# credit

# MACHINE LEARNING CASE STUDY: CREDIT DATA SET

- German Credit Dataset is a research dataset from the University of Hamburg from 1994 and donated by Prof. Hans Hoffman.
- Description (and manual download) at the UCI repository.

## Importing the Data

We use OpenML (R-Package) to download the dataset in a machine-readable format and convert it into a `data.frame`:

```
# load the dataset from OpenML Library
d = OpenML::getOMLDataSet(data.id = 31)

# convert the OpenML object to a regular data.frame
credit = as.data.frame(d)
```

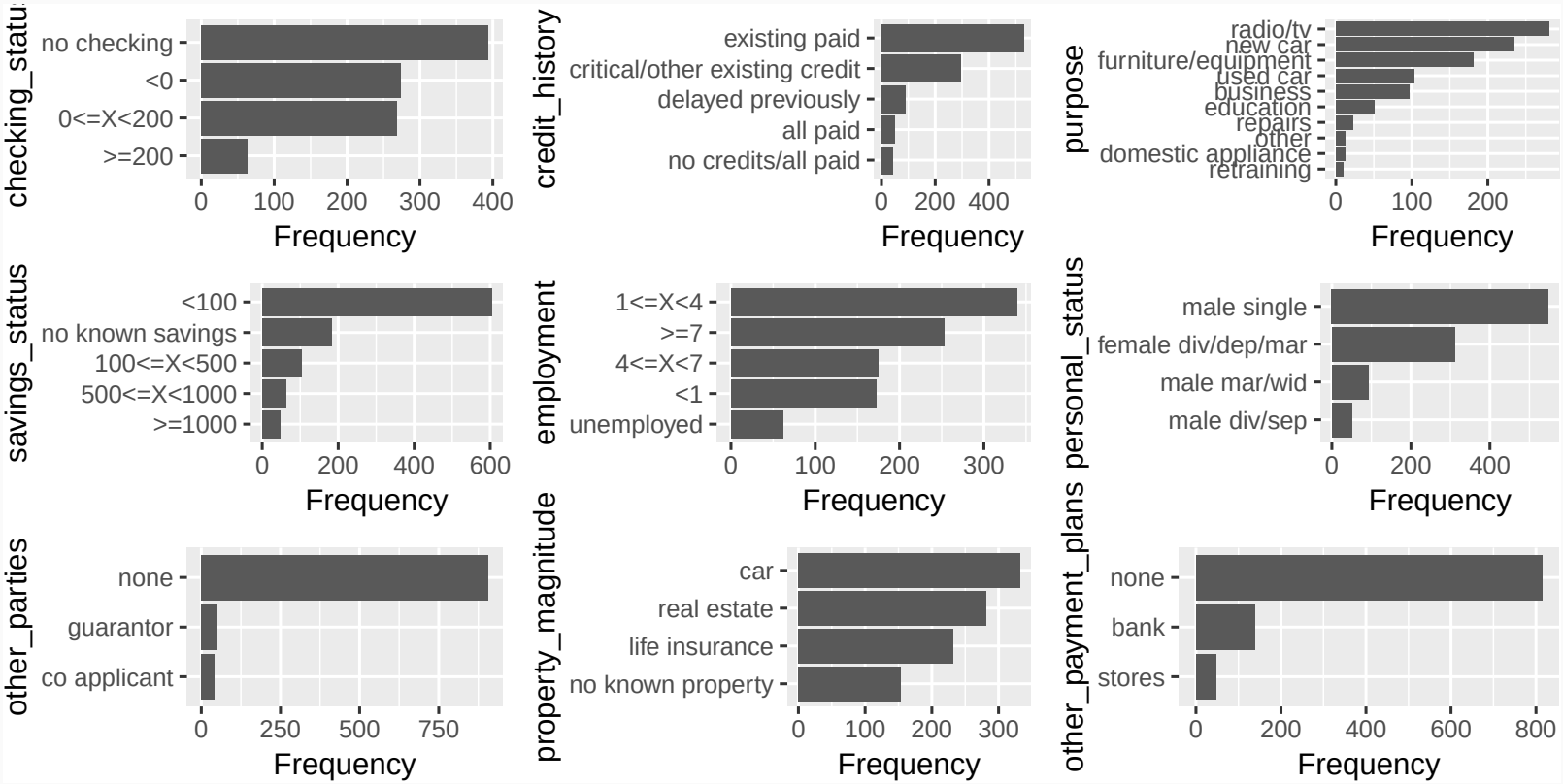
## Factor Variables

```
skimr::skim_to_list(credit) %>%
 .$factor %>%
  knitr::kable(format = 'latex', booktabs = TRUE) %>%
  kableExtra::kable_styling(latex_options = 'HOLD_position', font_size = 5)
```

| variable | missing | n_unique | top_counts |
|---|---|---|---|
| checking_status | 0 | 4 | no : 394, <0: 274, 0<=: 269, >=2: 63 |
| class | 0 | 2 | goo: 700, bad: 300, NA: 0 |
| credit_history | 0 | 5 | exi: 530, cri: 293, del: 88, all: 49 |
| employment | 0 | 5 | 1<=: 339, >=7: 253, 4<=: 174, <1: 172 |
| foreign_worker | 0 | 2 | yes: 963, no: 37, NA: 0 |
| housing | 0 | 3 | own: 713, ren: 179, for: 108, NA: 0 |
| job | 0 | 4 | ski: 630, uns: 200, hig: 148, une: 22 |
| other_parties | 0 | 3 | non: 907, gua: 52, co : 41, NA: 0 |
| other_payment_plans | 0 | 3 | non: 814, ban: 139, sto: 47, NA: 0 |
| own_telephone | 0 | 2 | non: 596, yes: 404, NA: 0 |
| personal_status | 0 | 4 | mal: 548, fem: 310, mal: 92, mal: 50 |
| property_magnitude | 0 | 4 | car: 332, rea: 282, lif: 232, no : 154 |
| purpose | 0 | 10 | rad: 280, new: 234, fur: 181, use: 103 |
| savings_status | 0 | 5 | <10: 603, no : 183, 100: 103, 500: 63 |

