MAR 45% missing - RandomForest

```
# sample MCAR dataset from PUMS
source("../../utils/sampleMAR45.R")
n = 10000
missing_col = c(1,3,7,9,10,11)
set.seed(3)

output_list <- sampleMAR45(n)
df <- output_list[['df']]
df_observed <- output_list[['df_observed']]

apply(is.na(df_observed), MARGIN = 2, mean)
```

```
##    VEH     MV     NP   RMSP    ENG  MARHT   SCHL RACNUM   AGEP    WKL  PINCP
## 0.4456 0.0000 0.3998 0.0000 0.0000 0.0000 0.4842 0.0000 0.4670 0.4478 0.4384
```

missForest

```
df.imp <- missForest(df_observed, verbose = FALSE)
d1 <-  df.imp$ximp
df.imp <- missForest(df_observed, verbose = FALSE)
d2 <-  df.imp$ximp
df.imp <- missForest(df_observed, verbose = FALSE)
d3 <-  df.imp$ximp
df.imp <- missForest(df_observed, verbose = FALSE)
d4 <-  df.imp$ximp
df.imp <- missForest(df_observed, verbose = FALSE)
d5 <-  df.imp$ximp
imputed_sets = rbind(d1, d2, d3, d4, d5)
```

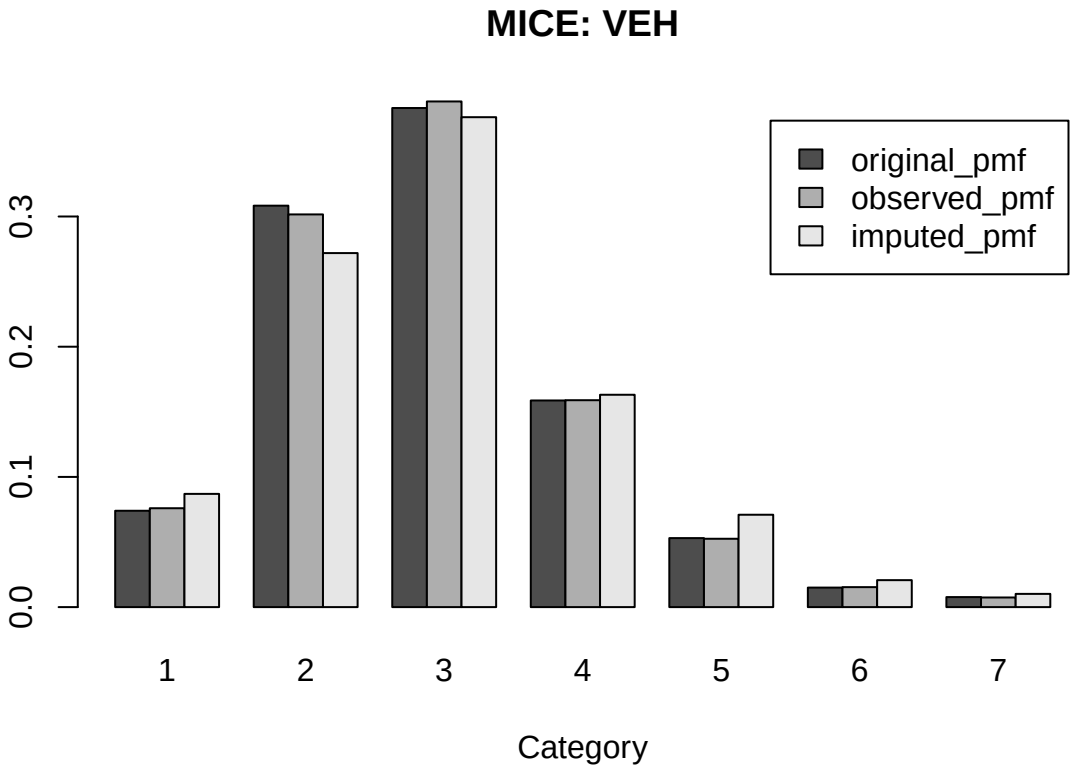
Diagnostics

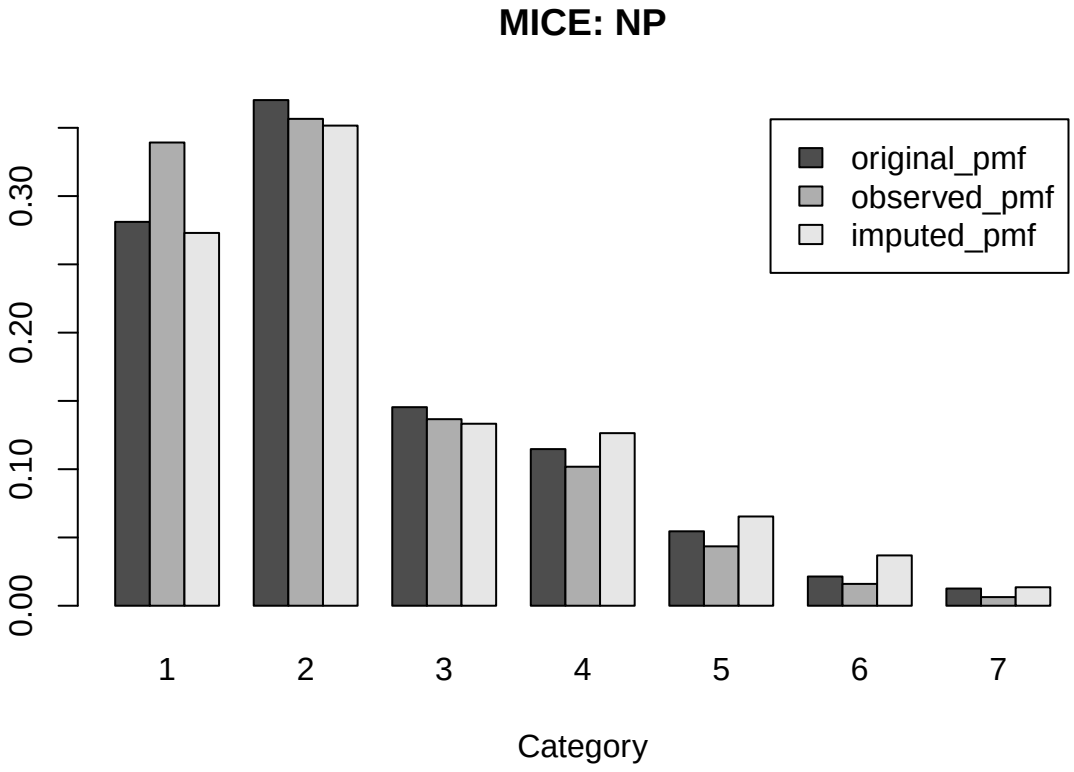
Assess bivariate joint distribution

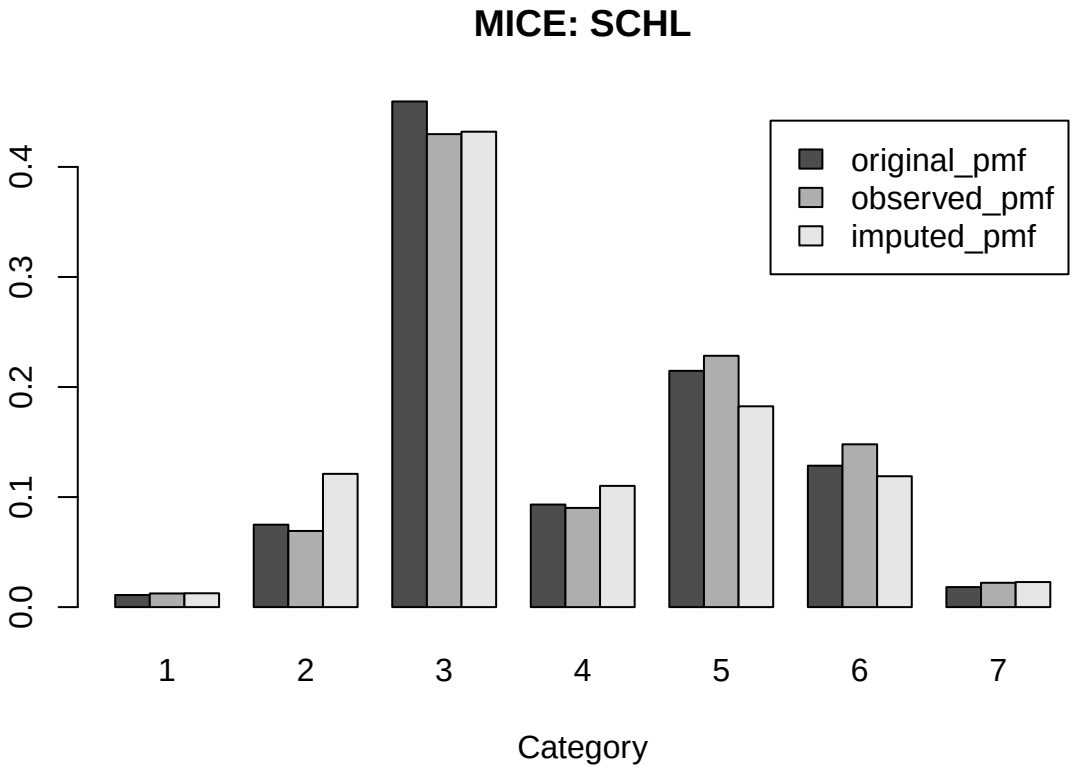
Assess trivariate joint distribution

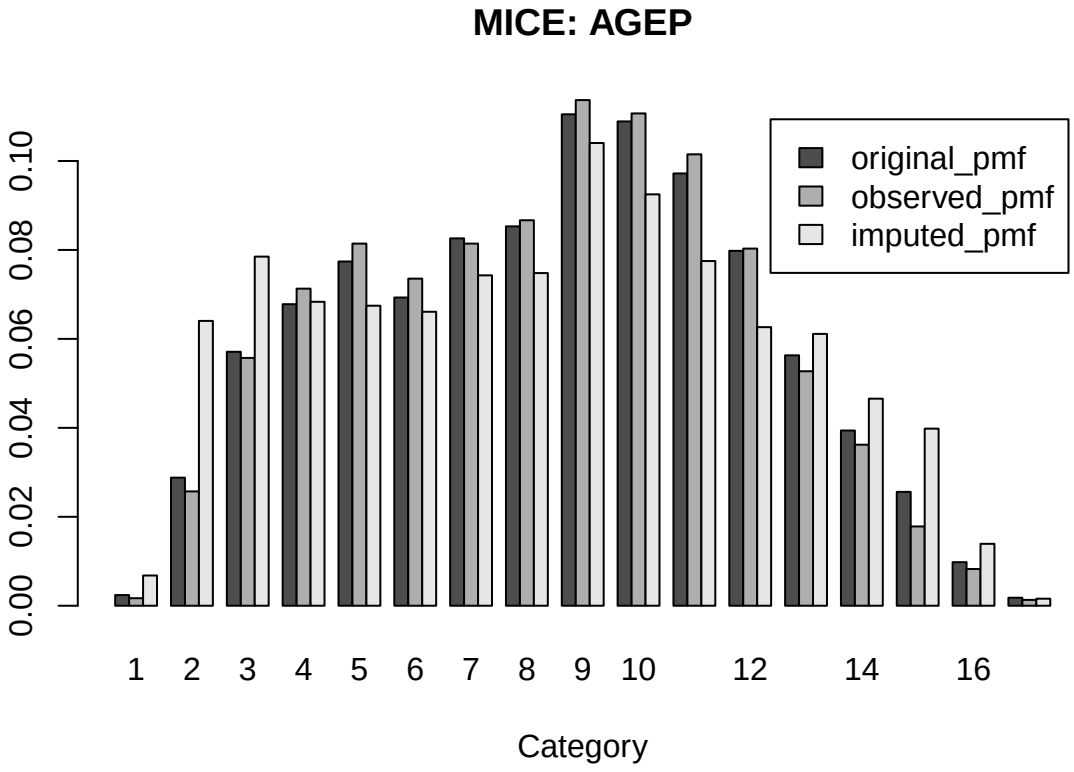
```
## [1] "rmse"
```

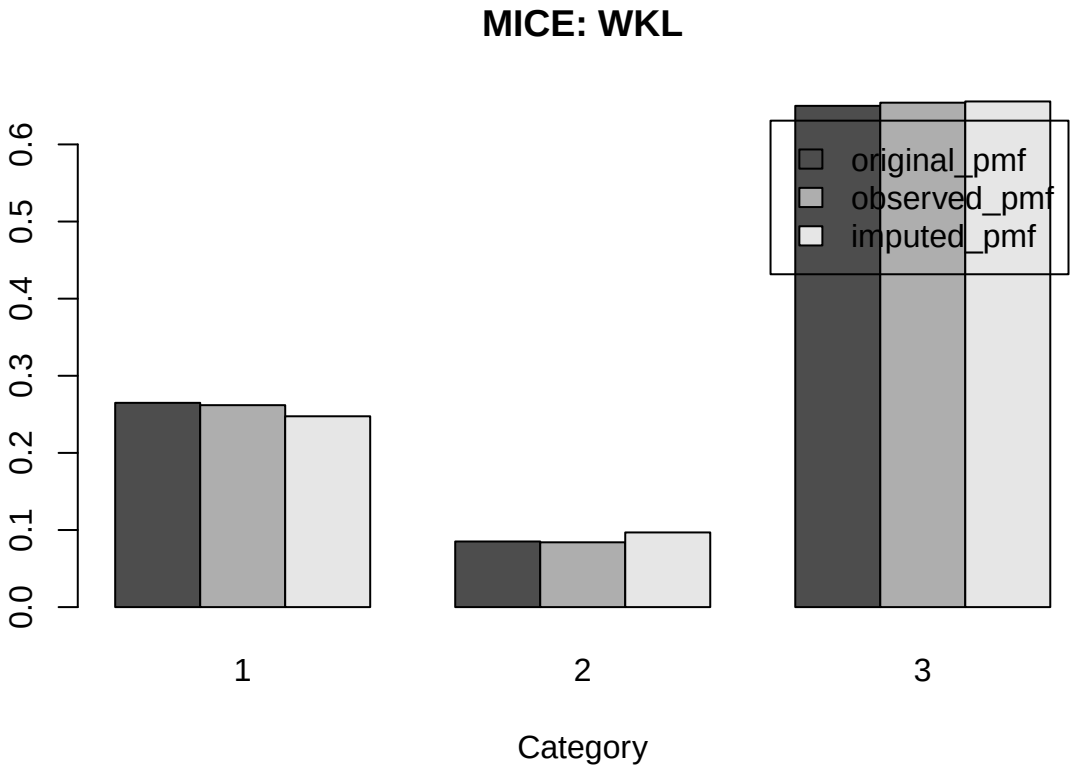
