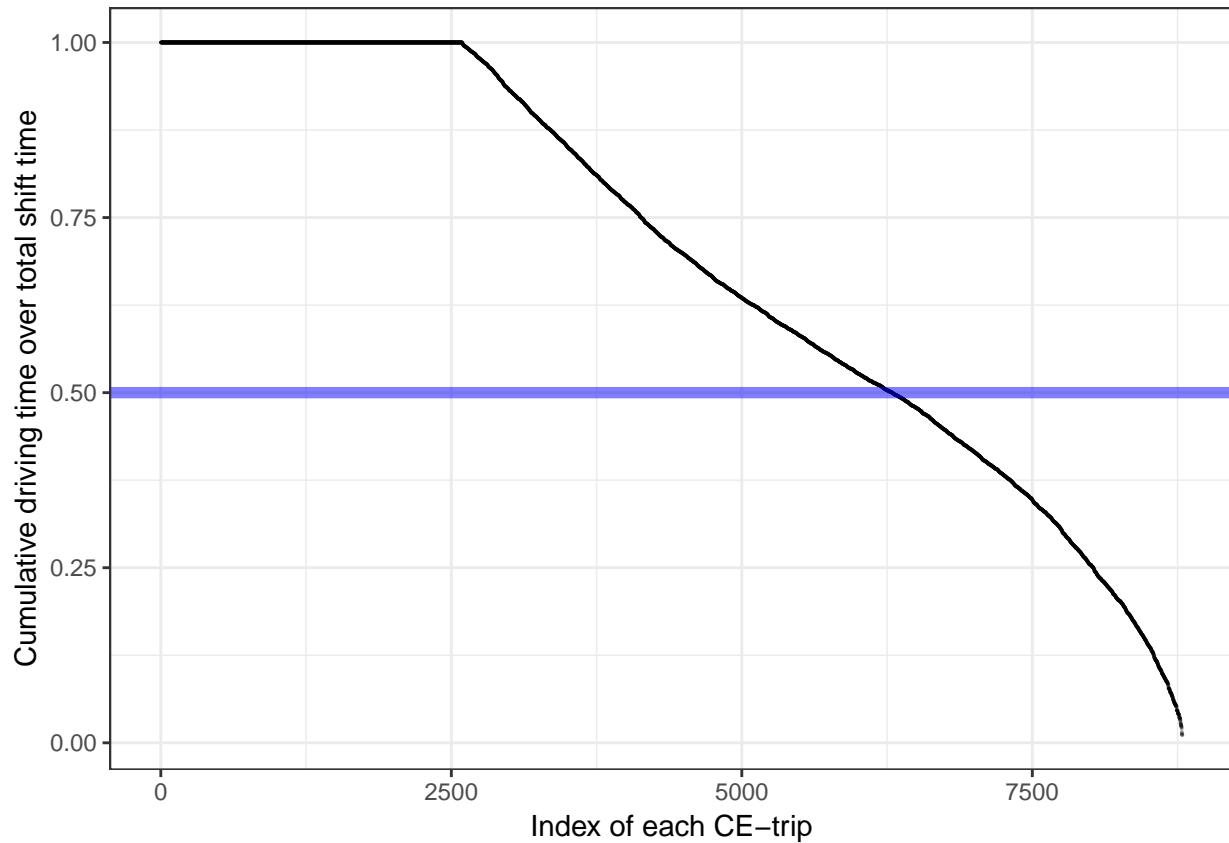


20180206 NSF meeting

*Miao Cai**

2019-02-08

1 At what stage did the drivers have critival events?

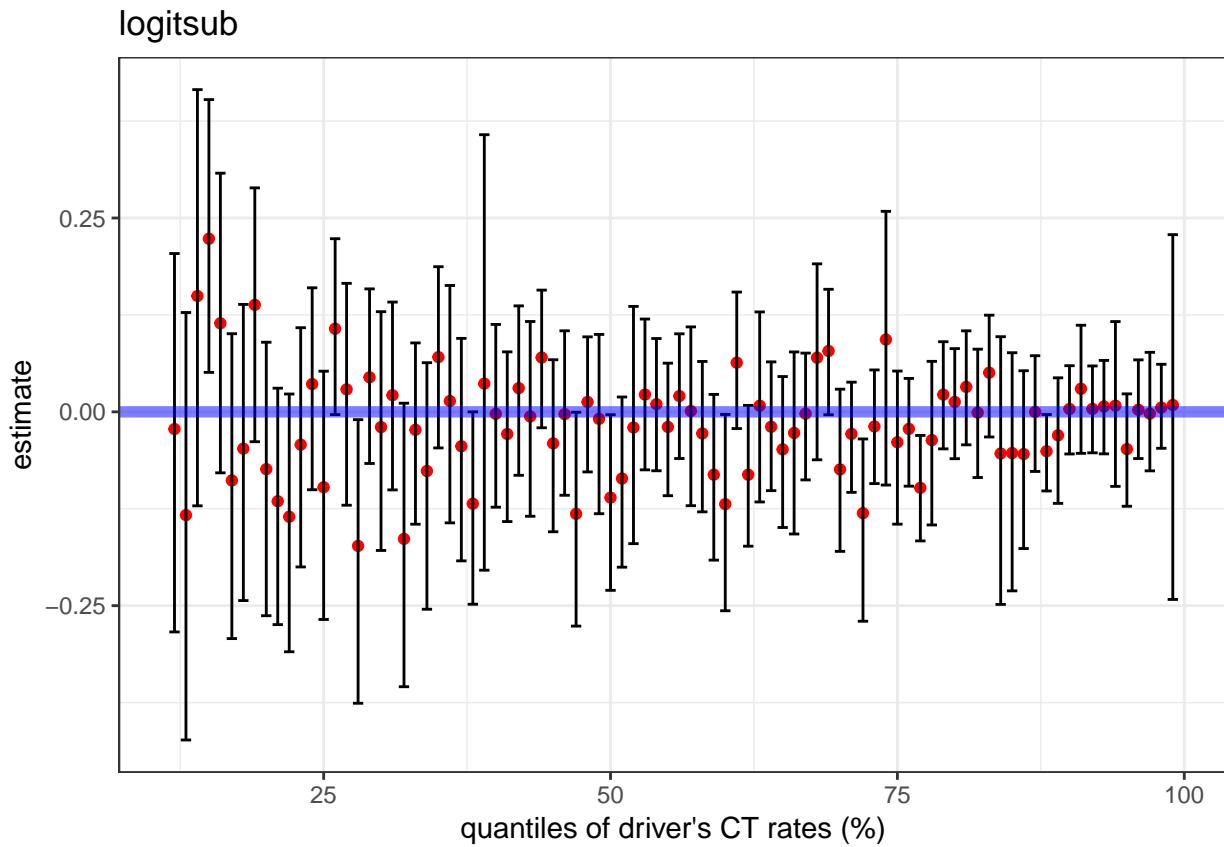


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2 Subgroup analysis

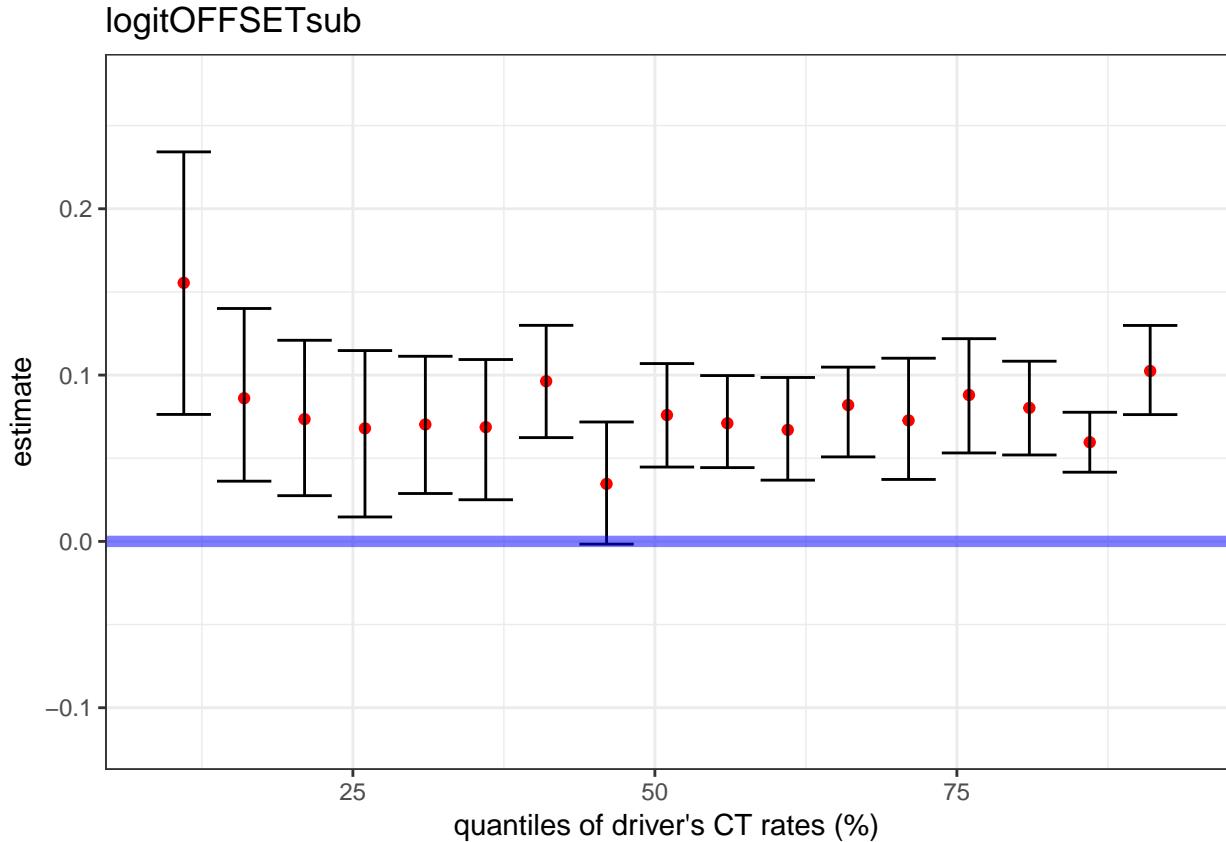
2.1 Logistic regression for subgroups

- Calculate the rate of critical events for each driver
- Sort the rate of critical events
- Divide the drivers into 20 subgroups according to the quantiles of CT rates
- Construct random intercepts and random slopes models for these subgroups



