

Stan fit StL and TN

Chris Hoover

6/2/2020

St. Louis

Fit to StL hospital census data

```
## DIAGNOSTIC(S) FROM PARSER:
## Info: integer division implicitly rounds to integer. Found int division: itoday - 1 / dknot
## Positive values rounded down, negative values rounded up or down in platform-dependent way.
## Info: integer division implicitly rounds to integer. Found int division: itoday / dknot
## Positive values rounded down, negative values rounded up or down in platform-dependent way.
##
## itoday/dknot = 13, nbeta = 20
## beta_knots = [1,10,20,30,40,50,60,70,80,90,100,110,120,121,131,136,137,145,146,160]

## Warning: There were 2 divergent transitions after warmup. Increasing adapt_delta above 0.95 may help
## http://mc-stan.org/misc/warnings.html#divergent-transitions-after-warmup

## Warning: There were 917 transitions after warmup that exceeded the maximum treedepth. Increase max_t
## http://mc-stan.org/misc/warnings.html#maximum-treedepth-exceeded

## Warning: Examine the pairs() plot to diagnose sampling problems

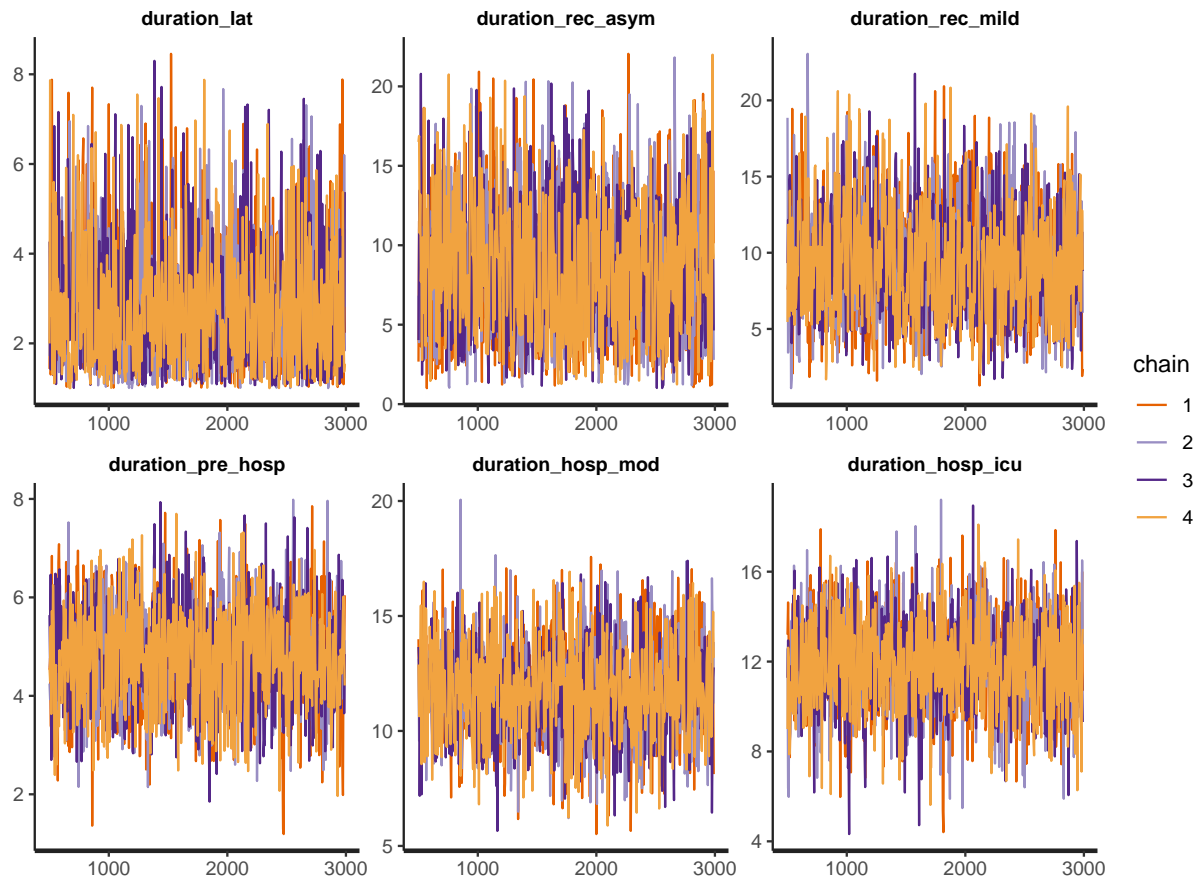
## Warning: The largest R-hat is NA, indicating chains have not mixed.
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#r-hat

## Warning: Bulk Effective Samples Size (ESS) is too low, indicating posterior means and medians may be
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#bulk-ess

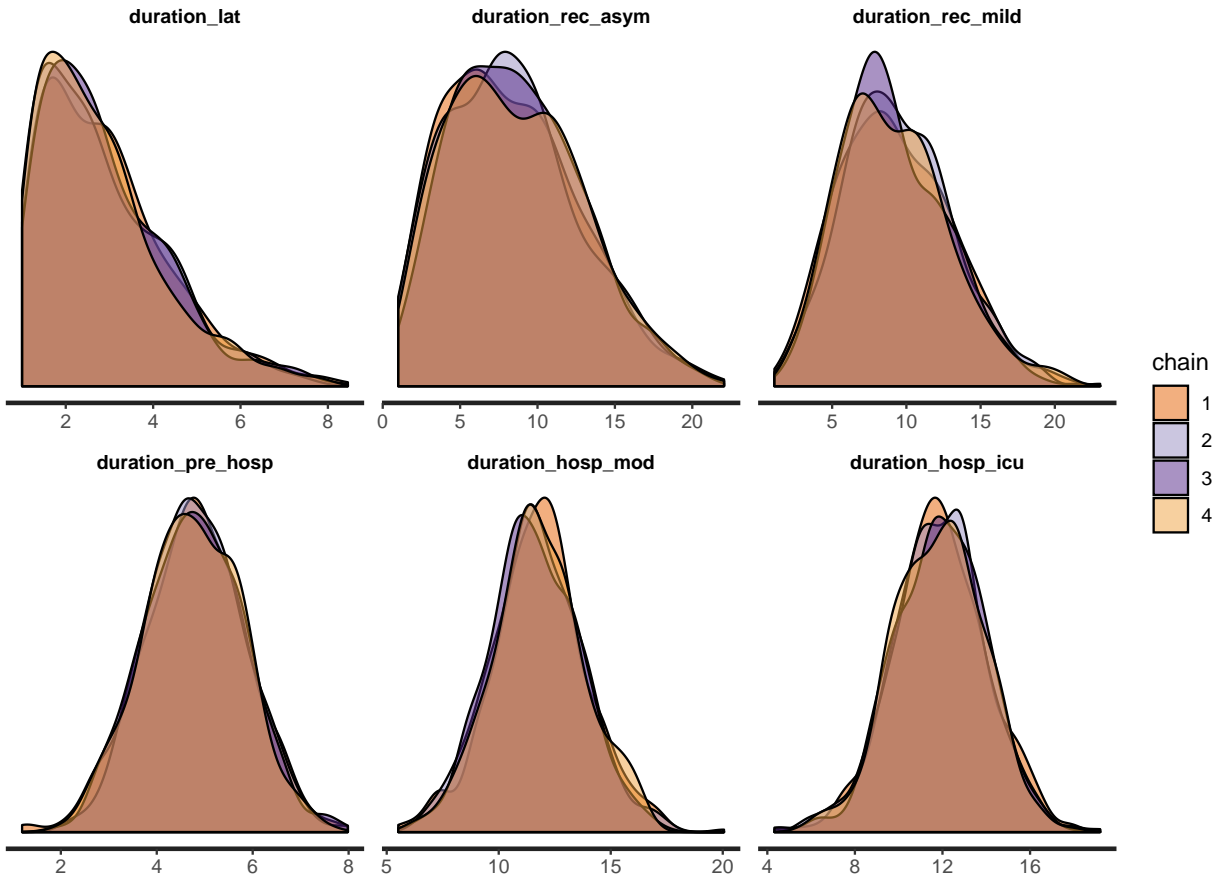
## Warning: Tail Effective Samples Size (ESS) is too low, indicating posterior variances and tail quant
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#tail-ess
```