```
## [1] 0.2831024
```

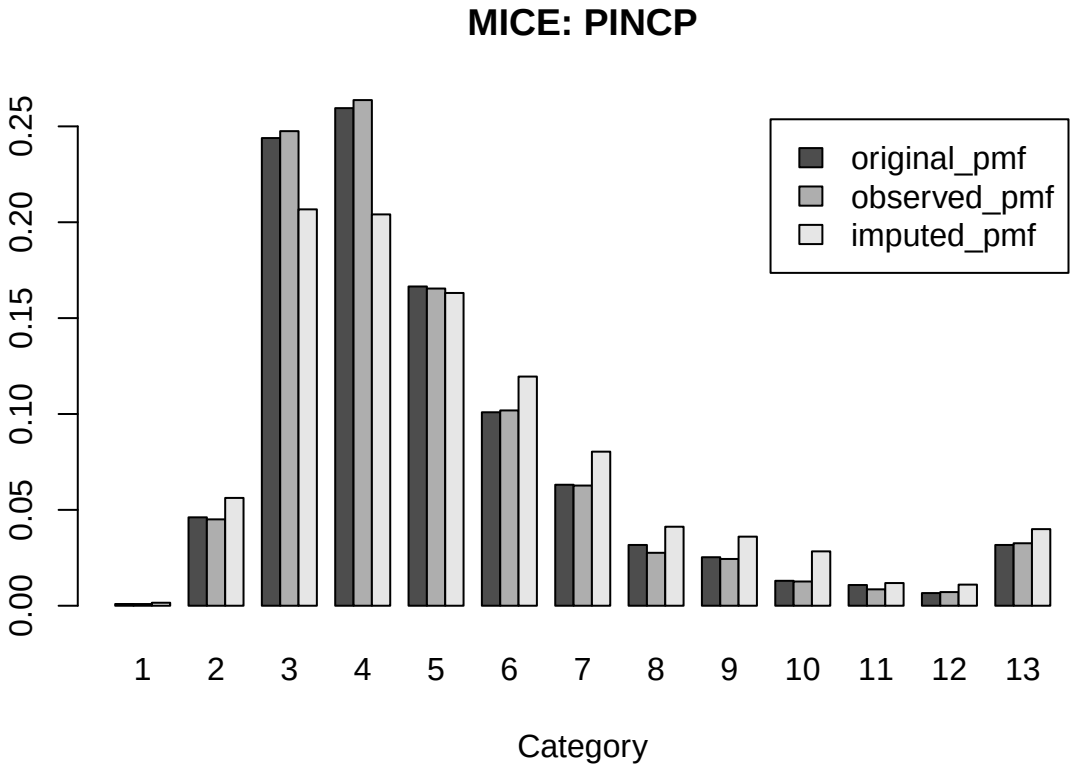

MICE: VEH
original_pmf
observed_pmf
imputed_pmf
0.0
0.1
0.2
0.3
1
2
3
4
5
6
7
Category

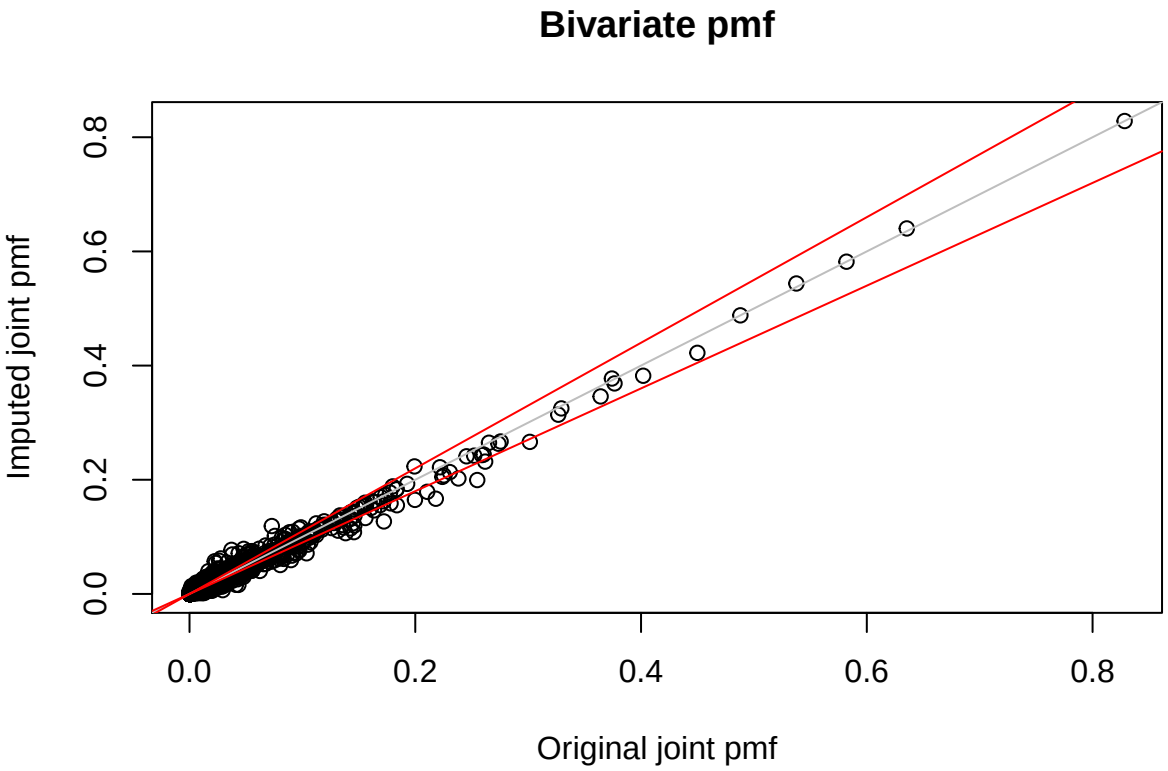

MICE: NP
original_pmf
observed_pmf
imputed_pmf
0.00
0.10
0.20
0.30
1
2
3
4
5
6
7
Category

