MODELING UPDATE

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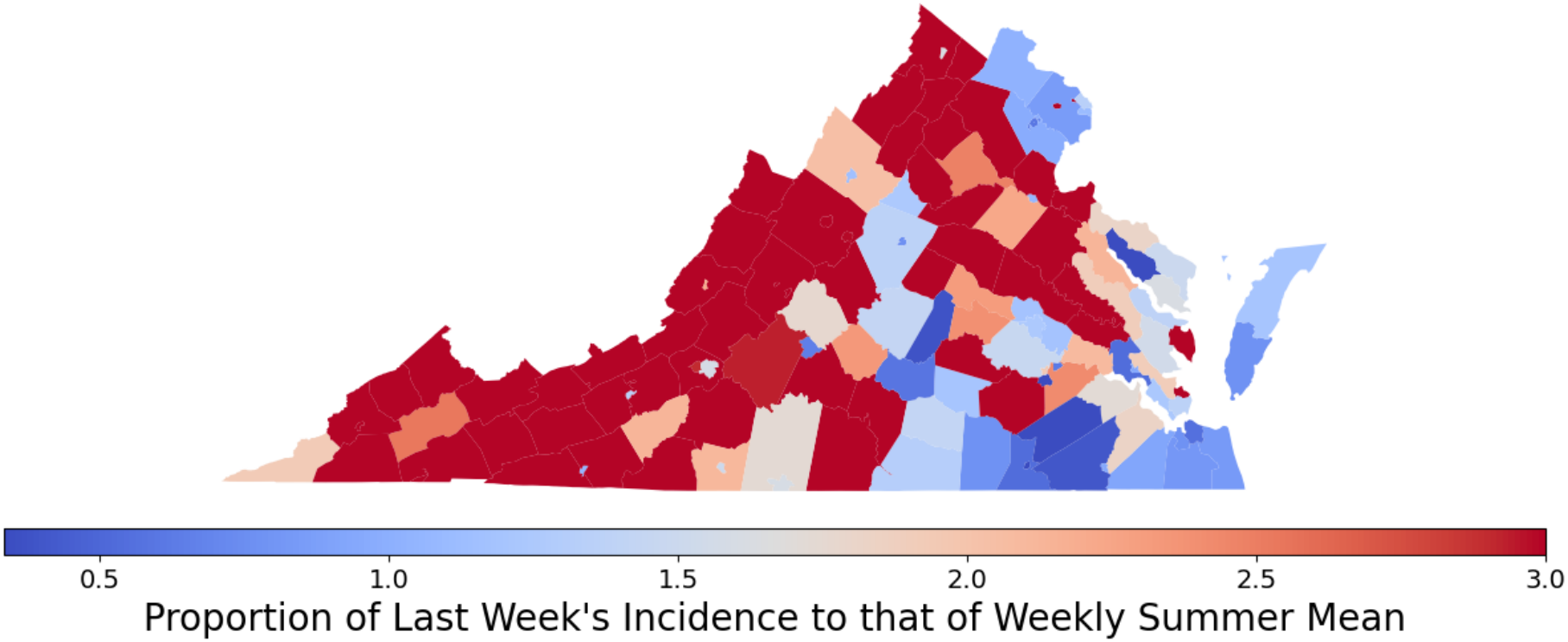
UVA COVID-19 Model-Background

- Model is developed by the UVA Biocomplexity Institute
- Model has evolved
  - Current methodology: “Adaptive Fitting”
  - Based on observed cases in each county
  - Responsive to current trends → week-to-week volatility
- Models thrive on more & better data, and the model improves every week.
- Behavioral and policy responses drive changes in current trends
- RAND provides additional analysis

