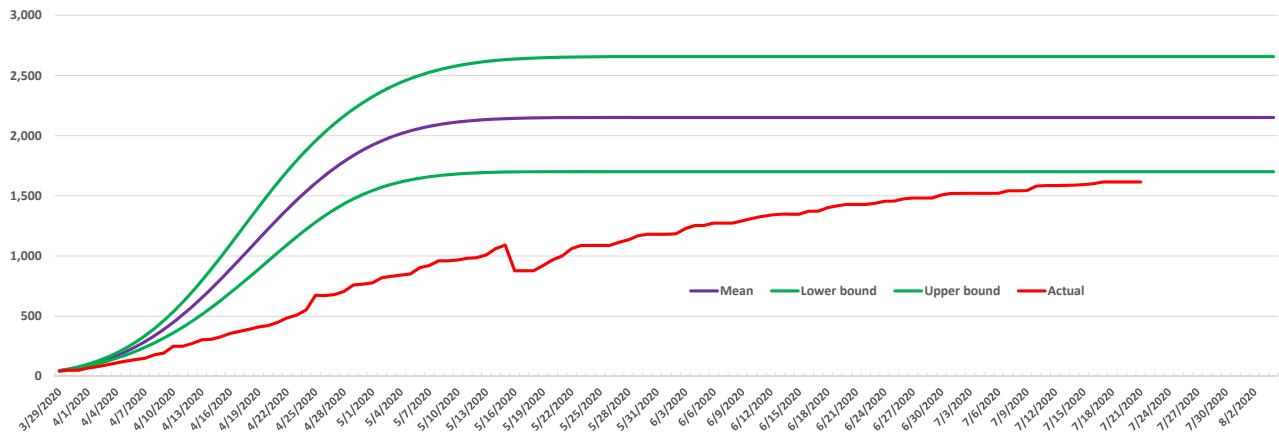
KANSAS STATE
UNIVERSITY | Agricultural Economics

Kansas COVID 19 Cumulative Death Projections



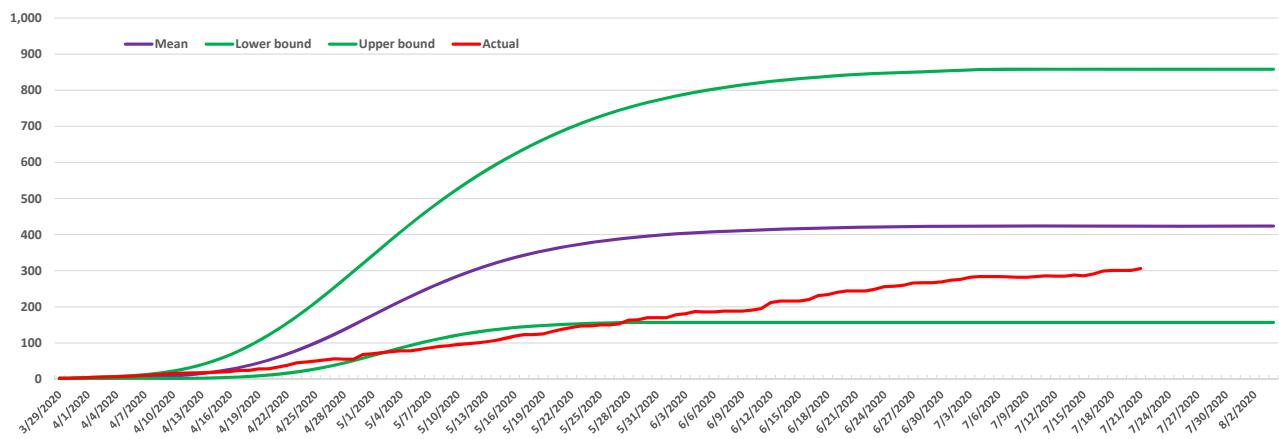
KANSAS STATE
UNIVERSITY | Agricultural Economics

Colorado COVID 19 Cumulative Death Projections March 26



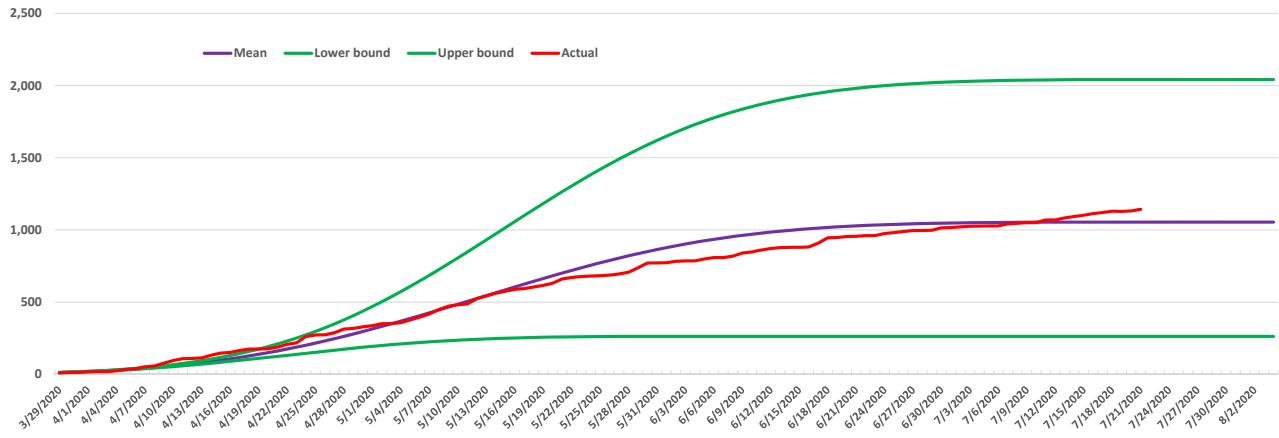
KANSAS STATE
UNIVERSITY | Agricultural Economics

Nebraska COVID 19 Daily Death Projections March 26



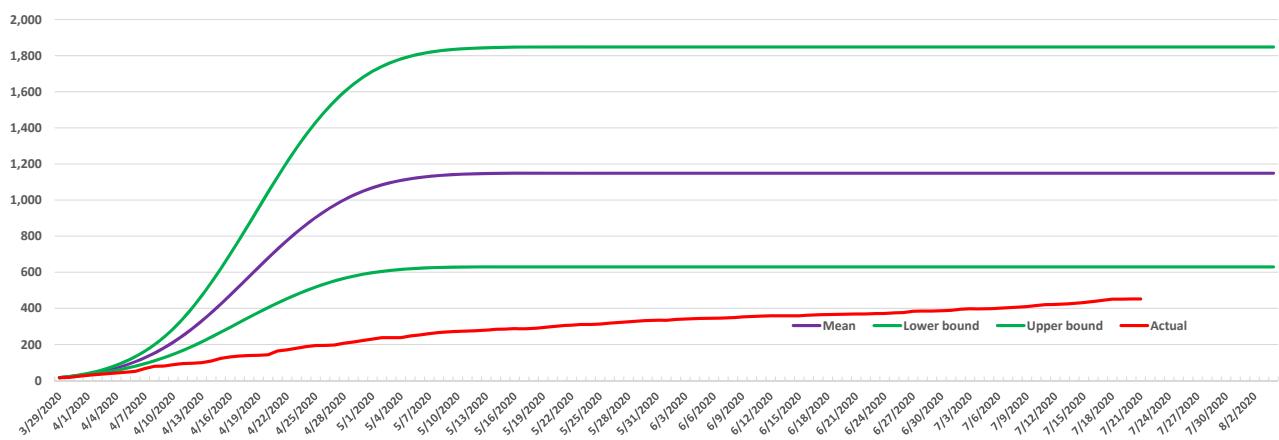
KANSAS STATE
UNIVERSITY | Agricultural Economics

Missouri COVID 19 Cumulative Death Projections March 26



KANSAS STATE
UNIVERSITY | Agricultural Economics

Oklahoma COVID 19 Daily Death Projections March 26



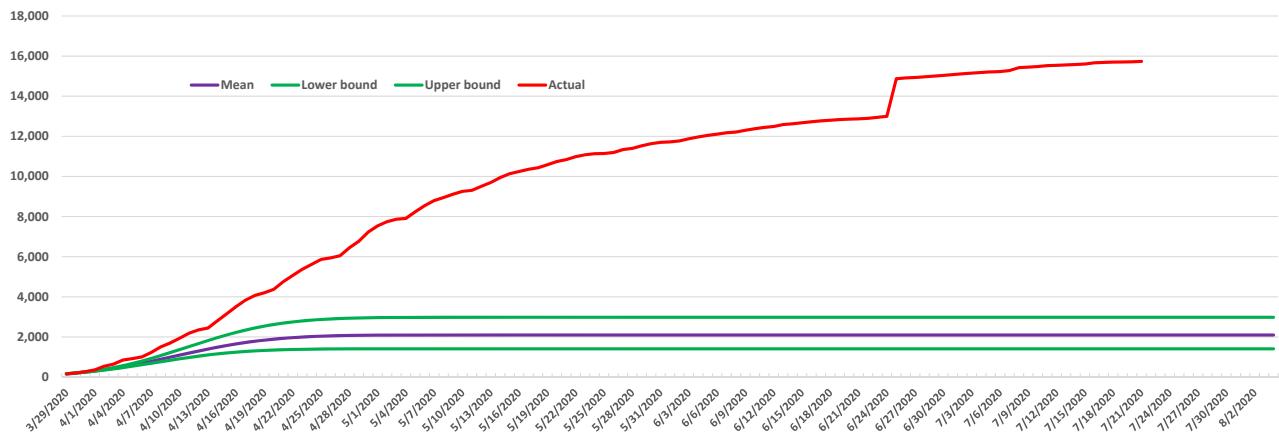
KANSAS STATE
UNIVERSITY | Agricultural Economics

New York COVID 19 Cumulative Death Projections



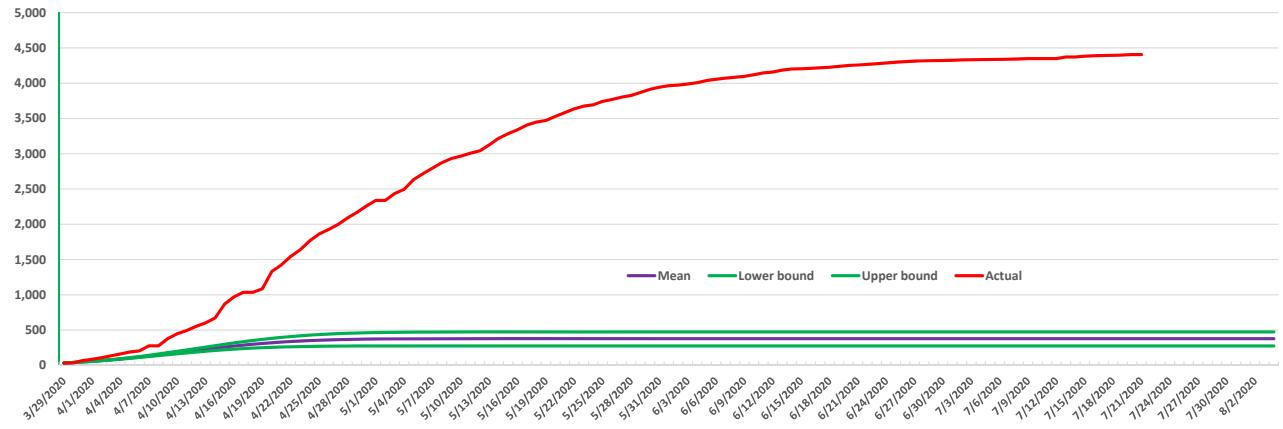
KANSAS STATE
UNIVERSITY | Agricultural Economics