Diagnostics

Traceplots

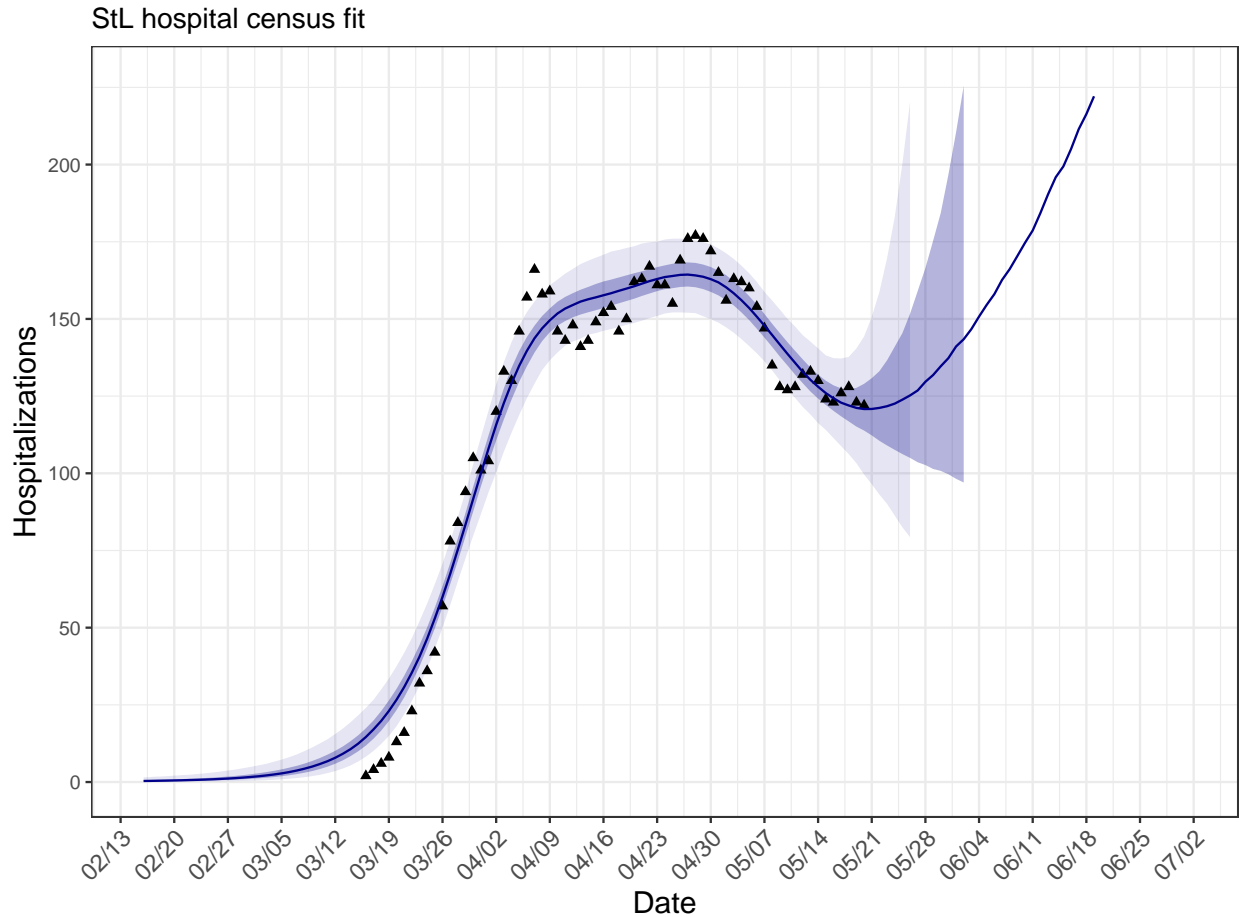


Posteriors



Comparison to observed data

```
## Warning: Removed 35 rows containing missing values (geom_path).
```



Fit to StL hospital census and admissions data

```
## DIAGNOSTIC(S) FROM PARSER:
```

```
## Info: integer division implicitly rounds to integer. Found int division: itoday - 1 / dknot
## Positive values rounded down, negative values rounded up or down in platform-dependent way.
## Info: integer division implicitly rounds to integer. Found int division: itoday / dknot
## Positive values rounded down, negative values rounded up or down in platform-dependent way.
##
```

```
## itoday/dknot = 13, nbeta = 20
```

```
## beta_knots = [1,10,20,30,40,50,60,70,80,90,100,110,120,121,131,136,137,145,146,160]
```

```
## Warning: There were 1153 transitions after warmup that exceeded the maximum treedepth. Increase max_
## http://mc-stan.org/misc/warnings.html#maximum-treedepth-exceeded
```

```
## Warning: Examine the pairs() plot to diagnose sampling problems
```

