coartic_asdur_CV_syllables

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```
data <- read.csv ('trans_dur_sbq_all_cs.csv')
```

```
data <- subset(data, Phone != 't\'')
data <- subset(data, Phone != 'k\'')
data$Phone <- droplevels(data$Phone)
```

```
CV_df <- data[ which(data$Word=='chaki-pi' | data$Word=='katari-pi' |
                               data$Word=='llama-pi' | data$Word=='maki-pi' |
                               data$Word=='papa-pi' | data$Word=='qhari-pi' |
                               data$Word=='sunkha-pi' | data$Word=='t\'ika-pi' |
                               data$Word=='waka-pi' | data$Word=='wallpa-pi' |
                               data$Word=='warmi-pi' | data$Word=='wasi-pi' |
                               data$Word=='wawa-pi'), ]
```

```
new_CVdf <- Reduce(function(x,y) merge(x,y,all=TRUE) ,list(chaki,
                  katari_t, katari_k, llama, maki, qhari, sunkha, tika,
                  warmi, wasi, papa, waka_k, waka_w, wawa, wallpa))
```

```
new_CVdf <- new_CVdf %>%
  group_by(Word, Speaker, Translation) %>%
  mutate(CV_duration = map2(Phone_duration, lead(Phone_duration), `+`)) %>%
  as.data.frame()
new_CVdf$CV_duration <- as.numeric(new_CVdf$CV_duration)


df.final <- new_CVdf
```

Some descriptive stats

```
print(paste("Average transition duration between [C] and [V]: adults",mean(adult$transition_duration)%>%
```

```
## [1] "Average transition duration between [C] and [V]: adults 0.02195"
```

```
print(paste("Average transition duration: children",mean(child$transition_duration)%>% round(5)))
```

```
## [1] "Average transition duration: children 0.02237"
```

```
print(paste("Average transition duration: ten y/os",mean(ten$transition_duration) %>% round(5)))
```

```
## [1] "Average transition duration: ten y/os 0.0235"
```

```
print(paste("Average transition duration: nine y/os",mean(nine$transition_duration)%>% round(5)))
```

```
## [1] "Average transition duration: nine y/os 0.02318"
```

```
print(paste("Average transition duration: eight y/os",mean(et$transition_duration)%>% round(5)))
```

```
## [1] "Average transition duration: eight y/os 0.02102"
```

```
print(paste("Average transition duration: seven y/os",mean(svn$transition_duration)%>% round(5)))
```

