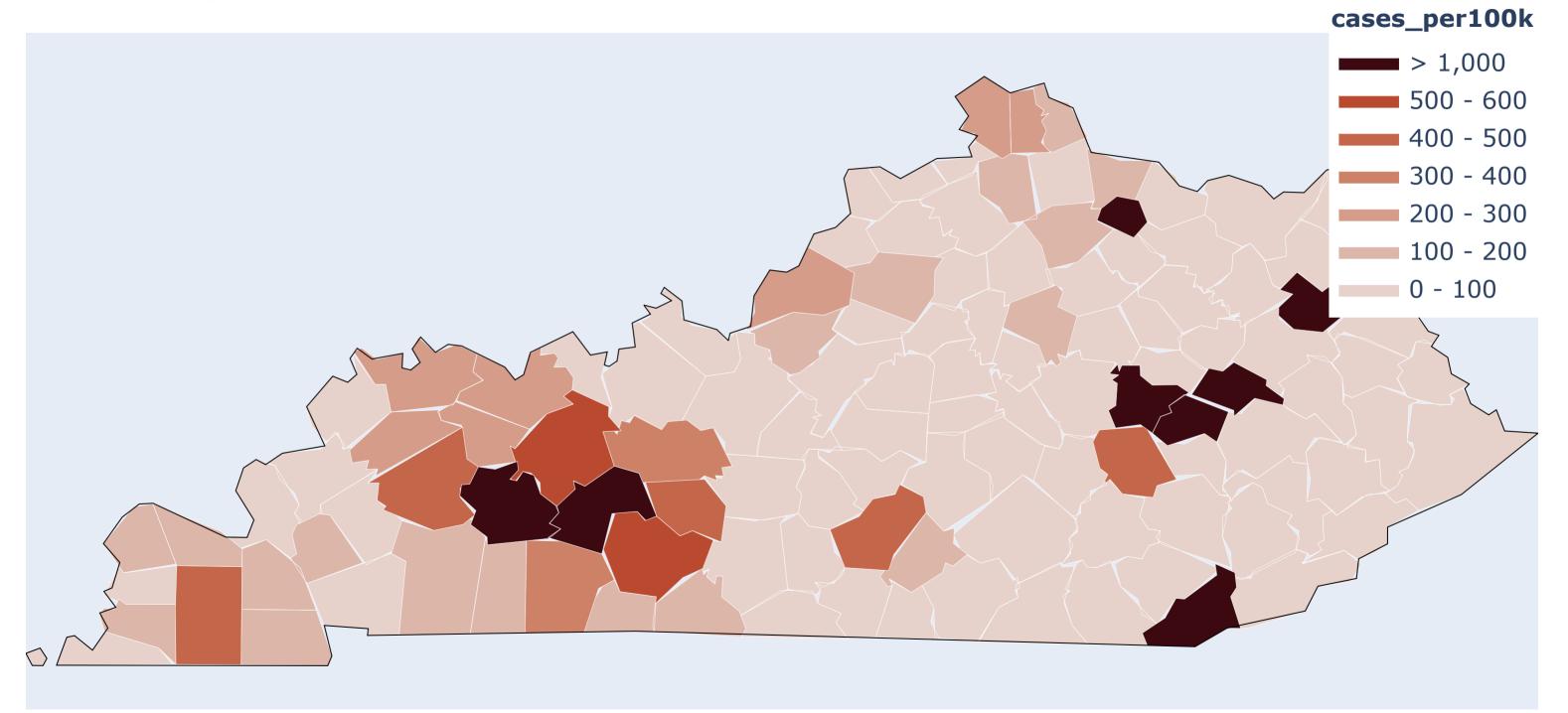
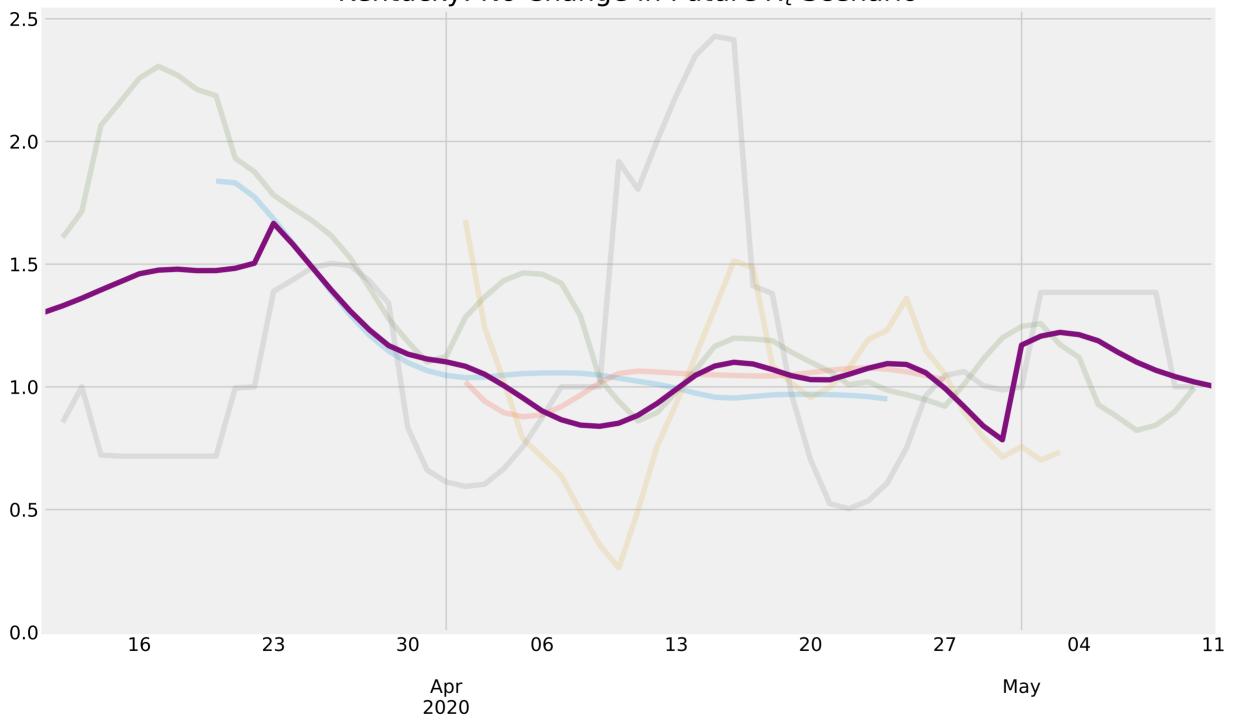
### Kentucky: COVID-19 Cases Per 100k Residents