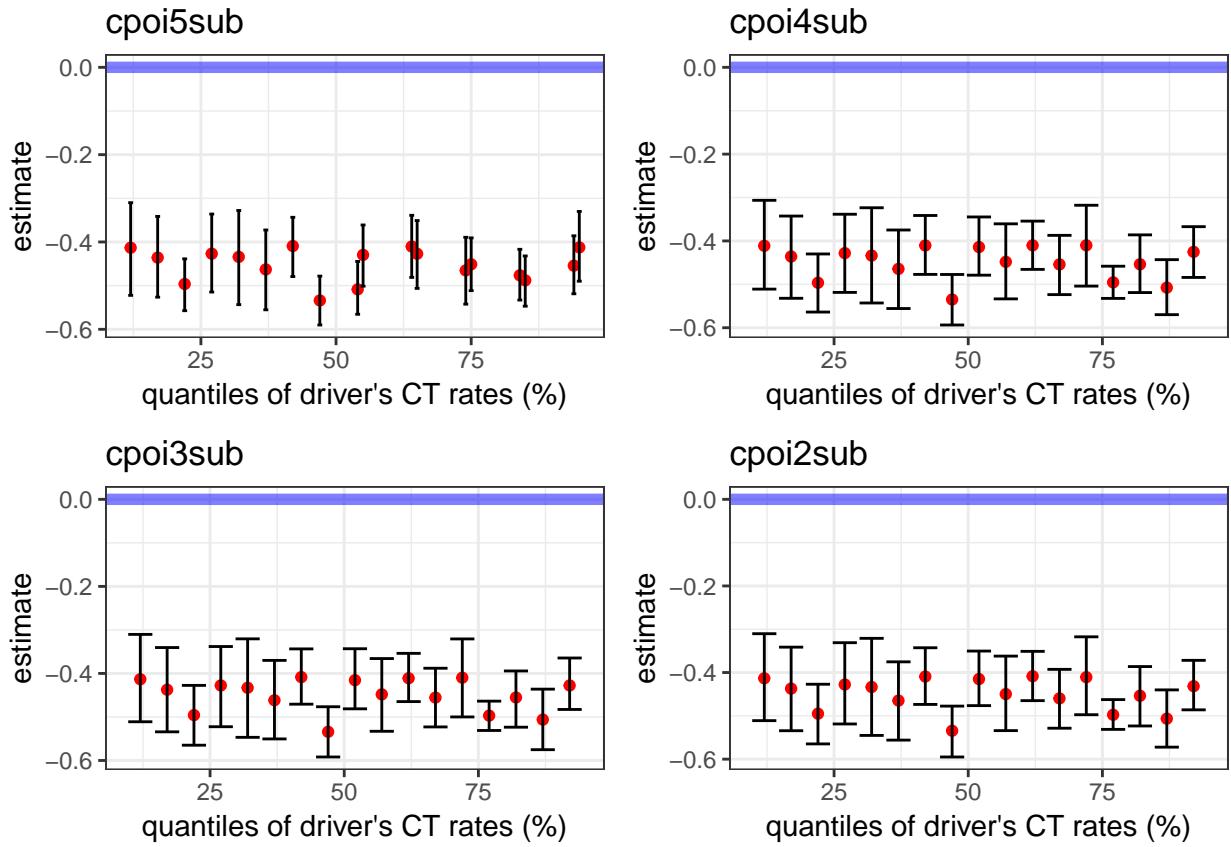
2.2 After removing the length of the trip - logit

```
## Warning: Removed 1 rows containing missing values (geom_point).  
  
## Warning: Removed 1 rows containing missing values (geom_errorbar).
```