New Jersey COVID 19 Cumulative Death Projections



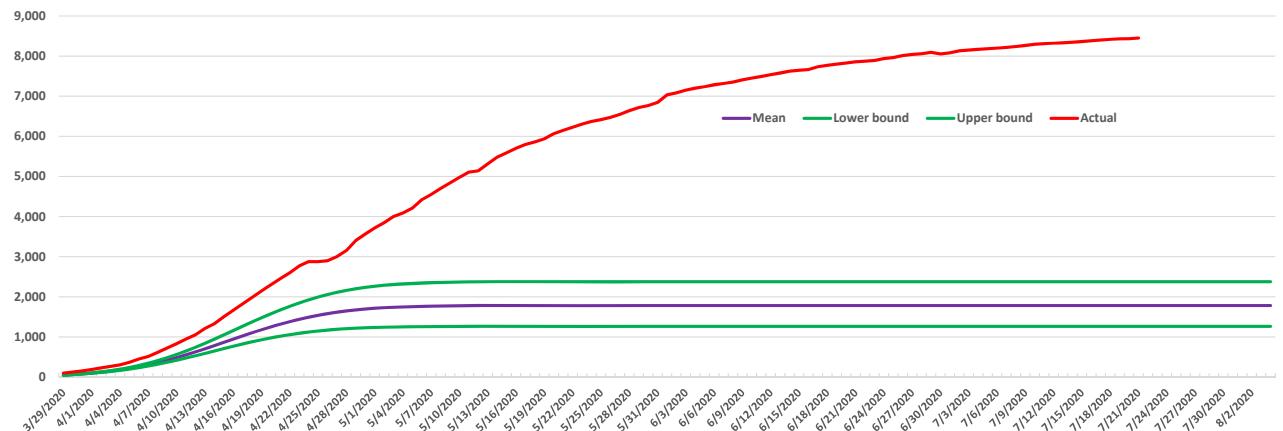
KANSAS STATE
UNIVERSITY | Agricultural Economics

Connecticut COVID 19 Cumulative Death Projections



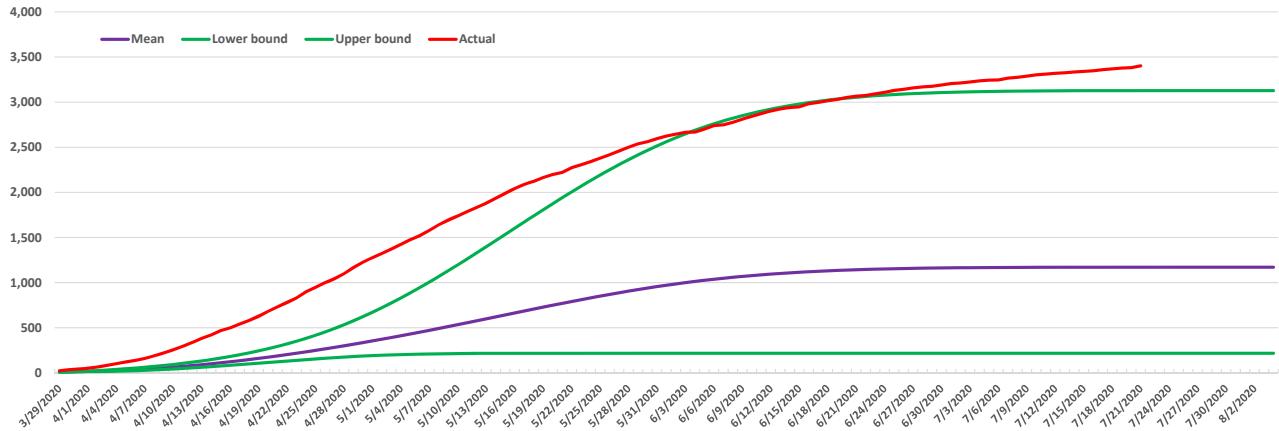
KANSAS STATE
UNIVERSITY | Agricultural Economics

Massachusetts COVID 19 Cumulative Death Projections



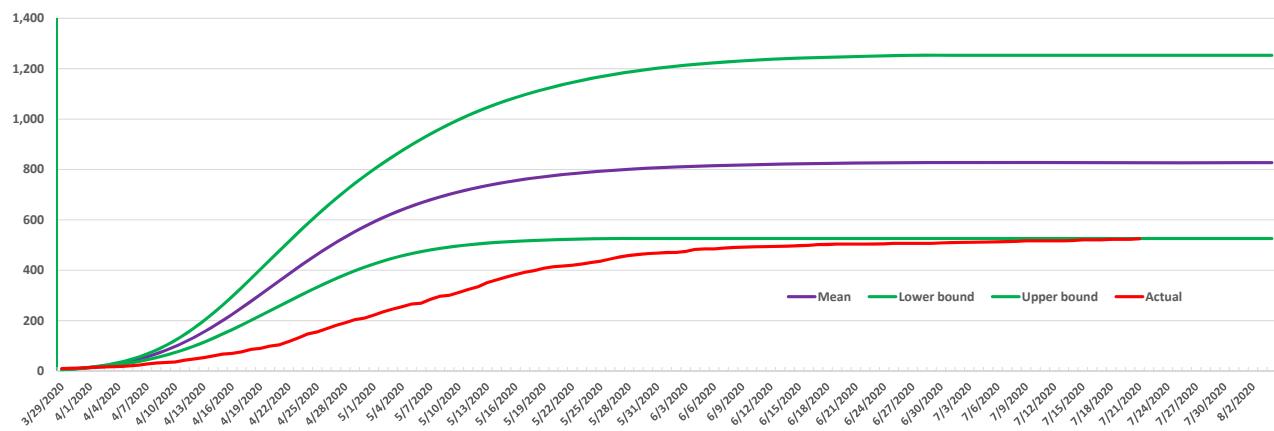
KANSAS STATE
UNIVERSITY | Agricultural Economics

Maryland COVID 19 Daily Death Projections March 26



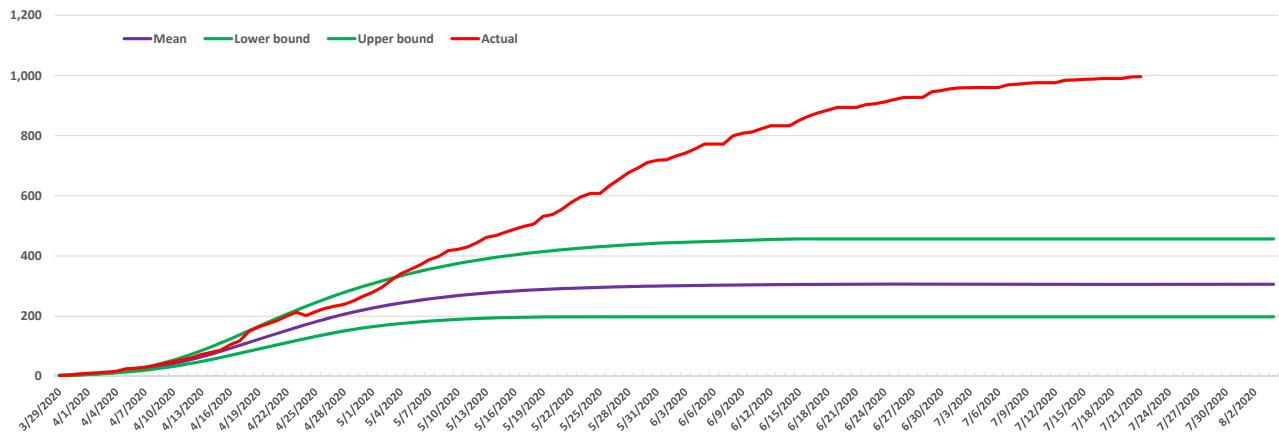
KANSAS STATE
UNIVERSITY | Agricultural Economics

Delaware COVID 19 Cumulative Death Projections



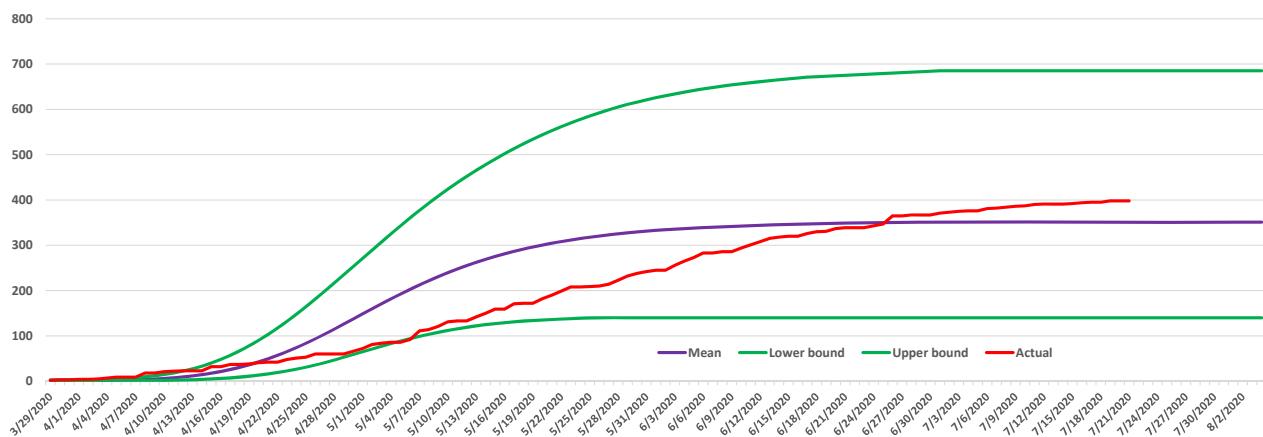
KANSAS STATE
UNIVERSITY | Agricultural Economics

Rhode Island COVID 19 Cumulative Death Projections March 26



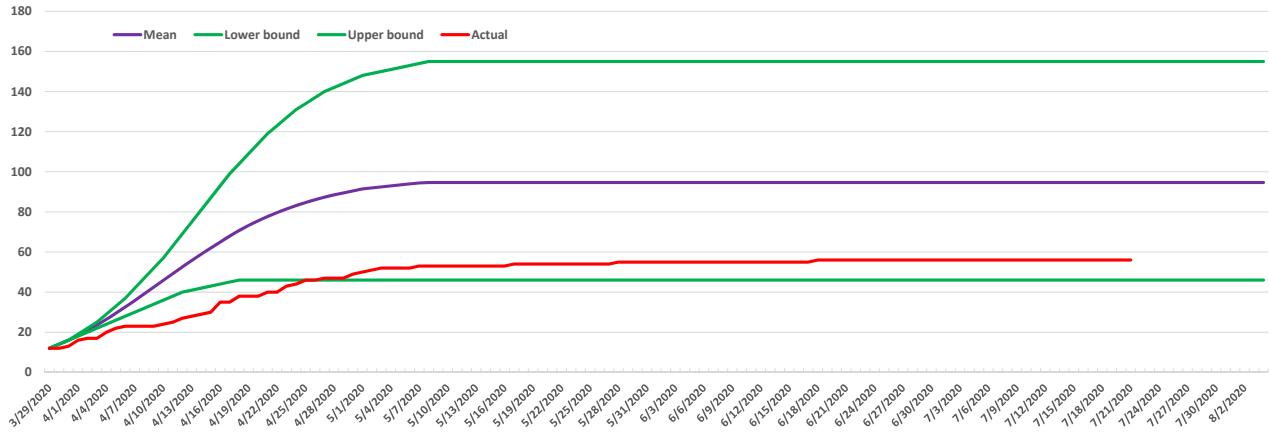
KANSAS STATE
UNIVERSITY | Agricultural Economics