### Reproduction Rate $(R_t)$ Estimates Kentucky: No Change in Future $R_t$ Scenario



rt\_deaths\_daily
rt\_hosp\_concur
rt\_hosp\_admits
rt\_cases\_daily
rt\_pos\_test\_share\_daily
rt\_joint\_est

Parameters Used

 $D_{incubation}: 3.0$   $D_{infectious}: 4.0$  $D_{tohospital}: 7.0$ 

 $D_{inhospital}$ : 11.0  $D_{tildeath}$ : 17.0

 $Rate_{Hospitalization}: 4.00\%$ 

Rate<sub>ICU</sub>: 31.71% Rate<sub>Ventilator</sub>: 40.00% Rate<sub>Mortality</sub>: 1.00%

 $BasicR_0: 1.3$ 

Author: Michael Donnelly (twtr: @donnellymjd)

Chart created on 19 May 2020

#### Simultaneous Infections Forecast Kentucky: No Change in Future $R_t$ Scenario 9,000 2.0 --- Reproduction Factor $(R_t)$ - Right Axis Reference Line: $R_t = 1$ **Exposed Population** Infectious Population 6,750 1.5 $\stackrel{\circ}{\sim}$ $R_t$ Estimate People 4,500 Parameters Used $D_{incubation}: 3.0$ $D_{infectious}$ : 4.0 $D_{tohospital}$ : 7.0 $D_{inhospital}: 11.0$ 2,250 0.5 $D_{tildeath}: 17.0$ Rate<sub>Hospitalization</sub>: 4.00% Rate<sub>ICU</sub>: 31.71% Rate<sub>Ventilator</sub>: 40.00% $Rate_{Mortality}: 1.00\%$ $BasicR_0:1.3$

May

Apr

0.0

Jun

Author: Michael Donnelly (twtr: @donnellymjd)

