

Humpback Whales and Ship Noise

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1 Data and Descriptive Statistics

```
# import data (this dataset is unfortunately not public)
openxlsx::read.xlsx("../Data/Humpback_Whales_Data.xlsx") -> dat_whale

# first a quick look at the missing values in the data
sapply(dat_whale, \(x) sum(is.na(x))) |> knitr::kable(col.names = "NAs")
```

	NAs
Individuum	0
Treatment	0
Szenario	0
ruhezeit	0
speed	5
Atem	0

```
# harmonize names
colnames(dat_whale) <- tolower(colnames(dat_whale))

# to numeric
lapply(dat_whale[, c("ruhezeit", "speed", "atem")], as.numeric) -> dat_whale[, c("ruhezeit", "speed", "atem")]

# to factor
lapply(dat_whale[, !(colnames(dat_whale) %in% c("ruhezeit", "speed", "atem"))],
       as.factor) -> dat_whale[, !(colnames(dat_whale) %in% c("ruhezeit", "speed", "atem"))]

# relevele
factor(dat_whale[, "szenario"],
       levels = c("Before", "During", "After")) -> dat_whale[, "szenario"]
factor(dat_whale[, "treatment"], c("Medium", "High", "Control")) -> dat_whale[, "treatment"]

# first split into different intensities
dat_whale_intens <- split(dat_whale, dat_whale[, "treatment"])

# build formulas
formulae <- paste(c("ruhezeit", "speed", "atem"), "~", "szenario")

# over treatment
invisible(Map(\(x, nom){