New Hampshire COVID 19 Cumulative Death Projections



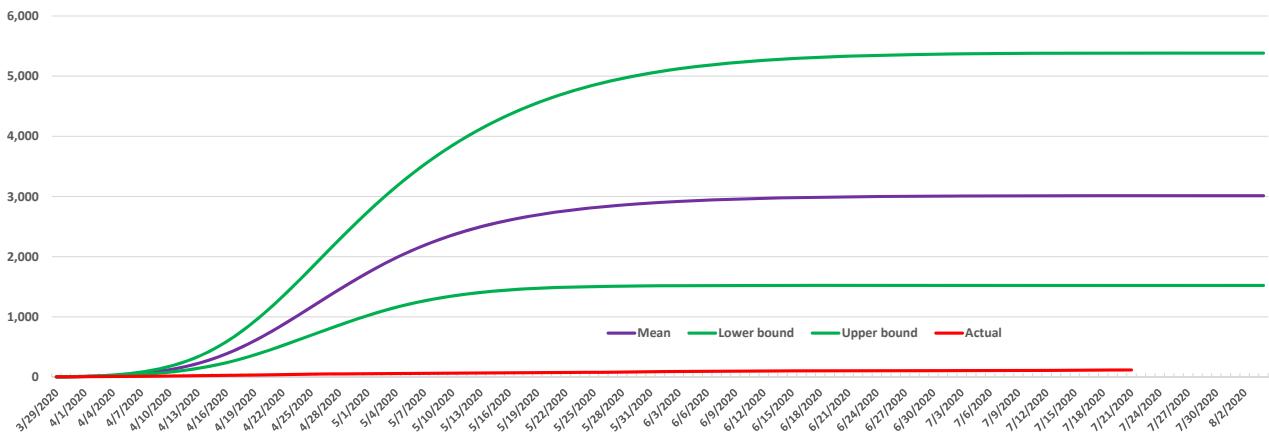
KANSAS STATE
UNIVERSITY | Agricultural Economics

Vermont COVID 19 Cumulative Death Projections March 26



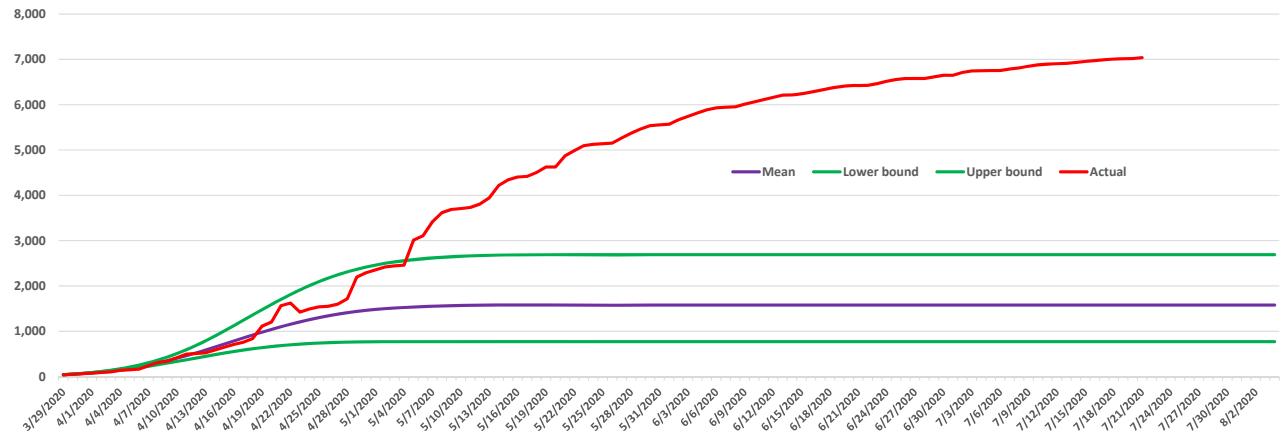
KANSAS STATE
UNIVERSITY | Agricultural Economics

Maine COVID 19 Cumulative Death Projections



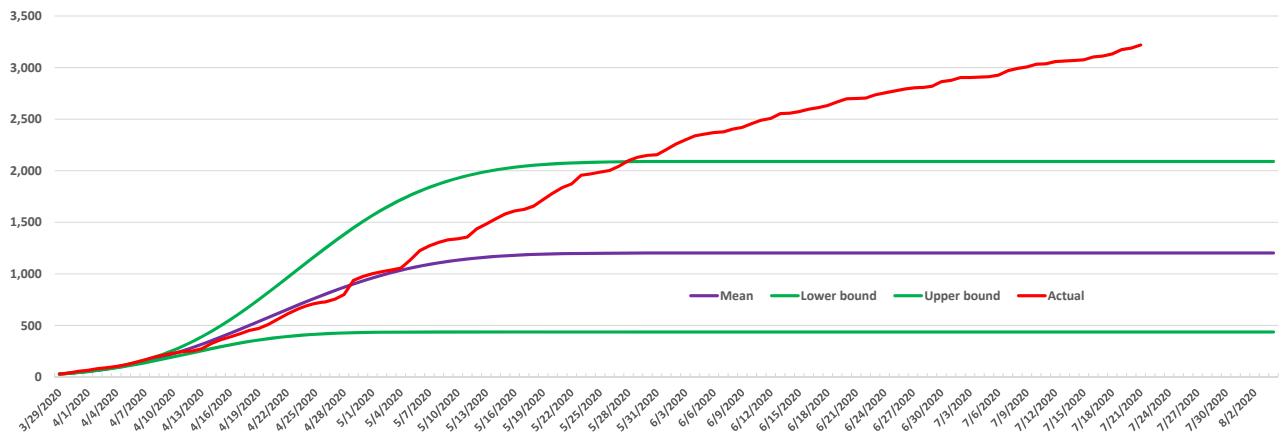
KANSAS STATE
UNIVERSITY | Agricultural Economics

Pennsylvania COVID 19 Cumulative Death Projections



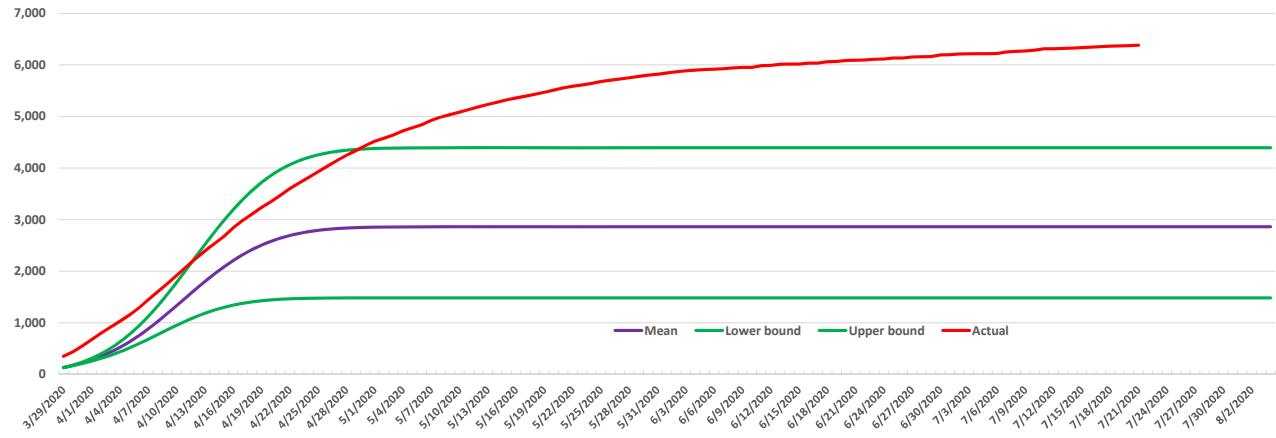
KANSAS STATE
UNIVERSITY | Agricultural Economics

Ohio COVID 19 Cumulative Death Projections March 26



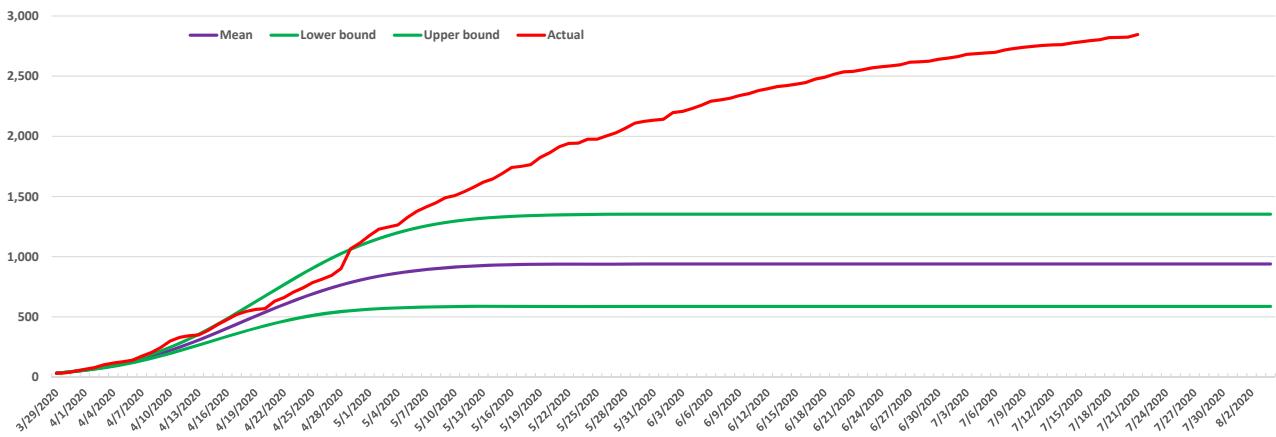
KANSAS STATE
UNIVERSITY | Agricultural Economics

Michigan COVID 19 Cumulative Death Projections



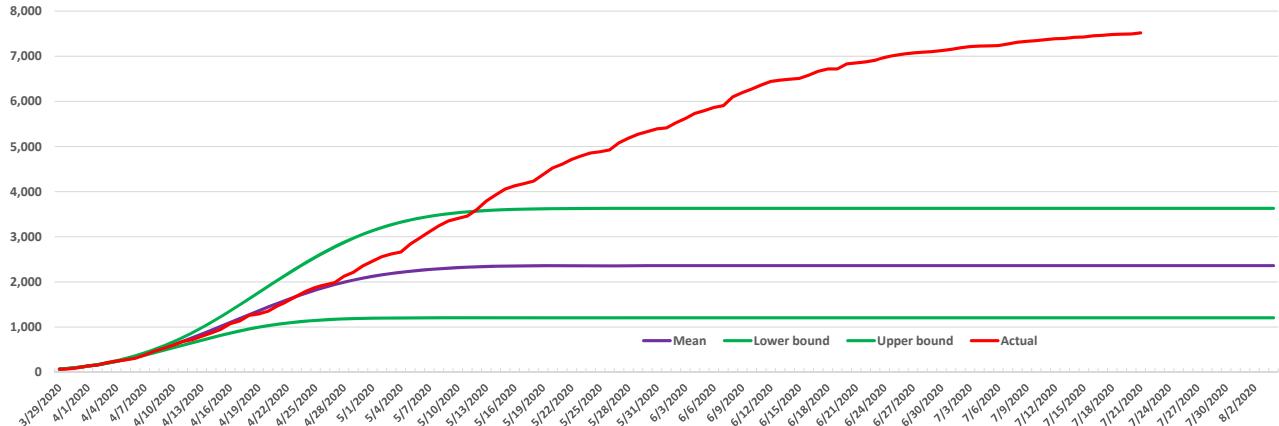
KANSAS STATE
UNIVERSITY | Agricultural Economics