```
## [1] "Average transition duration: seven y/os 0.02131"
```

```
print(paste("Average transition duration: 5 & 6 y/os",mean(six$transition_duration)%>% round(5)))
```

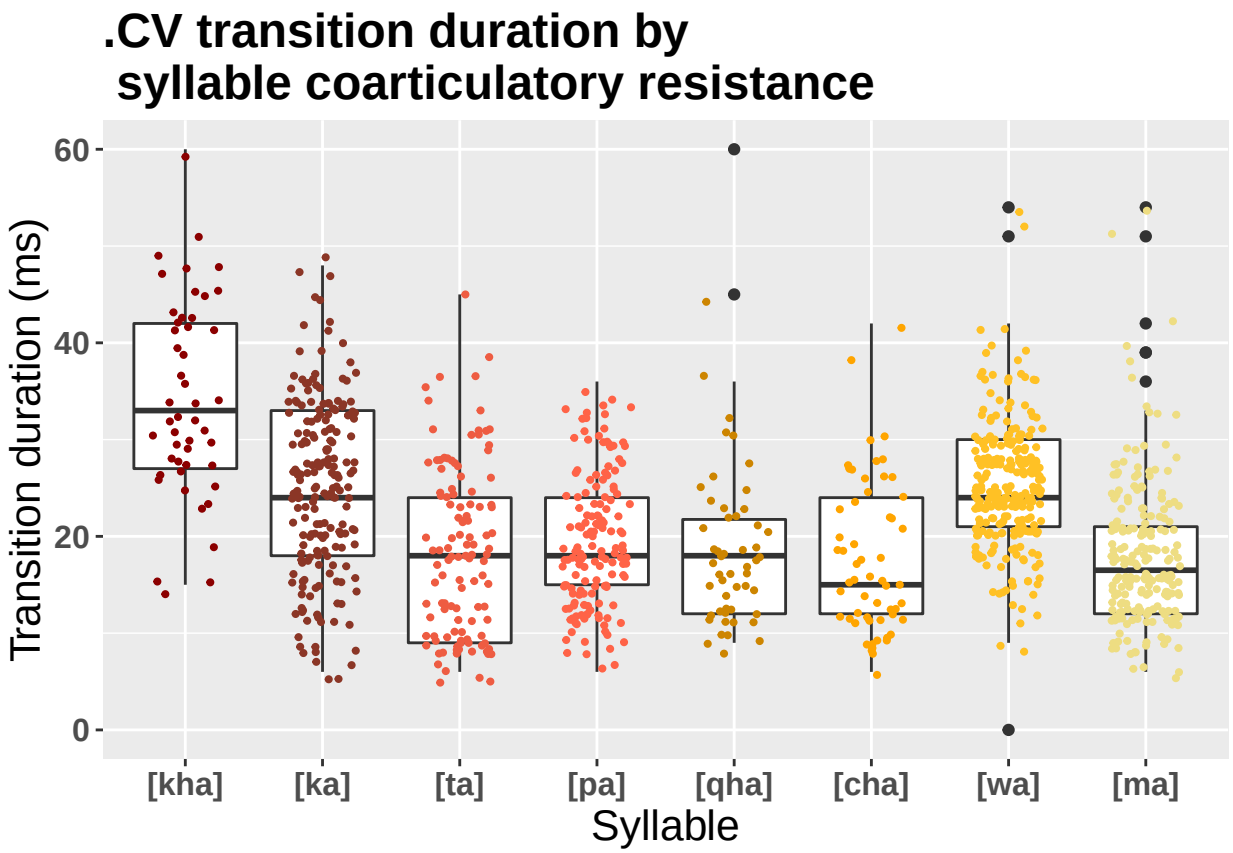
```
## [1] "Average transition duration: 5 & 6 y/os 0.02254"
```

Create some syllables for plotting

