Verification Report: cor_coxph

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Description

This is the verification report for the `cor_coxph` folder of the `correlates_reporting` project for CoVPN.

In this document, the output of `cor_coxph.R` is compared against the output of `cor_coxph_validation.R`. The two scripts use the same base mock data. The R objects generated by the script in `cor_coxph.R` and the R datasets generated by the script in `cor_coxph_validation.R` will be compared with each other to confirm they contain the same values.

`cor_coxph_validation.R` was independently double programmed based on the specifications found in `specifications.html`. This script outputs its processing to `verification/verification_output/cor_coxph_verification_output.csv`.

The R object `verification/verification_input/D57.rv.MockCOVE.Rdata` was provided by the original programmer to the tester for verification purposes of results generated for marker data at Day 57 by `cor_coxph.R`. Its md5 hash is 9715542f70ae67e8116844639f94ef27. The R object `verification/verification_input/D29.rv.MockCOVE.Rdata` was provided by the original programmer to the tester for verification purposes of results generated for marker data at Day 29 by `cor_coxph.R`. Its md5 hash is f4b108c6f21c326cb660ce604bc52327.

The file `verification/verification_output/D57.mock.csv` was created by the tester for verification of results generated for marker data at Day 57 using the `cor_coxph_validation.R` script. Its md5 hash is dda318a21d37734e57cda501a791dbba. The file `verification/verification_output/D29.mock.csv` was created by the tester for verification of results generated for marker data at Day 29 using the `cor_coxph_validation.R` script. Its md5 hash is 755d69af10b86928a9be371cae328e07.

```r
load(here("verification", "verification_input", "D57.rv.MockCOVE.Rdata"))

verification_data <- read.csv(
  here("verification", "verification_output", "D57.mock.csv")
  )

devdat <- rv$tab.1 %>%
  data.frame()

testdat <- verification_data %>% slice(1:4) %>%
  mutate(X1 = paste0(cases, "/", formatC(atRisk, format="d", big.mark=",")),
         X2 = format(round(estimate, 2), nsmall=2),
         X3 = paste0("(", format(round(conf.low, 2), nsmall=2), "-",
                     format(round(conf.high, 2), nsmall=2), ")"),
         X4 = ifelse(p.value < 0.001, "<0.001", format(round(p.value, 3), nsmall=3))) %>%
  select(marker, X1, X2, X3, X4) %>%
  column_to_rownames(var = "marker")
```

```
check_vec_d57 <- vector()
# all.equal(devdat, testdat)
check_vec_d57 <- all.equal(devdat, testdat)
rm(devdat, testdat)
#################################
devdat <- rv$tab.2 %>%
  data.frame() %>%
  remove_rownames()

testdat <- verification_data %>% slice(5:16) %>%
  mutate(V1 = rep(c("Lower", "Middle", "Upper"), 4),
         V2 = paste0(cases, "/", formatC(round(atRisk, 0), format="d", big.mark=",")),
         V3 = format(round(Attack.rate, 4), nsmall=4),
         est = format(round(estimate, 2), nsmall=2),
         est = ifelse(est=="1.00", "1", est),
         ci = paste0("(", format(round(conf.low, 2), nsmall=2), "-",
                     format(round(conf.high, 2), nsmall=2), ")"),
         ci = ifelse(est=="1", "N/A", ci),
         p = ifelse(p.value < 0.001, "<0.001", format(round(p.value, 3), nsmall=3)),
         p = ifelse(est=="1", "N/A", p),
         overall.pval = ifelse(overall.pval == "", "   ", overall.pval)) %>%
  select(V1, V2, V3, est, ci, p, overall.pval) %>%
  rename(overall.p.0 = overall.pval)

# all.equal(devdat, testdat)
check_vec_d57 <- append(check_vec_d57,
                        all.equal(devdat, testdat),
                        after = length(check_vec_d57))
rm(devdat, testdat)
#################################
markers <- c("bindSpike", "bindRBD", "pseudoneutid50", "pseudoneutid80")
for(i in 1:4){
  devdat <- unname(rv$fr.1[i+1])[[1]] %>%
    as.data.frame() %>%
    t() %>%
    as.data.frame() %>%
    mutate(marker = markers[i]) %>%
    rownames_to_column(var = "group") %>%
    mutate(group = str_trim(group, side = "left")) %>%
    select(marker, everything()) %>%
    rename(estimate = HR,
           conf.low = '(lower',
           conf.high = 'upper)') %>%
    select(-marker)

  testdat <- verification_data %>%