Indiana COVID 19 Cumulative Death Projections March 26



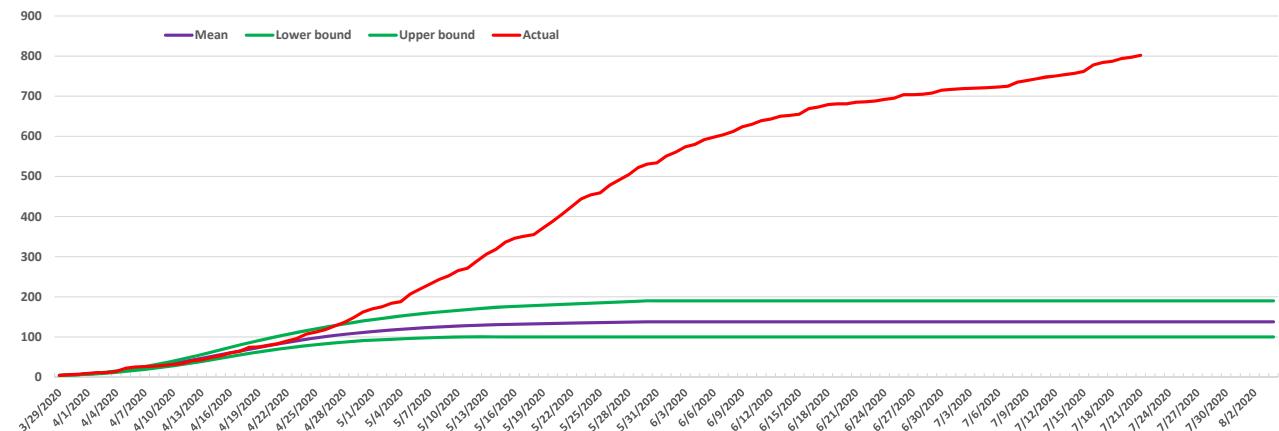
KANSAS STATE
UNIVERSITY | Agricultural Economics

Illinois COVID 19 Cumulative Death Projections March 26



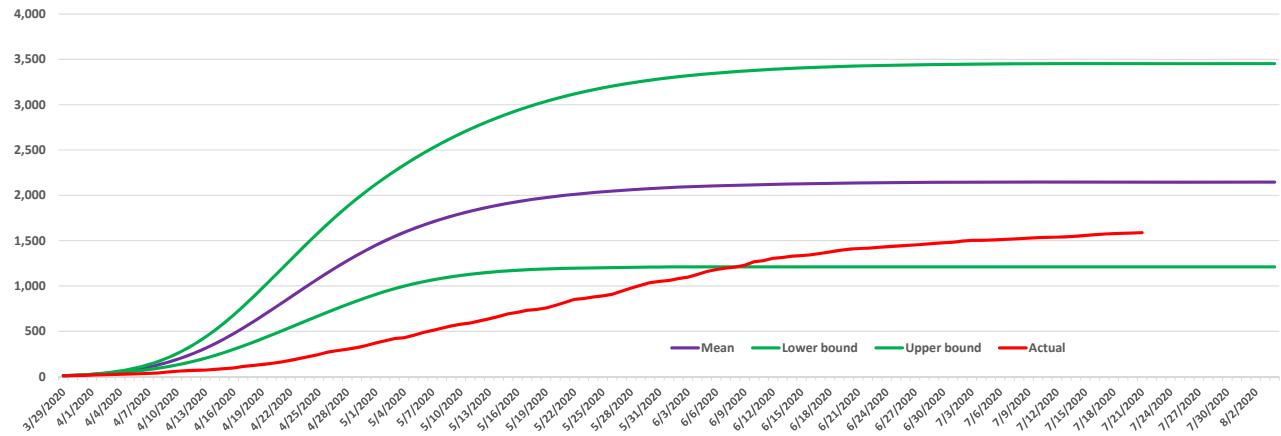
KANSAS STATE
UNIVERSITY | Agricultural Economics

Iowa COVID 19 Daily Death Projections March 26



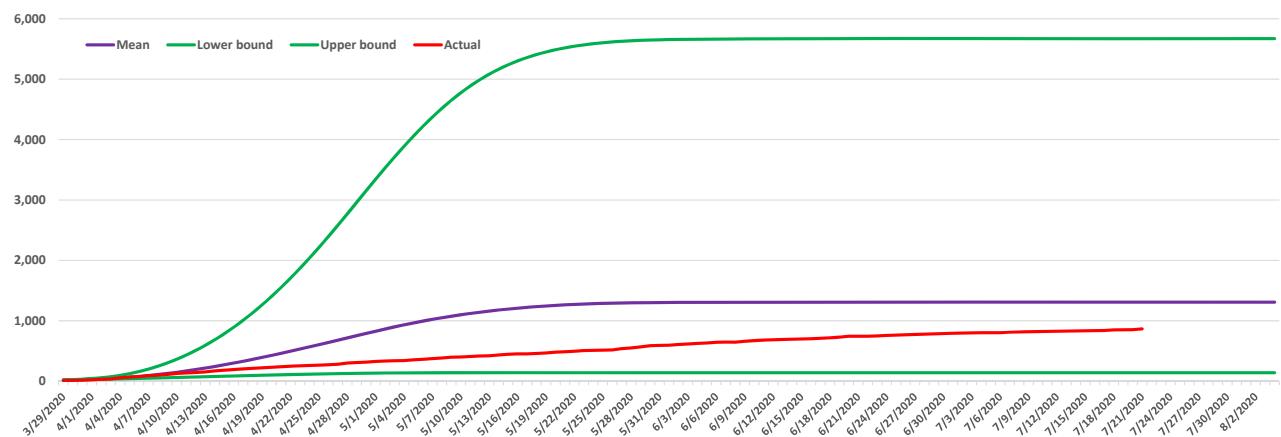
KANSAS STATE
UNIVERSITY | Agricultural Economics

Minnesota COVID 19 Cumulative Death Projections



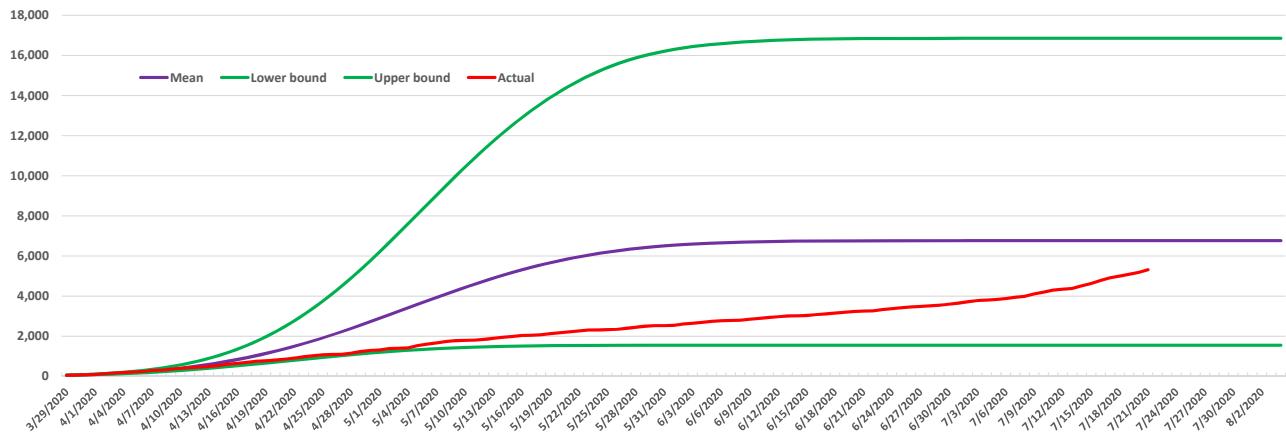
KANSAS STATE
UNIVERSITY | Agricultural Economics

Wisconsin COVID 19 Cumulative Death Projections



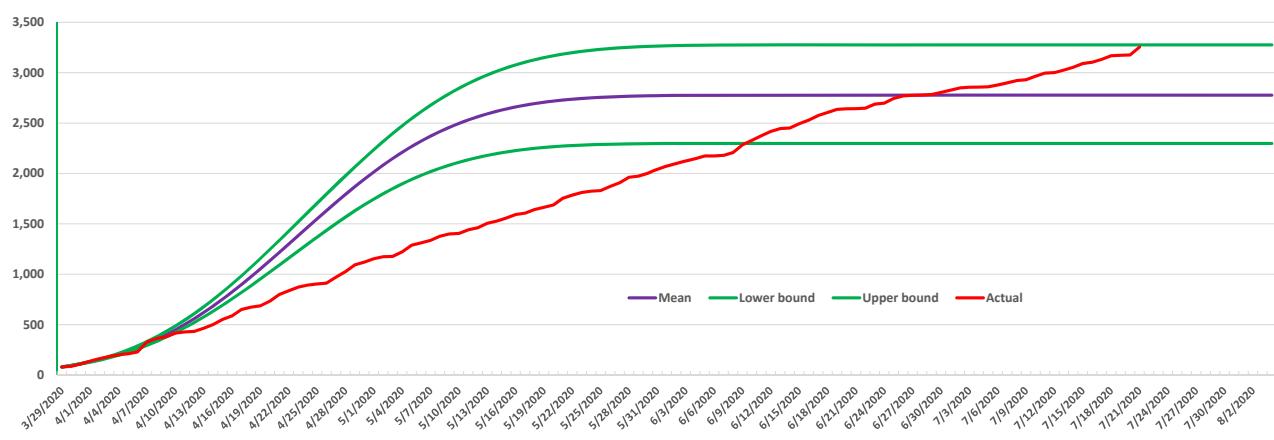
KANSAS STATE
UNIVERSITY | Agricultural Economics

Florida COVID 19 Cumulative Death Projections March 26



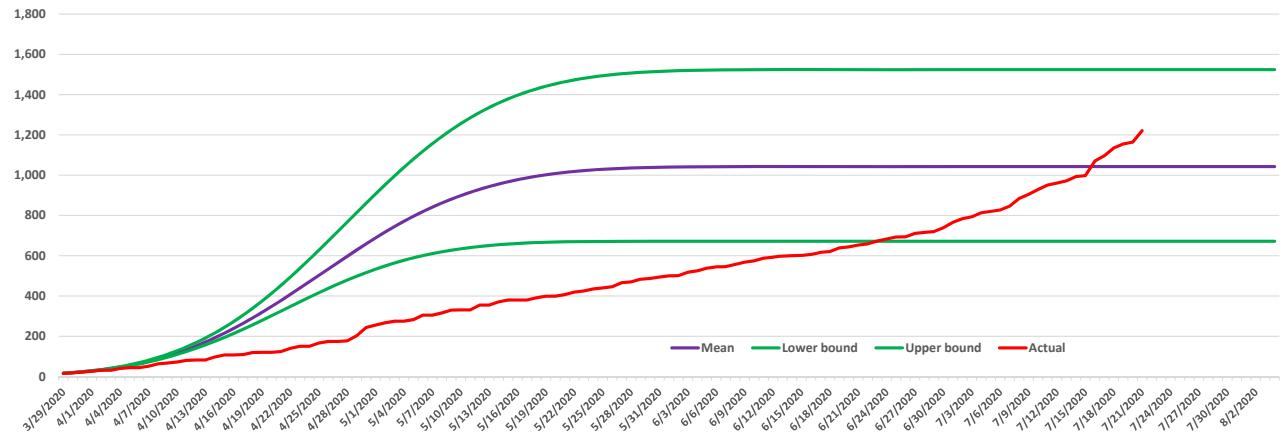
KANSAS STATE
UNIVERSITY | Agricultural Economics