12-Nov-21

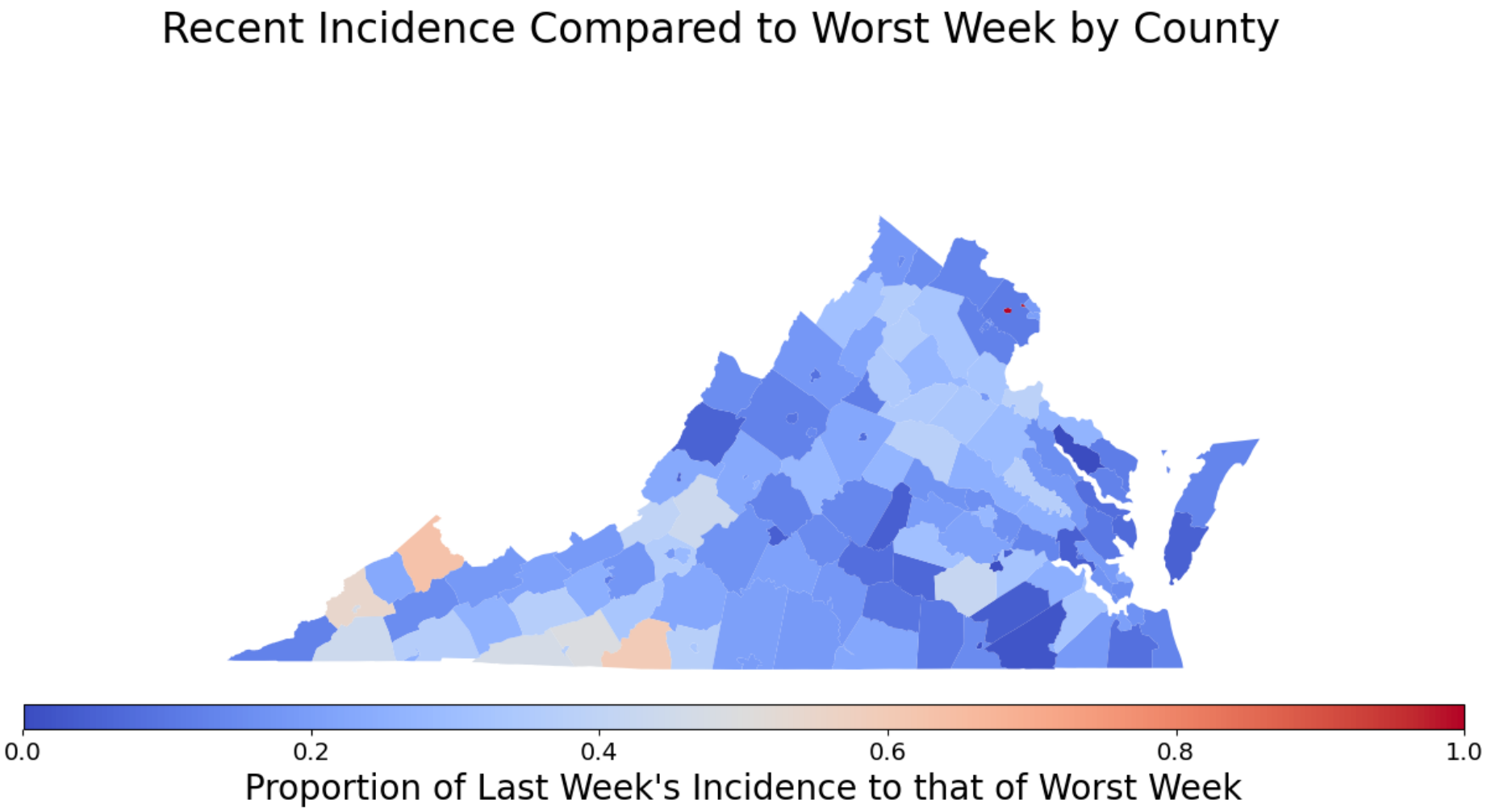
Current Week vs. Summer Low

Recent Incidence Compared to Weekly Summer Mean by County
Mean: 3.34; Median: 2.2; IQR: 1.24-4.43



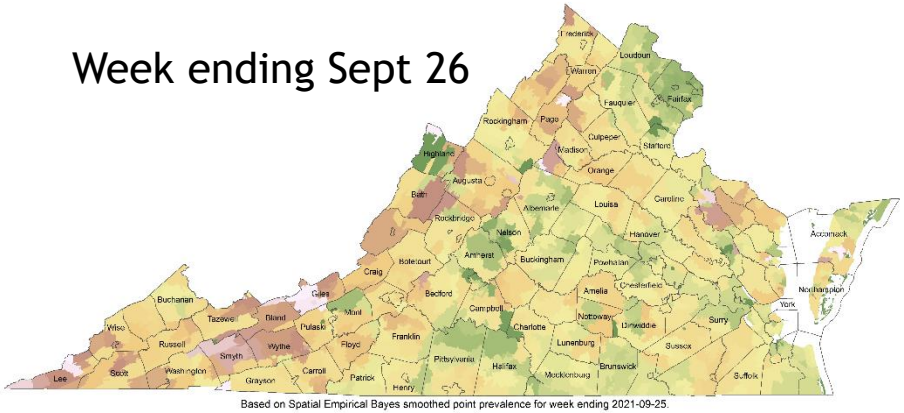
12-Nov-21

Current Week vs. Winter Peak



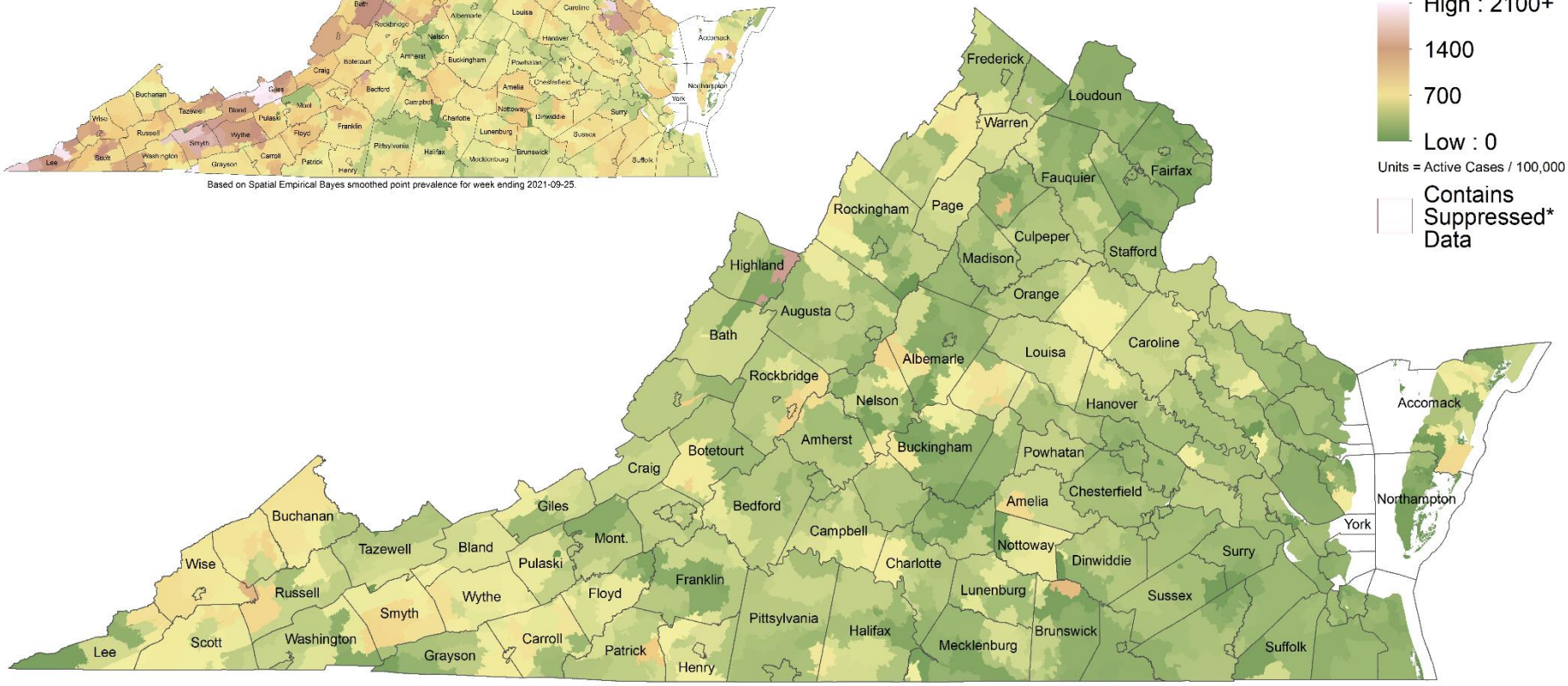
Point Prevalence

Week ending Sept 26



Based on Spatial Empirical Bayes smoothed point prevalence for week ending 2021-09-25.

