summary stats SA1

library(tidyverse)

## ── Attaching packages ─────────────────────────────────────── tidyverse 1.3.2 ──  
## ✔ ggplot2 3.3.6 ✔ purrr 0.3.4  
## ✔ tibble 3.1.8 ✔ dplyr 1.0.9  
## ✔ tidyr 1.2.0 ✔ stringr 1.4.0  
## ✔ readr 2.1.2 ✔ forcats 0.5.1  
## ── Conflicts ────────────────────────────────────────── tidyverse\_conflicts() ──  
## ✖ dplyr::filter() masks stats::filter()  
## ✖ dplyr::lag() masks stats::lag()

library(flextable)

##   
## Attaching package: 'flextable'  
##   
## The following object is masked from 'package:purrr':  
##   
## compose

library(readxl)  
library(extrafont)

## Registering fonts with R

library(forcats)  
library(writexl)

#times new roman tables  
my\_ft\_theme <- function(ft, ...) {  
 # Remove vertical cell padding  
 ft <- padding(ft, padding.top = 0, padding.bottom = 0, part = "all")  
   
 # Change font to TNR 11  
 ft <- font(ft, fontname = "Times New Roman", part = "all")  
 ft <- fontsize(ft, part = "all", size = 12)  
 ft  
}

headscan\_full<-read\_excel("C:\\Users\\19177\\OneDrive - Colostate\\Desktop\\Dissertation\\headscan\_dissertation\\headscan\_full.xlsx")  
headscan\_full$coder <- as.factor(headscan\_full$coder)  
headscan\_full$gender <- as.factor(headscan\_full$gender)  
headscan\_full$race\_eth <- as.factor(headscan\_full$race\_eth)  
headscan\_full$age\_group <- as.factor(headscan\_full$age\_group)  
#reordering factors by frequency  
headscan\_full$race\_eth <- factor(headscan\_full$race\_eth, levels = c("white", "Black", "LatinX", "Asian", "Other", "AIAN", "PTNS", "NHOPI"))  
str(headscan\_full)

## tibble [2,017 × 33] (S3: tbl\_df/tbl/data.frame)  
## $ ID : chr [1:2017] "400-20201012-002" "400-20201012-003" "400-20201012-004" "400-20201012-005" ...  
## $ AA\_C : num [1:2017] 6.5 5.5 7 5.8 6.7 6 5.9 5.9 6.5 6.5 ...  
## $ BGl\_C : num [1:2017] 31.5 28.9 29.3 31.3 28.8 30.6 32 NA 30 27.7 ...  
## $ BiW\_C : num [1:2017] 13 12.7 14.3 14 13.7 13 14.1 13.8 14.3 15 ...  
## $ BiW\_L : num [1:2017] 11.5 10.8 12.1 10.9 10.4 10.6 10.9 11.1 11.3 11.6 ...  
## $ ChCh\_C : num [1:2017] 6.2 6.4 6.8 7 7 7 6.7 6.9 6.7 6.3 ...  
## $ GoSub\_C : num [1:2017] 9.3 9.3 11.5 9.3 10.3 10 7.9 10.6 8.5 10.2 ...  
## $ NRB\_L : num [1:2017] 1.7 1.8 1.9 2.1 1.9 1.4 1.7 1.8 1.6 1.7 ...  
## $ ProA\_L : num [1:2017] 2.8 2.5 3.1 2.3 2.8 2.8 2.6 2.7 3.2 2.8 ...  
## $ ProA\_C : num [1:2017] 3.1 2.7 3.3 2.7 3.1 2.9 2.7 2.9 3.4 3.1 ...  
## $ ProS\_C : num [1:2017] 1.8 2 1.4 1.3 2.2 2.2 1.9 1.4 2.6 2.4 ...  
## $ ProS\_L : num [1:2017] 1.7 1.8 1.4 1.3 2 2 1.8 1.2 2.4 2.2 ...  
## $ SelP\_C : num [1:2017] 4.2 4.1 5.1 4.5 4.7 4.8 4.6 4.2 4.7 4.4 ...  
## $ SelP\_L : num [1:2017] 4.2 4.1 5.1 4.4 4.7 4.8 4.6 4.1 4.6 4.4 ...  
## $ SelDH\_C : num [1:2017] 1.5 0.9 0.9 1.1 1.3 1.5 0.9 0.9 1.2 1.4 ...  
## $ SelM\_L : num [1:2017] 12.2 9.9 13 11.5 11.9 12.6 11.7 11.2 11.7 11.7 ...  
## $ SnasM\_C : num [1:2017] 8.2 5.5 8.4 7.4 7.3 8 7.8 7.6 6.4 7.5 ...  
## $ SmanM\_C : num [1:2017] 5.9 5.1 4.5 4.3 3.3 3.4 5.5 3.7 6.1 4.1 ...  
## $ SmanM\_L : num [1:2017] 5.5 5 4.5 4.2 3.3 3.4 5 3.6 5.9 4 ...  
## $ SnasM\_L : num [1:2017] 7.5 5.3 7.8 6.9 6.7 7.6 6.9 7.1 6.2 6.9 ...  
## $ TrHO\_C : num [1:2017] 17.9 16.3 16.9 16.6 15.9 16.2 16.9 NA 16.7 16.6 ...  
## $ TrEJ\_C : num [1:2017] 4 3.2 3.9 2.9 4.6 4.2 2.9 3.2 2.9 3.3 ...  
## $ TrGo\_C : num [1:2017] 8.4 5.7 7 6.1 6.8 7 7.5 6.1 6.7 6.4 ...  
## $ TrSel\_C : num [1:2017] 14.9 13.8 15 13.3 14 15.1 14 13.8 15.6 14.3 ...  
## $ TrSman\_C : num [1:2017] 17.7 14.5 17.8 14.7 15.7 16.4 14.9 15.9 15.1 16 ...  
## $ TrSnas\_C : num [1:2017] 16.3 14.2 16.7 14.5 15.2 15.7 14.8 14.9 15.7 NA ...  
## $ TrTr\_C : num [1:2017] 29.6 27.6 29.2 27.3 27.9 30 28.3 27.5 30.7 28.6 ...  
## $ TrTr\_L : num [1:2017] 15.5 14.1 15.6 14.9 14.6 14.6 14.7 15.1 15.7 14.4 ...  
## $ coder : Factor w/ 4 levels "Chandler","Isabel",..: 4 4 4 4 4 4 4 4 4 4 ...  
## $ age : num [1:2017] 31 49 49 34 49 55 26 18 25 27 ...  
## $ gender : Factor w/ 4 levels "Female","Male",..: 2 1 2 2 2 2 2 2 2 2 ...  
## $ race\_eth : Factor w/ 8 levels "white","Black",..: 2 1 1 1 1 1 2 2 1 1 ...  
## $ age\_group: Factor w/ 3 levels "18-36","37-54",..: 1 2 2 1 2 3 1 1 1 1 ...

#HTML Table format   
#AACrace\_sumstats %>%   
 #kbl(caption = "Alare to Alare Contour SumStats by Race/Ethnicity") %>%   
 #kable\_styling(bootstrap\_options = c("striped", "hover", "condensed"), full\_width = TRUE)

#exploring NA values for measurements  
measureNAsums <- colSums(is.na(headscan\_full))  
  
measureNAprops <- colMeans(is.na(headscan\_full))  
  
measureNAprops1 <- as.data.frame(measureNAprops)  
measureNAprops1 <- rownames\_to\_column(measureNAprops1, "measure\_name")  
measureNAprops1 <- measureNAprops1 %>% slice(-c(1, 29:33))  
  
measureNAsums1 <- as.data.frame(measureNAsums)  
measureNAsums1 <- rownames\_to\_column(measureNAsums1, "measure\_name")  
measureNAsums1 <- measureNAsums1 %>% slice(-c(1, 29:33))  
  
measureNAs <- inner\_join(measureNAprops1, measureNAsums1, by = "measure\_name", desc)  
  
measureNAs$measureNAprops<- round(measureNAs$measureNAprops, digits=4)  
  
measureNAs$measure\_name <- fct\_reorder(measureNAs$measure\_name, measureNAs$measureNAsums, .desc=TRUE)  
  
str(measureNAs$measure\_name)

## Factor w/ 27 levels "BGl\_C","TrHO\_C",..: 19 1 20 21 12 9 24 23 22 16 ...

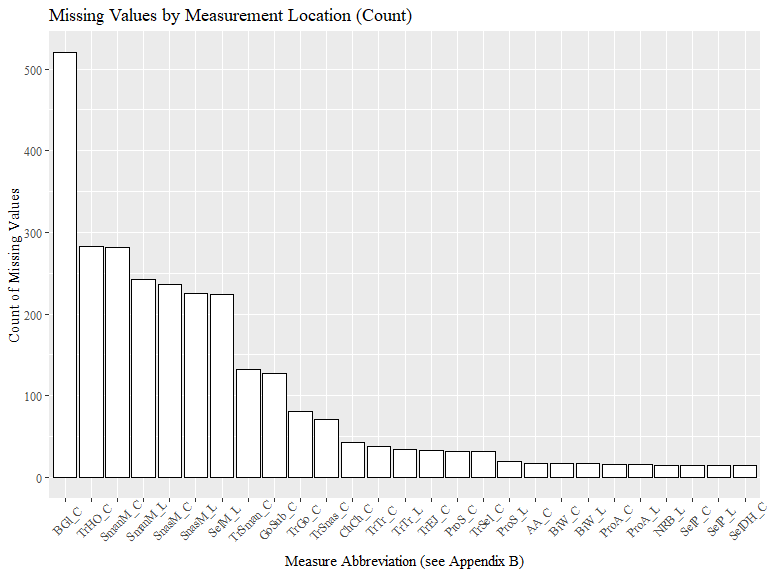
#Size 12 Table TNR  
flextable(measureNAs) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("NA values for each Measurement Location") %>%   
 autofit() %>%   
 set\_header\_labels(values = list(measure\_name = "Measurement Location",  
 measureNAprops = "Proportion of NA values",  
 measureNAsums = "Count of NA values"))

**Table** : NA values for each Measurement Location

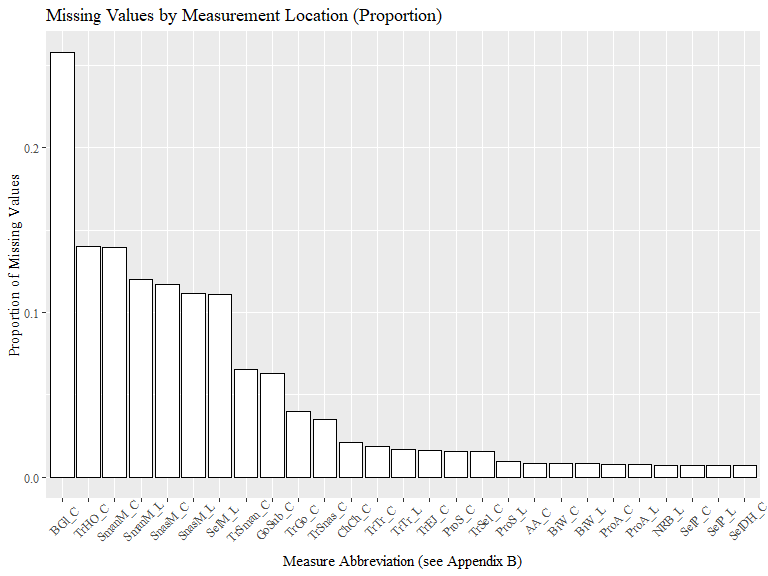
| **Measurement Location** | **Proportion of NA values** | **Count of NA values** |
| --- | --- | --- |
| AA\_C | 0.0084 | 17 |
| BGl\_C | 0.2578 | 520 |
| BiW\_C | 0.0084 | 17 |
| BiW\_L | 0.0084 | 17 |
| ChCh\_C | 0.0213 | 43 |
| GoSub\_C | 0.0630 | 127 |
| NRB\_L | 0.0074 | 15 |
| ProA\_L | 0.0079 | 16 |
| ProA\_C | 0.0079 | 16 |
| ProS\_C | 0.0154 | 31 |
| ProS\_L | 0.0094 | 19 |
| SelP\_C | 0.0074 | 15 |
| SelP\_L | 0.0074 | 15 |
| SelDH\_C | 0.0069 | 14 |
| SelM\_L | 0.1111 | 224 |
| SnasM\_C | 0.1170 | 236 |
| SmanM\_C | 0.1393 | 281 |
| SmanM\_L | 0.1200 | 242 |
| SnasM\_L | 0.1116 | 225 |
| TrHO\_C | 0.1403 | 283 |
| TrEJ\_C | 0.0164 | 33 |
| TrGo\_C | 0.0397 | 80 |
| TrSel\_C | 0.0154 | 31 |
| TrSman\_C | 0.0654 | 132 |
| TrSnas\_C | 0.0352 | 71 |
| TrTr\_C | 0.0188 | 38 |
| TrTr\_L | 0.0169 | 34 |

#boxplot  
#ggplot(data=measureNAs, aes(y=measureNAsums, x=measure\_name))+  
 #geom\_boxplot(color= "black", fill = "white")+  
 #theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 45, vjust=0.7))+  
 #labs(title="Missing Values by Measurement Location",  
 #y="Count of Missing Values",  
 #x="Measure Abbreviation")

#bar chart with counts  
ggplot(data=measureNAs, aes(x=measure\_name, y=measureNAsums))+  
 geom\_bar(stat= "identity", color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 45, vjust=0.7))+  
 labs(title="Missing Values by Measurement Location (Count)",  
 y="Count of Missing Values",  
 x="Measure Abbreviation (see Appendix B)")



#bar chart with proportions  
ggplot(data=measureNAs, aes(x=measure\_name, y=measureNAprops))+  
 geom\_bar(stat= "identity", color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 45, vjust=0.7))+  
 labs(title="Missing Values by Measurement Location (Proportion)",  
 y="Proportion of Missing Values",  
 x="Measure Abbreviation (see Appendix B)")

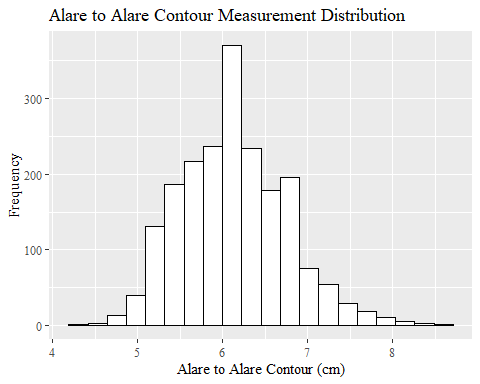


write\_xlsx(measureNAs, "C:\\Users\\19177\\OneDrive - Colostate\\Desktop\\Dissertation\\headscan\_dissertation\\measureNAs.xlsx")

AA\_C race/eth, gender, age group sumstats

#histogram of all AA\_C values  
ggplot(data=headscan\_full, aes(x=AA\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Alare to Alare Contour Measurement Distribution",  
 y="Frequency",  
 x="Alare to Alare Contour (cm)")

## Warning: Removed 17 rows containing non-finite values (stat\_bin).



#AA\_C race\_eth sumstats  
AA\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(AA\_C, na.rm = TRUE),  
 max = max(AA\_C, na.rm = TRUE),  
 mean = mean(AA\_C, na.rm = TRUE),  
 mdn = median(AA\_C, na.rm = TRUE),  
 sd = sd(AA\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(AA\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(AA\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(AA\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(AA\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(AA\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(AA\_C)))   
  
AA\_Crace\_sumstats <- AA\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(AA\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Alare to Alare Contour SumStats by Race/Ethnicity")

**Table** : Alare to Alare Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.4 | 8.3 | 6.11 | 6.1 | 0.61 | 0.02 | 5.20 | 5.70 | 6.1 | 6.5 | 7.20 | 9 |
| Black | 548 | 4.7 | 8.7 | 6.19 | 6.1 | 0.65 | 0.03 | 5.20 | 5.70 | 6.1 | 6.6 | 7.39 | 5 |
| LatinX | 100 | 4.7 | 7.5 | 6.15 | 6.2 | 0.63 | 0.06 | 5.19 | 5.70 | 6.2 | 6.6 | 7.21 | 1 |
| Asian | 91 | 5.0 | 7.7 | 5.91 | 5.8 | 0.69 | 0.07 | 5.00 | 5.32 | 5.8 | 6.3 | 7.26 | 1 |
| Other | 21 | 4.5 | 7.3 | 6.08 | 6.2 | 0.63 | 0.14 | 5.00 | 6.00 | 6.2 | 6.3 | 6.80 | 0 |
| AIAN | 8 | 5.2 | 6.9 | 6.09 | 6.1 | 0.58 | 0.20 | 5.35 | 5.80 | 6.1 | 6.4 | 6.84 | 1 |
| PTNS | 5 | 5.9 | 6.7 | 6.16 | 6.1 | 0.31 | 0.14 | 5.92 | 6.00 | 6.1 | 6.1 | 6.58 | 0 |
| NHOPI | 4 | 5.6 | 6.5 | 5.97 | 5.9 | 0.41 | 0.21 | 5.61 | 5.68 | 5.9 | 6.2 | 6.44 | 0 |

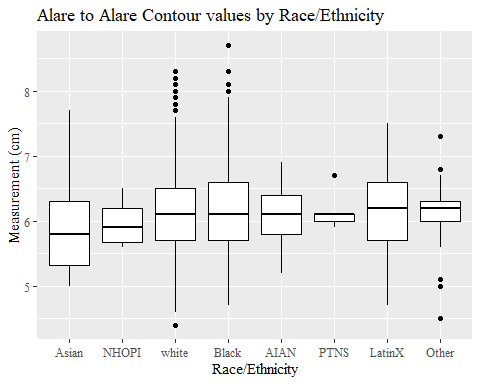
#%>% set\_header\_labels(values = list(AA\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(AA\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Alare to Alare Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Alare to Alare Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.4 | 8.3 | 6.11 | 6.1 | 0.61 | 0.02 | 5.20 | 5.70 | 6.1 | 6.5 | 7.20 | 9 |
| Black | 548 | 4.7 | 8.7 | 6.19 | 6.1 | 0.65 | 0.03 | 5.20 | 5.70 | 6.1 | 6.6 | 7.39 | 5 |
| LatinX | 100 | 4.7 | 7.5 | 6.15 | 6.2 | 0.63 | 0.06 | 5.19 | 5.70 | 6.2 | 6.6 | 7.21 | 1 |
| Asian | 91 | 5.0 | 7.7 | 5.91 | 5.8 | 0.69 | 0.07 | 5.00 | 5.32 | 5.8 | 6.3 | 7.26 | 1 |
| Other | 21 | 4.5 | 7.3 | 6.08 | 6.2 | 0.63 | 0.14 | 5.00 | 6.00 | 6.2 | 6.3 | 6.80 | 0 |
| AIAN | 8 | 5.2 | 6.9 | 6.09 | 6.1 | 0.58 | 0.20 | 5.35 | 5.80 | 6.1 | 6.4 | 6.84 | 1 |
| PTNS | 5 | 5.9 | 6.7 | 6.16 | 6.1 | 0.31 | 0.14 | 5.92 | 6.00 | 6.1 | 6.1 | 6.58 | 0 |
| NHOPI | 4 | 5.6 | 6.5 | 5.97 | 5.9 | 0.41 | 0.21 | 5.61 | 5.68 | 5.9 | 6.2 | 6.44 | 0 |

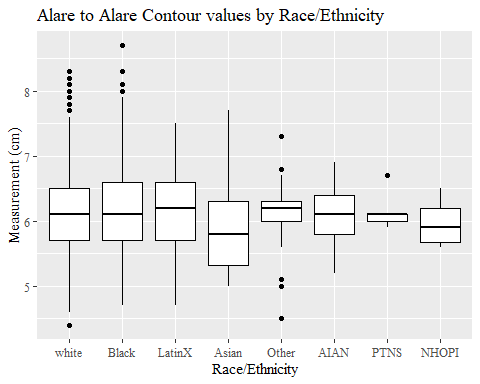
#%>% set\_header\_labels(values = list(AA\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, AA\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=AA\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Alare to Alare Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=AA\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Alare to Alare Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#AA\_C gender sumstats  
AA\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(AA\_C, na.rm = TRUE),  
 max = max(AA\_C, na.rm = TRUE),  
 mean = mean(AA\_C, na.rm = TRUE),  
 mdn = median(AA\_C, na.rm = TRUE),  
 sd = sd(AA\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(AA\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(AA\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(AA\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(AA\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(AA\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(AA\_C)))  
  
AA\_Cgender\_sumstats <- AA\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(AA\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Alare to Alare Contour SumStats by Gender")

**Table** : Alare to Alare Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.4 | 7.7 | 5.83 | 5.8 | 0.50 | 0.02 | 5.10 | 5.50 | 5.8 | 6.20 | 6.70 | 12 |
| Male | 939 | 4.7 | 8.7 | 6.46 | 6.4 | 0.59 | 0.02 | 5.60 | 6.00 | 6.4 | 6.80 | 7.43 | 5 |
| Non-binary or Other | 5 | 5.2 | 6.8 | 6.08 | 6.2 | 0.58 | 0.26 | 5.36 | 6.00 | 6.2 | 6.20 | 6.68 | 0 |
| Prefer not to say | 1 | 6.1 | 6.1 | 6.10 | 6.1 |  |  | 6.10 | 6.10 | 6.1 | 6.10 | 6.10 | 0 |
|  | 8 | 5.3 | 6.6 | 5.86 | 5.8 | 0.43 | 0.15 | 5.37 | 5.57 | 5.8 | 6.08 | 6.49 | 0 |

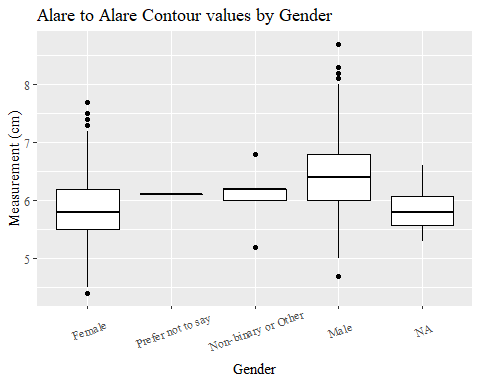
#%>% set\_header\_labels(values = list(AA\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(AA\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Alare to Alare Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Alare to Alare Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.4 | 7.7 | 5.83 | 5.8 | 0.50 | 0.02 | 5.10 | 5.50 | 5.8 | 6.20 | 6.70 | 12 |
| Male | 939 | 4.7 | 8.7 | 6.46 | 6.4 | 0.59 | 0.02 | 5.60 | 6.00 | 6.4 | 6.80 | 7.43 | 5 |
| Non-binary or Other | 5 | 5.2 | 6.8 | 6.08 | 6.2 | 0.58 | 0.26 | 5.36 | 6.00 | 6.2 | 6.20 | 6.68 | 0 |
| Prefer not to say | 1 | 6.1 | 6.1 | 6.10 | 6.1 |  |  | 6.10 | 6.10 | 6.1 | 6.10 | 6.10 | 0 |
|  | 8 | 5.3 | 6.6 | 5.86 | 5.8 | 0.43 | 0.15 | 5.37 | 5.57 | 5.8 | 6.08 | 6.49 | 0 |

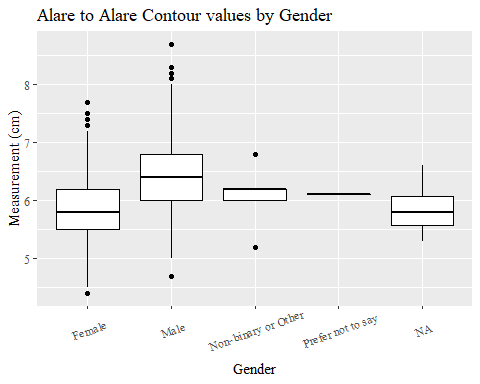
#%>% set\_header\_labels(values = list(AA\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, AA\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=AA\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Alare to Alare Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=AA\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Alare to Alare Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#AA\_C age group sumstats  
AA\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(AA\_C, na.rm = TRUE),  
 max = max(AA\_C, na.rm = TRUE),  
 mean = mean(AA\_C, na.rm = TRUE),  
 mdn = median(AA\_C, na.rm = TRUE),  
 sd = sd(AA\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(AA\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(AA\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(AA\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(AA\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(AA\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(AA\_C)))  
  
AA\_Cage\_sumstats <- AA\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(AA\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Alare to Alare Contour SumStats by Age Group")

**Table** : Alare to Alare Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.6 | 8.3 | 6.03 | 6.0 | 0.59 | 0.02 | 5.12 | 5.6 | 6.0 | 6.4 | 7.0 | 6 |
| 37-54 | 940 | 4.4 | 8.1 | 6.20 | 6.2 | 0.63 | 0.02 | 5.20 | 5.7 | 6.2 | 6.6 | 7.3 | 10 |
| 55-72 | 84 | 5.0 | 8.7 | 6.39 | 6.3 | 0.69 | 0.08 | 5.41 | 5.9 | 6.3 | 6.7 | 7.4 | 1 |
|  | 1 | 6.4 | 6.4 | 6.40 | 6.4 |  |  | 6.40 | 6.4 | 6.4 | 6.4 | 6.4 | 0 |

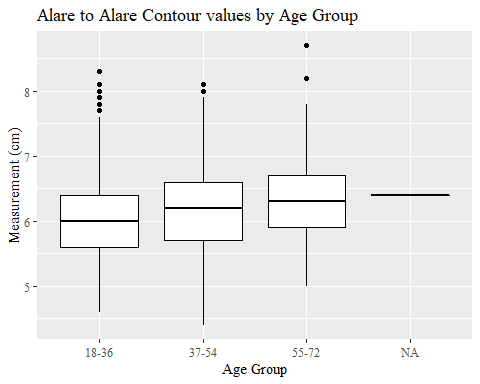
#%>% set\_header\_labels(values = list(AA\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(AA\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Alare to Alare Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Alare to Alare Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.6 | 8.3 | 6.03 | 6.0 | 0.59 | 0.02 | 5.12 | 5.6 | 6.0 | 6.4 | 7.0 | 6 |
| 37-54 | 940 | 4.4 | 8.1 | 6.20 | 6.2 | 0.63 | 0.02 | 5.20 | 5.7 | 6.2 | 6.6 | 7.3 | 10 |
| 55-72 | 84 | 5.0 | 8.7 | 6.39 | 6.3 | 0.69 | 0.08 | 5.41 | 5.9 | 6.3 | 6.7 | 7.4 | 1 |
|  | 1 | 6.4 | 6.4 | 6.40 | 6.4 |  |  | 6.40 | 6.4 | 6.4 | 6.4 | 6.4 | 0 |

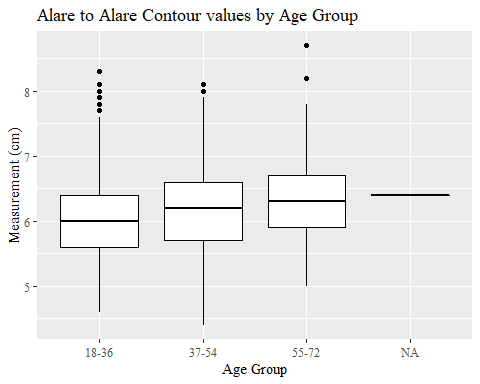
#%>% set\_header\_labels(values = list(AA\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, AA\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=AA\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Alare to Alare Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=AA\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Alare to Alare Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

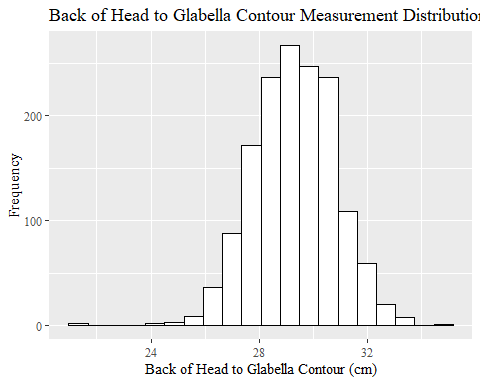
## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



BGl\_C race/eth, gender, age group sumstats

#histogram of all BGl\_C values  
ggplot(data=headscan\_full, aes(x=BGl\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Back of Head to Glabella Contour Measurement Distribution",  
 y="Frequency",  
 x="Back of Head to Glabella Contour (cm)")

## Warning: Removed 520 rows containing non-finite values (stat\_bin).



#BGl\_C race/eth sumstats  
BGl\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(BGl\_C, na.rm = TRUE),  
 max = max(BGl\_C, na.rm = TRUE),  
 mean = mean(BGl\_C, na.rm = TRUE),  
 mdn = median(BGl\_C, na.rm = TRUE),  
 sd = sd(BGl\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BGl\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(BGl\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(BGl\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(BGl\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(BGl\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(BGl\_C)))   
  
BGl\_Crace\_sumstats <- BGl\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(BGl\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Back of Head to Glabella Contour SumStats by Race/Ethnicity")

**Table** : Back of Head to Glabella Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 21.6 | 33.3 | 29.20 | 29.20 | 1.48 | 0.04 | 26.90 | 28.20 | 29.20 | 30.30 | 31.60 | 271 |
| Black | 548 | 24.3 | 35.0 | 29.72 | 29.60 | 1.49 | 0.06 | 27.40 | 28.50 | 29.60 | 30.80 | 32.30 | 197 |
| LatinX | 100 | 26.2 | 33.1 | 29.07 | 29.00 | 1.40 | 0.14 | 26.87 | 28.10 | 29.00 | 29.90 | 31.61 | 21 |
| Asian | 91 | 25.0 | 32.0 | 28.56 | 28.55 | 1.41 | 0.15 | 26.43 | 27.60 | 28.55 | 29.60 | 30.60 | 17 |
| Other | 21 | 21.5 | 33.4 | 28.84 | 28.90 | 2.69 | 0.59 | 25.28 | 27.90 | 28.90 | 30.15 | 32.42 | 6 |
| AIAN | 8 | 28.4 | 30.7 | 29.48 | 29.40 | 0.95 | 0.33 | 28.53 | 29.08 | 29.40 | 29.80 | 30.52 | 4 |
| PTNS | 5 | 29.4 | 29.4 | 29.40 | 29.40 |  |  | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 4 |
| NHOPI | 4 | 29.6 | 31.9 | 30.68 | 30.60 | 0.95 | 0.47 | 29.74 | 30.27 | 30.60 | 31.00 | 31.72 | 0 |

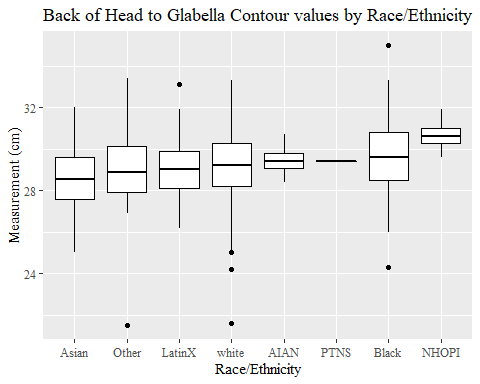
#%>% set\_header\_labels(values = list(BGl\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BGl\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Back of Head to Glabella Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Back of Head to Glabella Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 21.6 | 33.3 | 29.20 | 29.20 | 1.48 | 0.04 | 26.90 | 28.20 | 29.20 | 30.30 | 31.60 | 271 |
| Black | 548 | 24.3 | 35.0 | 29.72 | 29.60 | 1.49 | 0.06 | 27.40 | 28.50 | 29.60 | 30.80 | 32.30 | 197 |
| LatinX | 100 | 26.2 | 33.1 | 29.07 | 29.00 | 1.40 | 0.14 | 26.87 | 28.10 | 29.00 | 29.90 | 31.61 | 21 |
| Asian | 91 | 25.0 | 32.0 | 28.56 | 28.55 | 1.41 | 0.15 | 26.43 | 27.60 | 28.55 | 29.60 | 30.60 | 17 |
| Other | 21 | 21.5 | 33.4 | 28.84 | 28.90 | 2.69 | 0.59 | 25.28 | 27.90 | 28.90 | 30.15 | 32.42 | 6 |
| AIAN | 8 | 28.4 | 30.7 | 29.48 | 29.40 | 0.95 | 0.33 | 28.53 | 29.08 | 29.40 | 29.80 | 30.52 | 4 |
| PTNS | 5 | 29.4 | 29.4 | 29.40 | 29.40 |  |  | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 4 |
| NHOPI | 4 | 29.6 | 31.9 | 30.68 | 30.60 | 0.95 | 0.47 | 29.74 | 30.27 | 30.60 | 31.00 | 31.72 | 0 |

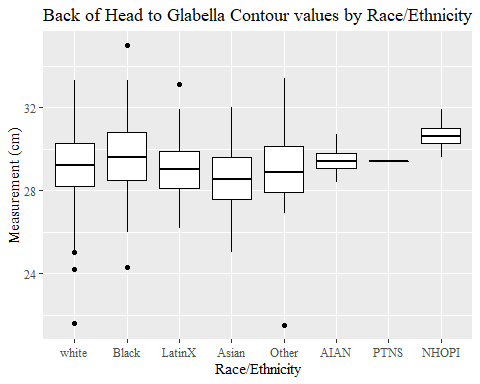
#%>% set\_header\_labels(values = list(BGl\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, BGl\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BGl\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Back of Head to Glabella Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 520 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BGl\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Back of Head to Glabella Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 520 rows containing non-finite values (stat\_boxplot).



#BGl\_C gender sumstats  
BGl\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(BGl\_C, na.rm = TRUE),  
 max = max(BGl\_C, na.rm = TRUE),  
 mean = mean(BGl\_C, na.rm = TRUE),  
 mdn = median(BGl\_C, na.rm = TRUE),  
 sd = sd(BGl\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BGl\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(BGl\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(BGl\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(BGl\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(BGl\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(BGl\_C)))

## Warning in min(BGl\_C, na.rm = TRUE): no non-missing arguments to min; returning  
## Inf

## Warning in max(BGl\_C, na.rm = TRUE): no non-missing arguments to max; returning  
## -Inf

BGl\_Cgender\_sumstats <- BGl\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(BGl\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Back of Head to Glabella Contour SumStats by Gender")

**Table** : Back of Head to Glabella Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 24.2 | 33.2 | 28.64 | 28.6 | 1.37 | 0.04 | 26.44 | 27.80 | 28.6 | 29.50 | 31.00 | 454 |
| Male | 939 | 21.5 | 35.0 | 29.75 | 29.8 | 1.44 | 0.05 | 27.50 | 28.80 | 29.8 | 30.70 | 32.00 | 61 |
| Non-binary or Other | 5 | 26.8 | 28.9 | 27.76 | 27.3 | 0.97 | 0.43 | 26.86 | 27.10 | 27.3 | 28.70 | 28.86 | 0 |
| Prefer not to say | 1 | Inf | -Inf |  |  |  |  |  |  |  |  |  | 1 |
|  | 8 | 26.9 | 28.1 | 27.55 | 27.6 | 0.59 | 0.21 | 26.94 | 27.12 | 27.6 | 28.02 | 28.09 | 4 |

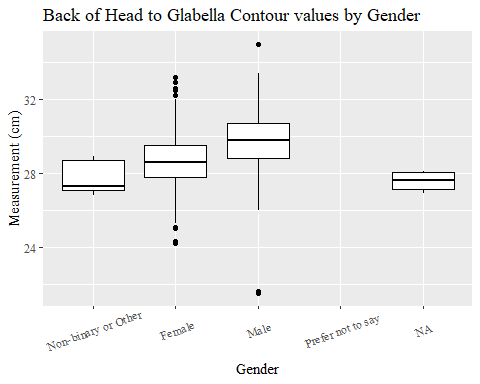
#%>% set\_header\_labels(values = list(BGl\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BGl\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Back of Head to Glabella Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Back of Head to Glabella Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 24.2 | 33.2 | 28.64 | 28.6 | 1.37 | 0.04 | 26.44 | 27.80 | 28.6 | 29.50 | 31.00 | 454 |
| Male | 939 | 21.5 | 35.0 | 29.75 | 29.8 | 1.44 | 0.05 | 27.50 | 28.80 | 29.8 | 30.70 | 32.00 | 61 |
| Non-binary or Other | 5 | 26.8 | 28.9 | 27.76 | 27.3 | 0.97 | 0.43 | 26.86 | 27.10 | 27.3 | 28.70 | 28.86 | 0 |
| Prefer not to say | 1 | Inf | -Inf |  |  |  |  |  |  |  |  |  | 1 |
|  | 8 | 26.9 | 28.1 | 27.55 | 27.6 | 0.59 | 0.21 | 26.94 | 27.12 | 27.6 | 28.02 | 28.09 | 4 |

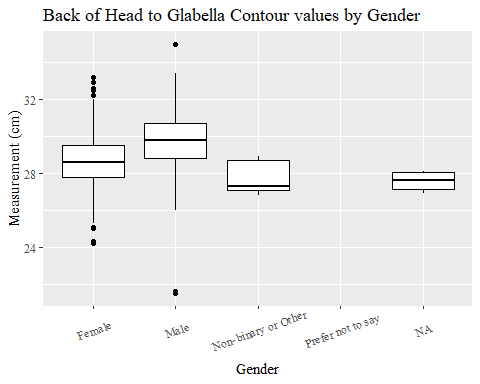
#%>% set\_header\_labels(values = list(BGl\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, BGl\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BGl\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Back of Head to Glabella Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 520 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BGl\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Back of Head to Glabella Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 520 rows containing non-finite values (stat\_boxplot).



#BGl\_C age group sumstats  
BGl\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(BGl\_C, na.rm = TRUE),  
 max = max(BGl\_C, na.rm = TRUE),  
 mean = mean(BGl\_C, na.rm = TRUE),  
 mdn = median(BGl\_C, na.rm = TRUE),  
 sd = sd(BGl\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BGl\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(BGl\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(BGl\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(BGl\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(BGl\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(BGl\_C)))  
  
BGl\_Cage\_sumstats <- BGl\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(BGl\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Back of Head to Glabella Contour SumStats by Age Group")

**Table** : Back of Head to Glabella Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 21.5 | 35.0 | 29.34 | 29.4 | 1.53 | 0.05 | 26.93 | 28.30 | 29.4 | 30.4 | 31.80 | 264 |
| 37-54 | 940 | 24.3 | 33.3 | 29.20 | 29.2 | 1.50 | 0.05 | 26.90 | 28.17 | 29.2 | 30.2 | 31.70 | 240 |
| 55-72 | 84 | 24.2 | 33.0 | 29.57 | 29.5 | 1.46 | 0.16 | 27.70 | 28.65 | 29.5 | 30.5 | 32.09 | 16 |
|  | 1 | 29.9 | 29.9 | 29.90 | 29.9 |  |  | 29.90 | 29.90 | 29.9 | 29.9 | 29.90 | 0 |

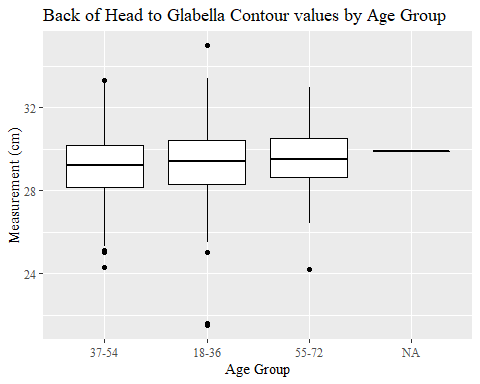
#%>% set\_header\_labels(values = list(BGl\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BGl\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Back of Head to Glabella Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Back of Head to Glabella Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 21.5 | 35.0 | 29.34 | 29.4 | 1.53 | 0.05 | 26.93 | 28.30 | 29.4 | 30.4 | 31.80 | 264 |
| 37-54 | 940 | 24.3 | 33.3 | 29.20 | 29.2 | 1.50 | 0.05 | 26.90 | 28.17 | 29.2 | 30.2 | 31.70 | 240 |
| 55-72 | 84 | 24.2 | 33.0 | 29.57 | 29.5 | 1.46 | 0.16 | 27.70 | 28.65 | 29.5 | 30.5 | 32.09 | 16 |
|  | 1 | 29.9 | 29.9 | 29.90 | 29.9 |  |  | 29.90 | 29.90 | 29.9 | 29.9 | 29.90 | 0 |

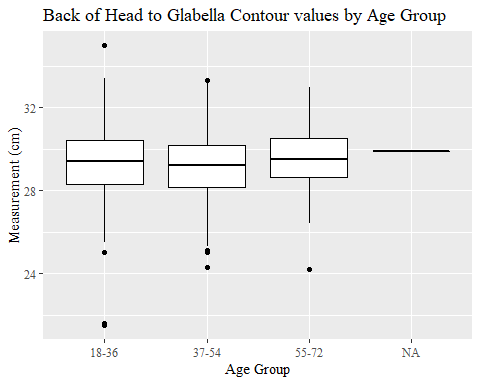
#%>% set\_header\_labels(values = list(BGl\_C = "Alare/AlareCont"))  
  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, BGl\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BGl\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Back of Head to Glabella Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 520 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BGl\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Back of Head to Glabella Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

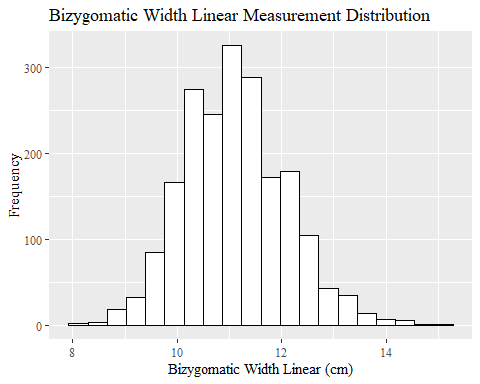
## Warning: Removed 520 rows containing non-finite values (stat\_boxplot).



BiW\_L

#histogram of all BiW\_L values  
ggplot(data=headscan\_full, aes(x=BiW\_L))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Bizygomatic Width Linear Measurement Distribution",  
 y="Frequency",  
 x="Bizygomatic Width Linear (cm)")

## Warning: Removed 17 rows containing non-finite values (stat\_bin).



#BiW\_L race/eth sumstats  
BiW\_Lrace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(BiW\_L, na.rm = TRUE),  
 max = max(BiW\_L, na.rm = TRUE),  
 mean = mean(BiW\_L, na.rm = TRUE),  
 mdn = median(BiW\_L, na.rm = TRUE),  
 sd = sd(BiW\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BiW\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(BiW\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(BiW\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(BiW\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(BiW\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(BiW\_L)))   
  
BiW\_Lrace\_sumstats <- BiW\_Lrace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(BiW\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Linear SumStats by Race/Ethnicity")

**Table** : Bizygomatic Width Linear SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 8.2 | 15.2 | 10.98 | 10.9 | 0.94 | 0.03 | 9.50 | 10.30 | 10.9 | 11.6 | 12.60 | 8 |
| Black | 548 | 9.1 | 14.8 | 11.46 | 11.4 | 0.99 | 0.04 | 10.00 | 10.80 | 11.4 | 12.1 | 13.20 | 5 |
| LatinX | 100 | 8.7 | 13.8 | 11.16 | 11.1 | 0.97 | 0.10 | 9.69 | 10.45 | 11.1 | 11.9 | 12.63 | 1 |
| Asian | 91 | 9.2 | 14.0 | 11.09 | 11.1 | 0.96 | 0.10 | 9.40 | 10.50 | 11.1 | 11.8 | 12.50 | 2 |
| Other | 21 | 9.7 | 12.9 | 10.83 | 10.9 | 0.97 | 0.21 | 9.70 | 9.80 | 10.9 | 11.3 | 12.60 | 0 |
| AIAN | 8 | 10.1 | 11.7 | 10.80 | 10.6 | 0.63 | 0.22 | 10.13 | 10.40 | 10.6 | 11.2 | 11.67 | 1 |
| PTNS | 5 | 10.2 | 12.5 | 11.34 | 11.3 | 1.01 | 0.45 | 10.26 | 10.50 | 11.3 | 12.2 | 12.44 | 0 |
| NHOPI | 4 | 11.0 | 12.2 | 11.65 | 11.7 | 0.50 | 0.25 | 11.09 | 11.45 | 11.7 | 11.9 | 12.14 | 0 |

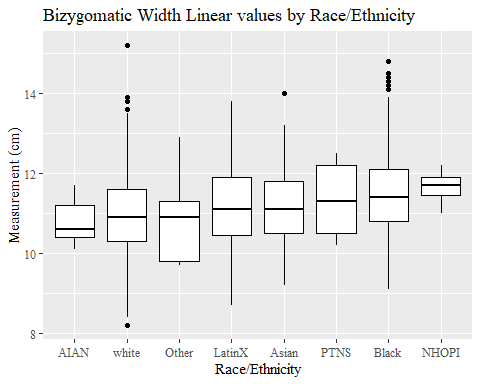
#%>% set\_header\_labels(values = list(BiW\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BiW\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Linear SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Bizygomatic Width Linear SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 8.2 | 15.2 | 10.98 | 10.9 | 0.94 | 0.03 | 9.50 | 10.30 | 10.9 | 11.6 | 12.60 | 8 |
| Black | 548 | 9.1 | 14.8 | 11.46 | 11.4 | 0.99 | 0.04 | 10.00 | 10.80 | 11.4 | 12.1 | 13.20 | 5 |
| LatinX | 100 | 8.7 | 13.8 | 11.16 | 11.1 | 0.97 | 0.10 | 9.69 | 10.45 | 11.1 | 11.9 | 12.63 | 1 |
| Asian | 91 | 9.2 | 14.0 | 11.09 | 11.1 | 0.96 | 0.10 | 9.40 | 10.50 | 11.1 | 11.8 | 12.50 | 2 |
| Other | 21 | 9.7 | 12.9 | 10.83 | 10.9 | 0.97 | 0.21 | 9.70 | 9.80 | 10.9 | 11.3 | 12.60 | 0 |
| AIAN | 8 | 10.1 | 11.7 | 10.80 | 10.6 | 0.63 | 0.22 | 10.13 | 10.40 | 10.6 | 11.2 | 11.67 | 1 |
| PTNS | 5 | 10.2 | 12.5 | 11.34 | 11.3 | 1.01 | 0.45 | 10.26 | 10.50 | 11.3 | 12.2 | 12.44 | 0 |
| NHOPI | 4 | 11.0 | 12.2 | 11.65 | 11.7 | 0.50 | 0.25 | 11.09 | 11.45 | 11.7 | 11.9 | 12.14 | 0 |

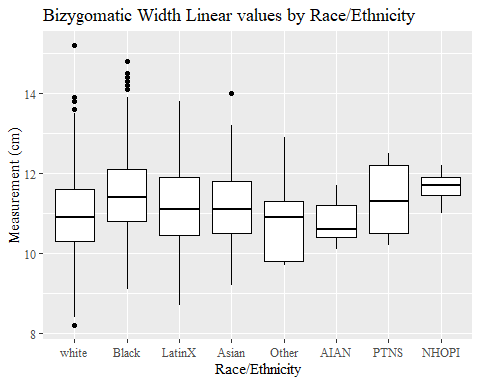
#%>% set\_header\_labels(values = list(BiW\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, BiW\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BiW\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Linear values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BiW\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Linear values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#BiW\_L gender sumstats  
BiW\_Lgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(BiW\_L, na.rm = TRUE),  
 max = max(BiW\_L, na.rm = TRUE),  
 mean = mean(BiW\_L, na.rm = TRUE),  
 mdn = median(BiW\_L, na.rm = TRUE),  
 sd = sd(BiW\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BiW\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(BiW\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(BiW\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(BiW\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(BiW\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(BiW\_L)))  
  
BiW\_Lgender\_sumstats <- BiW\_Lgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(BiW\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Linear SumStats by Gender")

**Table** : Bizygomatic Width Linear SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 8.2 | 14.2 | 10.91 | 10.8 | 0.95 | 0.03 | 9.40 | 10.2 | 10.8 | 11.60 | 12.50 | 12 |
| Male | 939 | 8.6 | 15.2 | 11.37 | 11.3 | 0.95 | 0.03 | 9.90 | 10.7 | 11.3 | 11.90 | 13.03 | 5 |
| Non-binary or Other | 5 | 9.1 | 10.7 | 9.86 | 9.9 | 0.61 | 0.27 | 9.18 | 9.5 | 9.9 | 10.10 | 10.58 | 0 |
| Prefer not to say | 1 | 11.3 | 11.3 | 11.30 | 11.3 |  |  | 11.30 | 11.3 | 11.3 | 11.30 | 11.30 | 0 |
|  | 8 | 9.6 | 12.2 | 11.03 | 11.3 | 0.88 | 0.31 | 9.78 | 10.4 | 11.3 | 11.55 | 12.02 | 0 |

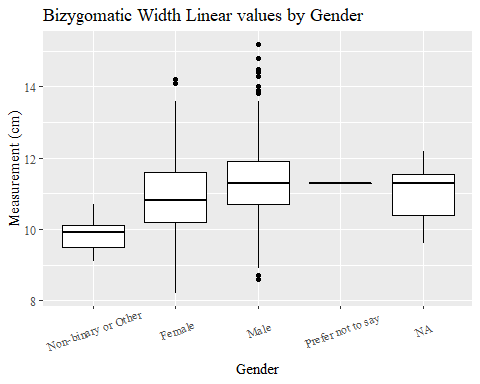
#%>% set\_header\_labels(values = list(BiW\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BiW\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Linear SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Bizygomatic Width Linear SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 8.2 | 14.2 | 10.91 | 10.8 | 0.95 | 0.03 | 9.40 | 10.2 | 10.8 | 11.60 | 12.50 | 12 |
| Male | 939 | 8.6 | 15.2 | 11.37 | 11.3 | 0.95 | 0.03 | 9.90 | 10.7 | 11.3 | 11.90 | 13.03 | 5 |
| Non-binary or Other | 5 | 9.1 | 10.7 | 9.86 | 9.9 | 0.61 | 0.27 | 9.18 | 9.5 | 9.9 | 10.10 | 10.58 | 0 |
| Prefer not to say | 1 | 11.3 | 11.3 | 11.30 | 11.3 |  |  | 11.30 | 11.3 | 11.3 | 11.30 | 11.30 | 0 |
|  | 8 | 9.6 | 12.2 | 11.03 | 11.3 | 0.88 | 0.31 | 9.78 | 10.4 | 11.3 | 11.55 | 12.02 | 0 |

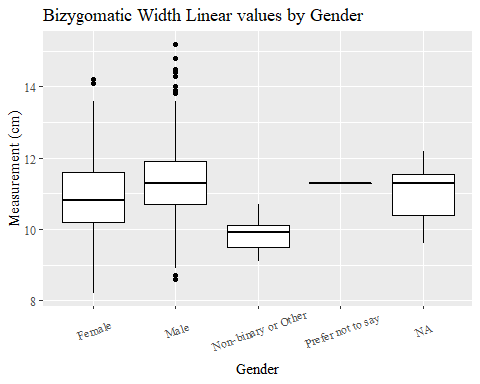
#%>% set\_header\_labels(values = list(BiW\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, BiW\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BiW\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Linear values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BiW\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Linear values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#BiW\_L age group sumstats  
BiW\_Lage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(BiW\_L, na.rm = TRUE),  
 max = max(BiW\_L, na.rm = TRUE),  
 mean = mean(BiW\_L, na.rm = TRUE),  
 mdn = median(BiW\_L, na.rm = TRUE),  
 sd = sd(BiW\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BiW\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(BiW\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(BiW\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(BiW\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(BiW\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(BiW\_L)))  
  
BiW\_Lage\_sumstats <- BiW\_Lage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(BiW\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Linear SumStats by Age Group")

**Table** : Bizygomatic Width Linear SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 8.4 | 14.5 | 11.16 | 11.1 | 0.98 | 0.03 | 9.70 | 10.4 | 11.1 | 11.80 | 12.90 | 6 |
| 37-54 | 940 | 8.2 | 15.2 | 11.10 | 11.1 | 0.97 | 0.03 | 9.50 | 10.5 | 11.1 | 11.80 | 12.65 | 9 |
| 55-72 | 84 | 8.7 | 13.4 | 10.95 | 10.9 | 0.93 | 0.10 | 9.51 | 10.3 | 10.9 | 11.55 | 12.60 | 2 |
|  | 1 | 10.3 | 10.3 | 10.30 | 10.3 |  |  | 10.30 | 10.3 | 10.3 | 10.30 | 10.30 | 0 |

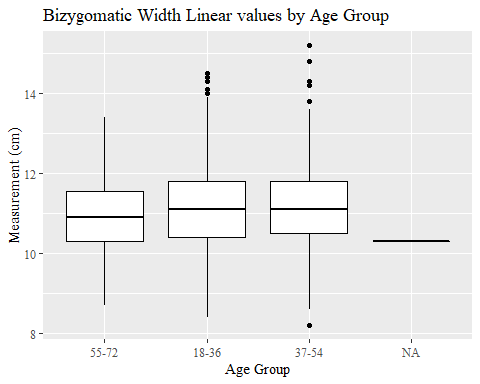
#%>% set\_header\_labels(values = list(BiW\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BiW\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Linear SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Bizygomatic Width Linear SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 8.4 | 14.5 | 11.16 | 11.1 | 0.98 | 0.03 | 9.70 | 10.4 | 11.1 | 11.80 | 12.90 | 6 |
| 37-54 | 940 | 8.2 | 15.2 | 11.10 | 11.1 | 0.97 | 0.03 | 9.50 | 10.5 | 11.1 | 11.80 | 12.65 | 9 |
| 55-72 | 84 | 8.7 | 13.4 | 10.95 | 10.9 | 0.93 | 0.10 | 9.51 | 10.3 | 10.9 | 11.55 | 12.60 | 2 |
|  | 1 | 10.3 | 10.3 | 10.30 | 10.3 |  |  | 10.30 | 10.3 | 10.3 | 10.30 | 10.30 | 0 |

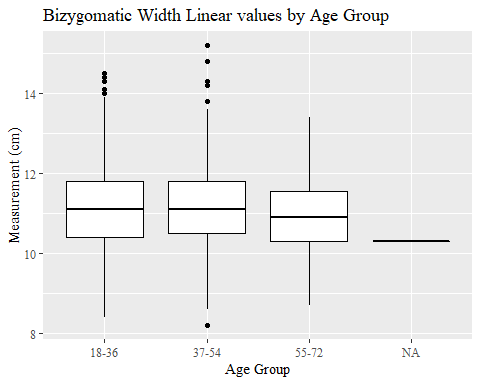
#%>% set\_header\_labels(values = list(BiW\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, BiW\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BiW\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Linear values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BiW\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Linear values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

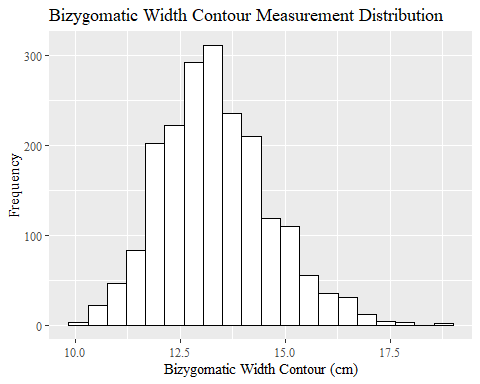
## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



BiW\_C

#histogram of all BiW\_C values  
ggplot(data=headscan\_full, aes(x=BiW\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Bizygomatic Width Contour Measurement Distribution",  
 y="Frequency",  
 x="Bizygomatic Width Contour (cm)")

## Warning: Removed 17 rows containing non-finite values (stat\_bin).



#BiW\_C race/eth sumstats  
BiW\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(BiW\_C, na.rm = TRUE),  
 max = max(BiW\_C, na.rm = TRUE),  
 mean = mean(BiW\_C, na.rm = TRUE),  
 mdn = median(BiW\_C, na.rm = TRUE),  
 sd = sd(BiW\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BiW\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(BiW\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(BiW\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(BiW\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(BiW\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(BiW\_C)))   
  
BiW\_Crace\_sumstats <- BiW\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(BiW\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Contour SumStats by Race/Ethnicity")