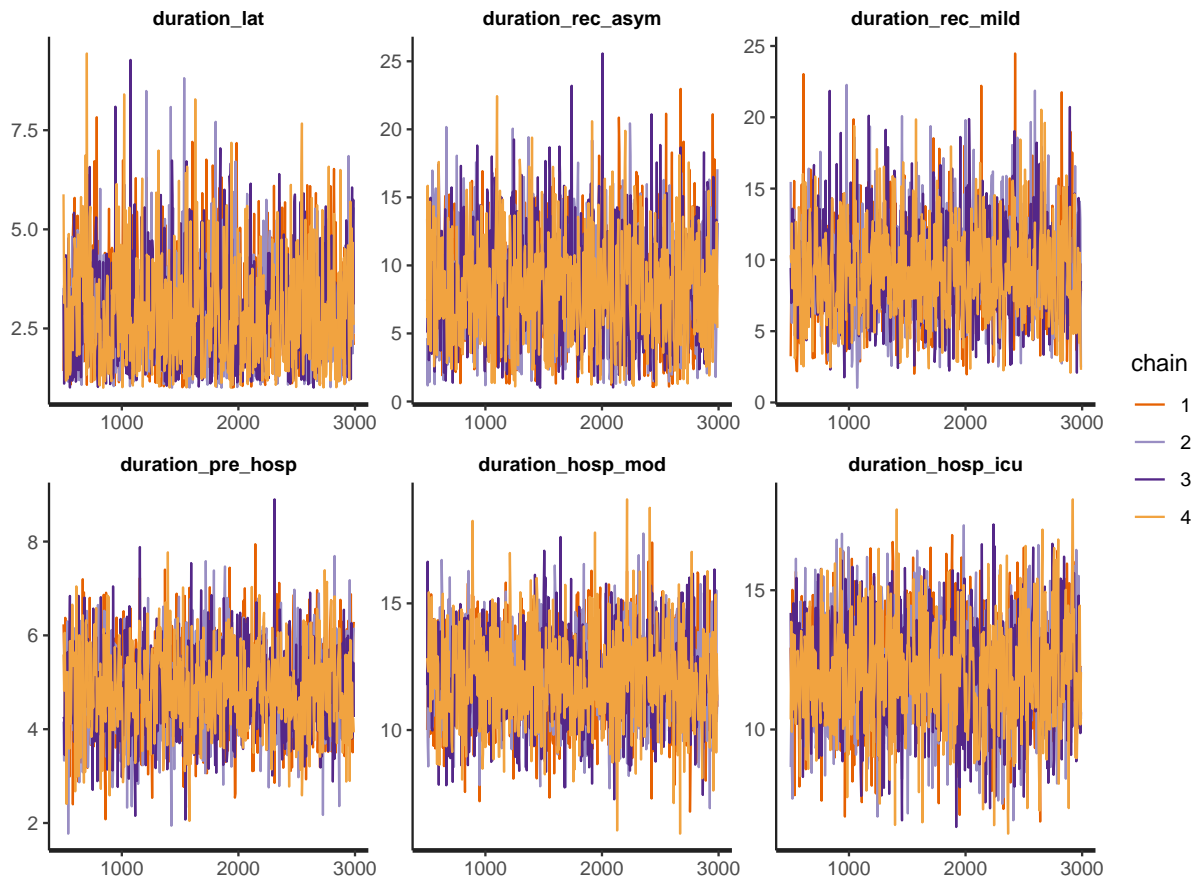
```
## Warning: The largest R-hat is NA, indicating chains have not mixed.
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#r-hat
```

```
## Warning: Bulk Effective Samples Size (ESS) is too low, indicating posterior means and medians may be
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#bulk-ess
```

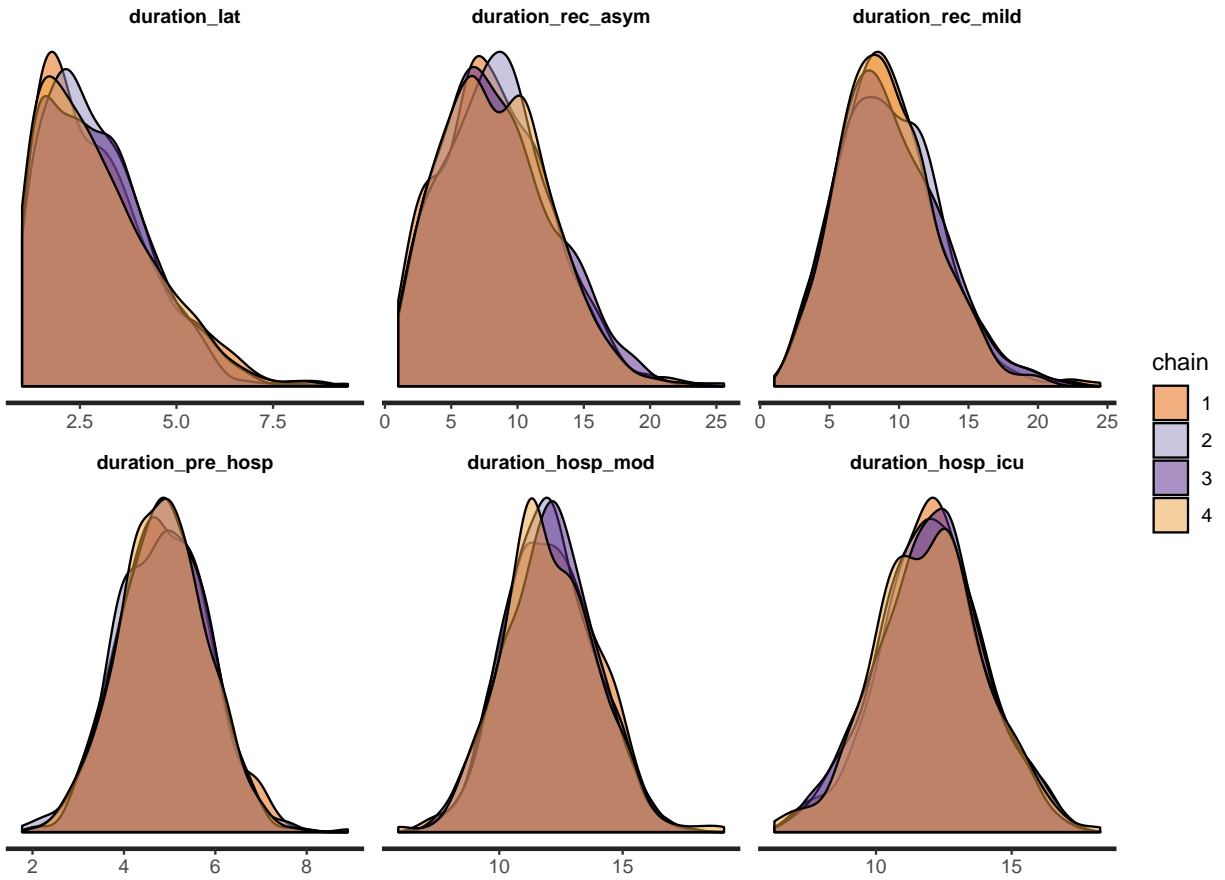
```
## Warning: Tail Effective Samples Size (ESS) is too low, indicating posterior variances and tail quantiles may be unreliable.
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#tail-ess
```