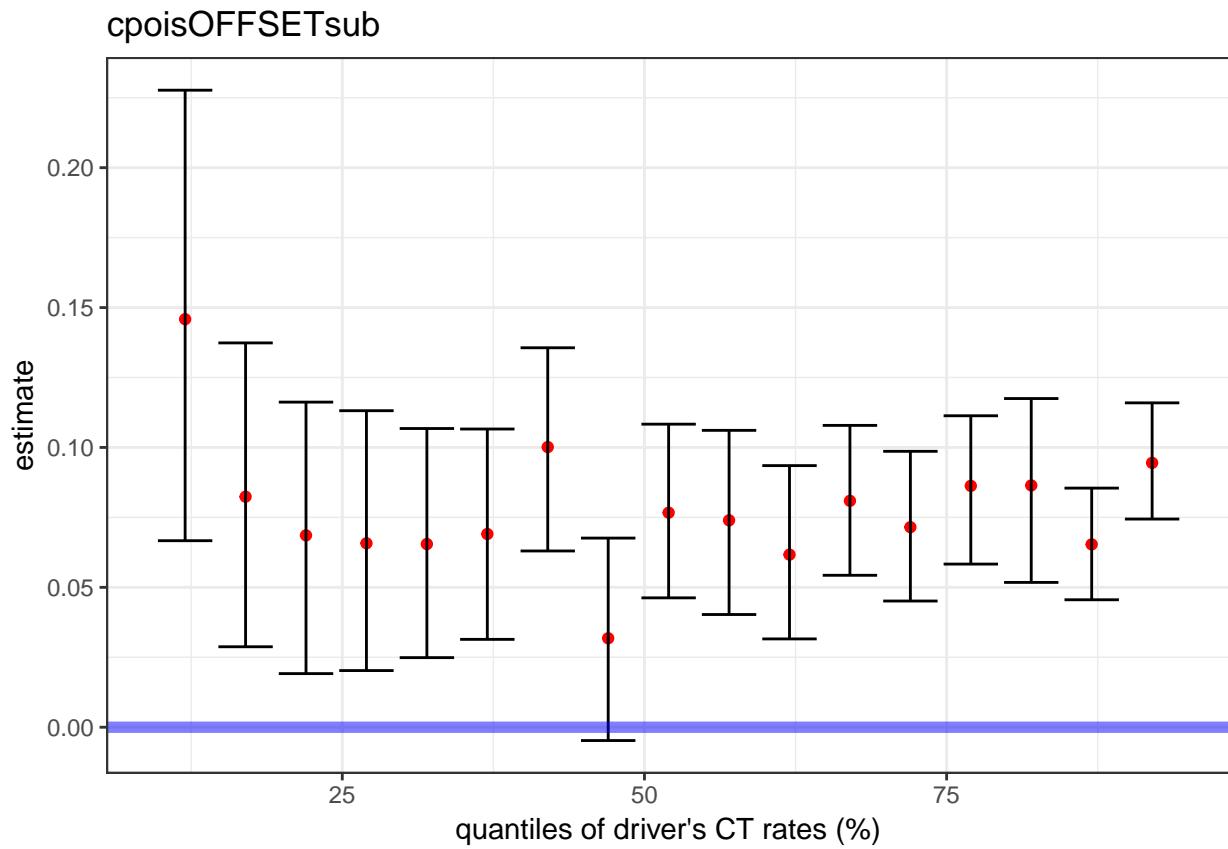


2.3 Censored Poisson regression for subgroups

I also tested the sensitivity of the threshold 5 