**Table** : Bizygomatic Width Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 10.1 | 18.8 | 13.32 | 13.30 | 1.28 | 0.04 | 11.40 | 12.40 | 13.30 | 14.10 | 15.50 | 8 |
| Black | 548 | 10.6 | 18.7 | 13.48 | 13.40 | 1.33 | 0.06 | 11.60 | 12.50 | 13.40 | 14.30 | 16.00 | 5 |
| LatinX | 100 | 10.6 | 17.1 | 13.39 | 13.10 | 1.30 | 0.13 | 11.90 | 12.40 | 13.10 | 14.20 | 15.61 | 1 |
| Asian | 91 | 10.5 | 15.6 | 12.87 | 13.00 | 1.14 | 0.12 | 11.10 | 12.00 | 13.00 | 13.50 | 14.80 | 2 |
| Other | 21 | 11.4 | 15.6 | 13.08 | 13.00 | 1.21 | 0.26 | 11.60 | 12.00 | 13.00 | 13.80 | 15.00 | 0 |
| AIAN | 8 | 11.5 | 14.5 | 12.84 | 12.40 | 0.97 | 0.34 | 11.77 | 12.40 | 12.40 | 13.35 | 14.20 | 1 |
| PTNS | 5 | 12.5 | 14.5 | 13.54 | 13.80 | 0.82 | 0.37 | 12.58 | 12.90 | 13.80 | 14.00 | 14.40 | 0 |
| NHOPI | 4 | 12.0 | 15.5 | 14.10 | 14.45 | 1.61 | 0.80 | 12.25 | 13.27 | 14.45 | 15.27 | 15.45 | 0 |

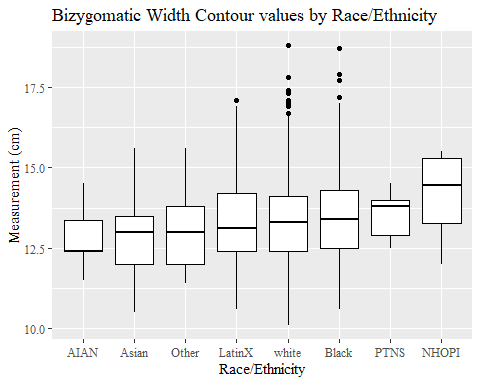
#%>% set\_header\_labels(values = list(BiW\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BiW\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Bizygomatic Width Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 10.1 | 18.8 | 13.32 | 13.30 | 1.28 | 0.04 | 11.40 | 12.40 | 13.30 | 14.10 | 15.50 | 8 |
| Black | 548 | 10.6 | 18.7 | 13.48 | 13.40 | 1.33 | 0.06 | 11.60 | 12.50 | 13.40 | 14.30 | 16.00 | 5 |
| LatinX | 100 | 10.6 | 17.1 | 13.39 | 13.10 | 1.30 | 0.13 | 11.90 | 12.40 | 13.10 | 14.20 | 15.61 | 1 |
| Asian | 91 | 10.5 | 15.6 | 12.87 | 13.00 | 1.14 | 0.12 | 11.10 | 12.00 | 13.00 | 13.50 | 14.80 | 2 |
| Other | 21 | 11.4 | 15.6 | 13.08 | 13.00 | 1.21 | 0.26 | 11.60 | 12.00 | 13.00 | 13.80 | 15.00 | 0 |
| AIAN | 8 | 11.5 | 14.5 | 12.84 | 12.40 | 0.97 | 0.34 | 11.77 | 12.40 | 12.40 | 13.35 | 14.20 | 1 |
| PTNS | 5 | 12.5 | 14.5 | 13.54 | 13.80 | 0.82 | 0.37 | 12.58 | 12.90 | 13.80 | 14.00 | 14.40 | 0 |
| NHOPI | 4 | 12.0 | 15.5 | 14.10 | 14.45 | 1.61 | 0.80 | 12.25 | 13.27 | 14.45 | 15.27 | 15.45 | 0 |

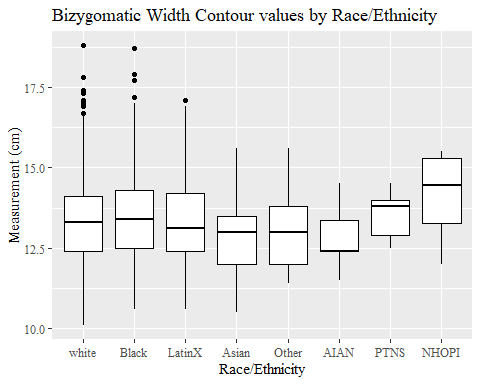
#%>% set\_header\_labels(values = list(BiW\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, BiW\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BiW\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BiW\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#BiW\_C gender sumstats  
BiW\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(BiW\_C, na.rm = TRUE),  
 max = max(BiW\_C, na.rm = TRUE),  
 mean = mean(BiW\_C, na.rm = TRUE),  
 mdn = median(BiW\_C, na.rm = TRUE),  
 sd = sd(BiW\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BiW\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(BiW\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(BiW\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(BiW\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(BiW\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(BiW\_C)))  
  
BiW\_Cgender\_sumstats <- BiW\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(BiW\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Contour SumStats by Gender")

**Table** : Bizygomatic Width Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 10.1 | 16.5 | 12.90 | 12.7 | 1.19 | 0.04 | 11.10 | 12.10 | 12.7 | 13.7 | 15.00 | 12 |
| Male | 939 | 10.5 | 18.8 | 13.85 | 13.7 | 1.22 | 0.04 | 12.10 | 13.10 | 13.7 | 14.5 | 16.20 | 5 |
| Non-binary or Other | 5 | 11.6 | 12.5 | 11.78 | 11.6 | 0.40 | 0.18 | 11.60 | 11.60 | 11.6 | 11.6 | 12.32 | 0 |
| Prefer not to say | 1 | 14.0 | 14.0 | 14.00 | 14.0 |  |  | 14.00 | 14.00 | 14.0 | 14.0 | 14.00 | 0 |
|  | 8 | 11.0 | 15.1 | 13.03 | 13.0 | 1.48 | 0.52 | 11.28 | 11.88 | 13.0 | 13.8 | 15.07 | 0 |

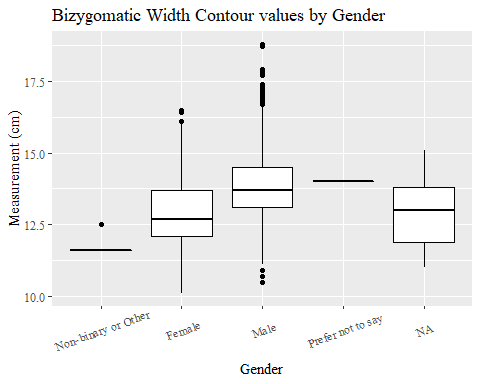
#%>% set\_header\_labels(values = list(BiW\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BiW\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Bizygomatic Width Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 10.1 | 16.5 | 12.90 | 12.7 | 1.19 | 0.04 | 11.10 | 12.10 | 12.7 | 13.7 | 15.00 | 12 |
| Male | 939 | 10.5 | 18.8 | 13.85 | 13.7 | 1.22 | 0.04 | 12.10 | 13.10 | 13.7 | 14.5 | 16.20 | 5 |
| Non-binary or Other | 5 | 11.6 | 12.5 | 11.78 | 11.6 | 0.40 | 0.18 | 11.60 | 11.60 | 11.6 | 11.6 | 12.32 | 0 |
| Prefer not to say | 1 | 14.0 | 14.0 | 14.00 | 14.0 |  |  | 14.00 | 14.00 | 14.0 | 14.0 | 14.00 | 0 |
|  | 8 | 11.0 | 15.1 | 13.03 | 13.0 | 1.48 | 0.52 | 11.28 | 11.88 | 13.0 | 13.8 | 15.07 | 0 |

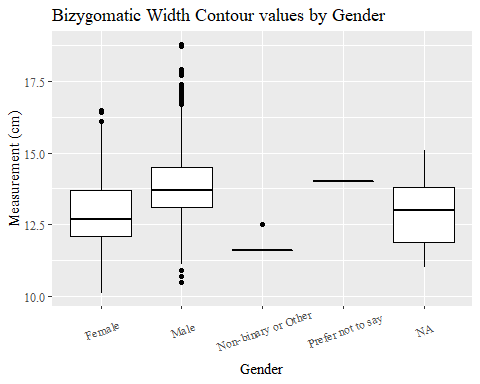
#%>% set\_header\_labels(values = list(BiW\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, BiW\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BiW\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BiW\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#BiW\_C age group sumstats  
BiW\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(BiW\_C, na.rm = TRUE),  
 max = max(BiW\_C, na.rm = TRUE),  
 mean = mean(BiW\_C, na.rm = TRUE),  
 mdn = median(BiW\_C, na.rm = TRUE),  
 sd = sd(BiW\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(BiW\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(BiW\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(BiW\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(BiW\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(BiW\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(BiW\_C)))  
  
BiW\_Cage\_sumstats <- BiW\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(BiW\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Contour SumStats by Age Group")

**Table** : Bizygomatic Width Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 10.2 | 17.9 | 13.37 | 13.3 | 1.28 | 0.04 | 11.5 | 12.5 | 13.3 | 14.1 | 15.70 | 6 |
| 37-54 | 940 | 10.1 | 18.8 | 13.32 | 13.2 | 1.31 | 0.04 | 11.3 | 12.4 | 13.2 | 14.1 | 15.60 | 9 |
| 55-72 | 84 | 10.7 | 16.4 | 13.26 | 13.1 | 1.31 | 0.14 | 11.4 | 12.3 | 13.1 | 13.9 | 15.88 | 2 |
|  | 1 | 12.4 | 12.4 | 12.40 | 12.4 |  |  | 12.4 | 12.4 | 12.4 | 12.4 | 12.40 | 0 |

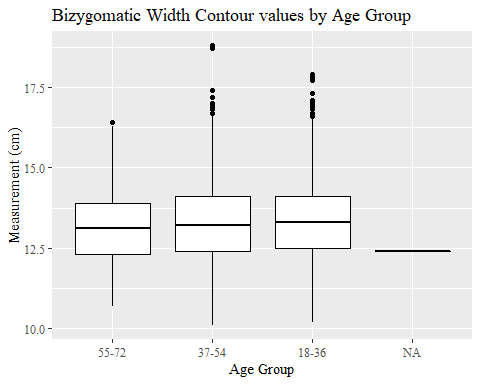
#%>% set\_header\_labels(values = list(BiW\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(BiW\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Bizygomatic Width Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Bizygomatic Width Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 10.2 | 17.9 | 13.37 | 13.3 | 1.28 | 0.04 | 11.5 | 12.5 | 13.3 | 14.1 | 15.70 | 6 |
| 37-54 | 940 | 10.1 | 18.8 | 13.32 | 13.2 | 1.31 | 0.04 | 11.3 | 12.4 | 13.2 | 14.1 | 15.60 | 9 |
| 55-72 | 84 | 10.7 | 16.4 | 13.26 | 13.1 | 1.31 | 0.14 | 11.4 | 12.3 | 13.1 | 13.9 | 15.88 | 2 |
|  | 1 | 12.4 | 12.4 | 12.40 | 12.4 |  |  | 12.4 | 12.4 | 12.4 | 12.4 | 12.40 | 0 |

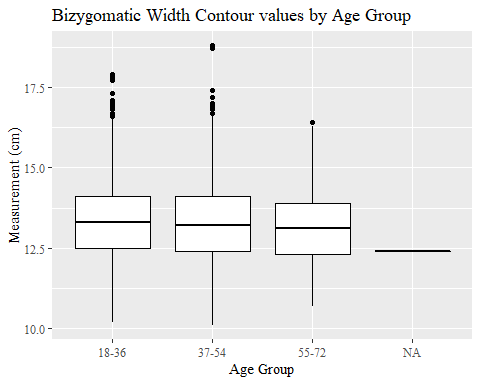
#%>% set\_header\_labels(values = list(BiW\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, BiW\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=BiW\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=BiW\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Bizygomatic Width Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

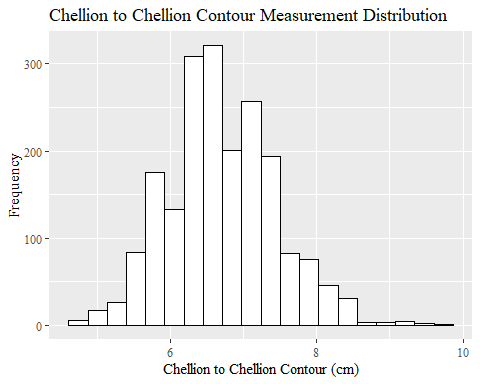
## Warning: Removed 17 rows containing non-finite values (stat\_boxplot).



ChCh\_C

#histogram of all ChCh\_C values  
ggplot(data=headscan\_full, aes(x=ChCh\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Chellion to Chellion Contour Measurement Distribution",  
 y="Frequency",  
 x="Chellion to Chellion Contour (cm)")

## Warning: Removed 43 rows containing non-finite values (stat\_bin).



#ChCh\_C race/eth sumstats  
ChCh\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(ChCh\_C, na.rm = TRUE),  
 max = max(ChCh\_C, na.rm = TRUE),  
 mean = mean(ChCh\_C, na.rm = TRUE),  
 mdn = median(ChCh\_C, na.rm = TRUE),  
 sd = sd(ChCh\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ChCh\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ChCh\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ChCh\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ChCh\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ChCh\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ChCh\_C)))   
  
ChCh\_Crace\_sumstats <- ChCh\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ChCh\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Chellion Chellion Contour SumStats by Race/Ethnicity")

**Table** : Chellion Chellion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.7 | 9.5 | 6.53 | 6.50 | 0.69 | 0.02 | 5.40 | 6.10 | 6.50 | 7.00 | 7.70 | 33 |
| Black | 548 | 5.1 | 9.7 | 7.12 | 7.10 | 0.71 | 0.03 | 6.00 | 6.60 | 7.10 | 7.60 | 8.30 | 6 |
| LatinX | 100 | 4.8 | 8.4 | 6.71 | 6.70 | 0.65 | 0.06 | 5.80 | 6.20 | 6.70 | 7.20 | 7.80 | 2 |
| Asian | 91 | 4.8 | 8.4 | 6.48 | 6.50 | 0.71 | 0.07 | 5.35 | 6.00 | 6.50 | 6.90 | 7.56 | 1 |
| Other | 21 | 5.6 | 8.4 | 6.73 | 6.70 | 0.65 | 0.14 | 5.90 | 6.40 | 6.70 | 7.00 | 7.80 | 0 |
| AIAN | 8 | 6.1 | 8.1 | 6.76 | 6.50 | 0.70 | 0.25 | 6.10 | 6.30 | 6.50 | 7.00 | 7.77 | 1 |
| PTNS | 5 | 5.8 | 8.4 | 6.86 | 6.70 | 0.99 | 0.44 | 5.90 | 6.30 | 6.70 | 7.10 | 8.14 | 0 |
| NHOPI | 4 | 6.1 | 7.6 | 6.85 | 6.85 | 0.81 | 0.41 | 6.12 | 6.18 | 6.85 | 7.53 | 7.58 | 0 |

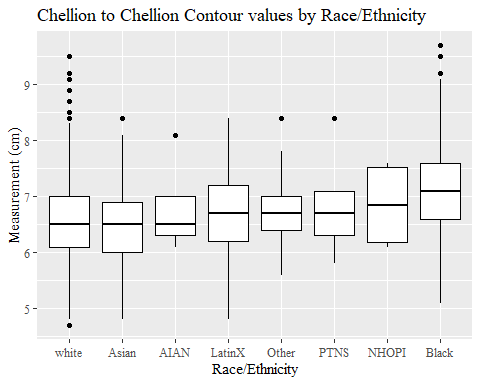
#%>% set\_header\_labels(values = list(ChCh\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ChCh\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Chellion Chellion Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Chellion Chellion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.7 | 9.5 | 6.53 | 6.50 | 0.69 | 0.02 | 5.40 | 6.10 | 6.50 | 7.00 | 7.70 | 33 |
| Black | 548 | 5.1 | 9.7 | 7.12 | 7.10 | 0.71 | 0.03 | 6.00 | 6.60 | 7.10 | 7.60 | 8.30 | 6 |
| LatinX | 100 | 4.8 | 8.4 | 6.71 | 6.70 | 0.65 | 0.06 | 5.80 | 6.20 | 6.70 | 7.20 | 7.80 | 2 |
| Asian | 91 | 4.8 | 8.4 | 6.48 | 6.50 | 0.71 | 0.07 | 5.35 | 6.00 | 6.50 | 6.90 | 7.56 | 1 |
| Other | 21 | 5.6 | 8.4 | 6.73 | 6.70 | 0.65 | 0.14 | 5.90 | 6.40 | 6.70 | 7.00 | 7.80 | 0 |
| AIAN | 8 | 6.1 | 8.1 | 6.76 | 6.50 | 0.70 | 0.25 | 6.10 | 6.30 | 6.50 | 7.00 | 7.77 | 1 |
| PTNS | 5 | 5.8 | 8.4 | 6.86 | 6.70 | 0.99 | 0.44 | 5.90 | 6.30 | 6.70 | 7.10 | 8.14 | 0 |
| NHOPI | 4 | 6.1 | 7.6 | 6.85 | 6.85 | 0.81 | 0.41 | 6.12 | 6.18 | 6.85 | 7.53 | 7.58 | 0 |

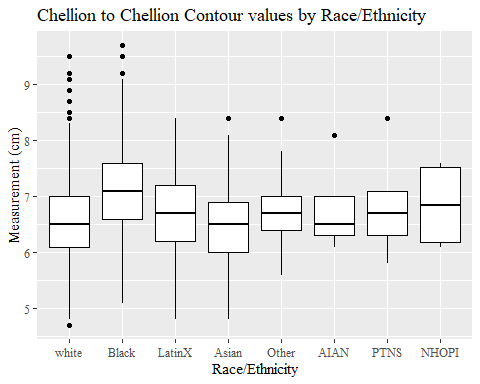
#%>% set\_header\_labels(values = list(ChCh\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, ChCh\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ChCh\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Chellion to Chellion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 43 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ChCh\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Chellion to Chellion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 43 rows containing non-finite values (stat\_boxplot).



#ChCh\_C gender sumstats  
ChCh\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(ChCh\_C, na.rm = TRUE),  
 max = max(ChCh\_C, na.rm = TRUE),  
 mean = mean(ChCh\_C, na.rm = TRUE),  
 mdn = median(ChCh\_C, na.rm = TRUE),  
 sd = sd(ChCh\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ChCh\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ChCh\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ChCh\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ChCh\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ChCh\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ChCh\_C)))  
  
ChCh\_Cgender\_sumstats <- ChCh\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(ChCh\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Chellion to Chellion Contour SumStats by Gender")

**Table** : Chellion to Chellion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.7 | 9.7 | 6.52 | 6.5 | 0.72 | 0.02 | 5.40 | 6.00 | 6.5 | 7.00 | 7.80 | 19 |
| Male | 939 | 4.8 | 9.5 | 6.91 | 6.9 | 0.71 | 0.02 | 5.80 | 6.40 | 6.9 | 7.40 | 8.10 | 24 |
| Non-binary or Other | 5 | 5.4 | 7.4 | 6.74 | 7.2 | 0.85 | 0.38 | 5.60 | 6.40 | 7.2 | 7.30 | 7.38 | 0 |
| Prefer not to say | 1 | 6.7 | 6.7 | 6.70 | 6.7 |  |  | 6.70 | 6.70 | 6.7 | 6.70 | 6.70 | 0 |
|  | 8 | 5.8 | 8.0 | 6.71 | 6.8 | 0.71 | 0.25 | 5.87 | 6.15 | 6.8 | 6.98 | 7.72 | 0 |

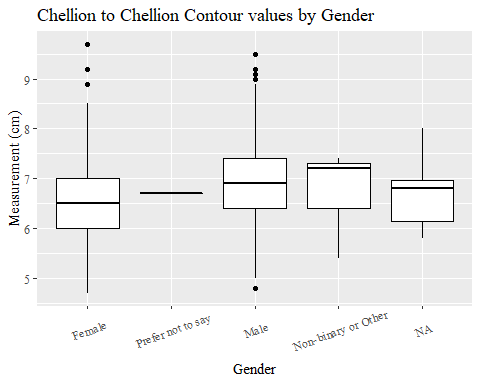
#%>% set\_header\_labels(values = list(ChCh\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ChCh\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Chellion to Chellion Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Chellion to Chellion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.7 | 9.7 | 6.52 | 6.5 | 0.72 | 0.02 | 5.40 | 6.00 | 6.5 | 7.00 | 7.80 | 19 |
| Male | 939 | 4.8 | 9.5 | 6.91 | 6.9 | 0.71 | 0.02 | 5.80 | 6.40 | 6.9 | 7.40 | 8.10 | 24 |
| Non-binary or Other | 5 | 5.4 | 7.4 | 6.74 | 7.2 | 0.85 | 0.38 | 5.60 | 6.40 | 7.2 | 7.30 | 7.38 | 0 |
| Prefer not to say | 1 | 6.7 | 6.7 | 6.70 | 6.7 |  |  | 6.70 | 6.70 | 6.7 | 6.70 | 6.70 | 0 |
|  | 8 | 5.8 | 8.0 | 6.71 | 6.8 | 0.71 | 0.25 | 5.87 | 6.15 | 6.8 | 6.98 | 7.72 | 0 |

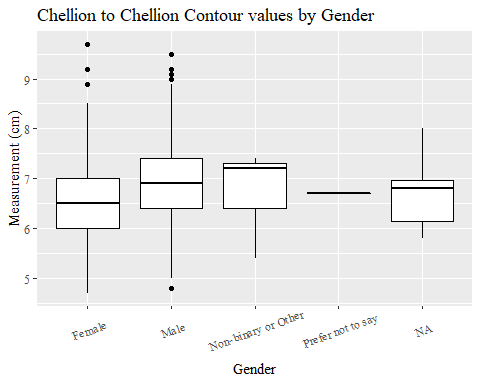
#%>% set\_header\_labels(values = list(ChCh\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, ChCh\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ChCh\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Chellion to Chellion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 43 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ChCh\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Chellion to Chellion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 43 rows containing non-finite values (stat\_boxplot).



#ChCh\_C age group sumstats  
ChCh\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(ChCh\_C, na.rm = TRUE),  
 max = max(ChCh\_C, na.rm = TRUE),  
 mean = mean(ChCh\_C, na.rm = TRUE),  
 mdn = median(ChCh\_C, na.rm = TRUE),  
 sd = sd(ChCh\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ChCh\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ChCh\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ChCh\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ChCh\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ChCh\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ChCh\_C)))  
  
ChCh\_Cage\_sumstats <- ChCh\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ChCh\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Chellion to Chellion Contour SumStats by Age Group")

**Table** : Chellion to Chellion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.7 | 8.5 | 6.58 | 6.60 | 0.69 | 0.02 | 5.5 | 6.1 | 6.60 | 7.0 | 7.8 | 17 |
| 37-54 | 940 | 4.7 | 9.7 | 6.81 | 6.75 | 0.77 | 0.03 | 5.6 | 6.3 | 6.75 | 7.3 | 8.1 | 24 |
| 55-72 | 84 | 5.4 | 9.1 | 7.00 | 7.00 | 0.83 | 0.09 | 5.6 | 6.4 | 7.00 | 7.6 | 8.3 | 2 |
|  | 1 | 7.5 | 7.5 | 7.50 | 7.50 |  |  | 7.5 | 7.5 | 7.50 | 7.5 | 7.5 | 0 |

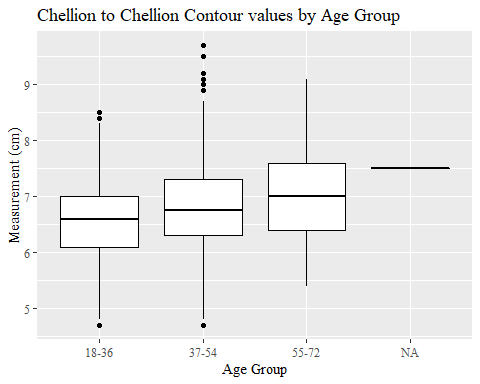
#%>% set\_header\_labels(values = list(ChCh\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ChCh\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Chellion to Chellion Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Chellion to Chellion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.7 | 8.5 | 6.58 | 6.60 | 0.69 | 0.02 | 5.5 | 6.1 | 6.60 | 7.0 | 7.8 | 17 |
| 37-54 | 940 | 4.7 | 9.7 | 6.81 | 6.75 | 0.77 | 0.03 | 5.6 | 6.3 | 6.75 | 7.3 | 8.1 | 24 |
| 55-72 | 84 | 5.4 | 9.1 | 7.00 | 7.00 | 0.83 | 0.09 | 5.6 | 6.4 | 7.00 | 7.6 | 8.3 | 2 |
|  | 1 | 7.5 | 7.5 | 7.50 | 7.50 |  |  | 7.5 | 7.5 | 7.50 | 7.5 | 7.5 | 0 |

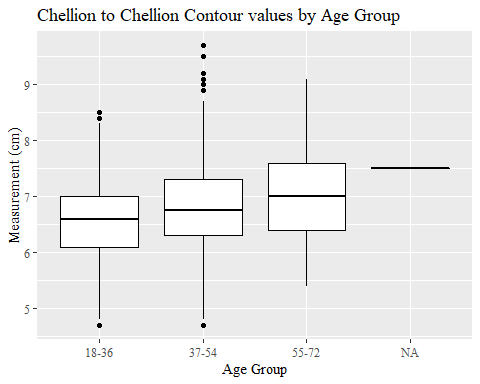
#%>% set\_header\_labels(values = list(ChCh\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, ChCh\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ChCh\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Chellion to Chellion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 43 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ChCh\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Chellion to Chellion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

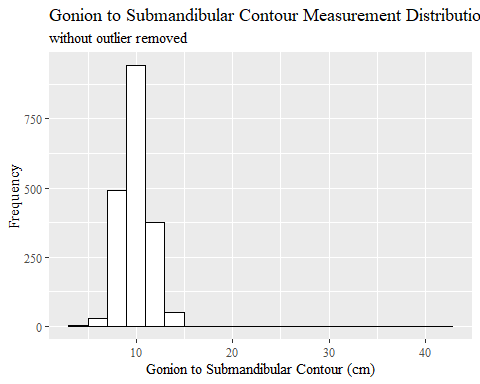
## Warning: Removed 43 rows containing non-finite values (stat\_boxplot).



GoSub\_C WITHOUT Outlier Removed!!!!

#histogram of all GoSub\_C values  
ggplot(data=headscan\_full, aes(x=GoSub\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Gonion to Submandibular Contour Measurement Distribution",  
 subtitle= "without outlier removed",  
 y="Frequency",  
 x="Gonion to Submandibular Contour (cm)")

## Warning: Removed 127 rows containing non-finite values (stat\_bin).



#GoSub\_C race/eth sumstats  
GoSub\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(GoSub\_C, na.rm = TRUE),  
 max = max(GoSub\_C, na.rm = TRUE),  
 mean = mean(GoSub\_C, na.rm = TRUE),  
 mdn = median(GoSub\_C, na.rm = TRUE),  
 sd = sd(GoSub\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(GoSub\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(GoSub\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(GoSub\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(GoSub\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(GoSub\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(GoSub\_C)))   
  
GoSub\_Crace\_sumstats <- GoSub\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(GoSub\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Race/Ethnicity")

**Table** : Gonion to Submandibular Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.5 | 42.4 | 9.81 | 9.7 | 1.85 | 0.05 | 7.40 | 8.7 | 9.7 | 10.70 | 12.46 | 71 |
| Black | 548 | 6.3 | 14.6 | 10.23 | 10.2 | 1.43 | 0.06 | 7.80 | 9.3 | 10.2 | 11.20 | 12.56 | 39 |
| LatinX | 100 | 6.7 | 13.2 | 9.75 | 9.8 | 1.37 | 0.14 | 7.60 | 8.8 | 9.8 | 10.40 | 11.90 | 9 |
| Asian | 91 | 7.1 | 13.7 | 9.56 | 9.4 | 1.44 | 0.15 | 7.48 | 8.5 | 9.4 | 10.60 | 12.02 | 2 |
| Other | 21 | 7.3 | 12.6 | 10.00 | 9.6 | 1.44 | 0.31 | 7.86 | 9.0 | 9.6 | 10.90 | 12.12 | 4 |
| AIAN | 8 | 7.1 | 11.1 | 8.99 | 9.4 | 1.40 | 0.50 | 7.31 | 7.9 | 9.4 | 9.75 | 10.74 | 1 |
| PTNS | 5 | 6.9 | 13.4 | 9.32 | 9.1 | 2.49 | 1.12 | 7.08 | 7.8 | 9.1 | 9.40 | 12.60 | 0 |
| NHOPI | 4 | 7.5 | 9.6 | 8.67 | 8.9 | 1.07 | 0.53 | 7.64 | 8.2 | 8.9 | 9.25 | 9.53 | 1 |

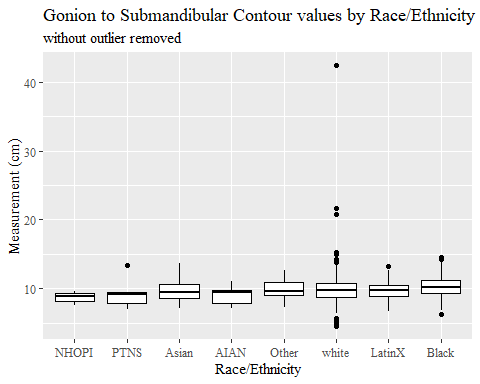
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(GoSub\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Gonion to Submandibular Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.5 | 42.4 | 9.81 | 9.7 | 1.85 | 0.05 | 7.40 | 8.7 | 9.7 | 10.70 | 12.46 | 71 |
| Black | 548 | 6.3 | 14.6 | 10.23 | 10.2 | 1.43 | 0.06 | 7.80 | 9.3 | 10.2 | 11.20 | 12.56 | 39 |
| LatinX | 100 | 6.7 | 13.2 | 9.75 | 9.8 | 1.37 | 0.14 | 7.60 | 8.8 | 9.8 | 10.40 | 11.90 | 9 |
| Asian | 91 | 7.1 | 13.7 | 9.56 | 9.4 | 1.44 | 0.15 | 7.48 | 8.5 | 9.4 | 10.60 | 12.02 | 2 |
| Other | 21 | 7.3 | 12.6 | 10.00 | 9.6 | 1.44 | 0.31 | 7.86 | 9.0 | 9.6 | 10.90 | 12.12 | 4 |
| AIAN | 8 | 7.1 | 11.1 | 8.99 | 9.4 | 1.40 | 0.50 | 7.31 | 7.9 | 9.4 | 9.75 | 10.74 | 1 |
| PTNS | 5 | 6.9 | 13.4 | 9.32 | 9.1 | 2.49 | 1.12 | 7.08 | 7.8 | 9.1 | 9.40 | 12.60 | 0 |
| NHOPI | 4 | 7.5 | 9.6 | 8.67 | 8.9 | 1.07 | 0.53 | 7.64 | 8.2 | 8.9 | 9.25 | 9.53 | 1 |

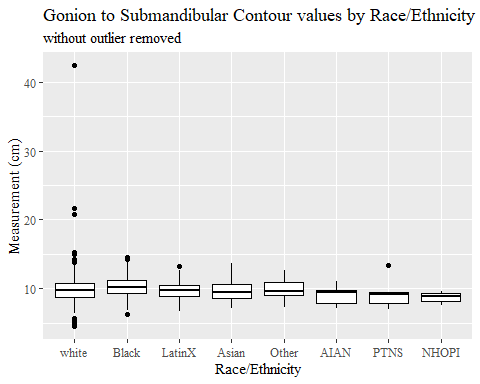
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, GoSub\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=GoSub\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Race/Ethnicity",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 127 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=GoSub\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Race/Ethnicity",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 127 rows containing non-finite values (stat\_boxplot).



#GoSub\_C gender sumstats  
GoSub\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(GoSub\_C, na.rm = TRUE),  
 max = max(GoSub\_C, na.rm = TRUE),  
 mean = mean(GoSub\_C, na.rm = TRUE),  
 mdn = median(GoSub\_C, na.rm = TRUE),  
 sd = sd(GoSub\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(GoSub\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(GoSub\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(GoSub\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(GoSub\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(GoSub\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(GoSub\_C)))  
  
GoSub\_Cgender\_sumstats <- GoSub\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(GoSub\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Gender")

**Table** : Gonion to Submandibular Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.5 | 20.8 | 9.37 | 9.35 | 1.39 | 0.04 | 7.20 | 8.4 | 9.35 | 10.30 | 11.70 | 26 |
| Male | 939 | 5.2 | 42.4 | 10.57 | 10.50 | 1.85 | 0.06 | 8.30 | 9.6 | 10.50 | 11.40 | 13.00 | 101 |
| Non-binary or Other | 5 | 7.2 | 11.4 | 9.72 | 10.40 | 1.61 | 0.72 | 7.60 | 9.2 | 10.40 | 10.40 | 11.20 | 0 |
| Prefer not to say | 1 | 13.4 | 13.4 | 13.40 | 13.40 |  |  | 13.40 | 13.4 | 13.40 | 13.40 | 13.40 | 0 |
|  | 8 | 8.2 | 11.2 | 9.81 | 9.70 | 0.94 | 0.33 | 8.59 | 9.3 | 9.70 | 10.48 | 11.02 | 0 |

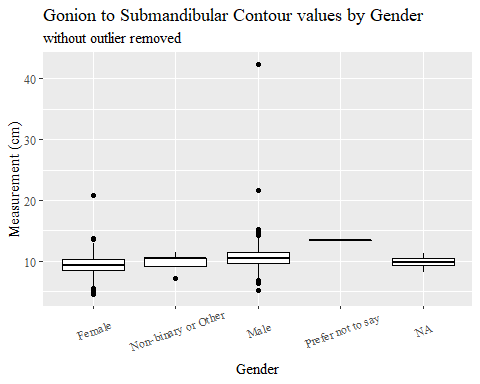
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(GoSub\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Gonion to Submandibular Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.5 | 20.8 | 9.37 | 9.35 | 1.39 | 0.04 | 7.20 | 8.4 | 9.35 | 10.30 | 11.70 | 26 |
| Male | 939 | 5.2 | 42.4 | 10.57 | 10.50 | 1.85 | 0.06 | 8.30 | 9.6 | 10.50 | 11.40 | 13.00 | 101 |
| Non-binary or Other | 5 | 7.2 | 11.4 | 9.72 | 10.40 | 1.61 | 0.72 | 7.60 | 9.2 | 10.40 | 10.40 | 11.20 | 0 |
| Prefer not to say | 1 | 13.4 | 13.4 | 13.40 | 13.40 |  |  | 13.40 | 13.4 | 13.40 | 13.40 | 13.40 | 0 |
|  | 8 | 8.2 | 11.2 | 9.81 | 9.70 | 0.94 | 0.33 | 8.59 | 9.3 | 9.70 | 10.48 | 11.02 | 0 |

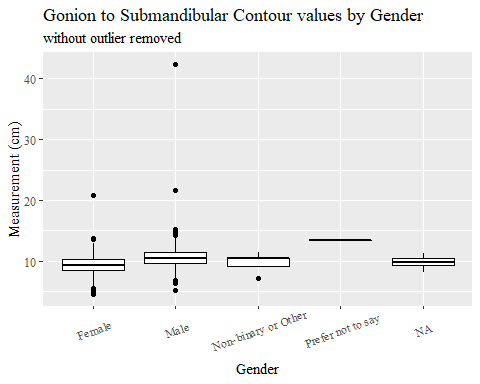
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, GoSub\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=GoSub\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Gender",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 127 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=GoSub\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Gender",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 127 rows containing non-finite values (stat\_boxplot).



#GoSub\_C age group sumstats  
GoSub\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(GoSub\_C, na.rm = TRUE),  
 max = max(GoSub\_C, na.rm = TRUE),  
 mean = mean(GoSub\_C, na.rm = TRUE),  
 mdn = median(GoSub\_C, na.rm = TRUE),  
 sd = sd(GoSub\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(GoSub\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(GoSub\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(GoSub\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(GoSub\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(GoSub\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(GoSub\_C)))  
  
GoSub\_Cage\_sumstats <- GoSub\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(GoSub\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Age Group")

**Table** : Gonion to Submandibular Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.9 | 14.6 | 9.52 | 9.5 | 1.43 | 0.05 | 7.30 | 8.5 | 9.5 | 10.5 | 12.10 | 59 |
| 37-54 | 940 | 4.5 | 42.4 | 10.26 | 10.2 | 1.91 | 0.06 | 7.77 | 9.3 | 10.2 | 11.2 | 12.73 | 65 |
| 55-72 | 84 | 6.5 | 14.5 | 10.60 | 10.6 | 1.41 | 0.15 | 8.40 | 9.7 | 10.6 | 11.6 | 12.90 | 3 |
|  | 1 | 10.1 | 10.1 | 10.10 | 10.1 |  |  | 10.10 | 10.1 | 10.1 | 10.1 | 10.10 | 0 |

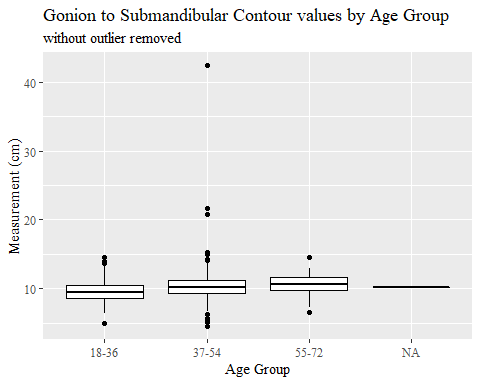
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(GoSub\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Gonion to Submandibular Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.9 | 14.6 | 9.52 | 9.5 | 1.43 | 0.05 | 7.30 | 8.5 | 9.5 | 10.5 | 12.10 | 59 |
| 37-54 | 940 | 4.5 | 42.4 | 10.26 | 10.2 | 1.91 | 0.06 | 7.77 | 9.3 | 10.2 | 11.2 | 12.73 | 65 |
| 55-72 | 84 | 6.5 | 14.5 | 10.60 | 10.6 | 1.41 | 0.15 | 8.40 | 9.7 | 10.6 | 11.6 | 12.90 | 3 |
|  | 1 | 10.1 | 10.1 | 10.10 | 10.1 |  |  | 10.10 | 10.1 | 10.1 | 10.1 | 10.10 | 0 |

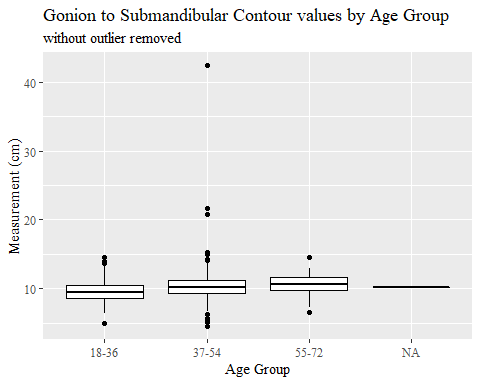
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, GoSub\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=GoSub\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Age Group",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 127 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=GoSub\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Age Group",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 127 rows containing non-finite values (stat\_boxplot).



GoSub\_C WITH Outlier Removed!!!!

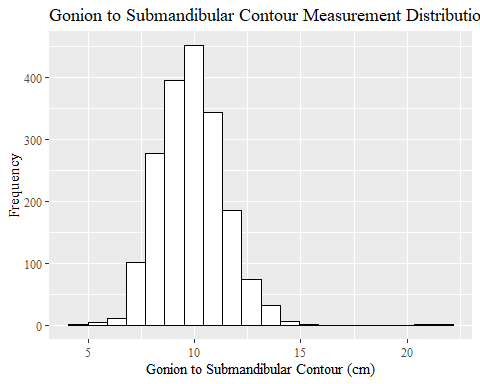
#REMOVING OUTLIER GoSubC  
  
max(headscan\_full$GoSub\_C, na.rm = TRUE)

## [1] 42.4

#400-20210129-009  
  
#CODE TO REMOVE OUTLIER, use later to remove from headscan\_full  
GoSub\_no\_out <- headscan\_full %>% mutate(GoSub\_C = replace(GoSub\_C, GoSub\_C>40, NA))

#histogram of all GoSub\_C values  
ggplot(data=GoSub\_no\_out, aes(x=GoSub\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Gonion to Submandibular Contour Measurement Distribution",  
 y="Frequency",  
 x="Gonion to Submandibular Contour (cm)")

## Warning: Removed 128 rows containing non-finite values (stat\_bin).



#GoSub\_C race/eth sumstats  
GoSub\_Crace\_sumstats1 <- GoSub\_no\_out %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(GoSub\_C, na.rm = TRUE),  
 max = max(GoSub\_C, na.rm = TRUE),  
 mean = mean(GoSub\_C, na.rm = TRUE),  
 mdn = median(GoSub\_C, na.rm = TRUE),  
 sd = sd(GoSub\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(GoSub\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(GoSub\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(GoSub\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(GoSub\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(GoSub\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(GoSub\_C)))   
  
GoSub\_Crace\_sumstats1 <- GoSub\_Crace\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(GoSub\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Race/Ethnicity")

**Table** : Gonion to Submandibular Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.5 | 21.7 | 9.78 | 9.7 | 1.59 | 0.05 | 7.40 | 8.7 | 9.7 | 10.70 | 12.40 | 72 |
| Black | 548 | 6.3 | 14.6 | 10.23 | 10.2 | 1.43 | 0.06 | 7.80 | 9.3 | 10.2 | 11.20 | 12.56 | 39 |
| LatinX | 100 | 6.7 | 13.2 | 9.75 | 9.8 | 1.37 | 0.14 | 7.60 | 8.8 | 9.8 | 10.40 | 11.90 | 9 |
| Asian | 91 | 7.1 | 13.7 | 9.56 | 9.4 | 1.44 | 0.15 | 7.48 | 8.5 | 9.4 | 10.60 | 12.02 | 2 |
| Other | 21 | 7.3 | 12.6 | 10.00 | 9.6 | 1.44 | 0.31 | 7.86 | 9.0 | 9.6 | 10.90 | 12.12 | 4 |
| AIAN | 8 | 7.1 | 11.1 | 8.99 | 9.4 | 1.40 | 0.50 | 7.31 | 7.9 | 9.4 | 9.75 | 10.74 | 1 |
| PTNS | 5 | 6.9 | 13.4 | 9.32 | 9.1 | 2.49 | 1.12 | 7.08 | 7.8 | 9.1 | 9.40 | 12.60 | 0 |
| NHOPI | 4 | 7.5 | 9.6 | 8.67 | 8.9 | 1.07 | 0.53 | 7.64 | 8.2 | 8.9 | 9.25 | 9.53 | 1 |

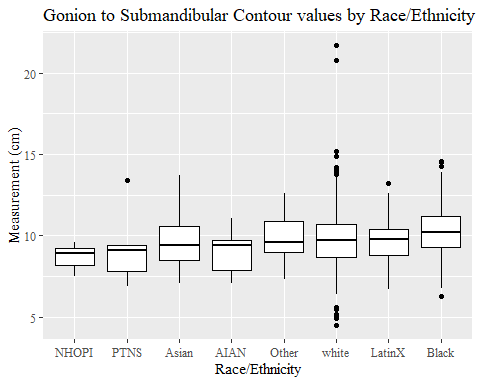
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(GoSub\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Gonion to Submandibular Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.5 | 21.7 | 9.78 | 9.7 | 1.59 | 0.05 | 7.40 | 8.7 | 9.7 | 10.70 | 12.40 | 72 |
| Black | 548 | 6.3 | 14.6 | 10.23 | 10.2 | 1.43 | 0.06 | 7.80 | 9.3 | 10.2 | 11.20 | 12.56 | 39 |
| LatinX | 100 | 6.7 | 13.2 | 9.75 | 9.8 | 1.37 | 0.14 | 7.60 | 8.8 | 9.8 | 10.40 | 11.90 | 9 |
| Asian | 91 | 7.1 | 13.7 | 9.56 | 9.4 | 1.44 | 0.15 | 7.48 | 8.5 | 9.4 | 10.60 | 12.02 | 2 |
| Other | 21 | 7.3 | 12.6 | 10.00 | 9.6 | 1.44 | 0.31 | 7.86 | 9.0 | 9.6 | 10.90 | 12.12 | 4 |
| AIAN | 8 | 7.1 | 11.1 | 8.99 | 9.4 | 1.40 | 0.50 | 7.31 | 7.9 | 9.4 | 9.75 | 10.74 | 1 |
| PTNS | 5 | 6.9 | 13.4 | 9.32 | 9.1 | 2.49 | 1.12 | 7.08 | 7.8 | 9.1 | 9.40 | 12.60 | 0 |
| NHOPI | 4 | 7.5 | 9.6 | 8.67 | 8.9 | 1.07 | 0.53 | 7.64 | 8.2 | 8.9 | 9.25 | 9.53 | 1 |

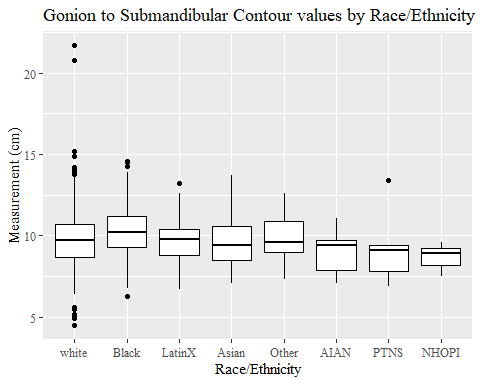
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
GoSub\_no\_out %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, GoSub\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=GoSub\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 128 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=GoSub\_no\_out, aes(y=GoSub\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 128 rows containing non-finite values (stat\_boxplot).



#GoSub\_C gender sumstats  
GoSub\_Cgender\_sumstats1 <- GoSub\_no\_out %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(GoSub\_C, na.rm = TRUE),  
 max = max(GoSub\_C, na.rm = TRUE),  
 mean = mean(GoSub\_C, na.rm = TRUE),  
 mdn = median(GoSub\_C, na.rm = TRUE),  
 sd = sd(GoSub\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(GoSub\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(GoSub\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(GoSub\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(GoSub\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(GoSub\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(GoSub\_C)))  
  
GoSub\_Cgender\_sumstats1 <- GoSub\_Cgender\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(GoSub\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Gender")

**Table** : Gonion to Submandibular Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.5 | 20.8 | 9.37 | 9.35 | 1.39 | 0.04 | 7.20 | 8.4 | 9.35 | 10.30 | 11.70 | 26 |
| Male | 939 | 5.2 | 21.7 | 10.53 | 10.50 | 1.48 | 0.05 | 8.30 | 9.6 | 10.50 | 11.40 | 13.00 | 102 |
| Non-binary or Other | 5 | 7.2 | 11.4 | 9.72 | 10.40 | 1.61 | 0.72 | 7.60 | 9.2 | 10.40 | 10.40 | 11.20 | 0 |
| Prefer not to say | 1 | 13.4 | 13.4 | 13.40 | 13.40 |  |  | 13.40 | 13.4 | 13.40 | 13.40 | 13.40 | 0 |
|  | 8 | 8.2 | 11.2 | 9.81 | 9.70 | 0.94 | 0.33 | 8.59 | 9.3 | 9.70 | 10.48 | 11.02 | 0 |

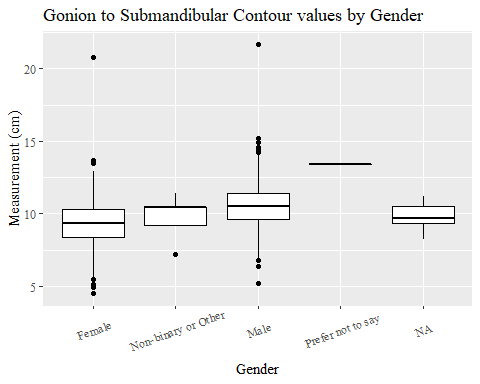
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(GoSub\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Gonion to Submandibular Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.5 | 20.8 | 9.37 | 9.35 | 1.39 | 0.04 | 7.20 | 8.4 | 9.35 | 10.30 | 11.70 | 26 |
| Male | 939 | 5.2 | 21.7 | 10.53 | 10.50 | 1.48 | 0.05 | 8.30 | 9.6 | 10.50 | 11.40 | 13.00 | 102 |
| Non-binary or Other | 5 | 7.2 | 11.4 | 9.72 | 10.40 | 1.61 | 0.72 | 7.60 | 9.2 | 10.40 | 10.40 | 11.20 | 0 |
| Prefer not to say | 1 | 13.4 | 13.4 | 13.40 | 13.40 |  |  | 13.40 | 13.4 | 13.40 | 13.40 | 13.40 | 0 |
|  | 8 | 8.2 | 11.2 | 9.81 | 9.70 | 0.94 | 0.33 | 8.59 | 9.3 | 9.70 | 10.48 | 11.02 | 0 |

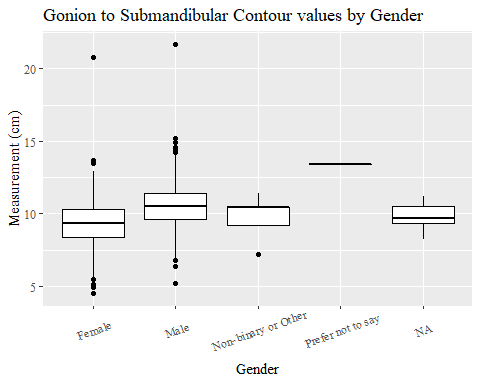
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
GoSub\_no\_out %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, GoSub\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=GoSub\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 128 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=GoSub\_no\_out, aes(y=GoSub\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 128 rows containing non-finite values (stat\_boxplot).



#GoSub\_C age group sumstats  
GoSub\_Cage\_sumstats1 <- GoSub\_no\_out %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(GoSub\_C, na.rm = TRUE),  
 max = max(GoSub\_C, na.rm = TRUE),  
 mean = mean(GoSub\_C, na.rm = TRUE),  
 mdn = median(GoSub\_C, na.rm = TRUE),  
 sd = sd(GoSub\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(GoSub\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(GoSub\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(GoSub\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(GoSub\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(GoSub\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(GoSub\_C)))  
  
GoSub\_Cage\_sumstats1 <- GoSub\_Cage\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(GoSub\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Age Group")

**Table** : Gonion to Submandibular Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.9 | 14.6 | 9.52 | 9.5 | 1.43 | 0.05 | 7.30 | 8.5 | 9.5 | 10.5 | 12.1 | 59 |
| 37-54 | 940 | 4.5 | 21.7 | 10.22 | 10.2 | 1.57 | 0.05 | 7.77 | 9.3 | 10.2 | 11.2 | 12.7 | 66 |
| 55-72 | 84 | 6.5 | 14.5 | 10.60 | 10.6 | 1.41 | 0.15 | 8.40 | 9.7 | 10.6 | 11.6 | 12.9 | 3 |
|  | 1 | 10.1 | 10.1 | 10.10 | 10.1 |  |  | 10.10 | 10.1 | 10.1 | 10.1 | 10.1 | 0 |

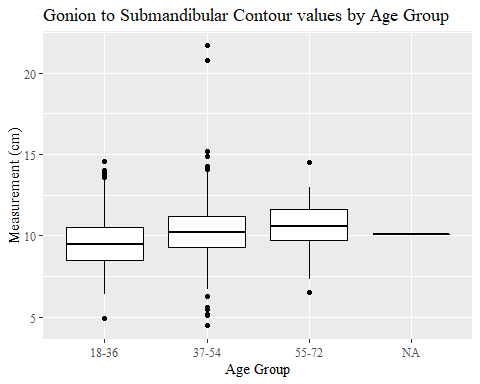
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(GoSub\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Gonion to Submandibular Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Gonion to Submandibular Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.9 | 14.6 | 9.52 | 9.5 | 1.43 | 0.05 | 7.30 | 8.5 | 9.5 | 10.5 | 12.1 | 59 |
| 37-54 | 940 | 4.5 | 21.7 | 10.22 | 10.2 | 1.57 | 0.05 | 7.77 | 9.3 | 10.2 | 11.2 | 12.7 | 66 |
| 55-72 | 84 | 6.5 | 14.5 | 10.60 | 10.6 | 1.41 | 0.15 | 8.40 | 9.7 | 10.6 | 11.6 | 12.9 | 3 |
|  | 1 | 10.1 | 10.1 | 10.10 | 10.1 |  |  | 10.10 | 10.1 | 10.1 | 10.1 | 10.1 | 0 |

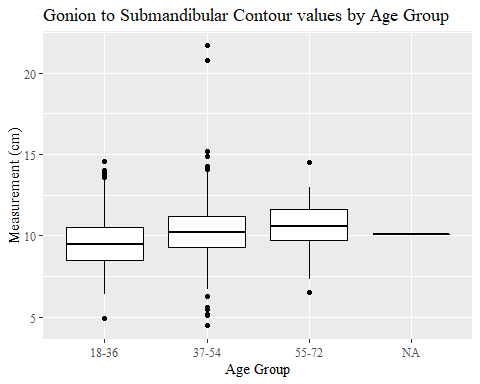
#%>% set\_header\_labels(values = list(GoSub\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
GoSub\_no\_out %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, GoSub\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=GoSub\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 128 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=GoSub\_no\_out, aes(y=GoSub\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Gonion to Submandibular Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

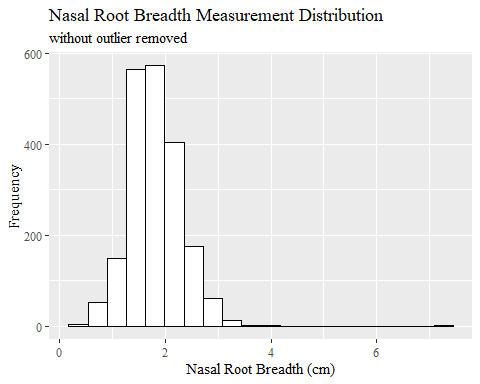
## Warning: Removed 128 rows containing non-finite values (stat\_boxplot).