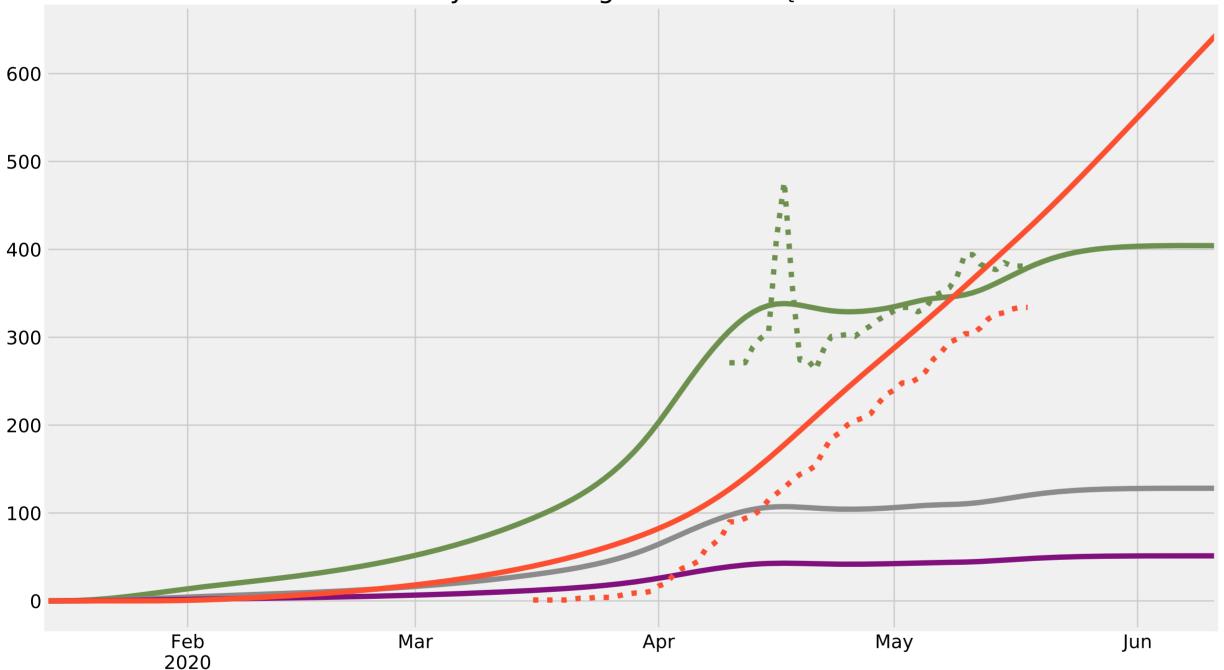
Mar

Chart created on 19 May 2020

Feb

2020

### Hospitalization and Deaths Forecast Kentucky: No Change in Future $R_t$ Scenario



Forecast Concurrent Hospitalizations

Forecast ICU Cases

Forecast Ventilations

Forecast Cumulative Deaths

Reported Concurrent Hospitalizations

Reported Total Deaths

Parameters Used

D<sub>incubation</sub>: 3.0

 $D_{infectious}$ : 4.0  $D_{tohospital}$ : 7.0

D<sub>inhospital</sub>: 11.0

 $D_{tildeath}: 17.0$ 

 $Rate_{Hospitalization}: 4.00\%$ 

Rate<sub>ICU</sub>: 31.71% Rate<sub>Ventilator</sub>: 40.00%

Rate<sub>Mortality</sub>: 1.00%

 $BasicR_0: 1.3$ 

Author: Michael Donnelly (twtr: @donnellymjd)

Chart created on 19 May 2020

Population Overview Forecast Kentucky: No Change in Future  $R_t$  Scenario 4,467,673 100% Forecast Susceptible Population Forecast Deaths Forecast Exposures Forecast Hospitalizations 3,350,755 75% Forecast Infectious Forecast Recoveries Population 2,233,837 50% Parameters Used  $D_{incubation}: 3.0$ D<sub>infectious</sub>: 4.0 D<sub>tohospital</sub>: 7.0  $D_{inhospital}: 11.0$  $D_{tildeath}: 17.0$ 1,116,918 25% Rate<sub>Hospitalization</sub>: 4.00% Rate<sub>ICU</sub>: 31.71% Rate<sub>Ventilator</sub>: 40.00% Rate<sub>Mortality</sub>: 1.00%  $BasicR_0: 1.3$ 