for censored Poisson regression.



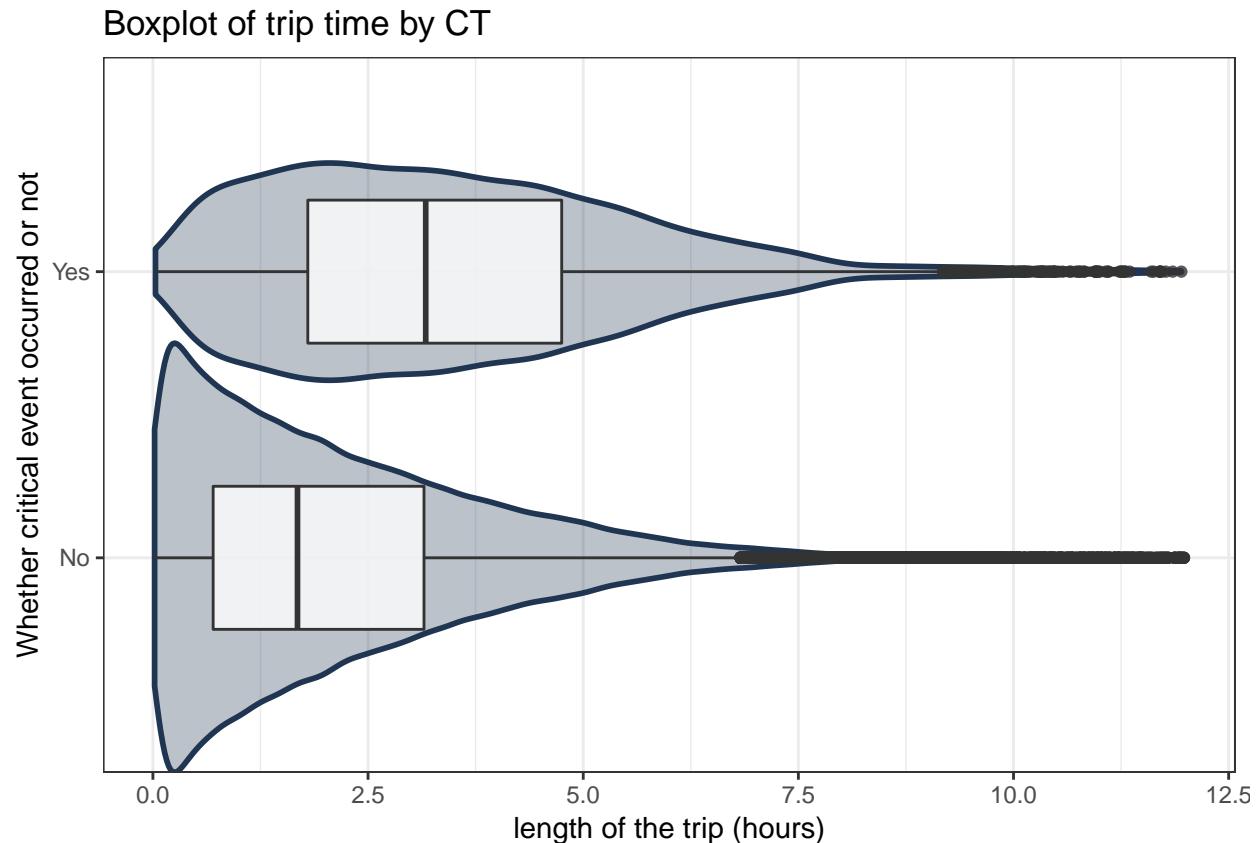
2.4 After removing the length of the trip - censored Poisson



