logit

library(tidyverse)

── Attaching packages ─────────────────────────────────────── tidyverse 1.3.2 ──  
✔ ggplot2 3.4.0 ✔ purrr 0.3.5   
✔ tibble 3.1.8 ✔ dplyr 1.0.10  
✔ tidyr 1.2.1 ✔ stringr 1.4.1   
✔ readr 2.1.3 ✔ forcats 0.5.2   
── Conflicts ────────────────────────────────────────── tidyverse\_conflicts() ──  
✖ dplyr::filter() masks stats::filter()  
✖ dplyr::lag() masks stats::lag()

library(mosaic)

Registered S3 method overwritten by 'mosaic':  
 method from   
 fortify.SpatialPolygonsDataFrame ggplot2  
  
The 'mosaic' package masks several functions from core packages in order to add   
additional features. The original behavior of these functions should not be affected by this.  
  
Attaching package: 'mosaic'  
  
The following object is masked from 'package:Matrix':  
  
 mean  
  
The following objects are masked from 'package:dplyr':  
  
 count, do, tally  
  
The following object is masked from 'package:purrr':  
  
 cross  
  
The following object is masked from 'package:ggplot2':  
  
 stat  
  
The following objects are masked from 'package:stats':  
  
 binom.test, cor, cor.test, cov, fivenum, IQR, median, prop.test,  
 quantile, sd, t.test, var  
  
The following objects are masked from 'package:base':  
  
 max, mean, min, prod, range, sample, sum

library(sjmisc)

Attaching package: 'sjmisc'  
  
The following object is masked from 'package:purrr':  
  
 is\_empty  
  
The following object is masked from 'package:tidyr':  
  
 replace\_na  
  
The following object is masked from 'package:tibble':  
  
 add\_case

library(jtools)

Attaching package: 'jtools'  
  
The following objects are masked from 'package:sjmisc':  
  
 %nin%, center

library(kableExtra)

Attaching package: 'kableExtra'  
  
The following object is masked from 'package:dplyr':  
  
 group\_rows

ukhls <- readRDS(url("https://cgmoreh.github.io/SOC2069/SOC2069-Statistical-analysis/ukhls\_w8.rds"))

frq(ukhls$smoker, out="viewer")

Smoker (x) <categorical>

| val | label | frq | raw.prc | valid.prc | cum.prc |  |
| --- | --- | --- | --- | --- | --- | --- |
| Yes |  | 5519 | 14.05 | 14.69 | 14.69 |  |
| No |  | 32058 | 81.59 | 85.31 | 100.00 |  |
| NA | NA | 1716 | 4.37 | NA | NA |  |
| total N=39293 · valid N=37577 · x̄=1.85 · σ=0.35 | | | | | | |

frq(ukhls$urban\_dv, out="viewer")

Urban or rural area, derived (x) <categorical>

| val | label | frq | raw.prc | valid.prc | cum.prc |  |
| --- | --- | --- | --- | --- | --- | --- |
| urban area |  | 30052 | 76.48 | 76.51 | 76.51 |  |
| rural area |  | 9226 | 23.48 | 23.49 | 100.00 |  |
| NA | NA | 15 | 0.04 | NA | NA |  |
| total N=39293 · valid N=39278 · x̄=1.23 · σ=0.42 | | | | | | |

frq(ukhls$hiqual\_dv, out = "viewer")

Highest qualification, UKHLS & BHPS samples (x) <categorical>

| val | label | frq | raw.prc | valid.prc | cum.prc |  |
| --- | --- | --- | --- | --- | --- | --- |
| Degree |  | 10058 | 25.60 | 26.17 | 26.17 |  |
| Other higher degree |  | 4659 | 11.86 | 12.12 | 38.29 |  |
| A-level etc |  | 8326 | 21.19 | 21.66 | 59.95 |  |
| GCSE etc |  | 7726 | 19.66 | 20.10 | 80.05 |  |
| Other qualification |  | 3388 | 8.62 | 8.81 | 88.87 |  |
| No qualification |  | 4278 | 10.89 | 11.13 | 100.00 |  |
| NA | NA | 858 | 2.18 | NA | NA |  |
| total N=39293 · valid N=38435 · x̄=3.07 · σ=1.65 | | | | | | |

summary(ukhls$fimnnet\_dv) %>% t() %>% kable()

| Min. | 1st Qu. | Median | Mean | 3rd Qu. | Max. |
| --- | --- | --- | --- | --- | --- |
| -53958.19 | 743.09 | 1300 | 1540.458 | 1969.01 | 89379.57 |

glm(smoker ~ fimnnet\_dv + hiqual\_dv + urban\_dv, family = binomial, data = ukhls) %>%   
 jtools::summ(digits=3, out="html")

|  |  |
| --- | --- |
| Observations | 36781 (2512 missing obs. deleted) |
| Dependent variable | smoker |
| Type | Generalized linear model |
| Family | binomial |
| Link | logit |

|  |  |
| --- | --- |
| χ²(7) | 964.546 |
| Pseudo-R² (Cragg-Uhler) | 0.046 |
| Pseudo-R² (McFadden) | 0.031 |
| AIC | 29755.011 |
| BIC | 29823.113 |

|  | Est. | S.E. | z val. | p |
| --- | --- | --- | --- | --- |
| (Intercept) | 2.486 | 0.047 | 53.141 | 0.000 |
| fimnnet\_dv | 0.000 | 0.000 | 2.283 | 0.022 |
| hiqual\_dvOther higher degree | -0.643 | 0.061 | -10.616 | 0.000 |
| hiqual\_dvA-level etc | -0.924 | 0.051 | -18.065 | 0.000 |
| hiqual\_dvGCSE etc | -1.215 | 0.050 | -24.097 | 0.000 |
| hiqual\_dvOther qualification | -1.153 | 0.061 | -19.038 | 0.000 |
| hiqual\_dvNo qualification | -1.176 | 0.058 | -20.366 | 0.000 |
| urban\_dvrural area | 0.293 | 0.037 | 7.947 | 0.000 |
| Standard errors: MLE |  |  |  |  |