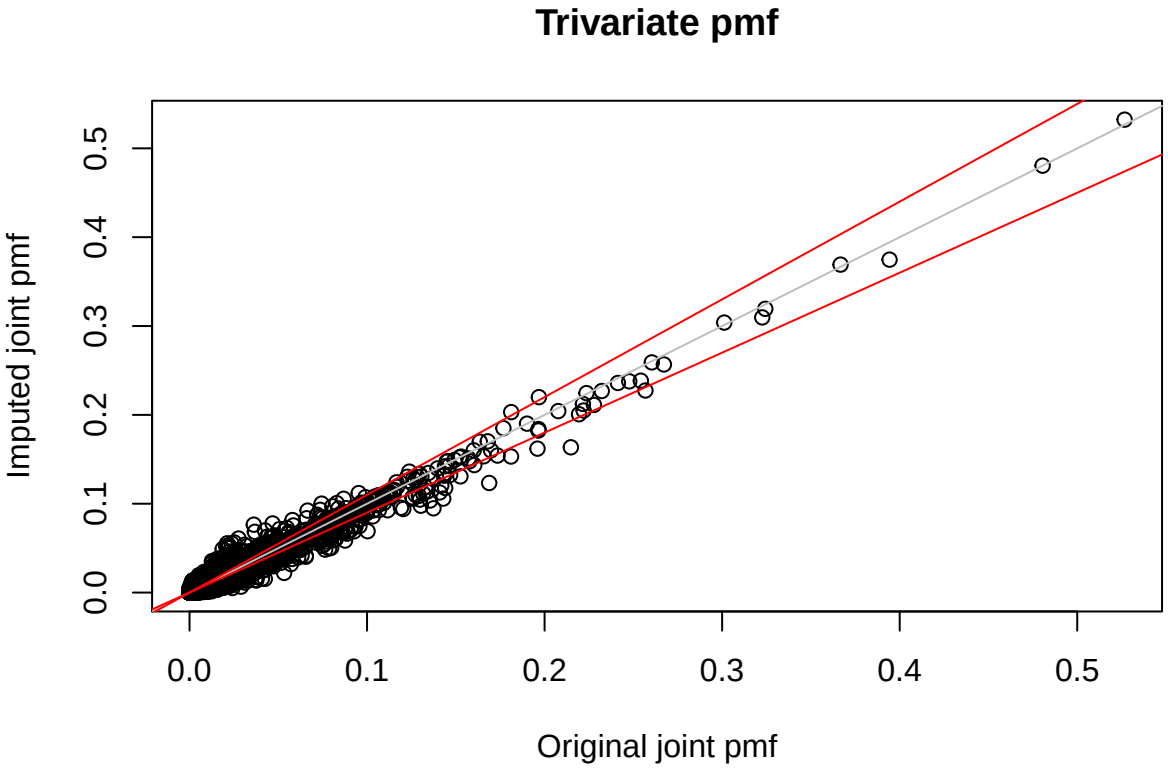

MICE: SCHL
original_pmf
observed_pmf
imputed_pmf
0.0
0.1
0.2
0.3
0.4
1
2
3
4
5
6
7
Category


MICE: AGEP
original_pmf
observed_pmf
imputed_pmf
0.00
0.02
0.04
0.06
0.08
0.10
1
2
3
4
5
6
7
8
9
10
12
14
16
Category


MICE: WKL
0.0
0.1
0.2
0.3
0.4
0.5
0.6
original_pmf
observed_pmf
imputed_pmf
1
2
3
Category


MICE: PINCP
0.00
0.05
0.10
0.15
0.20
0.25
original_pmf
observed_pmf
imputed_pmf
1
2
3
4
5
6
7
8
9
10
11
12
13
Category


Bivariate pmf
Imputed joint pmf
0.0
0.2
0.4
0.6
0.8
Original joint pmf


Trivariate pmf
Imputed joint pmf
0.0
0.1
0.2
0.3
0.4
0.5
Original joint pmf