NRB\_L WIHTOUT outlier removed

#histogram of all NRB\_L values  
ggplot(data=headscan\_full, aes(x=NRB\_L))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Nasal Root Breadth Measurement Distribution",  
 subtitle= "without outlier removed",  
 y="Frequency",  
 x="Nasal Root Breadth (cm)")

## Warning: Removed 15 rows containing non-finite values (stat\_bin).



#NRB\_L race/eth sumstats  
NRB\_Lrace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(NRB\_L, na.rm = TRUE),  
 max = max(NRB\_L, na.rm = TRUE),  
 mean = mean(NRB\_L, na.rm = TRUE),  
 mdn = median(NRB\_L, na.rm = TRUE),  
 sd = sd(NRB\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(NRB\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(NRB\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(NRB\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(NRB\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(NRB\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(NRB\_L)))   
  
NRB\_Lrace\_sumstats <- NRB\_Lrace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(NRB\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Race/Ethnicity")

**Table** : Nasal Root Breadth SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 0.3 | 7.2 | 1.73 | 1.7 | 0.47 | 0.01 | 1.00 | 1.40 | 1.7 | 2.00 | 2.50 | 8 |
| Black | 548 | 0.7 | 3.5 | 1.98 | 1.9 | 0.49 | 0.02 | 1.20 | 1.70 | 1.9 | 2.30 | 2.90 | 4 |
| LatinX | 100 | 0.8 | 2.9 | 1.75 | 1.7 | 0.44 | 0.04 | 1.10 | 1.40 | 1.7 | 2.00 | 2.51 | 1 |
| Asian | 91 | 0.8 | 3.1 | 1.66 | 1.6 | 0.50 | 0.05 | 1.00 | 1.30 | 1.6 | 1.90 | 2.60 | 1 |
| Other | 21 | 0.8 | 3.0 | 2.00 | 2.0 | 0.55 | 0.12 | 1.40 | 1.70 | 2.0 | 2.10 | 2.90 | 0 |
| AIAN | 8 | 0.8 | 2.8 | 1.81 | 1.8 | 0.62 | 0.22 | 1.01 | 1.55 | 1.8 | 2.10 | 2.59 | 1 |
| PTNS | 5 | 1.3 | 2.5 | 2.06 | 2.1 | 0.50 | 0.22 | 1.42 | 1.90 | 2.1 | 2.50 | 2.50 | 0 |
| NHOPI | 4 | 1.1 | 2.1 | 1.50 | 1.4 | 0.43 | 0.22 | 1.13 | 1.25 | 1.4 | 1.65 | 2.01 | 0 |

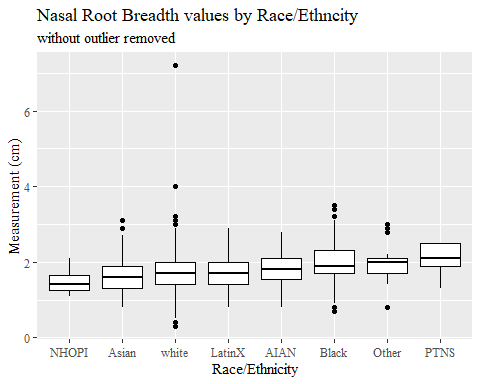
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(NRB\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Nasal Root Breadth SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 0.3 | 7.2 | 1.73 | 1.7 | 0.47 | 0.01 | 1.00 | 1.40 | 1.7 | 2.00 | 2.50 | 8 |
| Black | 548 | 0.7 | 3.5 | 1.98 | 1.9 | 0.49 | 0.02 | 1.20 | 1.70 | 1.9 | 2.30 | 2.90 | 4 |
| LatinX | 100 | 0.8 | 2.9 | 1.75 | 1.7 | 0.44 | 0.04 | 1.10 | 1.40 | 1.7 | 2.00 | 2.51 | 1 |
| Asian | 91 | 0.8 | 3.1 | 1.66 | 1.6 | 0.50 | 0.05 | 1.00 | 1.30 | 1.6 | 1.90 | 2.60 | 1 |
| Other | 21 | 0.8 | 3.0 | 2.00 | 2.0 | 0.55 | 0.12 | 1.40 | 1.70 | 2.0 | 2.10 | 2.90 | 0 |
| AIAN | 8 | 0.8 | 2.8 | 1.81 | 1.8 | 0.62 | 0.22 | 1.01 | 1.55 | 1.8 | 2.10 | 2.59 | 1 |
| PTNS | 5 | 1.3 | 2.5 | 2.06 | 2.1 | 0.50 | 0.22 | 1.42 | 1.90 | 2.1 | 2.50 | 2.50 | 0 |
| NHOPI | 4 | 1.1 | 2.1 | 1.50 | 1.4 | 0.43 | 0.22 | 1.13 | 1.25 | 1.4 | 1.65 | 2.01 | 0 |

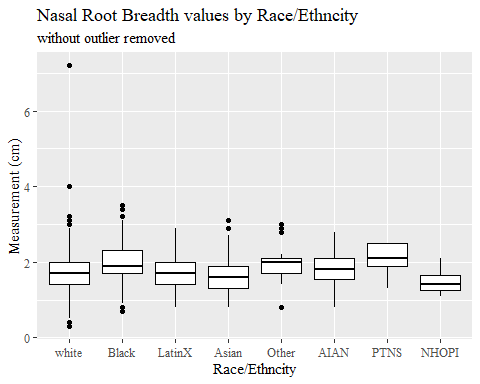
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, NRB\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=NRB\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Race/Ethncity",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=NRB\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Race/Ethncity",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Race/Ethncity")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#NRB\_L gender sumstats  
NRB\_Lgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(NRB\_L, na.rm = TRUE),  
 max = max(NRB\_L, na.rm = TRUE),  
 mean = mean(NRB\_L, na.rm = TRUE),  
 mdn = median(NRB\_L, na.rm = TRUE),  
 sd = sd(NRB\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(NRB\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(NRB\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(NRB\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(NRB\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(NRB\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(NRB\_L)))  
  
NRB\_Lgender\_sumstats <- NRB\_Lgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(NRB\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Gender")

**Table** : Nasal Root Breadth SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 0.4 | 3.2 | 1.82 | 1.8 | 0.48 | 0.01 | 1.00 | 1.50 | 1.8 | 2.1 | 2.70 | 9 |
| Male | 939 | 0.3 | 7.2 | 1.78 | 1.7 | 0.50 | 0.02 | 1.10 | 1.50 | 1.7 | 2.0 | 2.70 | 6 |
| Non-binary or Other | 5 | 0.8 | 2.0 | 1.42 | 1.3 | 0.52 | 0.23 | 0.86 | 1.10 | 1.3 | 1.9 | 1.98 | 0 |
| Prefer not to say | 1 | 1.9 | 1.9 | 1.90 | 1.9 |  |  | 1.90 | 1.90 | 1.9 | 1.9 | 1.90 | 0 |
|  | 8 | 1.4 | 1.9 | 1.70 | 1.7 | 0.15 | 0.05 | 1.47 | 1.67 | 1.7 | 1.8 | 1.86 | 0 |

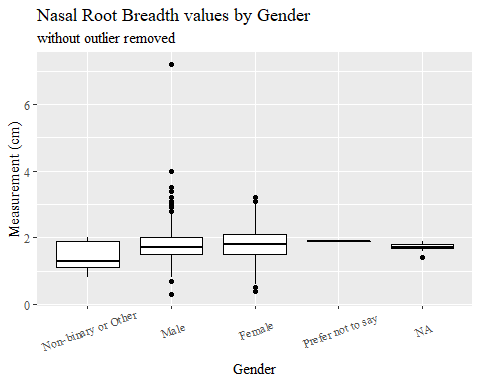
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(NRB\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Nasal Root Breadth SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 0.4 | 3.2 | 1.82 | 1.8 | 0.48 | 0.01 | 1.00 | 1.50 | 1.8 | 2.1 | 2.70 | 9 |
| Male | 939 | 0.3 | 7.2 | 1.78 | 1.7 | 0.50 | 0.02 | 1.10 | 1.50 | 1.7 | 2.0 | 2.70 | 6 |
| Non-binary or Other | 5 | 0.8 | 2.0 | 1.42 | 1.3 | 0.52 | 0.23 | 0.86 | 1.10 | 1.3 | 1.9 | 1.98 | 0 |
| Prefer not to say | 1 | 1.9 | 1.9 | 1.90 | 1.9 |  |  | 1.90 | 1.90 | 1.9 | 1.9 | 1.90 | 0 |
|  | 8 | 1.4 | 1.9 | 1.70 | 1.7 | 0.15 | 0.05 | 1.47 | 1.67 | 1.7 | 1.8 | 1.86 | 0 |

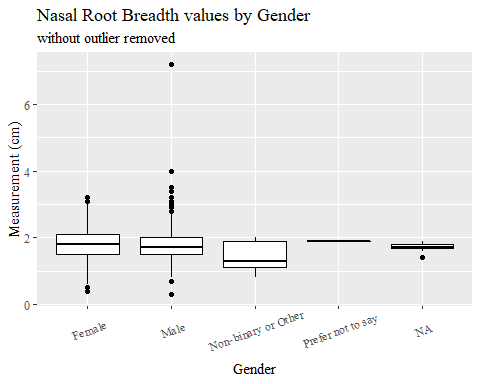
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, NRB\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=NRB\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Gender",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=NRB\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Gender",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#NRB\_L age group sumstats  
NRB\_Lage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(NRB\_L, na.rm = TRUE),  
 max = max(NRB\_L, na.rm = TRUE),  
 mean = mean(NRB\_L, na.rm = TRUE),  
 mdn = median(NRB\_L, na.rm = TRUE),  
 sd = sd(NRB\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(NRB\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(NRB\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(NRB\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(NRB\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(NRB\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(NRB\_L)))  
  
NRB\_Lage\_sumstats <- NRB\_Lage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(NRB\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Age Group")

**Table** : Nasal Root Breadth SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 0.4 | 7.2 | 1.82 | 1.8 | 0.50 | 0.02 | 1.10 | 1.5 | 1.8 | 2.10 | 2.7 | 6 |
| 37-54 | 940 | 0.3 | 3.5 | 1.78 | 1.8 | 0.47 | 0.02 | 1.00 | 1.5 | 1.8 | 2.00 | 2.6 | 8 |
| 55-72 | 84 | 0.8 | 3.2 | 1.74 | 1.7 | 0.53 | 0.06 | 0.91 | 1.4 | 1.7 | 1.95 | 2.8 | 1 |
|  | 1 | 1.3 | 1.3 | 1.30 | 1.3 |  |  | 1.30 | 1.3 | 1.3 | 1.30 | 1.3 | 0 |

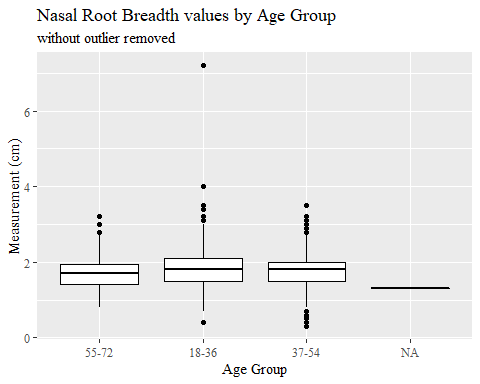
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(NRB\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Nasal Root Breadth SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 0.4 | 7.2 | 1.82 | 1.8 | 0.50 | 0.02 | 1.10 | 1.5 | 1.8 | 2.10 | 2.7 | 6 |
| 37-54 | 940 | 0.3 | 3.5 | 1.78 | 1.8 | 0.47 | 0.02 | 1.00 | 1.5 | 1.8 | 2.00 | 2.6 | 8 |
| 55-72 | 84 | 0.8 | 3.2 | 1.74 | 1.7 | 0.53 | 0.06 | 0.91 | 1.4 | 1.7 | 1.95 | 2.8 | 1 |
|  | 1 | 1.3 | 1.3 | 1.30 | 1.3 |  |  | 1.30 | 1.3 | 1.3 | 1.30 | 1.3 | 0 |

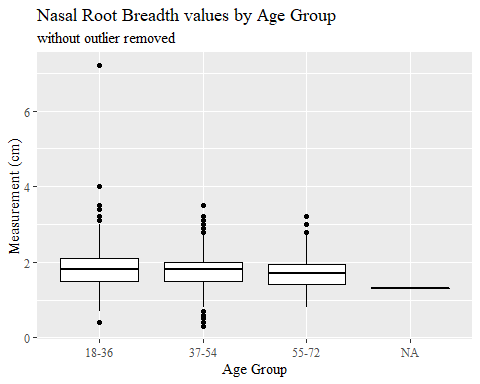
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, NRB\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=NRB\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Age Group",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=NRB\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Age Group",  
 subtitle= "without outlier removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



NRB\_L WITH Outlier removed

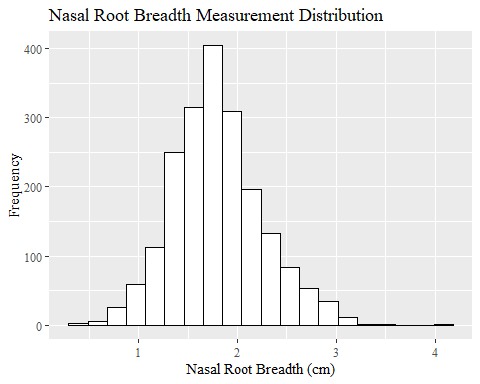
#REMOVING OUTLIER NRB\_L  
  
max(headscan\_full$NRB\_L, na.rm = TRUE)

## [1] 7.2

#CODE TO REMOVE OUTLIER, use later to remove from headscan\_full  
NRB\_L\_no\_out <- headscan\_full %>% mutate(NRB\_L = replace(NRB\_L, NRB\_L>7, NA))

#histogram of all NRB\_L values  
ggplot(data=NRB\_L\_no\_out, aes(x=NRB\_L))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Nasal Root Breadth Measurement Distribution",  
 y="Frequency",  
 x="Nasal Root Breadth (cm)")

## Warning: Removed 16 rows containing non-finite values (stat\_bin).



#NRB\_L race/eth sumstats  
NRB\_Lrace\_sumstats1 <- NRB\_L\_no\_out %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(NRB\_L, na.rm = TRUE),  
 max = max(NRB\_L, na.rm = TRUE),  
 mean = mean(NRB\_L, na.rm = TRUE),  
 mdn = median(NRB\_L, na.rm = TRUE),  
 sd = sd(NRB\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(NRB\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(NRB\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(NRB\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(NRB\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(NRB\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(NRB\_L)))   
  
NRB\_Lrace\_sumstats1 <- NRB\_Lrace\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(NRB\_Lrace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Race/Ethnicity")

**Table** : Nasal Root Breadth SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 0.3 | 4.0 | 1.73 | 1.7 | 0.44 | 0.01 | 1.00 | 1.40 | 1.7 | 2.00 | 2.50 | 9 |
| Black | 548 | 0.7 | 3.5 | 1.98 | 1.9 | 0.49 | 0.02 | 1.20 | 1.70 | 1.9 | 2.30 | 2.90 | 4 |
| LatinX | 100 | 0.8 | 2.9 | 1.75 | 1.7 | 0.44 | 0.04 | 1.10 | 1.40 | 1.7 | 2.00 | 2.51 | 1 |
| Asian | 91 | 0.8 | 3.1 | 1.66 | 1.6 | 0.50 | 0.05 | 1.00 | 1.30 | 1.6 | 1.90 | 2.60 | 1 |
| Other | 21 | 0.8 | 3.0 | 2.00 | 2.0 | 0.55 | 0.12 | 1.40 | 1.70 | 2.0 | 2.10 | 2.90 | 0 |
| AIAN | 8 | 0.8 | 2.8 | 1.81 | 1.8 | 0.62 | 0.22 | 1.01 | 1.55 | 1.8 | 2.10 | 2.59 | 1 |
| PTNS | 5 | 1.3 | 2.5 | 2.06 | 2.1 | 0.50 | 0.22 | 1.42 | 1.90 | 2.1 | 2.50 | 2.50 | 0 |
| NHOPI | 4 | 1.1 | 2.1 | 1.50 | 1.4 | 0.43 | 0.22 | 1.13 | 1.25 | 1.4 | 1.65 | 2.01 | 0 |

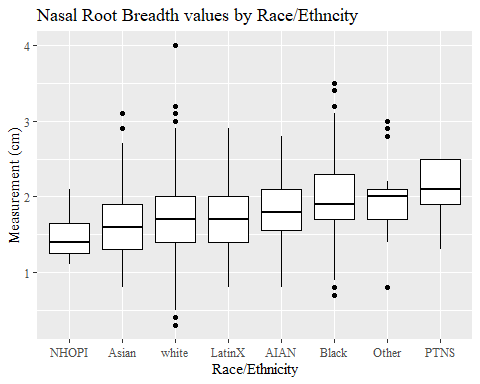
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(NRB\_Lrace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Nasal Root Breadth SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 0.3 | 4.0 | 1.73 | 1.7 | 0.44 | 0.01 | 1.00 | 1.40 | 1.7 | 2.00 | 2.50 | 9 |
| Black | 548 | 0.7 | 3.5 | 1.98 | 1.9 | 0.49 | 0.02 | 1.20 | 1.70 | 1.9 | 2.30 | 2.90 | 4 |
| LatinX | 100 | 0.8 | 2.9 | 1.75 | 1.7 | 0.44 | 0.04 | 1.10 | 1.40 | 1.7 | 2.00 | 2.51 | 1 |
| Asian | 91 | 0.8 | 3.1 | 1.66 | 1.6 | 0.50 | 0.05 | 1.00 | 1.30 | 1.6 | 1.90 | 2.60 | 1 |
| Other | 21 | 0.8 | 3.0 | 2.00 | 2.0 | 0.55 | 0.12 | 1.40 | 1.70 | 2.0 | 2.10 | 2.90 | 0 |
| AIAN | 8 | 0.8 | 2.8 | 1.81 | 1.8 | 0.62 | 0.22 | 1.01 | 1.55 | 1.8 | 2.10 | 2.59 | 1 |
| PTNS | 5 | 1.3 | 2.5 | 2.06 | 2.1 | 0.50 | 0.22 | 1.42 | 1.90 | 2.1 | 2.50 | 2.50 | 0 |
| NHOPI | 4 | 1.1 | 2.1 | 1.50 | 1.4 | 0.43 | 0.22 | 1.13 | 1.25 | 1.4 | 1.65 | 2.01 | 0 |

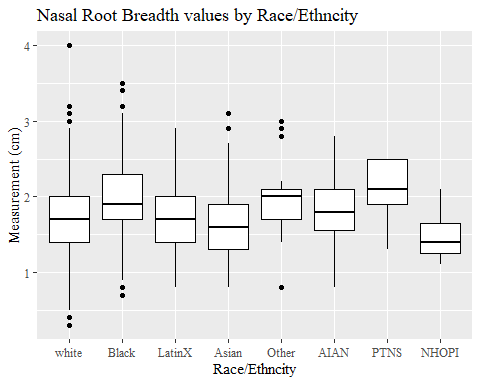
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
NRB\_L\_no\_out %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, NRB\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=NRB\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Race/Ethncity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=NRB\_L\_no\_out, aes(y=NRB\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Race/Ethncity",  
 y="Measurement (cm)",  
 x="Race/Ethncity")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#NRB\_L gender sumstats  
NRB\_Lgender\_sumstats1 <- NRB\_L\_no\_out %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(NRB\_L, na.rm = TRUE),  
 max = max(NRB\_L, na.rm = TRUE),  
 mean = mean(NRB\_L, na.rm = TRUE),  
 mdn = median(NRB\_L, na.rm = TRUE),  
 sd = sd(NRB\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(NRB\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(NRB\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(NRB\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(NRB\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(NRB\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(NRB\_L)))  
  
NRB\_Lgender\_sumstats1 <- NRB\_Lgender\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(NRB\_Lgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Gender")

**Table** : Nasal Root Breadth SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 0.4 | 3.2 | 1.82 | 1.8 | 0.48 | 0.01 | 1.00 | 1.50 | 1.8 | 2.1 | 2.70 | 9 |
| Male | 939 | 0.3 | 4.0 | 1.77 | 1.7 | 0.47 | 0.02 | 1.10 | 1.48 | 1.7 | 2.0 | 2.64 | 7 |
| Non-binary or Other | 5 | 0.8 | 2.0 | 1.42 | 1.3 | 0.52 | 0.23 | 0.86 | 1.10 | 1.3 | 1.9 | 1.98 | 0 |
| Prefer not to say | 1 | 1.9 | 1.9 | 1.90 | 1.9 |  |  | 1.90 | 1.90 | 1.9 | 1.9 | 1.90 | 0 |
|  | 8 | 1.4 | 1.9 | 1.70 | 1.7 | 0.15 | 0.05 | 1.47 | 1.67 | 1.7 | 1.8 | 1.86 | 0 |

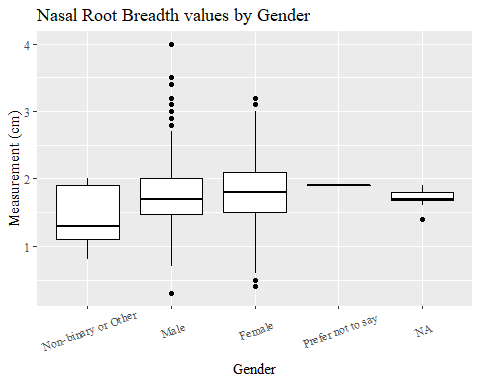
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(NRB\_Lgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Nasal Root Breadth SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 0.4 | 3.2 | 1.82 | 1.8 | 0.48 | 0.01 | 1.00 | 1.50 | 1.8 | 2.1 | 2.70 | 9 |
| Male | 939 | 0.3 | 4.0 | 1.77 | 1.7 | 0.47 | 0.02 | 1.10 | 1.48 | 1.7 | 2.0 | 2.64 | 7 |
| Non-binary or Other | 5 | 0.8 | 2.0 | 1.42 | 1.3 | 0.52 | 0.23 | 0.86 | 1.10 | 1.3 | 1.9 | 1.98 | 0 |
| Prefer not to say | 1 | 1.9 | 1.9 | 1.90 | 1.9 |  |  | 1.90 | 1.90 | 1.9 | 1.9 | 1.90 | 0 |
|  | 8 | 1.4 | 1.9 | 1.70 | 1.7 | 0.15 | 0.05 | 1.47 | 1.67 | 1.7 | 1.8 | 1.86 | 0 |

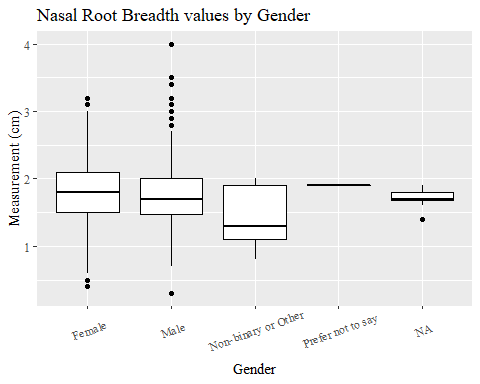
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
NRB\_L\_no\_out %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, NRB\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=NRB\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=NRB\_L\_no\_out, aes(y=NRB\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#NRB\_L age group sumstats  
NRB\_Lage\_sumstats1 <- NRB\_L\_no\_out %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(NRB\_L, na.rm = TRUE),  
 max = max(NRB\_L, na.rm = TRUE),  
 mean = mean(NRB\_L, na.rm = TRUE),  
 mdn = median(NRB\_L, na.rm = TRUE),  
 sd = sd(NRB\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(NRB\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(NRB\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(NRB\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(NRB\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(NRB\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(NRB\_L)))  
  
NRB\_Lage\_sumstats1 <- NRB\_Lage\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(NRB\_Lage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Age Group")

**Table** : Nasal Root Breadth SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 0.4 | 4.0 | 1.81 | 1.8 | 0.47 | 0.02 | 1.10 | 1.5 | 1.8 | 2.10 | 2.7 | 7 |
| 37-54 | 940 | 0.3 | 3.5 | 1.78 | 1.8 | 0.47 | 0.02 | 1.00 | 1.5 | 1.8 | 2.00 | 2.6 | 8 |
| 55-72 | 84 | 0.8 | 3.2 | 1.74 | 1.7 | 0.53 | 0.06 | 0.91 | 1.4 | 1.7 | 1.95 | 2.8 | 1 |
|  | 1 | 1.3 | 1.3 | 1.30 | 1.3 |  |  | 1.30 | 1.3 | 1.3 | 1.30 | 1.3 | 0 |

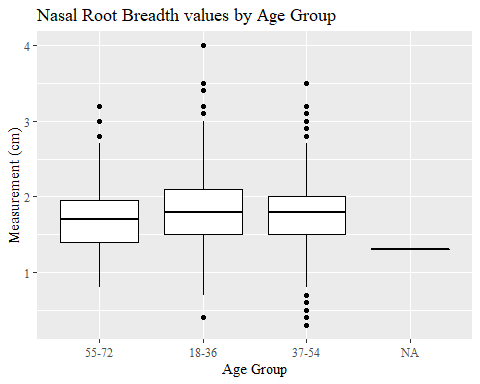
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(NRB\_Lage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Nasal Root Breadth SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Nasal Root Breadth SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 0.4 | 4.0 | 1.81 | 1.8 | 0.47 | 0.02 | 1.10 | 1.5 | 1.8 | 2.10 | 2.7 | 7 |
| 37-54 | 940 | 0.3 | 3.5 | 1.78 | 1.8 | 0.47 | 0.02 | 1.00 | 1.5 | 1.8 | 2.00 | 2.6 | 8 |
| 55-72 | 84 | 0.8 | 3.2 | 1.74 | 1.7 | 0.53 | 0.06 | 0.91 | 1.4 | 1.7 | 1.95 | 2.8 | 1 |
|  | 1 | 1.3 | 1.3 | 1.30 | 1.3 |  |  | 1.30 | 1.3 | 1.3 | 1.30 | 1.3 | 0 |

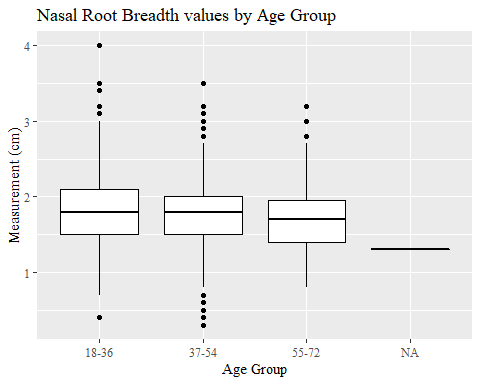
#%>% set\_header\_labels(values = list(NRB\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
NRB\_L\_no\_out %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, NRB\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=NRB\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=NRB\_L\_no\_out, aes(y=NRB\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Nasal Root Breadth values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

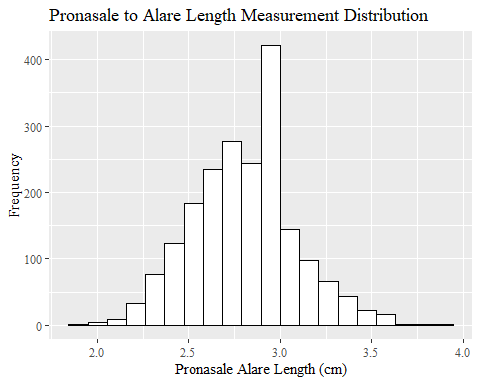
## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



ProA\_L

#histogram of all ProA\_L values  
ggplot(data=headscan\_full, aes(x=ProA\_L))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Pronasale to Alare Length Measurement Distribution",  
 y="Frequency",  
 x="Pronasale Alare Length (cm)")

## Warning: Removed 16 rows containing non-finite values (stat\_bin).



#ProA\_L race/eth sumstats  
ProA\_Lrace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(ProA\_L, na.rm = TRUE),  
 max = max(ProA\_L, na.rm = TRUE),  
 mean = mean(ProA\_L, na.rm = TRUE),  
 mdn = median(ProA\_L, na.rm = TRUE),  
 sd = sd(ProA\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProA\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProA\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProA\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProA\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProA\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProA\_L)))   
  
ProA\_Lrace\_sumstats <- ProA\_Lrace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ProA\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Length SumStats by Race/Ethnicity")

**Table** : Pronasale to Alare Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.9 | 3.7 | 2.78 | 2.80 | 0.30 | 0.01 | 2.30 | 2.60 | 2.80 | 3.00 | 3.30 | 8 |
| Black | 548 | 2.0 | 3.9 | 2.83 | 2.80 | 0.31 | 0.01 | 2.31 | 2.60 | 2.80 | 3.00 | 3.40 | 5 |
| LatinX | 100 | 2.2 | 3.4 | 2.81 | 2.80 | 0.30 | 0.03 | 2.30 | 2.60 | 2.80 | 3.00 | 3.31 | 1 |
| Asian | 91 | 2.2 | 3.6 | 2.71 | 2.70 | 0.32 | 0.03 | 2.30 | 2.50 | 2.70 | 2.90 | 3.30 | 1 |
| Other | 21 | 2.1 | 3.2 | 2.78 | 2.80 | 0.29 | 0.06 | 2.10 | 2.70 | 2.80 | 3.00 | 3.10 | 0 |
| AIAN | 8 | 2.2 | 3.2 | 2.73 | 2.70 | 0.30 | 0.11 | 2.32 | 2.65 | 2.70 | 2.85 | 3.11 | 1 |
| PTNS | 5 | 2.6 | 3.2 | 2.80 | 2.70 | 0.25 | 0.11 | 2.60 | 2.60 | 2.70 | 2.90 | 3.14 | 0 |
| NHOPI | 4 | 2.6 | 3.0 | 2.72 | 2.65 | 0.19 | 0.09 | 2.60 | 2.60 | 2.65 | 2.78 | 2.96 | 0 |

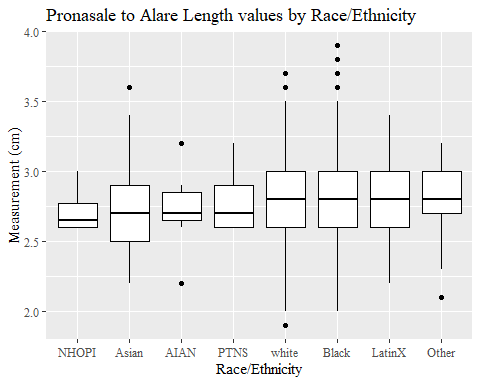
#%>% set\_header\_labels(values = list(ProA\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ProA\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Length SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Alare Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.9 | 3.7 | 2.78 | 2.80 | 0.30 | 0.01 | 2.30 | 2.60 | 2.80 | 3.00 | 3.30 | 8 |
| Black | 548 | 2.0 | 3.9 | 2.83 | 2.80 | 0.31 | 0.01 | 2.31 | 2.60 | 2.80 | 3.00 | 3.40 | 5 |
| LatinX | 100 | 2.2 | 3.4 | 2.81 | 2.80 | 0.30 | 0.03 | 2.30 | 2.60 | 2.80 | 3.00 | 3.31 | 1 |
| Asian | 91 | 2.2 | 3.6 | 2.71 | 2.70 | 0.32 | 0.03 | 2.30 | 2.50 | 2.70 | 2.90 | 3.30 | 1 |
| Other | 21 | 2.1 | 3.2 | 2.78 | 2.80 | 0.29 | 0.06 | 2.10 | 2.70 | 2.80 | 3.00 | 3.10 | 0 |
| AIAN | 8 | 2.2 | 3.2 | 2.73 | 2.70 | 0.30 | 0.11 | 2.32 | 2.65 | 2.70 | 2.85 | 3.11 | 1 |
| PTNS | 5 | 2.6 | 3.2 | 2.80 | 2.70 | 0.25 | 0.11 | 2.60 | 2.60 | 2.70 | 2.90 | 3.14 | 0 |
| NHOPI | 4 | 2.6 | 3.0 | 2.72 | 2.65 | 0.19 | 0.09 | 2.60 | 2.60 | 2.65 | 2.78 | 2.96 | 0 |

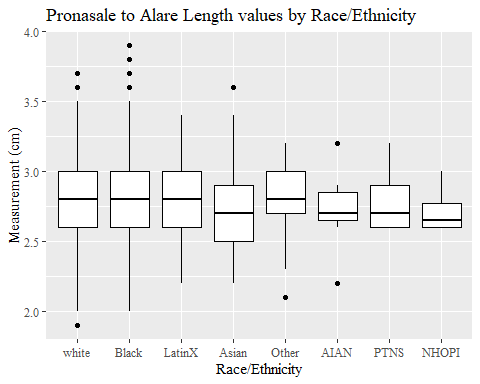
#%>% set\_header\_labels(values = list(ProA\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, ProA\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProA\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProA\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#ProA\_L gender sumstats  
ProA\_Lgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(ProA\_L, na.rm = TRUE),  
 max = max(ProA\_L, na.rm = TRUE),  
 mean = mean(ProA\_L, na.rm = TRUE),  
 mdn = median(ProA\_L, na.rm = TRUE),  
 sd = sd(ProA\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProA\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProA\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProA\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProA\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProA\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProA\_L)))  
  
ProA\_Lgender\_sumstats <- ProA\_Lgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(ProA\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Length SumStats by Gender")

**Table** : Pronasale to Alare Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.9 | 3.6 | 2.65 | 2.6 | 0.25 | 0.01 | 2.30 | 2.50 | 2.6 | 2.80 | 3.1 | 11 |
| Male | 939 | 2.3 | 3.9 | 2.96 | 3.0 | 0.27 | 0.01 | 2.60 | 2.80 | 3.0 | 3.10 | 3.4 | 5 |
| Non-binary or Other | 5 | 2.3 | 2.8 | 2.68 | 2.8 | 0.22 | 0.10 | 2.38 | 2.70 | 2.8 | 2.80 | 2.8 | 0 |
| Prefer not to say | 1 | 2.6 | 2.6 | 2.60 | 2.6 |  |  | 2.60 | 2.60 | 2.6 | 2.60 | 2.6 | 0 |
|  | 8 | 2.2 | 3.0 | 2.55 | 2.5 | 0.23 | 0.08 | 2.27 | 2.48 | 2.5 | 2.62 | 2.9 | 0 |

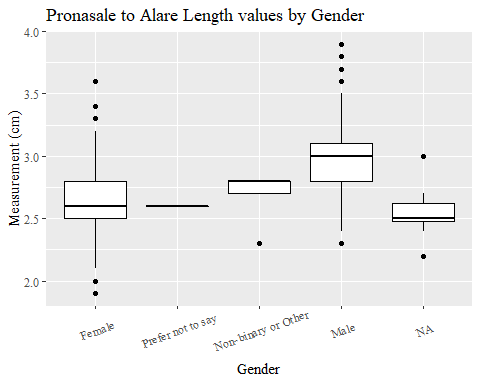
#%>% set\_header\_labels(values = list(ProA\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ProA\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Length SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Alare Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.9 | 3.6 | 2.65 | 2.6 | 0.25 | 0.01 | 2.30 | 2.50 | 2.6 | 2.80 | 3.1 | 11 |
| Male | 939 | 2.3 | 3.9 | 2.96 | 3.0 | 0.27 | 0.01 | 2.60 | 2.80 | 3.0 | 3.10 | 3.4 | 5 |
| Non-binary or Other | 5 | 2.3 | 2.8 | 2.68 | 2.8 | 0.22 | 0.10 | 2.38 | 2.70 | 2.8 | 2.80 | 2.8 | 0 |
| Prefer not to say | 1 | 2.6 | 2.6 | 2.60 | 2.6 |  |  | 2.60 | 2.60 | 2.6 | 2.60 | 2.6 | 0 |
|  | 8 | 2.2 | 3.0 | 2.55 | 2.5 | 0.23 | 0.08 | 2.27 | 2.48 | 2.5 | 2.62 | 2.9 | 0 |

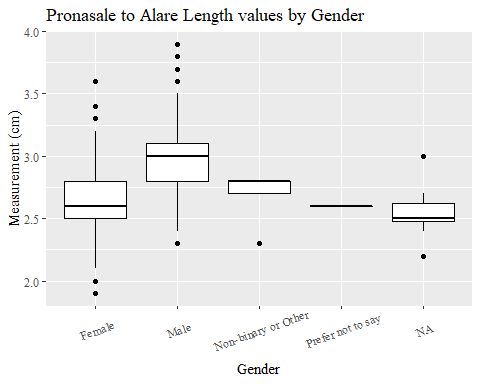
#%>% set\_header\_labels(values = list(ProA\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, ProA\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProA\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProA\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#ProA\_L age group sumstats  
ProA\_Lage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(ProA\_L, na.rm = TRUE),  
 max = max(ProA\_L, na.rm = TRUE),  
 mean = mean(ProA\_L, na.rm = TRUE),  
 mdn = median(ProA\_L, na.rm = TRUE),  
 sd = sd(ProA\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProA\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProA\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProA\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProA\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProA\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProA\_L)))  
  
ProA\_Lage\_sumstats <- ProA\_Lage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ProA\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale Alare Length SumStats by Age Group")

**Table** : Pronasale Alare Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 2.0 | 3.7 | 2.76 | 2.7 | 0.29 | 0.01 | 2.30 | 2.6 | 2.7 | 2.98 | 3.20 | 6 |
| 37-54 | 940 | 1.9 | 3.8 | 2.83 | 2.8 | 0.31 | 0.01 | 2.35 | 2.6 | 2.8 | 3.00 | 3.40 | 9 |
| 55-72 | 84 | 2.2 | 3.9 | 2.90 | 2.9 | 0.32 | 0.03 | 2.50 | 2.7 | 2.9 | 3.10 | 3.49 | 1 |
|  | 1 | 2.5 | 2.5 | 2.50 | 2.5 |  |  | 2.50 | 2.5 | 2.5 | 2.50 | 2.50 | 0 |

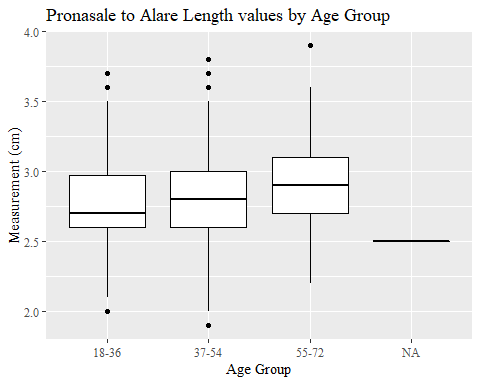
#%>% set\_header\_labels(values = list(ProA\_L = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ProA\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Length SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Alare Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 2.0 | 3.7 | 2.76 | 2.7 | 0.29 | 0.01 | 2.30 | 2.6 | 2.7 | 2.98 | 3.20 | 6 |
| 37-54 | 940 | 1.9 | 3.8 | 2.83 | 2.8 | 0.31 | 0.01 | 2.35 | 2.6 | 2.8 | 3.00 | 3.40 | 9 |
| 55-72 | 84 | 2.2 | 3.9 | 2.90 | 2.9 | 0.32 | 0.03 | 2.50 | 2.7 | 2.9 | 3.10 | 3.49 | 1 |
|  | 1 | 2.5 | 2.5 | 2.50 | 2.5 |  |  | 2.50 | 2.5 | 2.5 | 2.50 | 2.50 | 0 |

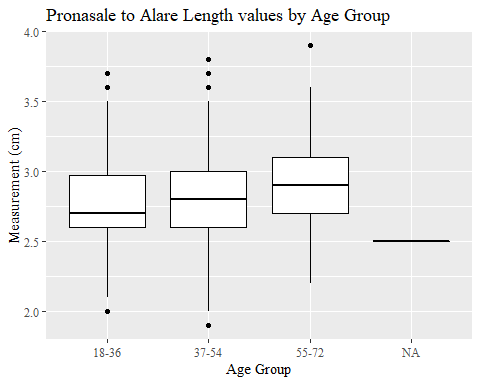
#%>% set\_header\_labels(values = list(ProA\_L = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, ProA\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProA\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProA\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

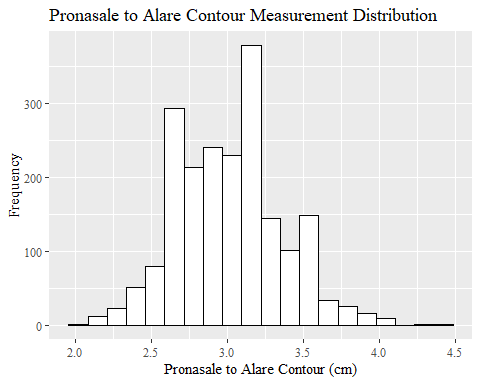
## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



ProA\_C

#histogram of all ProA\_C values  
ggplot(data=headscan\_full, aes(x=ProA\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Pronasale to Alare Contour Measurement Distribution",  
 y="Frequency",  
 x="Pronasale to Alare Contour (cm)")

## Warning: Removed 16 rows containing non-finite values (stat\_bin).



#ProA\_C race/eth sumstats  
ProA\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(ProA\_C, na.rm = TRUE),  
 max = max(ProA\_C, na.rm = TRUE),  
 mean = mean(ProA\_C, na.rm = TRUE),  
 mdn = median(ProA\_C, na.rm = TRUE),  
 sd = sd(ProA\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProA\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProA\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProA\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProA\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProA\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProA\_C)))   
  
ProA\_Crace\_sumstats <- ProA\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ProA\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Contour SumStats by Race/Ethnicity")

**Table** : Pronasale to Alare Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 2.0 | 4.1 | 3.01 | 3.00 | 0.34 | 0.01 | 2.50 | 2.80 | 3.00 | 3.20 | 3.60 | 8 |
| Black | 548 | 2.1 | 4.4 | 3.03 | 3.00 | 0.36 | 0.02 | 2.50 | 2.80 | 3.00 | 3.30 | 3.70 | 5 |
| LatinX | 100 | 2.4 | 3.8 | 3.03 | 3.00 | 0.34 | 0.03 | 2.49 | 2.80 | 3.00 | 3.30 | 3.60 | 1 |
| Asian | 91 | 2.2 | 4.0 | 2.91 | 2.85 | 0.36 | 0.04 | 2.40 | 2.60 | 2.85 | 3.10 | 3.50 | 1 |
| Other | 21 | 2.2 | 3.5 | 2.98 | 3.00 | 0.35 | 0.08 | 2.20 | 2.90 | 3.00 | 3.20 | 3.50 | 0 |
| AIAN | 8 | 2.3 | 3.4 | 2.93 | 2.90 | 0.35 | 0.13 | 2.45 | 2.80 | 2.90 | 3.15 | 3.34 | 1 |
| PTNS | 5 | 2.7 | 3.5 | 3.06 | 3.00 | 0.30 | 0.14 | 2.74 | 2.90 | 3.00 | 3.20 | 3.44 | 0 |
| NHOPI | 4 | 2.7 | 3.4 | 2.95 | 2.85 | 0.31 | 0.16 | 2.71 | 2.77 | 2.85 | 3.02 | 3.32 | 0 |

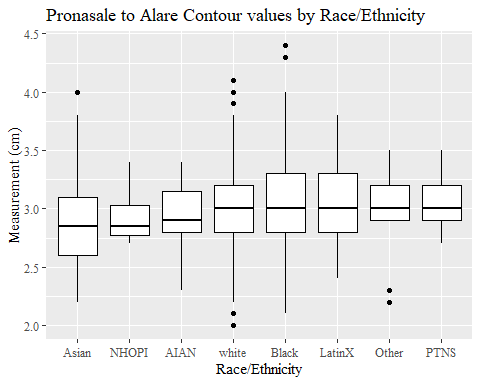
#%>% set\_header\_Cabels(values = list(ProA\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ProA\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Alare Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 2.0 | 4.1 | 3.01 | 3.00 | 0.34 | 0.01 | 2.50 | 2.80 | 3.00 | 3.20 | 3.60 | 8 |
| Black | 548 | 2.1 | 4.4 | 3.03 | 3.00 | 0.36 | 0.02 | 2.50 | 2.80 | 3.00 | 3.30 | 3.70 | 5 |
| LatinX | 100 | 2.4 | 3.8 | 3.03 | 3.00 | 0.34 | 0.03 | 2.49 | 2.80 | 3.00 | 3.30 | 3.60 | 1 |
| Asian | 91 | 2.2 | 4.0 | 2.91 | 2.85 | 0.36 | 0.04 | 2.40 | 2.60 | 2.85 | 3.10 | 3.50 | 1 |
| Other | 21 | 2.2 | 3.5 | 2.98 | 3.00 | 0.35 | 0.08 | 2.20 | 2.90 | 3.00 | 3.20 | 3.50 | 0 |
| AIAN | 8 | 2.3 | 3.4 | 2.93 | 2.90 | 0.35 | 0.13 | 2.45 | 2.80 | 2.90 | 3.15 | 3.34 | 1 |
| PTNS | 5 | 2.7 | 3.5 | 3.06 | 3.00 | 0.30 | 0.14 | 2.74 | 2.90 | 3.00 | 3.20 | 3.44 | 0 |
| NHOPI | 4 | 2.7 | 3.4 | 2.95 | 2.85 | 0.31 | 0.16 | 2.71 | 2.77 | 2.85 | 3.02 | 3.32 | 0 |

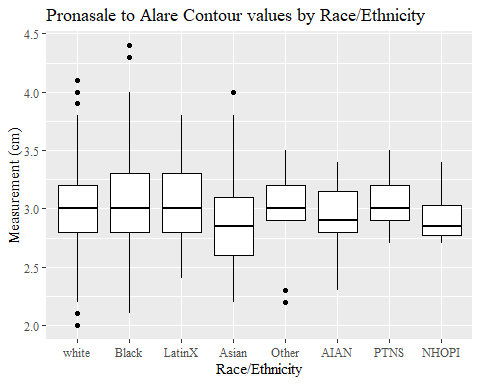
#%>% set\_header\_Cabels(values = list(ProA\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, ProA\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProA\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProA\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#ProA\_C gender sumstats  
ProA\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(ProA\_C, na.rm = TRUE),  
 max = max(ProA\_C, na.rm = TRUE),  
 mean = mean(ProA\_C, na.rm = TRUE),  
 mdn = median(ProA\_C, na.rm = TRUE),  
 sd = sd(ProA\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProA\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProA\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProA\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProA\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProA\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProA\_C)))  
  
ProA\_Cgender\_sumstats <- ProA\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(ProA\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Contour SumStats by Gender")

**Table** : Pronasale to Alare Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 2.0 | 4.1 | 2.85 | 2.80 | 0.29 | 0.01 | 2.40 | 2.7 | 2.80 | 3.00 | 3.40 | 11 |
| Male | 939 | 2.3 | 4.4 | 3.20 | 3.20 | 0.32 | 0.01 | 2.70 | 3.0 | 3.20 | 3.40 | 3.80 | 5 |
| Non-binary or Other | 5 | 2.5 | 3.1 | 2.92 | 3.00 | 0.25 | 0.11 | 2.58 | 2.9 | 3.00 | 3.10 | 3.10 | 0 |
| Prefer not to say | 1 | 2.7 | 2.7 | 2.70 | 2.70 |  |  | 2.70 | 2.7 | 2.70 | 2.70 | 2.70 | 0 |
|  | 8 | 2.3 | 3.3 | 2.75 | 2.75 | 0.29 | 0.10 | 2.40 | 2.6 | 2.75 | 2.82 | 3.16 | 0 |

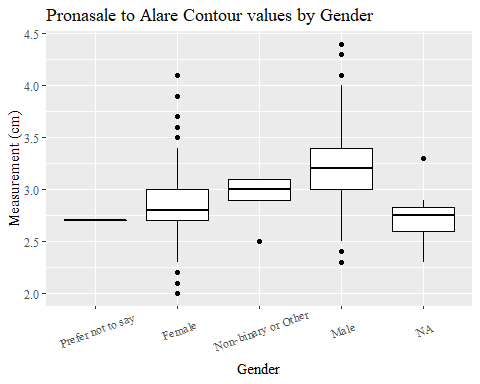
#%>% set\_header\_Cabels(values = list(ProA\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ProA\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Alare Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 2.0 | 4.1 | 2.85 | 2.80 | 0.29 | 0.01 | 2.40 | 2.7 | 2.80 | 3.00 | 3.40 | 11 |
| Male | 939 | 2.3 | 4.4 | 3.20 | 3.20 | 0.32 | 0.01 | 2.70 | 3.0 | 3.20 | 3.40 | 3.80 | 5 |
| Non-binary or Other | 5 | 2.5 | 3.1 | 2.92 | 3.00 | 0.25 | 0.11 | 2.58 | 2.9 | 3.00 | 3.10 | 3.10 | 0 |
| Prefer not to say | 1 | 2.7 | 2.7 | 2.70 | 2.70 |  |  | 2.70 | 2.7 | 2.70 | 2.70 | 2.70 | 0 |
|  | 8 | 2.3 | 3.3 | 2.75 | 2.75 | 0.29 | 0.10 | 2.40 | 2.6 | 2.75 | 2.82 | 3.16 | 0 |

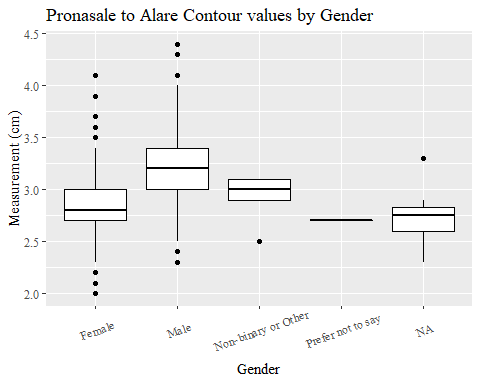
#%>% set\_header\_Cabels(values = list(ProA\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, ProA\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProA\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProA\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#ProA\_C age group sumstats  
ProA\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(ProA\_C, na.rm = TRUE),  
 max = max(ProA\_C, na.rm = TRUE),  
 mean = mean(ProA\_C, na.rm = TRUE),  
 mdn = median(ProA\_C, na.rm = TRUE),  
 sd = sd(ProA\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProA\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProA\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProA\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProA\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProA\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProA\_C)))  
  
ProA\_Cage\_sumstats <- ProA\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ProA\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Contour SumStats by Age Group")

**Table** : Pronasale to Alare Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 2.1 | 4.1 | 2.97 | 2.9 | 0.33 | 0.01 | 2.4 | 2.7 | 2.9 | 3.20 | 3.5 | 6 |
| 37-54 | 940 | 2.0 | 4.3 | 3.05 | 3.0 | 0.36 | 0.01 | 2.5 | 2.8 | 3.0 | 3.30 | 3.7 | 9 |
| 55-72 | 84 | 2.3 | 4.4 | 3.11 | 3.1 | 0.36 | 0.04 | 2.6 | 2.9 | 3.1 | 3.35 | 3.7 | 1 |
|  | 1 | 2.7 | 2.7 | 2.70 | 2.7 |  |  | 2.7 | 2.7 | 2.7 | 2.70 | 2.7 | 0 |

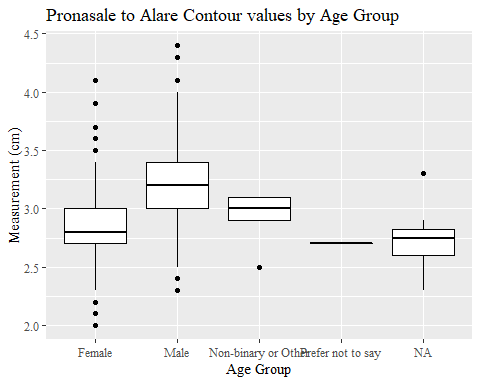
#%>% set\_header\_Cabels(values = list(ProA\_C = "Alare/AlareCont"))  
  
#Autofit Width Table TNR  
flextable(ProA\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Alare Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Alare Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 2.1 | 4.1 | 2.97 | 2.9 | 0.33 | 0.01 | 2.4 | 2.7 | 2.9 | 3.20 | 3.5 | 6 |
| 37-54 | 940 | 2.0 | 4.3 | 3.05 | 3.0 | 0.36 | 0.01 | 2.5 | 2.8 | 3.0 | 3.30 | 3.7 | 9 |
| 55-72 | 84 | 2.3 | 4.4 | 3.11 | 3.1 | 0.36 | 0.04 | 2.6 | 2.9 | 3.1 | 3.35 | 3.7 | 1 |
|  | 1 | 2.7 | 2.7 | 2.70 | 2.7 |  |  | 2.7 | 2.7 | 2.7 | 2.70 | 2.7 | 0 |

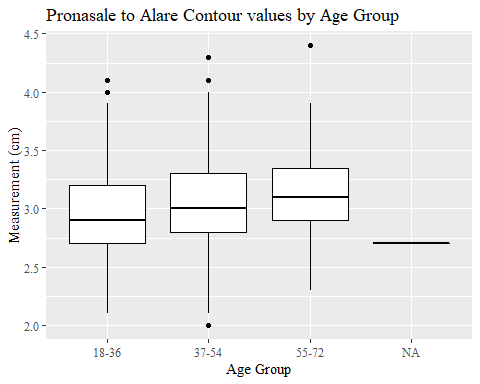
#%>% set\_header\_Cabels(values = list(ProA\_C = "Alare/AlareCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, ProA\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProA\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProA\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Alare Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

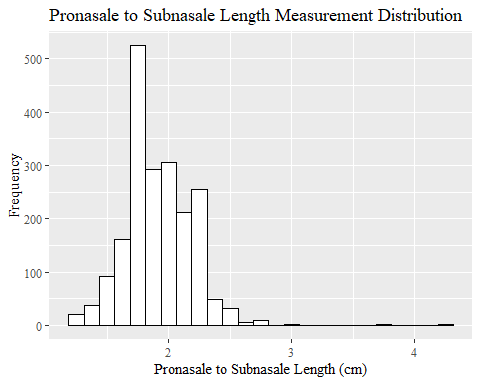
## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



ProS\_L

#histogram of all ProS\_L values  
ggplot(data=headscan\_full, aes(x=ProS\_L))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Pronasale to Subnasale Length Measurement Distribution",  
 y="Frequency",  
 x="Pronasale to Subnasale Length (cm)")

## Warning: Removed 19 rows containing non-finite values (stat\_bin).



#ProS\_L race/eth sumstats  
ProS\_Lrace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(ProS\_L, na.rm = TRUE),  
 max = max(ProS\_L, na.rm = TRUE),  
 mean = mean(ProS\_L, na.rm = TRUE),  
 mdn = median(AA\_C, na.rm = TRUE),  
 sd = sd(ProS\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProS\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProS\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProS\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProS\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProS\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProS\_L)))   
  
ProS\_Lrace\_sumstats <- ProS\_Lrace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ProS\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Length SumStats by Race/Ethnicity")

**Table** : Pronasale to Subnasale Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.3 | 3.0 | 1.97 | 6.1 | 0.25 | 0.01 | 1.6 | 1.80 | 2.0 | 2.10 | 2.40 | 11 |
| Black | 548 | 1.2 | 4.2 | 1.82 | 6.1 | 0.27 | 0.01 | 1.4 | 1.65 | 1.8 | 2.00 | 2.20 | 5 |
| LatinX | 100 | 1.3 | 2.5 | 1.88 | 6.2 | 0.23 | 0.02 | 1.5 | 1.70 | 1.9 | 2.00 | 2.20 | 1 |
| Asian | 91 | 1.3 | 4.2 | 1.84 | 5.8 | 0.33 | 0.03 | 1.5 | 1.70 | 1.8 | 2.00 | 2.20 | 1 |
| Other | 21 | 1.2 | 2.2 | 1.80 | 6.2 | 0.26 | 0.06 | 1.3 | 1.60 | 1.9 | 1.90 | 2.20 | 0 |
| AIAN | 8 | 1.7 | 1.9 | 1.80 | 6.1 | 0.08 | 0.03 | 1.7 | 1.75 | 1.8 | 1.85 | 1.90 | 1 |
| PTNS | 5 | 1.6 | 1.9 | 1.70 | 6.1 | 0.12 | 0.05 | 1.6 | 1.60 | 1.7 | 1.70 | 1.86 | 0 |
| NHOPI | 4 | 1.6 | 2.4 | 1.90 | 5.9 | 0.38 | 0.19 | 1.6 | 1.60 | 1.8 | 2.10 | 2.34 | 0 |

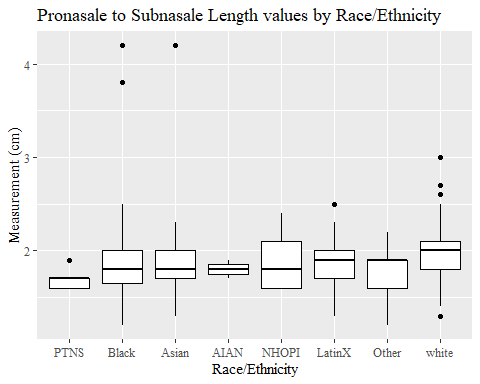
#%>% set\_header\_labels(values = list(ProS\_L = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(ProS\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Length SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Subnasale Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.3 | 3.0 | 1.97 | 6.1 | 0.25 | 0.01 | 1.6 | 1.80 | 2.0 | 2.10 | 2.40 | 11 |
| Black | 548 | 1.2 | 4.2 | 1.82 | 6.1 | 0.27 | 0.01 | 1.4 | 1.65 | 1.8 | 2.00 | 2.20 | 5 |
| LatinX | 100 | 1.3 | 2.5 | 1.88 | 6.2 | 0.23 | 0.02 | 1.5 | 1.70 | 1.9 | 2.00 | 2.20 | 1 |
| Asian | 91 | 1.3 | 4.2 | 1.84 | 5.8 | 0.33 | 0.03 | 1.5 | 1.70 | 1.8 | 2.00 | 2.20 | 1 |
| Other | 21 | 1.2 | 2.2 | 1.80 | 6.2 | 0.26 | 0.06 | 1.3 | 1.60 | 1.9 | 1.90 | 2.20 | 0 |
| AIAN | 8 | 1.7 | 1.9 | 1.80 | 6.1 | 0.08 | 0.03 | 1.7 | 1.75 | 1.8 | 1.85 | 1.90 | 1 |
| PTNS | 5 | 1.6 | 1.9 | 1.70 | 6.1 | 0.12 | 0.05 | 1.6 | 1.60 | 1.7 | 1.70 | 1.86 | 0 |
| NHOPI | 4 | 1.6 | 2.4 | 1.90 | 5.9 | 0.38 | 0.19 | 1.6 | 1.60 | 1.8 | 2.10 | 2.34 | 0 |

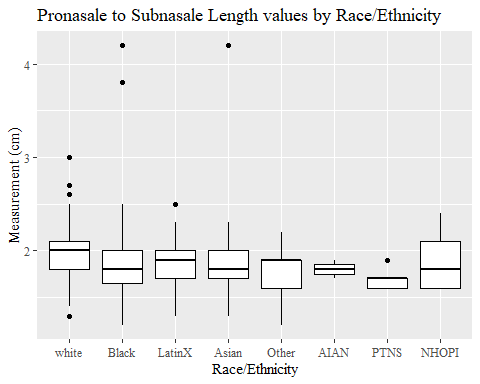
#%>% set\_header\_labels(values = list(ProS\_L = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, ProS\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProS\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 19 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProS\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 19 rows containing non-finite values (stat\_boxplot).