3 Checking the association between trip time and cumulative driving time

3.1 Boxplot on the distribution of trip time between CT and non-CT trips

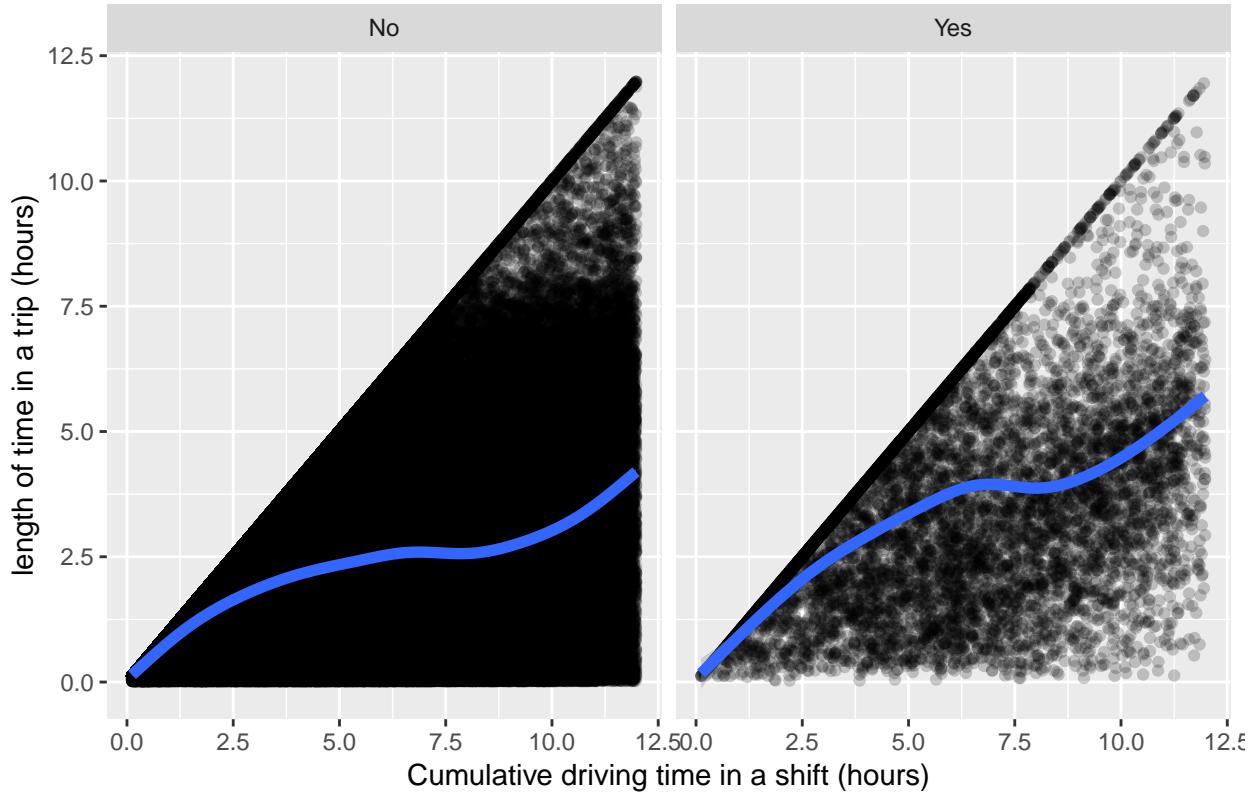
```
## Warning: position_dodge requires non-overlapping x intervals
```



