Rmarkdown report in R Shiny

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Presentation plan

- Introduction
  - Call and purpose for creating shiny app
  - Historical development of shiny app
- Functionalities Results
- Conclusions

Call for creating shiny app

- Constant requirements, regulations and agreements with cooperation partners
- Numerous surveys covering related topics, R code require no manual changes between period

- A lot of repetitive, manual tasks and data analysis

- Surveys that apply the same methods for mathematical tasks

- Collaboration and documentation tools:
    - excel (with coloring within conditional formatting),
    - emails(comments and other features),
    - reviews of Teams chats,
    - comments in R.

Development of shiny app

Figures and insights

Become acquainted with R shiny app in 2018 year,

result is interactive report,

real time link to data,

approximate 10 people have rights ,

installing app on user's computer,

2 possibilities: desctop or web app.

..periods➔

Get started with R Shiny app design	Gradually Involving Rmarkdown in mastering reports	Building Package in R Shiny framework
Collect user needs		Includes Rmarkdown report
Analyze surveys methodologies		

- 2018 reference year
- 2020 reference year
- from 2021 reference year

Implementation of an R Shiny app

Integrated short term business statistics surveys into application

Retail (NACE G47)

Wholesale (NACE G45,46)

Services (H-N (excluding K; M72; M75))

Poultrymeat

The carriage of goods by road

multiple calculations for one period within a short time period!!!!

R packages and functions

Internal packages
- ISDAVS package(data retrieval)
- vardpoor package(data quality) – published on github

- **Internal** functions for nonresponse rate calculation, calibration, creating structures.
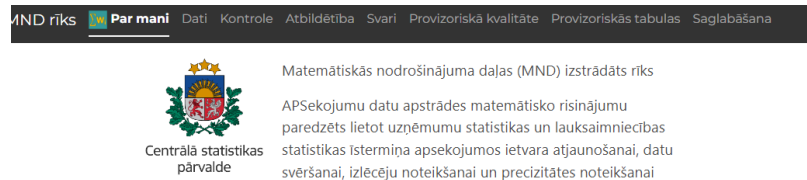
External:
- DT
- shiny
- kableExtra
- devtools
- tools
- Utils
- openxlsx

Functionalities of the app (1)
Appearance of the App(1) ➔

- Introduction and description of sections

user defines tabs based on previous interactions
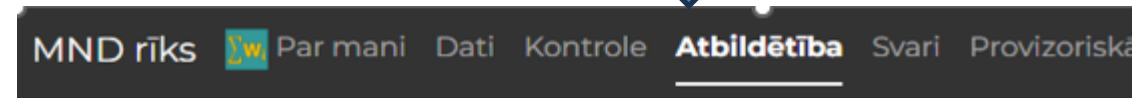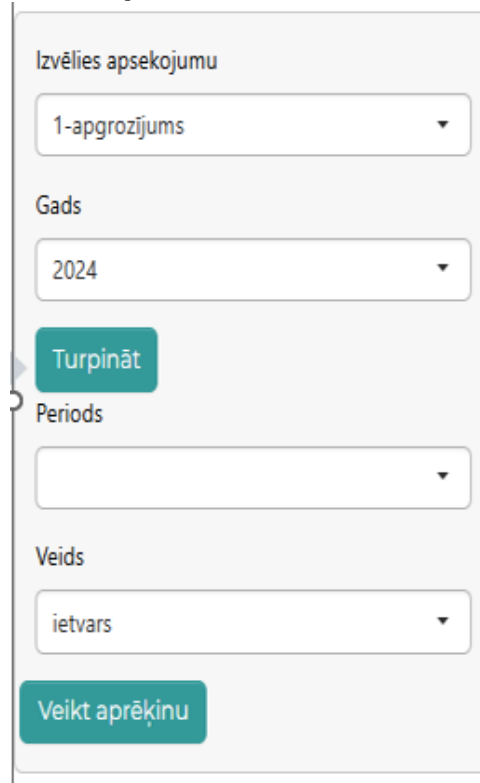
Functionalities of the app(2)
Appearance of the app(2)