Diagnostics

Traceplots

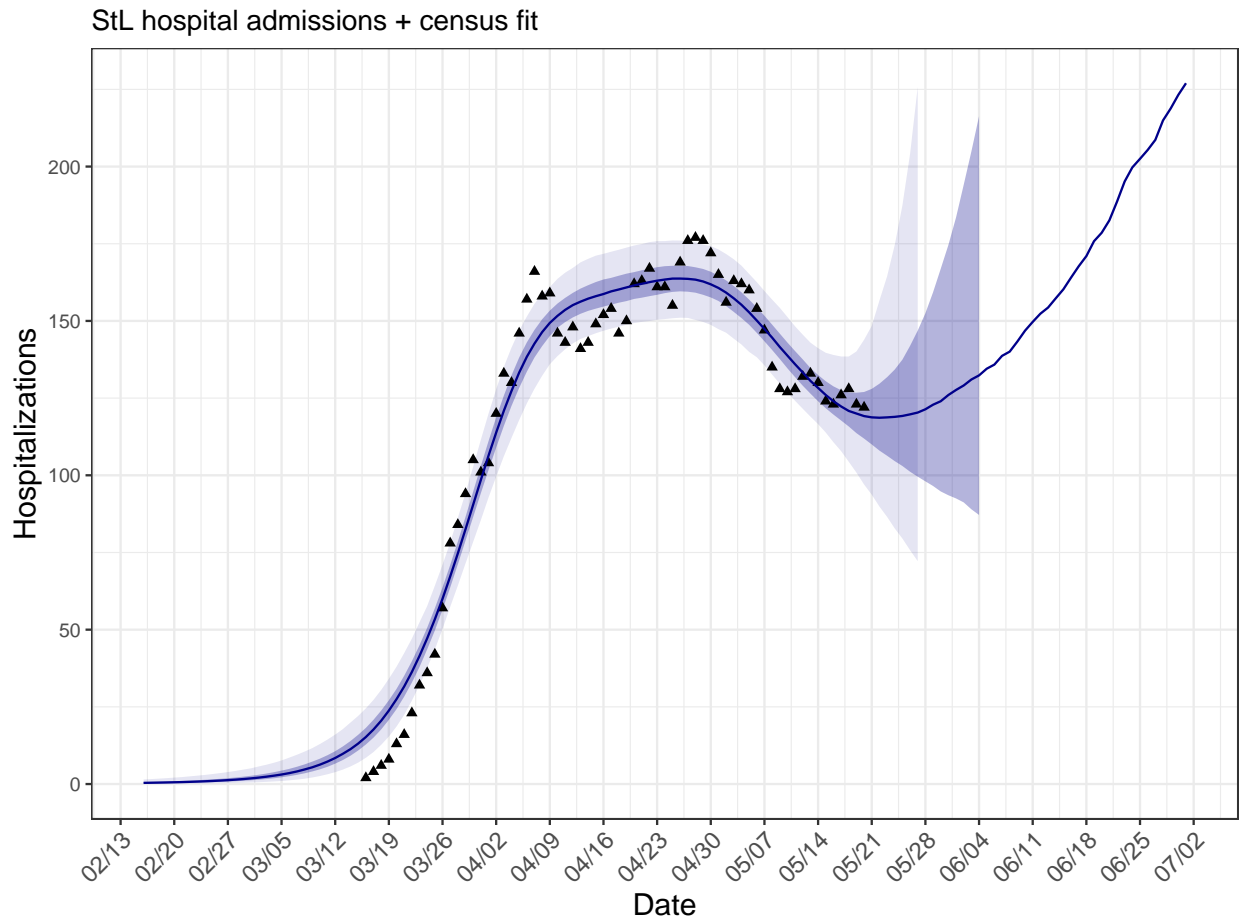


Posteriors

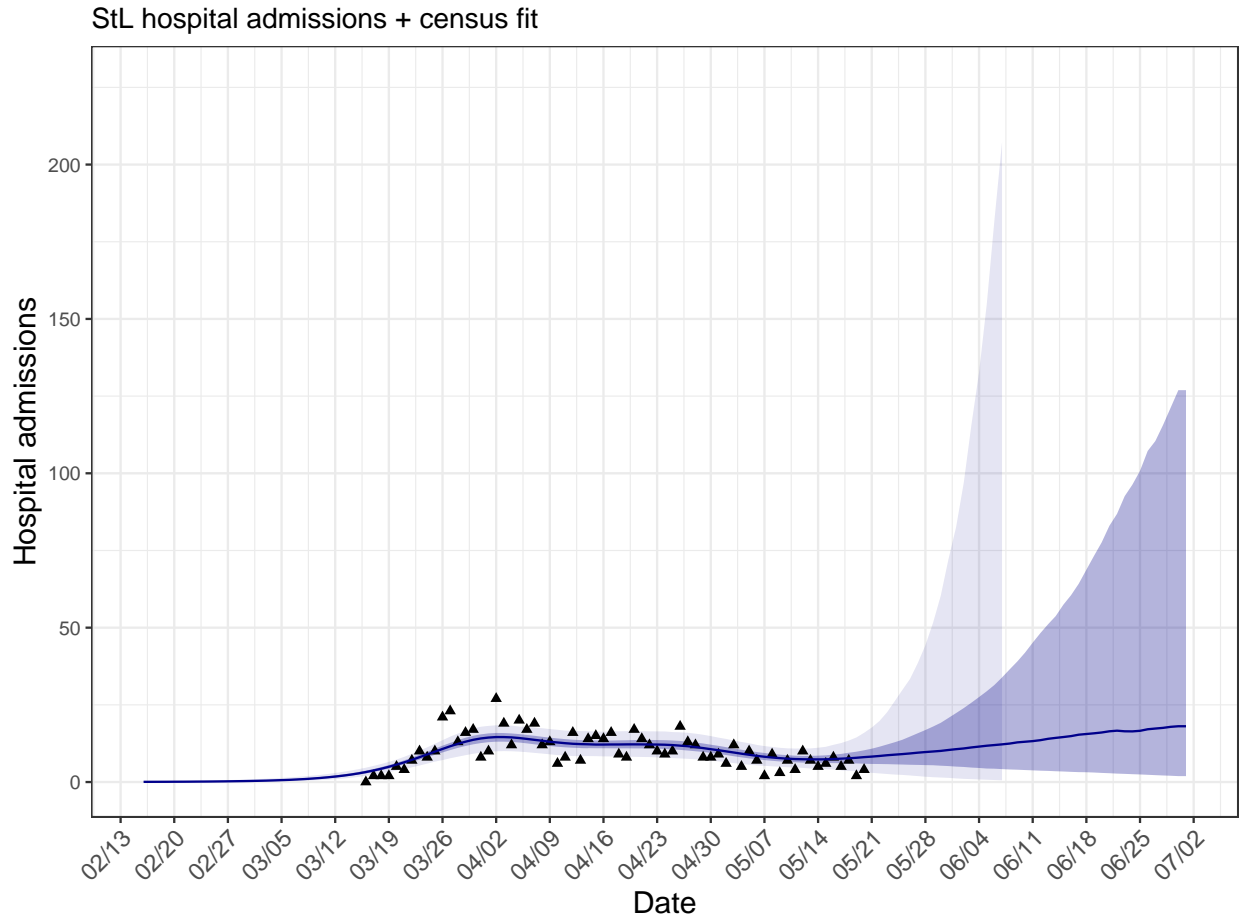


Comparison to observed data

```
## Warning: Removed 23 rows containing missing values (geom_path).
```



Warning: Removed 23 rows containing missing values (geom_path).