#ProS\_L gender sumstats  
ProS\_Lgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(ProS\_L, na.rm = TRUE),  
 max = max(ProS\_L, na.rm = TRUE),  
 mean = mean(ProS\_L, na.rm = TRUE),  
 mdn = median(ProS\_L, na.rm = TRUE),  
 sd = sd(ProS\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProS\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProS\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProS\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProS\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProS\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProS\_L)))  
  
ProS\_Lgender\_sumstats <- ProS\_Lgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(ProS\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Length SumStats by Gender")

**Table** : Pronasale to Subnasale Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.2 | 4.2 | 1.87 | 1.9 | 0.27 | 0.01 | 1.50 | 1.70 | 1.9 | 2.0 | 2.30 | 11 |
| Male | 939 | 1.2 | 3.0 | 1.96 | 2.0 | 0.26 | 0.01 | 1.60 | 1.80 | 2.0 | 2.1 | 2.40 | 8 |
| Non-binary or Other | 5 | 1.5 | 2.0 | 1.78 | 1.8 | 0.18 | 0.08 | 1.56 | 1.80 | 1.8 | 1.8 | 1.96 | 0 |
| Prefer not to say | 1 | 1.7 | 1.7 | 1.70 | 1.7 |  |  | 1.70 | 1.70 | 1.7 | 1.7 | 1.70 | 0 |
|  | 8 | 1.4 | 2.1 | 1.77 | 1.7 | 0.29 | 0.10 | 1.44 | 1.58 | 1.7 | 2.1 | 2.10 | 0 |

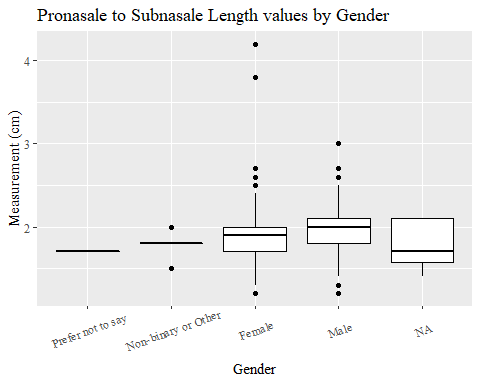
#%>% set\_header\_labels(values = list(ProS\_L = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(ProS\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Length SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Subnasale Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.2 | 4.2 | 1.87 | 1.9 | 0.27 | 0.01 | 1.50 | 1.70 | 1.9 | 2.0 | 2.30 | 11 |
| Male | 939 | 1.2 | 3.0 | 1.96 | 2.0 | 0.26 | 0.01 | 1.60 | 1.80 | 2.0 | 2.1 | 2.40 | 8 |
| Non-binary or Other | 5 | 1.5 | 2.0 | 1.78 | 1.8 | 0.18 | 0.08 | 1.56 | 1.80 | 1.8 | 1.8 | 1.96 | 0 |
| Prefer not to say | 1 | 1.7 | 1.7 | 1.70 | 1.7 |  |  | 1.70 | 1.70 | 1.7 | 1.7 | 1.70 | 0 |
|  | 8 | 1.4 | 2.1 | 1.77 | 1.7 | 0.29 | 0.10 | 1.44 | 1.58 | 1.7 | 2.1 | 2.10 | 0 |

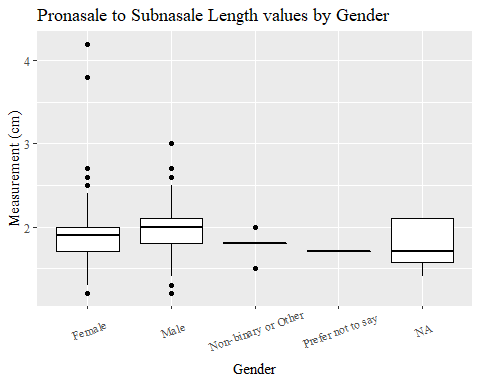
#%>% set\_header\_labels(values = list(ProS\_L = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, ProS\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProS\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 19 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProS\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 19 rows containing non-finite values (stat\_boxplot).



#ProS\_L age group sumstats  
ProS\_Lage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(ProS\_L, na.rm = TRUE),  
 max = max(ProS\_L, na.rm = TRUE),  
 mean = mean(ProS\_L, na.rm = TRUE),  
 mdn = median(ProS\_L, na.rm = TRUE),  
 sd = sd(ProS\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProS\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProS\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProS\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProS\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProS\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProS\_L)))  
  
ProS\_Lage\_sumstats <- ProS\_Lage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ProS\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale Subnasale Length SumStats by Age Group")

**Table** : Pronasale Subnasale Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 1.2 | 3.0 | 1.87 | 1.9 | 0.24 | 0.01 | 1.5 | 1.7 | 1.9 | 2.0 | 2.3 | 6 |
| 37-54 | 940 | 1.2 | 4.2 | 1.95 | 1.9 | 0.29 | 0.01 | 1.5 | 1.8 | 1.9 | 2.1 | 2.4 | 11 |
| 55-72 | 84 | 1.3 | 2.6 | 1.98 | 2.0 | 0.24 | 0.03 | 1.6 | 1.8 | 2.0 | 2.1 | 2.4 | 2 |
|  | 1 | 2.3 | 2.3 | 2.30 | 2.3 |  |  | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 0 |

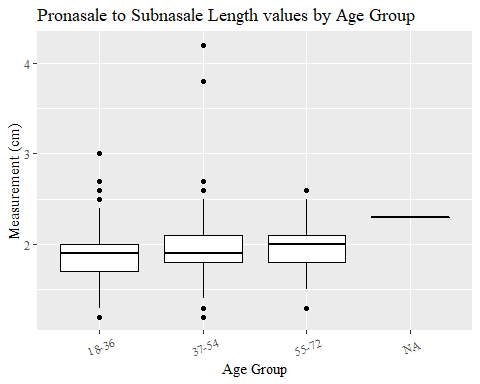
#%>% set\_header\_labels(values = list(ProS\_L = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(ProS\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale Subnasale Length SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale Subnasale Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 1.2 | 3.0 | 1.87 | 1.9 | 0.24 | 0.01 | 1.5 | 1.7 | 1.9 | 2.0 | 2.3 | 6 |
| 37-54 | 940 | 1.2 | 4.2 | 1.95 | 1.9 | 0.29 | 0.01 | 1.5 | 1.8 | 1.9 | 2.1 | 2.4 | 11 |
| 55-72 | 84 | 1.3 | 2.6 | 1.98 | 2.0 | 0.24 | 0.03 | 1.6 | 1.8 | 2.0 | 2.1 | 2.4 | 2 |
|  | 1 | 2.3 | 2.3 | 2.30 | 2.3 |  |  | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 0 |

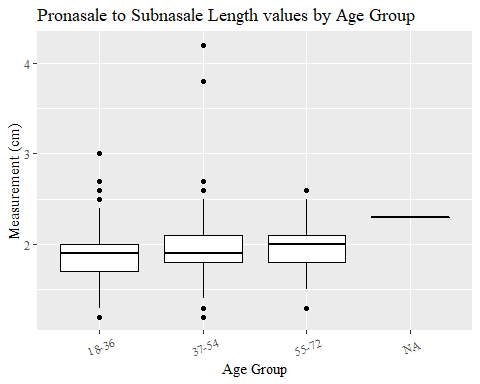
#%>% set\_header\_labels(values = list(ProS\_L = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, ProS\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProS\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 19 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProS\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

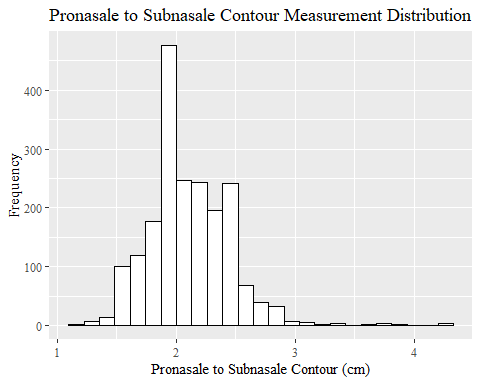
## Warning: Removed 19 rows containing non-finite values (stat\_boxplot).



ProS\_C

#histogram of all ProS\_C values  
ggplot(data=headscan\_full, aes(x=ProS\_C))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Pronasale to Subnasale Contour Measurement Distribution",  
 y="Frequency",  
 x="Pronasale to Subnasale Contour (cm)")

## Warning: Removed 31 rows containing non-finite values (stat\_bin).



#ProS\_C race/eth sumstats  
ProS\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(ProS\_C, na.rm = TRUE),  
 max = max(ProS\_C, na.rm = TRUE),  
 mean = mean(ProS\_C, na.rm = TRUE),  
 mdn = median(ProS\_C, na.rm = TRUE),  
 sd = sd(ProS\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProS\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProS\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProS\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProS\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProS\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProS\_C)))   
  
ProS\_Crace\_sumstats <- ProS\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ProS\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Contour SumStats by Race/Ethnicity")

**Table** : Pronasale to Subnasale Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.3 | 4.3 | 2.16 | 2.20 | 0.31 | 0.01 | 1.70 | 1.90 | 2.20 | 2.40 | 2.70 | 21 |
| Black | 548 | 1.2 | 4.2 | 2.02 | 2.00 | 0.36 | 0.02 | 1.50 | 1.80 | 2.00 | 2.20 | 2.50 | 7 |
| LatinX | 100 | 1.4 | 2.9 | 2.07 | 2.00 | 0.29 | 0.03 | 1.60 | 1.90 | 2.00 | 2.20 | 2.50 | 1 |
| Asian | 91 | 1.4 | 4.2 | 2.02 | 2.00 | 0.37 | 0.04 | 1.60 | 1.80 | 2.00 | 2.20 | 2.55 | 1 |
| Other | 21 | 1.3 | 2.6 | 1.96 | 2.10 | 0.31 | 0.07 | 1.30 | 1.80 | 2.10 | 2.10 | 2.40 | 0 |
| AIAN | 8 | 1.9 | 2.3 | 2.03 | 2.00 | 0.13 | 0.04 | 1.93 | 2.00 | 2.00 | 2.00 | 2.21 | 1 |
| PTNS | 5 | 1.7 | 2.1 | 1.84 | 1.80 | 0.15 | 0.07 | 1.72 | 1.80 | 1.80 | 1.80 | 2.04 | 0 |
| NHOPI | 4 | 1.7 | 2.9 | 2.17 | 2.05 | 0.55 | 0.27 | 1.71 | 1.78 | 2.05 | 2.45 | 2.81 | 0 |

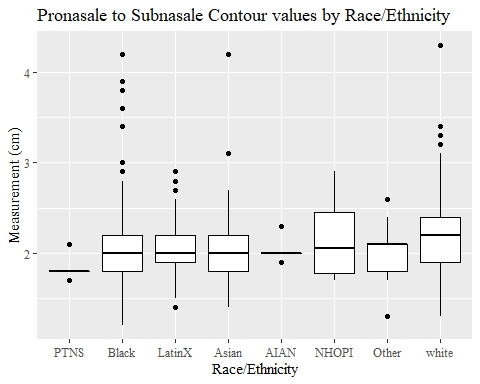
#%>% set\_header\_Cabels(values = list(ProS\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(ProS\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Subnasale Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.3 | 4.3 | 2.16 | 2.20 | 0.31 | 0.01 | 1.70 | 1.90 | 2.20 | 2.40 | 2.70 | 21 |
| Black | 548 | 1.2 | 4.2 | 2.02 | 2.00 | 0.36 | 0.02 | 1.50 | 1.80 | 2.00 | 2.20 | 2.50 | 7 |
| LatinX | 100 | 1.4 | 2.9 | 2.07 | 2.00 | 0.29 | 0.03 | 1.60 | 1.90 | 2.00 | 2.20 | 2.50 | 1 |
| Asian | 91 | 1.4 | 4.2 | 2.02 | 2.00 | 0.37 | 0.04 | 1.60 | 1.80 | 2.00 | 2.20 | 2.55 | 1 |
| Other | 21 | 1.3 | 2.6 | 1.96 | 2.10 | 0.31 | 0.07 | 1.30 | 1.80 | 2.10 | 2.10 | 2.40 | 0 |
| AIAN | 8 | 1.9 | 2.3 | 2.03 | 2.00 | 0.13 | 0.04 | 1.93 | 2.00 | 2.00 | 2.00 | 2.21 | 1 |
| PTNS | 5 | 1.7 | 2.1 | 1.84 | 1.80 | 0.15 | 0.07 | 1.72 | 1.80 | 1.80 | 1.80 | 2.04 | 0 |
| NHOPI | 4 | 1.7 | 2.9 | 2.17 | 2.05 | 0.55 | 0.27 | 1.71 | 1.78 | 2.05 | 2.45 | 2.81 | 0 |

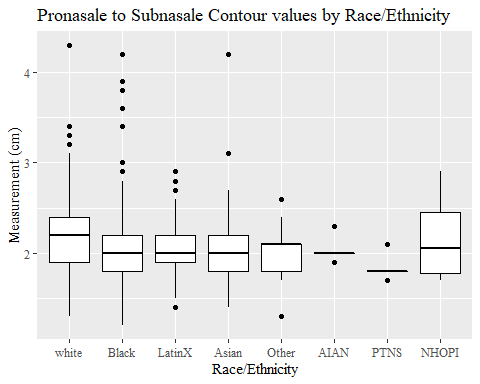
#%>% set\_header\_Cabels(values = list(ProS\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, ProS\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProS\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProS\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#ProS\_C gender sumstats  
ProS\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(ProS\_C, na.rm = TRUE),  
 max = max(ProS\_C, na.rm = TRUE),  
 mean = mean(ProS\_C, na.rm = TRUE),  
 mdn = median(ProS\_C, na.rm = TRUE),  
 sd = sd(ProS\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProS\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProS\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProS\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProS\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProS\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProS\_C)))  
  
ProS\_Cgender\_sumstats <- ProS\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(ProS\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Contour SumStats by Gender")

**Table** : Pronasale to Subnasale Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.3 | 4.2 | 2.05 | 2.0 | 0.32 | 0.01 | 1.60 | 1.80 | 2.0 | 2.2 | 2.50 | 12 |
| Male | 939 | 1.2 | 4.3 | 2.19 | 2.2 | 0.34 | 0.01 | 1.70 | 2.00 | 2.2 | 2.4 | 2.70 | 19 |
| Non-binary or Other | 5 | 1.7 | 2.0 | 1.90 | 1.9 | 0.12 | 0.05 | 1.74 | 1.90 | 1.9 | 2.0 | 2.00 | 0 |
| Prefer not to say | 1 | 1.8 | 1.8 | 1.80 | 1.8 |  |  | 1.80 | 1.80 | 1.8 | 1.8 | 1.80 | 0 |
|  | 8 | 1.5 | 2.4 | 1.95 | 1.9 | 0.35 | 0.12 | 1.54 | 1.67 | 1.9 | 2.3 | 2.36 | 0 |

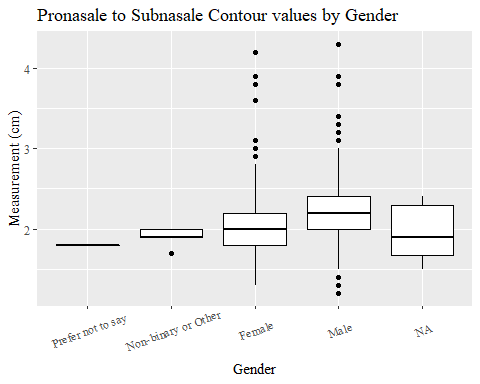
#%>% set\_header\_Cabels(values = list(ProS\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(ProS\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Subnasale Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.3 | 4.2 | 2.05 | 2.0 | 0.32 | 0.01 | 1.60 | 1.80 | 2.0 | 2.2 | 2.50 | 12 |
| Male | 939 | 1.2 | 4.3 | 2.19 | 2.2 | 0.34 | 0.01 | 1.70 | 2.00 | 2.2 | 2.4 | 2.70 | 19 |
| Non-binary or Other | 5 | 1.7 | 2.0 | 1.90 | 1.9 | 0.12 | 0.05 | 1.74 | 1.90 | 1.9 | 2.0 | 2.00 | 0 |
| Prefer not to say | 1 | 1.8 | 1.8 | 1.80 | 1.8 |  |  | 1.80 | 1.80 | 1.8 | 1.8 | 1.80 | 0 |
|  | 8 | 1.5 | 2.4 | 1.95 | 1.9 | 0.35 | 0.12 | 1.54 | 1.67 | 1.9 | 2.3 | 2.36 | 0 |

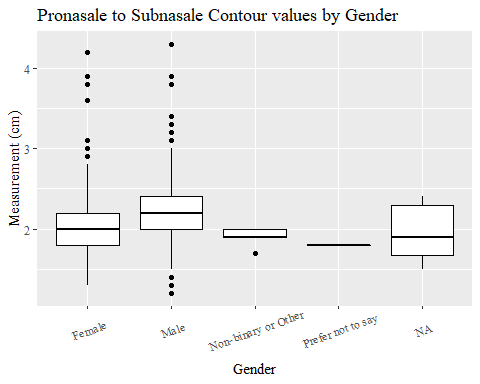
#%>% set\_header\_Cabels(values = list(ProS\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, ProS\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProS\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProS\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#ProS\_C age group sumstats  
ProS\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(ProS\_C, na.rm = TRUE),  
 max = max(ProS\_C, na.rm = TRUE),  
 mean = mean(ProS\_C, na.rm = TRUE),  
 mdn = median(ProS\_C, na.rm = TRUE),  
 sd = sd(ProS\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(ProS\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(ProS\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(ProS\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(ProS\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(ProS\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(ProS\_C)))  
  
ProS\_Cage\_sumstats <- ProS\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(ProS\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Contour SumStats by Age Group")

**Table** : Pronasale to Subnasale Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 1.3 | 4.3 | 2.06 | 2.0 | 0.31 | 0.01 | 1.6 | 1.8 | 2.0 | 2.2 | 2.5 | 12 |
| 37-54 | 940 | 1.2 | 4.2 | 2.16 | 2.1 | 0.35 | 0.01 | 1.6 | 1.9 | 2.1 | 2.3 | 2.7 | 16 |
| 55-72 | 84 | 1.5 | 3.2 | 2.18 | 2.2 | 0.29 | 0.03 | 1.7 | 2.0 | 2.2 | 2.4 | 2.7 | 3 |
|  | 1 | 2.5 | 2.5 | 2.50 | 2.5 |  |  | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 0 |

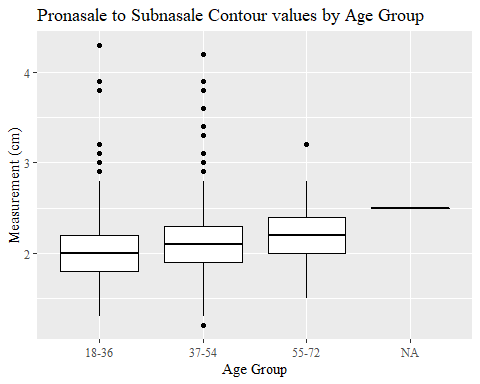
#%>% set\_header\_Cabels(values = list(ProS\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(ProS\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Pronasale to Subnasale Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Pronasale to Subnasale Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 1.3 | 4.3 | 2.06 | 2.0 | 0.31 | 0.01 | 1.6 | 1.8 | 2.0 | 2.2 | 2.5 | 12 |
| 37-54 | 940 | 1.2 | 4.2 | 2.16 | 2.1 | 0.35 | 0.01 | 1.6 | 1.9 | 2.1 | 2.3 | 2.7 | 16 |
| 55-72 | 84 | 1.5 | 3.2 | 2.18 | 2.2 | 0.29 | 0.03 | 1.7 | 2.0 | 2.2 | 2.4 | 2.7 | 3 |
|  | 1 | 2.5 | 2.5 | 2.50 | 2.5 |  |  | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 0 |

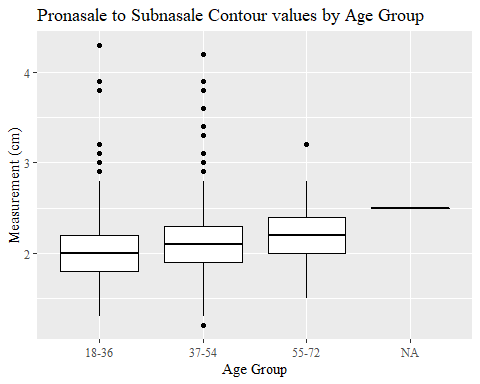
#%>% set\_header\_Cabels(values = list(ProS\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, ProS\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=ProS\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=ProS\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Pronasale to Subnasale Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

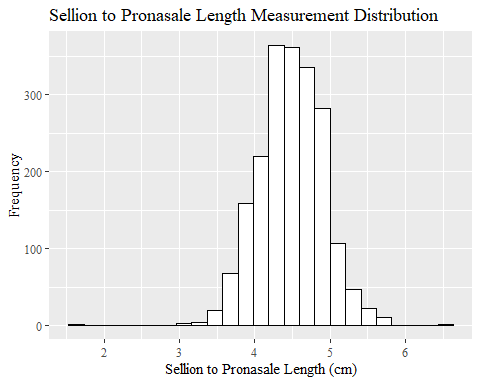
## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



SelP\_L

#histogram of all SelP\_L values  
ggplot(data=headscan\_full, aes(x=SelP\_L))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Sellion to Pronasale Length Measurement Distribution",  
 y="Frequency",  
 x="Sellion to Pronasale Length (cm)")

## Warning: Removed 15 rows containing non-finite values (stat\_bin).



#SelP\_L race/eth sumstats  
SelP\_Lrace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(SelP\_L, na.rm = TRUE),  
 max = max(SelP\_L, na.rm = TRUE),  
 mean = mean(SelP\_L, na.rm = TRUE),  
 mdn = median(SelP\_L, na.rm = TRUE),  
 sd = sd(SelP\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelP\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelP\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelP\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelP\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelP\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelP\_L)))   
  
SelP\_Lrace\_sumstats <- SelP\_Lrace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelP\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Length SumStats by Race/Ethnicity")

**Table** : Sellion to Pronasale Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.6 | 6.5 | 4.51 | 4.5 | 0.45 | 0.01 | 3.80 | 4.20 | 4.5 | 4.80 | 5.30 | 7 |
| Black | 548 | 3.0 | 5.7 | 4.33 | 4.3 | 0.42 | 0.02 | 3.61 | 4.05 | 4.3 | 4.60 | 5.00 | 5 |
| LatinX | 100 | 3.4 | 5.4 | 4.53 | 4.5 | 0.39 | 0.04 | 3.89 | 4.30 | 4.5 | 4.80 | 5.20 | 1 |
| Asian | 91 | 3.6 | 5.4 | 4.37 | 4.4 | 0.39 | 0.04 | 3.84 | 4.10 | 4.4 | 4.60 | 5.10 | 1 |
| Other | 21 | 3.7 | 5.5 | 4.56 | 4.6 | 0.39 | 0.08 | 4.10 | 4.40 | 4.6 | 4.70 | 5.10 | 0 |
| AIAN | 8 | 3.7 | 5.2 | 4.56 | 4.7 | 0.53 | 0.19 | 3.79 | 4.30 | 4.7 | 4.85 | 5.11 | 1 |
| PTNS | 5 | 4.0 | 4.5 | 4.24 | 4.2 | 0.18 | 0.08 | 4.04 | 4.20 | 4.2 | 4.30 | 4.46 | 0 |
| NHOPI | 4 | 3.9 | 4.8 | 4.38 | 4.4 | 0.37 | 0.18 | 3.98 | 4.28 | 4.4 | 4.50 | 4.74 | 0 |

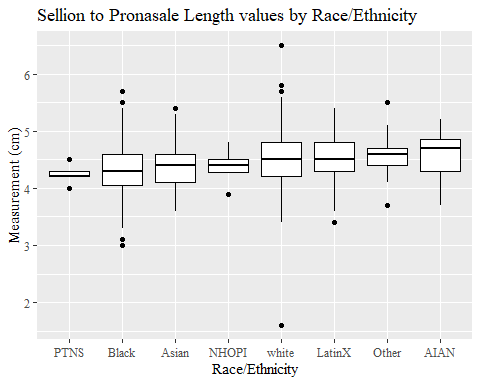
#%>% set\_header\_Cabels(values = list(SelP\_L = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelP\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Length SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Pronasale Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.6 | 6.5 | 4.51 | 4.5 | 0.45 | 0.01 | 3.80 | 4.20 | 4.5 | 4.80 | 5.30 | 7 |
| Black | 548 | 3.0 | 5.7 | 4.33 | 4.3 | 0.42 | 0.02 | 3.61 | 4.05 | 4.3 | 4.60 | 5.00 | 5 |
| LatinX | 100 | 3.4 | 5.4 | 4.53 | 4.5 | 0.39 | 0.04 | 3.89 | 4.30 | 4.5 | 4.80 | 5.20 | 1 |
| Asian | 91 | 3.6 | 5.4 | 4.37 | 4.4 | 0.39 | 0.04 | 3.84 | 4.10 | 4.4 | 4.60 | 5.10 | 1 |
| Other | 21 | 3.7 | 5.5 | 4.56 | 4.6 | 0.39 | 0.08 | 4.10 | 4.40 | 4.6 | 4.70 | 5.10 | 0 |
| AIAN | 8 | 3.7 | 5.2 | 4.56 | 4.7 | 0.53 | 0.19 | 3.79 | 4.30 | 4.7 | 4.85 | 5.11 | 1 |
| PTNS | 5 | 4.0 | 4.5 | 4.24 | 4.2 | 0.18 | 0.08 | 4.04 | 4.20 | 4.2 | 4.30 | 4.46 | 0 |
| NHOPI | 4 | 3.9 | 4.8 | 4.38 | 4.4 | 0.37 | 0.18 | 3.98 | 4.28 | 4.4 | 4.50 | 4.74 | 0 |

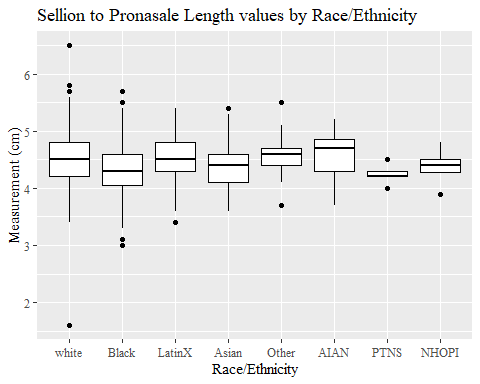
#%>% set\_header\_Cabels(values = list(SelP\_L = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, SelP\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelP\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelP\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#SelP\_L gender sumstats  
SelP\_Lgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(SelP\_L, na.rm = TRUE),  
 max = max(SelP\_L, na.rm = TRUE),  
 mean = mean(SelP\_L, na.rm = TRUE),  
 mdn = median(SelP\_L, na.rm = TRUE),  
 sd = sd(SelP\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelP\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelP\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelP\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelP\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelP\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelP\_L)))  
  
SelP\_Lgender\_sumstats <- SelP\_Lgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(SelP\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Length SumStats by Gender")

**Table** : Sellion to Pronasale Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.6 | 5.7 | 4.28 | 4.3 | 0.39 | 0.01 | 3.70 | 4.00 | 4.3 | 4.50 | 4.90 | 10 |
| Male | 939 | 3.1 | 6.5 | 4.65 | 4.6 | 0.42 | 0.01 | 4.00 | 4.40 | 4.6 | 4.90 | 5.30 | 5 |
| Non-binary or Other | 5 | 3.6 | 5.2 | 4.06 | 3.8 | 0.65 | 0.29 | 3.64 | 3.80 | 3.8 | 3.90 | 4.94 | 0 |
| Prefer not to say | 1 | 4.0 | 4.0 | 4.00 | 4.0 |  |  | 4.00 | 4.00 | 4.0 | 4.00 | 4.00 | 0 |
|  | 8 | 3.7 | 5.1 | 4.12 | 4.0 | 0.43 | 0.15 | 3.74 | 3.95 | 4.0 | 4.15 | 4.82 | 0 |

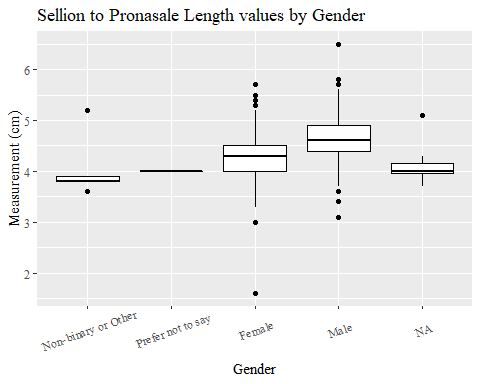
#%>% set\_header\_Cabels(values = list(SelP\_L = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelP\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Length SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Pronasale Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.6 | 5.7 | 4.28 | 4.3 | 0.39 | 0.01 | 3.70 | 4.00 | 4.3 | 4.50 | 4.90 | 10 |
| Male | 939 | 3.1 | 6.5 | 4.65 | 4.6 | 0.42 | 0.01 | 4.00 | 4.40 | 4.6 | 4.90 | 5.30 | 5 |
| Non-binary or Other | 5 | 3.6 | 5.2 | 4.06 | 3.8 | 0.65 | 0.29 | 3.64 | 3.80 | 3.8 | 3.90 | 4.94 | 0 |
| Prefer not to say | 1 | 4.0 | 4.0 | 4.00 | 4.0 |  |  | 4.00 | 4.00 | 4.0 | 4.00 | 4.00 | 0 |
|  | 8 | 3.7 | 5.1 | 4.12 | 4.0 | 0.43 | 0.15 | 3.74 | 3.95 | 4.0 | 4.15 | 4.82 | 0 |

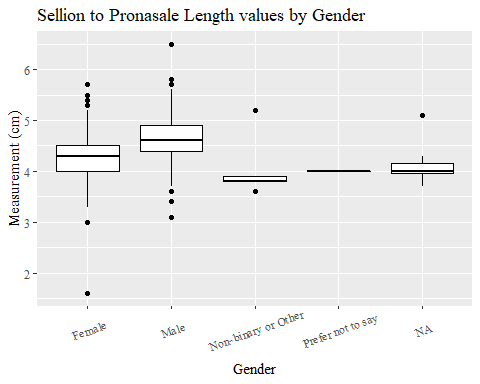
#%>% set\_header\_Cabels(values = list(SelP\_L = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, SelP\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelP\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelP\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#SelP\_L age group sumstats  
SelP\_Lage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(SelP\_L, na.rm = TRUE),  
 max = max(SelP\_L, na.rm = TRUE),  
 mean = mean(SelP\_L, na.rm = TRUE),  
 mdn = median(SelP\_L, na.rm = TRUE),  
 sd = sd(SelP\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelP\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelP\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelP\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelP\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelP\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelP\_L)))  
  
SelP\_Lage\_sumstats <- SelP\_Lage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelP\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Length SumStats by Age Group")

**Table** : Sellion to Pronasale Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 3.1 | 5.7 | 4.43 | 4.4 | 0.42 | 0.01 | 3.8 | 4.2 | 4.4 | 4.7 | 5.1 | 5 |
| 37-54 | 940 | 1.6 | 6.5 | 4.47 | 4.5 | 0.46 | 0.02 | 3.7 | 4.2 | 4.5 | 4.7 | 5.3 | 9 |
| 55-72 | 84 | 3.7 | 5.8 | 4.53 | 4.5 | 0.44 | 0.05 | 4.0 | 4.2 | 4.5 | 4.7 | 5.3 | 1 |
|  | 1 | 4.3 | 4.3 | 4.30 | 4.3 |  |  | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 0 |

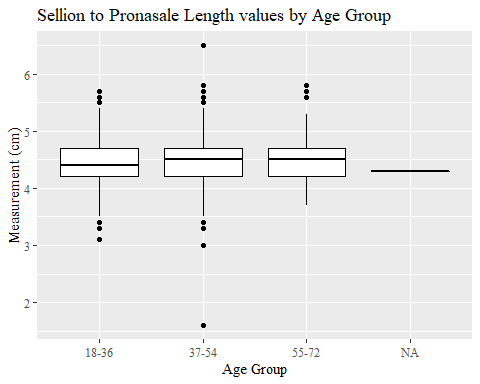
#%>% set\_header\_Cabels(values = list(SelP\_L = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelP\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Length SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Pronasale Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 3.1 | 5.7 | 4.43 | 4.4 | 0.42 | 0.01 | 3.8 | 4.2 | 4.4 | 4.7 | 5.1 | 5 |
| 37-54 | 940 | 1.6 | 6.5 | 4.47 | 4.5 | 0.46 | 0.02 | 3.7 | 4.2 | 4.5 | 4.7 | 5.3 | 9 |
| 55-72 | 84 | 3.7 | 5.8 | 4.53 | 4.5 | 0.44 | 0.05 | 4.0 | 4.2 | 4.5 | 4.7 | 5.3 | 1 |
|  | 1 | 4.3 | 4.3 | 4.30 | 4.3 |  |  | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 0 |

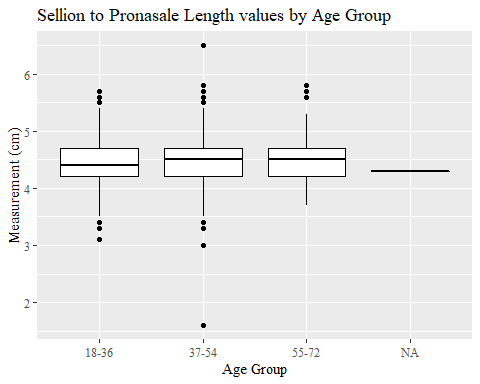
#%>% set\_header\_Cabels(values = list(SelP\_L = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, SelP\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelP\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelP\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

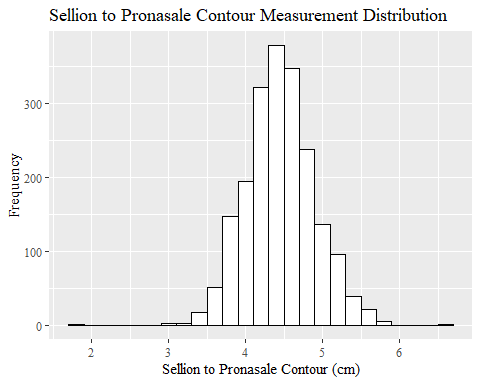
## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



SelP\_C

#histogram of all SelP\_C values  
ggplot(data=headscan\_full, aes(x=SelP\_C ))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Sellion to Pronasale Contour Measurement Distribution",  
 y="Frequency",  
 x="Sellion to Pronasale Contour (cm)")

## Warning: Removed 15 rows containing non-finite values (stat\_bin).



#SelP\_C race/eth sumstats  
SelP\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(SelP\_C, na.rm = TRUE),  
 max = max(SelP\_C, na.rm = TRUE),  
 mean = mean(SelP\_C, na.rm = TRUE),  
 mdn = median(SelP\_C, na.rm = TRUE),  
 sd = sd(SelP\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelP\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelP\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelP\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelP\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelP\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelP\_C)))   
  
SelP\_Crace\_sumstats <- SelP\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelP\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Contour SumStats by Race/Ethnicity")

**Table** : Sellion to Pronasale Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.8 | 6.6 | 4.55 | 4.5 | 0.46 | 0.01 | 3.80 | 4.30 | 4.5 | 4.80 | 5.30 | 7 |
| Black | 548 | 3.0 | 5.8 | 4.38 | 4.4 | 0.43 | 0.02 | 3.70 | 4.10 | 4.4 | 4.70 | 5.10 | 5 |
| LatinX | 100 | 3.4 | 5.5 | 4.58 | 4.6 | 0.40 | 0.04 | 3.90 | 4.30 | 4.6 | 4.90 | 5.21 | 1 |
| Asian | 91 | 3.6 | 5.5 | 4.42 | 4.4 | 0.41 | 0.04 | 3.90 | 4.10 | 4.4 | 4.68 | 5.10 | 1 |
| Other | 21 | 3.8 | 5.5 | 4.62 | 4.6 | 0.39 | 0.09 | 4.10 | 4.40 | 4.6 | 4.80 | 5.20 | 0 |
| AIAN | 8 | 3.7 | 5.2 | 4.61 | 4.8 | 0.55 | 0.20 | 3.79 | 4.35 | 4.8 | 4.95 | 5.14 | 1 |
| PTNS | 5 | 4.1 | 4.6 | 4.30 | 4.3 | 0.19 | 0.08 | 4.12 | 4.20 | 4.3 | 4.30 | 4.54 | 0 |
| NHOPI | 4 | 4.0 | 4.8 | 4.40 | 4.4 | 0.33 | 0.16 | 4.06 | 4.30 | 4.4 | 4.50 | 4.74 | 0 |

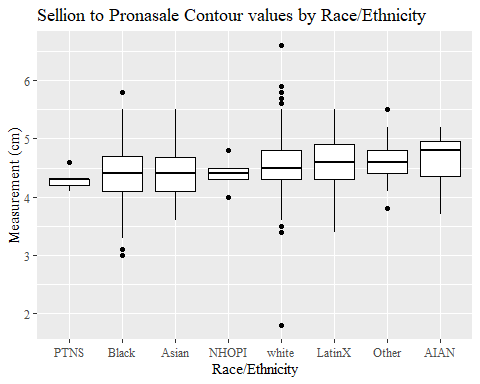
#%>% set\_header\_Cabels(values = list(SelP\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelP\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Pronasale Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 1.8 | 6.6 | 4.55 | 4.5 | 0.46 | 0.01 | 3.80 | 4.30 | 4.5 | 4.80 | 5.30 | 7 |
| Black | 548 | 3.0 | 5.8 | 4.38 | 4.4 | 0.43 | 0.02 | 3.70 | 4.10 | 4.4 | 4.70 | 5.10 | 5 |
| LatinX | 100 | 3.4 | 5.5 | 4.58 | 4.6 | 0.40 | 0.04 | 3.90 | 4.30 | 4.6 | 4.90 | 5.21 | 1 |
| Asian | 91 | 3.6 | 5.5 | 4.42 | 4.4 | 0.41 | 0.04 | 3.90 | 4.10 | 4.4 | 4.68 | 5.10 | 1 |
| Other | 21 | 3.8 | 5.5 | 4.62 | 4.6 | 0.39 | 0.09 | 4.10 | 4.40 | 4.6 | 4.80 | 5.20 | 0 |
| AIAN | 8 | 3.7 | 5.2 | 4.61 | 4.8 | 0.55 | 0.20 | 3.79 | 4.35 | 4.8 | 4.95 | 5.14 | 1 |
| PTNS | 5 | 4.1 | 4.6 | 4.30 | 4.3 | 0.19 | 0.08 | 4.12 | 4.20 | 4.3 | 4.30 | 4.54 | 0 |
| NHOPI | 4 | 4.0 | 4.8 | 4.40 | 4.4 | 0.33 | 0.16 | 4.06 | 4.30 | 4.4 | 4.50 | 4.74 | 0 |

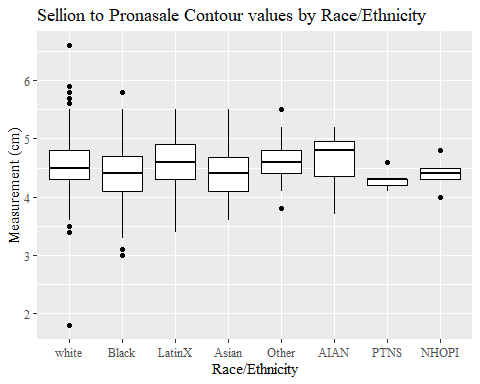
#%>% set\_header\_Cabels(values = list(SelP\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, SelP\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelP\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelP\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#SelP\_C gender sumstats  
SelP\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(SelP\_C, na.rm = TRUE),  
 max = max(SelP\_C, na.rm = TRUE),  
 mean = mean(SelP\_C, na.rm = TRUE),  
 mdn = median(SelP\_C, na.rm = TRUE),  
 sd = sd(SelP\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelP\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelP\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelP\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelP\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelP\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelP\_C)))  
  
SelP\_Cgender\_sumstats <- SelP\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(SelP\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Contour SumStats by Gender")

**Table** : Sellion to Pronasale Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.8 | 5.8 | 4.33 | 4.3 | 0.39 | 0.01 | 3.70 | 4.10 | 4.3 | 4.60 | 4.90 | 10 |
| Male | 939 | 3.1 | 6.6 | 4.70 | 4.7 | 0.42 | 0.01 | 4.00 | 4.40 | 4.7 | 5.00 | 5.40 | 5 |
| Non-binary or Other | 5 | 3.6 | 5.3 | 4.12 | 3.9 | 0.67 | 0.30 | 3.66 | 3.90 | 3.9 | 3.90 | 5.02 | 0 |
| Prefer not to say | 1 | 4.1 | 4.1 | 4.10 | 4.1 |  |  | 4.10 | 4.10 | 4.1 | 4.10 | 4.10 | 0 |
|  | 8 | 3.8 | 5.1 | 4.15 | 4.0 | 0.42 | 0.15 | 3.80 | 3.95 | 4.0 | 4.23 | 4.82 | 0 |

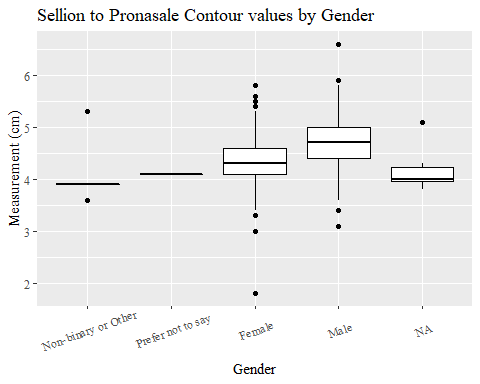
#%>% set\_header\_Cabels(values = list(SelP\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelP\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Pronasale Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 1.8 | 5.8 | 4.33 | 4.3 | 0.39 | 0.01 | 3.70 | 4.10 | 4.3 | 4.60 | 4.90 | 10 |
| Male | 939 | 3.1 | 6.6 | 4.70 | 4.7 | 0.42 | 0.01 | 4.00 | 4.40 | 4.7 | 5.00 | 5.40 | 5 |
| Non-binary or Other | 5 | 3.6 | 5.3 | 4.12 | 3.9 | 0.67 | 0.30 | 3.66 | 3.90 | 3.9 | 3.90 | 5.02 | 0 |
| Prefer not to say | 1 | 4.1 | 4.1 | 4.10 | 4.1 |  |  | 4.10 | 4.10 | 4.1 | 4.10 | 4.10 | 0 |
|  | 8 | 3.8 | 5.1 | 4.15 | 4.0 | 0.42 | 0.15 | 3.80 | 3.95 | 4.0 | 4.23 | 4.82 | 0 |

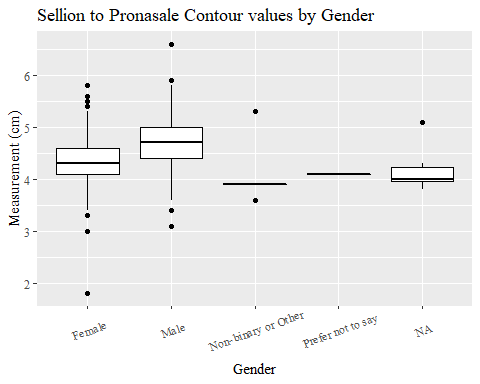
#%>% set\_header\_Cabels(values = list(SelP\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, SelP\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelP\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelP\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#SelP\_C age group sumstats  
SelP\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(SelP\_C, na.rm = TRUE),  
 max = max(SelP\_C, na.rm = TRUE),  
 mean = mean(SelP\_C, na.rm = TRUE),  
 mdn = median(SelP\_C, na.rm = TRUE),  
 sd = sd(SelP\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelP\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelP\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelP\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelP\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelP\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelP\_C)))  
  
SelP\_Cage\_sumstats <- SelP\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelP\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Contour SumStats by Age Group")

**Table** : Sellion to Pronasale Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 3.1 | 5.8 | 4.48 | 4.5 | 0.43 | 0.01 | 3.80 | 4.2 | 4.5 | 4.8 | 5.20 | 5 |
| 37-54 | 940 | 1.8 | 6.6 | 4.51 | 4.5 | 0.47 | 0.02 | 3.80 | 4.2 | 4.5 | 4.8 | 5.30 | 9 |
| 55-72 | 84 | 3.8 | 5.8 | 4.59 | 4.5 | 0.44 | 0.05 | 4.01 | 4.3 | 4.5 | 4.8 | 5.39 | 1 |
|  | 1 | 4.3 | 4.3 | 4.30 | 4.3 |  |  | 4.30 | 4.3 | 4.3 | 4.3 | 4.30 | 0 |

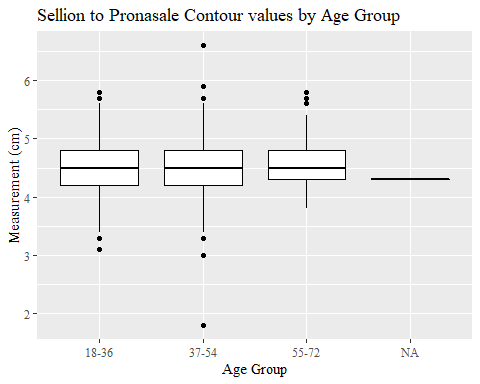
#%>% set\_header\_Cabels(values = list(SelP\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelP\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Pronasale Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Pronasale Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 3.1 | 5.8 | 4.48 | 4.5 | 0.43 | 0.01 | 3.80 | 4.2 | 4.5 | 4.8 | 5.20 | 5 |
| 37-54 | 940 | 1.8 | 6.6 | 4.51 | 4.5 | 0.47 | 0.02 | 3.80 | 4.2 | 4.5 | 4.8 | 5.30 | 9 |
| 55-72 | 84 | 3.8 | 5.8 | 4.59 | 4.5 | 0.44 | 0.05 | 4.01 | 4.3 | 4.5 | 4.8 | 5.39 | 1 |
|  | 1 | 4.3 | 4.3 | 4.30 | 4.3 |  |  | 4.30 | 4.3 | 4.3 | 4.3 | 4.30 | 0 |

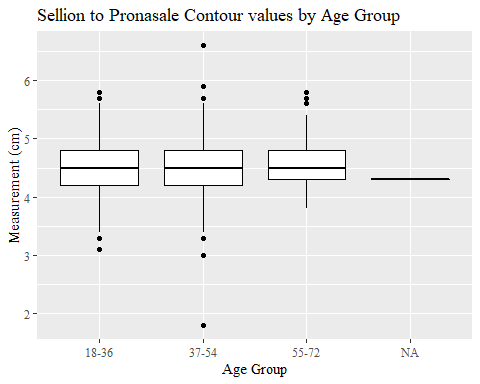
#%>% set\_header\_Cabels(values = list(SelP\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, SelP\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelP\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelP\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Pronasale Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

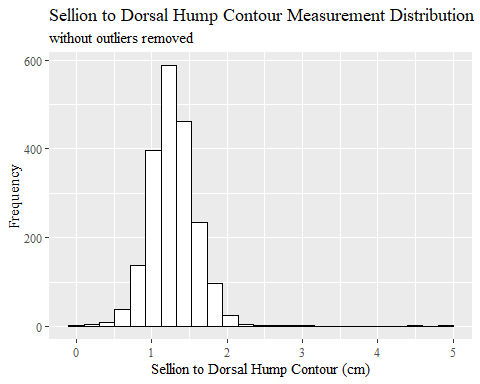
## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).



SelDH\_C with outliers

#histogram of all SelDH\_C values  
ggplot(data=headscan\_full, aes(x=SelDH\_C ))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Sellion to Dorsal Hump Contour Measurement Distribution",  
 subtitle = "without outliers removed",  
 y="Frequency",  
 x="Sellion to Dorsal Hump Contour (cm)")

## Warning: Removed 14 rows containing non-finite values (stat\_bin).



#SelDH\_C race/eth sumstats  
SelDH\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(SelDH\_C, na.rm = TRUE),  
 max = max(SelDH\_C, na.rm = TRUE),  
 mean = mean(SelDH\_C, na.rm = TRUE),  
 mdn = median(SelDH\_C, na.rm = TRUE),  
 sd = sd(SelDH\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelDH\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelDH\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelDH\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelDH\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelDH\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelDH\_C)))   
  
SelDH\_Crace\_sumstats <- SelDH\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelDH\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Race/Ethnicity")

**Table** : Sellion to Dorsal Hump Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 0.1 | 5.0 | 1.33 | 1.30 | 0.31 | 0.01 | 0.90 | 1.10 | 1.30 | 1.50 | 1.80 | 7 |
| Black | 548 | 0.3 | 2.4 | 1.25 | 1.20 | 0.28 | 0.01 | 0.80 | 1.10 | 1.20 | 1.40 | 1.70 | 4 |
| LatinX | 100 | 0.7 | 4.5 | 1.37 | 1.30 | 0.42 | 0.04 | 0.89 | 1.20 | 1.30 | 1.50 | 1.80 | 1 |
| Asian | 91 | 0.8 | 2.0 | 1.30 | 1.30 | 0.26 | 0.03 | 0.95 | 1.10 | 1.30 | 1.40 | 1.80 | 1 |
| Other | 21 | 0.8 | 2.8 | 1.29 | 1.20 | 0.43 | 0.09 | 0.90 | 1.00 | 1.20 | 1.50 | 1.60 | 0 |
| AIAN | 8 | 0.2 | 1.5 | 1.14 | 1.40 | 0.48 | 0.17 | 0.38 | 1.05 | 1.40 | 1.40 | 1.47 | 1 |
| PTNS | 5 | 0.4 | 1.5 | 1.08 | 1.20 | 0.41 | 0.18 | 0.54 | 1.10 | 1.20 | 1.20 | 1.44 | 0 |
| NHOPI | 4 | 1.2 | 1.7 | 1.40 | 1.35 | 0.24 | 0.12 | 1.20 | 1.20 | 1.35 | 1.55 | 1.67 | 0 |

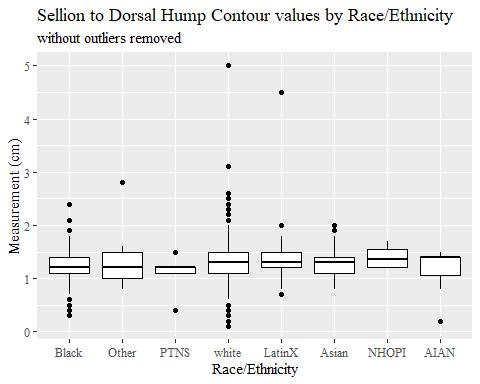
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelDH\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Dorsal Hump Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 0.1 | 5.0 | 1.33 | 1.30 | 0.31 | 0.01 | 0.90 | 1.10 | 1.30 | 1.50 | 1.80 | 7 |
| Black | 548 | 0.3 | 2.4 | 1.25 | 1.20 | 0.28 | 0.01 | 0.80 | 1.10 | 1.20 | 1.40 | 1.70 | 4 |
| LatinX | 100 | 0.7 | 4.5 | 1.37 | 1.30 | 0.42 | 0.04 | 0.89 | 1.20 | 1.30 | 1.50 | 1.80 | 1 |
| Asian | 91 | 0.8 | 2.0 | 1.30 | 1.30 | 0.26 | 0.03 | 0.95 | 1.10 | 1.30 | 1.40 | 1.80 | 1 |
| Other | 21 | 0.8 | 2.8 | 1.29 | 1.20 | 0.43 | 0.09 | 0.90 | 1.00 | 1.20 | 1.50 | 1.60 | 0 |
| AIAN | 8 | 0.2 | 1.5 | 1.14 | 1.40 | 0.48 | 0.17 | 0.38 | 1.05 | 1.40 | 1.40 | 1.47 | 1 |
| PTNS | 5 | 0.4 | 1.5 | 1.08 | 1.20 | 0.41 | 0.18 | 0.54 | 1.10 | 1.20 | 1.20 | 1.44 | 0 |
| NHOPI | 4 | 1.2 | 1.7 | 1.40 | 1.35 | 0.24 | 0.12 | 1.20 | 1.20 | 1.35 | 1.55 | 1.67 | 0 |

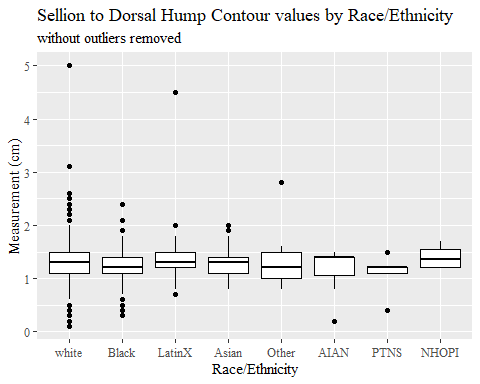
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, SelDH\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelDH\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Race/Ethnicity",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 14 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelDH\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Race/Ethnicity",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 14 rows containing non-finite values (stat\_boxplot).



#SelDH\_C gender sumstats  
SelDH\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(SelDH\_C, na.rm = TRUE),  
 max = max(SelDH\_C, na.rm = TRUE),  
 mean = mean(SelDH\_C, na.rm = TRUE),  
 mdn = median(SelDH\_C, na.rm = TRUE),  
 sd = sd(SelDH\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelDH\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelDH\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelDH\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelDH\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelDH\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelDH\_C)))  
  
SelDH\_Cgender\_sumstats <- SelDH\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(SelDH\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Gender")

**Table** : Sellion to Dorsal Hump Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 0.1 | 5.0 | 1.26 | 1.30 | 0.31 | 0.01 | 0.80 | 1.1 | 1.30 | 1.40 | 1.7 | 9 |
| Male | 939 | 0.4 | 3.1 | 1.37 | 1.40 | 0.30 | 0.01 | 0.90 | 1.2 | 1.40 | 1.50 | 1.8 | 5 |
| Non-binary or Other | 5 | 0.8 | 1.4 | 0.98 | 0.90 | 0.24 | 0.11 | 0.82 | 0.9 | 0.90 | 0.90 | 1.3 | 0 |
| Prefer not to say | 1 | 1.2 | 1.2 | 1.20 | 1.20 |  |  | 1.20 | 1.2 | 1.20 | 1.20 | 1.2 | 0 |
|  | 8 | 0.6 | 1.4 | 0.98 | 0.85 | 0.30 | 0.10 | 0.67 | 0.8 | 0.85 | 1.18 | 1.4 | 0 |

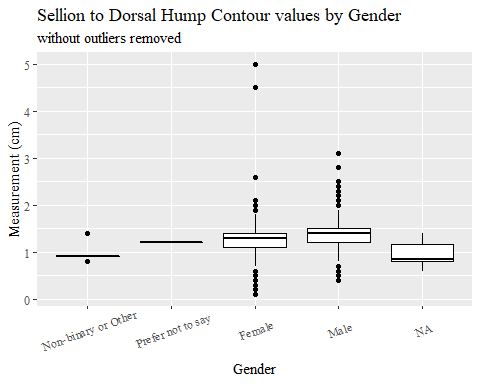
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelDH\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Dorsal Hump Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 0.1 | 5.0 | 1.26 | 1.30 | 0.31 | 0.01 | 0.80 | 1.1 | 1.30 | 1.40 | 1.7 | 9 |
| Male | 939 | 0.4 | 3.1 | 1.37 | 1.40 | 0.30 | 0.01 | 0.90 | 1.2 | 1.40 | 1.50 | 1.8 | 5 |
| Non-binary or Other | 5 | 0.8 | 1.4 | 0.98 | 0.90 | 0.24 | 0.11 | 0.82 | 0.9 | 0.90 | 0.90 | 1.3 | 0 |
| Prefer not to say | 1 | 1.2 | 1.2 | 1.20 | 1.20 |  |  | 1.20 | 1.2 | 1.20 | 1.20 | 1.2 | 0 |
|  | 8 | 0.6 | 1.4 | 0.98 | 0.85 | 0.30 | 0.10 | 0.67 | 0.8 | 0.85 | 1.18 | 1.4 | 0 |

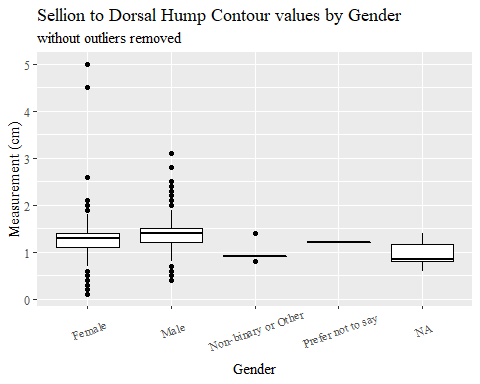
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, SelDH\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelDH\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Gender",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 14 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelDH\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Gender",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 14 rows containing non-finite values (stat\_boxplot).



