Histopathology Research Template

true

2020-02-26

Contents

[![*DOI*]($https://zenodo.org/badge/DOI/10.5281/zenodo.3635430.svg$)]($https://doi.org/10.5281/zenodo.3635430$)

https://doi.org/10.5281/zenodo.3635430

https://osf.io/3tjfk/

Histopathology Research Template

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1 Introduction

- **State the marker of interest, the study objectives, and hypotheses (Knijn, Simmer, and Nagtegaal 2015).**[1]

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[1]From Table 1: Proposed items for reporting histopathology studies. Recommendations for reporting histopathology studies: a proposal Virchows Arch (2015) 466:611–615 DOI 10.1007/s00428-015-1762-3 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4460276/

2 Materials & Methods

Describe Materials and Methods as highlighted in (Knijn, Simmer, and Nagtegaal 2015).[2]

- Describe patient characteristics, and inclusion and exclusion criteria

- Describe treatment details

- Describe the type of material used

- Specify how expression of the biomarker was assessed

- Describe the number of independent (blinded) scorers and how they scored

- State the method of case selection, study design, origin of the cases, and time frame

- Describe the end of the follow-up period and median follow-up time

- Define all clinical endpoints examined

- Specify all applied statistical methods

- Describe how interactions with other clinical/pathological factors were analyzed

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2.1 Header Codes

Codes for general settings.[3]

Setup global chunk settings[4]

```
knitr::opts_chunk$set(
    eval = TRUE,
    echo = TRUE,
    fig.path = here::here("figs/"),
    message = FALSE,
    warning = FALSE,
    error = TRUE,
    cache = TRUE,
    comment = NA,
    tidy = TRUE,
    fig.width = 6,
    fig.height = 4
)

library(knitr)
hook_output = knit_hooks$get("output")
knit_hooks$set(output = function(x, options) {
    # this hook is used only when the linewidth option is not NULL
    if (!is.null(n <- options$linewidth)) {
        x = knitr:::split_lines(x)
        # any lines wider than n should be wrapped
        if (any(nchar(x) > n))
            x = strwrap(x, width = n)
```

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[2]From Table 1: Proposed items for reporting histopathology studies. Recommendations for reporting histopathology studies: a proposal Virchows Arch (2015) 466:611–615 DOI 10.1007/s00428-015-1762-3 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4460276/

[3]See `childRmd/_01header.Rmd` file for other general settings

[4]Change `echo = FALSE` to hide codes after knitting and Change `cache = TRUE` to knit quickly. Change `error=TRUE` to continue rendering while errors are present.

```
        x = paste(x, collapse = "\n")
    }
    hook_output(x, options)
})

  pre:not([class]) {
    color: #333333;
    background-color: #cccccc;
  }
```

Load Library

see `R/loadLibrary.R` for the libraries loaded.

```
source(file = here::here("R", "loadLibrary.R"))
```

2.2 Generate Fake Data

Codes for generating fake data.[5]

Generate Fake Data

This code generates a fake histopathological data. Some sources for fake data generation here[6] , here[7] , here[8] , here[9] , here[10] , here[11] , here[12] , here[13] , and here[14] .

Use this code to generate fake clinicopathologic data

```
source(file = here::here("R", "gc_fake_data.R"))
```

```
wakefield::table_heat(x = fakedata, palette = "Set1", flip = TRUE, print = TRUE)
```

---

[5] See `childRmd/_02fakeData.Rmd` file for other codes

[6] Synthea The validity of synthetic clinical data: a validation study of a leading synthetic data generator (Synthea) using clinical quality measures. BMC Med Inform Decis Mak 19, 44 (2019) doi:10.1186/s12911-019-0793-0

[7] https://bmcmedinformdecismak.biomedcentral.com/articles/10.1186/s12911-019-0793-0