Connect to SQL data base managemenet or download micro data from local directory

- Previously, a different system was used with different field and variable names.
- A challenging task of associating each table with its survey

Provides the option to select a reference(also prior periods), process(weights calculation or frame renewment)

Izvēlies apsekojumu

1-apgrozījums ▼

survey from available options

Gads

2024 ▼

a reference(also prior periods)

The user's survey access is limited:

Use **observeEvent** in server.R

(trigger actions only on specific events)

Turpināt

Periods

▼

Veids

ietvars ▼

choose specific processes from the provided process

Veikt aprēķinu

Rshiny and Rmarkdown workflow

ui.R

Input elements - choices,labels

actionbuttons, checkbox

Html Output display

server.R

Process inputs from ui.R,

calls rmarkdown::render to generate reports dynamically,

perform computations,

generates tables

file.rmd

R code chunks,

generate customized reports,

implemented parameters from server.R,

exportable content(html)
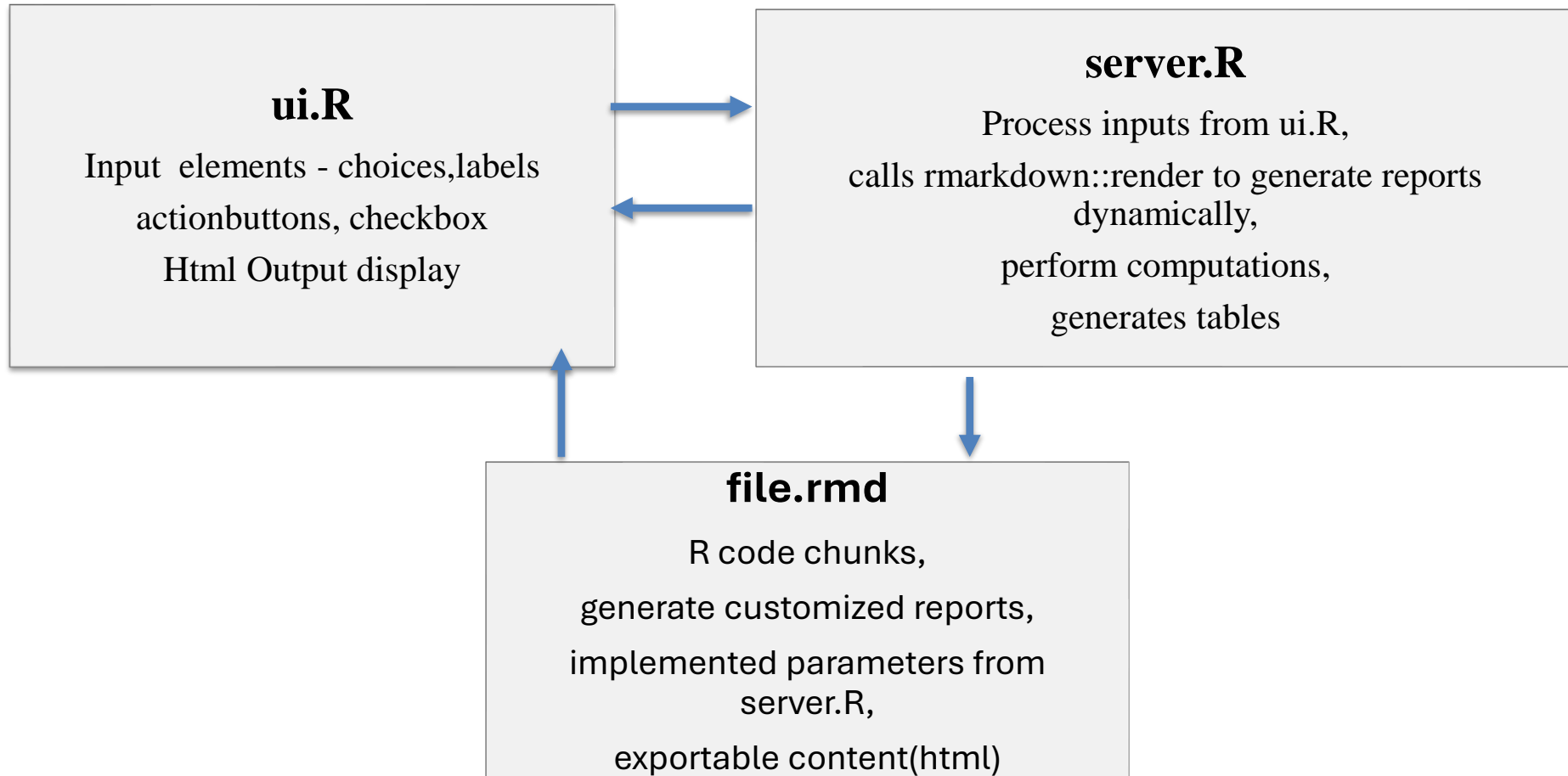
Functionalities of the R shiny app(3)