```
df.final$plot_Phone <- mapvalues(df.final$Word, from = c("chaki-pi", "katari-pi",
                                                         "llama-pi", "maki-pi", "papa-pi",
                                                         "qhari-pi", "sunkha-pi", "t\'ika-pi", "waka-pi"
                                                         "wasi-pi", "warmi-pi",
                                                         "wawa-pi", "wallpa-pi"),
                                 to = c("[cha]", "[ta]", "[ma]", "[ma]",
                                        "[pa]", "[qha]", "[kha]", "[ka]",
                                        "[ka]", "[wa]",  "[wa]", "[wa]",  "[pa]"))
```

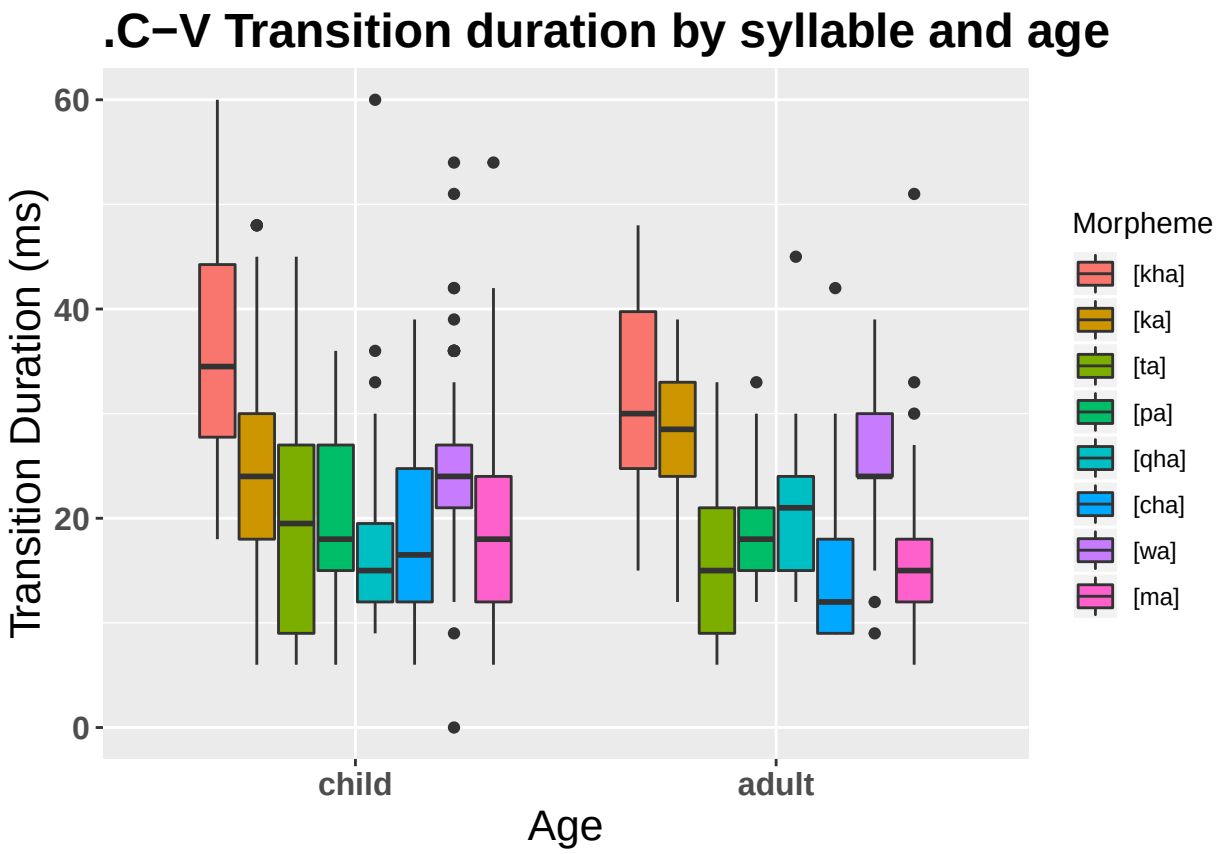
Visualize C-V transition duration by consonant manner

```
# relevel by sonority
df.final$plot_Phone <- factor(df.final$plot_Phone,
                              levels=c("[kha]","[ka]", "[ta]", "[pa]",
                                       "[qha]", "[cha]",
                                       "[wa]", "[ma]"))
ggplot(df.final, aes(x=plot_Phone, y=transition_duration*1000)) +
  geom_boxplot() +
  geom_jitter(aes(color = plot_Phone), width=0.25, size=0.75) +
  scale_color_manual(values = c("darkred", "tomato4","tomato2", "tomato", "orange3", "orange",
                                "goldenrod1", "lightgoldenrod")) +
  scale_y_continuous(limits=c(0,60)) +
labs(title= ".CV transition duration by \n syllable coarticulatory resistance",
                y="Transition duration (ms)", x = "Syllable") +
  theme(legend.position="none") +
  theme(axis.title=element_text(size=16)) +
  theme(plot.title = element_text(size = 18, face = "bold")) +
  theme(axis.text.x = element_text(face="bold", size=12),
        axis.text.y = element_text(face ='bold', size=12))
```



Analysis by age

```
word_plot <- ggplot(df.final, aes(x=Age, y=transition_duration*1000, fill=plot_Phone)) +
  geom_boxplot() + guides(fill=guide_legend(title="Morpheme"))
word_plot + labs(title= ".C-V Transition duration by syllable and age",
                 y="Transition Duration (ms)", x = "Age") +
    scale_y_continuous(limits=c(0,60)) +
  theme(axis.title=element_text(size=16)) +
  theme(plot.title = element_text(size = 18, face = "bold")) +
  theme(axis.text.x = element_text(face="bold", size=12),
        axis.text.y = element_text(face ='bold', size=12))
```


.C−V Transition duration by syllable and age
Transition Duration (ms)
60
40
20
0
child
adult
Age
Morpheme
[kha]
[ka]
[ta]
[pa]
[qha]
[cha]
[wa]
[ma]