Fit to StL hospital admissions data only

```
## DIAGNOSTIC(S) FROM PARSER:
## Info: integer division implicitly rounds to integer. Found int division: itoday - 1 / dknot
## Positive values rounded down, negative values rounded up or down in platform-dependent way.
## Info: integer division implicitly rounds to integer. Found int division: itoday / dknot
## Positive values rounded down, negative values rounded up or down in platform-dependent way.
##
## itoday/dknot = 13, nbeta = 20
## beta_knots = [1,10,20,30,40,50,60,70,80,90,100,110,120,121,131,136,137,145,146,160]

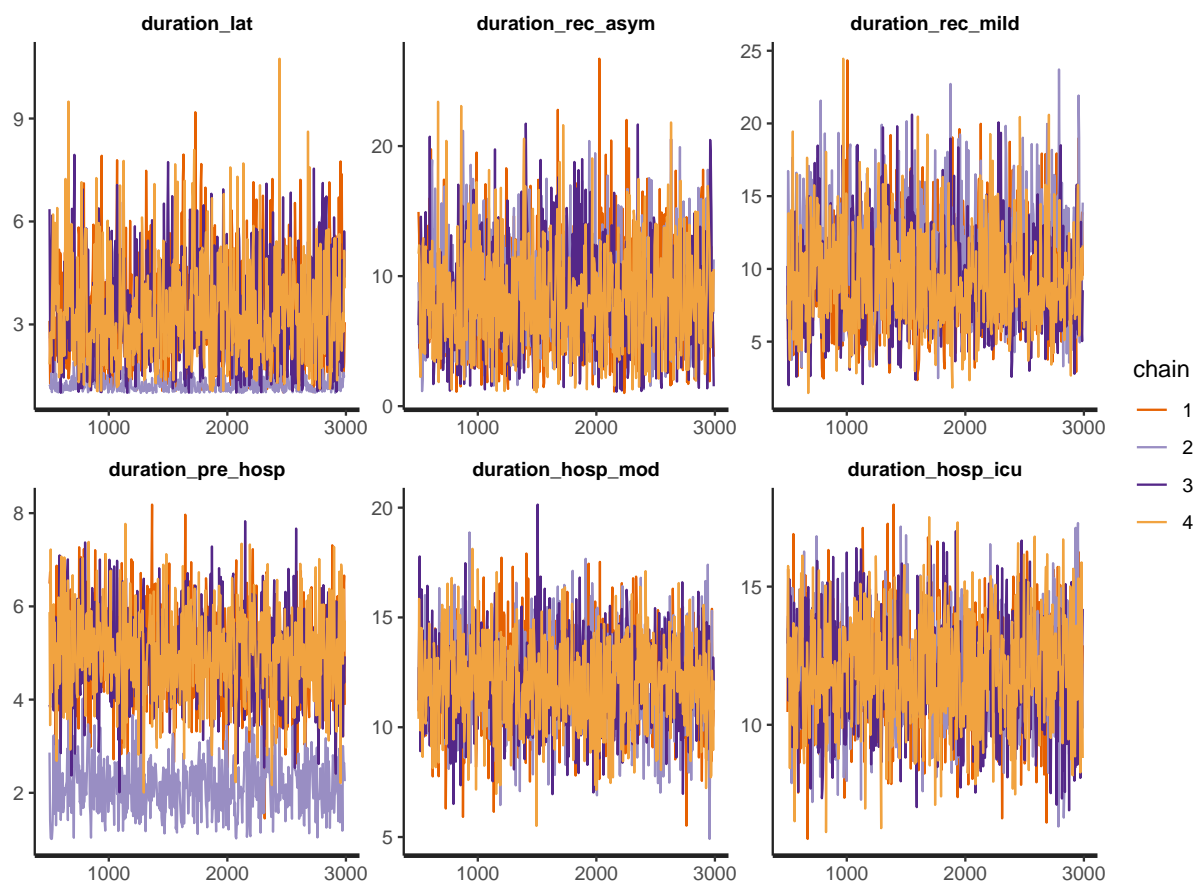
## Warning: The largest R-hat is NA, indicating chains have not mixed.
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#r-hat

## Warning: Bulk Effective Samples Size (ESS) is too low, indicating posterior means and medians may be
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#bulk-ess

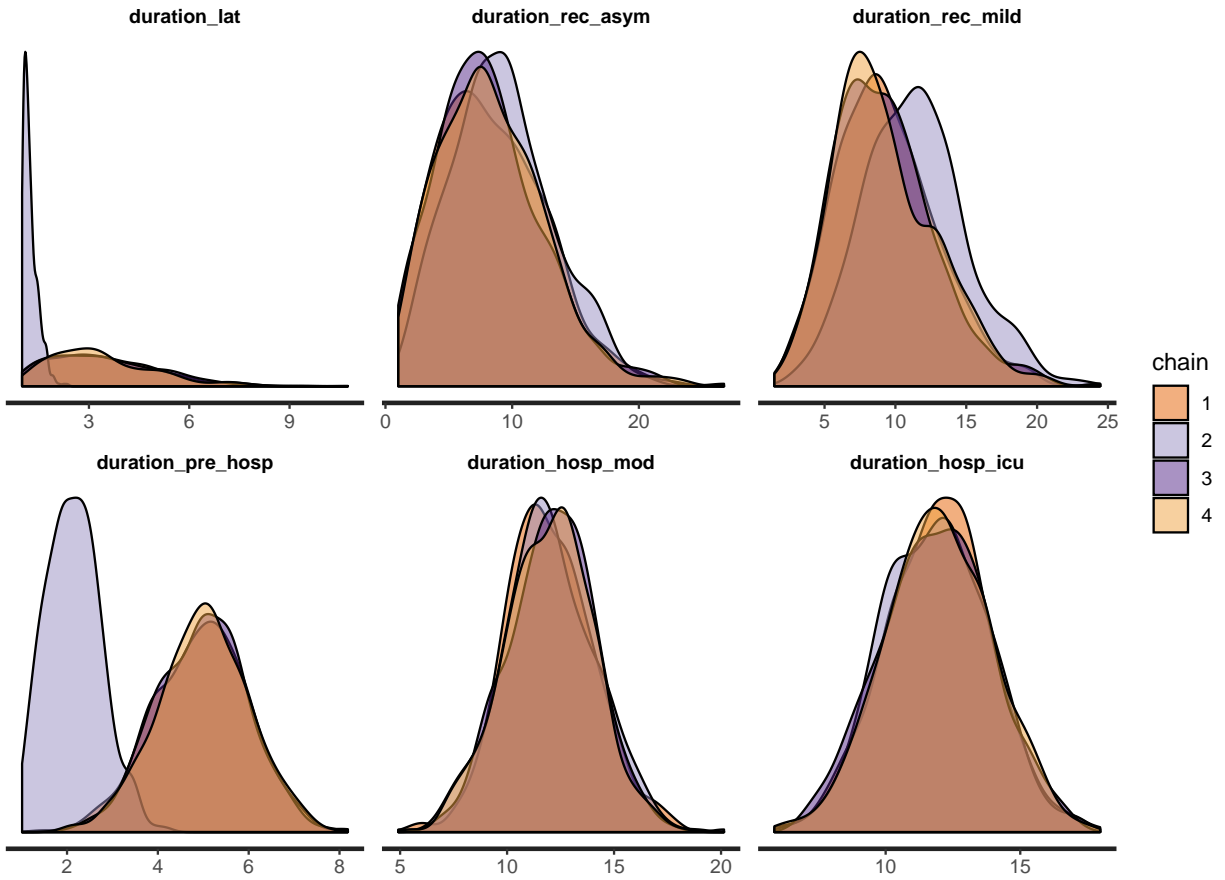
## Warning: Tail Effective Samples Size (ESS) is too low, indicating posterior variances and tail quant.
## Running the chains for more iterations may help. See
## http://mc-stan.org/misc/warnings.html#tail-ess
```