Html output

server.R

```
output$markdown <- renderUI( {
  withProgress(message = '0.no 4.posmiem.Tika uzsākta aplikācijas darbība',detail="(...šobrīd tiek ielādēti dati)",{
    includeHTML(rmarkdown::render(input = file.path(system.file("extdata", package = "CSPsvari"),"Svari_1apgrozijums.rmd"),
                              params = list(apsek = values$apsek, gads = input$gads,gadscet2 = input$gadscet2,
                                        izleceji = input$izleceji,
                                        uuk = input$uuk,
                                        period = values$period,sistema = values$sistema,
                                        datums = values$datums,
                                        sar = values$sar,
                                        apmain = values$sar),
                        output_dir=xxx,quiet=F,output_file=paste0("1_apgrozijums_", input$gadscet2,
",                   Sys.Date(),".html")))
",
```

Functionalities of the app(4)

Rendering a Second Rmd File

```
```{r echo = FALSE, error = TRUE}
rmarkdown::render(input =file.path(system.file("extdata", package = "CSPsvari"),
                    "Svari_1apgrozijums_vestures_atskaite.rmd"),output_dir=paste0(ifelse(.Platform$OS.type == "windows", "T:", "~/T"),
                    "/SMKD/MND/ApsUzn/1_apgrozijums/!Apmaina/",
            input$gads,"/2_svari/" , tolower(substr(input$gadscet2,5,7)),
            ...raksts"),quiet=T,output_file=paste0("1_apgrozijums_", input$gadscet2, "_svaru_vestures_atskaite",format(Sys.time(), "%d-%m-%
```

- In R Markdown is reference to another rmd file (for building history)
- Generate separate report from both rmd files
- Save data and report in local directory with versioning.

- naming chunk
- comments for easy to read code

```
2_apgrozijums_m08_svari_2024-10-18.html
2_apgrozijums_m08_svari_2024-10-22.html
2_apgrozijums_m08_svari_2024-10-24.html
2_apgrozijums_m08_svaru_vestures_atskaite18-10-2024_21_51.html
2_apgrozijums_m08_svaru_vestures_atskaite18-10-2024_22_01.html
2_apgrozijums_m08_svaru_vestures_atskaite18-10-2024_22_17.html
2_apgrozijums_m08_svaru_vestures_atskaite22-10-2024_10_52.html
```

```
```{r, Aktuālo nace_gr piekārtošana, echo...
########################
# Izleceju noteiksana #
########################
# Izleceju noteiksanas metode daleji ir aizguta no Mark Last un Ab
# "Automated Detection of Outliers in Real-World Data"
# atrodama, piemeram: "T:\SMKD\MND\Users\!Arhivs\GintersBuss\outli
# Piekarto aktualos NACE domenus kvalitates aprekiniem.

ietv_sv[, nace_3z_pirmd := substr(nace_pirmd, 1, 3)]
```

