simulation

Intro

This doc reproduces the simulation results of the article provided by Hanneh and Gerko. This doc is fully reproducible because it is created based on the also attached. qmd file.

Full reproducible script

```
Loading required package: lattice

Loading required package: survival

Warning: package 'survival' was built under R version 4.2.3

Loading required package: Formula

Loading required package: ggplot2


Attaching package: 'Hmisc'

The following objects are masked from 'package:base':

    format.pval, units

Warning: package 'mice' was built under R version 4.2.3


Attaching package: 'mice'
```

```
The following object is masked from 'package:stats':

    filter

The following objects are masked from 'package:base':

    cbind, rbind

Warning: package 'tidyverse' was built under R version 4.2.3

Warning: package 'tibble' was built under R version 4.2.3

-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.0     v readr     2.1.4
v forcats   1.0.0     v stringr   1.5.0
v lubridate 1.9.2     v tibble    3.2.1
v purrr     1.0.1     v tidyr     1.3.0

-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter()    masks mice::filter(), stats::filter()
x dplyr::lag()       masks stats::lag()
x dplyr::src()       masks Hmisc::src()
x dplyr::summarize() masks Hmisc::summarize()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to becor

Processing SAS dataset DEMO_I    ..

Processing SAS dataset BPX_I     ..

Processing SAS dataset BMX_I     ..

Processing SAS dataset GHB_I     ..

Processing SAS dataset TCHOL_I   ..
```

```
Call:
lm(formula = bp ~ HbA1C + age + as.factor(sex), data = dc)

Residuals:
Systolic: Blood pres (1st rdg) mm Hg
    Min      1Q  Median      3Q     Max
-49.887 -10.509  -1.378   8.491 107.583

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)     98.75149    1.21418  81.332  < 2e-16 ***
HbA1C            1.12638    0.20291   5.551 2.98e-08 ***
age              0.44486    0.01284  34.648  < 2e-16 ***
as.factor(sex)2 -3.24792    0.45164  -7.191 7.34e-13 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 16.1 on 5088 degrees of freedom
Multiple R-squared:  0.2305,    Adjusted R-squared:   0.23
F-statistic:   508 on 3 and 5088 DF,  p-value: < 2.2e-16


                    2.5 %      97.5 %
(Intercept)     96.3711755 101.1317982
HbA1C            0.7285836   1.5241825
age              0.4196932   0.4700355
as.factor(sex)2 -4.1333281  -2.3625106



Call:
lm(formula = bp ~ HbA1C + bmi + age + as.factor(sex), data = dc)

Residuals:
Systolic: Blood pres (1st rdg) mm Hg
    Min      1Q  Median      3Q     Max
-51.068 -10.251  -1.504   8.264 107.410

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)     92.65583    1.39320  66.506  < 2e-16 ***
HbA1C            0.75177    0.20596   3.650 0.000265 ***
bmi              0.28632    0.03282   8.724  < 2e-16 ***
```

```
age               0.44586    0.01275  34.979  < 2e-16 ***
as.factor(sex)2 -3.63115    0.45049  -8.060  9.4e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 15.98 on 5087 degrees of freedom
Multiple R-squared:  0.2418,    Adjusted R-squared:  0.2412
F-statistic: 405.7 on 4 and 5087 DF,  p-value: < 2.2e-16


                      2.5 %     97.5 %
(Intercept)     89.9245592 95.3871089
HbA1C            0.3479966  1.1555348
bmi              0.2219815  0.3506673
age              0.4208695  0.4708464
as.factor(sex)2 -4.5143014 -2.7479929
```