    filter(marker == paste0("Day57", markers[i])) %>%
    filter(group %in% c("All baseline negative, vaccine", "Age >= 65",
                        "Age < 65, At risk", "Age < 65, Not at risk")) %>%
    select(marker, group, estimate, conf.low, conf.high, p.value) %>%
    select(-marker)

  nevents_verification <- verification_data %>%
```

```r
    filter(marker == paste0("Day57", markers[i])) %>%
    filter(group %in% c("All baseline negative, vaccine", "Age >= 65",
                        "Age < 65, At risk", "Age < 65, Not at risk")) %>%
  .$cases

  # all.equal(devdat, testdat)
  # all.equal(rv$fr.1$nevents, nevents_verification)
  check_vec_d57 <- append(check_vec_d57,
                          all.equal(devdat, testdat),
                          after = length(check_vec_d57))
  check_vec_d57 <- append(check_vec_d57,
                          all.equal(rv$fr.1$nevents, nevents_verification),
                          after = length(check_vec_d57))
}
rm(devdat, testdat)
################################
for(i in 1:4){
  devdat <- unname(rv$fr.2[i+1])[[1]] %>%
    as.data.frame() %>%
    t() %>%
    as.data.frame() %>%
    mutate(marker = markers[i]) %>%
    rownames_to_column(var = "group") %>%
    mutate(group = str_trim(group, side = "left")) %>%
    select(marker, everything()) %>%
    rename(estimate = HR,
           conf.low = `(lower`,
           conf.high = `upper)`) %>%
    select(-marker)

  testdat <- verification_data %>%
    filter(marker == paste0("Day57", markers[i])) %>%
    filter(group %in% c("All baseline negative, vaccine", "Age >= 65",
                        "Age < 65", "At risk", "Not at risk",
                        "Comm. of color", "WhiteNonHispanic",
                        "Men", "Women")) %>%
    mutate(group = case_when(group == "All baseline negative, vaccine" ~ "All Vaccine",
                             group == "WhiteNonHispanic" ~ "White Non-Hispanic",
                             TRUE ~ group)) %>%
    select(marker, group, estimate, conf.low, conf.high, p.value) %>%
    select(-marker)

  nevents_verification <- verification_data %>%
    filter(marker == paste0("Day57", markers[i])) %>%
    filter(group %in% c("All baseline negative, vaccine", "Age >= 65",
                        "Age < 65", "At risk", "Not at risk",
                        "Comm. of color", "WhiteNonHispanic",
                        "Men", "Women")) %>%
  .$cases

  # all.equal(devdat, testdat)
  # all.equal(rv$fr.2$nevents, nevents_verification)
  check_vec_d57 <- append(check_vec_d57,
```

```r
                                all.equal(devdat, testdat),
                                after = length(check_vec_d57))
  check_vec_d57 <- append(check_vec_d57,
                                all.equal(rv$fr.2$nevents, nevents_verification),
                                after = length(check_vec_d57))
}
rm(devdat, testdat)


load(here("verification", "verification_input", "D29.rv.MockCOVE.Rdata"))

verification_data_d29 <- read.csv(
  here("verification", "verification_output", "D29.mock.csv")
  )

devdat <- rv$tab.1 %>%
  data.frame()

testdat <- verification_data_d29 %>% slice(1:4) %>%
  mutate(X1 = paste0(cases, "/", formatC(atRisk, format="d", big.mark=",")),
         X2 = format(round(estimate, 2), nsmall=2),
         X3 = paste0("(", format(round(conf.low, 2), nsmall=2), "-",
                     format(round(conf.high, 2), nsmall=2), ")"),
         X4 = ifelse(p.value < 0.001, "<0.001",
                     format(round(p.value, 3), nsmall=3))) %>%
  select(marker, X1, X2, X3, X4) %>%
  column_to_rownames(var = "marker")

check_vec_d29 <- vector()
# all.equal(devdat, testdat)
check_vec_d29 <- all.equal(devdat, testdat)
rm(devdat, testdat)
###################################
devdat <- rv$tab.2 %>%
  data.frame() %>%
  remove_rownames()

testdat <- verification_data_d29 %>% slice(5:16) %>%
  mutate(V1 = rep(c("Lower", "Middle", "Upper"), 4),
         V2 = paste0(round(cases, 0), "/", formatC(round(atRisk, 0), format="d", big.mark=",")),
         V3 = format(round(Attack.rate, 4), nsmall=4),
         est = format(round(estimate, 2), nsmall=2),
         est = ifelse(est=="1.00", "1", est),
         ci = paste0("(", format(round(conf.low, 2), nsmall=2), "-",
                     format(round(conf.high, 2), nsmall=2), ")"),