#SelDH\_C age group sumstats  
SelDH\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(SelDH\_C, na.rm = TRUE),  
 max = max(SelDH\_C, na.rm = TRUE),  
 mean = mean(SelDH\_C, na.rm = TRUE),  
 mdn = median(SelDH\_C, na.rm = TRUE),  
 sd = sd(SelDH\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelDH\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelDH\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelDH\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelDH\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelDH\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelDH\_C)))  
  
SelDH\_Cage\_sumstats <- SelDH\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelDH\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Age Group")

**Table** : Sellion to Dorsal Hump Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 0.2 | 2.8 | 1.31 | 1.3 | 0.28 | 0.01 | 0.90 | 1.1 | 1.3 | 1.5 | 1.8 | 5 |
| 37-54 | 940 | 0.1 | 5.0 | 1.31 | 1.3 | 0.35 | 0.01 | 0.80 | 1.1 | 1.3 | 1.5 | 1.8 | 8 |
| 55-72 | 84 | 0.6 | 2.1 | 1.30 | 1.3 | 0.32 | 0.03 | 0.71 | 1.1 | 1.3 | 1.5 | 1.8 | 1 |
|  | 1 | 1.3 | 1.3 | 1.30 | 1.3 |  |  | 1.30 | 1.3 | 1.3 | 1.3 | 1.3 | 0 |

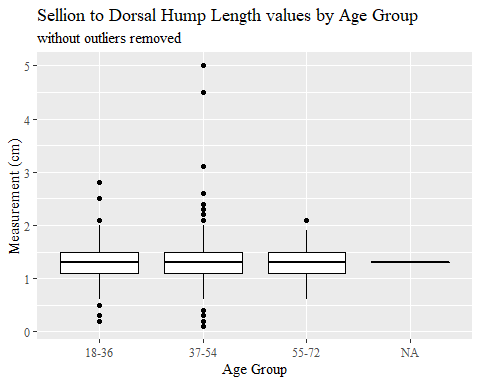
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelDH\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Dorsal Hump Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 0.2 | 2.8 | 1.31 | 1.3 | 0.28 | 0.01 | 0.90 | 1.1 | 1.3 | 1.5 | 1.8 | 5 |
| 37-54 | 940 | 0.1 | 5.0 | 1.31 | 1.3 | 0.35 | 0.01 | 0.80 | 1.1 | 1.3 | 1.5 | 1.8 | 8 |
| 55-72 | 84 | 0.6 | 2.1 | 1.30 | 1.3 | 0.32 | 0.03 | 0.71 | 1.1 | 1.3 | 1.5 | 1.8 | 1 |
|  | 1 | 1.3 | 1.3 | 1.30 | 1.3 |  |  | 1.30 | 1.3 | 1.3 | 1.3 | 1.3 | 0 |

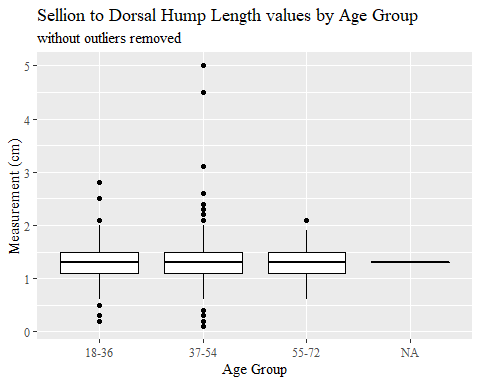
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, SelDH\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelDH\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Length values by Age Group",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 14 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelDH\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Length values by Age Group",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 14 rows containing non-finite values (stat\_boxplot).



SelDH\_C without outliers

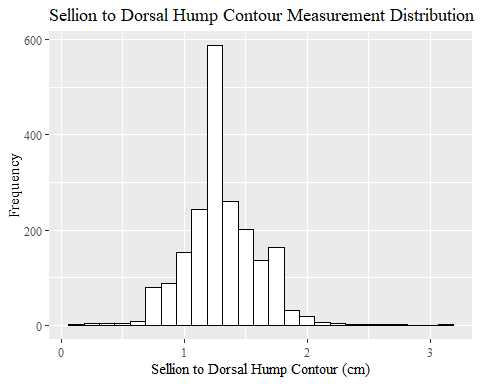
max(headscan\_full$SelDH\_C, na.rm = TRUE)

## [1] 5

#CODE TO REMOVE OUTLIER, use later to remove from headscan\_full  
SelDH\_C\_no\_out <- headscan\_full %>% mutate(SelDH\_C = replace(SelDH\_C, SelDH\_C>4, NA))

#histogram of all SelDH\_C values  
ggplot(data=SelDH\_C\_no\_out, aes(x=SelDH\_C))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Sellion to Dorsal Hump Contour Measurement Distribution",  
 y="Frequency",  
 x="Sellion to Dorsal Hump Contour (cm)")

## Warning: Removed 16 rows containing non-finite values (stat\_bin).



#SelDH\_C race/eth sumstats  
SelDH\_Crace\_sumstats1 <- SelDH\_C\_no\_out %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(SelDH\_C, na.rm = TRUE),  
 max = max(SelDH\_C, na.rm = TRUE),  
 mean = mean(SelDH\_C, na.rm = TRUE),  
 mdn = median(SelDH\_C, na.rm = TRUE),  
 sd = sd(SelDH\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelDH\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelDH\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelDH\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelDH\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelDH\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelDH\_C)))   
  
SelDH\_Crace\_sumstats1 <- SelDH\_Crace\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelDH\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Race/Ethnicity")

**Table** : Sellion to Dorsal Hump Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 0.1 | 3.1 | 1.33 | 1.30 | 0.30 | 0.01 | 0.90 | 1.10 | 1.30 | 1.50 | 1.80 | 8 |
| Black | 548 | 0.3 | 2.4 | 1.25 | 1.20 | 0.28 | 0.01 | 0.80 | 1.10 | 1.20 | 1.40 | 1.70 | 4 |
| LatinX | 100 | 0.7 | 2.0 | 1.34 | 1.30 | 0.28 | 0.03 | 0.88 | 1.20 | 1.30 | 1.50 | 1.80 | 2 |
| Asian | 91 | 0.8 | 2.0 | 1.30 | 1.30 | 0.26 | 0.03 | 0.95 | 1.10 | 1.30 | 1.40 | 1.80 | 1 |
| Other | 21 | 0.8 | 2.8 | 1.29 | 1.20 | 0.43 | 0.09 | 0.90 | 1.00 | 1.20 | 1.50 | 1.60 | 0 |
| AIAN | 8 | 0.2 | 1.5 | 1.14 | 1.40 | 0.48 | 0.17 | 0.38 | 1.05 | 1.40 | 1.40 | 1.47 | 1 |
| PTNS | 5 | 0.4 | 1.5 | 1.08 | 1.20 | 0.41 | 0.18 | 0.54 | 1.10 | 1.20 | 1.20 | 1.44 | 0 |
| NHOPI | 4 | 1.2 | 1.7 | 1.40 | 1.35 | 0.24 | 0.12 | 1.20 | 1.20 | 1.35 | 1.55 | 1.67 | 0 |

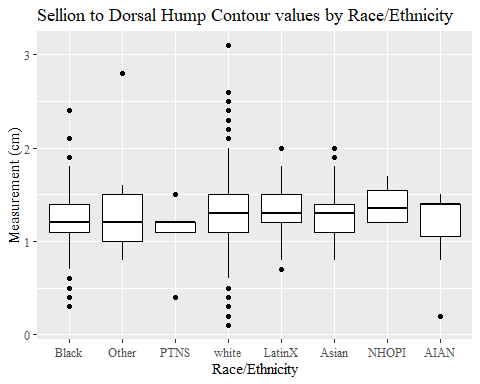
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelDH\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Dorsal Hump Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 0.1 | 3.1 | 1.33 | 1.30 | 0.30 | 0.01 | 0.90 | 1.10 | 1.30 | 1.50 | 1.80 | 8 |
| Black | 548 | 0.3 | 2.4 | 1.25 | 1.20 | 0.28 | 0.01 | 0.80 | 1.10 | 1.20 | 1.40 | 1.70 | 4 |
| LatinX | 100 | 0.7 | 2.0 | 1.34 | 1.30 | 0.28 | 0.03 | 0.88 | 1.20 | 1.30 | 1.50 | 1.80 | 2 |
| Asian | 91 | 0.8 | 2.0 | 1.30 | 1.30 | 0.26 | 0.03 | 0.95 | 1.10 | 1.30 | 1.40 | 1.80 | 1 |
| Other | 21 | 0.8 | 2.8 | 1.29 | 1.20 | 0.43 | 0.09 | 0.90 | 1.00 | 1.20 | 1.50 | 1.60 | 0 |
| AIAN | 8 | 0.2 | 1.5 | 1.14 | 1.40 | 0.48 | 0.17 | 0.38 | 1.05 | 1.40 | 1.40 | 1.47 | 1 |
| PTNS | 5 | 0.4 | 1.5 | 1.08 | 1.20 | 0.41 | 0.18 | 0.54 | 1.10 | 1.20 | 1.20 | 1.44 | 0 |
| NHOPI | 4 | 1.2 | 1.7 | 1.40 | 1.35 | 0.24 | 0.12 | 1.20 | 1.20 | 1.35 | 1.55 | 1.67 | 0 |

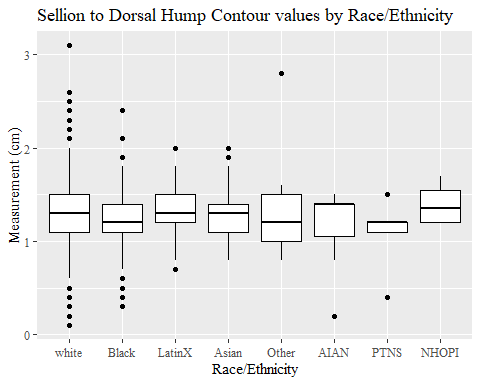
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
SelDH\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, SelDH\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelDH\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=SelDH\_C\_no\_out, aes(y=SelDH\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#SelDH\_C gender sumstats  
SelDH\_Cgender\_sumstats1 <- SelDH\_C\_no\_out %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(SelDH\_C, na.rm = TRUE),  
 max = max(SelDH\_C, na.rm = TRUE),  
 mean = mean(SelDH\_C, na.rm = TRUE),  
 mdn = median(SelDH\_C, na.rm = TRUE),  
 sd = sd(SelDH\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelDH\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelDH\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelDH\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelDH\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelDH\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelDH\_C)))  
  
SelDH\_Cgender\_sumstats1 <- SelDH\_Cgender\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(SelDH\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Gender")

**Table** : Sellion to Dorsal Hump Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 0.1 | 2.6 | 1.25 | 1.30 | 0.27 | 0.01 | 0.80 | 1.1 | 1.30 | 1.40 | 1.7 | 11 |
| Male | 939 | 0.4 | 3.1 | 1.37 | 1.40 | 0.30 | 0.01 | 0.90 | 1.2 | 1.40 | 1.50 | 1.8 | 5 |
| Non-binary or Other | 5 | 0.8 | 1.4 | 0.98 | 0.90 | 0.24 | 0.11 | 0.82 | 0.9 | 0.90 | 0.90 | 1.3 | 0 |
| Prefer not to say | 1 | 1.2 | 1.2 | 1.20 | 1.20 |  |  | 1.20 | 1.2 | 1.20 | 1.20 | 1.2 | 0 |
|  | 8 | 0.6 | 1.4 | 0.98 | 0.85 | 0.30 | 0.10 | 0.67 | 0.8 | 0.85 | 1.18 | 1.4 | 0 |

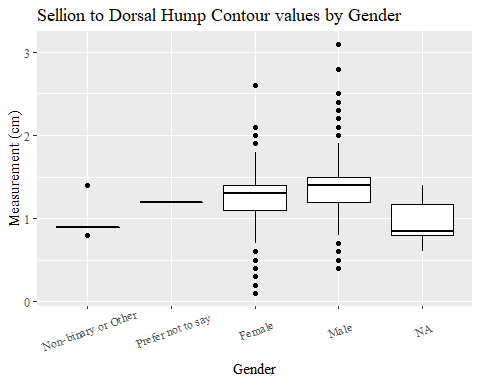
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelDH\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Dorsal Hump Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 0.1 | 2.6 | 1.25 | 1.30 | 0.27 | 0.01 | 0.80 | 1.1 | 1.30 | 1.40 | 1.7 | 11 |
| Male | 939 | 0.4 | 3.1 | 1.37 | 1.40 | 0.30 | 0.01 | 0.90 | 1.2 | 1.40 | 1.50 | 1.8 | 5 |
| Non-binary or Other | 5 | 0.8 | 1.4 | 0.98 | 0.90 | 0.24 | 0.11 | 0.82 | 0.9 | 0.90 | 0.90 | 1.3 | 0 |
| Prefer not to say | 1 | 1.2 | 1.2 | 1.20 | 1.20 |  |  | 1.20 | 1.2 | 1.20 | 1.20 | 1.2 | 0 |
|  | 8 | 0.6 | 1.4 | 0.98 | 0.85 | 0.30 | 0.10 | 0.67 | 0.8 | 0.85 | 1.18 | 1.4 | 0 |

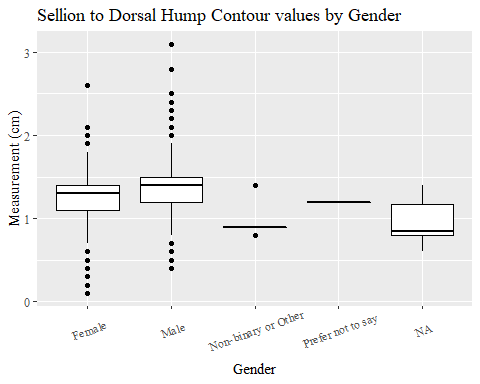
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
SelDH\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, SelDH\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelDH\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=SelDH\_C\_no\_out, aes(y=SelDH\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#SelDH\_C age group sumstats  
SelDH\_Cage\_sumstats1 <- SelDH\_C\_no\_out %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(SelDH\_C, na.rm = TRUE),  
 max = max(SelDH\_C, na.rm = TRUE),  
 mean = mean(SelDH\_C, na.rm = TRUE),  
 mdn = median(SelDH\_C, na.rm = TRUE),  
 sd = sd(SelDH\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelDH\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelDH\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelDH\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelDH\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelDH\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelDH\_C)))  
  
SelDH\_Cage\_sumstats1 <- SelDH\_Cage\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelDH\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Age Group")

**Table** : Sellion to Dorsal Hump Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 0.2 | 2.8 | 1.31 | 1.3 | 0.28 | 0.01 | 0.90 | 1.1 | 1.3 | 1.5 | 1.8 | 5 |
| 37-54 | 940 | 0.1 | 3.1 | 1.30 | 1.3 | 0.31 | 0.01 | 0.80 | 1.1 | 1.3 | 1.5 | 1.8 | 10 |
| 55-72 | 84 | 0.6 | 2.1 | 1.30 | 1.3 | 0.32 | 0.03 | 0.71 | 1.1 | 1.3 | 1.5 | 1.8 | 1 |
|  | 1 | 1.3 | 1.3 | 1.30 | 1.3 |  |  | 1.30 | 1.3 | 1.3 | 1.3 | 1.3 | 0 |

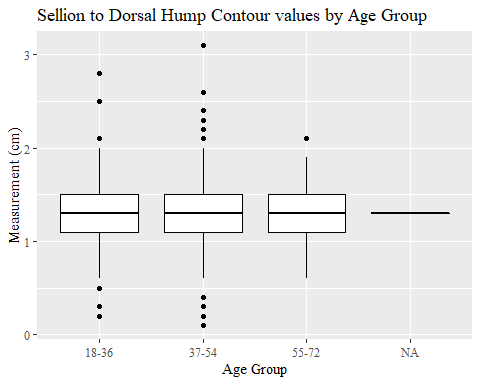
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelDH\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Dorsal Hump Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Dorsal Hump Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 0.2 | 2.8 | 1.31 | 1.3 | 0.28 | 0.01 | 0.90 | 1.1 | 1.3 | 1.5 | 1.8 | 5 |
| 37-54 | 940 | 0.1 | 3.1 | 1.30 | 1.3 | 0.31 | 0.01 | 0.80 | 1.1 | 1.3 | 1.5 | 1.8 | 10 |
| 55-72 | 84 | 0.6 | 2.1 | 1.30 | 1.3 | 0.32 | 0.03 | 0.71 | 1.1 | 1.3 | 1.5 | 1.8 | 1 |
|  | 1 | 1.3 | 1.3 | 1.30 | 1.3 |  |  | 1.30 | 1.3 | 1.3 | 1.3 | 1.3 | 0 |

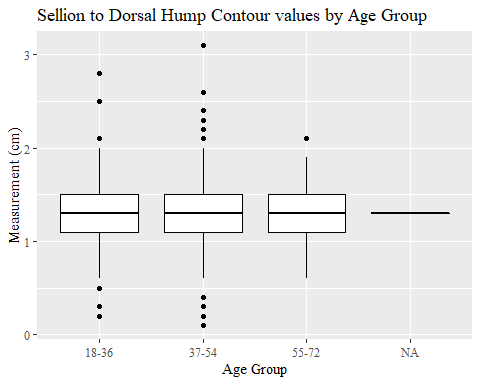
#%>% set\_header\_Cabels(values = list(SelDH\_C = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
SelDH\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, SelDH\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelDH\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=SelDH\_C\_no\_out, aes(y=SelDH\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Dorsal Hump Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

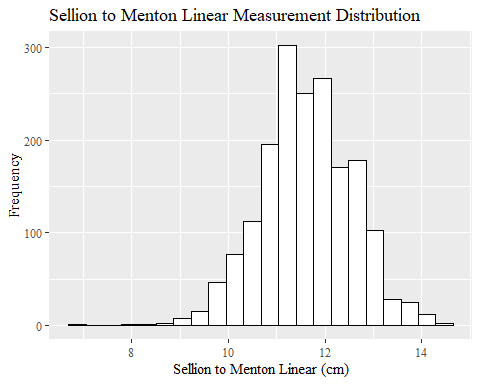
## Warning: Removed 16 rows containing non-finite values (stat\_boxplot).



SelM\_L

#histogram of all SelM\_L values  
ggplot(data=headscan\_full, aes(x=SelM\_L))+  
 geom\_bar(stat="bin", bins=22, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Sellion to Menton Linear Measurement Distribution",  
 y="Frequency",  
 x="Sellion to Menton Linear (cm)")

## Warning: Removed 224 rows containing non-finite values (stat\_bin).



#SelM\_L race/eth sumstats  
SelM\_Lrace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(SelM\_L, na.rm = TRUE),  
 max = max(SelM\_L, na.rm = TRUE),  
 mean = mean(SelM\_L, na.rm = TRUE),  
 mdn = median(SelM\_L, na.rm = TRUE),  
 sd = sd(SelM\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelM\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelM\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelM\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelM\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelM\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelM\_L)))   
  
SelM\_Lrace\_sumstats <- SelM\_Lrace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelM\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Menton Length SumStats by Race/Ethnicity")

**Table** : Sellion to Menton Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 6.9 | 14.5 | 11.57 | 11.50 | 0.93 | 0.03 | 10.00 | 11.00 | 11.50 | 12.20 | 13.10 | 135 |
| Black | 548 | 9.1 | 14.2 | 11.85 | 11.80 | 0.90 | 0.04 | 10.20 | 11.20 | 11.80 | 12.50 | 13.20 | 70 |
| LatinX | 100 | 8.4 | 14.2 | 11.58 | 11.60 | 1.07 | 0.11 | 9.80 | 10.90 | 11.60 | 12.20 | 13.49 | 8 |
| Asian | 91 | 8.8 | 13.2 | 11.19 | 11.10 | 0.87 | 0.09 | 9.70 | 10.75 | 11.10 | 11.75 | 12.60 | 4 |
| Other | 21 | 10.5 | 12.6 | 11.44 | 11.30 | 0.58 | 0.13 | 10.73 | 11.10 | 11.30 | 11.67 | 12.38 | 5 |
| AIAN | 8 | 9.9 | 13.7 | 11.55 | 11.15 | 1.34 | 0.48 | 10.15 | 10.93 | 11.15 | 12.20 | 13.40 | 2 |
| PTNS | 5 | 10.2 | 12.6 | 11.58 | 11.70 | 0.89 | 0.40 | 10.44 | 11.40 | 11.70 | 12.00 | 12.48 | 0 |
| NHOPI | 4 | 9.8 | 12.2 | 11.50 | 12.00 | 1.14 | 0.57 | 10.13 | 11.45 | 12.00 | 12.05 | 12.17 | 0 |

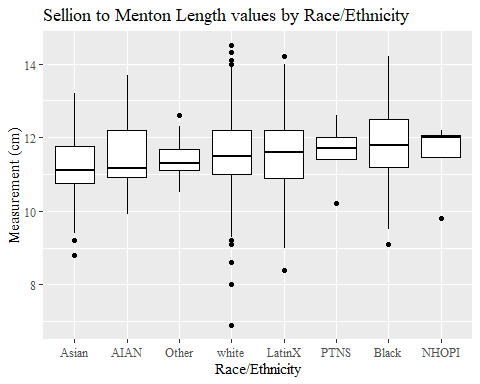
#%>% set\_header\_Cabels(values = list(SelM\_L = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelM\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Menton Length SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Menton Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 6.9 | 14.5 | 11.57 | 11.50 | 0.93 | 0.03 | 10.00 | 11.00 | 11.50 | 12.20 | 13.10 | 135 |
| Black | 548 | 9.1 | 14.2 | 11.85 | 11.80 | 0.90 | 0.04 | 10.20 | 11.20 | 11.80 | 12.50 | 13.20 | 70 |
| LatinX | 100 | 8.4 | 14.2 | 11.58 | 11.60 | 1.07 | 0.11 | 9.80 | 10.90 | 11.60 | 12.20 | 13.49 | 8 |
| Asian | 91 | 8.8 | 13.2 | 11.19 | 11.10 | 0.87 | 0.09 | 9.70 | 10.75 | 11.10 | 11.75 | 12.60 | 4 |
| Other | 21 | 10.5 | 12.6 | 11.44 | 11.30 | 0.58 | 0.13 | 10.73 | 11.10 | 11.30 | 11.67 | 12.38 | 5 |
| AIAN | 8 | 9.9 | 13.7 | 11.55 | 11.15 | 1.34 | 0.48 | 10.15 | 10.93 | 11.15 | 12.20 | 13.40 | 2 |
| PTNS | 5 | 10.2 | 12.6 | 11.58 | 11.70 | 0.89 | 0.40 | 10.44 | 11.40 | 11.70 | 12.00 | 12.48 | 0 |
| NHOPI | 4 | 9.8 | 12.2 | 11.50 | 12.00 | 1.14 | 0.57 | 10.13 | 11.45 | 12.00 | 12.05 | 12.17 | 0 |

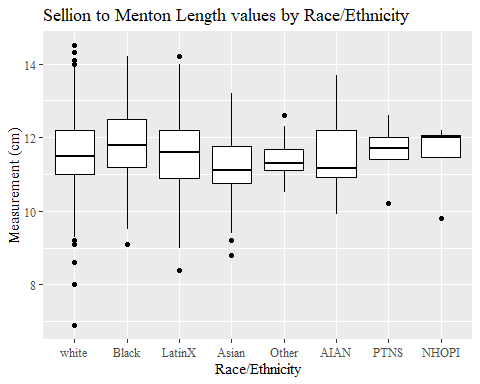
#%>% set\_header\_Cabels(values = list(SelM\_L = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, SelM\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelM\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Menton Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 224 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelM\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Menton Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 224 rows containing non-finite values (stat\_boxplot).



#SelM\_L gender sumstats  
SelM\_Lgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(SelM\_L, na.rm = TRUE),  
 max = max(SelM\_L, na.rm = TRUE),  
 mean = mean(SelM\_L, na.rm = TRUE),  
 mdn = median(SelM\_L, na.rm = TRUE),  
 sd = sd(SelM\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelM\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelM\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelM\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelM\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelM\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelM\_L)))  
  
SelM\_Lgender\_sumstats <- SelM\_Lgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(SelM\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Menton Length SumStats by Gender")

**Table** : Sellion to Menton Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 6.9 | 14.0 | 11.31 | 11.4 | 0.83 | 0.03 | 9.90 | 10.80 | 11.4 | 11.80 | 12.60 | 17 |
| Male | 939 | 9.3 | 14.5 | 12.08 | 12.1 | 0.90 | 0.03 | 10.60 | 11.50 | 12.1 | 12.70 | 13.54 | 207 |
| Non-binary or Other | 5 | 8.0 | 11.6 | 10.64 | 11.4 | 1.52 | 0.68 | 8.54 | 10.70 | 11.4 | 11.50 | 11.58 | 0 |
| Prefer not to say | 1 | 12.6 | 12.6 | 12.60 | 12.6 |  |  | 12.60 | 12.60 | 12.6 | 12.60 | 12.60 | 0 |
|  | 8 | 10.3 | 12.8 | 11.45 | 11.2 | 0.87 | 0.31 | 10.48 | 10.88 | 11.2 | 12.15 | 12.62 | 0 |

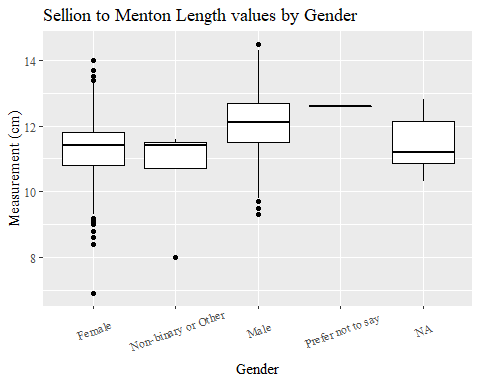
#%>% set\_header\_Cabels(values = list(SelM\_L = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelM\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Menton Length SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Menton Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 6.9 | 14.0 | 11.31 | 11.4 | 0.83 | 0.03 | 9.90 | 10.80 | 11.4 | 11.80 | 12.60 | 17 |
| Male | 939 | 9.3 | 14.5 | 12.08 | 12.1 | 0.90 | 0.03 | 10.60 | 11.50 | 12.1 | 12.70 | 13.54 | 207 |
| Non-binary or Other | 5 | 8.0 | 11.6 | 10.64 | 11.4 | 1.52 | 0.68 | 8.54 | 10.70 | 11.4 | 11.50 | 11.58 | 0 |
| Prefer not to say | 1 | 12.6 | 12.6 | 12.60 | 12.6 |  |  | 12.60 | 12.60 | 12.6 | 12.60 | 12.60 | 0 |
|  | 8 | 10.3 | 12.8 | 11.45 | 11.2 | 0.87 | 0.31 | 10.48 | 10.88 | 11.2 | 12.15 | 12.62 | 0 |

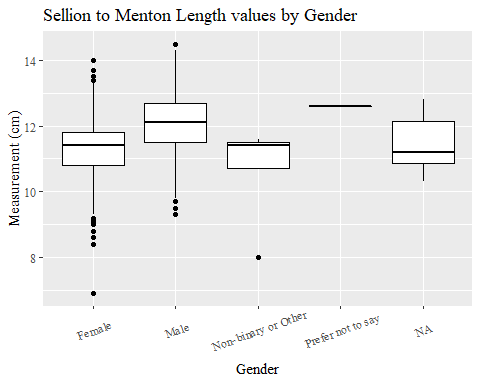
#%>% set\_header\_Cabels(values = list(SelM\_L = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, SelM\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelM\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Menton Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 224 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelM\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Menton Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 224 rows containing non-finite values (stat\_boxplot).



#SelM\_L age group sumstats  
SelM\_Lage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(SelM\_L, na.rm = TRUE),  
 max = max(SelM\_L, na.rm = TRUE),  
 mean = mean(SelM\_L, na.rm = TRUE),  
 mdn = median(SelM\_L, na.rm = TRUE),  
 sd = sd(SelM\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SelM\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SelM\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SelM\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SelM\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SelM\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SelM\_L)))  
  
SelM\_Lage\_sumstats <- SelM\_Lage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SelM\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Menton Length SumStats by Age Group")

**Table** : Sellion to Menton Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 8.0 | 14.3 | 11.57 | 11.6 | 0.91 | 0.03 | 10.10 | 11.0 | 11.6 | 12.20 | 13.10 | 120 |
| 37-54 | 940 | 6.9 | 14.2 | 11.68 | 11.7 | 0.96 | 0.03 | 10.10 | 11.1 | 11.7 | 12.30 | 13.20 | 99 |
| 55-72 | 84 | 8.6 | 14.5 | 11.59 | 11.7 | 1.01 | 0.11 | 9.79 | 11.1 | 11.7 | 12.35 | 12.82 | 5 |
|  | 1 | 11.3 | 11.3 | 11.30 | 11.3 |  |  | 11.30 | 11.3 | 11.3 | 11.30 | 11.30 | 0 |

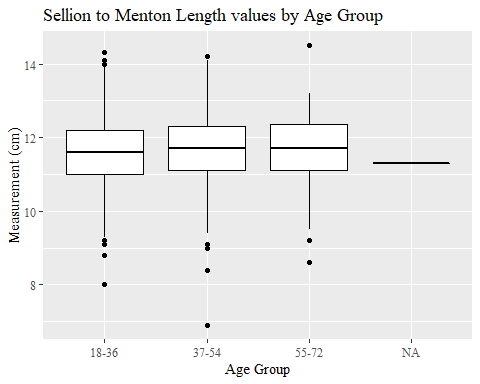
#%>% set\_header\_Cabels(values = list(SelM\_L = "Sellion/SellionCont"))  
  
#Autofit Width Table TNR  
flextable(SelM\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Sellion to Menton Length SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Sellion to Menton Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 8.0 | 14.3 | 11.57 | 11.6 | 0.91 | 0.03 | 10.10 | 11.0 | 11.6 | 12.20 | 13.10 | 120 |
| 37-54 | 940 | 6.9 | 14.2 | 11.68 | 11.7 | 0.96 | 0.03 | 10.10 | 11.1 | 11.7 | 12.30 | 13.20 | 99 |
| 55-72 | 84 | 8.6 | 14.5 | 11.59 | 11.7 | 1.01 | 0.11 | 9.79 | 11.1 | 11.7 | 12.35 | 12.82 | 5 |
|  | 1 | 11.3 | 11.3 | 11.30 | 11.3 |  |  | 11.30 | 11.3 | 11.3 | 11.30 | 11.30 | 0 |

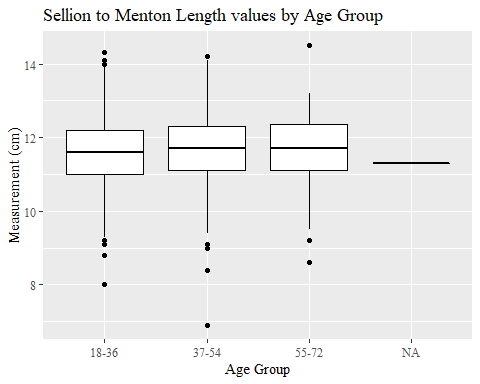
#%>% set\_header\_Cabels(values = list(SelM\_L = "Sellion/SellionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, SelM\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SelM\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Menton Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 224 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SelM\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Sellion to Menton Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

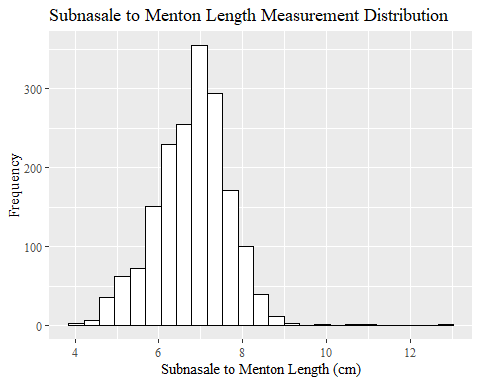
## Warning: Removed 224 rows containing non-finite values (stat\_boxplot).



SnasM\_L

#histogram of all SnasM\_L values  
ggplot(data=headscan\_full, aes(x=SnasM\_L))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Subnasale to Menton Length Measurement Distribution",  
 y="Frequency",  
 x="Subnasale to Menton Length (cm)")

## Warning: Removed 225 rows containing non-finite values (stat\_bin).



#SnasM\_L race/eth sumstats  
SnasM\_Lrace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(SnasM\_L, na.rm = TRUE),  
 max = max(SnasM\_L, na.rm = TRUE),  
 mean = mean(SnasM\_L, na.rm = TRUE),  
 mdn = median(SnasM\_L, na.rm = TRUE),  
 sd = sd(SnasM\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_L)))   
  
SnasM\_Lrace\_sumstats <- SnasM\_Lrace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SnasM\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Length SumStats by Race/Ethnicity")

**Table** : Subnasale to Menton Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.1 | 12.8 | 6.70 | 6.70 | 0.83 | 0.02 | 5.20 | 6.20 | 6.70 | 7.20 | 7.90 | 136 |
| Black | 548 | 4.6 | 11.1 | 7.10 | 7.20 | 0.83 | 0.04 | 5.60 | 6.60 | 7.20 | 7.70 | 8.30 | 70 |
| LatinX | 100 | 4.3 | 9.0 | 6.73 | 6.80 | 0.96 | 0.10 | 4.96 | 6.20 | 6.80 | 7.32 | 8.25 | 8 |
| Asian | 91 | 4.0 | 10.5 | 6.43 | 6.40 | 0.96 | 0.10 | 5.00 | 5.85 | 6.40 | 7.10 | 7.84 | 4 |
| Other | 21 | 5.2 | 7.8 | 6.66 | 6.65 | 0.66 | 0.14 | 5.65 | 6.47 | 6.65 | 7.12 | 7.58 | 5 |
| AIAN | 8 | 5.4 | 8.3 | 6.50 | 6.15 | 1.08 | 0.38 | 5.50 | 5.82 | 6.15 | 7.00 | 8.03 | 2 |
| PTNS | 5 | 5.9 | 8.1 | 7.06 | 7.20 | 0.84 | 0.38 | 6.04 | 6.60 | 7.20 | 7.50 | 7.98 | 0 |
| NHOPI | 4 | 4.6 | 7.8 | 6.57 | 6.95 | 1.41 | 0.70 | 4.90 | 6.10 | 6.95 | 7.42 | 7.72 | 0 |

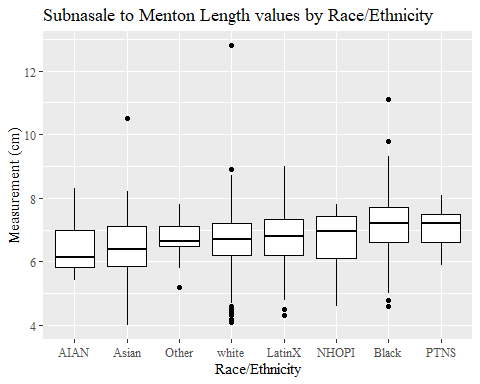
#%>% set\_header\_Cabels(values = list(SnasM\_L = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Length SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Length SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.1 | 12.8 | 6.70 | 6.70 | 0.83 | 0.02 | 5.20 | 6.20 | 6.70 | 7.20 | 7.90 | 136 |
| Black | 548 | 4.6 | 11.1 | 7.10 | 7.20 | 0.83 | 0.04 | 5.60 | 6.60 | 7.20 | 7.70 | 8.30 | 70 |
| LatinX | 100 | 4.3 | 9.0 | 6.73 | 6.80 | 0.96 | 0.10 | 4.96 | 6.20 | 6.80 | 7.32 | 8.25 | 8 |
| Asian | 91 | 4.0 | 10.5 | 6.43 | 6.40 | 0.96 | 0.10 | 5.00 | 5.85 | 6.40 | 7.10 | 7.84 | 4 |
| Other | 21 | 5.2 | 7.8 | 6.66 | 6.65 | 0.66 | 0.14 | 5.65 | 6.47 | 6.65 | 7.12 | 7.58 | 5 |
| AIAN | 8 | 5.4 | 8.3 | 6.50 | 6.15 | 1.08 | 0.38 | 5.50 | 5.82 | 6.15 | 7.00 | 8.03 | 2 |
| PTNS | 5 | 5.9 | 8.1 | 7.06 | 7.20 | 0.84 | 0.38 | 6.04 | 6.60 | 7.20 | 7.50 | 7.98 | 0 |
| NHOPI | 4 | 4.6 | 7.8 | 6.57 | 6.95 | 1.41 | 0.70 | 4.90 | 6.10 | 6.95 | 7.42 | 7.72 | 0 |

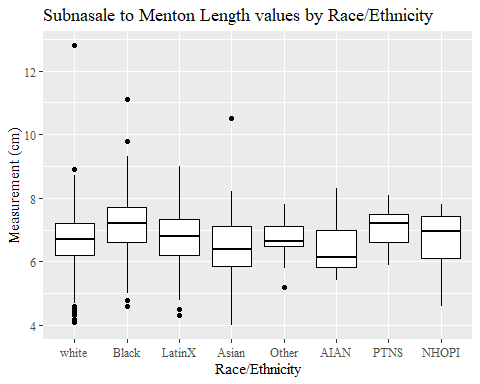
#%>% set\_header\_Cabels(values = list(SnasM\_L = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, SnasM\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 225 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SnasM\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Length values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 225 rows containing non-finite values (stat\_boxplot).



#SnasM\_L gender sumstats  
SnasM\_Lgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(SnasM\_L, na.rm = TRUE),  
 max = max(SnasM\_L, na.rm = TRUE),  
 mean = mean(SnasM\_L, na.rm = TRUE),  
 mdn = median(SnasM\_L, na.rm = TRUE),  
 sd = sd(SnasM\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_L)))  
  
SnasM\_Lgender\_sumstats <- SnasM\_Lgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(SnasM\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Length SumStats by Gender")

**Table** : Subnasale to Menton Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.0 | 11.1 | 6.62 | 6.7 | 0.81 | 0.02 | 5.10 | 6.20 | 6.7 | 7.20 | 7.80 | 17 |
| Male | 939 | 4.2 | 12.8 | 7.04 | 7.1 | 0.88 | 0.03 | 5.50 | 6.50 | 7.1 | 7.60 | 8.30 | 208 |
| Non-binary or Other | 5 | 4.1 | 7.4 | 6.22 | 7.0 | 1.43 | 0.64 | 4.36 | 5.40 | 7.0 | 7.20 | 7.36 | 0 |
| Prefer not to say | 1 | 8.1 | 8.1 | 8.10 | 8.1 |  |  | 8.10 | 8.10 | 8.1 | 8.10 | 8.10 | 0 |
|  | 8 | 5.7 | 7.8 | 6.80 | 6.7 | 0.83 | 0.29 | 5.80 | 6.15 | 6.7 | 7.62 | 7.77 | 0 |

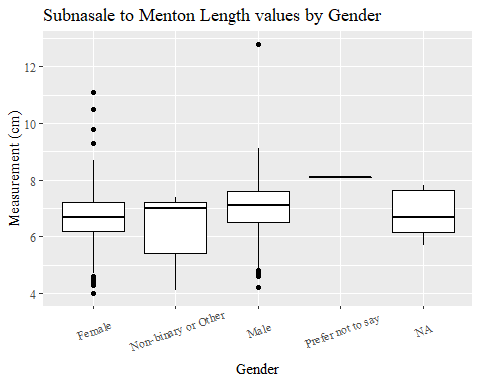
#%>% set\_header\_Cabels(values = list(SnasM\_L = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Length SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Length SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.0 | 11.1 | 6.62 | 6.7 | 0.81 | 0.02 | 5.10 | 6.20 | 6.7 | 7.20 | 7.80 | 17 |
| Male | 939 | 4.2 | 12.8 | 7.04 | 7.1 | 0.88 | 0.03 | 5.50 | 6.50 | 7.1 | 7.60 | 8.30 | 208 |
| Non-binary or Other | 5 | 4.1 | 7.4 | 6.22 | 7.0 | 1.43 | 0.64 | 4.36 | 5.40 | 7.0 | 7.20 | 7.36 | 0 |
| Prefer not to say | 1 | 8.1 | 8.1 | 8.10 | 8.1 |  |  | 8.10 | 8.10 | 8.1 | 8.10 | 8.10 | 0 |
|  | 8 | 5.7 | 7.8 | 6.80 | 6.7 | 0.83 | 0.29 | 5.80 | 6.15 | 6.7 | 7.62 | 7.77 | 0 |

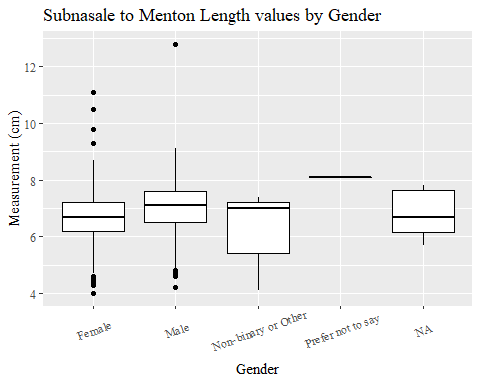
#%>% set\_header\_Cabels(values = list(SnasM\_L = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, SnasM\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 225 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SnasM\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Length values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 225 rows containing non-finite values (stat\_boxplot).



#SnasM\_L age group sumstats  
SnasM\_Lage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(SnasM\_L, na.rm = TRUE),  
 max = max(SnasM\_L, na.rm = TRUE),  
 mean = mean(SnasM\_L, na.rm = TRUE),  
 mdn = median(SnasM\_L, na.rm = TRUE),  
 sd = sd(SnasM\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_L)))  
  
SnasM\_Lage\_sumstats <- SnasM\_Lage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SnasM\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Length SumStats by Age Group")

**Table** : Subnasale to Menton Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.0 | 12.8 | 6.78 | 6.8 | 0.87 | 0.03 | 5.20 | 6.30 | 6.8 | 7.4 | 8.10 | 120 |
| 37-54 | 940 | 4.3 | 11.1 | 6.82 | 6.8 | 0.86 | 0.03 | 5.30 | 6.30 | 6.8 | 7.4 | 8.10 | 99 |
| 55-72 | 84 | 4.3 | 8.2 | 6.62 | 6.7 | 0.86 | 0.09 | 5.17 | 6.12 | 6.7 | 7.3 | 7.71 | 6 |
|  | 1 | 6.4 | 6.4 | 6.40 | 6.4 |  |  | 6.40 | 6.40 | 6.4 | 6.4 | 6.40 | 0 |

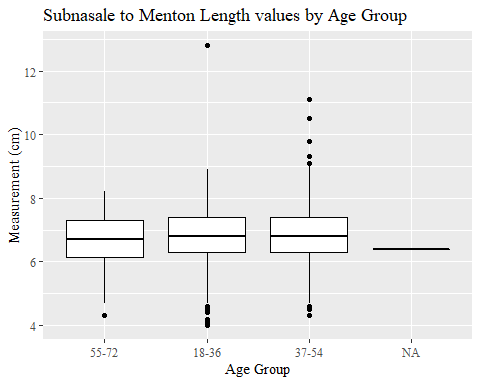
#%>% set\_header\_Cabels(values = list(SnasM\_L = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Length SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Length SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.0 | 12.8 | 6.78 | 6.8 | 0.87 | 0.03 | 5.20 | 6.30 | 6.8 | 7.4 | 8.10 | 120 |
| 37-54 | 940 | 4.3 | 11.1 | 6.82 | 6.8 | 0.86 | 0.03 | 5.30 | 6.30 | 6.8 | 7.4 | 8.10 | 99 |
| 55-72 | 84 | 4.3 | 8.2 | 6.62 | 6.7 | 0.86 | 0.09 | 5.17 | 6.12 | 6.7 | 7.3 | 7.71 | 6 |
|  | 1 | 6.4 | 6.4 | 6.40 | 6.4 |  |  | 6.40 | 6.40 | 6.4 | 6.4 | 6.40 | 0 |

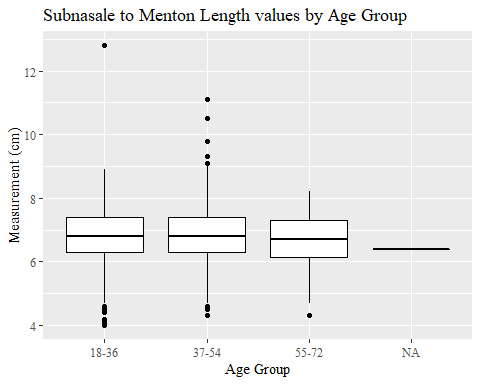
#%>% set\_header\_Cabels(values = list(SnasM\_L = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, SnasM\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 225 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SnasM\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

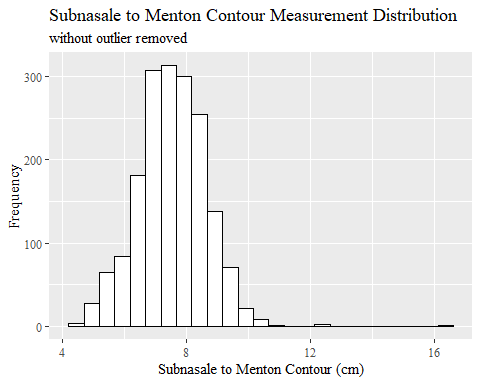
## Warning: Removed 225 rows containing non-finite values (stat\_boxplot).



SnasM\_C without outliers removed

#histogram of all SnasM\_C values  
ggplot(data=headscan\_full, aes(x=SnasM\_C))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Subnasale to Menton Contour Measurement Distribution",  
 subtitle = "without outlier removed",  
 y="Frequency",  
 x="Subnasale to Menton Contour (cm)")

## Warning: Removed 236 rows containing non-finite values (stat\_bin).



#SnasM\_C race/eth sumstats  
SnasM\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(SnasM\_C, na.rm = TRUE),  
 max = max(SnasM\_C, na.rm = TRUE),  
 mean = mean(SnasM\_C, na.rm = TRUE),  
 mdn = median(SnasM\_C, na.rm = TRUE),  
 sd = sd(SnasM\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_C)))   
  
SnasM\_Crace\_sumstats <- SnasM\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SnasM\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Race/Ethnicity")

**Table** : Subnasale to Menton Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.4 | 16.3 | 7.29 | 7.30 | 1.01 | 0.03 | 5.60 | 6.70 | 7.30 | 7.90 | 8.90 | 144 |
| Black | 548 | 5.4 | 12.4 | 8.11 | 8.20 | 1.00 | 0.04 | 6.30 | 7.50 | 8.20 | 8.70 | 9.62 | 71 |
| LatinX | 100 | 5.0 | 9.7 | 7.36 | 7.40 | 1.10 | 0.11 | 5.45 | 6.70 | 7.40 | 8.20 | 9.25 | 9 |
| Asian | 91 | 4.6 | 12.5 | 7.22 | 7.15 | 1.17 | 0.12 | 5.55 | 6.53 | 7.15 | 7.88 | 9.15 | 5 |
| Other | 21 | 5.9 | 8.5 | 7.21 | 7.15 | 0.73 | 0.16 | 5.97 | 6.90 | 7.15 | 7.65 | 8.27 | 5 |
| AIAN | 8 | 5.8 | 9.3 | 7.15 | 6.60 | 1.39 | 0.49 | 5.90 | 6.25 | 6.60 | 8.00 | 9.08 | 2 |
| PTNS | 5 | 6.2 | 9.0 | 7.98 | 8.60 | 1.14 | 0.51 | 6.46 | 7.50 | 8.60 | 8.60 | 8.92 | 0 |
| NHOPI | 4 | 6.2 | 8.5 | 7.47 | 7.60 | 1.07 | 0.53 | 6.32 | 6.80 | 7.60 | 8.27 | 8.46 | 0 |

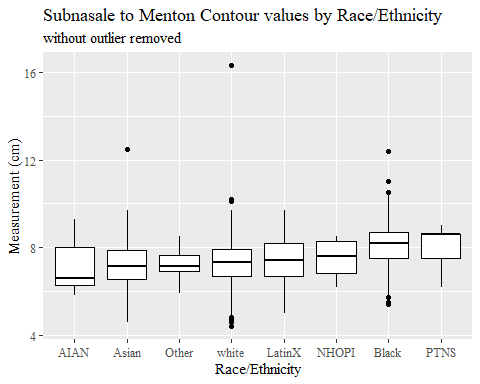
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.4 | 16.3 | 7.29 | 7.30 | 1.01 | 0.03 | 5.60 | 6.70 | 7.30 | 7.90 | 8.90 | 144 |
| Black | 548 | 5.4 | 12.4 | 8.11 | 8.20 | 1.00 | 0.04 | 6.30 | 7.50 | 8.20 | 8.70 | 9.62 | 71 |
| LatinX | 100 | 5.0 | 9.7 | 7.36 | 7.40 | 1.10 | 0.11 | 5.45 | 6.70 | 7.40 | 8.20 | 9.25 | 9 |
| Asian | 91 | 4.6 | 12.5 | 7.22 | 7.15 | 1.17 | 0.12 | 5.55 | 6.53 | 7.15 | 7.88 | 9.15 | 5 |
| Other | 21 | 5.9 | 8.5 | 7.21 | 7.15 | 0.73 | 0.16 | 5.97 | 6.90 | 7.15 | 7.65 | 8.27 | 5 |
| AIAN | 8 | 5.8 | 9.3 | 7.15 | 6.60 | 1.39 | 0.49 | 5.90 | 6.25 | 6.60 | 8.00 | 9.08 | 2 |
| PTNS | 5 | 6.2 | 9.0 | 7.98 | 8.60 | 1.14 | 0.51 | 6.46 | 7.50 | 8.60 | 8.60 | 8.92 | 0 |
| NHOPI | 4 | 6.2 | 8.5 | 7.47 | 7.60 | 1.07 | 0.53 | 6.32 | 6.80 | 7.60 | 8.27 | 8.46 | 0 |

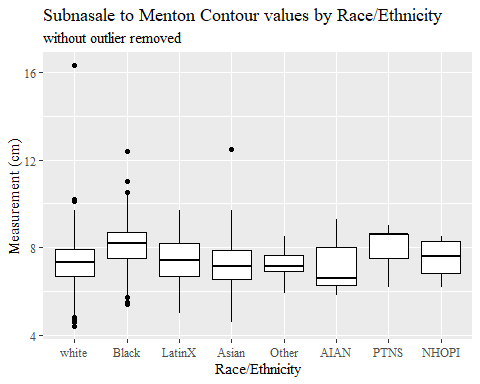
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, SnasM\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Race/Ethnicity",  
 subtitle = "without outlier removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 236 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SnasM\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Race/Ethnicity",  
 subtitle = "without outlier removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 236 rows containing non-finite values (stat\_boxplot).



#SnasM\_C gender sumstats  
SnasM\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(SnasM\_C, na.rm = TRUE),  
 max = max(SnasM\_C, na.rm = TRUE),  
 mean = mean(SnasM\_C, na.rm = TRUE),  
 mdn = median(SnasM\_C, na.rm = TRUE),  
 sd = sd(SnasM\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_C)))  
  
SnasM\_Cgender\_sumstats <- SnasM\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(SnasM\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Gender")

**Table** : Subnasale to Menton Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.6 | 12.5 | 7.30 | 7.3 | 1.00 | 0.03 | 5.50 | 6.70 | 7.3 | 8.00 | 8.80 | 23 |
| Male | 939 | 4.6 | 16.3 | 7.81 | 7.9 | 1.11 | 0.04 | 6.00 | 7.10 | 7.9 | 8.50 | 9.47 | 213 |
| Non-binary or Other | 5 | 4.4 | 8.1 | 6.72 | 7.5 | 1.61 | 0.72 | 4.66 | 5.70 | 7.5 | 7.90 | 8.06 | 0 |
| Prefer not to say | 1 | 9.0 | 9.0 | 9.00 | 9.0 |  |  | 9.00 | 9.00 | 9.0 | 9.00 | 9.00 | 0 |
|  | 8 | 6.4 | 8.7 | 7.55 | 7.5 | 0.84 | 0.30 | 6.47 | 7.05 | 7.5 | 8.08 | 8.66 | 0 |

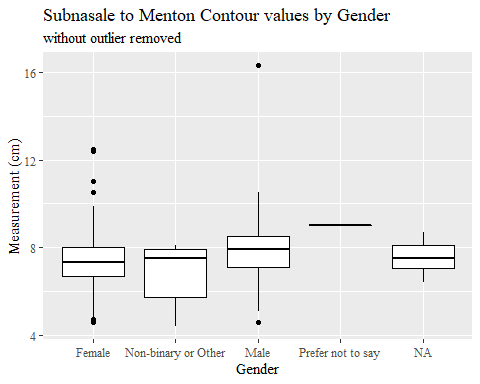
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.6 | 12.5 | 7.30 | 7.3 | 1.00 | 0.03 | 5.50 | 6.70 | 7.3 | 8.00 | 8.80 | 23 |
| Male | 939 | 4.6 | 16.3 | 7.81 | 7.9 | 1.11 | 0.04 | 6.00 | 7.10 | 7.9 | 8.50 | 9.47 | 213 |
| Non-binary or Other | 5 | 4.4 | 8.1 | 6.72 | 7.5 | 1.61 | 0.72 | 4.66 | 5.70 | 7.5 | 7.90 | 8.06 | 0 |
| Prefer not to say | 1 | 9.0 | 9.0 | 9.00 | 9.0 |  |  | 9.00 | 9.00 | 9.0 | 9.00 | 9.00 | 0 |
|  | 8 | 6.4 | 8.7 | 7.55 | 7.5 | 0.84 | 0.30 | 6.47 | 7.05 | 7.5 | 8.08 | 8.66 | 0 |

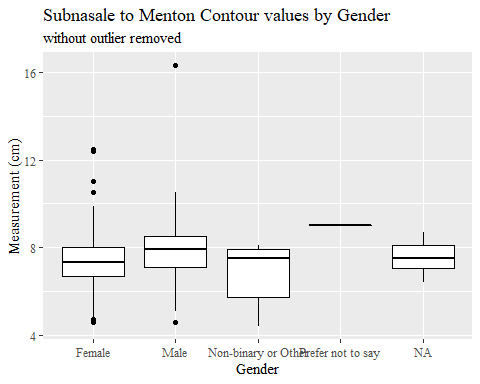
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, SnasM\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Gender",  
 subtitle = "without outlier removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 236 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SnasM\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Gender",  
 subtitle = "without outlier removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 236 rows containing non-finite values (stat\_boxplot).