Apr

May

Feb

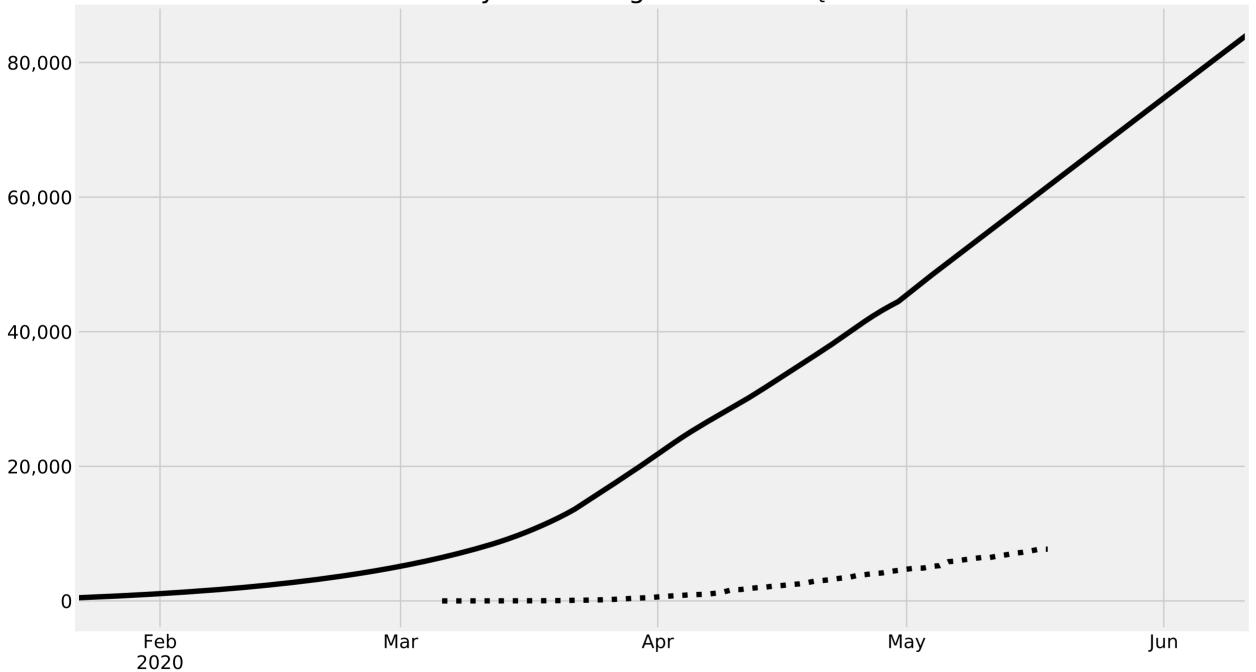
2020

Mar

0%

Jun

#### **Cumulative Infections Forecast** Kentucky: No Change in Future $R_t$ Scenario



Forecast Cumulative Infections • • • Reported Cumulative Infections

Parameters Used

 $D_{incubation}$ : 3.0  $D_{infectious}$ : 4.0  $D_{tohospital}$ : 7.0

 $D_{inhospital}: 11.0$ 

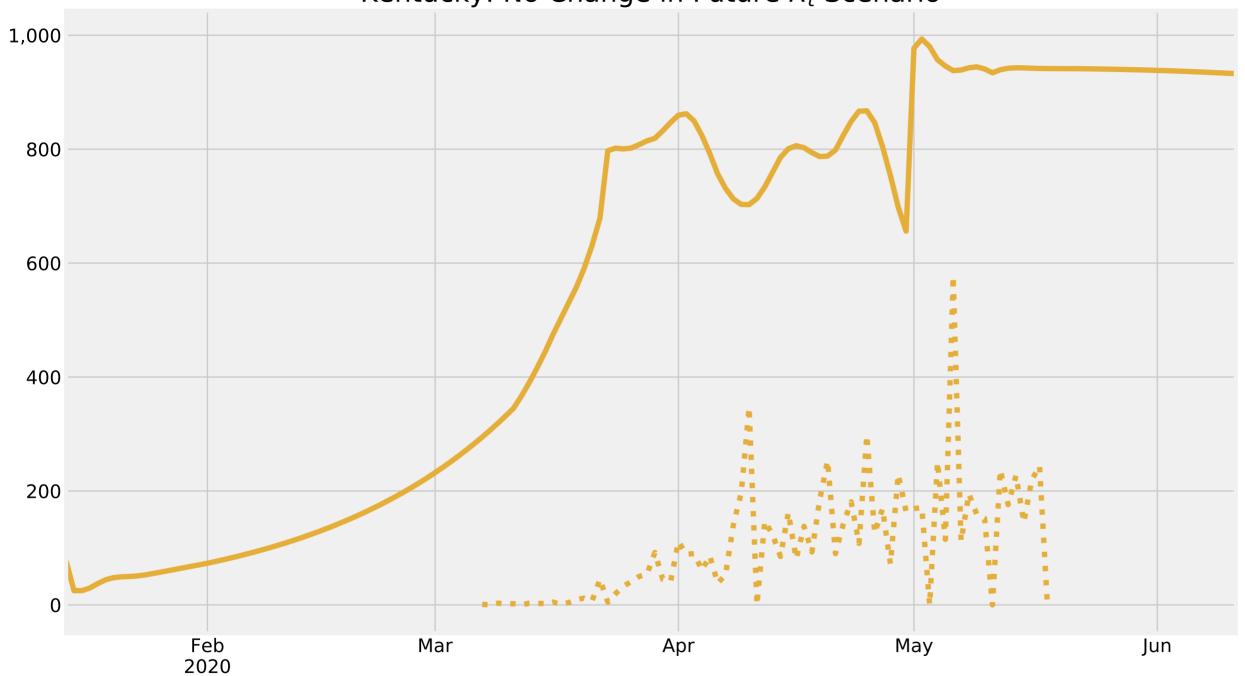
 $D_{tildeath}: 17.0$ 

Rate<sub>Hospitalization</sub>: 4.00%

Rate<sub>ICU</sub>: 31.71% Rate<sub>Ventilator</sub>: 40.00% Rate<sub>Mortality</sub>: 1.00%

 $BasicR_0: 1.3$ 

## Daily Exposures Forecast Kentucky: No Change in Future $R_t$ Scenario



Forecast Daily New Infections (Exposed) Reported Daily New Infections (Exposed)