Week ending Oct 31



Based on Spatial Empirical Bayes smoothed point prevalence for week ending 2021-10-30.

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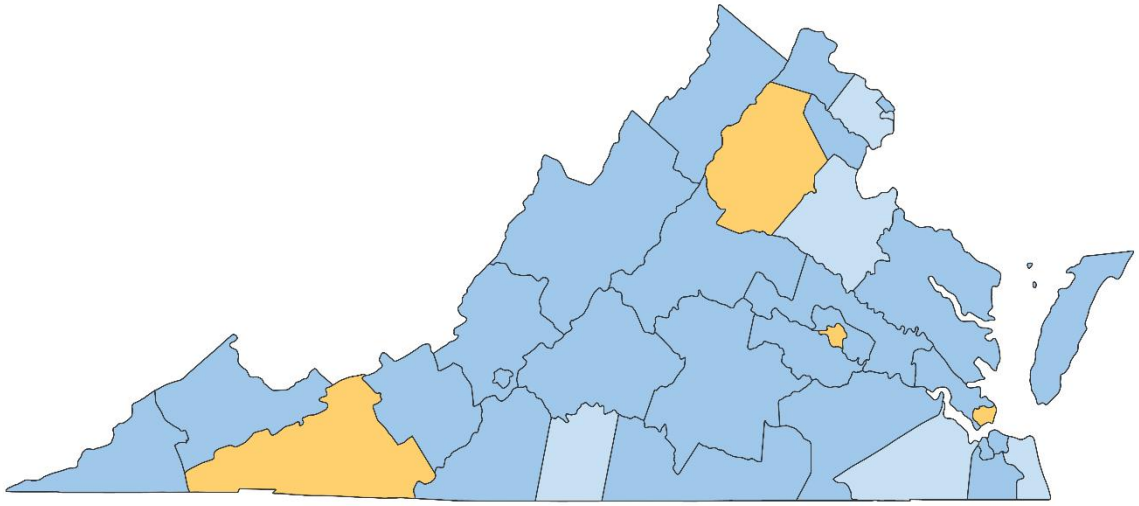
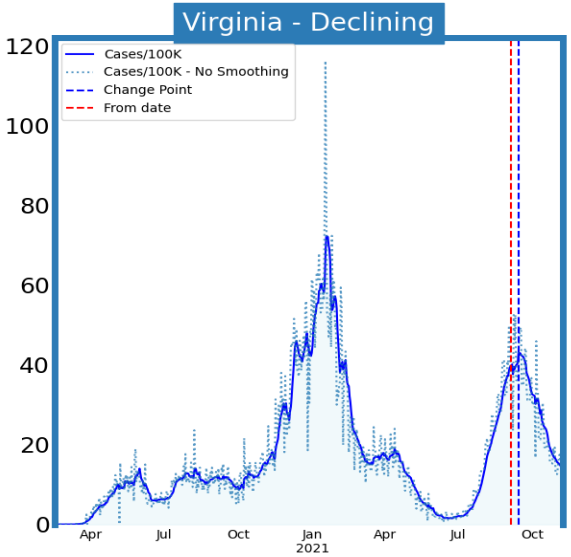
In Decline, But Slowing

Status	# Districts (prev week)
Declining	25 (33)
Plateau	6 (1)
Slow Growth	4 (1)
In Surge	0 (0)





Trajectory	Description	Weekly Case Rate (per 100K) bounds
Declining	Sustained decreases following a recent peak	below -0.9
Plateau	Steady level with minimal trend up or down	above -0.9 and below 0.5
Slow Growth	Sustained growth not rapid enough to be considered a Surge	above 0.5 and below 2.5
In Surge	Currently experiencing sustained rapid and significant growth	2.5 or greater