  # align
  par(mfrow = c(3, 1))

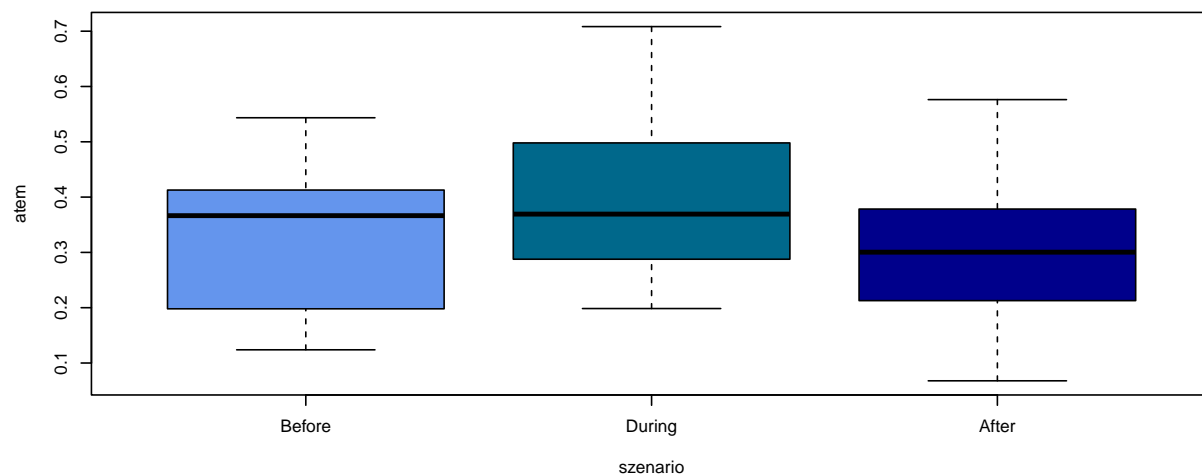
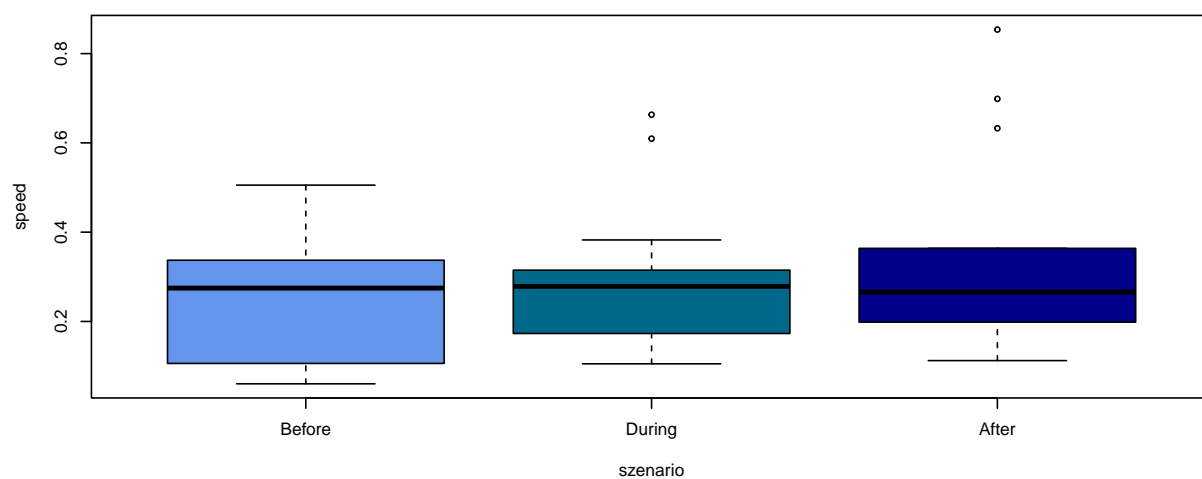
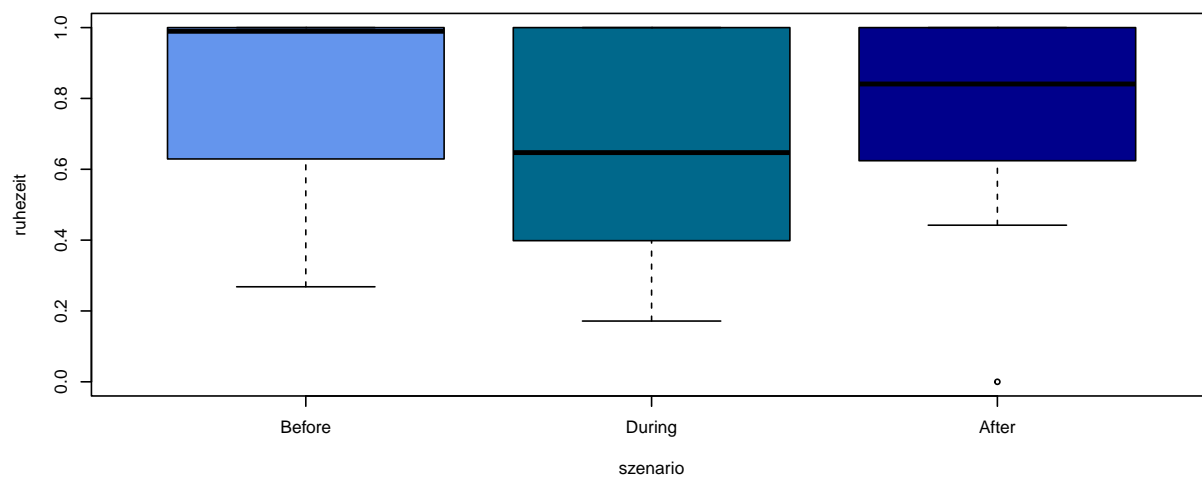
  # over szenarios
  invisible(Map(\(y, ind){

    # boxplots
    boxplot(as.formula(y), data = x,
            col = c("cornflowerblue", "deepskyblue4", "darkblue"))

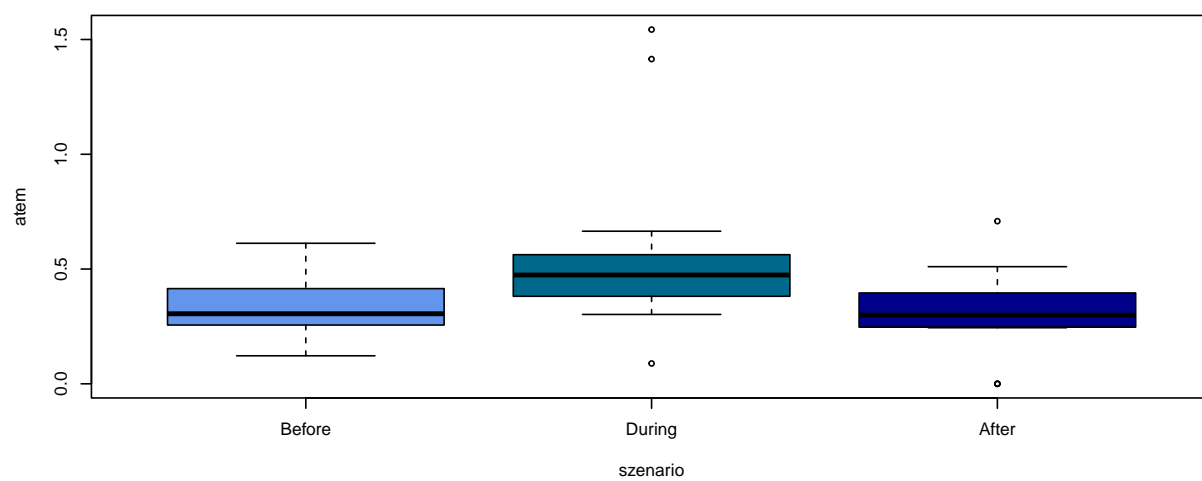
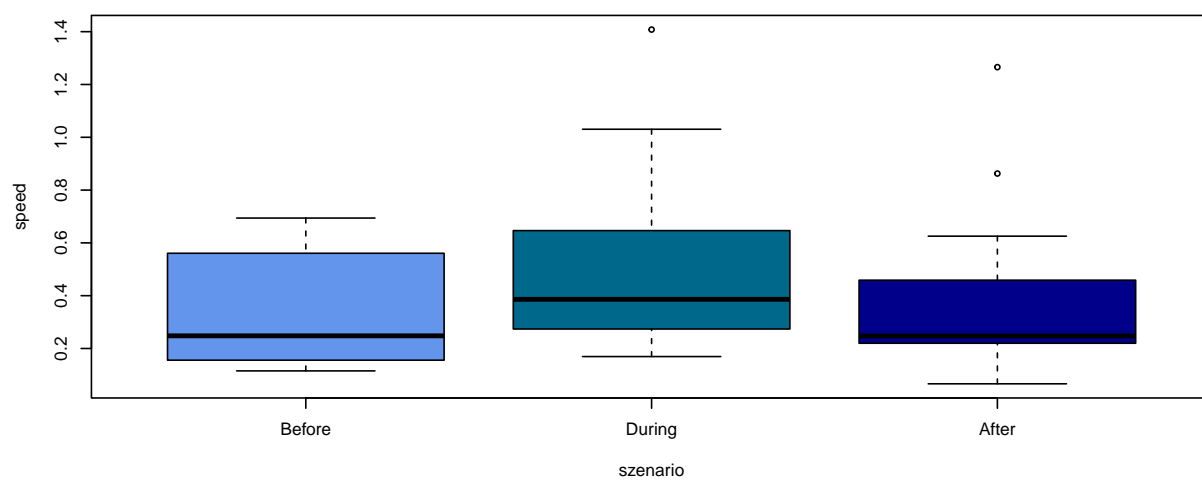
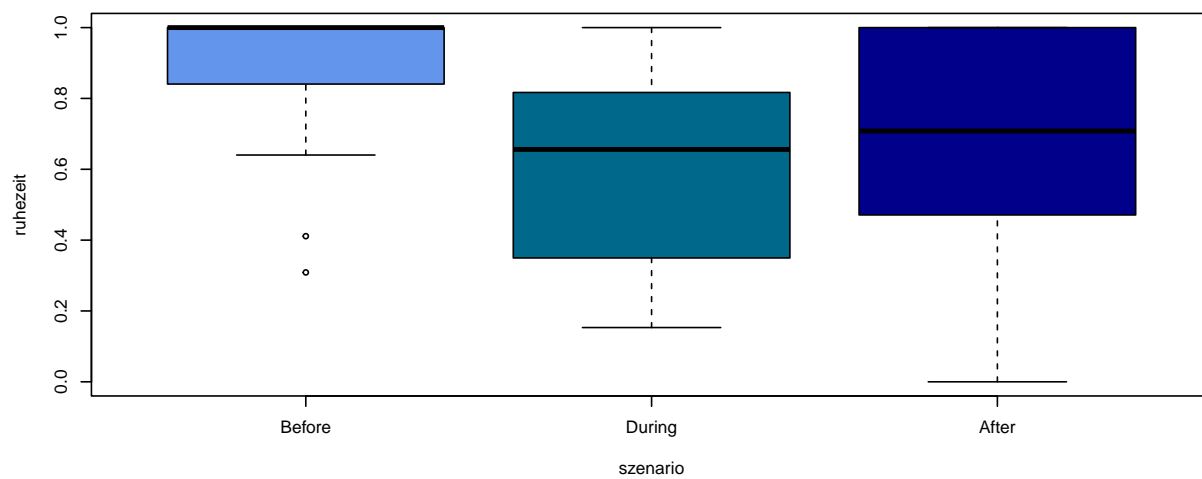
    # add label
    if(ind) mtext(nom, side = 3, line = 2, cex = 2)
```

```
  }, formulae, rep(c(T, F, F), 3))  
}, dat_whale_intens, names(dat_whale_intens))
```

Medium



High



Control