#SnasM\_C age group sumstats  
SnasM\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(SnasM\_C, na.rm = TRUE),  
 max = max(SnasM\_C, na.rm = TRUE),  
 mean = mean(SnasM\_C, na.rm = TRUE),  
 sd = sd(SnasM\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_C)))  
  
SnasM\_Cage\_sumstats <- SnasM\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SnasM\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Age Group")

**Table** : Subnasale to Menton Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.4 | 16.3 | 7.50 | 1.08 | 0.03 | 5.7 | 6.8 | 7.50 | 8.2 | 9.20 | 124 |
| 37-54 | 940 | 4.7 | 12.5 | 7.54 | 1.08 | 0.04 | 5.7 | 6.9 | 7.50 | 8.3 | 9.30 | 106 |
| 55-72 | 84 | 4.9 | 10.2 | 7.35 | 1.11 | 0.12 | 5.3 | 6.6 | 7.15 | 8.2 | 8.84 | 6 |
|  | 1 | 7.1 | 7.1 | 7.10 |  |  | 7.1 | 7.1 | 7.10 | 7.1 | 7.10 | 0 |

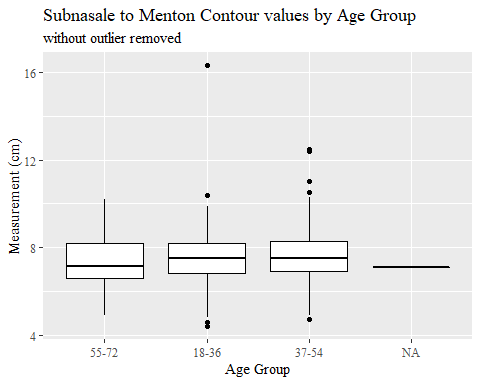
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.4 | 16.3 | 7.50 | 1.08 | 0.03 | 5.7 | 6.8 | 7.50 | 8.2 | 9.20 | 124 |
| 37-54 | 940 | 4.7 | 12.5 | 7.54 | 1.08 | 0.04 | 5.7 | 6.9 | 7.50 | 8.3 | 9.30 | 106 |
| 55-72 | 84 | 4.9 | 10.2 | 7.35 | 1.11 | 0.12 | 5.3 | 6.6 | 7.15 | 8.2 | 8.84 | 6 |
|  | 1 | 7.1 | 7.1 | 7.10 |  |  | 7.1 | 7.1 | 7.10 | 7.1 | 7.10 | 0 |

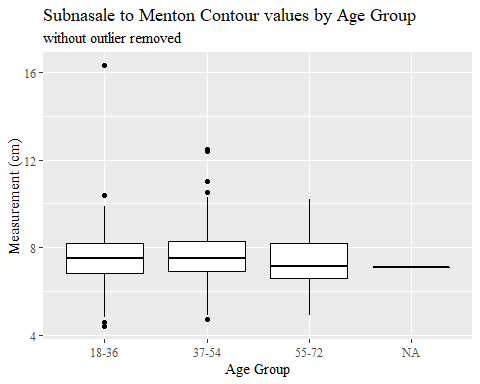
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, SnasM\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Age Group",  
 subtitle = "without outlier removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 236 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=SnasM\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Age Group",  
 subtitle = "without outlier removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 236 rows containing non-finite values (stat\_boxplot).



SnasM\_C with outlier removed

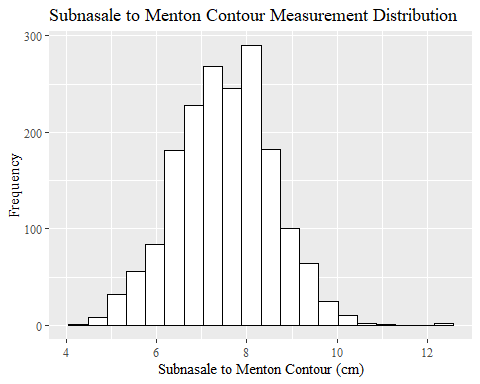
#REMOVING OUTLIER SnasM\_C  
  
max(headscan\_full$SnasM\_C, na.rm = TRUE)

## [1] 16.3

#CODE TO REMOVE OUTLIER, use later to remove from headscan\_full  
SnasM\_C\_no\_out <- headscan\_full %>% mutate(SnasM\_C = replace(SnasM\_C, SnasM\_C>16, NA))

#histogram of all SnasM\_C values  
ggplot(data=SnasM\_C\_no\_out, aes(x=SnasM\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Subnasale to Menton Contour Measurement Distribution",  
 y="Frequency",  
 x="Subnasale to Menton Contour (cm)")

## Warning: Removed 237 rows containing non-finite values (stat\_bin).



#SnasM\_C race/eth sumstats  
SnasM\_Crace\_sumstats1 <- SnasM\_C\_no\_out %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(SnasM\_C, na.rm = TRUE),  
 max = max(SnasM\_C, na.rm = TRUE),  
 mean = mean(SnasM\_C, na.rm = TRUE),  
 mdn = median(SnasM\_C, na.rm = TRUE),  
 sd = sd(SnasM\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_C)))   
  
SnasM\_Crace\_sumstats1 <- SnasM\_Crace\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SnasM\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Race/Ethnicity")

**Table** : Subnasale to Menton Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.4 | 10.2 | 7.28 | 7.30 | 0.97 | 0.03 | 5.60 | 6.70 | 7.30 | 7.90 | 8.90 | 145 |
| Black | 548 | 5.4 | 12.4 | 8.11 | 8.20 | 1.00 | 0.04 | 6.30 | 7.50 | 8.20 | 8.70 | 9.62 | 71 |
| LatinX | 100 | 5.0 | 9.7 | 7.36 | 7.40 | 1.10 | 0.11 | 5.45 | 6.70 | 7.40 | 8.20 | 9.25 | 9 |
| Asian | 91 | 4.6 | 12.5 | 7.22 | 7.15 | 1.17 | 0.12 | 5.55 | 6.53 | 7.15 | 7.88 | 9.15 | 5 |
| Other | 21 | 5.9 | 8.5 | 7.21 | 7.15 | 0.73 | 0.16 | 5.97 | 6.90 | 7.15 | 7.65 | 8.27 | 5 |
| AIAN | 8 | 5.8 | 9.3 | 7.15 | 6.60 | 1.39 | 0.49 | 5.90 | 6.25 | 6.60 | 8.00 | 9.08 | 2 |
| PTNS | 5 | 6.2 | 9.0 | 7.98 | 8.60 | 1.14 | 0.51 | 6.46 | 7.50 | 8.60 | 8.60 | 8.92 | 0 |
| NHOPI | 4 | 6.2 | 8.5 | 7.47 | 7.60 | 1.07 | 0.53 | 6.32 | 6.80 | 7.60 | 8.27 | 8.46 | 0 |

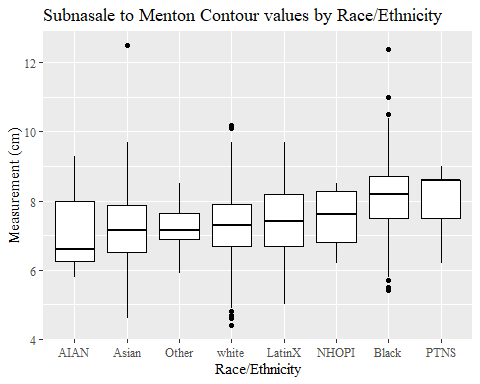
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 4.4 | 10.2 | 7.28 | 7.30 | 0.97 | 0.03 | 5.60 | 6.70 | 7.30 | 7.90 | 8.90 | 145 |
| Black | 548 | 5.4 | 12.4 | 8.11 | 8.20 | 1.00 | 0.04 | 6.30 | 7.50 | 8.20 | 8.70 | 9.62 | 71 |
| LatinX | 100 | 5.0 | 9.7 | 7.36 | 7.40 | 1.10 | 0.11 | 5.45 | 6.70 | 7.40 | 8.20 | 9.25 | 9 |
| Asian | 91 | 4.6 | 12.5 | 7.22 | 7.15 | 1.17 | 0.12 | 5.55 | 6.53 | 7.15 | 7.88 | 9.15 | 5 |
| Other | 21 | 5.9 | 8.5 | 7.21 | 7.15 | 0.73 | 0.16 | 5.97 | 6.90 | 7.15 | 7.65 | 8.27 | 5 |
| AIAN | 8 | 5.8 | 9.3 | 7.15 | 6.60 | 1.39 | 0.49 | 5.90 | 6.25 | 6.60 | 8.00 | 9.08 | 2 |
| PTNS | 5 | 6.2 | 9.0 | 7.98 | 8.60 | 1.14 | 0.51 | 6.46 | 7.50 | 8.60 | 8.60 | 8.92 | 0 |
| NHOPI | 4 | 6.2 | 8.5 | 7.47 | 7.60 | 1.07 | 0.53 | 6.32 | 6.80 | 7.60 | 8.27 | 8.46 | 0 |

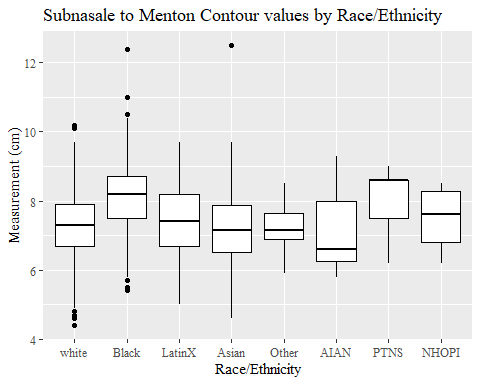
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
SnasM\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, SnasM\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 237 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=SnasM\_C\_no\_out, aes(y=SnasM\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 237 rows containing non-finite values (stat\_boxplot).



#SnasM\_C gender sumstats  
SnasM\_Cgender\_sumstats1 <- SnasM\_C\_no\_out %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(SnasM\_C, na.rm = TRUE),  
 max = max(SnasM\_C, na.rm = TRUE),  
 mean = mean(SnasM\_C, na.rm = TRUE),  
 mdn = median(SnasM\_C, na.rm = TRUE),  
 sd = sd(SnasM\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_C)))  
  
SnasM\_Cgender\_sumstats1 <- SnasM\_Cgender\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(SnasM\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Gender")

**Table** : Subnasale to Menton Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.6 | 12.5 | 7.30 | 7.3 | 1.00 | 0.03 | 5.50 | 6.70 | 7.3 | 8.00 | 8.80 | 23 |
| Male | 939 | 4.6 | 10.5 | 7.80 | 7.9 | 1.07 | 0.03 | 6.00 | 7.10 | 7.9 | 8.50 | 9.40 | 214 |
| Non-binary or Other | 5 | 4.4 | 8.1 | 6.72 | 7.5 | 1.61 | 0.72 | 4.66 | 5.70 | 7.5 | 7.90 | 8.06 | 0 |
| Prefer not to say | 1 | 9.0 | 9.0 | 9.00 | 9.0 |  |  | 9.00 | 9.00 | 9.0 | 9.00 | 9.00 | 0 |
|  | 8 | 6.4 | 8.7 | 7.55 | 7.5 | 0.84 | 0.30 | 6.47 | 7.05 | 7.5 | 8.08 | 8.66 | 0 |

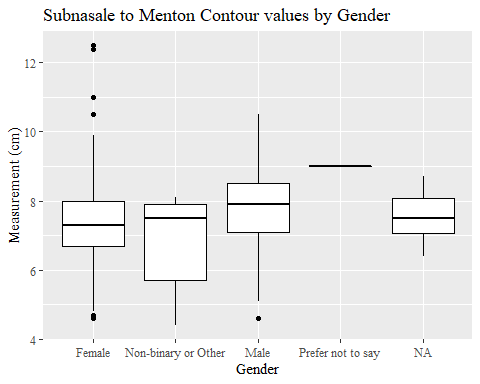
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 4.6 | 12.5 | 7.30 | 7.3 | 1.00 | 0.03 | 5.50 | 6.70 | 7.3 | 8.00 | 8.80 | 23 |
| Male | 939 | 4.6 | 10.5 | 7.80 | 7.9 | 1.07 | 0.03 | 6.00 | 7.10 | 7.9 | 8.50 | 9.40 | 214 |
| Non-binary or Other | 5 | 4.4 | 8.1 | 6.72 | 7.5 | 1.61 | 0.72 | 4.66 | 5.70 | 7.5 | 7.90 | 8.06 | 0 |
| Prefer not to say | 1 | 9.0 | 9.0 | 9.00 | 9.0 |  |  | 9.00 | 9.00 | 9.0 | 9.00 | 9.00 | 0 |
|  | 8 | 6.4 | 8.7 | 7.55 | 7.5 | 0.84 | 0.30 | 6.47 | 7.05 | 7.5 | 8.08 | 8.66 | 0 |

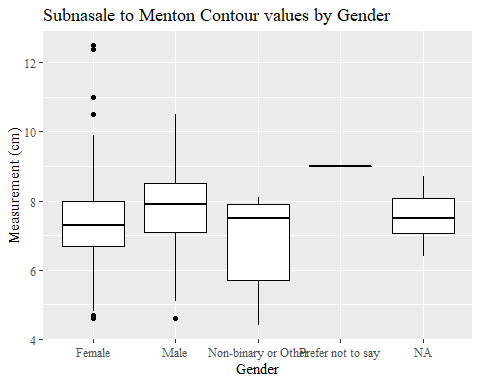
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
SnasM\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, SnasM\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 237 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=SnasM\_C\_no\_out, aes(y=SnasM\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 237 rows containing non-finite values (stat\_boxplot).



#SnasM\_C age group sumstats  
SnasM\_Cage\_sumstats1 <- SnasM\_C\_no\_out %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(SnasM\_C, na.rm = TRUE),  
 max = max(SnasM\_C, na.rm = TRUE),  
 mean = mean(SnasM\_C, na.rm = TRUE),  
 sd = sd(SnasM\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(SnasM\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(SnasM\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(SnasM\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(SnasM\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(SnasM\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(SnasM\_C)))  
  
SnasM\_Cage\_sumstats1 <- SnasM\_Cage\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(SnasM\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Age Group")

**Table** : Subnasale to Menton Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.4 | 10.4 | 7.49 | 1.04 | 0.03 | 5.7 | 6.8 | 7.50 | 8.2 | 9.20 | 125 |
| 37-54 | 940 | 4.7 | 12.5 | 7.54 | 1.08 | 0.04 | 5.7 | 6.9 | 7.50 | 8.3 | 9.30 | 106 |
| 55-72 | 84 | 4.9 | 10.2 | 7.35 | 1.11 | 0.12 | 5.3 | 6.6 | 7.15 | 8.2 | 8.84 | 6 |
|  | 1 | 7.1 | 7.1 | 7.10 |  |  | 7.1 | 7.1 | 7.10 | 7.1 | 7.10 | 0 |

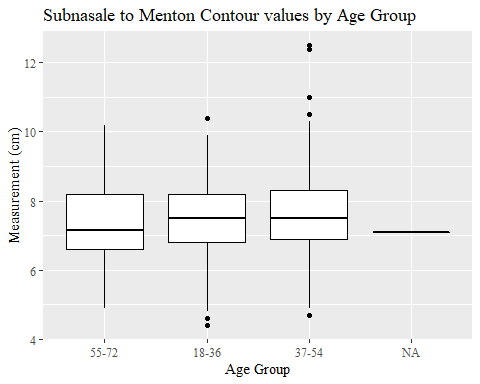
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(SnasM\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Subnasale to Menton Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Subnasale to Menton Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 4.4 | 10.4 | 7.49 | 1.04 | 0.03 | 5.7 | 6.8 | 7.50 | 8.2 | 9.20 | 125 |
| 37-54 | 940 | 4.7 | 12.5 | 7.54 | 1.08 | 0.04 | 5.7 | 6.9 | 7.50 | 8.3 | 9.30 | 106 |
| 55-72 | 84 | 4.9 | 10.2 | 7.35 | 1.11 | 0.12 | 5.3 | 6.6 | 7.15 | 8.2 | 8.84 | 6 |
|  | 1 | 7.1 | 7.1 | 7.10 |  |  | 7.1 | 7.1 | 7.10 | 7.1 | 7.10 | 0 |

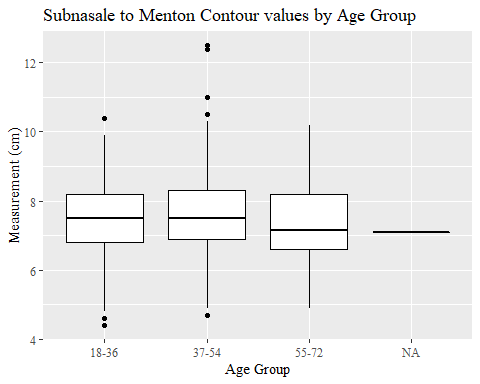
#%>% set\_header\_Cabels(values = list(SnasM\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
SnasM\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, SnasM\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=SnasM\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 237 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=SnasM\_C\_no\_out, aes(y=SnasM\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Subnasale to Menton Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

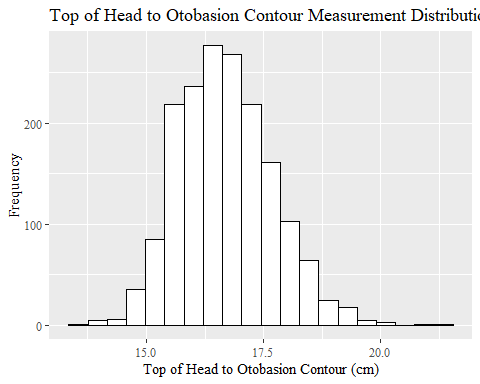
## Warning: Removed 237 rows containing non-finite values (stat\_boxplot).



TrHO\_C

#histogram of all TrHO\_C values  
ggplot(data=headscan\_full, aes(x=TrHO\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Top of Head to Otobasion Contour Measurement Distribution",  
 y="Frequency",  
 x="Top of Head to Otobasion Contour (cm)")

## Warning: Removed 283 rows containing non-finite values (stat\_bin).



#TrHO\_C race/eth sumstats  
TrHO\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrHO\_C, na.rm = TRUE),  
 max = max(TrHO\_C, na.rm = TRUE),  
 mean = mean(TrHO\_C, na.rm = TRUE),  
 mdn = median(TrHO\_C, na.rm = TRUE),  
 sd = sd(TrHO\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrHO\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrHO\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrHO\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrHO\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrHO\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrHO\_C)))   
  
TrHO\_Crace\_sumstats <- TrHO\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrHO\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Top of Head to Otobasion Contour SumStats by Race/Ethnicity")

**Table** : Top of Head to Otobasion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 13.5 | 21.3 | 16.62 | 16.60 | 0.97 | 0.03 | 15.20 | 15.90 | 16.60 | 17.20 | 18.30 | 117 |
| Black | 548 | 14.1 | 20.3 | 16.81 | 16.80 | 1.09 | 0.05 | 15.10 | 16.00 | 16.80 | 17.50 | 18.50 | 138 |
| LatinX | 100 | 15.0 | 19.6 | 16.83 | 16.70 | 1.01 | 0.10 | 15.50 | 16.10 | 16.70 | 17.40 | 18.56 | 11 |
| Asian | 91 | 15.1 | 18.8 | 17.00 | 16.90 | 0.79 | 0.08 | 15.60 | 16.50 | 16.90 | 17.58 | 18.29 | 9 |
| Other | 21 | 14.2 | 18.4 | 16.75 | 16.75 | 1.01 | 0.22 | 15.47 | 16.22 | 16.75 | 17.48 | 18.40 | 3 |
| AIAN | 8 | 15.3 | 18.2 | 16.70 | 16.70 | 1.22 | 0.43 | 15.36 | 15.60 | 16.70 | 17.75 | 18.08 | 1 |
| PTNS | 5 | 18.1 | 18.1 | 18.10 | 18.10 |  |  | 18.10 | 18.10 | 18.10 | 18.10 | 18.10 | 4 |
| NHOPI | 4 | 16.6 | 17.9 | 17.32 | 17.40 | 0.54 | 0.27 | 16.72 | 17.20 | 17.40 | 17.52 | 17.82 | 0 |

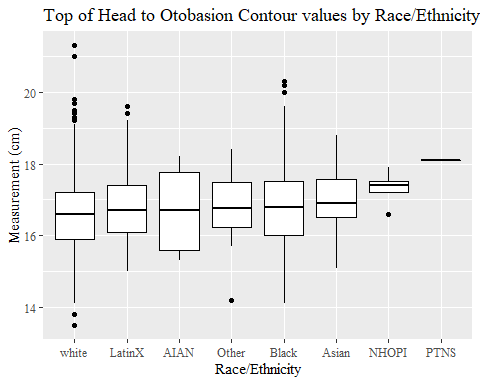
#%>% set\_header\_Cabels(values = list(TrHO\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrHO\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Top of Head to Otobasion Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Top of Head to Otobasion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 13.5 | 21.3 | 16.62 | 16.60 | 0.97 | 0.03 | 15.20 | 15.90 | 16.60 | 17.20 | 18.30 | 117 |
| Black | 548 | 14.1 | 20.3 | 16.81 | 16.80 | 1.09 | 0.05 | 15.10 | 16.00 | 16.80 | 17.50 | 18.50 | 138 |
| LatinX | 100 | 15.0 | 19.6 | 16.83 | 16.70 | 1.01 | 0.10 | 15.50 | 16.10 | 16.70 | 17.40 | 18.56 | 11 |
| Asian | 91 | 15.1 | 18.8 | 17.00 | 16.90 | 0.79 | 0.08 | 15.60 | 16.50 | 16.90 | 17.58 | 18.29 | 9 |
| Other | 21 | 14.2 | 18.4 | 16.75 | 16.75 | 1.01 | 0.22 | 15.47 | 16.22 | 16.75 | 17.48 | 18.40 | 3 |
| AIAN | 8 | 15.3 | 18.2 | 16.70 | 16.70 | 1.22 | 0.43 | 15.36 | 15.60 | 16.70 | 17.75 | 18.08 | 1 |
| PTNS | 5 | 18.1 | 18.1 | 18.10 | 18.10 |  |  | 18.10 | 18.10 | 18.10 | 18.10 | 18.10 | 4 |
| NHOPI | 4 | 16.6 | 17.9 | 17.32 | 17.40 | 0.54 | 0.27 | 16.72 | 17.20 | 17.40 | 17.52 | 17.82 | 0 |

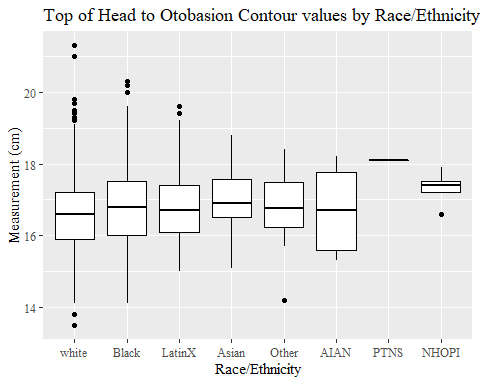
#%>% set\_header\_Cabels(values = list(TrHO\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrHO\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrHO\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Top of Head to Otobasion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 283 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrHO\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Top of Head to Otobasion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 283 rows containing non-finite values (stat\_boxplot).



#TrHO\_C gender sumstats  
TrHO\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrHO\_C, na.rm = TRUE),  
 max = max(TrHO\_C, na.rm = TRUE),  
 mean = mean(TrHO\_C, na.rm = TRUE),  
 mdn = median(TrHO\_C, na.rm = TRUE),  
 sd = sd(TrHO\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrHO\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrHO\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrHO\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrHO\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrHO\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrHO\_C)))

## Warning in min(TrHO\_C, na.rm = TRUE): no non-missing arguments to min; returning  
## Inf

## Warning in max(TrHO\_C, na.rm = TRUE): no non-missing arguments to max; returning  
## -Inf

TrHO\_Cgender\_sumstats <- TrHO\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrHO\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Top of Head to Otobasion Contour SumStats by Gender")

**Table** : Top of Head to Otobasion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 13.5 | 20.2 | 16.44 | 16.4 | 0.99 | 0.03 | 15.10 | 15.7 | 16.4 | 17.0 | 18.20 | 215 |
| Male | 939 | 14.1 | 21.3 | 16.94 | 16.9 | 0.94 | 0.03 | 15.40 | 16.3 | 16.9 | 17.5 | 18.50 | 64 |
| Non-binary or Other | 5 | 15.6 | 18.4 | 17.20 | 17.5 | 1.04 | 0.47 | 15.86 | 16.9 | 17.5 | 17.6 | 18.24 | 0 |
| Prefer not to say | 1 | Inf | -Inf |  |  |  |  |  |  |  |  |  | 1 |
|  | 8 | 15.9 | 17.5 | 16.54 | 16.4 | 0.63 | 0.22 | 15.94 | 16.1 | 16.4 | 16.8 | 17.36 | 3 |

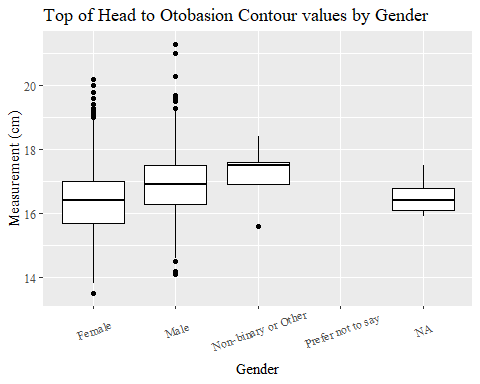
#%>% set\_header\_Cabels(values = list(TrHO\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrHO\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Top of Head to Otobasion Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Top of Head to Otobasion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 13.5 | 20.2 | 16.44 | 16.4 | 0.99 | 0.03 | 15.10 | 15.7 | 16.4 | 17.0 | 18.20 | 215 |
| Male | 939 | 14.1 | 21.3 | 16.94 | 16.9 | 0.94 | 0.03 | 15.40 | 16.3 | 16.9 | 17.5 | 18.50 | 64 |
| Non-binary or Other | 5 | 15.6 | 18.4 | 17.20 | 17.5 | 1.04 | 0.47 | 15.86 | 16.9 | 17.5 | 17.6 | 18.24 | 0 |
| Prefer not to say | 1 | Inf | -Inf |  |  |  |  |  |  |  |  |  | 1 |
|  | 8 | 15.9 | 17.5 | 16.54 | 16.4 | 0.63 | 0.22 | 15.94 | 16.1 | 16.4 | 16.8 | 17.36 | 3 |

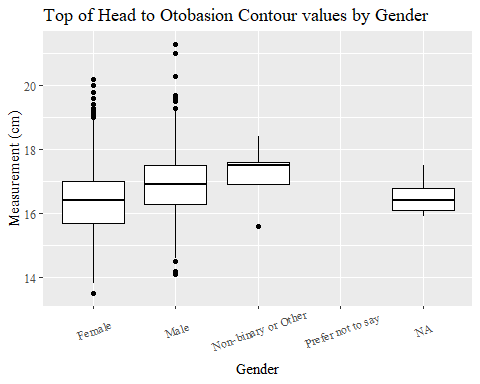
#%>% set\_header\_Cabels(values = list(TrHO\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrHO\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrHO\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Top of Head to Otobasion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 283 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrHO\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Top of Head to Otobasion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 283 rows containing non-finite values (stat\_boxplot).



#TrHO\_C age group sumstats  
TrHO\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrHO\_C, na.rm = TRUE),  
 max = max(TrHO\_C, na.rm = TRUE),  
 mean = mean(TrHO\_C, na.rm = TRUE),  
 mdn = median(TrHO\_C, na.rm = TRUE),  
 sd = sd(TrHO\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrHO\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrHO\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrHO\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrHO\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrHO\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrHO\_C)))  
  
TrHO\_Cage\_sumstats <- TrHO\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrHO\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Top of Head to Otobasion Contour SumStats by Age Group")

**Table** : Top of Head to Otobasion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 13.5 | 21.3 | 16.80 | 16.70 | 1.01 | 0.03 | 15.30 | 16.1 | 16.70 | 17.5 | 18.41 | 153 |
| 37-54 | 940 | 13.8 | 21.0 | 16.58 | 16.60 | 0.97 | 0.03 | 15.10 | 15.9 | 16.60 | 17.2 | 18.20 | 122 |
| 55-72 | 84 | 14.7 | 19.2 | 16.74 | 16.65 | 1.08 | 0.12 | 15.07 | 16.1 | 16.65 | 17.4 | 18.60 | 8 |
|  | 1 | 16.9 | 16.9 | 16.90 | 16.90 |  |  | 16.90 | 16.9 | 16.90 | 16.9 | 16.90 | 0 |

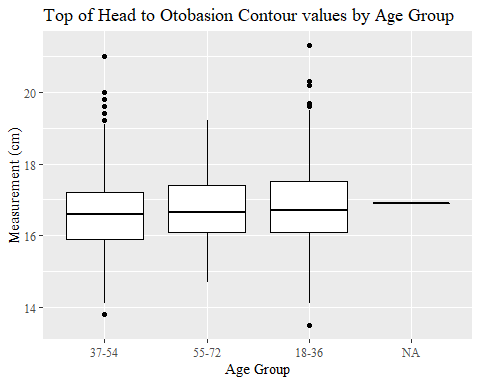
#%>% set\_header\_Cabels(values = list(TrHO\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrHO\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Top of Head to Otobasion Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Top of Head to Otobasion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 13.5 | 21.3 | 16.80 | 16.70 | 1.01 | 0.03 | 15.30 | 16.1 | 16.70 | 17.5 | 18.41 | 153 |
| 37-54 | 940 | 13.8 | 21.0 | 16.58 | 16.60 | 0.97 | 0.03 | 15.10 | 15.9 | 16.60 | 17.2 | 18.20 | 122 |
| 55-72 | 84 | 14.7 | 19.2 | 16.74 | 16.65 | 1.08 | 0.12 | 15.07 | 16.1 | 16.65 | 17.4 | 18.60 | 8 |
|  | 1 | 16.9 | 16.9 | 16.90 | 16.90 |  |  | 16.90 | 16.9 | 16.90 | 16.9 | 16.90 | 0 |

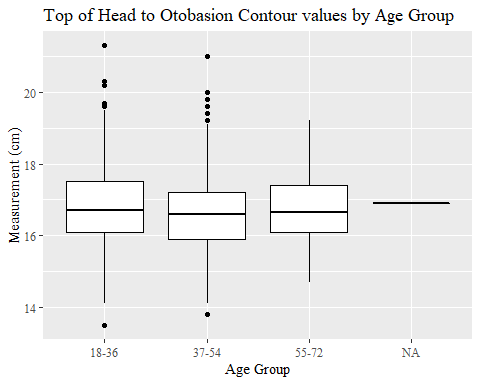
#%>% set\_header\_Cabels(values = list(TrHO\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrHO\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrHO\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Top of Head to Otobasion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 283 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrHO\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Top of Head to Otobasion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

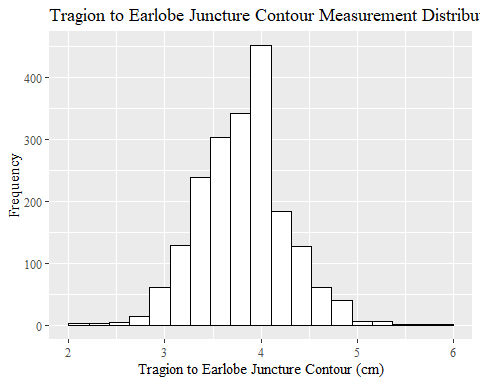
## Warning: Removed 283 rows containing non-finite values (stat\_boxplot).



TrEJ\_C

#histogram of all TrEJ\_C values  
ggplot(data=headscan\_full, aes(x=TrEJ\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Earlobe Juncture Contour Measurement Distribution",  
 y="Frequency",  
 x="Tragion to Earlobe Juncture Contour (cm)")

## Warning: Removed 33 rows containing non-finite values (stat\_bin).



#TrEJ\_C race/eth sumstats  
TrEJ\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrEJ\_C, na.rm = TRUE),  
 max = max(TrEJ\_C, na.rm = TRUE),  
 mean = mean(TrEJ\_C, na.rm = TRUE),  
 mdn = median(TrEJ\_C, na.rm = TRUE),  
 sd = sd(TrEJ\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrEJ\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrEJ\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrEJ\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrEJ\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrEJ\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrEJ\_C)))   
  
TrEJ\_Crace\_sumstats <- TrEJ\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrEJ\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Earlobe Juncture Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Earlobe Juncture Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 2.0 | 6.0 | 3.84 | 3.80 | 0.46 | 0.01 | 3.20 | 3.50 | 3.80 | 4.10 | 4.60 | 17 |
| Black | 548 | 2.2 | 5.4 | 3.67 | 3.65 | 0.46 | 0.02 | 3.00 | 3.40 | 3.65 | 4.00 | 4.40 | 10 |
| LatinX | 100 | 2.8 | 5.2 | 3.96 | 3.90 | 0.45 | 0.04 | 3.39 | 3.70 | 3.90 | 4.30 | 4.80 | 1 |
| Asian | 91 | 2.8 | 5.4 | 3.94 | 3.90 | 0.44 | 0.05 | 3.28 | 3.70 | 3.90 | 4.20 | 4.80 | 2 |
| Other | 21 | 3.0 | 5.1 | 3.77 | 3.50 | 0.62 | 0.14 | 3.00 | 3.30 | 3.50 | 4.32 | 4.62 | 1 |
| AIAN | 8 | 3.4 | 4.4 | 3.85 | 3.90 | 0.41 | 0.15 | 3.40 | 3.47 | 3.90 | 4.10 | 4.32 | 2 |
| PTNS | 5 | 2.8 | 4.4 | 3.64 | 3.60 | 0.61 | 0.27 | 2.92 | 3.40 | 3.60 | 4.00 | 4.32 | 0 |
| NHOPI | 4 | 3.1 | 4.8 | 3.70 | 3.45 | 0.76 | 0.38 | 3.13 | 3.25 | 3.45 | 3.90 | 4.62 | 0 |

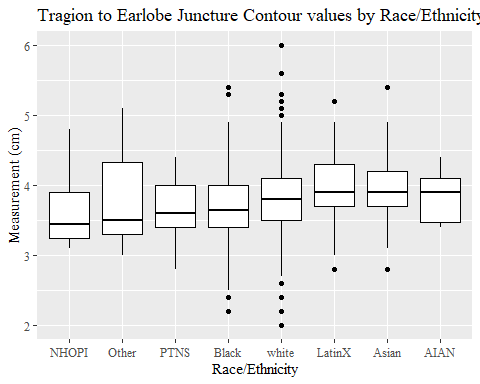
#%>% set\_header\_Cabels(values = list(TrEJ\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrEJ\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Earlobe Juncture Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Earlobe Juncture Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 2.0 | 6.0 | 3.84 | 3.80 | 0.46 | 0.01 | 3.20 | 3.50 | 3.80 | 4.10 | 4.60 | 17 |
| Black | 548 | 2.2 | 5.4 | 3.67 | 3.65 | 0.46 | 0.02 | 3.00 | 3.40 | 3.65 | 4.00 | 4.40 | 10 |
| LatinX | 100 | 2.8 | 5.2 | 3.96 | 3.90 | 0.45 | 0.04 | 3.39 | 3.70 | 3.90 | 4.30 | 4.80 | 1 |
| Asian | 91 | 2.8 | 5.4 | 3.94 | 3.90 | 0.44 | 0.05 | 3.28 | 3.70 | 3.90 | 4.20 | 4.80 | 2 |
| Other | 21 | 3.0 | 5.1 | 3.77 | 3.50 | 0.62 | 0.14 | 3.00 | 3.30 | 3.50 | 4.32 | 4.62 | 1 |
| AIAN | 8 | 3.4 | 4.4 | 3.85 | 3.90 | 0.41 | 0.15 | 3.40 | 3.47 | 3.90 | 4.10 | 4.32 | 2 |
| PTNS | 5 | 2.8 | 4.4 | 3.64 | 3.60 | 0.61 | 0.27 | 2.92 | 3.40 | 3.60 | 4.00 | 4.32 | 0 |
| NHOPI | 4 | 3.1 | 4.8 | 3.70 | 3.45 | 0.76 | 0.38 | 3.13 | 3.25 | 3.45 | 3.90 | 4.62 | 0 |

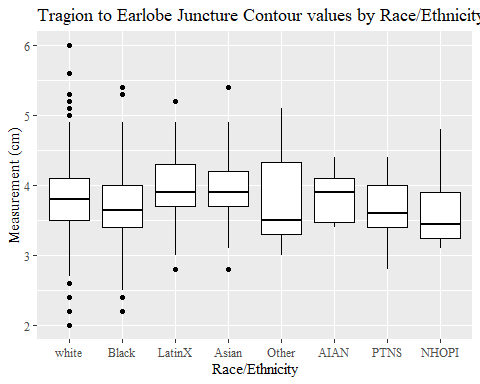
#%>% set\_header\_Cabels(values = list(TrEJ\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrEJ\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrEJ\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Earlobe Juncture Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 33 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrEJ\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Earlobe Juncture Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 33 rows containing non-finite values (stat\_boxplot).



#TrEJ\_C gender sumstats  
TrEJ\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrEJ\_C, na.rm = TRUE),  
 max = max(TrEJ\_C, na.rm = TRUE),  
 mean = mean(TrEJ\_C, na.rm = TRUE),  
 mdn = median(TrEJ\_C, na.rm = TRUE),  
 sd = sd(TrEJ\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrEJ\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrEJ\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrEJ\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrEJ\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrEJ\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrEJ\_C)))  
  
TrEJ\_Cgender\_sumstats <- TrEJ\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrEJ\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Earlobe Juncture Contour SumStats by Gender")

**Table** : Tragion to Earlobe Juncture Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 2.2 | 5.3 | 3.74 | 3.70 | 0.44 | 0.01 | 3.00 | 3.40 | 3.70 | 4.0 | 4.40 | 23 |
| Male | 939 | 2.0 | 6.0 | 3.88 | 3.90 | 0.49 | 0.02 | 3.10 | 3.50 | 3.90 | 4.2 | 4.70 | 10 |
| Non-binary or Other | 5 | 3.3 | 4.5 | 3.78 | 3.60 | 0.51 | 0.23 | 3.32 | 3.40 | 3.60 | 4.1 | 4.42 | 0 |
| Prefer not to say | 1 | 3.6 | 3.6 | 3.60 | 3.60 |  |  | 3.60 | 3.60 | 3.60 | 3.6 | 3.60 | 0 |
|  | 8 | 3.1 | 4.4 | 3.66 | 3.65 | 0.47 | 0.17 | 3.13 | 3.27 | 3.65 | 4.0 | 4.26 | 0 |

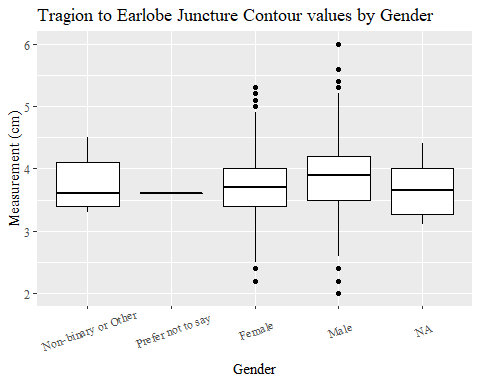
#%>% set\_header\_Cabels(values = list(TrEJ\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrEJ\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Earlobe Juncture Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Earlobe Juncture Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 2.2 | 5.3 | 3.74 | 3.70 | 0.44 | 0.01 | 3.00 | 3.40 | 3.70 | 4.0 | 4.40 | 23 |
| Male | 939 | 2.0 | 6.0 | 3.88 | 3.90 | 0.49 | 0.02 | 3.10 | 3.50 | 3.90 | 4.2 | 4.70 | 10 |
| Non-binary or Other | 5 | 3.3 | 4.5 | 3.78 | 3.60 | 0.51 | 0.23 | 3.32 | 3.40 | 3.60 | 4.1 | 4.42 | 0 |
| Prefer not to say | 1 | 3.6 | 3.6 | 3.60 | 3.60 |  |  | 3.60 | 3.60 | 3.60 | 3.6 | 3.60 | 0 |
|  | 8 | 3.1 | 4.4 | 3.66 | 3.65 | 0.47 | 0.17 | 3.13 | 3.27 | 3.65 | 4.0 | 4.26 | 0 |

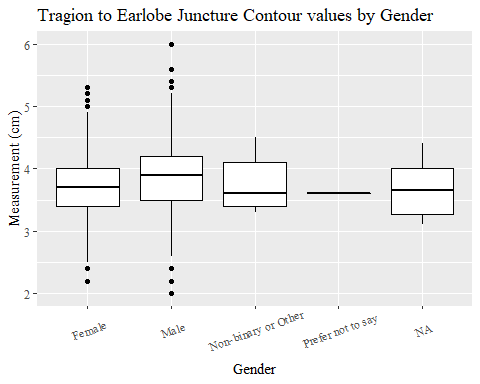
#%>% set\_header\_Cabels(values = list(TrEJ\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrEJ\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrEJ\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Earlobe Juncture Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 33 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrEJ\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Earlobe Juncture Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 33 rows containing non-finite values (stat\_boxplot).



#TrEJ\_C age group sumstats  
TrEJ\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrEJ\_C, na.rm = TRUE),  
 max = max(TrEJ\_C, na.rm = TRUE),  
 mean = mean(TrEJ\_C, na.rm = TRUE),  
 mdn = median(TrEJ\_C, na.rm = TRUE),  
 sd = sd(TrEJ\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrEJ\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrEJ\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrEJ\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrEJ\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrEJ\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrEJ\_C)))  
  
TrEJ\_Cage\_sumstats <- TrEJ\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrEJ\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Earlobe Juncture Contour SumStats by Age Group")

**Table** : Tragion to Earlobe Juncture Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 2.2 | 5.6 | 3.75 | 3.7 | 0.46 | 0.01 | 3.0 | 3.4 | 3.7 | 4.0 | 4.5 | 12 |
| 37-54 | 940 | 2.0 | 6.0 | 3.84 | 3.8 | 0.47 | 0.02 | 3.1 | 3.5 | 3.8 | 4.1 | 4.6 | 19 |
| 55-72 | 84 | 2.9 | 5.2 | 4.01 | 4.0 | 0.47 | 0.05 | 3.4 | 3.6 | 4.0 | 4.3 | 4.8 | 2 |
|  | 1 | 3.3 | 3.3 | 3.30 | 3.3 |  |  | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 0 |

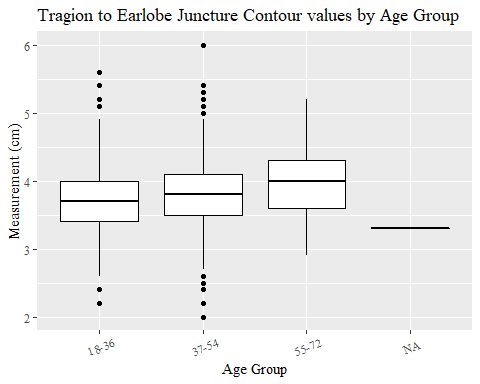
#%>% set\_header\_Cabels(values = list(TrEJ\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrEJ\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Earlobe Juncture Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Earlobe Juncture Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 2.2 | 5.6 | 3.75 | 3.7 | 0.46 | 0.01 | 3.0 | 3.4 | 3.7 | 4.0 | 4.5 | 12 |
| 37-54 | 940 | 2.0 | 6.0 | 3.84 | 3.8 | 0.47 | 0.02 | 3.1 | 3.5 | 3.8 | 4.1 | 4.6 | 19 |
| 55-72 | 84 | 2.9 | 5.2 | 4.01 | 4.0 | 0.47 | 0.05 | 3.4 | 3.6 | 4.0 | 4.3 | 4.8 | 2 |
|  | 1 | 3.3 | 3.3 | 3.30 | 3.3 |  |  | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 0 |

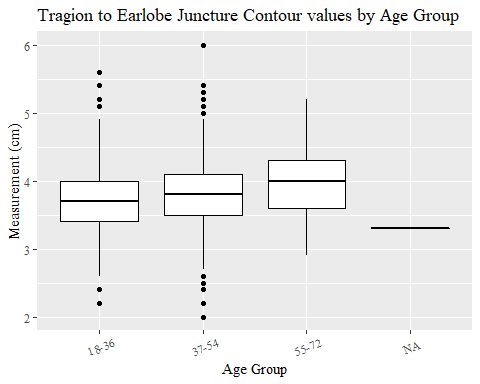
#%>% set\_header\_Cabels(values = list(TrEJ\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrEJ\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrEJ\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Earlobe Juncture Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 33 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrEJ\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Earlobe Juncture Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

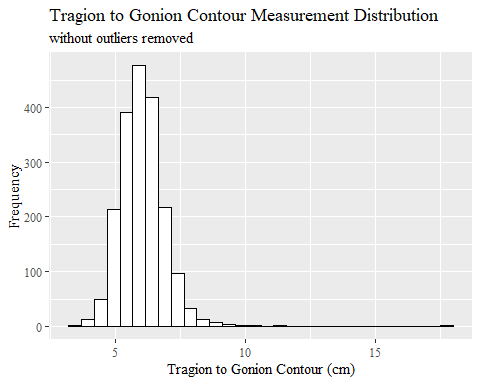
## Warning: Removed 33 rows containing non-finite values (stat\_boxplot).



TrGo\_C without outliers removed

#histogram of all TrGo\_C values  
ggplot(data=headscan\_full, aes(x=TrGo\_C))+  
 geom\_bar(stat="bin", bins=30, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Gonion Contour Measurement Distribution",  
 subtitle = "without outliers removed",  
 y="Frequency",  
 x="Tragion to Gonion Contour (cm)")

## Warning: Removed 80 rows containing non-finite values (stat\_bin).



#TrGo\_C race/eth sumstats  
TrGo\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrGo\_C, na.rm = TRUE),  
 max = max(TrGo\_C, na.rm = TRUE),  
 mean = mean(TrGo\_C, na.rm = TRUE),  
 mdn = median(TrGo\_C, na.rm = TRUE),  
 sd = sd(TrGo\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrGo\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrGo\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrGo\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrGo\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrGo\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrGo\_C)))   
  
TrGo\_Crace\_sumstats <- TrGo\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrGo\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Gonion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 3.5 | 17.8 | 6.01 | 6.00 | 0.92 | 0.03 | 4.80 | 5.40 | 6.00 | 6.50 | 7.40 | 53 |
| Black | 548 | 3.5 | 9.6 | 5.98 | 5.90 | 0.81 | 0.03 | 4.80 | 5.40 | 5.90 | 6.45 | 7.30 | 17 |
| LatinX | 100 | 4.1 | 8.3 | 6.04 | 6.10 | 0.73 | 0.07 | 4.95 | 5.60 | 6.10 | 6.43 | 7.30 | 4 |
| Asian | 91 | 4.4 | 8.7 | 6.14 | 6.00 | 0.84 | 0.09 | 4.88 | 5.50 | 6.00 | 6.60 | 7.60 | 2 |
| Other | 21 | 4.3 | 7.6 | 5.71 | 5.65 | 0.83 | 0.18 | 4.56 | 5.18 | 5.65 | 6.18 | 6.75 | 3 |
| AIAN | 8 | 5.6 | 7.0 | 6.11 | 6.00 | 0.51 | 0.18 | 5.63 | 5.75 | 6.00 | 6.35 | 6.88 | 1 |
| PTNS | 5 | 5.8 | 8.1 | 6.96 | 7.00 | 0.90 | 0.40 | 5.92 | 6.40 | 7.00 | 7.50 | 7.98 | 0 |
| NHOPI | 4 | 4.9 | 7.1 | 6.20 | 6.40 | 0.93 | 0.46 | 5.12 | 6.03 | 6.40 | 6.58 | 7.00 | 0 |

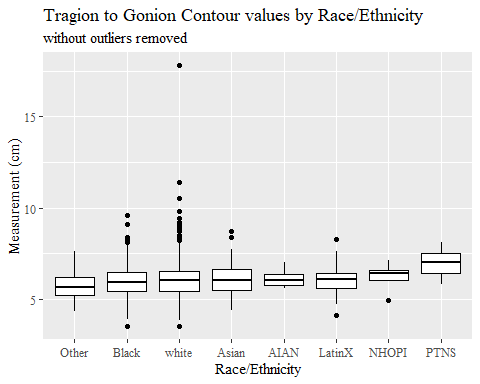
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrGo\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Gonion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 3.5 | 17.8 | 6.01 | 6.00 | 0.92 | 0.03 | 4.80 | 5.40 | 6.00 | 6.50 | 7.40 | 53 |
| Black | 548 | 3.5 | 9.6 | 5.98 | 5.90 | 0.81 | 0.03 | 4.80 | 5.40 | 5.90 | 6.45 | 7.30 | 17 |
| LatinX | 100 | 4.1 | 8.3 | 6.04 | 6.10 | 0.73 | 0.07 | 4.95 | 5.60 | 6.10 | 6.43 | 7.30 | 4 |
| Asian | 91 | 4.4 | 8.7 | 6.14 | 6.00 | 0.84 | 0.09 | 4.88 | 5.50 | 6.00 | 6.60 | 7.60 | 2 |
| Other | 21 | 4.3 | 7.6 | 5.71 | 5.65 | 0.83 | 0.18 | 4.56 | 5.18 | 5.65 | 6.18 | 6.75 | 3 |
| AIAN | 8 | 5.6 | 7.0 | 6.11 | 6.00 | 0.51 | 0.18 | 5.63 | 5.75 | 6.00 | 6.35 | 6.88 | 1 |
| PTNS | 5 | 5.8 | 8.1 | 6.96 | 7.00 | 0.90 | 0.40 | 5.92 | 6.40 | 7.00 | 7.50 | 7.98 | 0 |
| NHOPI | 4 | 4.9 | 7.1 | 6.20 | 6.40 | 0.93 | 0.46 | 5.12 | 6.03 | 6.40 | 6.58 | 7.00 | 0 |

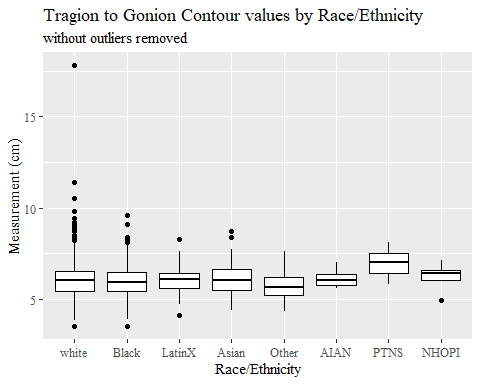
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrGo\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrGo\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Race/Ethnicity",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 80 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrGo\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Race/Ethnicity",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 80 rows containing non-finite values (stat\_boxplot).



#TrGo\_C gender sumstats  
TrGo\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrGo\_C, na.rm = TRUE),  
 max = max(TrGo\_C, na.rm = TRUE),  
 mean = mean(TrGo\_C, na.rm = TRUE),  
 mdn = median(TrGo\_C, na.rm = TRUE),  
 sd = sd(TrGo\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrGo\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrGo\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrGo\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrGo\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrGo\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrGo\_C)))  
  
TrGo\_Cgender\_sumstats <- TrGo\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrGo\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Gender")

**Table** : Tragion to Gonion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 3.5 | 9.8 | 5.82 | 5.8 | 0.77 | 0.02 | 4.70 | 5.3 | 5.8 | 6.3 | 7.00 | 24 |
| Male | 939 | 3.5 | 17.8 | 6.23 | 6.2 | 0.94 | 0.03 | 4.90 | 5.6 | 6.2 | 6.7 | 7.60 | 56 |
| Non-binary or Other | 5 | 4.5 | 5.9 | 5.38 | 5.5 | 0.54 | 0.24 | 4.66 | 5.3 | 5.5 | 5.7 | 5.86 | 0 |
| Prefer not to say | 1 | 5.8 | 5.8 | 5.80 | 5.8 |  |  | 5.80 | 5.8 | 5.8 | 5.8 | 5.80 | 0 |
|  | 8 | 5.2 | 7.3 | 5.84 | 5.5 | 0.81 | 0.28 | 5.20 | 5.2 | 5.5 | 6.2 | 7.12 | 0 |

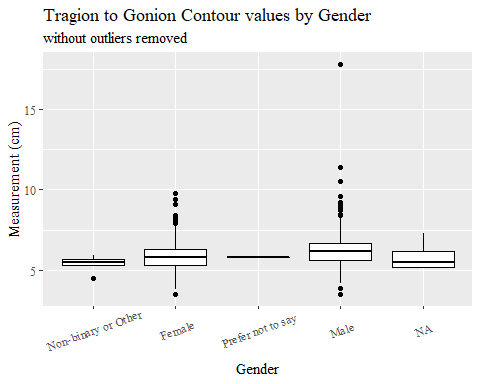
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrGo\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Gonion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 3.5 | 9.8 | 5.82 | 5.8 | 0.77 | 0.02 | 4.70 | 5.3 | 5.8 | 6.3 | 7.00 | 24 |
| Male | 939 | 3.5 | 17.8 | 6.23 | 6.2 | 0.94 | 0.03 | 4.90 | 5.6 | 6.2 | 6.7 | 7.60 | 56 |
| Non-binary or Other | 5 | 4.5 | 5.9 | 5.38 | 5.5 | 0.54 | 0.24 | 4.66 | 5.3 | 5.5 | 5.7 | 5.86 | 0 |
| Prefer not to say | 1 | 5.8 | 5.8 | 5.80 | 5.8 |  |  | 5.80 | 5.8 | 5.8 | 5.8 | 5.80 | 0 |
|  | 8 | 5.2 | 7.3 | 5.84 | 5.5 | 0.81 | 0.28 | 5.20 | 5.2 | 5.5 | 6.2 | 7.12 | 0 |

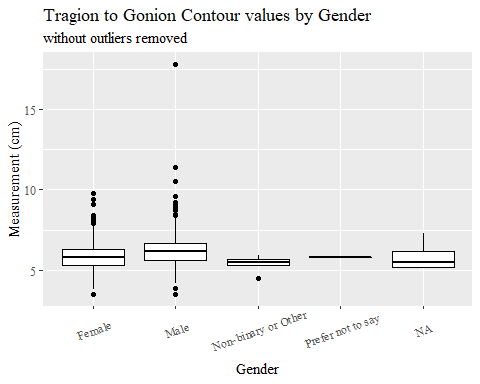
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrGo\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrGo\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Gender",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 80 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrGo\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Gender",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 80 rows containing non-finite values (stat\_boxplot).



#TrGo\_C age group sumstats  
TrGo\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrGo\_C, na.rm = TRUE),  
 max = max(TrGo\_C, na.rm = TRUE),  
 mean = mean(TrGo\_C, na.rm = TRUE),  
 mdn = median(TrGo\_C, na.rm = TRUE),  
 sd = sd(TrGo\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrGo\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrGo\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrGo\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrGo\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrGo\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrGo\_C)))  
  
TrGo\_Cage\_sumstats <- TrGo\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrGo\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Age Group")

**Table** : Tragion to Gonion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 3.8 | 9.2 | 6.01 | 6.0 | 0.81 | 0.03 | 4.8 | 5.40 | 6.0 | 6.50 | 7.40 | 33 |
| 37-54 | 940 | 3.5 | 11.4 | 5.99 | 6.0 | 0.86 | 0.03 | 4.7 | 5.40 | 6.0 | 6.50 | 7.33 | 45 |
| 55-72 | 84 | 4.1 | 17.8 | 6.21 | 6.1 | 1.54 | 0.17 | 4.8 | 5.53 | 6.1 | 6.57 | 7.60 | 2 |
|  | 1 | 6.2 | 6.2 | 6.20 | 6.2 |  |  | 6.2 | 6.20 | 6.2 | 6.20 | 6.20 | 0 |

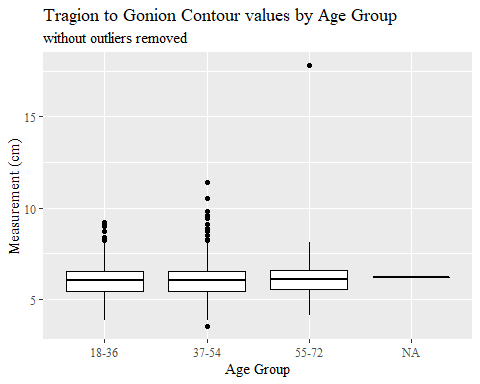
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrGo\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Gonion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 3.8 | 9.2 | 6.01 | 6.0 | 0.81 | 0.03 | 4.8 | 5.40 | 6.0 | 6.50 | 7.40 | 33 |
| 37-54 | 940 | 3.5 | 11.4 | 5.99 | 6.0 | 0.86 | 0.03 | 4.7 | 5.40 | 6.0 | 6.50 | 7.33 | 45 |
| 55-72 | 84 | 4.1 | 17.8 | 6.21 | 6.1 | 1.54 | 0.17 | 4.8 | 5.53 | 6.1 | 6.57 | 7.60 | 2 |
|  | 1 | 6.2 | 6.2 | 6.20 | 6.2 |  |  | 6.2 | 6.20 | 6.2 | 6.20 | 6.20 | 0 |

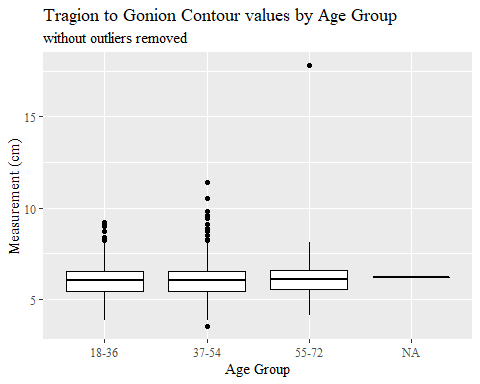
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrGo\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrGo\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Age Group",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 80 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrGo\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Age Group",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 80 rows containing non-finite values (stat\_boxplot).