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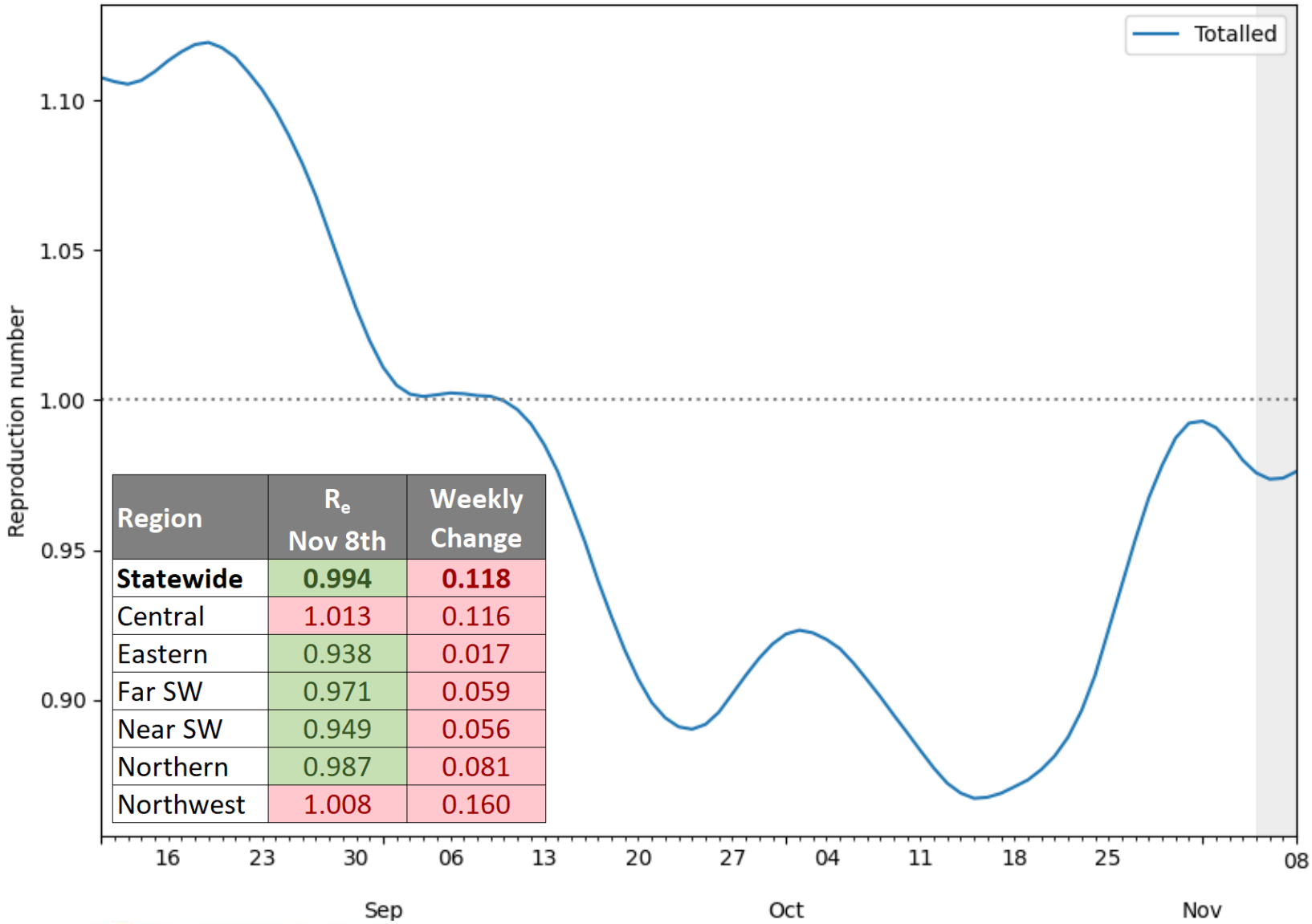
VA state-wide RE with 7 day moving window by confirmation date redistributed GT 2021-11-08



Region	R_e Nov 8th	Weekly Change
Statewide	**0.994**	**0.118**
Central	1.013	0.116
Eastern	0.938	0.017
Far SW	0.971	0.059
Near SW	0.949	0.056
Northern	0.987	0.081
Northwest	1.008	0.160

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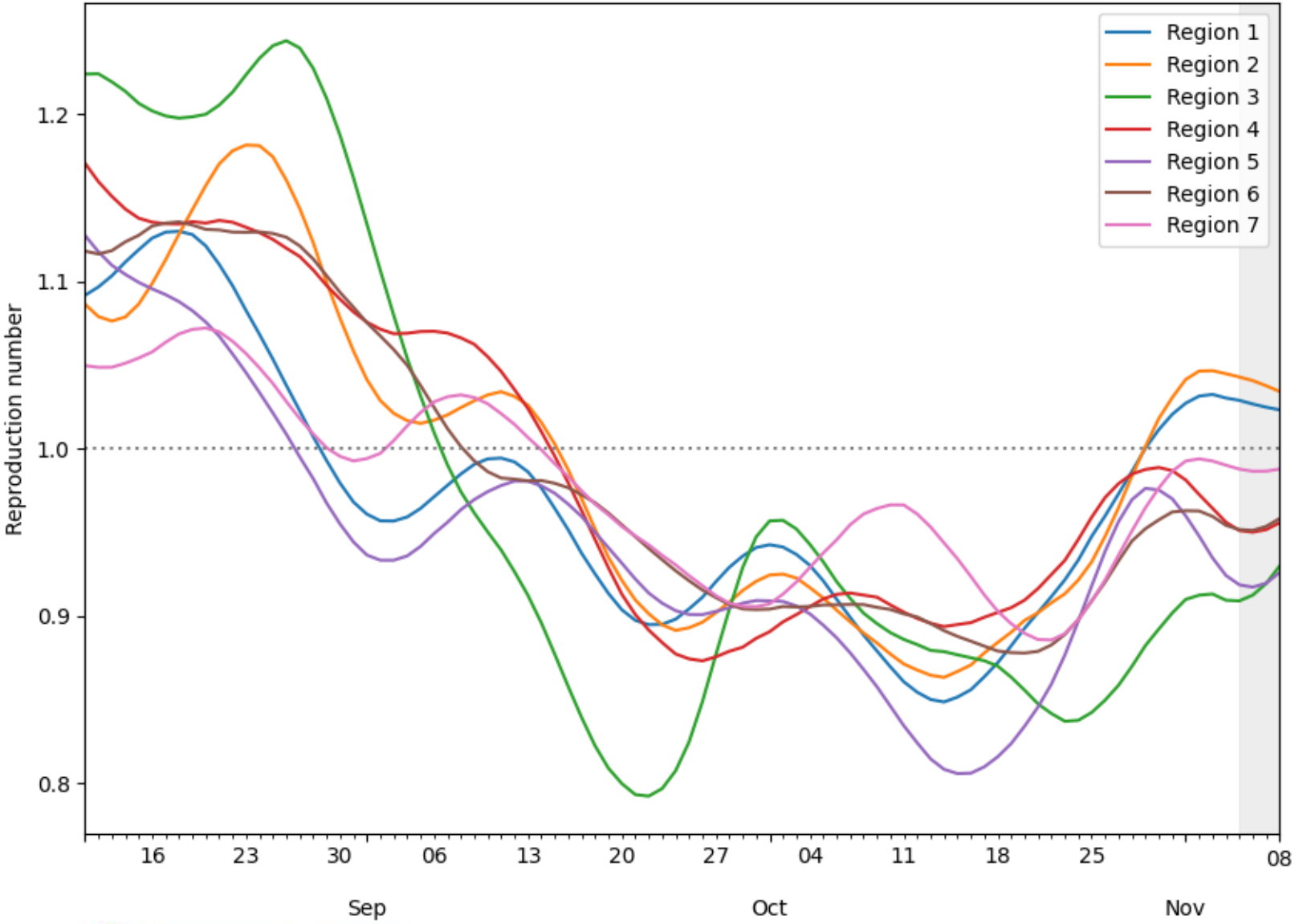
VA RE by VDEM region with 7 day moving window by confirmation date redistributed GT 2021-11-08