Diagnostics

Traceplots

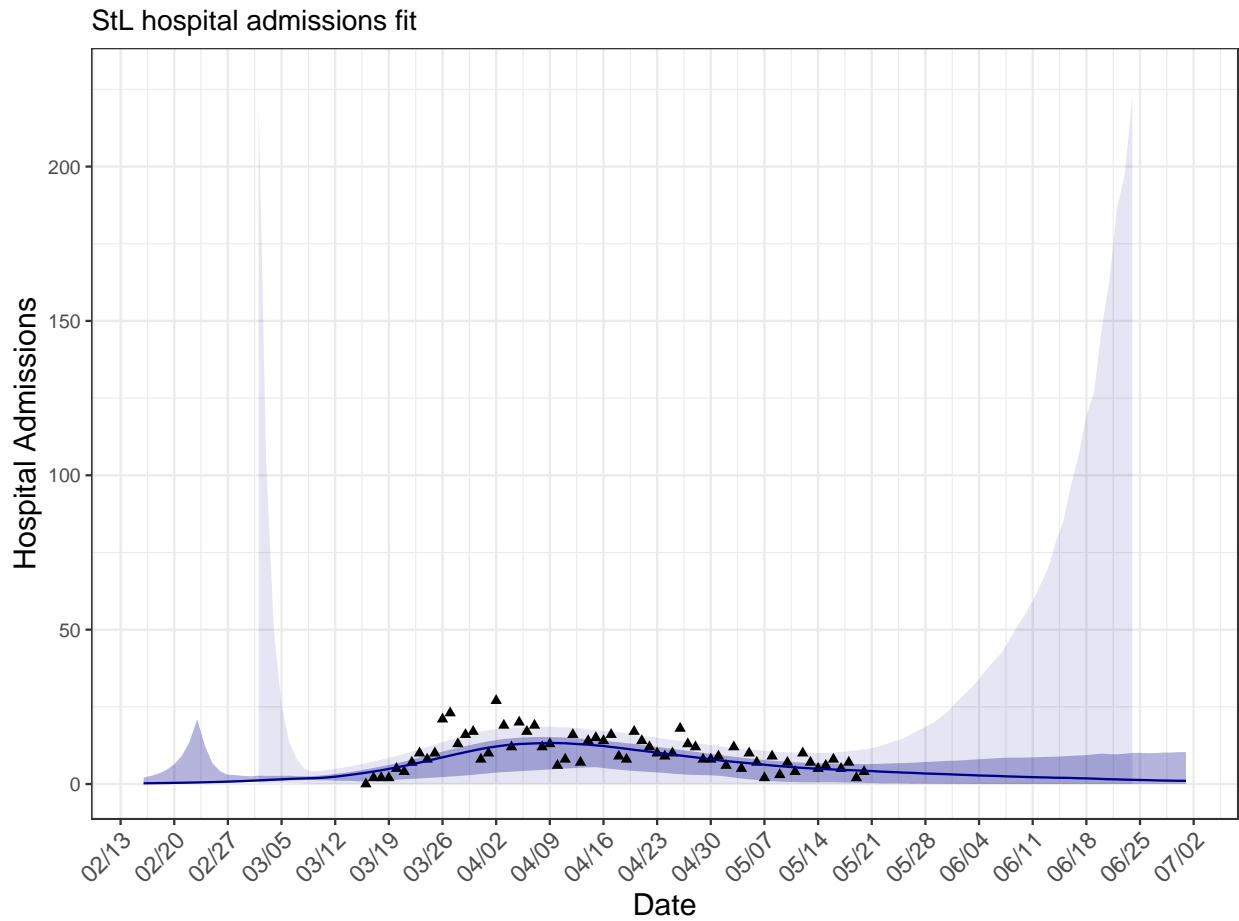


Posteriors



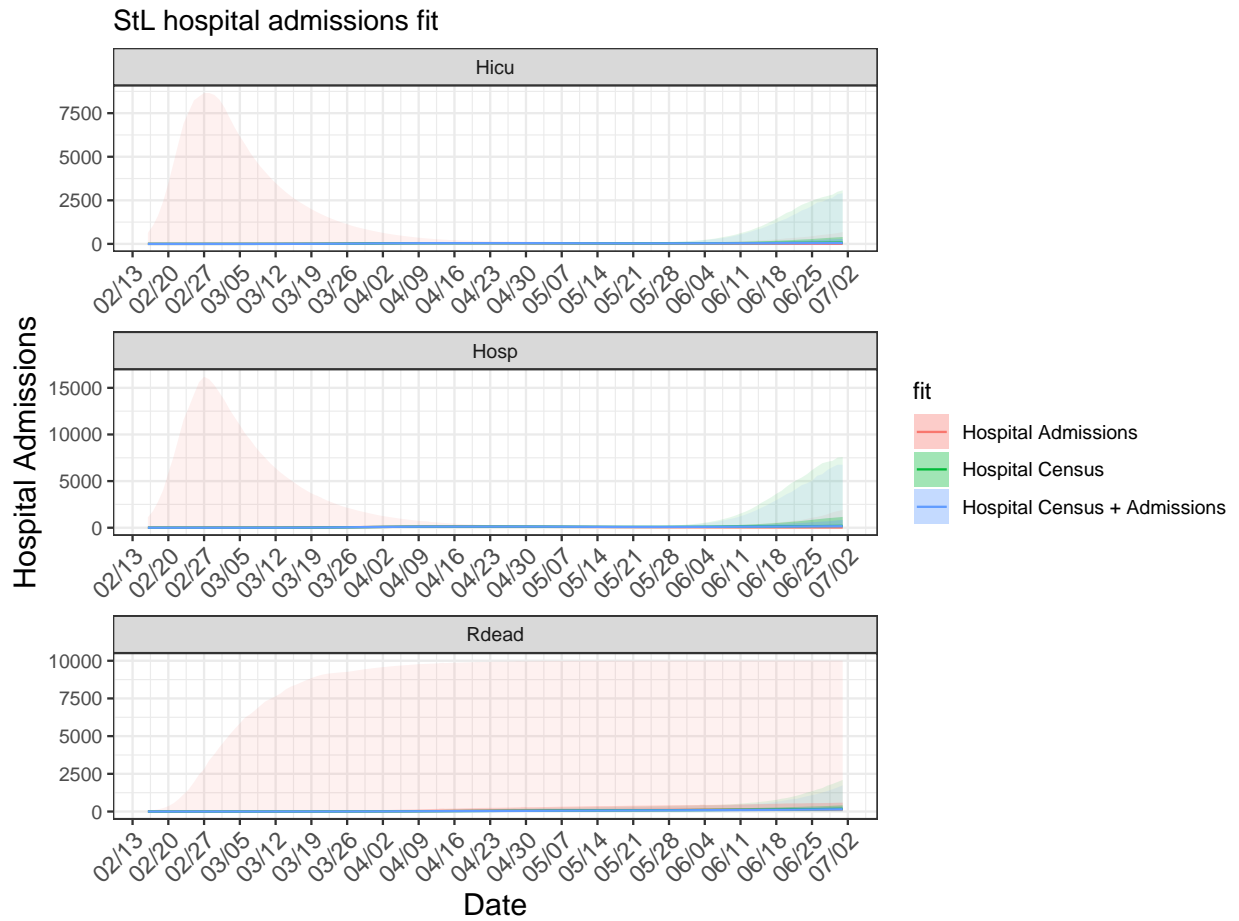
Comparison to observed data

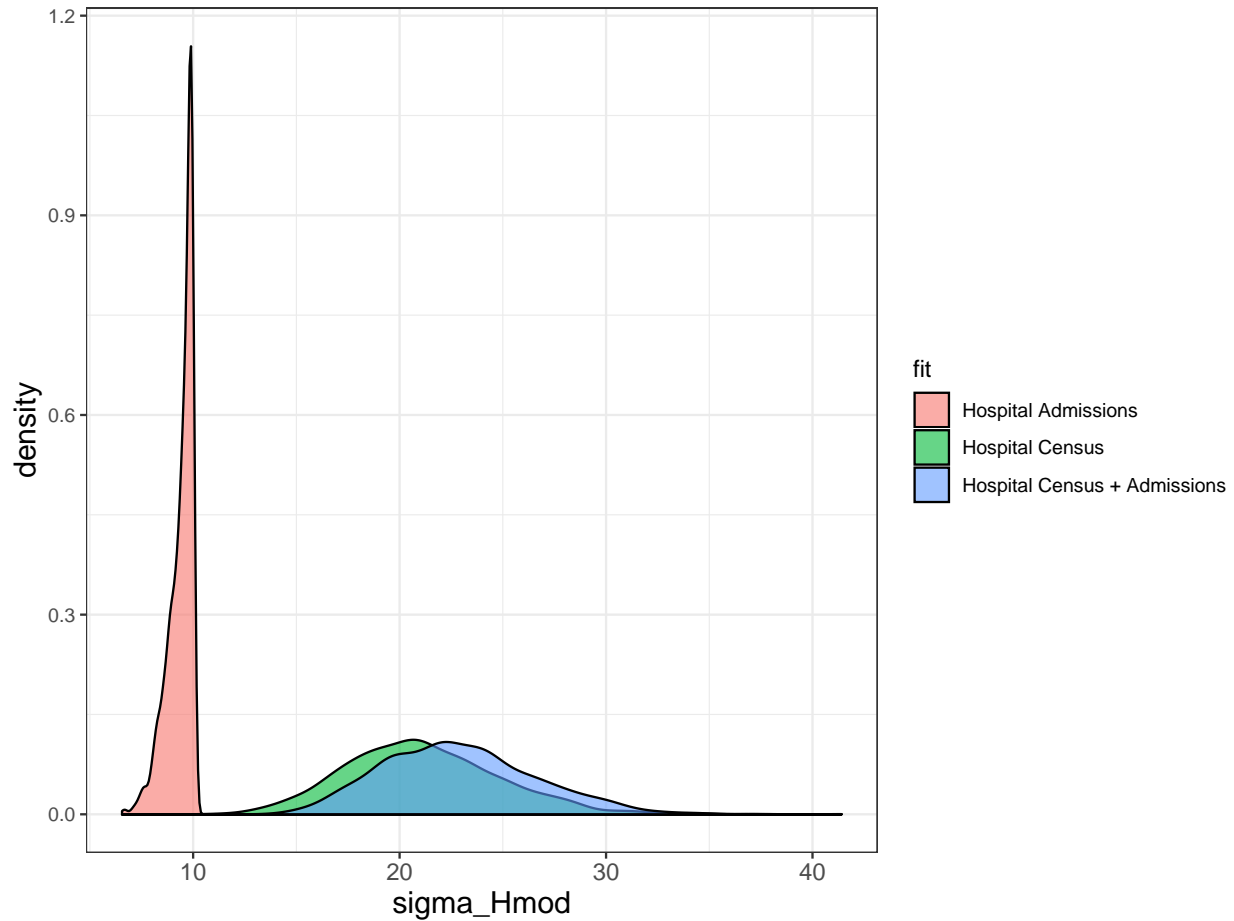
```
## Warning: Removed 23 rows containing missing values (geom_path).
```



Compare StL fits across different data sources used for fitting

```
## Warning: Removed 69 rows containing missing values (geom_path).
```





Tennessee

Fit to TN hospital admissions only

```
## DIAGNOSTIC(S) FROM PARSER:
## Info: integer division implicitly rounds to integer. Found int division: itoday - 1 / dknot
## Positive values rounded down, negative values rounded up or down in platform-dependent way.
## Info: integer division implicitly rounds to integer. Found int division: itoday / dknot
## Positive values rounded down, negative values rounded up or down in platform-dependent way.
##
## itoday/dknot = 13, nbeta = 20
## beta_knots = [1,10,20,30,40,50,60,70,80,90,100,110,120,121,131,136,137,145,146,160]

## Warning: There were 25 transitions after warmup that exceeded the maximum treedepth. Increase max_tr
## http://mc-stan.org/misc/warnings.html#maximum-treedepth-exceeded

## Warning: There were 1 chains where the estimated Bayesian Fraction of Missing Information was low. S
## http://mc-stan.org/misc/warnings.html#bfmi-low

## Warning: Examine the pairs() plot to diagnose sampling problems
```