Parameters Used

 $D_{incubation}$ : 3.0  $D_{infectious}$ : 4.0  $D_{tohospital}$ : 7.0

D<sub>inhospital</sub>: 11.0

 $D_{tildeath}: 17.0$ 

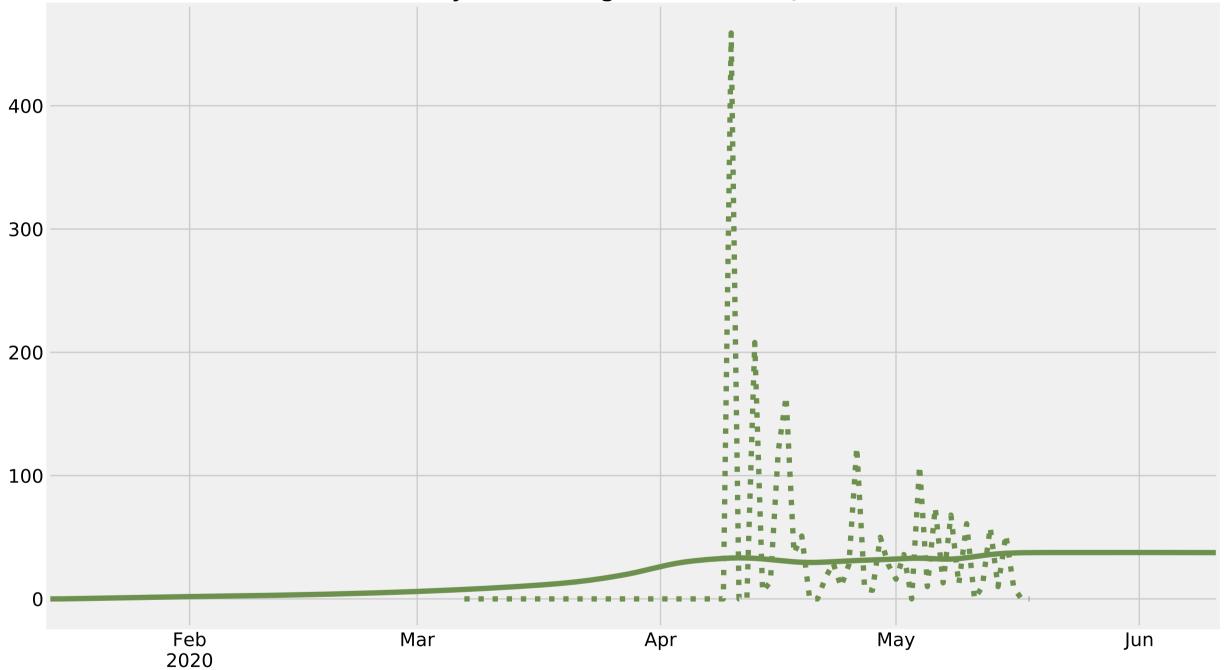
Rate<sub>Hospitalization</sub>: 4.00%

Rate<sub>ICU</sub>: 31.71%

Rate<sub>Ventilator</sub>: 40.00% Rate<sub>Mortality</sub>: 1.00%

 $BasicR_0: 1.3$ 

Daily Hospital Admissions Forecast Kentucky: No Change in Future  $R_t$  Scenario