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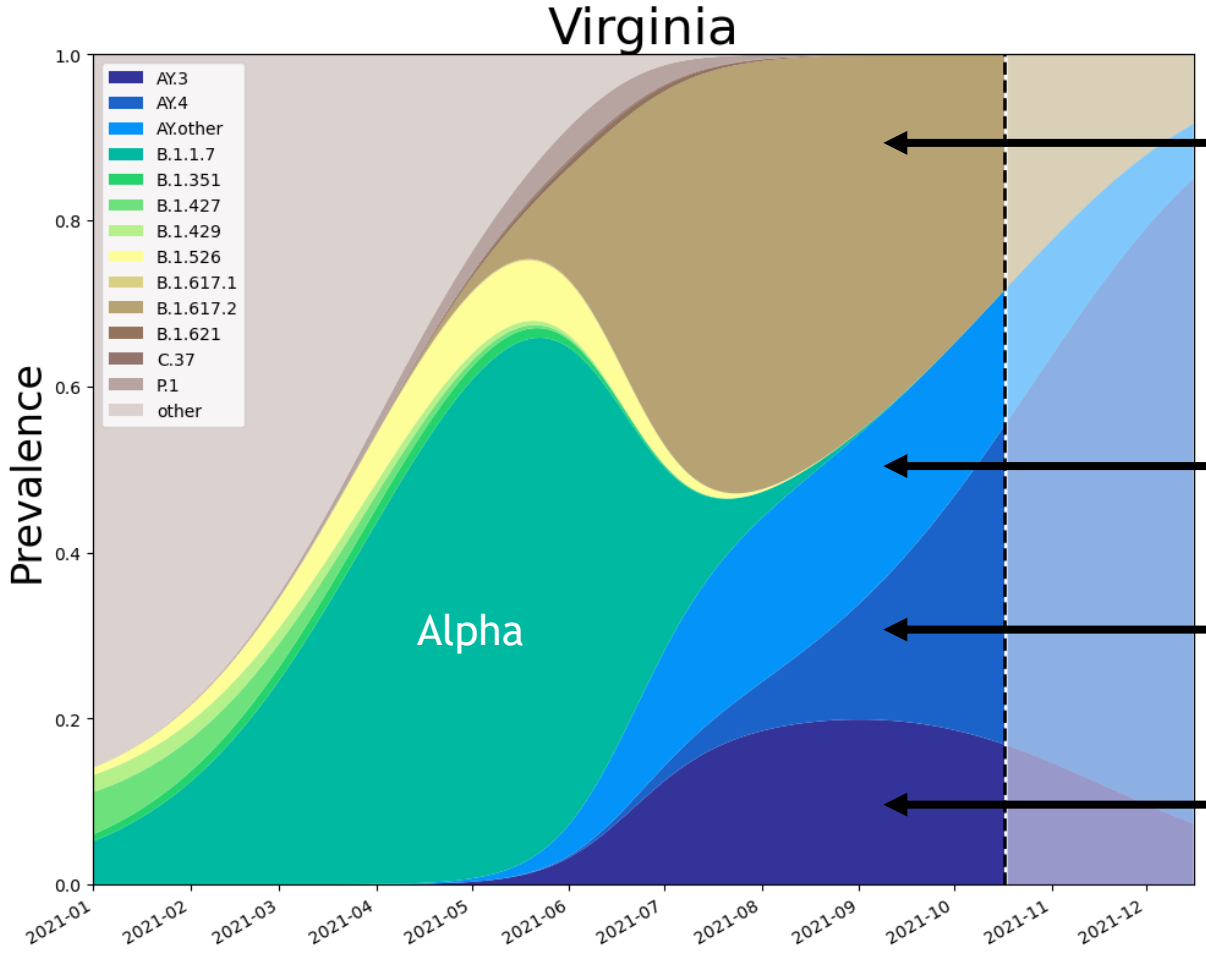
Variants of Concern



Delta (ancestral)

Delta (other subvariant)

Delta (AY.4 subvariant)

Delta (AY.3 subvariant)

Current fits suggest stable mix of Delta & subvariants into the future

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GISAID
outbreak.info
Outbreak Info

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Projection Scenarios

Name	Txm Controls	Vax	Description
Adaptive	C	SQ	Likely trajectory based on conditions remaining similar to the current experience
Adaptive-VaxOpt	C	VO	Vaccination through October reaches an optimistically high level of expanded coverage (85%)
Adaptive-SurgeControl	25%	SQ	Transmission rates in the next month reduced through increased control from non-pharmaceutical interventions, with status quo vax and Delta
Adaptive-FallWinter2020	FallWinter2020	SQ	Transmission rates coarsely follow the rates from last September through this February but are boosted by Delta's enhanced transmissibility
Adaptive-FallWinter2020-VaxOpt	FallWinter2020	VO	Transmission rates coarsely follow the rates from last September through this February but are boosted by Delta's enhanced transmissibility, with optimistic vax