Georgia COVID 19 Cumulative Death Projections



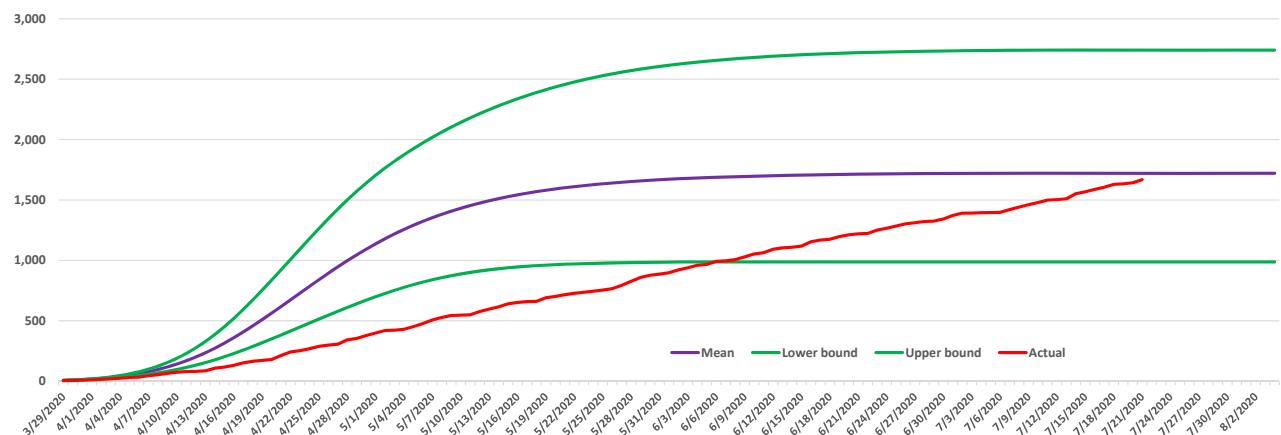
KANSAS STATE
UNIVERSITY | Agricultural Economics

South Carolina COVID 19 Cumulative Death Projections



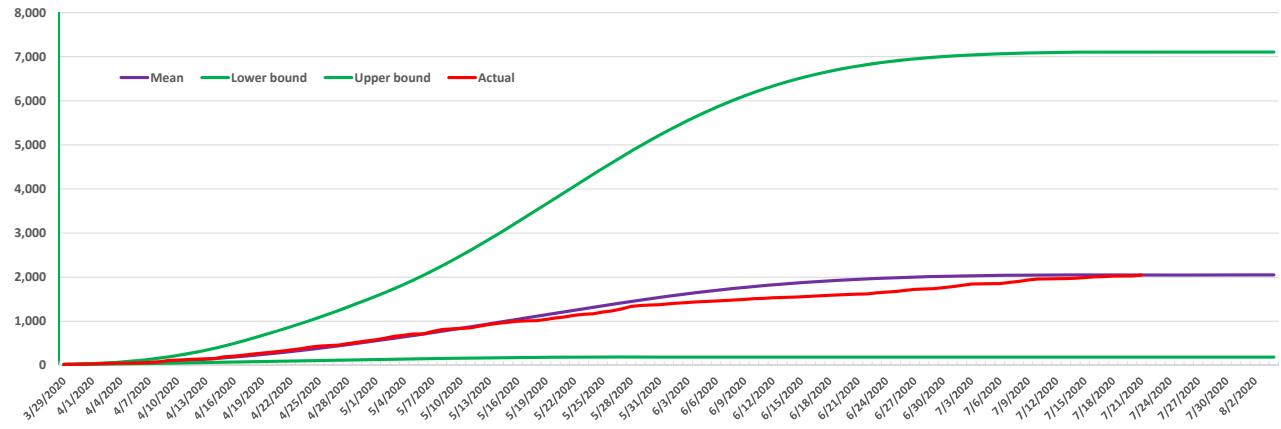
KANSAS STATE
UNIVERSITY | Agricultural Economics

North Carolina COVID 19 Cumulative Death Projections



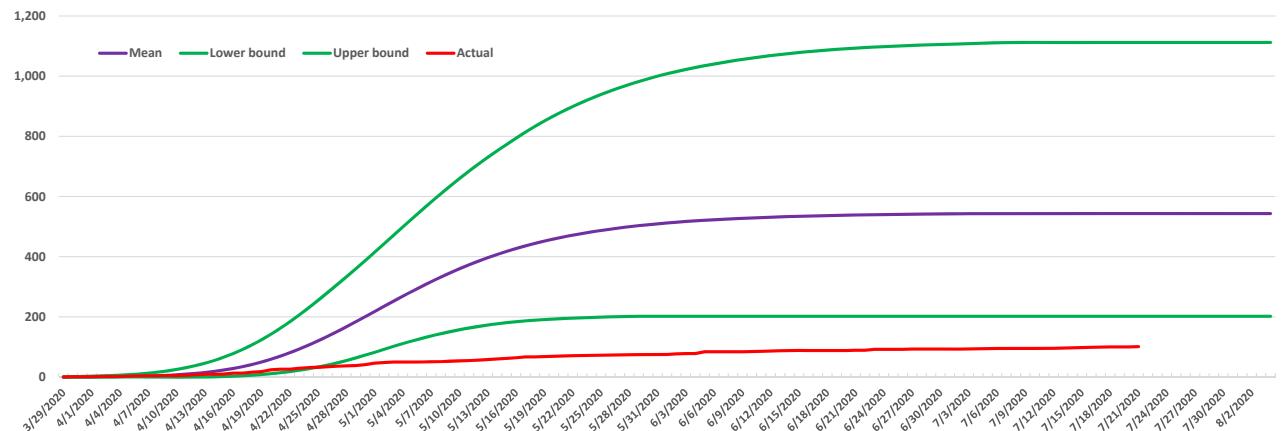
KANSAS STATE
UNIVERSITY | Agricultural Economics

Virginia COVID 19 Cumulative Death Projections



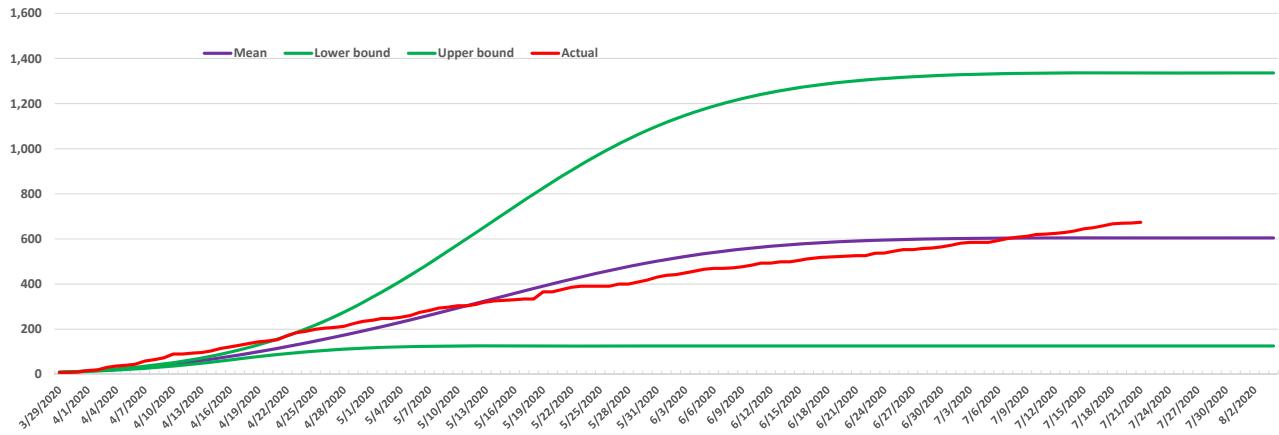
KANSAS STATE
UNIVERSITY | Agricultural Economics

West Virginia COVID 19 Cumulative Death Projections



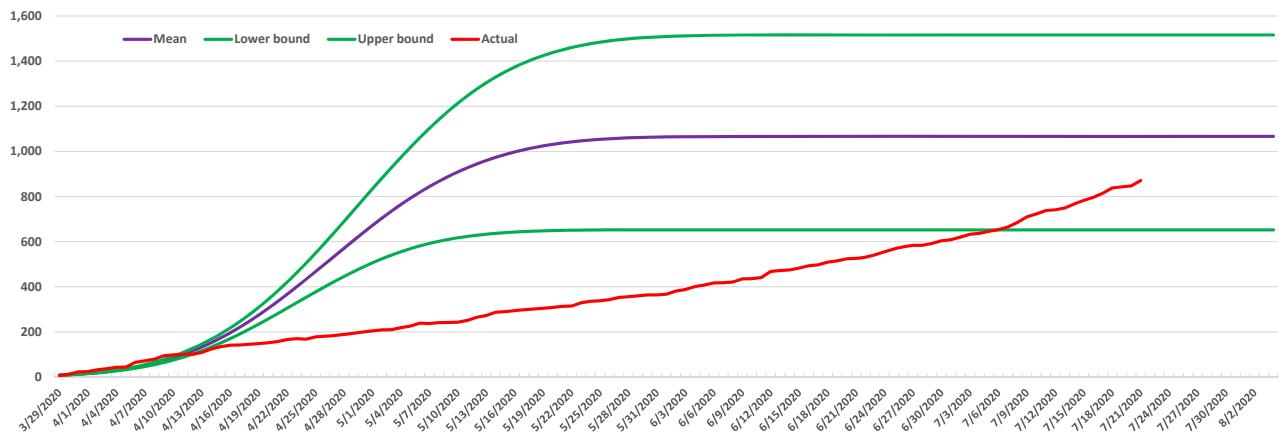
KANSAS STATE
UNIVERSITY | Agricultural Economics

Kentucky COVID 19 Cumulative Death Projections March 26



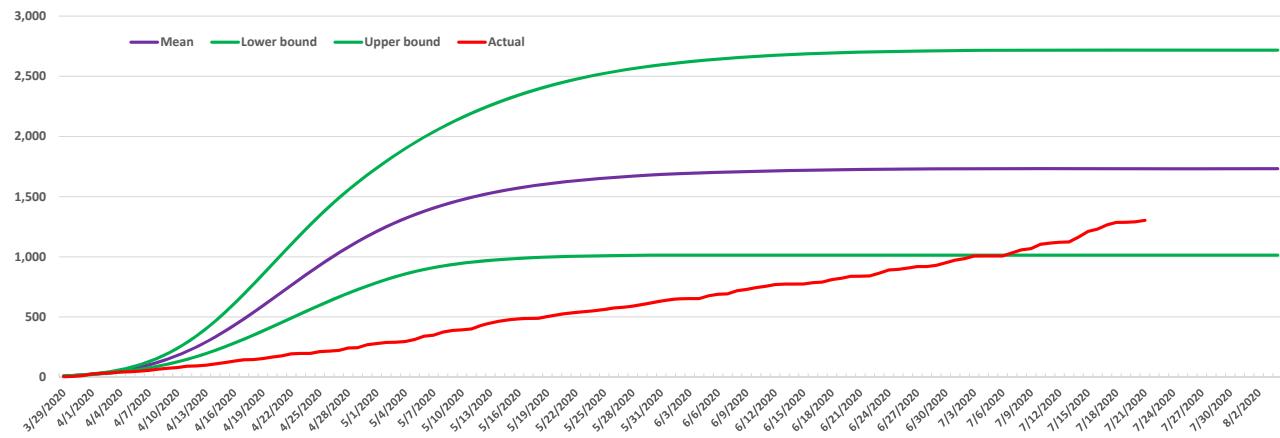
KANSAS STATE
UNIVERSITY | Agricultural Economics