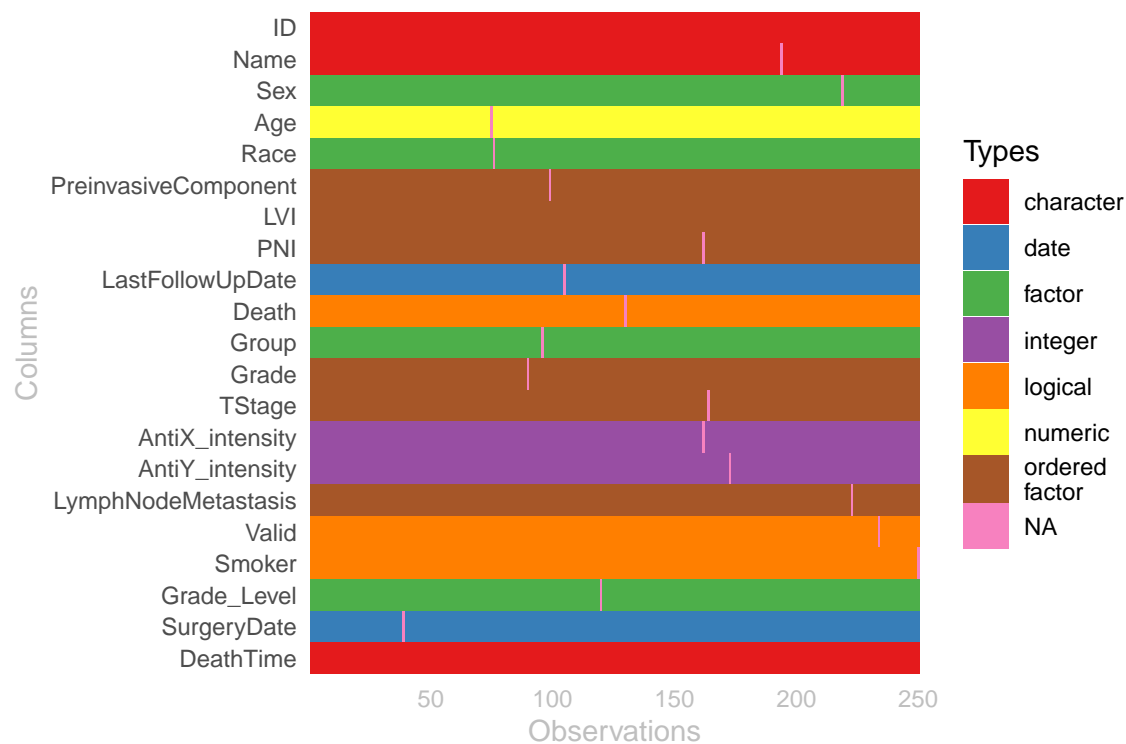[8] Synthetic Patient Generation

[9] Basic Setup and Running

[10] intelligent patient data generator (iPDG)

[11] https://medium.com/free-code-camp/how-our-test-data-generator-makes-fake-data-look-real-ace01c5bde4a

[12] https://forums.librehealth.io/t/demo-data-generation/203

[13] https://mihin.org/services/patient-generator/

[14] lung, cancer, breast datası ile birleştir

2.3 Import Data

Codes for importing data.[15]

Read the data

```
library(readxl)
mydata <- readxl::read_excel(here::here("data", "mydata.xlsx"))
# View(mydata) # Use to view data after importing
```

Add code for import multiple data purrr reduce

2.4 Study Population

2.5 Ethics and IRB

2.6 Define Variable Types

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[15]See `childRmd/_03importData.Rmd` file for other codes

2.7   Overview the Data

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3   Statistical Analysis

Learn these tests as highlighted in (Schmidt et al. 2017).[16]

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4   Results

Write results as described in (Knijn, Simmer, and Nagtegaal 2015)[17]

- Describe the number of patients included in the analysis and reason for dropout
- Report patient/disease characteristics (including the biomarker of interest) with the number of missing values
- Describe the interaction of the biomarker of interest with established prognostic variables
- Include at least 90 % of initial cases included in univariate and multivariate analyses
- Report the estimated effect (relative risk/odds ratio, confidence interval, and p value) in univariate analysis
- Report the estimated effect (hazard rate/odds ratio, confidence interval, and p value) in multivariate analysis
- Report the estimated effects (hazard ratio/odds ratio, confidence interval, and p value) of other prognostic factors included in multivariate analysis

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4.1   Descriptive Statistics

4.2 Survival Analysis

5   Discussion

- Interpret the results in context of the working hypothesis elaborated in the introduction and other relevant studies; include a discussion of limitations of the study.

- Discuss potential clinical applications and implications for future research

6   Footer

References

Knijn, N., F. Simmer, and I. D. Nagtegaal. 2015. "Recommendations for Reporting Histopathology Studies: A Proposal." *Virchows Archiv* 466 (6): 611–15. https://doi.org/10.1007/s00428-015-1762-3.

Schmidt, Robert L., Deborah J. Chute, Jorie M. Colbert-Getz, Adolfo Firpo-Betancourt, Daniel S. James, Julie K. Karp, Douglas C. Miller, et al. 2017. "Statistical Literacy Among Academic Pathologists: A Survey Study to Gauge Knowledge of Frequently Used Statistical Tests Among Trainees and Faculty." *Archives of Pathology & Laboratory Medicine* 141 (2): 279–87. https://doi.org/10.5858/arpa.2016-0200-OA.