Functionalities of the app(5)

Alerts, interaction

- Pop-up notifications
- Error or warning messages
- Information messages
- Implemented progress line - give feedback on what the app is doing without requiring manual updates or interactions.

```
if (nrow(dublikati[N>1])>0) {
  showNotification("Parbaudiet papildinājuma failu uuk dublikātiem!
  Ietvara atjaunošana ir pārtraukta", type = c("warning"))
  stop("Parbaudiet papildinājuma failu uuk dublikātiem! Aprēķins pārtraukts")
```

```
output$markdown <- renderUI( {
  withProgress(message = '0.no 4.posmiem.Tika uzsākta aplikācijas darbība',detail="(...šobrīd tiek ielādēti dati)",{
```

Functionalities of the app(6)
Results

• Perform matemathical tasks (weighting, data quality asessment)

Setting in R Markdown

runtime: shinyrmd

- Convenient to handle results
- Builds the foundation for better methodological practices
- Enhances the planning of future sampling techniques

Vēstures svaru un kvalitātes aprēķinu atskaite pa periodiem

Apsekojums: 2-apgrozījums
Skripta izpildītājs: IKatkovska
Datums: 2024-10-24 12:37:04
Svaru aprēķina atskaites periods: 2024m08

INFORMĀCIJA PAR VISIEM APRĒĶINĀTAJIEM ATSKAITES GADA PERIODIEM (MND vajadzībām)
1. Kvalitātes aprēķini pa periodiem.

Show 100 entries   Search:

gr	cv_kriterijs	cv_m08	cv_m07	cv_m06	cv_m06_t30	cv_m05	cv_m04	cv_m03	cv_m03_t30
5		2.8	2.89	2.37	2.78	2.66	2.02	2.67	
5		3.24	2.85	2.64	3.85	3.66	2.51	2.66	2.
2		2.48	2.21	2.46	-1	2.93	2.08	2.21	
nav_noteikts		2.84	3.75	2.87	4.38	3.49	2.64	3.18	3.
						4.03	3.72	3.54	3.
						3.7	3.19	3.15	3.

Showing 1 to 100 of 572 entries   Previous 1 2 3 4 5 6 Next

2. DVV skaits izlasē, pievienoto(jauno) DVV skaits izlasē, skaits Isdavs pirmdatos, lielo(resp_liel) DVV skaits un apvienotajā ietvarā.

periodi	sk_izlase	sk_jaunie_izlase	sk_pirmdati	sk_lielie	sk_atj.ietv
m01	3517	14	3517	2121	39920
m02	3520	3	3520	2126	40050
m03_t30	3520	0	3520	2120	40050
m03	3527	7	3527	2133	40320
m04	3530	3	3530	2135	40460

3. Piederības(pieder), respondences(resp), gala svaru(kops_sv) pazīmju skaits.

periodi	resp_sum	pieder_sum	kops_sum
m01	3369	3469	3321
m02	3387	3464	3331

Use GitLab(1)

- Version control
- Collaboration tools

- Code management
- Issues creating

Roles and responsibilities

presently

- Renew R app, rmd files yearly
- verify the user's access to data and newest R versions, packages
- prepare manuals (outlier's methadology, functionality of app)
- comunication with users regarding R app work
- automated dynamic report
- refresh Gitlab(local)
- keep CRAN (local) store package up-to-date versions

previously

- renew R code yearly
- use newest R versions, packages
- comunication with responsible person relating to data collection, processing, outlier identification
- informative writing, manually writing

Conclusions

- Every survey running independently in app
- Running Shiny app at any data collection phase
- Output data loss prevention, since every output is saved separetaly
- Data cleaning(user can correct empty cells, response status, status of survey)
- Data monitoring with real time data
- Less time-consuming.

Way forward

- Add choices of data formats for user
- New validations regarding survey characteristics
- Adding validation to interact with other surveys
- Expand graphical interaction
- Supplement with new surveys
- Improve UI design
- To improve publishing.

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