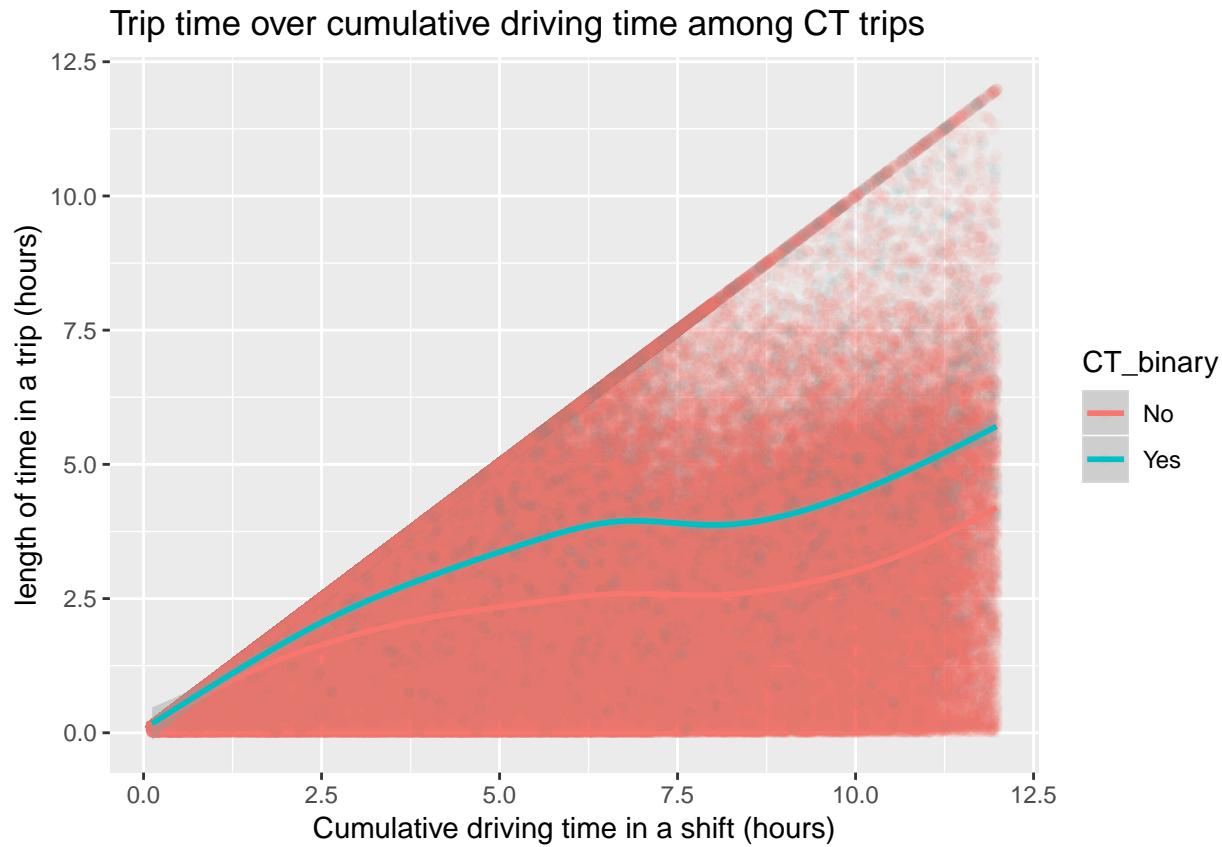
3.2 Scatterplot on trip time and cumulative driving time

```
## `geom_smooth()` using method = 'gam' and formula 'y ~ s(x, bs = "cs")'
```

Trip time over cumulative driving time among CT trips



```
## `geom_smooth()` using method = 'gam' and formula 'y ~ s(x, bs = "cs")'
```

