

# Angewandte Forschungsmethodik I: Strukturgleichungsmodellierung I (SS 18)

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## Recoding

```
allbus %<>%  
  select(-mn11:-mn21) %>% #select(mm05) %>% table()  
  mutate(mm02 = 8 - mm02) %>%  
  mutate(mm05 = 8 - mm05) %>%  
  select(mm01:mm06, Alter, Bildung, Geschlecht)
```

## Imputation

```
mice_allbus <- mice(allbus, method = "norm.nob", m = 1)  
  
imp_allbus <- complete(mice_allbus)  
  
names(imp_allbus) <- paste0(names(imp_allbus), "_imp")
```

## Merging

```
combined_allbus <- allbus %>%  
  cbind(imp_allbus)  
  
combined_allbus %>%  
  sjmisc::descr() %>%  
  as.data.frame() %>%  
  select(-type, -label, -se:-trimmed) %>%  
  arrange(variable) %>%  
  knitr::kable()
```

## Correlation Matrices

```
ggheatmap <- function(.data) {  
  
  library(reshape2)  
  
  cormat <- round(cor(.data, use = "pairwise.complete.obs"),3)
```

```

# Get upper triangle of the correlation matrix
get_upper_tri <- function(cormat){
  cormat[lower.tri(cormat)] <- NA
  return(cormat)
}

reorder_cormat <- function(cormat){
  # Use correlation between variables as distance
  dd <- as.dist((1-cormat)/2)
  hc <- hclust(dd)
  cormat <- cormat[hc$order, hc$order]
}

# Reorder the correlation matrix
#cormat <- reorder_cormat(cormat)
upper_tri <- get_upper_tri(cormat)
# Melt the correlation matrix
melted_cormat <- melt(upper_tri, na.rm = TRUE) %>%
  mutate(value = sprintf("%.2f", value, 2)) %>%
  mutate(value = as.numeric(value))
# Create a ggheatmap
ggplot(melted_cormat, aes(Var2, Var1, fill = value)) +
  geom_tile(color = "white")+
  scale_fill_gradient2(low = "blue", high = "red", mid = "white",
    midpoint = 0, limit = c(-1,1), space = "Lab",
    name="Pearson Correlation\n") +
  ggthemes::theme_hc() + # minimal theme
  theme(axis.text.x = element_text(angle = 45, vjust = 1,
    size = 12, hjust = 1))+
  # coord_fixed() +
  geom_text(aes(Var2, Var1, label = value), color = "black", size = 4) +
  theme(
    axis.title.x = element_blank(),
    axis.title.y = element_blank(),
    panel.grid.major = element_blank(),
    panel.border = element_blank(),
    panel.background = element_blank(),
    axis.ticks = element_blank(),
    legend.justification = c(1, 0),
    legend.position = c(0.7, 0.8),
    legend.title = element_text(size = 20),
    axis.ticks.length = unit(2, "cm"),
    legend.direction = "horizontal")+
  guides(fill = guide_colorbar(barwidth = 30, barheight = 1.5,
    title.position = "top", title.hjust = 0.5))
}

ggheatmap(combined_allbus)

```