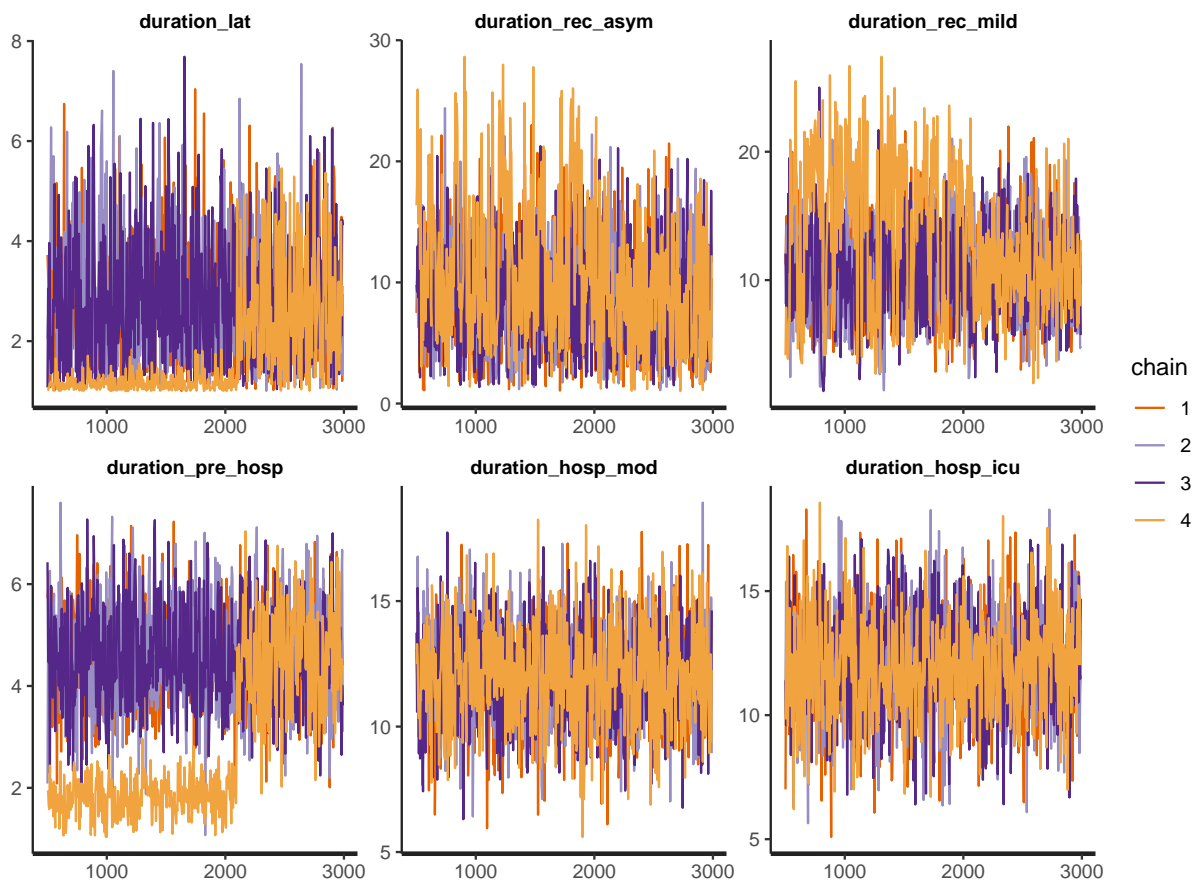
```
## Warning: The largest R-hat is NA, indicating chains have not mixed.  
## Running the chains for more iterations may help. See  
## http://mc-stan.org/misc/warnings.html#r-hat
```

```
## Warning: Bulk Effective Samples Size (ESS) is too low, indicating posterior means and medians may be biased.  
## Running the chains for more iterations may help. See  
## http://mc-stan.org/misc/warnings.html#bulk-ess
```

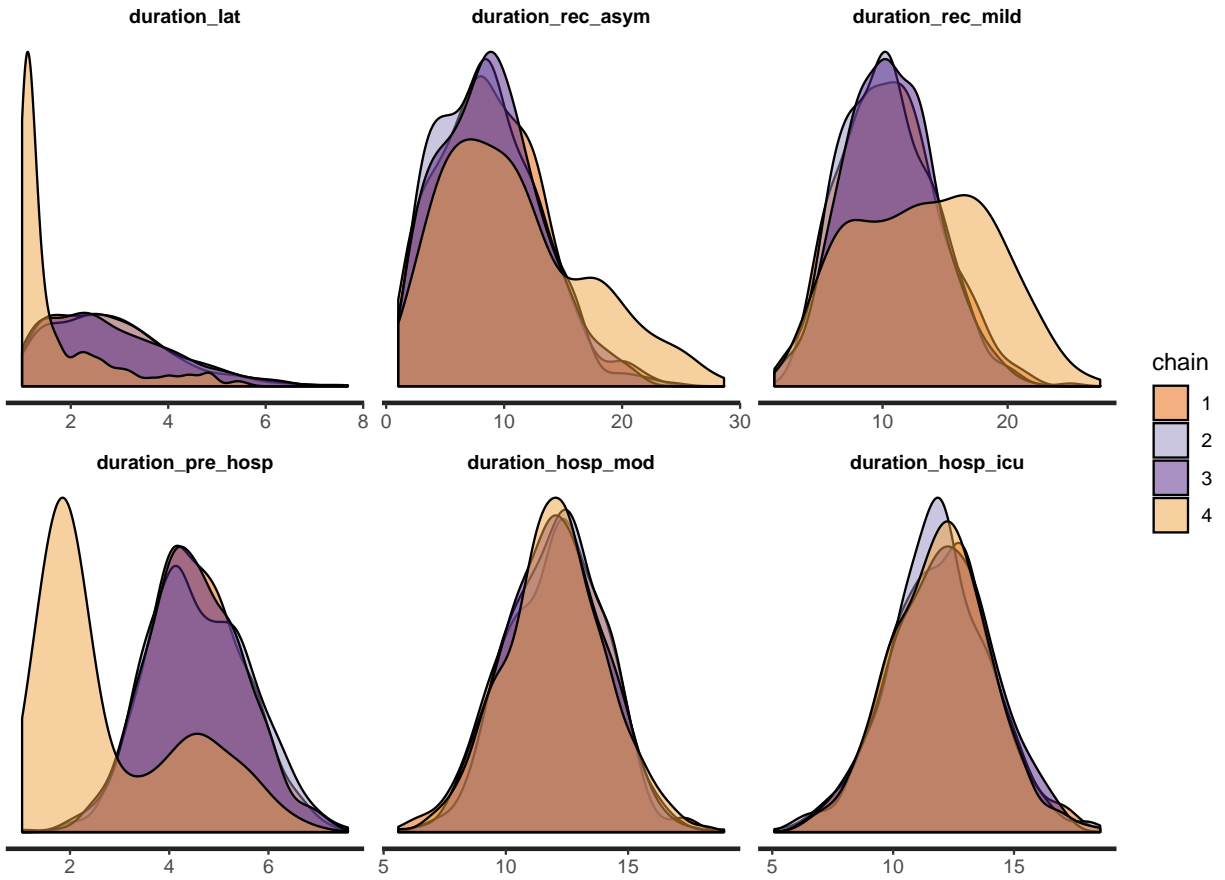
```
## Warning: Tail Effective Samples Size (ESS) is too low, indicating posterior variances and tail quantiles may be biased.  
## Running the chains for more iterations may help. See  
## http://mc-stan.org/misc/warnings.html#tail-ess
```

Diagnostics

Traceplots



Posteriors



Comparison to observed data

```
## Warning: Removed 22 rows containing missing values (geom_point).
```

```
## Warning: Removed 23 rows containing missing values (geom_path).
```