Tennessee COVID 19 Cumulative Death Projections March 26



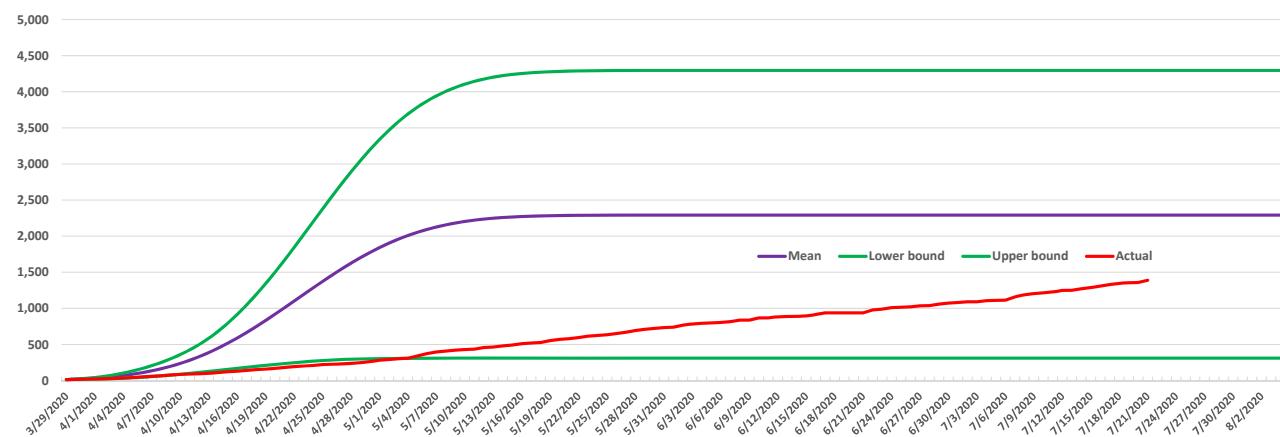
KANSAS STATE
UNIVERSITY | Agricultural Economics

Alabama COVID 19 Cumulative Death Projections March 26



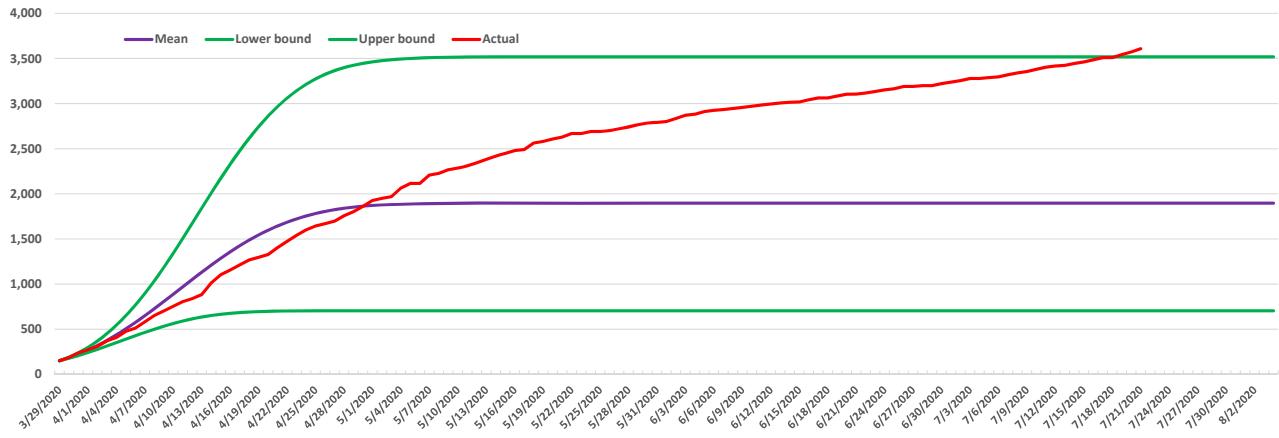
KANSAS STATE
UNIVERSITY | Agricultural Economics

Mississippi COVID 19 Daily Death Projections March 26



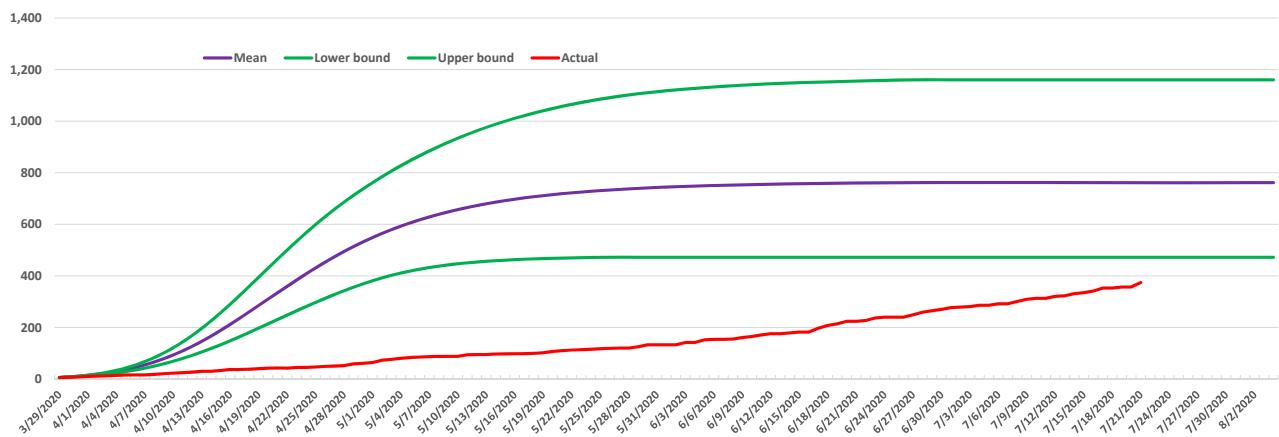
KANSAS STATE
UNIVERSITY | Agricultural Economics

Louisiana COVID 19 Daily Death Projections March 26



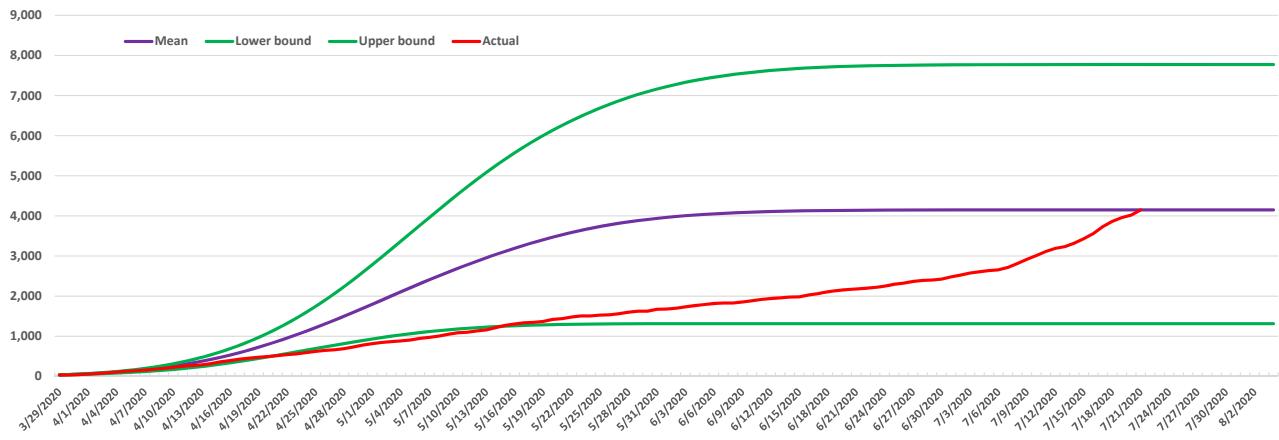
KANSAS STATE
UNIVERSITY | Agricultural Economics

Arkansas COVID 19 Cumulative Death Projections March 26



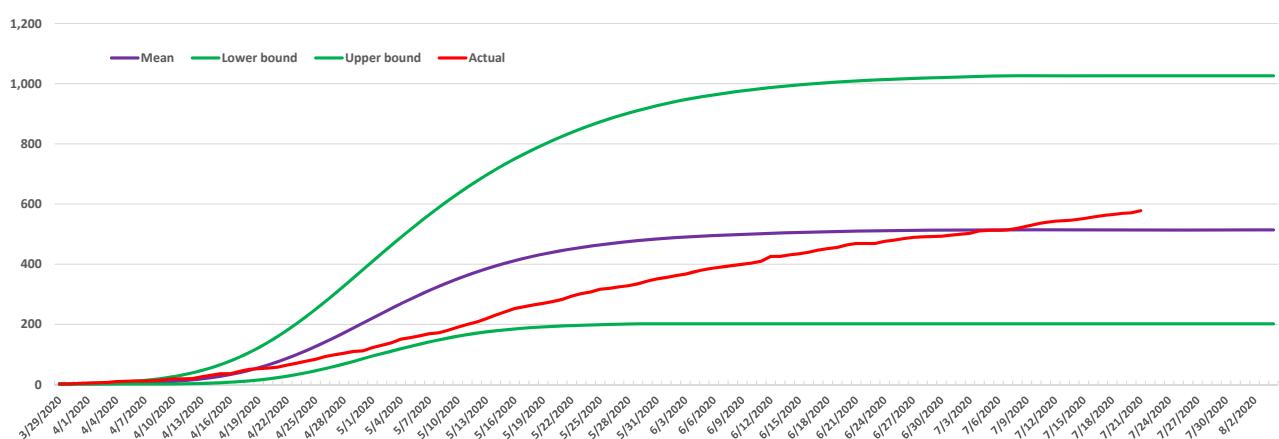
KANSAS STATE
UNIVERSITY | Agricultural Economics

Texas COVID 19 Daily Death Projections March 26



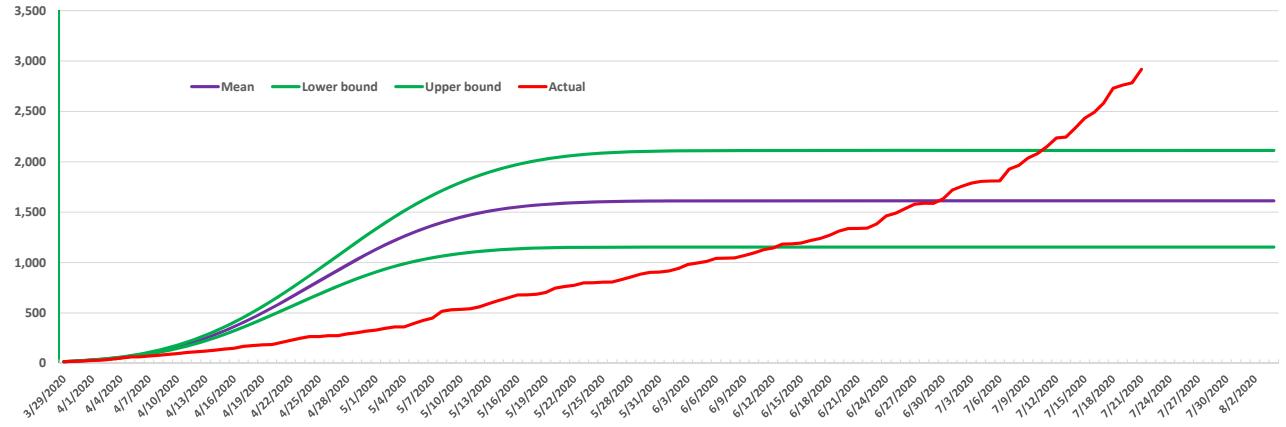
KANSAS STATE
UNIVERSITY | Agricultural Economics