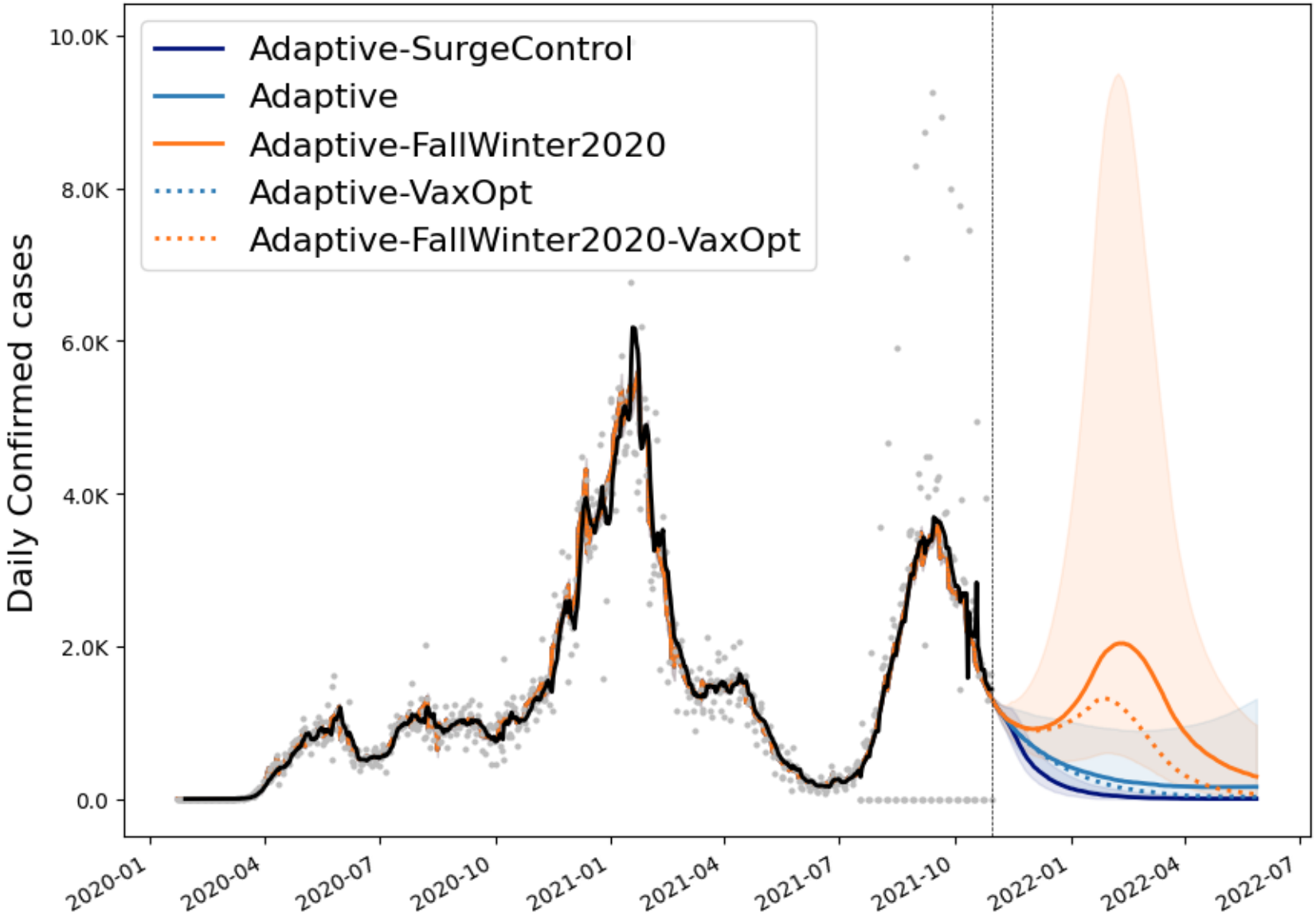
Transmission Controls:

C = Current levels persist into the future
25% = Transmission rates are reduced by 25% with a gradual introduction
FallWinter2020 = Transmission rates from Sept 2020 – Feb 2021 are coarsely replayed but boosted by Delta's increased transmissibility

Vaccinations:

SQ = Status quo acceptance leads to expected rates of vaccination
VO = Vaccination acceptance optimistically expands with increased rates to 85% of adult population, 3rd doses reach 60% of all previously vaccinated

Virginia Daily Confirmed - Comparison



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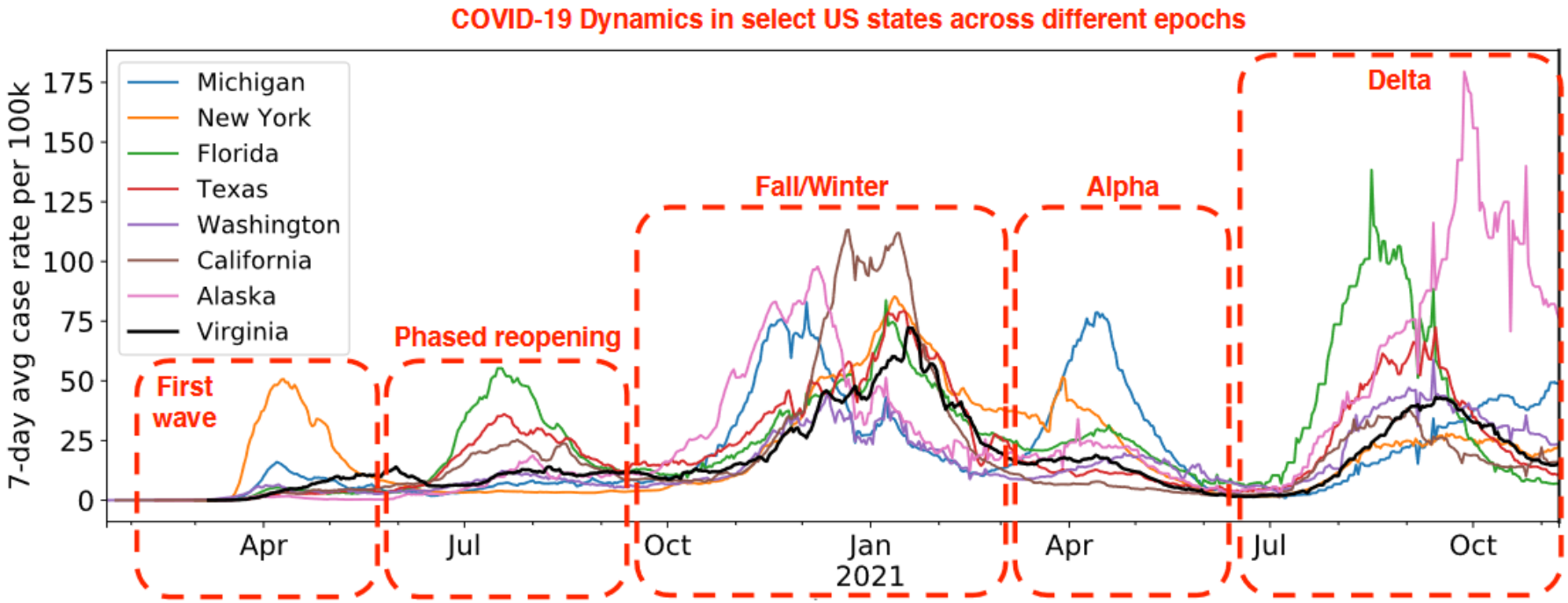
Early Warning