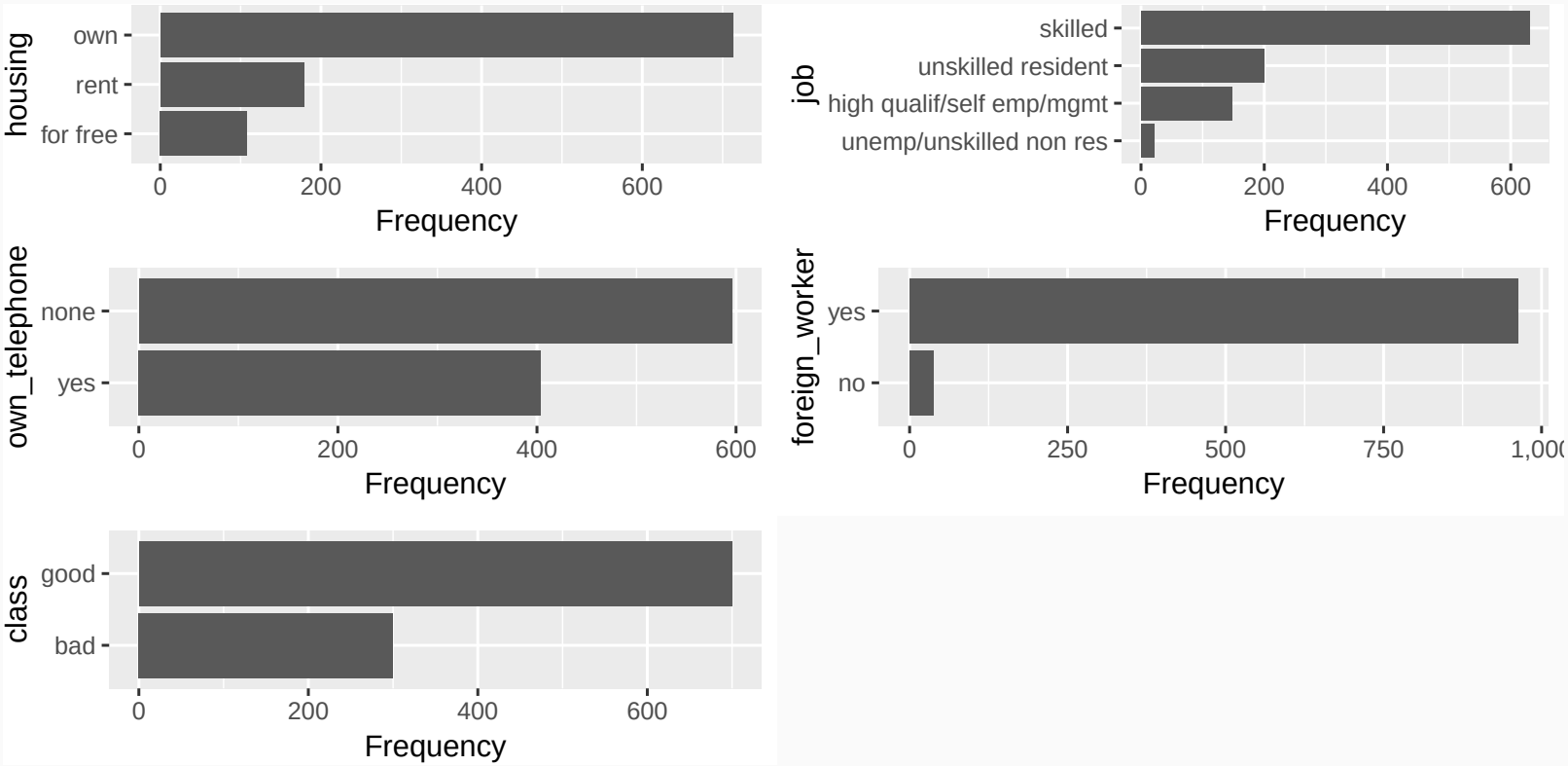
## Barplots of discrete features

```
plot_bar(credit[, 1:14])
```



## Barplots of discrete features

```
plot_bar(credit[, 15:21])
```



## Numerical Variables

```
skimr::skim_to_list(credit) %>%
 .$numeric %>%
  knitr::kable(format = 'latex', booktabs = TRUE) %>%
  kableExtra::kable_styling(latex_options = 'HOLD_position', font_size = 6)
```

| variable | missing | mean | sd |
|---|---|---|---|
| age | 0 | 35.55 | 11.38 |
| credit_amount | 0 | 3271.26 | 2822.74 |
| duration | 0 | 20.9 | 12.06 |
| existing_credits | 0 | 1.41 | 0.58 |
| installment_commitment | 0 | 2.97 | 1.12 |
| num_dependents | 0 | 1.16 | 0.36 |
| residence_since | 0 | 2.85 | 1.1 |

## Histograms of numerical features

```
plot_histogram(credit)
```