Forecast Hospital Admissions

Reported Hospital Admissions

Parameters Used

 $D_{incubation}: 3.0$   $D_{infectious}: 4.0$  $D_{tohospital}: 7.0$ 

 $D_{inhospital}: 11.0$ 

 $D_{tildeath}: 17.0$ 

 $Rate_{Hospitalization}: 4.00\%$ 

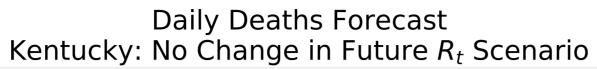
Rate<sub>ICU</sub>: 31.71%

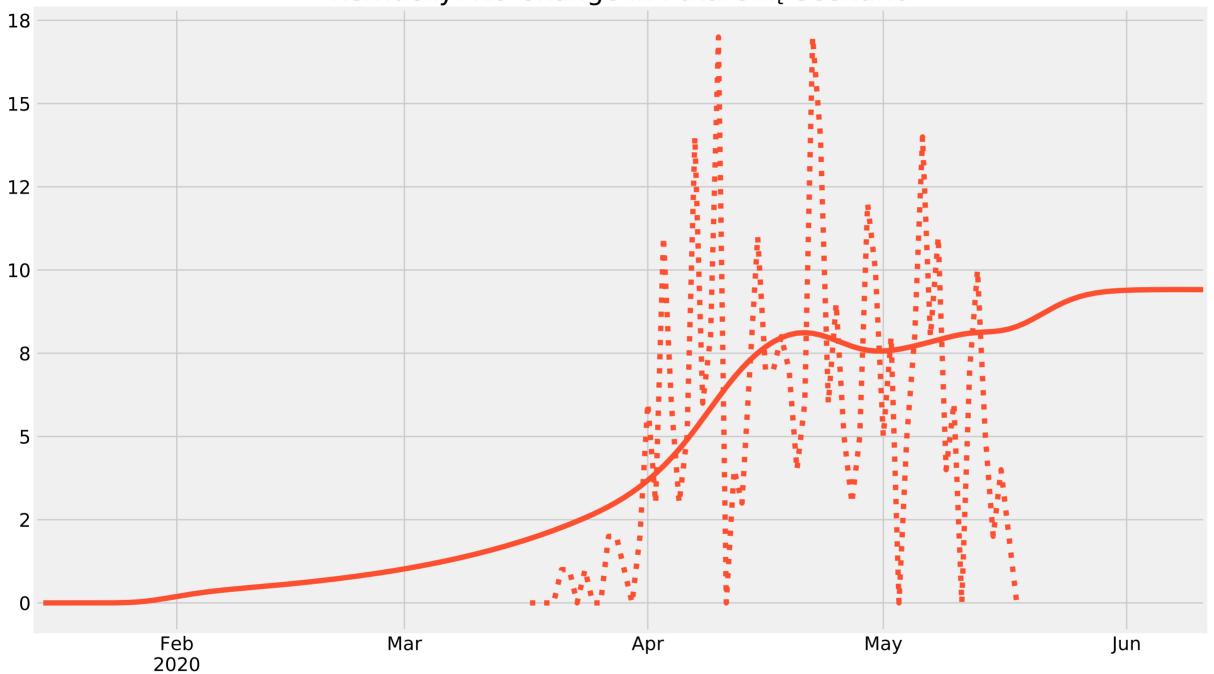
 $Rate_{Ventilator}$ : 40.00%  $Rate_{Mortality}$ : 1.00%