NY reaches 50 per 100k. MI reaches ~20 per 100k.

Effect of reopening strongly felt in FL, TX, and (to a lesser extent) CA.

Onset of Fall/Winter wave in 2020 is staggered across the states. Almost all of them reach peak case rates. Early surge in AK, MI. Wider peak for CA. Very similar trajectories for NY, FL, VA, TX.

Strong Alpha wave in MI. NY experiences minor spike continuing from Fall/ Winter wave.

Lot of variability in slope as Delta variant takes hold. FL has early peak. AK has late peak. CA, NY have flatter curves, with MI experiencing slow growth throughout.

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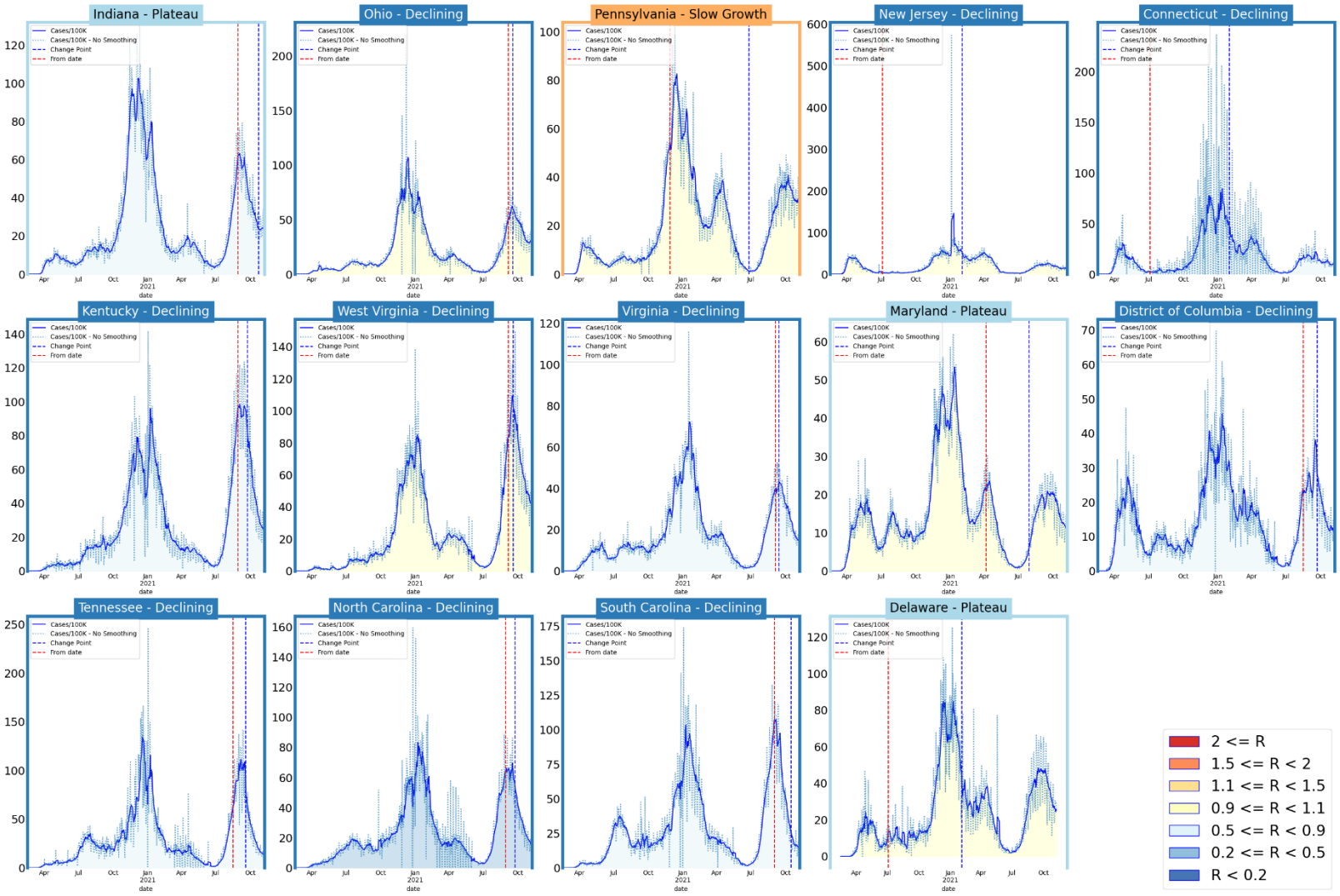
Created by: Srini Venkatramanan (@srinlv_venkat)