TrGo\_C with outliers removed

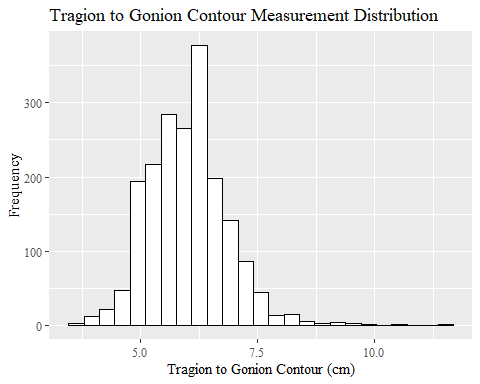
max(headscan\_full$TrGo\_C, na.rm = TRUE)

## [1] 17.8

#CODE TO REMOVE OUTLIER, use later to remove from headscan\_full  
TrGo\_C\_no\_out <- headscan\_full %>% mutate(TrGo\_C = replace(TrGo\_C, TrGo\_C>17, NA))

#histogram of all TrGo\_C values  
ggplot(data=TrGo\_C\_no\_out, aes(x=TrGo\_C))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Gonion Contour Measurement Distribution",  
 y="Frequency",  
 x="Tragion to Gonion Contour (cm)")

## Warning: Removed 81 rows containing non-finite values (stat\_bin).



#TrGo\_C race/eth sumstats  
TrGo\_Crace\_sumstats1 <- TrGo\_C\_no\_out %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrGo\_C, na.rm = TRUE),  
 max = max(TrGo\_C, na.rm = TRUE),  
 mean = mean(TrGo\_C, na.rm = TRUE),  
 mdn = median(TrGo\_C, na.rm = TRUE),  
 sd = sd(TrGo\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrGo\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrGo\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrGo\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrGo\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrGo\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrGo\_C)))   
  
TrGo\_Crace\_sumstats1 <- TrGo\_Crace\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrGo\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Gonion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 3.5 | 11.4 | 6.00 | 6.00 | 0.85 | 0.02 | 4.80 | 5.40 | 6.00 | 6.50 | 7.40 | 54 |
| Black | 548 | 3.5 | 9.6 | 5.98 | 5.90 | 0.81 | 0.03 | 4.80 | 5.40 | 5.90 | 6.45 | 7.30 | 17 |
| LatinX | 100 | 4.1 | 8.3 | 6.04 | 6.10 | 0.73 | 0.07 | 4.95 | 5.60 | 6.10 | 6.43 | 7.30 | 4 |
| Asian | 91 | 4.4 | 8.7 | 6.14 | 6.00 | 0.84 | 0.09 | 4.88 | 5.50 | 6.00 | 6.60 | 7.60 | 2 |
| Other | 21 | 4.3 | 7.6 | 5.71 | 5.65 | 0.83 | 0.18 | 4.56 | 5.18 | 5.65 | 6.18 | 6.75 | 3 |
| AIAN | 8 | 5.6 | 7.0 | 6.11 | 6.00 | 0.51 | 0.18 | 5.63 | 5.75 | 6.00 | 6.35 | 6.88 | 1 |
| PTNS | 5 | 5.8 | 8.1 | 6.96 | 7.00 | 0.90 | 0.40 | 5.92 | 6.40 | 7.00 | 7.50 | 7.98 | 0 |
| NHOPI | 4 | 4.9 | 7.1 | 6.20 | 6.40 | 0.93 | 0.46 | 5.12 | 6.03 | 6.40 | 6.58 | 7.00 | 0 |

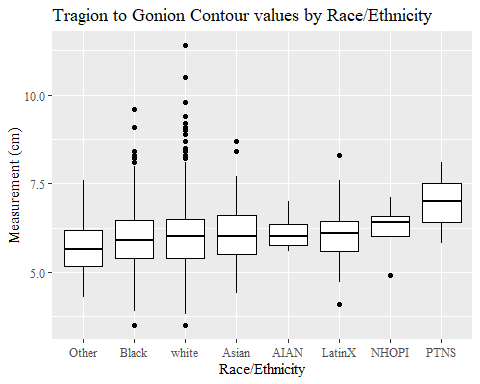
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrGo\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Gonion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 3.5 | 11.4 | 6.00 | 6.00 | 0.85 | 0.02 | 4.80 | 5.40 | 6.00 | 6.50 | 7.40 | 54 |
| Black | 548 | 3.5 | 9.6 | 5.98 | 5.90 | 0.81 | 0.03 | 4.80 | 5.40 | 5.90 | 6.45 | 7.30 | 17 |
| LatinX | 100 | 4.1 | 8.3 | 6.04 | 6.10 | 0.73 | 0.07 | 4.95 | 5.60 | 6.10 | 6.43 | 7.30 | 4 |
| Asian | 91 | 4.4 | 8.7 | 6.14 | 6.00 | 0.84 | 0.09 | 4.88 | 5.50 | 6.00 | 6.60 | 7.60 | 2 |
| Other | 21 | 4.3 | 7.6 | 5.71 | 5.65 | 0.83 | 0.18 | 4.56 | 5.18 | 5.65 | 6.18 | 6.75 | 3 |
| AIAN | 8 | 5.6 | 7.0 | 6.11 | 6.00 | 0.51 | 0.18 | 5.63 | 5.75 | 6.00 | 6.35 | 6.88 | 1 |
| PTNS | 5 | 5.8 | 8.1 | 6.96 | 7.00 | 0.90 | 0.40 | 5.92 | 6.40 | 7.00 | 7.50 | 7.98 | 0 |
| NHOPI | 4 | 4.9 | 7.1 | 6.20 | 6.40 | 0.93 | 0.46 | 5.12 | 6.03 | 6.40 | 6.58 | 7.00 | 0 |

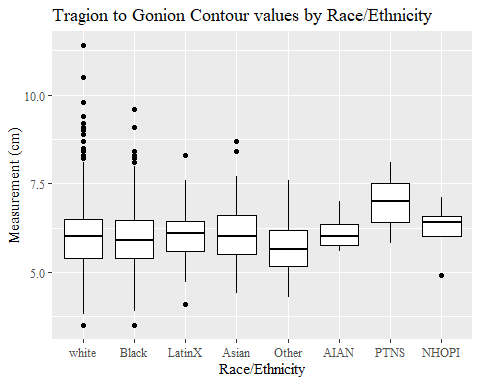
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrGo\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrGo\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrGo\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 81 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrGo\_C\_no\_out, aes(y=TrGo\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 81 rows containing non-finite values (stat\_boxplot).



#TrGo\_C gender sumstats  
TrGo\_Cgender\_sumstats1 <- TrGo\_C\_no\_out %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrGo\_C, na.rm = TRUE),  
 max = max(TrGo\_C, na.rm = TRUE),  
 mean = mean(TrGo\_C, na.rm = TRUE),  
 mdn = median(TrGo\_C, na.rm = TRUE),  
 sd = sd(TrGo\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrGo\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrGo\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrGo\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrGo\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrGo\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrGo\_C)))  
  
TrGo\_Cgender\_sumstats1 <- TrGo\_Cgender\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrGo\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Gender")

**Table** : Tragion to Gonion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 3.5 | 9.8 | 5.82 | 5.8 | 0.77 | 0.02 | 4.70 | 5.3 | 5.8 | 6.3 | 7.00 | 24 |
| Male | 939 | 3.5 | 11.4 | 6.22 | 6.2 | 0.86 | 0.03 | 4.90 | 5.6 | 6.2 | 6.7 | 7.60 | 57 |
| Non-binary or Other | 5 | 4.5 | 5.9 | 5.38 | 5.5 | 0.54 | 0.24 | 4.66 | 5.3 | 5.5 | 5.7 | 5.86 | 0 |
| Prefer not to say | 1 | 5.8 | 5.8 | 5.80 | 5.8 |  |  | 5.80 | 5.8 | 5.8 | 5.8 | 5.80 | 0 |
|  | 8 | 5.2 | 7.3 | 5.84 | 5.5 | 0.81 | 0.28 | 5.20 | 5.2 | 5.5 | 6.2 | 7.12 | 0 |

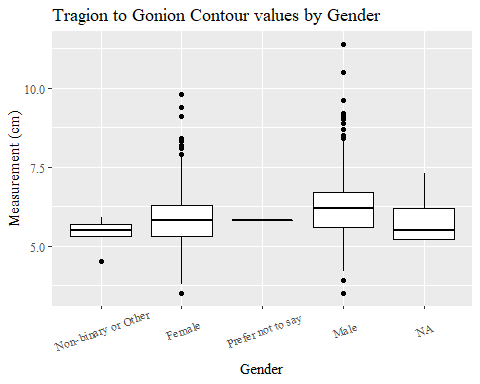
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrGo\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Gonion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 3.5 | 9.8 | 5.82 | 5.8 | 0.77 | 0.02 | 4.70 | 5.3 | 5.8 | 6.3 | 7.00 | 24 |
| Male | 939 | 3.5 | 11.4 | 6.22 | 6.2 | 0.86 | 0.03 | 4.90 | 5.6 | 6.2 | 6.7 | 7.60 | 57 |
| Non-binary or Other | 5 | 4.5 | 5.9 | 5.38 | 5.5 | 0.54 | 0.24 | 4.66 | 5.3 | 5.5 | 5.7 | 5.86 | 0 |
| Prefer not to say | 1 | 5.8 | 5.8 | 5.80 | 5.8 |  |  | 5.80 | 5.8 | 5.8 | 5.8 | 5.80 | 0 |
|  | 8 | 5.2 | 7.3 | 5.84 | 5.5 | 0.81 | 0.28 | 5.20 | 5.2 | 5.5 | 6.2 | 7.12 | 0 |

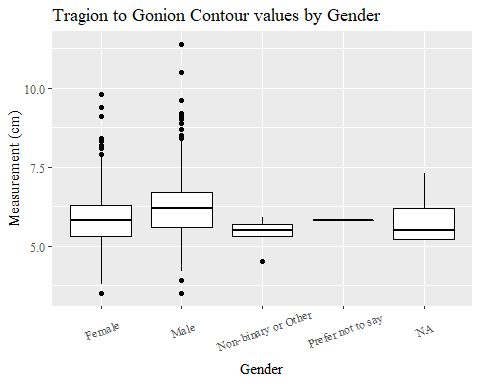
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrGo\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrGo\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrGo\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 81 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrGo\_C\_no\_out, aes(y=TrGo\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 81 rows containing non-finite values (stat\_boxplot).



#TrGo\_C age group sumstats  
TrGo\_Cage\_sumstats1 <- TrGo\_C\_no\_out %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrGo\_C, na.rm = TRUE),  
 max = max(TrGo\_C, na.rm = TRUE),  
 mean = mean(TrGo\_C, na.rm = TRUE),  
 mdn = median(TrGo\_C, na.rm = TRUE),  
 sd = sd(TrGo\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrGo\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrGo\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrGo\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrGo\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrGo\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrGo\_C)))  
  
TrGo\_Cage\_sumstats1 <- TrGo\_Cage\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrGo\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Age Group")

**Table** : Tragion to Gonion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 3.8 | 9.2 | 6.01 | 6.0 | 0.81 | 0.03 | 4.8 | 5.4 | 6.0 | 6.5 | 7.40 | 33 |
| 37-54 | 940 | 3.5 | 11.4 | 5.99 | 6.0 | 0.86 | 0.03 | 4.7 | 5.4 | 6.0 | 6.5 | 7.33 | 45 |
| 55-72 | 84 | 4.1 | 8.1 | 6.06 | 6.1 | 0.85 | 0.09 | 4.8 | 5.5 | 6.1 | 6.5 | 7.50 | 3 |
|  | 1 | 6.2 | 6.2 | 6.20 | 6.2 |  |  | 6.2 | 6.2 | 6.2 | 6.2 | 6.20 | 0 |

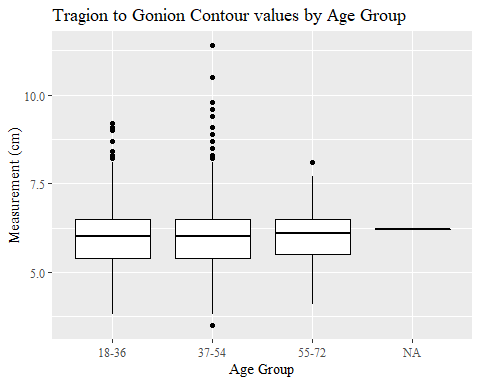
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrGo\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Gonion Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Gonion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 3.8 | 9.2 | 6.01 | 6.0 | 0.81 | 0.03 | 4.8 | 5.4 | 6.0 | 6.5 | 7.40 | 33 |
| 37-54 | 940 | 3.5 | 11.4 | 5.99 | 6.0 | 0.86 | 0.03 | 4.7 | 5.4 | 6.0 | 6.5 | 7.33 | 45 |
| 55-72 | 84 | 4.1 | 8.1 | 6.06 | 6.1 | 0.85 | 0.09 | 4.8 | 5.5 | 6.1 | 6.5 | 7.50 | 3 |
|  | 1 | 6.2 | 6.2 | 6.20 | 6.2 |  |  | 6.2 | 6.2 | 6.2 | 6.2 | 6.20 | 0 |

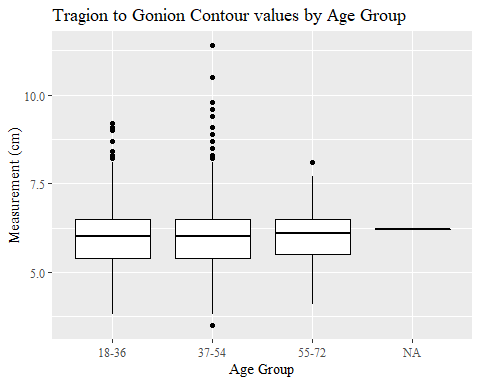
#%>% set\_header\_Cabels(values = list(TrGo\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrGo\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrGo\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrGo\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 81 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrGo\_C\_no\_out, aes(y=TrGo\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Gonion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

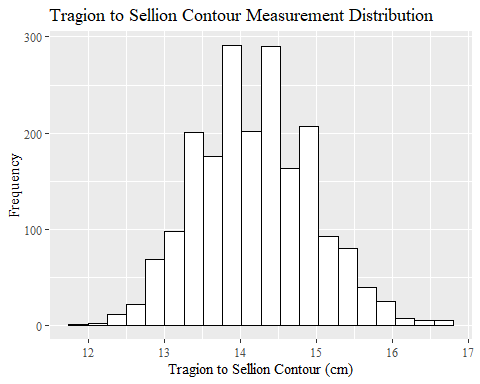
## Warning: Removed 81 rows containing non-finite values (stat\_boxplot).



TrSel\_C

#histogram of all TrSel\_C values  
ggplot(data=headscan\_full, aes(x=TrSel\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Sellion Contour Measurement Distribution",  
 y="Frequency",  
 x="Tragion to Sellion Contour (cm)")

## Warning: Removed 31 rows containing non-finite values (stat\_bin).



#TrSel\_C race/eth sumstats  
TrSel\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrSel\_C, na.rm = TRUE),  
 max = max(TrSel\_C, na.rm = TRUE),  
 mean = mean(TrSel\_C, na.rm = TRUE),  
 mdn = median(TrSel\_C, na.rm = TRUE),  
 sd = sd(TrSel\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSel\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSel\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSel\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSel\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSel\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSel\_C)))   
  
TrSel\_Crace\_sumstats <- TrSel\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSel\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Sellion Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Sellion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 12.0 | 16.8 | 14.08 | 14.10 | 0.73 | 0.02 | 13.00 | 13.60 | 14.10 | 14.6 | 15.30 | 18 |
| Black | 548 | 12.4 | 16.8 | 14.48 | 14.50 | 0.73 | 0.03 | 13.30 | 14.00 | 14.50 | 14.9 | 15.70 | 7 |
| LatinX | 100 | 12.5 | 16.2 | 14.12 | 14.10 | 0.73 | 0.07 | 12.90 | 13.70 | 14.10 | 14.6 | 15.11 | 1 |
| Asian | 91 | 12.2 | 16.5 | 14.16 | 14.00 | 0.78 | 0.08 | 13.20 | 13.60 | 14.00 | 14.7 | 15.53 | 3 |
| Other | 21 | 12.9 | 16.2 | 14.24 | 14.30 | 0.77 | 0.17 | 13.09 | 13.83 | 14.30 | 14.5 | 15.15 | 1 |
| AIAN | 8 | 13.3 | 14.5 | 13.73 | 13.60 | 0.42 | 0.15 | 13.33 | 13.45 | 13.60 | 13.9 | 14.35 | 1 |
| PTNS | 5 | 13.5 | 15.0 | 14.30 | 14.50 | 0.60 | 0.27 | 13.58 | 13.90 | 14.50 | 14.6 | 14.92 | 0 |
| NHOPI | 4 | 14.2 | 14.8 | 14.57 | 14.65 | 0.29 | 0.14 | 14.24 | 14.43 | 14.65 | 14.8 | 14.80 | 0 |

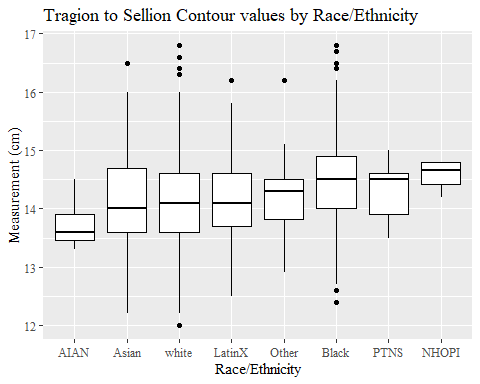
#%>% set\_header\_Cabels(values = list(TrSel\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSel\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Sellion Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Sellion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 12.0 | 16.8 | 14.08 | 14.10 | 0.73 | 0.02 | 13.00 | 13.60 | 14.10 | 14.6 | 15.30 | 18 |
| Black | 548 | 12.4 | 16.8 | 14.48 | 14.50 | 0.73 | 0.03 | 13.30 | 14.00 | 14.50 | 14.9 | 15.70 | 7 |
| LatinX | 100 | 12.5 | 16.2 | 14.12 | 14.10 | 0.73 | 0.07 | 12.90 | 13.70 | 14.10 | 14.6 | 15.11 | 1 |
| Asian | 91 | 12.2 | 16.5 | 14.16 | 14.00 | 0.78 | 0.08 | 13.20 | 13.60 | 14.00 | 14.7 | 15.53 | 3 |
| Other | 21 | 12.9 | 16.2 | 14.24 | 14.30 | 0.77 | 0.17 | 13.09 | 13.83 | 14.30 | 14.5 | 15.15 | 1 |
| AIAN | 8 | 13.3 | 14.5 | 13.73 | 13.60 | 0.42 | 0.15 | 13.33 | 13.45 | 13.60 | 13.9 | 14.35 | 1 |
| PTNS | 5 | 13.5 | 15.0 | 14.30 | 14.50 | 0.60 | 0.27 | 13.58 | 13.90 | 14.50 | 14.6 | 14.92 | 0 |
| NHOPI | 4 | 14.2 | 14.8 | 14.57 | 14.65 | 0.29 | 0.14 | 14.24 | 14.43 | 14.65 | 14.8 | 14.80 | 0 |

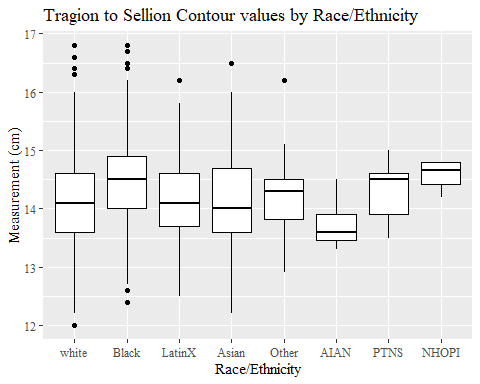
#%>% set\_header\_Cabels(values = list(TrSel\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrSel\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSel\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Sellion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSel\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Sellion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#TrSel\_C gender sumstats  
TrSel\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrSel\_C, na.rm = TRUE),  
 max = max(TrSel\_C, na.rm = TRUE),  
 mean = mean(TrSel\_C, na.rm = TRUE),  
 mdn = median(TrSel\_C, na.rm = TRUE),  
 sd = sd(TrSel\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSel\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSel\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSel\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSel\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSel\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSel\_C)))  
  
TrSel\_Cgender\_sumstats <- TrSel\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrSel\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Sellion Contour SumStats by Gender")

**Table** : Tragion to Sellion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 12.0 | 16.8 | 13.86 | 13.8 | 0.67 | 0.02 | 12.90 | 13.4 | 13.8 | 14.30 | 15.00 | 22 |
| Male | 939 | 12.5 | 16.8 | 14.57 | 14.6 | 0.66 | 0.02 | 13.50 | 14.1 | 14.6 | 15.00 | 15.65 | 9 |
| Non-binary or Other | 5 | 13.0 | 14.4 | 13.90 | 14.0 | 0.53 | 0.24 | 13.20 | 14.0 | 14.0 | 14.10 | 14.34 | 0 |
| Prefer not to say | 1 | 14.6 | 14.6 | 14.60 | 14.6 |  |  | 14.60 | 14.6 | 14.6 | 14.60 | 14.60 | 0 |
|  | 8 | 13.5 | 14.5 | 14.04 | 14.1 | 0.34 | 0.12 | 13.54 | 13.9 | 14.1 | 14.22 | 14.43 | 0 |

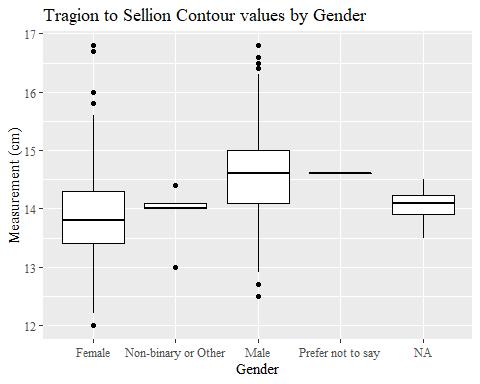
#%>% set\_header\_Cabels(values = list(TrSel\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSel\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Sellion Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Sellion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 12.0 | 16.8 | 13.86 | 13.8 | 0.67 | 0.02 | 12.90 | 13.4 | 13.8 | 14.30 | 15.00 | 22 |
| Male | 939 | 12.5 | 16.8 | 14.57 | 14.6 | 0.66 | 0.02 | 13.50 | 14.1 | 14.6 | 15.00 | 15.65 | 9 |
| Non-binary or Other | 5 | 13.0 | 14.4 | 13.90 | 14.0 | 0.53 | 0.24 | 13.20 | 14.0 | 14.0 | 14.10 | 14.34 | 0 |
| Prefer not to say | 1 | 14.6 | 14.6 | 14.60 | 14.6 |  |  | 14.60 | 14.6 | 14.6 | 14.60 | 14.60 | 0 |
|  | 8 | 13.5 | 14.5 | 14.04 | 14.1 | 0.34 | 0.12 | 13.54 | 13.9 | 14.1 | 14.22 | 14.43 | 0 |

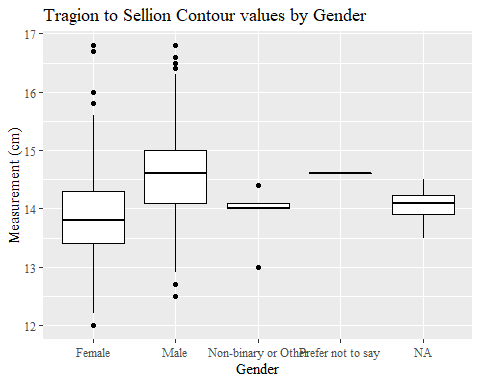
#%>% set\_header\_Cabels(values = list(TrSel\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrSel\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSel\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Sellion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSel\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Sellion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#TrSel\_C age group sumstats  
TrSel\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrSel\_C, na.rm = TRUE),  
 max = max(TrSel\_C, na.rm = TRUE),  
 mean = mean(TrSel\_C, na.rm = TRUE),  
 mdn = median(TrSel\_C, na.rm = TRUE),  
 sd = sd(TrSel\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSel\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSel\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSel\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSel\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSel\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSel\_C)))  
  
TrSel\_Cage\_sumstats <- TrSel\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSel\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Sellion Contour SumStats by Age Group")

**Table** : Tragion to Sellion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 12.2 | 16.8 | 14.17 | 14.2 | 0.75 | 0.02 | 13.0 | 13.7 | 14.2 | 14.7 | 15.50 | 13 |
| 37-54 | 940 | 12.0 | 16.8 | 14.20 | 14.2 | 0.74 | 0.02 | 13.1 | 13.6 | 14.2 | 14.7 | 15.50 | 17 |
| 55-72 | 84 | 12.7 | 16.0 | 14.42 | 14.6 | 0.69 | 0.07 | 13.4 | 13.8 | 14.6 | 14.9 | 15.48 | 1 |
|  | 1 | 14.5 | 14.5 | 14.50 | 14.5 |  |  | 14.5 | 14.5 | 14.5 | 14.5 | 14.50 | 0 |

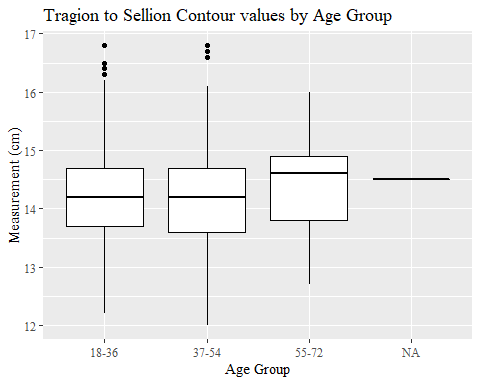
#%>% set\_header\_Cabels(values = list(TrSel\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSel\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Sellion Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Sellion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 12.2 | 16.8 | 14.17 | 14.2 | 0.75 | 0.02 | 13.0 | 13.7 | 14.2 | 14.7 | 15.50 | 13 |
| 37-54 | 940 | 12.0 | 16.8 | 14.20 | 14.2 | 0.74 | 0.02 | 13.1 | 13.6 | 14.2 | 14.7 | 15.50 | 17 |
| 55-72 | 84 | 12.7 | 16.0 | 14.42 | 14.6 | 0.69 | 0.07 | 13.4 | 13.8 | 14.6 | 14.9 | 15.48 | 1 |
|  | 1 | 14.5 | 14.5 | 14.50 | 14.5 |  |  | 14.5 | 14.5 | 14.5 | 14.5 | 14.50 | 0 |

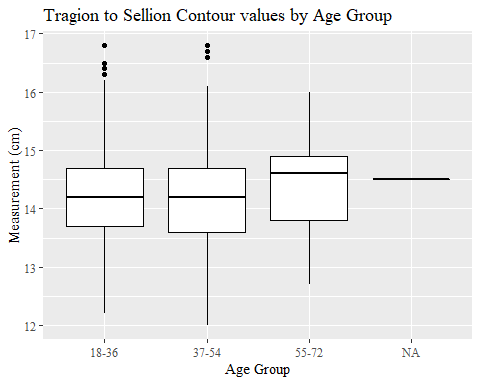
#%>% set\_header\_Cabels(values = list(TrSel\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrSel\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSel\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Sellion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSel\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Sellion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

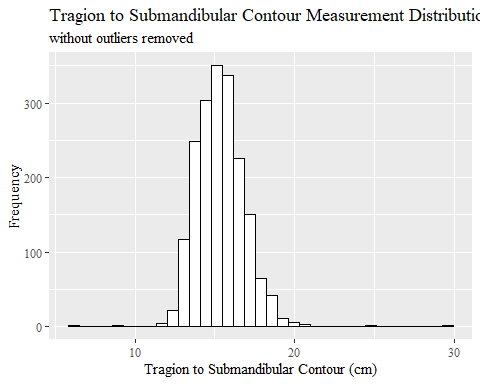
## Warning: Removed 31 rows containing non-finite values (stat\_boxplot).



TrSman\_C without outlier removed

#histogram of all TrSman\_C values  
ggplot(data=headscan\_full, aes(x=TrSman\_C))+  
 geom\_bar(stat="bin", bins=35, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Submandibular Contour Measurement Distribution",  
 subtitle = "without outliers removed",  
 y="Frequency",  
 x="Tragion to Submandibular Contour (cm)")

## Warning: Removed 132 rows containing non-finite values (stat\_bin).



#TrSman\_C race/eth sumstats  
TrSman\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrSman\_C, na.rm = TRUE),  
 max = max(TrSman\_C, na.rm = TRUE),  
 mean = mean(TrSman\_C, na.rm = TRUE),  
 mdn = median(TrSman\_C, na.rm = TRUE),  
 sd = sd(TrSman\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSman\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSman\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSman\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSman\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSman\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSman\_C)))   
  
TrSman\_Crace\_sumstats <- TrSman\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSman\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Submandibular Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 6.4 | 29.8 | 15.23 | 15.10 | 1.56 | 0.04 | 13.10 | 14.20 | 15.10 | 16.10 | 17.86 | 72 |
| Black | 548 | 12.2 | 20.1 | 15.68 | 15.60 | 1.27 | 0.05 | 13.80 | 14.80 | 15.60 | 16.55 | 17.89 | 45 |
| LatinX | 100 | 12.6 | 19.5 | 15.31 | 15.05 | 1.47 | 0.15 | 13.20 | 14.20 | 15.05 | 16.22 | 17.68 | 4 |
| Asian | 91 | 12.2 | 19.6 | 15.03 | 15.00 | 1.37 | 0.14 | 13.00 | 14.05 | 15.00 | 15.80 | 17.31 | 4 |
| Other | 21 | 13.2 | 16.5 | 15.00 | 15.05 | 0.99 | 0.22 | 13.35 | 14.60 | 15.05 | 15.67 | 16.20 | 5 |
| AIAN | 8 | 13.0 | 16.9 | 14.44 | 14.60 | 1.39 | 0.49 | 13.09 | 13.30 | 14.60 | 15.00 | 16.42 | 1 |
| PTNS | 5 | 13.9 | 18.1 | 15.58 | 15.40 | 1.58 | 0.71 | 14.06 | 14.70 | 15.40 | 15.80 | 17.64 | 0 |
| NHOPI | 4 | 14.3 | 15.1 | 14.77 | 14.90 | 0.42 | 0.21 | 14.36 | 14.60 | 14.90 | 15.00 | 15.08 | 1 |

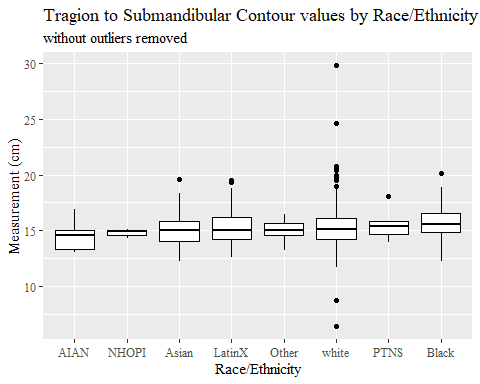
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSman\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Submandibular Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 6.4 | 29.8 | 15.23 | 15.10 | 1.56 | 0.04 | 13.10 | 14.20 | 15.10 | 16.10 | 17.86 | 72 |
| Black | 548 | 12.2 | 20.1 | 15.68 | 15.60 | 1.27 | 0.05 | 13.80 | 14.80 | 15.60 | 16.55 | 17.89 | 45 |
| LatinX | 100 | 12.6 | 19.5 | 15.31 | 15.05 | 1.47 | 0.15 | 13.20 | 14.20 | 15.05 | 16.22 | 17.68 | 4 |
| Asian | 91 | 12.2 | 19.6 | 15.03 | 15.00 | 1.37 | 0.14 | 13.00 | 14.05 | 15.00 | 15.80 | 17.31 | 4 |
| Other | 21 | 13.2 | 16.5 | 15.00 | 15.05 | 0.99 | 0.22 | 13.35 | 14.60 | 15.05 | 15.67 | 16.20 | 5 |
| AIAN | 8 | 13.0 | 16.9 | 14.44 | 14.60 | 1.39 | 0.49 | 13.09 | 13.30 | 14.60 | 15.00 | 16.42 | 1 |
| PTNS | 5 | 13.9 | 18.1 | 15.58 | 15.40 | 1.58 | 0.71 | 14.06 | 14.70 | 15.40 | 15.80 | 17.64 | 0 |
| NHOPI | 4 | 14.3 | 15.1 | 14.77 | 14.90 | 0.42 | 0.21 | 14.36 | 14.60 | 14.90 | 15.00 | 15.08 | 1 |

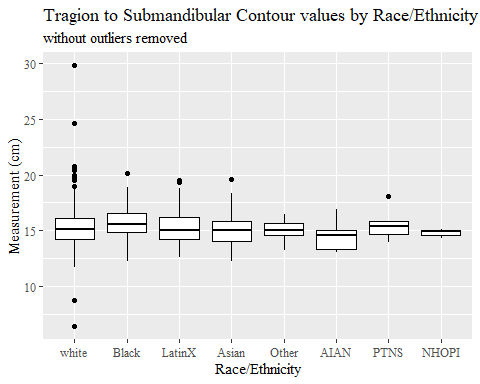
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrSman\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSman\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Race/Ethnicity",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 132 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSman\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Race/Ethnicity",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 132 rows containing non-finite values (stat\_boxplot).



#TrSman\_C gender sumstats  
TrSman\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrSman\_C, na.rm = TRUE),  
 max = max(TrSman\_C, na.rm = TRUE),  
 mean = mean(TrSman\_C, na.rm = TRUE),  
 mdn = median(TrSman\_C, na.rm = TRUE),  
 sd = sd(TrSman\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSman\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSman\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSman\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSman\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSman\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSman\_C)))  
  
TrSman\_Cgender\_sumstats <- TrSman\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrSman\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Gender")

**Table** : Tragion to Submandibular Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 8.7 | 19.5 | 14.68 | 14.5 | 1.19 | 0.04 | 13.00 | 13.90 | 14.5 | 15.40 | 16.74 | 32 |
| Male | 939 | 6.4 | 29.8 | 16.15 | 16.0 | 1.40 | 0.05 | 14.29 | 15.30 | 16.0 | 16.90 | 18.40 | 100 |
| Non-binary or Other | 5 | 11.9 | 16.1 | 14.32 | 14.7 | 1.72 | 0.77 | 12.18 | 13.30 | 14.7 | 15.60 | 16.00 | 0 |
| Prefer not to say | 1 | 18.1 | 18.1 | 18.10 | 18.1 |  |  | 18.10 | 18.10 | 18.1 | 18.10 | 18.10 | 0 |
|  | 8 | 14.3 | 17.5 | 15.22 | 14.9 | 1.02 | 0.36 | 14.41 | 14.67 | 14.9 | 15.27 | 16.91 | 0 |

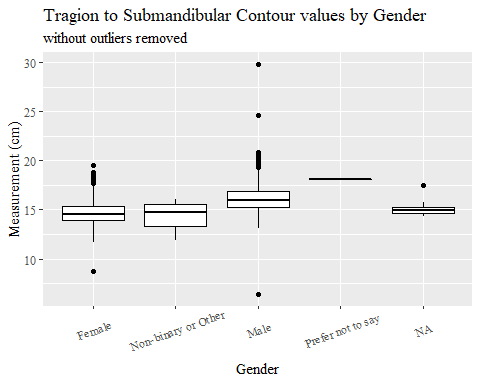
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSman\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Submandibular Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 8.7 | 19.5 | 14.68 | 14.5 | 1.19 | 0.04 | 13.00 | 13.90 | 14.5 | 15.40 | 16.74 | 32 |
| Male | 939 | 6.4 | 29.8 | 16.15 | 16.0 | 1.40 | 0.05 | 14.29 | 15.30 | 16.0 | 16.90 | 18.40 | 100 |
| Non-binary or Other | 5 | 11.9 | 16.1 | 14.32 | 14.7 | 1.72 | 0.77 | 12.18 | 13.30 | 14.7 | 15.60 | 16.00 | 0 |
| Prefer not to say | 1 | 18.1 | 18.1 | 18.10 | 18.1 |  |  | 18.10 | 18.10 | 18.1 | 18.10 | 18.10 | 0 |
|  | 8 | 14.3 | 17.5 | 15.22 | 14.9 | 1.02 | 0.36 | 14.41 | 14.67 | 14.9 | 15.27 | 16.91 | 0 |

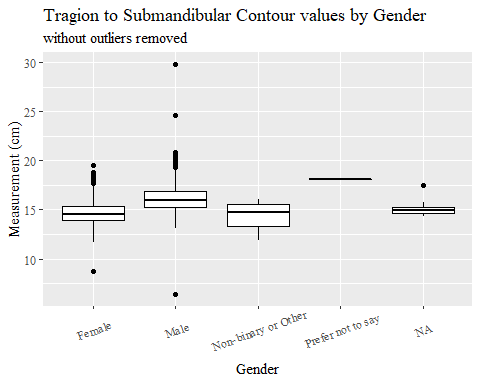
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrSman\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSman\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Gender",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 132 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSman\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Gender",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 132 rows containing non-finite values (stat\_boxplot).



#TrSman\_C age group sumstats  
TrSman\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrSman\_C, na.rm = TRUE),  
 max = max(TrSman\_C, na.rm = TRUE),  
 mean = mean(TrSman\_C, na.rm = TRUE),  
 mdn = median(TrSman\_C, na.rm = TRUE),  
 sd = sd(TrSman\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSman\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSman\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSman\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSman\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSman\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSman\_C)))  
  
TrSman\_Cage\_sumstats <- TrSman\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSman\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Age Group")

**Table** : Tragion to Submandibular Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 11.9 | 20.5 | 15.02 | 14.9 | 1.35 | 0.04 | 13.1 | 14.00 | 14.9 | 15.90 | 17.4 | 67 |
| 37-54 | 940 | 8.7 | 29.8 | 15.63 | 15.5 | 1.53 | 0.05 | 13.6 | 14.60 | 15.5 | 16.50 | 18.2 | 63 |
| 55-72 | 84 | 6.4 | 18.9 | 15.80 | 15.9 | 1.64 | 0.18 | 13.7 | 14.93 | 15.9 | 16.78 | 17.7 | 2 |
|  | 1 | 15.8 | 15.8 | 15.80 | 15.8 |  |  | 15.8 | 15.80 | 15.8 | 15.80 | 15.8 | 0 |

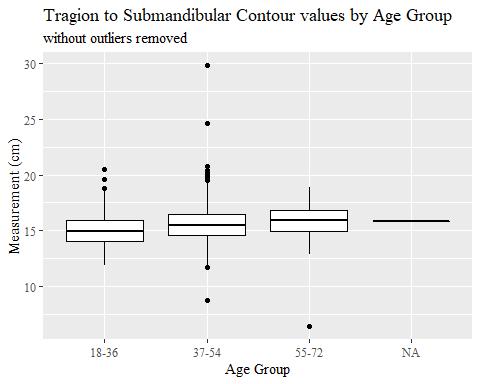
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSman\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Submandibular Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 11.9 | 20.5 | 15.02 | 14.9 | 1.35 | 0.04 | 13.1 | 14.00 | 14.9 | 15.90 | 17.4 | 67 |
| 37-54 | 940 | 8.7 | 29.8 | 15.63 | 15.5 | 1.53 | 0.05 | 13.6 | 14.60 | 15.5 | 16.50 | 18.2 | 63 |
| 55-72 | 84 | 6.4 | 18.9 | 15.80 | 15.9 | 1.64 | 0.18 | 13.7 | 14.93 | 15.9 | 16.78 | 17.7 | 2 |
|  | 1 | 15.8 | 15.8 | 15.80 | 15.8 |  |  | 15.8 | 15.80 | 15.8 | 15.80 | 15.8 | 0 |

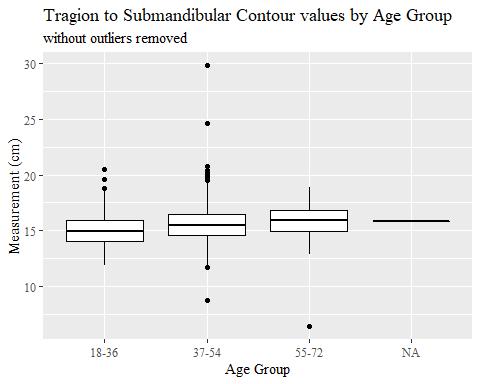
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrSman\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSman\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Age Group",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 132 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSman\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Age Group",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 132 rows containing non-finite values (stat\_boxplot).



TrSman\_C with outlier removed

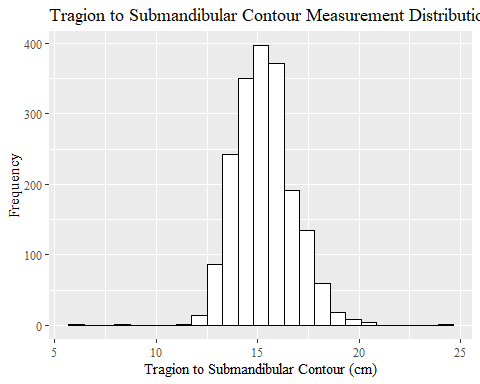
max(headscan\_full$TrSman\_C, na.rm = TRUE)

## [1] 29.8

#CODE TO REMOVE OUTLIER, use later to remove from headscan\_full  
TrSman\_C\_no\_out <- headscan\_full %>% mutate(TrSman\_C = replace(TrSman\_C, TrSman\_C>29, NA))

#histogram of all TrSman\_C values  
ggplot(data=TrSman\_C\_no\_out, aes(x=TrSman\_C))+  
 geom\_bar(stat="bin", bins=25, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Submandibular Contour Measurement Distribution",  
 y="Frequency",  
 x="Tragion to Submandibular Contour (cm)")

## Warning: Removed 133 rows containing non-finite values (stat\_bin).



#TrSman\_C race/eth sumstats  
TrSman\_Crace\_sumstats1 <- TrSman\_C\_no\_out %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrSman\_C, na.rm = TRUE),  
 max = max(TrSman\_C, na.rm = TRUE),  
 mean = mean(TrSman\_C, na.rm = TRUE),  
 mdn = median(TrSman\_C, na.rm = TRUE),  
 sd = sd(TrSman\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSman\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSman\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSman\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSman\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSman\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSman\_C)))   
  
TrSman\_Crace\_sumstats1 <- TrSman\_Crace\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSman\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Submandibular Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 6.4 | 24.6 | 15.22 | 15.10 | 1.50 | 0.04 | 13.10 | 14.20 | 15.10 | 16.10 | 17.80 | 73 |
| Black | 548 | 12.2 | 20.1 | 15.68 | 15.60 | 1.27 | 0.05 | 13.80 | 14.80 | 15.60 | 16.55 | 17.89 | 45 |
| LatinX | 100 | 12.6 | 19.5 | 15.31 | 15.05 | 1.47 | 0.15 | 13.20 | 14.20 | 15.05 | 16.22 | 17.68 | 4 |
| Asian | 91 | 12.2 | 19.6 | 15.03 | 15.00 | 1.37 | 0.14 | 13.00 | 14.05 | 15.00 | 15.80 | 17.31 | 4 |
| Other | 21 | 13.2 | 16.5 | 15.00 | 15.05 | 0.99 | 0.22 | 13.35 | 14.60 | 15.05 | 15.67 | 16.20 | 5 |
| AIAN | 8 | 13.0 | 16.9 | 14.44 | 14.60 | 1.39 | 0.49 | 13.09 | 13.30 | 14.60 | 15.00 | 16.42 | 1 |
| PTNS | 5 | 13.9 | 18.1 | 15.58 | 15.40 | 1.58 | 0.71 | 14.06 | 14.70 | 15.40 | 15.80 | 17.64 | 0 |
| NHOPI | 4 | 14.3 | 15.1 | 14.77 | 14.90 | 0.42 | 0.21 | 14.36 | 14.60 | 14.90 | 15.00 | 15.08 | 1 |

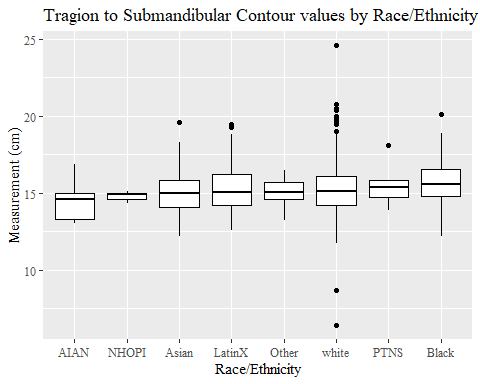
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSman\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Submandibular Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 6.4 | 24.6 | 15.22 | 15.10 | 1.50 | 0.04 | 13.10 | 14.20 | 15.10 | 16.10 | 17.80 | 73 |
| Black | 548 | 12.2 | 20.1 | 15.68 | 15.60 | 1.27 | 0.05 | 13.80 | 14.80 | 15.60 | 16.55 | 17.89 | 45 |
| LatinX | 100 | 12.6 | 19.5 | 15.31 | 15.05 | 1.47 | 0.15 | 13.20 | 14.20 | 15.05 | 16.22 | 17.68 | 4 |
| Asian | 91 | 12.2 | 19.6 | 15.03 | 15.00 | 1.37 | 0.14 | 13.00 | 14.05 | 15.00 | 15.80 | 17.31 | 4 |
| Other | 21 | 13.2 | 16.5 | 15.00 | 15.05 | 0.99 | 0.22 | 13.35 | 14.60 | 15.05 | 15.67 | 16.20 | 5 |
| AIAN | 8 | 13.0 | 16.9 | 14.44 | 14.60 | 1.39 | 0.49 | 13.09 | 13.30 | 14.60 | 15.00 | 16.42 | 1 |
| PTNS | 5 | 13.9 | 18.1 | 15.58 | 15.40 | 1.58 | 0.71 | 14.06 | 14.70 | 15.40 | 15.80 | 17.64 | 0 |
| NHOPI | 4 | 14.3 | 15.1 | 14.77 | 14.90 | 0.42 | 0.21 | 14.36 | 14.60 | 14.90 | 15.00 | 15.08 | 1 |

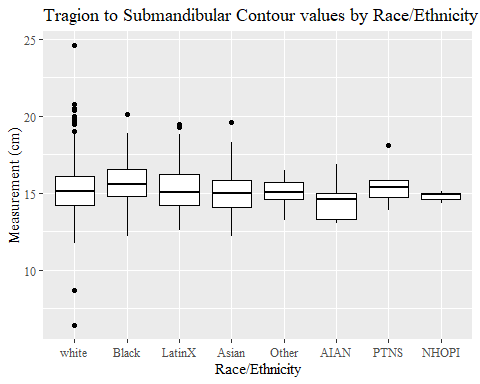
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrSman\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrSman\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSman\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 133 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrSman\_C\_no\_out, aes(y=TrSman\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 133 rows containing non-finite values (stat\_boxplot).



#TrSman\_C gender sumstats  
TrSman\_Cgender\_sumstats1 <- TrSman\_C\_no\_out %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrSman\_C, na.rm = TRUE),  
 max = max(TrSman\_C, na.rm = TRUE),  
 mean = mean(TrSman\_C, na.rm = TRUE),  
 mdn = median(TrSman\_C, na.rm = TRUE),  
 sd = sd(TrSman\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSman\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSman\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSman\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSman\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSman\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSman\_C)))  
  
TrSman\_Cgender\_sumstats1 <- TrSman\_Cgender\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrSman\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Gender")

**Table** : Tragion to Submandibular Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 8.7 | 19.5 | 14.68 | 14.5 | 1.19 | 0.04 | 13.00 | 13.90 | 14.5 | 15.40 | 16.74 | 32 |
| Male | 939 | 6.4 | 24.6 | 16.14 | 16.0 | 1.32 | 0.04 | 14.29 | 15.30 | 16.0 | 16.90 | 18.40 | 101 |
| Non-binary or Other | 5 | 11.9 | 16.1 | 14.32 | 14.7 | 1.72 | 0.77 | 12.18 | 13.30 | 14.7 | 15.60 | 16.00 | 0 |
| Prefer not to say | 1 | 18.1 | 18.1 | 18.10 | 18.1 |  |  | 18.10 | 18.10 | 18.1 | 18.10 | 18.10 | 0 |
|  | 8 | 14.3 | 17.5 | 15.22 | 14.9 | 1.02 | 0.36 | 14.41 | 14.67 | 14.9 | 15.27 | 16.91 | 0 |

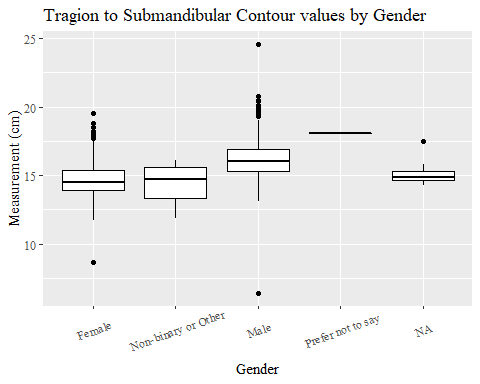
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSman\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Submandibular Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 8.7 | 19.5 | 14.68 | 14.5 | 1.19 | 0.04 | 13.00 | 13.90 | 14.5 | 15.40 | 16.74 | 32 |
| Male | 939 | 6.4 | 24.6 | 16.14 | 16.0 | 1.32 | 0.04 | 14.29 | 15.30 | 16.0 | 16.90 | 18.40 | 101 |
| Non-binary or Other | 5 | 11.9 | 16.1 | 14.32 | 14.7 | 1.72 | 0.77 | 12.18 | 13.30 | 14.7 | 15.60 | 16.00 | 0 |
| Prefer not to say | 1 | 18.1 | 18.1 | 18.10 | 18.1 |  |  | 18.10 | 18.10 | 18.1 | 18.10 | 18.10 | 0 |
|  | 8 | 14.3 | 17.5 | 15.22 | 14.9 | 1.02 | 0.36 | 14.41 | 14.67 | 14.9 | 15.27 | 16.91 | 0 |

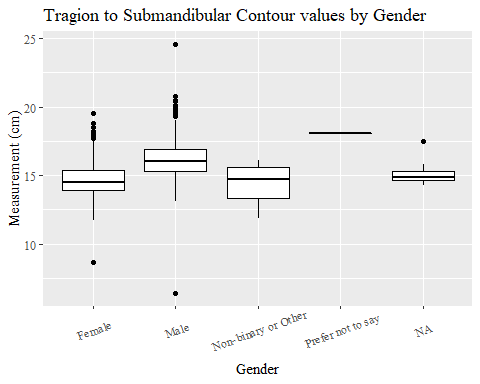
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrSman\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrSman\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSman\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 133 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrSman\_C\_no\_out, aes(y=TrSman\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 133 rows containing non-finite values (stat\_boxplot).



#TrSman\_C age group sumstats  
TrSman\_Cage\_sumstats1 <- TrSman\_C\_no\_out %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrSman\_C, na.rm = TRUE),  
 max = max(TrSman\_C, na.rm = TRUE),  
 mean = mean(TrSman\_C, na.rm = TRUE),  
 mdn = median(TrSman\_C, na.rm = TRUE),  
 sd = sd(TrSman\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSman\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSman\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSman\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSman\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSman\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSman\_C)))  
  
TrSman\_Cage\_sumstats1 <- TrSman\_Cage\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSman\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Age Group")

**Table** : Tragion to Submandibular Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 11.9 | 20.5 | 15.02 | 14.9 | 1.35 | 0.04 | 13.1 | 14.00 | 14.9 | 15.90 | 17.40 | 67 |
| 37-54 | 940 | 8.7 | 24.6 | 15.62 | 15.5 | 1.45 | 0.05 | 13.6 | 14.60 | 15.5 | 16.50 | 18.12 | 64 |
| 55-72 | 84 | 6.4 | 18.9 | 15.80 | 15.9 | 1.64 | 0.18 | 13.7 | 14.93 | 15.9 | 16.78 | 17.70 | 2 |
|  | 1 | 15.8 | 15.8 | 15.80 | 15.8 |  |  | 15.8 | 15.80 | 15.8 | 15.80 | 15.80 | 0 |

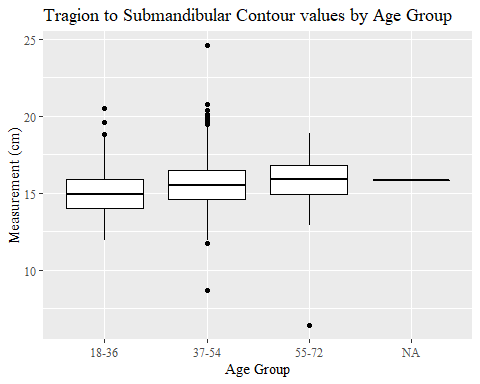
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSman\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Submandibular Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Submandibular Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 11.9 | 20.5 | 15.02 | 14.9 | 1.35 | 0.04 | 13.1 | 14.00 | 14.9 | 15.90 | 17.40 | 67 |
| 37-54 | 940 | 8.7 | 24.6 | 15.62 | 15.5 | 1.45 | 0.05 | 13.6 | 14.60 | 15.5 | 16.50 | 18.12 | 64 |
| 55-72 | 84 | 6.4 | 18.9 | 15.80 | 15.9 | 1.64 | 0.18 | 13.7 | 14.93 | 15.9 | 16.78 | 17.70 | 2 |
|  | 1 | 15.8 | 15.8 | 15.80 | 15.8 |  |  | 15.8 | 15.80 | 15.8 | 15.80 | 15.80 | 0 |

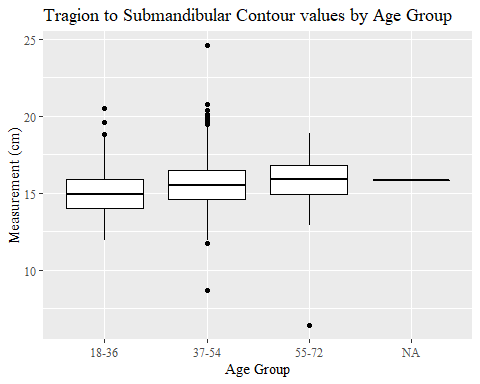
#%>% set\_header\_Cabels(values = list(TrSman\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrSman\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrSman\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSman\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 133 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrSman\_C\_no\_out, aes(y=TrSman\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Submandibular Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

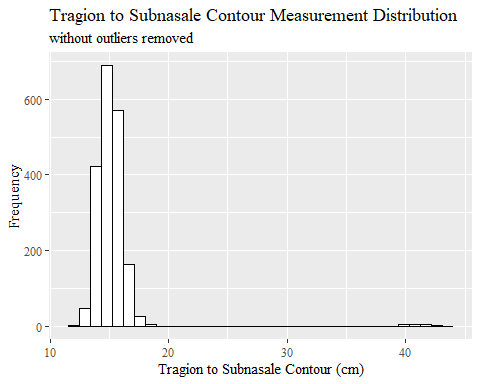
## Warning: Removed 133 rows containing non-finite values (stat\_boxplot).