New Mexico COVID 19 Daily Death Projections March 26



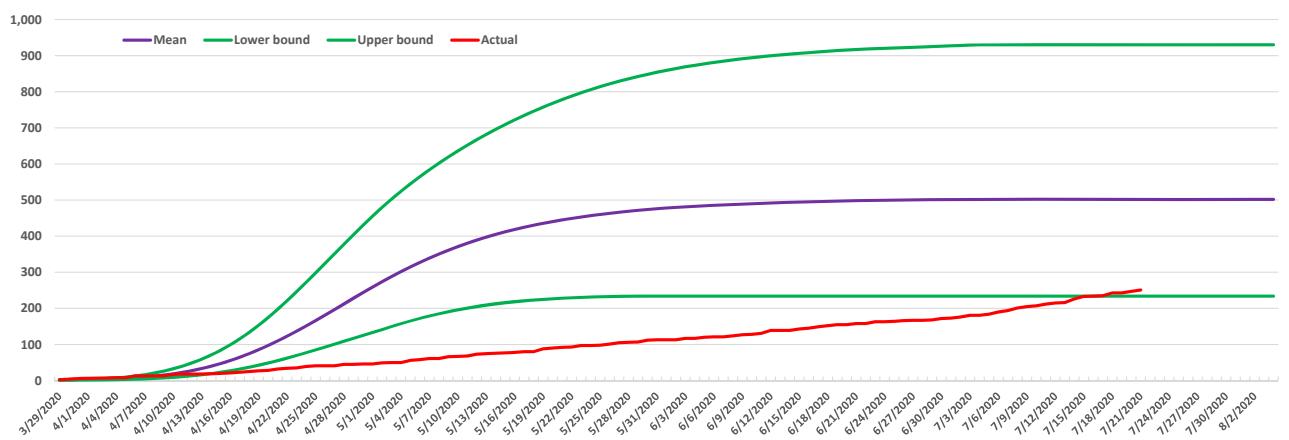
KANSAS STATE
UNIVERSITY | Agricultural Economics

Arizona COVID 19 Cumulative Death Projections



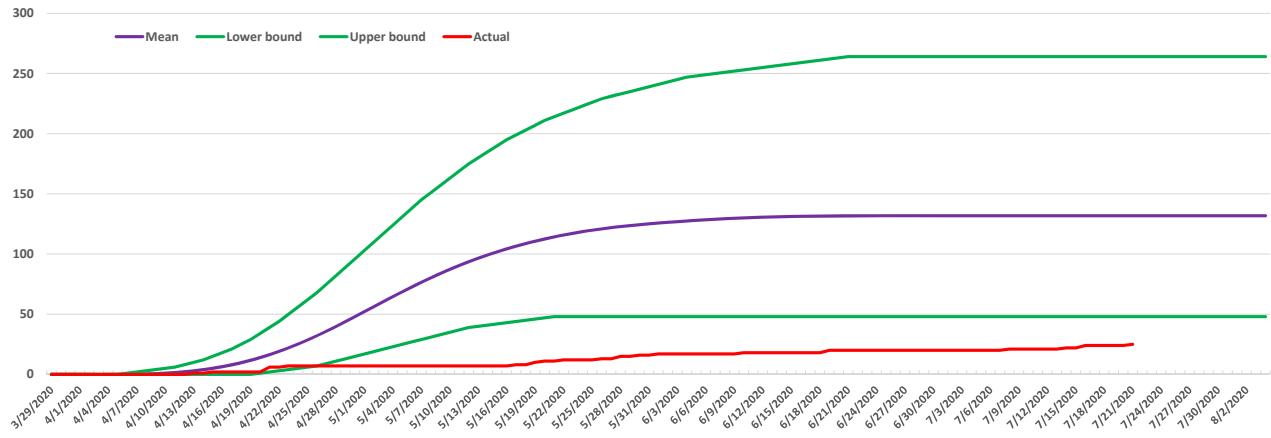
KANSAS STATE
UNIVERSITY | Agricultural Economics

Utah COVID 19 Daily Death Projections March 26



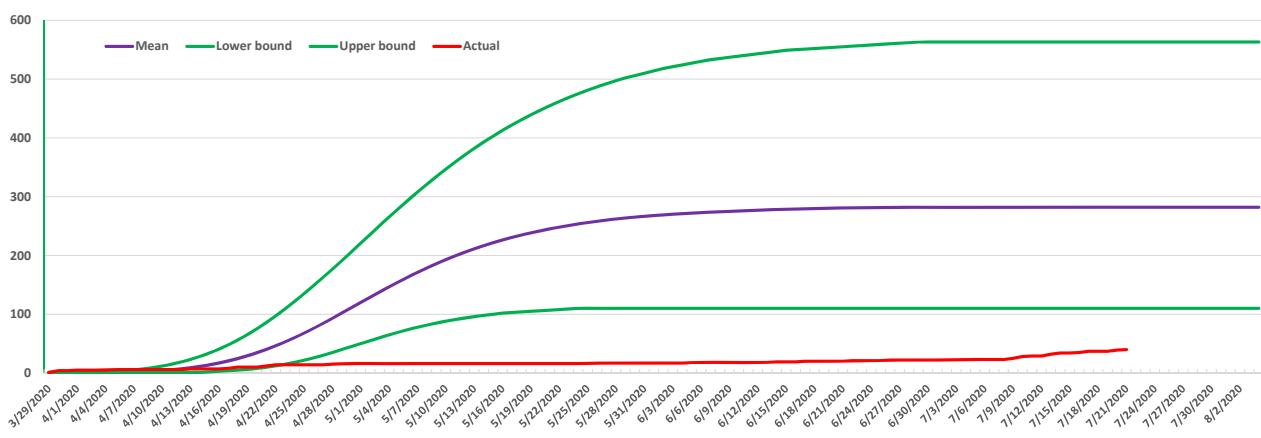
KANSAS STATE
UNIVERSITY | Agricultural Economics

Wyoming COVID 19 Cumulative Death Projections March 26



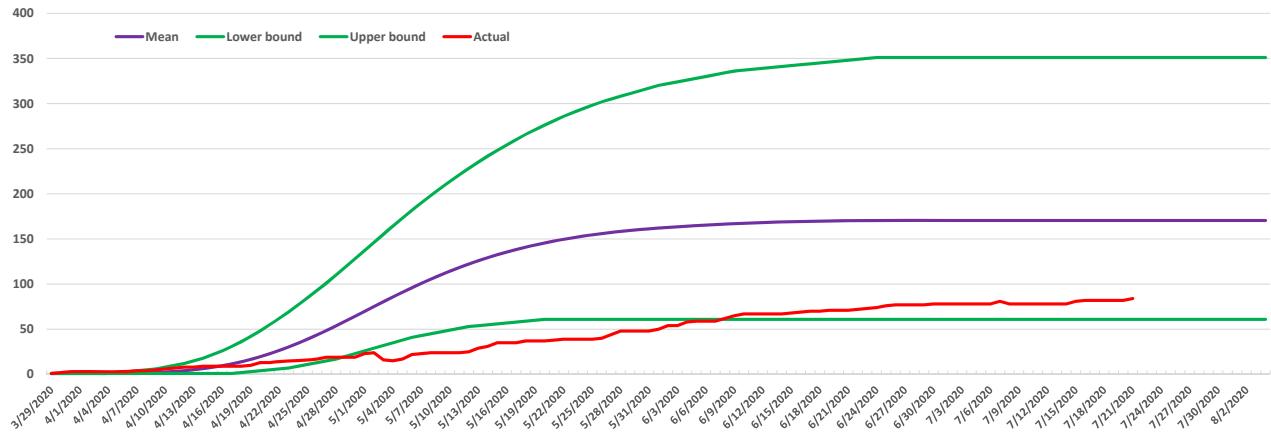
KANSAS STATE
UNIVERSITY | Agricultural Economics

Montana COVID 19 Cumulative Death Projections



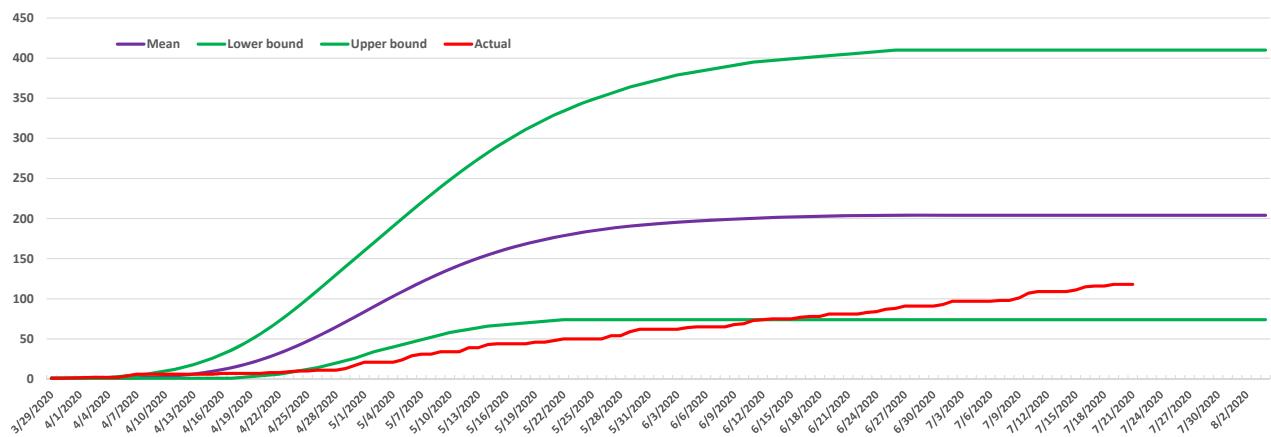
KANSAS STATE
UNIVERSITY | Agricultural Economics

North Dakota COVID 19 Cumulative Death Projections March 26



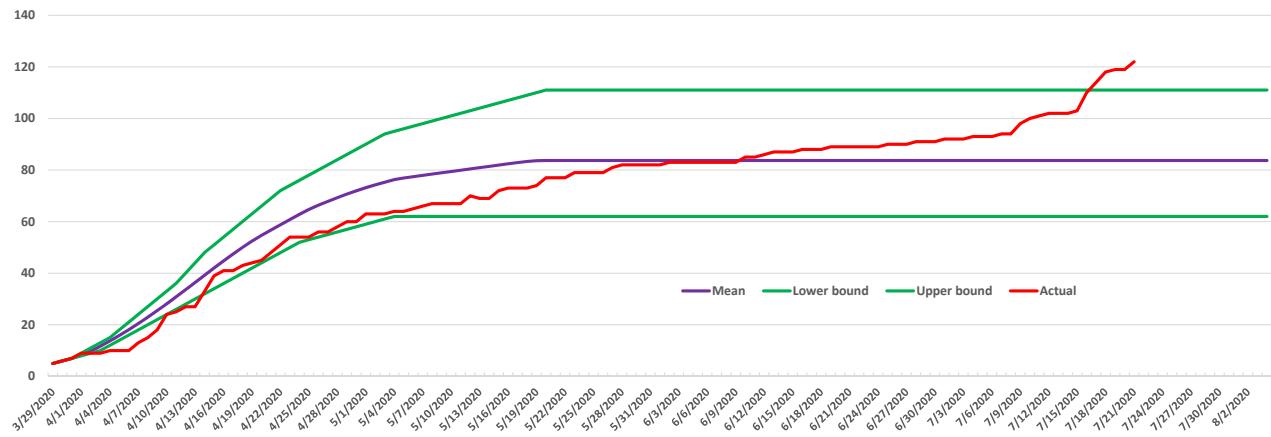
KANSAS STATE
UNIVERSITY | Agricultural Economics