 $BasicR_0: 1.3$ 

Author: Michael Donnelly (twtr: @donnellymjd)

Chart created on 19 May 2020





Forecast Daily Deaths • • • Reported Daily Deaths

Parameters Used

 $D_{incubation}: 3.0$ 

D<sub>infectious</sub>: 4.0  $D_{tohospital}:7.0$ 

D<sub>inhospital</sub>: 11.0

 $D_{tildeath}: 17.0$ 

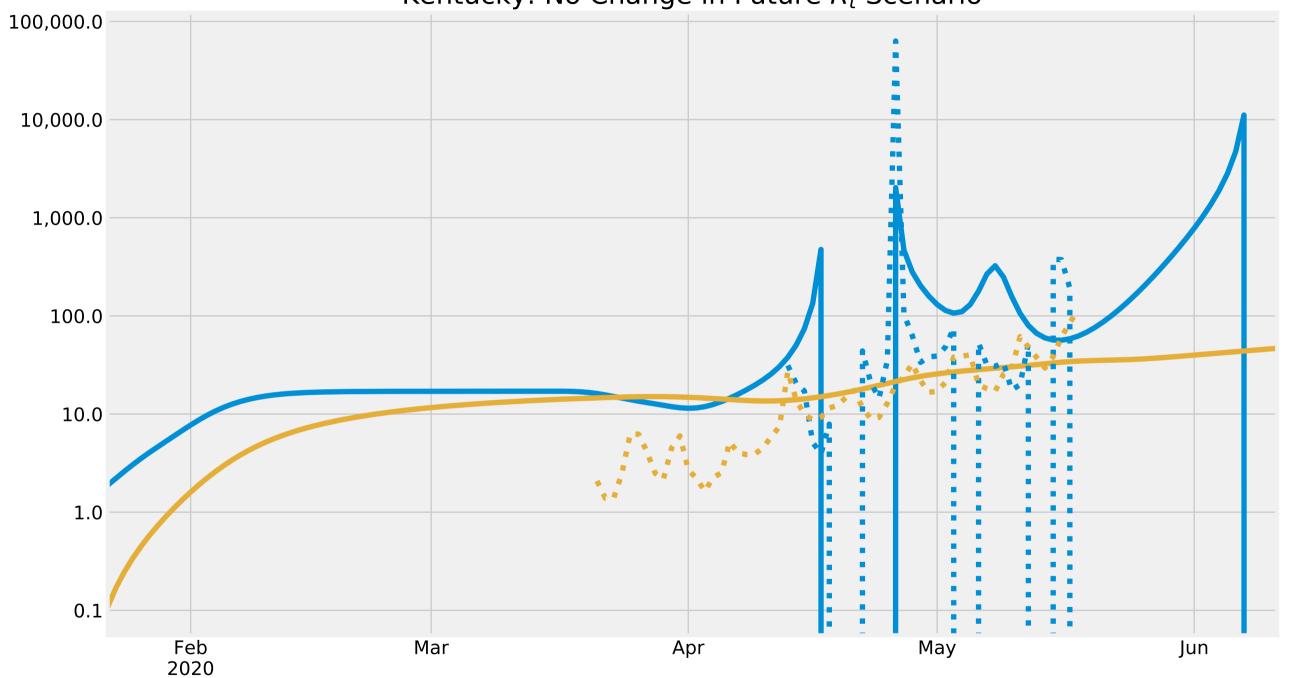
Rate<sub>Hospitalization</sub>: 4.00%

Rate<sub>ICU</sub>: 31.71%

Rate<sub>Ventilator</sub>: 40.00% Rate<sub>Mortality</sub>: 1.00%

 $BasicR_0: 1.3$ 

# Doubling Rate Forecast Kentucky: No Change in Future $R_t$ Scenario



hospitalized

deaths

• • Reported Concurrent Hospitalizations

Reported Total Deaths

#### Parameters Used

 $D_{incubation}$ : 3.0  $D_{infectious}$ : 4.0  $D_{tohospital}$ : 7.0

 $D_{inhospital}: 11.0$ 

 $D_{tildeath}: 17.0$ 

Rate<sub>Hospitalization</sub>: 4.00% Rate<sub>ICU</sub>: 31.71%

Rate<sub>Ventilator</sub>: 40.00% Rate<sub>Mortality</sub>: 1.00%

 $BasicR_0: 1.3$