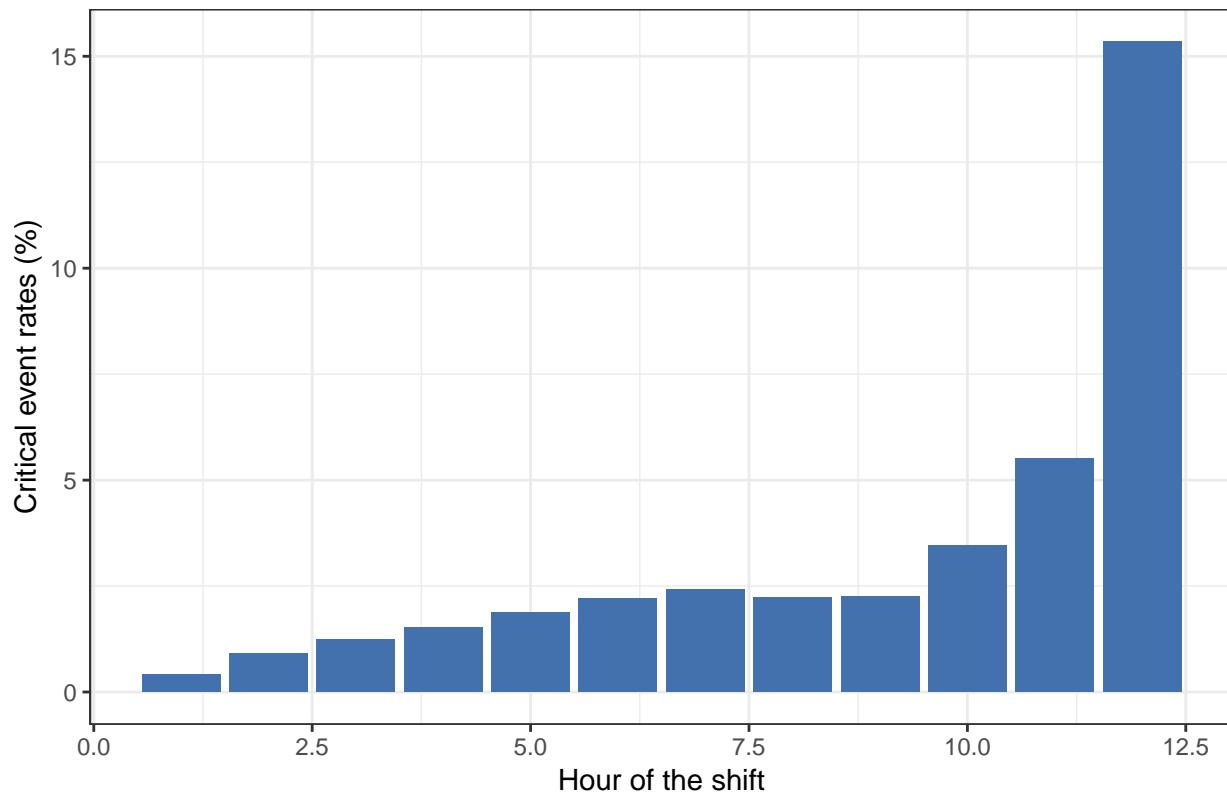


3.3 Caculating cumulative driving time by adding up CT in each trip

```
## # A tibble: 10 x 2
## # Groups:   group [2]
##       x group
##   <int> <dbl>
## 1     0     1
## 2     1     1
## 3     2     1
## 4     3     1
## 5     4     1
## 6     0     2
## 7     6     2
## 8     7     2
## 9     8     2
## 10    9     2

## Warning: Expected 30 pieces. Missing pieces filled with `NA` in 8789
## rows [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,
## 20, ...].
```

The rate (%) of critical events in each hour of the shift



3.4 Calculating CT by adding driving time in each previous trip and time to CE in the last trip

```
## # A tibble: 10 x 2
## # Groups:   group [2]
##       x group
##   <int> <dbl>
## 1     0     1
## 2     1     1
## 3     2     1
## 4     3     1
## 5     4     1
## 6     0     2
## 7     6     2
## 8     7     2
## 9     8     2
## 10    9     2

## Warning: Expected 30 pieces. Missing pieces filled with `NA` in 8789
## rows [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,
## 20, ...].
```

The rate (%) of critical events in each hour of the shift