South Dakota COVID 19 Daily Death Projections March 26



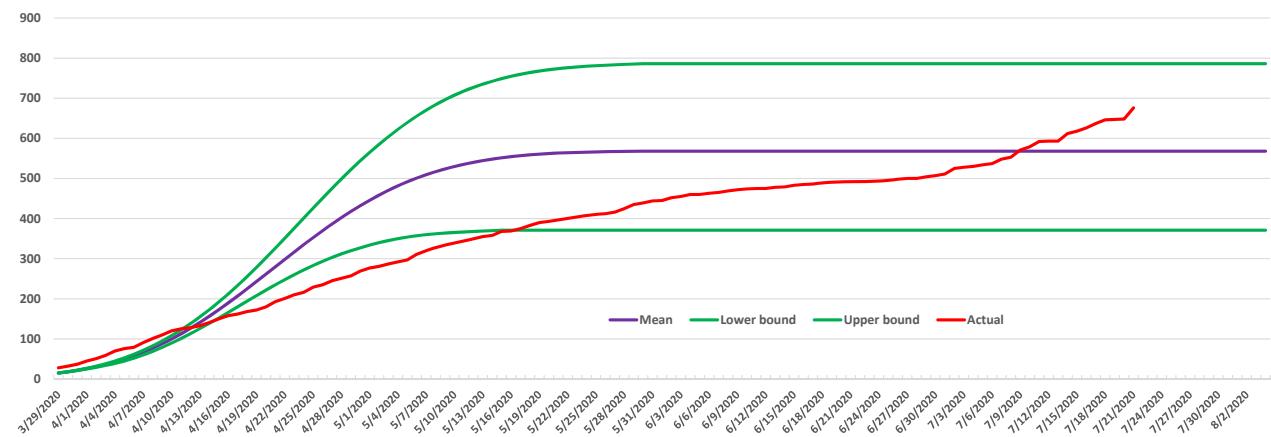
KANSAS STATE
UNIVERSITY | Agricultural Economics

Idaho COVID 19 Cumulative Death Projections March 26



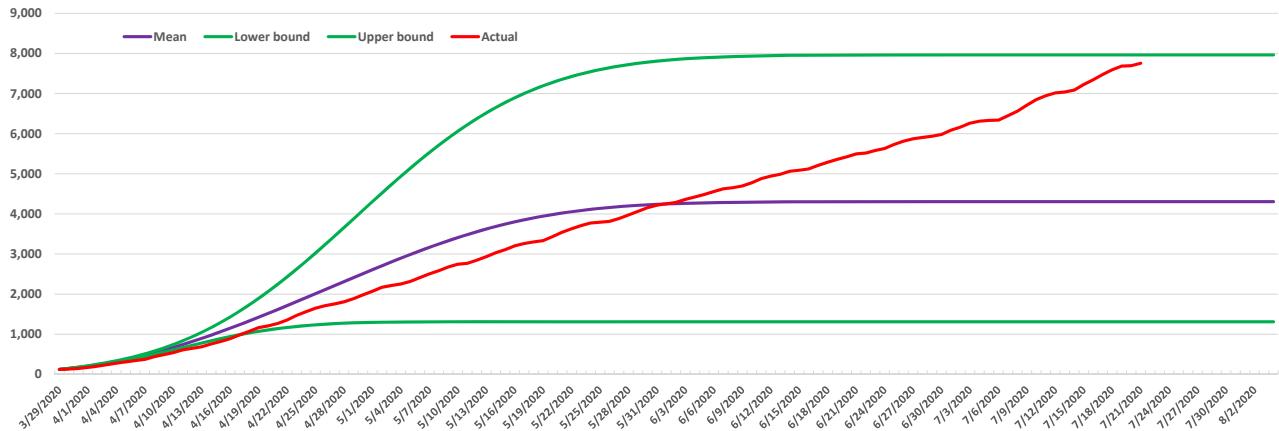
KANSAS STATE
UNIVERSITY | Agricultural Economics

Nevada COVID 19 Cumulative Death Projections



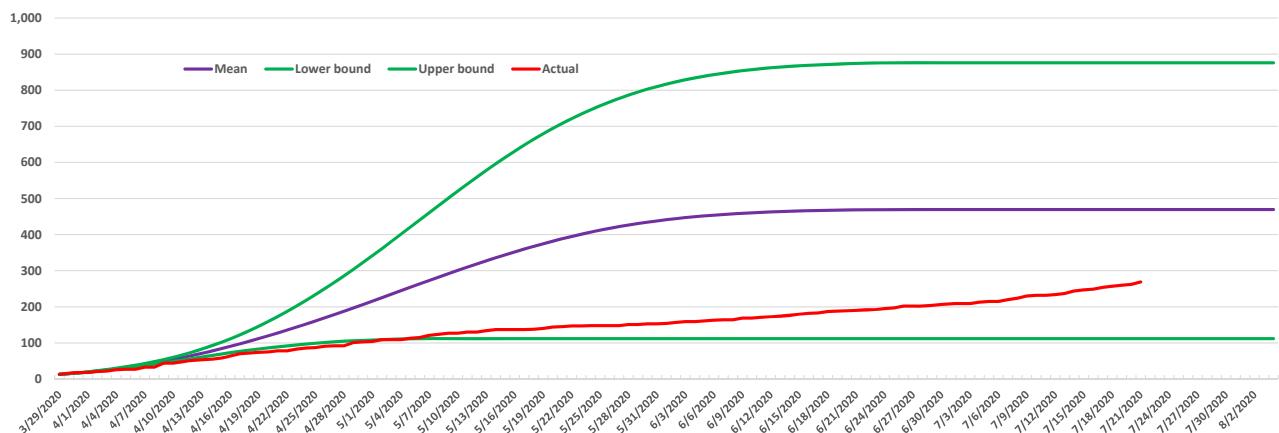
KANSAS STATE
UNIVERSITY | Agricultural Economics

California COVID 19 Cumulative Death Projections March 26



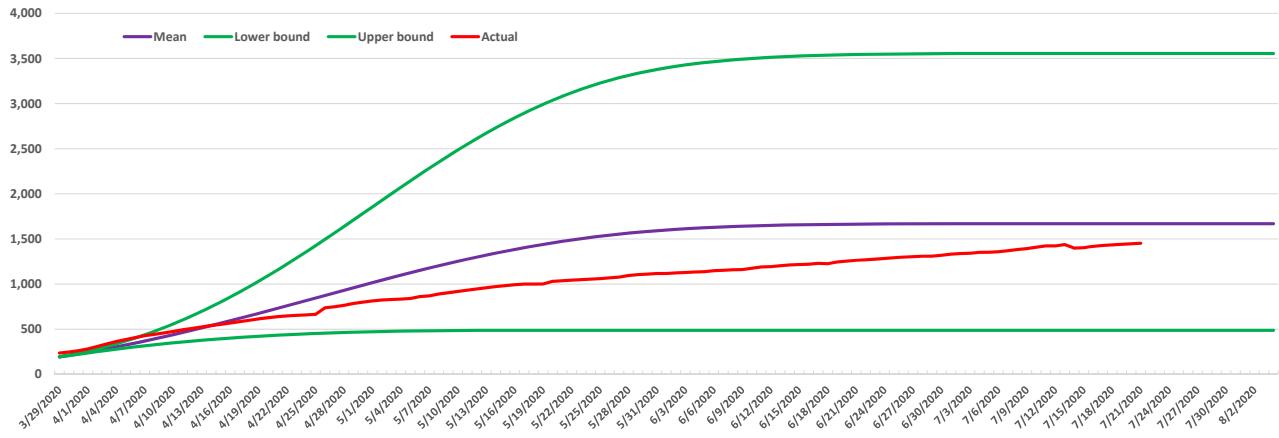
KANSAS STATE
UNIVERSITY | Agricultural Economics

Oregon COVID 19 Cumulative Death Projections March 26



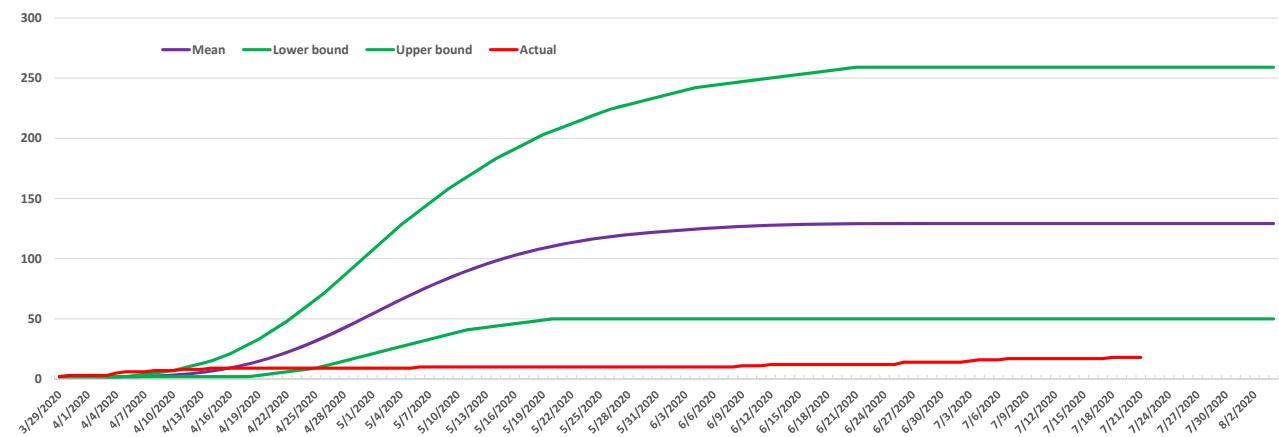
KANSAS STATE
UNIVERSITY | Agricultural Economics

Washington COVID 19 Cumulative Death Projections March 26



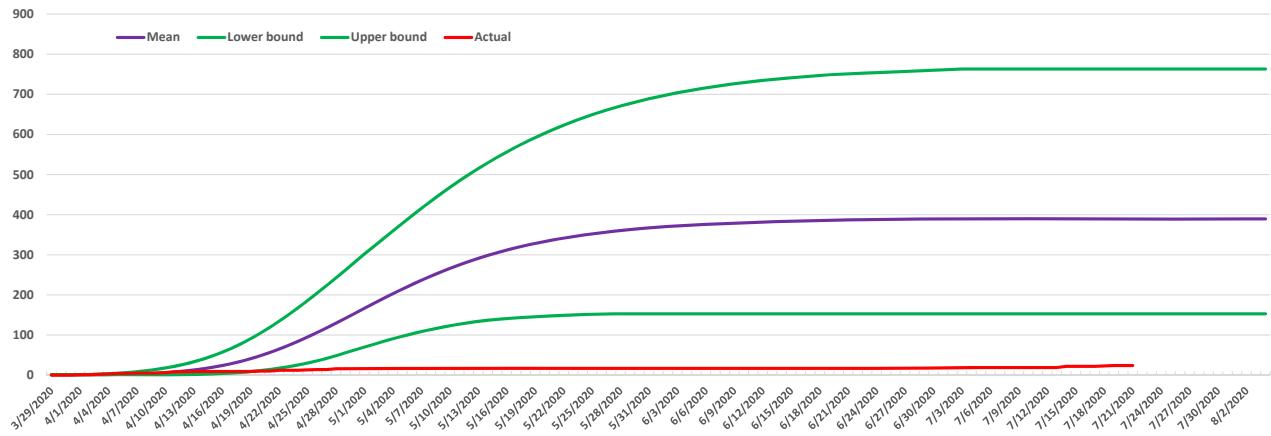
KANSAS STATE
UNIVERSITY | Agricultural Economics

Alaska COVID 19 Cumulative Death Projections March 26



KANSAS STATE
UNIVERSITY | Agricultural Economics

Hawaii COVID 19 Daily Death Projections March 26



KANSAS STATE
UNIVERSITY | Agricultural Economics