         ci = ifelse(est=="1", "N/A", ci),
         p = ifelse(p.value < 0.001, "<0.001", format(round(p.value, 3), nsmall=3)),
         p = ifelse(est=="1", "N/A", p),
         overall.pval = ifelse(is.na(overall.pval), "   ", overall.pval)) %>%
  rename(overall.p.0 = overall.pval) %>%
  select(V1, V2, V3, est, ci, p, overall.p.0)

# all.equal(devdat, testdat)
check_vec_d29 <- append(check_vec_d29,
```

```r
                            all.equal(devdat, testdat),
                            after = length(check_vec_d29))
rm(devdat, testdat)
####################################
markers <- c("bindSpike", "bindRBD", "pseudoneutid50", "pseudoneutid80")
for(i in 1:4){
  devdat <- unname(rv$fr.1[i+1])[[1]] %>%
    as.data.frame() %>%
    t() %>%
    as.data.frame() %>%
    mutate(marker = markers[i]) %>%
    rownames_to_column(var = "group") %>%
    mutate(group = str_trim(group, side = "left")) %>%
    select(marker, everything()) %>%
    rename(estimate = HR,
           conf.low = '(lower',
           conf.high = 'upper)') %>%
    select(-marker)

  testdat <- verification_data_d29 %>%
    filter(marker == paste0("Day29", markers[i])) %>%
    filter(group %in% c("All baseline negative, vaccine", "Age >= 65",
                        "Age < 65, At risk", "Age < 65, Not at risk")) %>%
    select(marker, group, estimate, conf.low, conf.high, p.value) %>%
    select(-marker)

  nevents_verification <- verification_data_d29 %>%
    filter(marker == paste0("Day29", markers[i])) %>%
    filter(group %in% c("All baseline negative, vaccine", "Age >= 65",
                        "Age < 65, At risk", "Age < 65, Not at risk")) %>%
    .$cases

  # all.equal(devdat, testdat)
  # all.equal(rv$fr.1$nevents, nevents_verification)
  check_vec_d29 <- append(check_vec_d29,
                          all.equal(devdat, testdat),
                          after = length(check_vec_d29))
  check_vec_d29 <- append(check_vec_d29,
                          all.equal(rv$fr.1$nevents, nevents_verification),
                          after = length(check_vec_d29))
}
####################################
for(i in 1:4){
  devdat <- unname(rv$fr.2[i+1])[[1]] %>%
    as.data.frame() %>%
    t() %>%
    as.data.frame() %>%
    mutate(marker = markers[i]) %>%
    rownames_to_column(var = "group") %>%
    mutate(group = str_trim(group, side = "left")) %>%
    select(marker, everything()) %>%
    rename(estimate = HR,
           conf.low = '(lower',
```

```r
                conf.high = 'upper)') %>%
    select(-marker)

  testdat <- verification_data_d29 %>%
    filter(marker == paste0("Day29", markers[i])) %>%
    filter(group %in% c("All baseline negative, vaccine", "Age >= 65",
                        "Age < 65", "At risk", "Not at risk",
                        "Comm. of color", "WhiteNonHispanic",
                        "Men", "Women")) %>%
    mutate(group = case_when(group == "All baseline negative, vaccine" ~ "All Vaccine",
                             group == "WhiteNonHispanic" ~ "White Non-Hispanic",
                             TRUE ~ group)) %>%
    select(marker, group, estimate, conf.low, conf.high, p.value) %>%
    select(-marker)

  nevents_verification <- verification_data_d29 %>%
    filter(marker == paste0("Day29", markers[i])) %>%
    filter(group %in% c("All baseline negative, vaccine", "Age >= 65",
                        "Age < 65", "At risk", "Not at risk",
                        "Comm. of color", "WhiteNonHispanic",
                        "Men", "Women")) %>%
    .$cases

  # all.equal(devdat, testdat)
  # all.equal(rv$fr.2$nevents, nevents_verification)
  check_vec_d29 <- append(check_vec_d29,
                          all.equal(devdat, testdat),
                          after = length(check_vec_d29))
  check_vec_d29 <- append(check_vec_d29,
                          all.equal(rv$fr.2$nevents, nevents_verification),
                          after = length(check_vec_d29))
}
```

Verification

Output of `cor_coxph.R` is equivalent to the output of `cor_coxph_validation.R` for marker data at Day 57. Output of `cor_coxph.R` is equivalent to the output of `cor_coxph_validation.R` for marker data at Day 29. `cor_coxph.R` passes verification.

Signatures

Role	Name	Signature	Date
Tester	Bhavesh Borate		