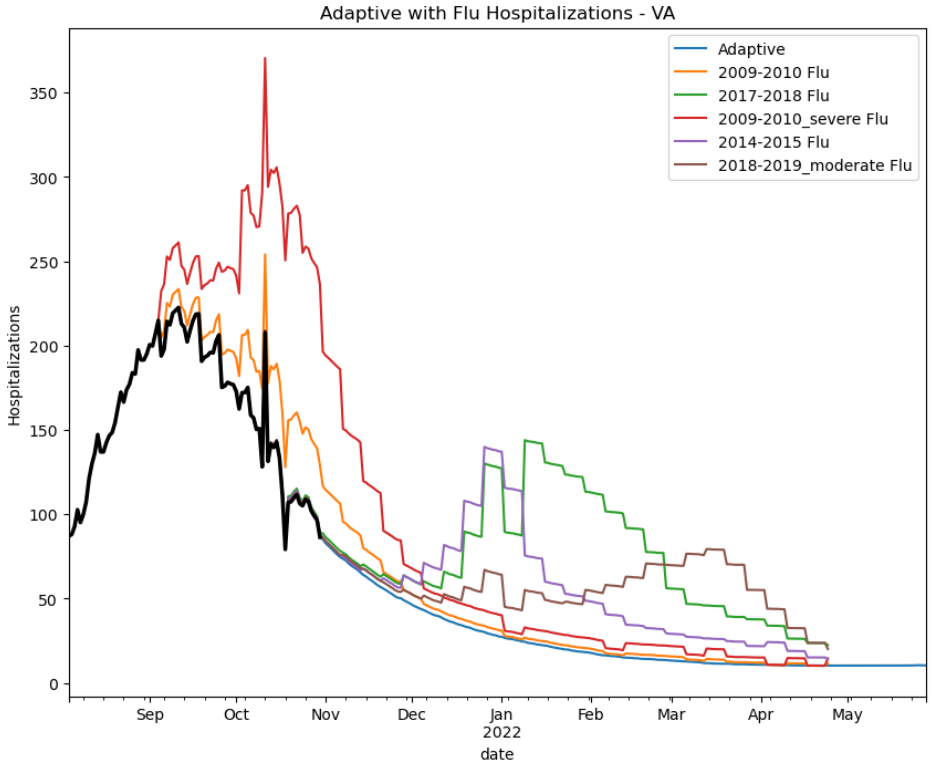
Early Warning

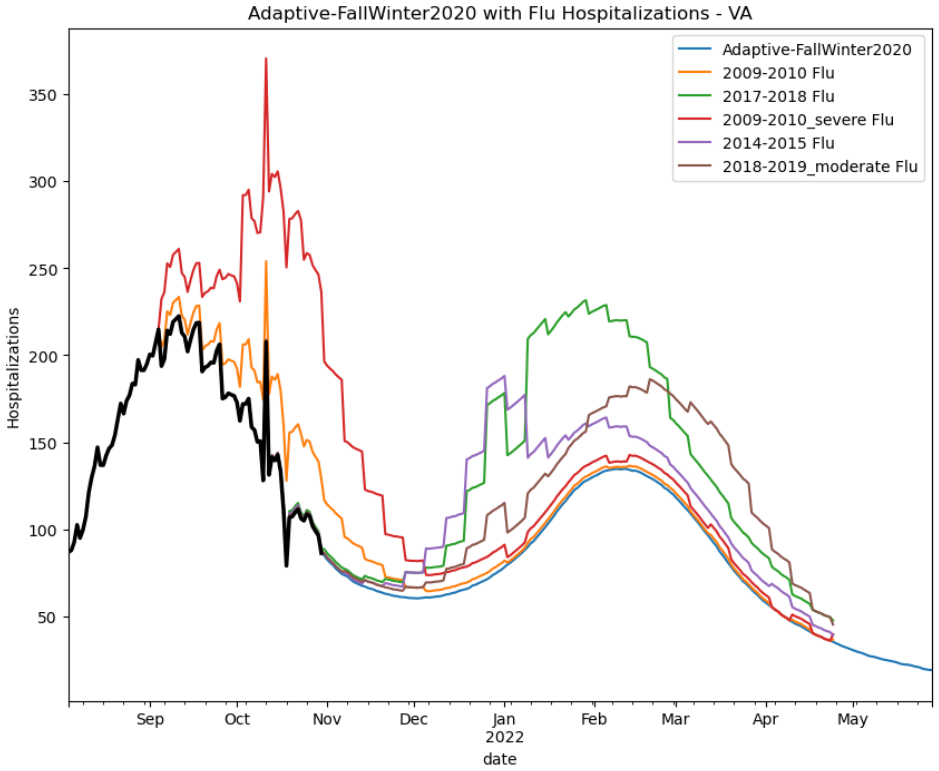


Projecting Hospitalizations

Augmented COVID-19 daily hospitalizations with that of past Influenza seasons

- No regions should exceed their current capacities





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Where to find modeling results

- VDH COVID-19 Data Insights
  https://www.vdh.virginia.gov/coronavirus/covid-19-data-insights/
  - Model Explorer (Wed)
  - UVA Biocomplexity Institute Slides (Fri)
  - RAND Slides (Fri)
  - Weekly Update (Fri)

- COVID-19 Medical Resource Demand Dashboard
  https://covid19.biocomplexity.virginia.edu/dashboards
  - Hospital Capacity Scenarios

- Internal Dashboards
  - Transmission Rates (R0) (Wed)
    https://dataviz.vdh.virginia.gov/#/views/TransmissionRate/Dashboard1
  - Google Mobility Report (Wed)
    https://dataviz.vdh.virginia.gov/views/GoogleMobility/Dashboard1
  - Detailed Internal Model (Wed)
    https://dataviz.vdh.virginia.gov/views/DailyModelInternal_15908727184890/AllModelResults?iframeSizedToWindow=true&:embed=y&:showAppBanner=false&:display_count=no&:showVizHome=no