TrSnas\_C without outliers removed

#histogram of all TrSnas\_C values  
ggplot(data=headscan\_full, aes(x=TrSnas\_C))+  
 geom\_bar(stat="bin", bins=35, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Subnasale Contour Measurement Distribution",  
 subtitle = "without outliers removed",  
 y="Frequency",  
 x="Tragion to Subnasale Contour (cm)")

## Warning: Removed 71 rows containing non-finite values (stat\_bin).



#TrSnas\_C race/eth sumstats  
TrSnas\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrSnas\_C, na.rm = TRUE),  
 max = max(TrSnas\_C, na.rm = TRUE),  
 mean = mean(TrSnas\_C, na.rm = TRUE),  
 mdn = median(TrSnas\_C, na.rm = TRUE),  
 sd = sd(TrSnas\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSnas\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSnas\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSnas\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSnas\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSnas\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSnas\_C)))   
  
TrSnas\_Crace\_sumstats <- TrSnas\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSnas\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Subnasale Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 12.2 | 43.7 | 15.26 | 14.80 | 3.42 | 0.10 | 13.51 | 14.20 | 14.80 | 15.50 | 16.60 | 57 |
| Black | 548 | 13.1 | 18.1 | 15.50 | 15.50 | 0.83 | 0.04 | 14.20 | 14.90 | 15.50 | 16.00 | 16.90 | 8 |
| LatinX | 100 | 13.1 | 16.9 | 14.94 | 14.80 | 0.82 | 0.08 | 13.68 | 14.40 | 14.80 | 15.67 | 16.12 | 2 |
| Asian | 91 | 12.9 | 17.2 | 14.85 | 14.70 | 0.96 | 0.10 | 13.54 | 14.20 | 14.70 | 15.40 | 16.66 | 2 |
| Other | 21 | 13.5 | 17.2 | 15.15 | 15.00 | 0.88 | 0.19 | 14.07 | 14.57 | 15.00 | 15.85 | 16.35 | 1 |
| AIAN | 8 | 13.8 | 16.0 | 14.60 | 14.40 | 0.69 | 0.24 | 13.95 | 14.30 | 14.40 | 14.70 | 15.64 | 1 |
| PTNS | 5 | 14.2 | 16.2 | 15.28 | 15.20 | 0.77 | 0.34 | 14.36 | 15.00 | 15.20 | 15.80 | 16.12 | 0 |
| NHOPI | 4 | 15.0 | 15.5 | 15.20 | 15.15 | 0.24 | 0.12 | 15.00 | 15.00 | 15.15 | 15.35 | 15.47 | 0 |

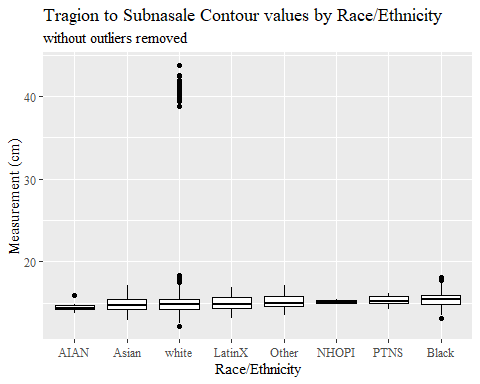
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSnas\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Subnasale Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 12.2 | 43.7 | 15.26 | 14.80 | 3.42 | 0.10 | 13.51 | 14.20 | 14.80 | 15.50 | 16.60 | 57 |
| Black | 548 | 13.1 | 18.1 | 15.50 | 15.50 | 0.83 | 0.04 | 14.20 | 14.90 | 15.50 | 16.00 | 16.90 | 8 |
| LatinX | 100 | 13.1 | 16.9 | 14.94 | 14.80 | 0.82 | 0.08 | 13.68 | 14.40 | 14.80 | 15.67 | 16.12 | 2 |
| Asian | 91 | 12.9 | 17.2 | 14.85 | 14.70 | 0.96 | 0.10 | 13.54 | 14.20 | 14.70 | 15.40 | 16.66 | 2 |
| Other | 21 | 13.5 | 17.2 | 15.15 | 15.00 | 0.88 | 0.19 | 14.07 | 14.57 | 15.00 | 15.85 | 16.35 | 1 |
| AIAN | 8 | 13.8 | 16.0 | 14.60 | 14.40 | 0.69 | 0.24 | 13.95 | 14.30 | 14.40 | 14.70 | 15.64 | 1 |
| PTNS | 5 | 14.2 | 16.2 | 15.28 | 15.20 | 0.77 | 0.34 | 14.36 | 15.00 | 15.20 | 15.80 | 16.12 | 0 |
| NHOPI | 4 | 15.0 | 15.5 | 15.20 | 15.15 | 0.24 | 0.12 | 15.00 | 15.00 | 15.15 | 15.35 | 15.47 | 0 |

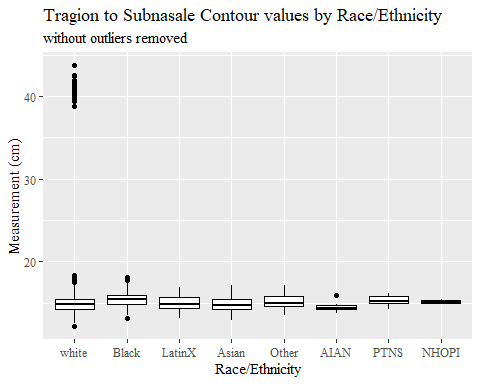
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrSnas\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSnas\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Race/Ethnicity",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 71 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSnas\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Race/Ethnicity",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 71 rows containing non-finite values (stat\_boxplot).



#TrSnas\_C gender sumstats  
TrSnas\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrSnas\_C, na.rm = TRUE),  
 max = max(TrSnas\_C, na.rm = TRUE),  
 mean = mean(TrSnas\_C, na.rm = TRUE),  
 mdn = median(TrSnas\_C, na.rm = TRUE),  
 sd = sd(TrSnas\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSnas\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSnas\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSnas\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSnas\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSnas\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSnas\_C)))  
  
TrSnas\_Cgender\_sumstats <- TrSnas\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrSnas\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Gender")

**Table** : Tragion to Subnasale Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 12.2 | 42.0 | 14.90 | 14.5 | 2.80 | 0.09 | 13.50 | 14.0 | 14.5 | 15.10 | 16.20 | 36 |
| Male | 939 | 12.7 | 43.7 | 15.74 | 15.5 | 2.59 | 0.08 | 14.20 | 14.9 | 15.5 | 16.10 | 17.00 | 35 |
| Non-binary or Other | 5 | 13.6 | 15.1 | 14.60 | 14.7 | 0.60 | 0.27 | 13.80 | 14.6 | 14.7 | 15.00 | 15.08 | 0 |
| Prefer not to say | 1 | 15.2 | 15.2 | 15.20 | 15.2 |  |  | 15.20 | 15.2 | 15.2 | 15.20 | 15.20 | 0 |
|  | 8 | 14.1 | 15.7 | 14.81 | 14.9 | 0.55 | 0.19 | 14.17 | 14.3 | 14.9 | 15.12 | 15.52 | 0 |

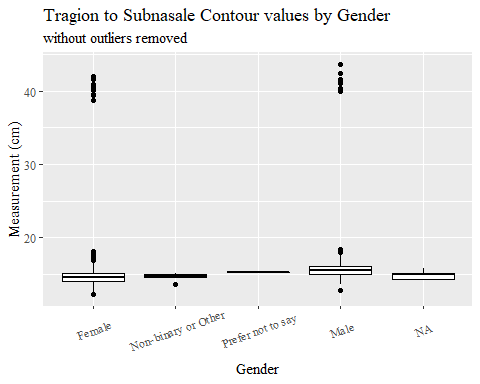
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSnas\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Subnasale Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 12.2 | 42.0 | 14.90 | 14.5 | 2.80 | 0.09 | 13.50 | 14.0 | 14.5 | 15.10 | 16.20 | 36 |
| Male | 939 | 12.7 | 43.7 | 15.74 | 15.5 | 2.59 | 0.08 | 14.20 | 14.9 | 15.5 | 16.10 | 17.00 | 35 |
| Non-binary or Other | 5 | 13.6 | 15.1 | 14.60 | 14.7 | 0.60 | 0.27 | 13.80 | 14.6 | 14.7 | 15.00 | 15.08 | 0 |
| Prefer not to say | 1 | 15.2 | 15.2 | 15.20 | 15.2 |  |  | 15.20 | 15.2 | 15.2 | 15.20 | 15.20 | 0 |
|  | 8 | 14.1 | 15.7 | 14.81 | 14.9 | 0.55 | 0.19 | 14.17 | 14.3 | 14.9 | 15.12 | 15.52 | 0 |

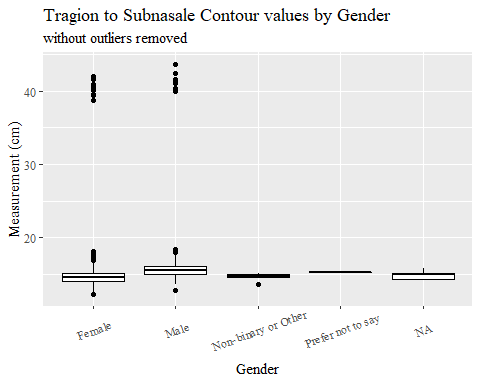
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrSnas\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSnas\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Gender",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 71 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSnas\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Gender",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 71 rows containing non-finite values (stat\_boxplot).



#TrSnas\_C age group sumstats  
TrSnas\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrSnas\_C, na.rm = TRUE),  
 max = max(TrSnas\_C, na.rm = TRUE),  
 mean = mean(TrSnas\_C, na.rm = TRUE),  
 mdn = median(TrSnas\_C, na.rm = TRUE),  
 sd = sd(TrSnas\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSnas\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSnas\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSnas\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSnas\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSnas\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSnas\_C)))  
  
TrSnas\_Cage\_sumstats <- TrSnas\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSnas\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Age Group")

**Table** : Tragion to Subnasale Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 12.9 | 43.7 | 15.22 | 14.9 | 2.74 | 0.09 | 13.6 | 14.3 | 14.9 | 15.6 | 16.7 | 31 |
| 37-54 | 940 | 12.2 | 41.1 | 15.32 | 15.0 | 2.67 | 0.09 | 13.6 | 14.4 | 15.0 | 15.7 | 16.8 | 37 |
| 55-72 | 84 | 13.0 | 42.5 | 15.76 | 15.5 | 3.13 | 0.34 | 14.2 | 14.7 | 15.5 | 16.0 | 17.0 | 3 |
|  | 1 | 14.7 | 14.7 | 14.70 | 14.7 |  |  | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 0 |

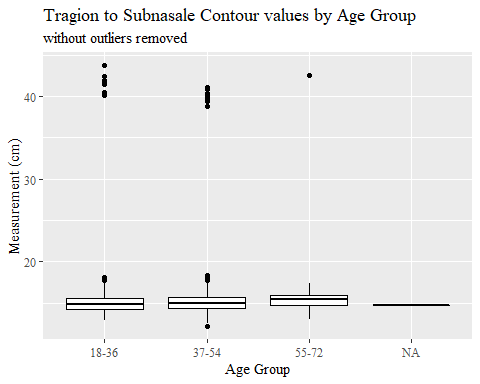
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSnas\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Subnasale Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 12.9 | 43.7 | 15.22 | 14.9 | 2.74 | 0.09 | 13.6 | 14.3 | 14.9 | 15.6 | 16.7 | 31 |
| 37-54 | 940 | 12.2 | 41.1 | 15.32 | 15.0 | 2.67 | 0.09 | 13.6 | 14.4 | 15.0 | 15.7 | 16.8 | 37 |
| 55-72 | 84 | 13.0 | 42.5 | 15.76 | 15.5 | 3.13 | 0.34 | 14.2 | 14.7 | 15.5 | 16.0 | 17.0 | 3 |
|  | 1 | 14.7 | 14.7 | 14.70 | 14.7 |  |  | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 0 |

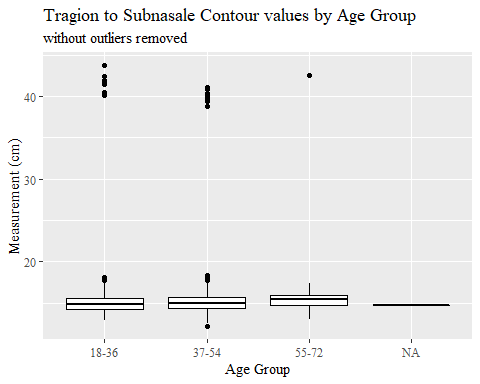
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrSnas\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSnas\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Age Group",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 71 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrSnas\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Age Group",  
 subtitle = "without outliers removed",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 71 rows containing non-finite values (stat\_boxplot).

 TrSnas\_C with outliers removed

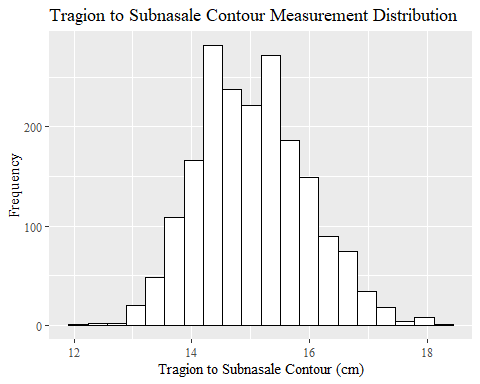
max(headscan\_full$TrSnas\_C, na.rm = TRUE)

## [1] 43.7

#CODE TO REMOVE OUTLIER, use later to remove from headscan\_full  
TrSnas\_C\_no\_out <- headscan\_full %>% mutate(TrSnas\_C = replace(TrSnas\_C, TrSnas\_C>30, NA))

#histogram of all TrSnas\_C values  
ggplot(data=TrSnas\_C\_no\_out, aes(x=TrSnas\_C))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Subnasale Contour Measurement Distribution",  
 y="Frequency",  
 x="Tragion to Subnasale Contour (cm)")

## Warning: Removed 90 rows containing non-finite values (stat\_bin).



#TrSnas\_C race/eth sumstats  
TrSnas\_Crace\_sumstats1 <- TrSnas\_C\_no\_out %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrSnas\_C, na.rm = TRUE),  
 max = max(TrSnas\_C, na.rm = TRUE),  
 mean = mean(TrSnas\_C, na.rm = TRUE),  
 mdn = median(TrSnas\_C, na.rm = TRUE),  
 sd = sd(TrSnas\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSnas\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSnas\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSnas\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSnas\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSnas\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSnas\_C)))   
  
TrSnas\_Crace\_sumstats1 <- TrSnas\_Crace\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSnas\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Subnasale Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 12.2 | 18.4 | 14.84 | 14.70 | 0.91 | 0.03 | 13.50 | 14.20 | 14.70 | 15.50 | 16.40 | 76 |
| Black | 548 | 13.1 | 18.1 | 15.50 | 15.50 | 0.83 | 0.04 | 14.20 | 14.90 | 15.50 | 16.00 | 16.90 | 8 |
| LatinX | 100 | 13.1 | 16.9 | 14.94 | 14.80 | 0.82 | 0.08 | 13.68 | 14.40 | 14.80 | 15.67 | 16.12 | 2 |
| Asian | 91 | 12.9 | 17.2 | 14.85 | 14.70 | 0.96 | 0.10 | 13.54 | 14.20 | 14.70 | 15.40 | 16.66 | 2 |
| Other | 21 | 13.5 | 17.2 | 15.15 | 15.00 | 0.88 | 0.19 | 14.07 | 14.57 | 15.00 | 15.85 | 16.35 | 1 |
| AIAN | 8 | 13.8 | 16.0 | 14.60 | 14.40 | 0.69 | 0.24 | 13.95 | 14.30 | 14.40 | 14.70 | 15.64 | 1 |
| PTNS | 5 | 14.2 | 16.2 | 15.28 | 15.20 | 0.77 | 0.34 | 14.36 | 15.00 | 15.20 | 15.80 | 16.12 | 0 |
| NHOPI | 4 | 15.0 | 15.5 | 15.20 | 15.15 | 0.24 | 0.12 | 15.00 | 15.00 | 15.15 | 15.35 | 15.47 | 0 |

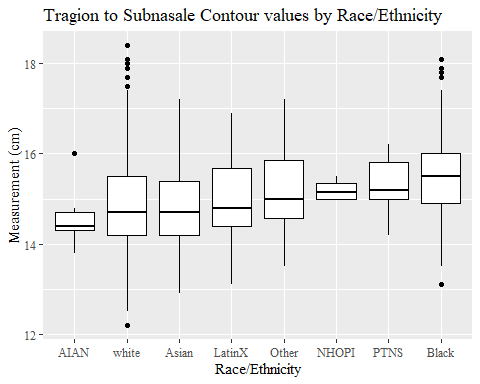
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSnas\_Crace\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Subnasale Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 12.2 | 18.4 | 14.84 | 14.70 | 0.91 | 0.03 | 13.50 | 14.20 | 14.70 | 15.50 | 16.40 | 76 |
| Black | 548 | 13.1 | 18.1 | 15.50 | 15.50 | 0.83 | 0.04 | 14.20 | 14.90 | 15.50 | 16.00 | 16.90 | 8 |
| LatinX | 100 | 13.1 | 16.9 | 14.94 | 14.80 | 0.82 | 0.08 | 13.68 | 14.40 | 14.80 | 15.67 | 16.12 | 2 |
| Asian | 91 | 12.9 | 17.2 | 14.85 | 14.70 | 0.96 | 0.10 | 13.54 | 14.20 | 14.70 | 15.40 | 16.66 | 2 |
| Other | 21 | 13.5 | 17.2 | 15.15 | 15.00 | 0.88 | 0.19 | 14.07 | 14.57 | 15.00 | 15.85 | 16.35 | 1 |
| AIAN | 8 | 13.8 | 16.0 | 14.60 | 14.40 | 0.69 | 0.24 | 13.95 | 14.30 | 14.40 | 14.70 | 15.64 | 1 |
| PTNS | 5 | 14.2 | 16.2 | 15.28 | 15.20 | 0.77 | 0.34 | 14.36 | 15.00 | 15.20 | 15.80 | 16.12 | 0 |
| NHOPI | 4 | 15.0 | 15.5 | 15.20 | 15.15 | 0.24 | 0.12 | 15.00 | 15.00 | 15.15 | 15.35 | 15.47 | 0 |

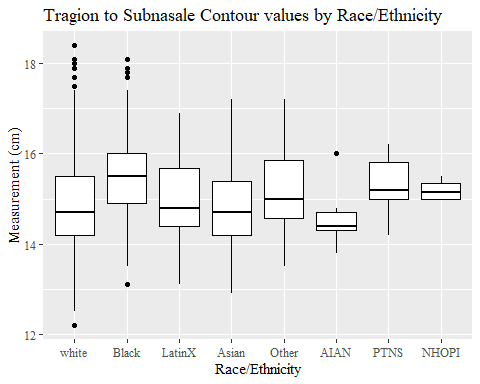
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrSnas\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrSnas\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSnas\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 90 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrSnas\_C\_no\_out, aes(y=TrSnas\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 90 rows containing non-finite values (stat\_boxplot).



#TrSnas\_C gender sumstats  
TrSnas\_Cgender\_sumstats1 <- TrSnas\_C\_no\_out %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrSnas\_C, na.rm = TRUE),  
 max = max(TrSnas\_C, na.rm = TRUE),  
 mean = mean(TrSnas\_C, na.rm = TRUE),  
 mdn = median(TrSnas\_C, na.rm = TRUE),  
 sd = sd(TrSnas\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSnas\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSnas\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSnas\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSnas\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSnas\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSnas\_C)))  
  
TrSnas\_Cgender\_sumstats1 <- TrSnas\_Cgender\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrSnas\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Gender")

**Table** : Tragion to Subnasale Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 12.2 | 18.1 | 14.63 | 14.5 | 0.83 | 0.03 | 13.50 | 14.0 | 14.5 | 15.10 | 16.10 | 47 |
| Male | 939 | 12.7 | 18.4 | 15.51 | 15.5 | 0.82 | 0.03 | 14.20 | 14.9 | 15.5 | 16.00 | 16.90 | 43 |
| Non-binary or Other | 5 | 13.6 | 15.1 | 14.60 | 14.7 | 0.60 | 0.27 | 13.80 | 14.6 | 14.7 | 15.00 | 15.08 | 0 |
| Prefer not to say | 1 | 15.2 | 15.2 | 15.20 | 15.2 |  |  | 15.20 | 15.2 | 15.2 | 15.20 | 15.20 | 0 |
|  | 8 | 14.1 | 15.7 | 14.81 | 14.9 | 0.55 | 0.19 | 14.17 | 14.3 | 14.9 | 15.12 | 15.52 | 0 |

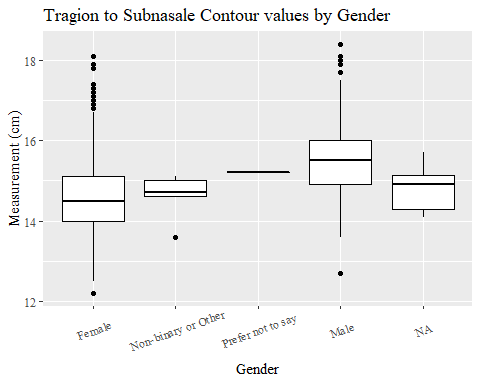
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSnas\_Cgender\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Subnasale Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 12.2 | 18.1 | 14.63 | 14.5 | 0.83 | 0.03 | 13.50 | 14.0 | 14.5 | 15.10 | 16.10 | 47 |
| Male | 939 | 12.7 | 18.4 | 15.51 | 15.5 | 0.82 | 0.03 | 14.20 | 14.9 | 15.5 | 16.00 | 16.90 | 43 |
| Non-binary or Other | 5 | 13.6 | 15.1 | 14.60 | 14.7 | 0.60 | 0.27 | 13.80 | 14.6 | 14.7 | 15.00 | 15.08 | 0 |
| Prefer not to say | 1 | 15.2 | 15.2 | 15.20 | 15.2 |  |  | 15.20 | 15.2 | 15.2 | 15.20 | 15.20 | 0 |
|  | 8 | 14.1 | 15.7 | 14.81 | 14.9 | 0.55 | 0.19 | 14.17 | 14.3 | 14.9 | 15.12 | 15.52 | 0 |

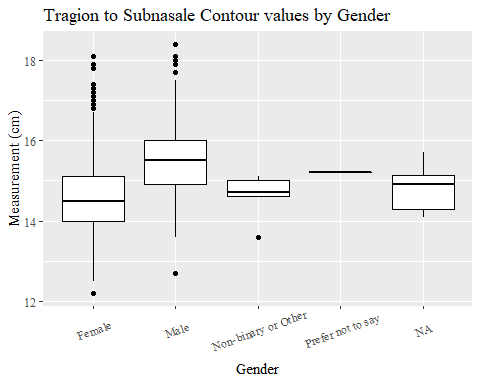
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrSnas\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrSnas\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSnas\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 90 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrSnas\_C\_no\_out, aes(y=TrSnas\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 90 rows containing non-finite values (stat\_boxplot).



#TrSnas\_C age group sumstats  
TrSnas\_Cage\_sumstats1 <- TrSnas\_C\_no\_out %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrSnas\_C, na.rm = TRUE),  
 max = max(TrSnas\_C, na.rm = TRUE),  
 mean = mean(TrSnas\_C, na.rm = TRUE),  
 mdn = median(TrSnas\_C, na.rm = TRUE),  
 sd = sd(TrSnas\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrSnas\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrSnas\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrSnas\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrSnas\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrSnas\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrSnas\_C)))  
  
TrSnas\_Cage\_sumstats1 <- TrSnas\_Cage\_sumstats1 %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrSnas\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Age Group")

**Table** : Tragion to Subnasale Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 12.9 | 18.1 | 14.97 | 14.9 | 0.91 | 0.03 | 13.60 | 14.3 | 14.9 | 15.6 | 16.60 | 40 |
| 37-54 | 940 | 12.2 | 18.4 | 15.07 | 15.0 | 0.95 | 0.03 | 13.60 | 14.4 | 15.0 | 15.7 | 16.70 | 46 |
| 55-72 | 84 | 13.0 | 17.4 | 15.42 | 15.5 | 0.88 | 0.10 | 14.18 | 14.7 | 15.5 | 16.0 | 16.81 | 4 |
|  | 1 | 14.7 | 14.7 | 14.70 | 14.7 |  |  | 14.70 | 14.7 | 14.7 | 14.7 | 14.70 | 0 |

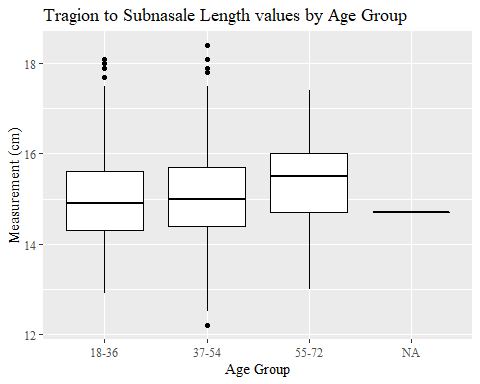
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#Autofit Width Table TNR  
flextable(TrSnas\_Cage\_sumstats1) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Subnasale Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Subnasale Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 12.9 | 18.1 | 14.97 | 14.9 | 0.91 | 0.03 | 13.60 | 14.3 | 14.9 | 15.6 | 16.60 | 40 |
| 37-54 | 940 | 12.2 | 18.4 | 15.07 | 15.0 | 0.95 | 0.03 | 13.60 | 14.4 | 15.0 | 15.7 | 16.70 | 46 |
| 55-72 | 84 | 13.0 | 17.4 | 15.42 | 15.5 | 0.88 | 0.10 | 14.18 | 14.7 | 15.5 | 16.0 | 16.81 | 4 |
|  | 1 | 14.7 | 14.7 | 14.70 | 14.7 |  |  | 14.70 | 14.7 | 14.7 | 14.7 | 14.70 | 0 |

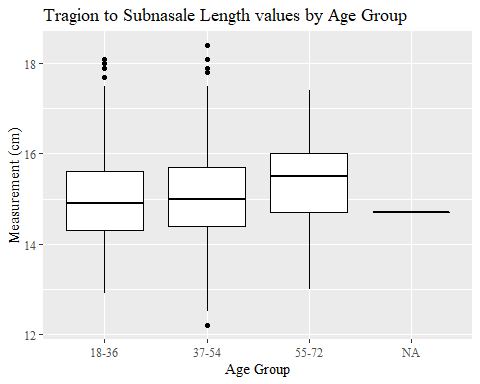
#%>% set\_header\_Cabels(values = list(TrSnas\_C = "Subnasale/SubnasaleCont"))  
  
#boxplot reorderd by median  
TrSnas\_C\_no\_out %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrSnas\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrSnas\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 90 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=TrSnas\_C\_no\_out, aes(y=TrSnas\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Subnasale Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

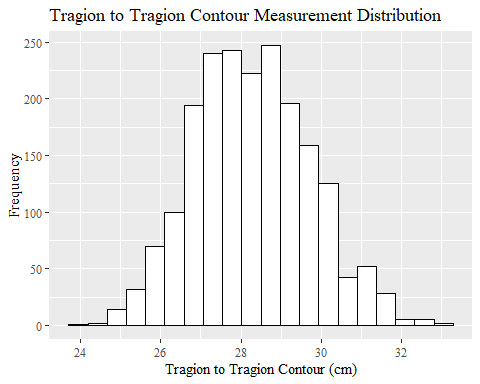
## Warning: Removed 90 rows containing non-finite values (stat\_boxplot).



TrTr\_C

#histogram of all TrTr\_C values  
ggplot(data=headscan\_full, aes(x=TrTr\_C ))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Tragion Contour Measurement Distribution",  
 y="Frequency",  
 x="Tragion to Tragion Contour (cm)")

## Warning: Removed 38 rows containing non-finite values (stat\_bin).



#TrTr\_C race/eth sumstats  
TrTr\_Crace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrTr\_C, na.rm = TRUE),  
 max = max(TrTr\_C, na.rm = TRUE),  
 mean = mean(TrTr\_C, na.rm = TRUE),  
 mdn = median(TrTr\_C, na.rm = TRUE),  
 sd = sd(TrTr\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrTr\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrTr\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrTr\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrTr\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrTr\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrTr\_C)))   
  
TrTr\_Crace\_sumstats <- TrTr\_Crace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrTr\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Contour SumStats by Race/Ethnicity")

**Table** : Tragion to Tragion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 24.1 | 33.2 | 28.07 | 28.00 | 1.38 | 0.04 | 26.00 | 27.10 | 28.00 | 29.00 | 30.40 | 23 |
| Black | 548 | 24.8 | 32.9 | 28.81 | 28.80 | 1.41 | 0.06 | 26.50 | 27.80 | 28.80 | 29.70 | 31.20 | 9 |
| LatinX | 100 | 25.0 | 31.7 | 28.06 | 27.90 | 1.41 | 0.14 | 25.79 | 27.25 | 27.90 | 29.00 | 30.25 | 1 |
| Asian | 91 | 24.3 | 32.5 | 28.12 | 27.80 | 1.52 | 0.16 | 26.10 | 27.10 | 27.80 | 29.13 | 30.90 | 3 |
| Other | 21 | 25.3 | 31.4 | 28.28 | 28.35 | 1.46 | 0.32 | 26.44 | 27.55 | 28.35 | 28.97 | 30.36 | 1 |
| AIAN | 8 | 26.5 | 29.6 | 27.30 | 26.70 | 1.12 | 0.40 | 26.53 | 26.65 | 26.70 | 27.50 | 29.09 | 1 |
| PTNS | 5 | 26.9 | 29.8 | 28.38 | 28.50 | 1.27 | 0.57 | 26.98 | 27.30 | 28.50 | 29.40 | 29.72 | 0 |
| NHOPI | 4 | 28.3 | 29.7 | 28.92 | 28.85 | 0.68 | 0.34 | 28.32 | 28.37 | 28.85 | 29.40 | 29.64 | 0 |

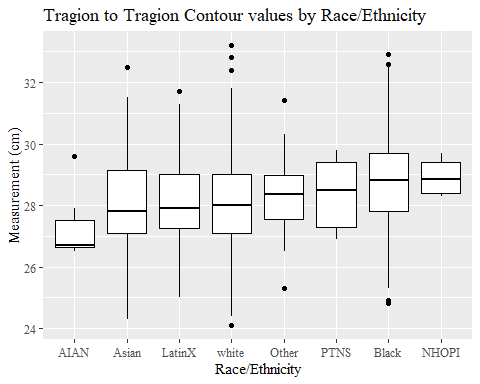
#%>% set\_header\_Cabels(values = list(TrTr\_C = "Tragion/TragionCont"))  
  
#Autofit Width Table TNR  
flextable(TrTr\_Crace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Contour SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Tragion Contour SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 24.1 | 33.2 | 28.07 | 28.00 | 1.38 | 0.04 | 26.00 | 27.10 | 28.00 | 29.00 | 30.40 | 23 |
| Black | 548 | 24.8 | 32.9 | 28.81 | 28.80 | 1.41 | 0.06 | 26.50 | 27.80 | 28.80 | 29.70 | 31.20 | 9 |
| LatinX | 100 | 25.0 | 31.7 | 28.06 | 27.90 | 1.41 | 0.14 | 25.79 | 27.25 | 27.90 | 29.00 | 30.25 | 1 |
| Asian | 91 | 24.3 | 32.5 | 28.12 | 27.80 | 1.52 | 0.16 | 26.10 | 27.10 | 27.80 | 29.13 | 30.90 | 3 |
| Other | 21 | 25.3 | 31.4 | 28.28 | 28.35 | 1.46 | 0.32 | 26.44 | 27.55 | 28.35 | 28.97 | 30.36 | 1 |
| AIAN | 8 | 26.5 | 29.6 | 27.30 | 26.70 | 1.12 | 0.40 | 26.53 | 26.65 | 26.70 | 27.50 | 29.09 | 1 |
| PTNS | 5 | 26.9 | 29.8 | 28.38 | 28.50 | 1.27 | 0.57 | 26.98 | 27.30 | 28.50 | 29.40 | 29.72 | 0 |
| NHOPI | 4 | 28.3 | 29.7 | 28.92 | 28.85 | 0.68 | 0.34 | 28.32 | 28.37 | 28.85 | 29.40 | 29.64 | 0 |

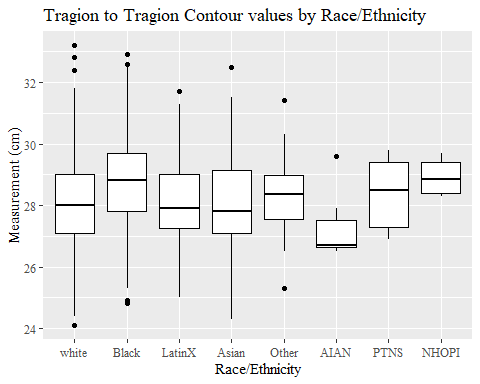
#%>% set\_header\_Cabels(values = list(TrTr\_C = "Tragion/TragionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrTr\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrTr\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 38 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrTr\_C, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Contour values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 38 rows containing non-finite values (stat\_boxplot).



#TrTr\_C gender sumstats  
TrTr\_Cgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrTr\_C, na.rm = TRUE),  
 max = max(TrTr\_C, na.rm = TRUE),  
 mean = mean(TrTr\_C, na.rm = TRUE),  
 mdn = median(TrTr\_C, na.rm = TRUE),  
 sd = sd(TrTr\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrTr\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrTr\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrTr\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrTr\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrTr\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrTr\_C)))  
  
TrTr\_Cgender\_sumstats <- TrTr\_Cgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrTr\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Contour SumStats by Gender")

**Table** : Tragion to Tragion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 24.1 | 32.9 | 27.58 | 27.50 | 1.23 | 0.04 | 25.70 | 26.70 | 27.50 | 28.3 | 29.72 | 26 |
| Male | 939 | 25.4 | 33.2 | 29.05 | 29.00 | 1.23 | 0.04 | 27.10 | 28.20 | 29.00 | 29.9 | 31.20 | 12 |
| Non-binary or Other | 5 | 26.0 | 28.8 | 27.72 | 27.80 | 1.04 | 0.47 | 26.36 | 27.80 | 27.80 | 28.2 | 28.68 | 0 |
| Prefer not to say | 1 | 29.4 | 29.4 | 29.40 | 29.40 |  |  | 29.40 | 29.40 | 29.40 | 29.4 | 29.40 | 0 |
|  | 8 | 27.0 | 30.2 | 27.91 | 27.75 | 1.05 | 0.37 | 27.00 | 27.15 | 27.75 | 28.1 | 29.57 | 0 |

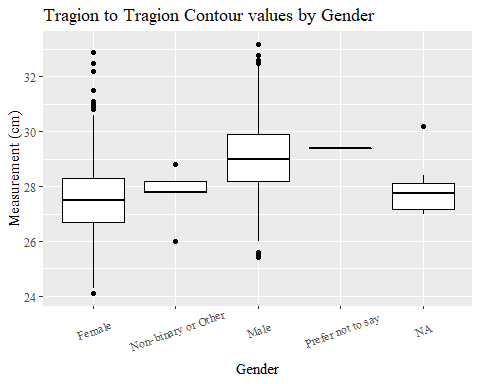
#%>% set\_header\_Cabels(values = list(TrTr\_C = "Tragion/TragionCont"))  
  
#Autofit Width Table TNR  
flextable(TrTr\_Cgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Contour SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Tragion Contour SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 24.1 | 32.9 | 27.58 | 27.50 | 1.23 | 0.04 | 25.70 | 26.70 | 27.50 | 28.3 | 29.72 | 26 |
| Male | 939 | 25.4 | 33.2 | 29.05 | 29.00 | 1.23 | 0.04 | 27.10 | 28.20 | 29.00 | 29.9 | 31.20 | 12 |
| Non-binary or Other | 5 | 26.0 | 28.8 | 27.72 | 27.80 | 1.04 | 0.47 | 26.36 | 27.80 | 27.80 | 28.2 | 28.68 | 0 |
| Prefer not to say | 1 | 29.4 | 29.4 | 29.40 | 29.40 |  |  | 29.40 | 29.40 | 29.40 | 29.4 | 29.40 | 0 |
|  | 8 | 27.0 | 30.2 | 27.91 | 27.75 | 1.05 | 0.37 | 27.00 | 27.15 | 27.75 | 28.1 | 29.57 | 0 |

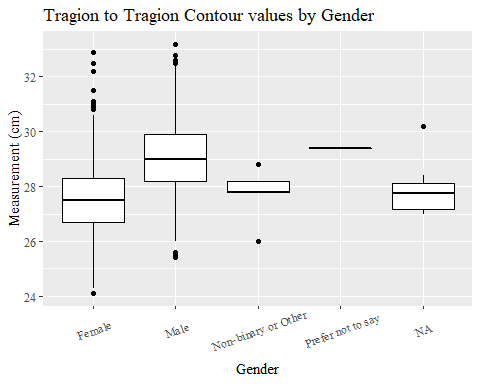
#%>% set\_header\_Cabels(values = list(TrTr\_C = "Tragion/TragionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrTr\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrTr\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 38 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrTr\_C, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Contour values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 38 rows containing non-finite values (stat\_boxplot).



#TrTr\_C age group sumstats  
TrTr\_Cage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrTr\_C, na.rm = TRUE),  
 max = max(TrTr\_C, na.rm = TRUE),  
 mean = mean(TrTr\_C, na.rm = TRUE),  
 mdn = median(TrTr\_C, na.rm = TRUE),  
 sd = sd(TrTr\_C, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrTr\_C, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrTr\_C, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrTr\_C, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrTr\_C, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrTr\_C, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrTr\_C)))  
  
TrTr\_Cage\_sumstats <- TrTr\_Cage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrTr\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Contour SumStats by Age Group")

**Table** : Tragion to Tragion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 24.1 | 32.6 | 28.22 | 28.2 | 1.44 | 0.05 | 26.00 | 27.2 | 28.2 | 29.20 | 30.70 | 18 |
| 37-54 | 940 | 24.4 | 33.2 | 28.28 | 28.2 | 1.43 | 0.05 | 26.10 | 27.2 | 28.2 | 29.30 | 30.80 | 19 |
| 55-72 | 84 | 25.5 | 31.7 | 28.76 | 28.8 | 1.33 | 0.14 | 26.61 | 27.8 | 28.8 | 29.75 | 30.89 | 1 |
|  | 1 | 28.3 | 28.3 | 28.30 | 28.3 |  |  | 28.30 | 28.3 | 28.3 | 28.30 | 28.30 | 0 |

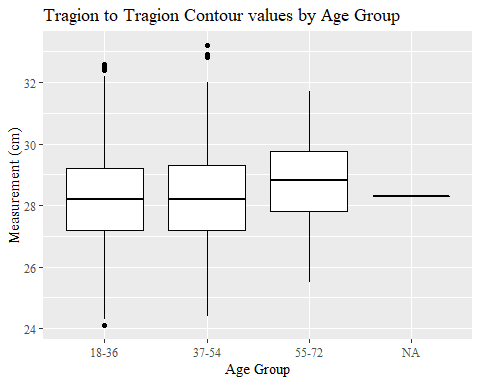
#%>% set\_header\_Cabels(values = list(TrTr\_C = "Tragion/TragionCont"))  
  
#Autofit Width Table TNR  
flextable(TrTr\_Cage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Contour SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Tragion Contour SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 24.1 | 32.6 | 28.22 | 28.2 | 1.44 | 0.05 | 26.00 | 27.2 | 28.2 | 29.20 | 30.70 | 18 |
| 37-54 | 940 | 24.4 | 33.2 | 28.28 | 28.2 | 1.43 | 0.05 | 26.10 | 27.2 | 28.2 | 29.30 | 30.80 | 19 |
| 55-72 | 84 | 25.5 | 31.7 | 28.76 | 28.8 | 1.33 | 0.14 | 26.61 | 27.8 | 28.8 | 29.75 | 30.89 | 1 |
|  | 1 | 28.3 | 28.3 | 28.30 | 28.3 |  |  | 28.30 | 28.3 | 28.3 | 28.30 | 28.30 | 0 |

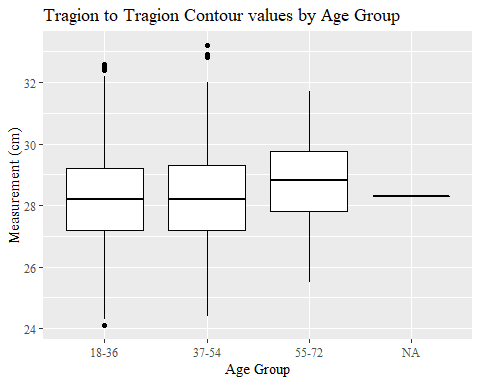
#%>% set\_header\_Cabels(values = list(TrTr\_C = "Tragion/TragionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrTr\_C, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrTr\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 38 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrTr\_C, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Contour values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

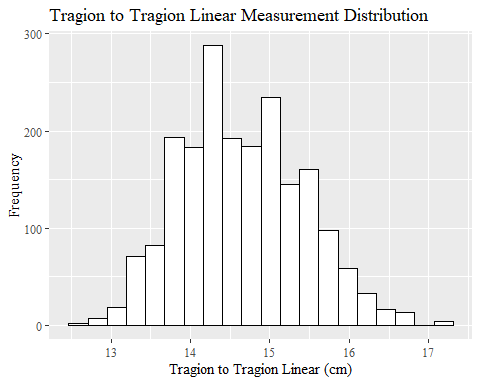
## Warning: Removed 38 rows containing non-finite values (stat\_boxplot).



TrTr\_L

#histogram of all TrTr\_L values  
ggplot(data=headscan\_full, aes(x=TrTr\_L))+  
 geom\_bar(stat="bin", bins=20, color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 labs(title="Tragion to Tragion Linear Measurement Distribution",  
 y="Frequency",  
 x="Tragion to Tragion Linear (cm)")

## Warning: Removed 34 rows containing non-finite values (stat\_bin).



#TrTr\_L race/eth sumstats  
TrTr\_Lrace\_sumstats <- headscan\_full %>%   
 group\_by(race\_eth) %>%   
 summarise(n = n(),  
 min = min(TrTr\_L, na.rm = TRUE),  
 max = max(TrTr\_L, na.rm = TRUE),  
 mean = mean(TrTr\_L, na.rm = TRUE),  
 mdn = median(TrTr\_L, na.rm = TRUE),  
 sd = sd(TrTr\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrTr\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrTr\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrTr\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrTr\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrTr\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrTr\_L)))   
  
TrTr\_Lrace\_sumstats <- TrTr\_Lrace\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrTr\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Linear SumStats by Race/Ethnicity")

**Table** : Tragion to Tragion Linear SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 12.7 | 17.3 | 14.55 | 14.50 | 0.76 | 0.02 | 13.40 | 14.00 | 14.50 | 15.10 | 15.80 | 20 |
| Black | 548 | 13.0 | 17.2 | 14.85 | 14.80 | 0.76 | 0.03 | 13.70 | 14.30 | 14.80 | 15.40 | 16.11 | 9 |
| LatinX | 100 | 13.2 | 17.1 | 14.69 | 14.70 | 0.75 | 0.08 | 13.50 | 14.15 | 14.70 | 15.10 | 15.81 | 1 |
| Asian | 91 | 12.9 | 16.7 | 14.76 | 14.80 | 0.87 | 0.09 | 13.54 | 14.00 | 14.80 | 15.30 | 16.10 | 2 |
| Other | 21 | 13.8 | 15.9 | 14.74 | 14.60 | 0.66 | 0.14 | 13.99 | 14.20 | 14.60 | 15.17 | 15.80 | 1 |
| AIAN | 8 | 13.2 | 15.7 | 14.19 | 14.00 | 0.80 | 0.28 | 13.38 | 13.85 | 14.00 | 14.35 | 15.40 | 1 |
| PTNS | 5 | 13.7 | 15.6 | 14.78 | 15.30 | 0.86 | 0.39 | 13.76 | 14.00 | 15.30 | 15.30 | 15.54 | 0 |
| NHOPI | 4 | 15.3 | 16.0 | 15.65 | 15.65 | 0.31 | 0.16 | 15.33 | 15.45 | 15.65 | 15.85 | 15.97 | 0 |

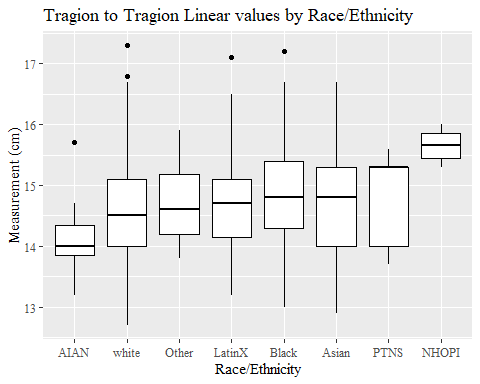
#%>% set\_header\_Labels(values = list(TrTr\_L = "Tragion/TragionCont"))  
  
#Autofit Width Table TNR  
flextable(TrTr\_Lrace\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Linear SumStats by Race/Ethnicity") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Tragion Linear SumStats by Race/Ethnicity

| **race\_eth** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| white | 1,240 | 12.7 | 17.3 | 14.55 | 14.50 | 0.76 | 0.02 | 13.40 | 14.00 | 14.50 | 15.10 | 15.80 | 20 |
| Black | 548 | 13.0 | 17.2 | 14.85 | 14.80 | 0.76 | 0.03 | 13.70 | 14.30 | 14.80 | 15.40 | 16.11 | 9 |
| LatinX | 100 | 13.2 | 17.1 | 14.69 | 14.70 | 0.75 | 0.08 | 13.50 | 14.15 | 14.70 | 15.10 | 15.81 | 1 |
| Asian | 91 | 12.9 | 16.7 | 14.76 | 14.80 | 0.87 | 0.09 | 13.54 | 14.00 | 14.80 | 15.30 | 16.10 | 2 |
| Other | 21 | 13.8 | 15.9 | 14.74 | 14.60 | 0.66 | 0.14 | 13.99 | 14.20 | 14.60 | 15.17 | 15.80 | 1 |
| AIAN | 8 | 13.2 | 15.7 | 14.19 | 14.00 | 0.80 | 0.28 | 13.38 | 13.85 | 14.00 | 14.35 | 15.40 | 1 |
| PTNS | 5 | 13.7 | 15.6 | 14.78 | 15.30 | 0.86 | 0.39 | 13.76 | 14.00 | 15.30 | 15.30 | 15.54 | 0 |
| NHOPI | 4 | 15.3 | 16.0 | 15.65 | 15.65 | 0.31 | 0.16 | 15.33 | 15.45 | 15.65 | 15.85 | 15.97 | 0 |

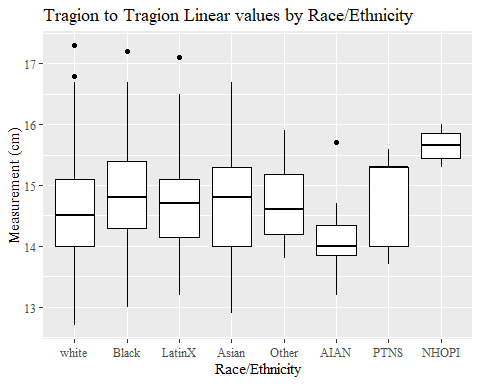
#%>% set\_header\_Labels(values = list(TrTr\_L = "Tragion/TragionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(race\_eth= fct\_reorder(race\_eth, TrTr\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrTr\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Linear values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 34 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrTr\_L, x=race\_eth))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Linear values by Race/Ethnicity",  
 y="Measurement (cm)",  
 x="Race/Ethnicity")

## Warning: Removed 34 rows containing non-finite values (stat\_boxplot).



#TrTr\_L gender sumstats  
TrTr\_Lgender\_sumstats <- headscan\_full %>%   
 group\_by(gender) %>%   
 summarise(n = n(),  
 min = min(TrTr\_L, na.rm = TRUE),  
 max = max(TrTr\_L, na.rm = TRUE),  
 mean = mean(TrTr\_L, na.rm = TRUE),  
 mdn = median(TrTr\_L, na.rm = TRUE),  
 sd = sd(TrTr\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrTr\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrTr\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrTr\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrTr\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrTr\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrTr\_L)))  
  
TrTr\_Lgender\_sumstats <- TrTr\_Lgender\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
#Size 12 Table TNR  
flextable(TrTr\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Linear SumStats by Gender")

**Table** : Tragion to Tragion Linear SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 12.7 | 16.5 | 14.19 | 14.2 | 0.58 | 0.02 | 13.30 | 13.80 | 14.2 | 14.50 | 15.20 | 23 |
| Male | 939 | 13.2 | 17.3 | 15.17 | 15.2 | 0.62 | 0.02 | 14.20 | 14.70 | 15.2 | 15.60 | 16.20 | 11 |
| Non-binary or Other | 5 | 13.9 | 14.9 | 14.32 | 14.1 | 0.41 | 0.19 | 13.94 | 14.10 | 14.1 | 14.60 | 14.84 | 0 |
| Prefer not to say | 1 | 15.3 | 15.3 | 15.30 | 15.3 |  |  | 15.30 | 15.30 | 15.3 | 15.30 | 15.30 | 0 |
|  | 8 | 13.8 | 15.0 | 14.45 | 14.4 | 0.38 | 0.13 | 13.94 | 14.28 | 14.4 | 14.72 | 14.93 | 0 |

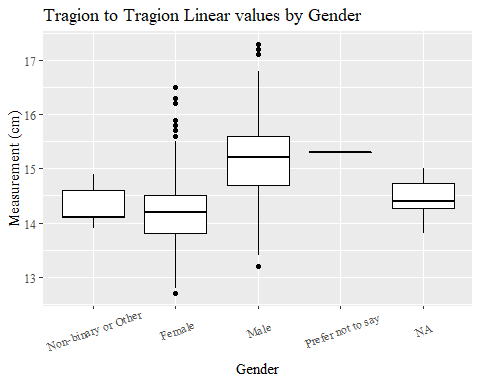
#%>% set\_header\_Labels(values = list(TrTr\_L = "Tragion/TragionCont"))  
  
#Autofit Width Table TNR  
flextable(TrTr\_Lgender\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Linear SumStats by Gender") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Tragion Linear SumStats by Gender

| **gender** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Female | 1,064 | 12.7 | 16.5 | 14.19 | 14.2 | 0.58 | 0.02 | 13.30 | 13.80 | 14.2 | 14.50 | 15.20 | 23 |
| Male | 939 | 13.2 | 17.3 | 15.17 | 15.2 | 0.62 | 0.02 | 14.20 | 14.70 | 15.2 | 15.60 | 16.20 | 11 |
| Non-binary or Other | 5 | 13.9 | 14.9 | 14.32 | 14.1 | 0.41 | 0.19 | 13.94 | 14.10 | 14.1 | 14.60 | 14.84 | 0 |
| Prefer not to say | 1 | 15.3 | 15.3 | 15.30 | 15.3 |  |  | 15.30 | 15.30 | 15.3 | 15.30 | 15.30 | 0 |
|  | 8 | 13.8 | 15.0 | 14.45 | 14.4 | 0.38 | 0.13 | 13.94 | 14.28 | 14.4 | 14.72 | 14.93 | 0 |

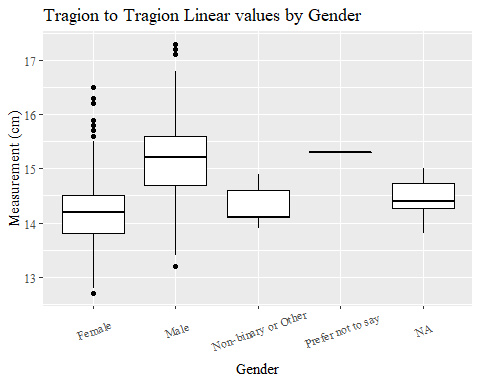
#%>% set\_header\_Labels(values = list(TrTr\_L = "Tragion/TragionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(gender= fct\_reorder(gender, TrTr\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrTr\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Linear values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 34 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrTr\_L, x=gender))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Linear values by Gender",  
 y="Measurement (cm)",  
 x="Gender")

## Warning: Removed 34 rows containing non-finite values (stat\_boxplot).



#TrTr\_L age group sumstats  
TrTr\_Lage\_sumstats <- headscan\_full %>%   
 group\_by(age\_group) %>%   
 summarise(n = n(),  
 min = min(TrTr\_L, na.rm = TRUE),  
 max = max(TrTr\_L, na.rm = TRUE),  
 mean = mean(TrTr\_L, na.rm = TRUE),  
 mdn = median(TrTr\_L, na.rm = TRUE),  
 sd = sd(TrTr\_L, na.rm = TRUE),  
 se = sd/sqrt(n),  
 percent5th = quantile(TrTr\_L, 0.05, na.rm=TRUE),  
 percent25th = quantile(TrTr\_L, 0.25, na.rm=TRUE),  
 percent50th = quantile(TrTr\_L, 0.50, na.rm=TRUE),  
 percent75th = quantile(TrTr\_L, 0.75, na.rm=TRUE),  
 percent95th = quantile(TrTr\_L, 0.95, na.rm=TRUE),  
 na = sum(is.na(TrTr\_L)))  
  
TrTr\_Lage\_sumstats <- TrTr\_Lage\_sumstats %>%   
 mutate(across(where(is.numeric), round, 2))  
  
  
#Size 12 Table TNR  
flextable(TrTr\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Linear SumStats by Age Group")

**Table** : Tragion to Tragion Linear SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 12.7 | 16.7 | 14.64 | 14.6 | 0.77 | 0.02 | 13.40 | 14.1 | 14.6 | 15.2 | 16.00 | 15 |
| 37-54 | 940 | 12.7 | 17.3 | 14.64 | 14.6 | 0.77 | 0.03 | 13.50 | 14.1 | 14.6 | 15.2 | 15.99 | 18 |
| 55-72 | 84 | 13.2 | 17.2 | 14.92 | 14.9 | 0.85 | 0.09 | 13.61 | 14.3 | 14.9 | 15.6 | 16.19 | 1 |
|  | 1 | 14.7 | 14.7 | 14.70 | 14.7 |  |  | 14.70 | 14.7 | 14.7 | 14.7 | 14.70 | 0 |

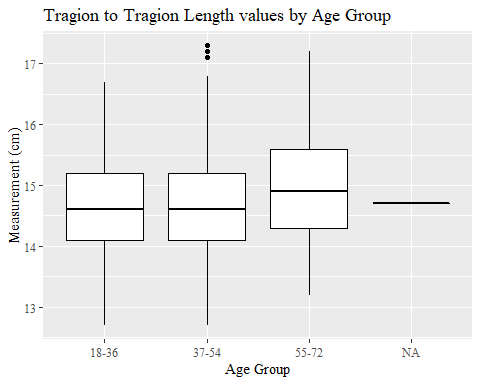
#%>% set\_header\_Labels(values = list(TrTr\_L = "Tragion/TragionCont"))  
  
#Autofit Width Table TNR  
flextable(TrTr\_Lage\_sumstats) %>%  
 my\_ft\_theme()%>%   
 bold(part = "header") %>%   
 set\_caption("Tragion to Tragion Linear SumStats by Age Group") %>%   
 fit\_to\_width(7.5)

**Table** : Tragion to Tragion Linear SumStats by Age Group

| **age\_group** | **n** | **min** | **max** | **mean** | **mdn** | **sd** | **se** | **percent5th** | **percent25th** | **percent50th** | **percent75th** | **percent95th** | **na** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18-36 | 992 | 12.7 | 16.7 | 14.64 | 14.6 | 0.77 | 0.02 | 13.40 | 14.1 | 14.6 | 15.2 | 16.00 | 15 |
| 37-54 | 940 | 12.7 | 17.3 | 14.64 | 14.6 | 0.77 | 0.03 | 13.50 | 14.1 | 14.6 | 15.2 | 15.99 | 18 |
| 55-72 | 84 | 13.2 | 17.2 | 14.92 | 14.9 | 0.85 | 0.09 | 13.61 | 14.3 | 14.9 | 15.6 | 16.19 | 1 |
|  | 1 | 14.7 | 14.7 | 14.70 | 14.7 |  |  | 14.70 | 14.7 | 14.7 | 14.7 | 14.70 | 0 |

#%>% set\_header\_Labels(values = list(TrTr\_L = "Tragion/TragionCont"))  
  
#boxplot reorderd by median  
headscan\_full %>%   
 ungroup() %>%   
 mutate(age\_group= fct\_reorder(age\_group, TrTr\_L, FUN=median, na.rm=TRUE)) %>%   
 ggplot(aes(y=TrTr\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 34 rows containing non-finite values (stat\_boxplot).



#boxplot not reordered by median  
ggplot(data=headscan\_full, aes(y=TrTr\_L, x=age\_group))+  
 geom\_boxplot(color= "black", fill = "white")+  
 theme(text=element\_text(family= "Times New Roman"))+  
 #theme(axis.text.x = element\_text(angle = 20, vjust=0.7))+  
 labs(title="Tragion to Tragion Length values by Age Group",  
 y="Measurement (cm)",  
 x="Age Group")

## Warning: Removed 34 rows containing non-finite values (stat\_boxplot).

