Scoped verbs:
A subtitle

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Stanford Data Lab

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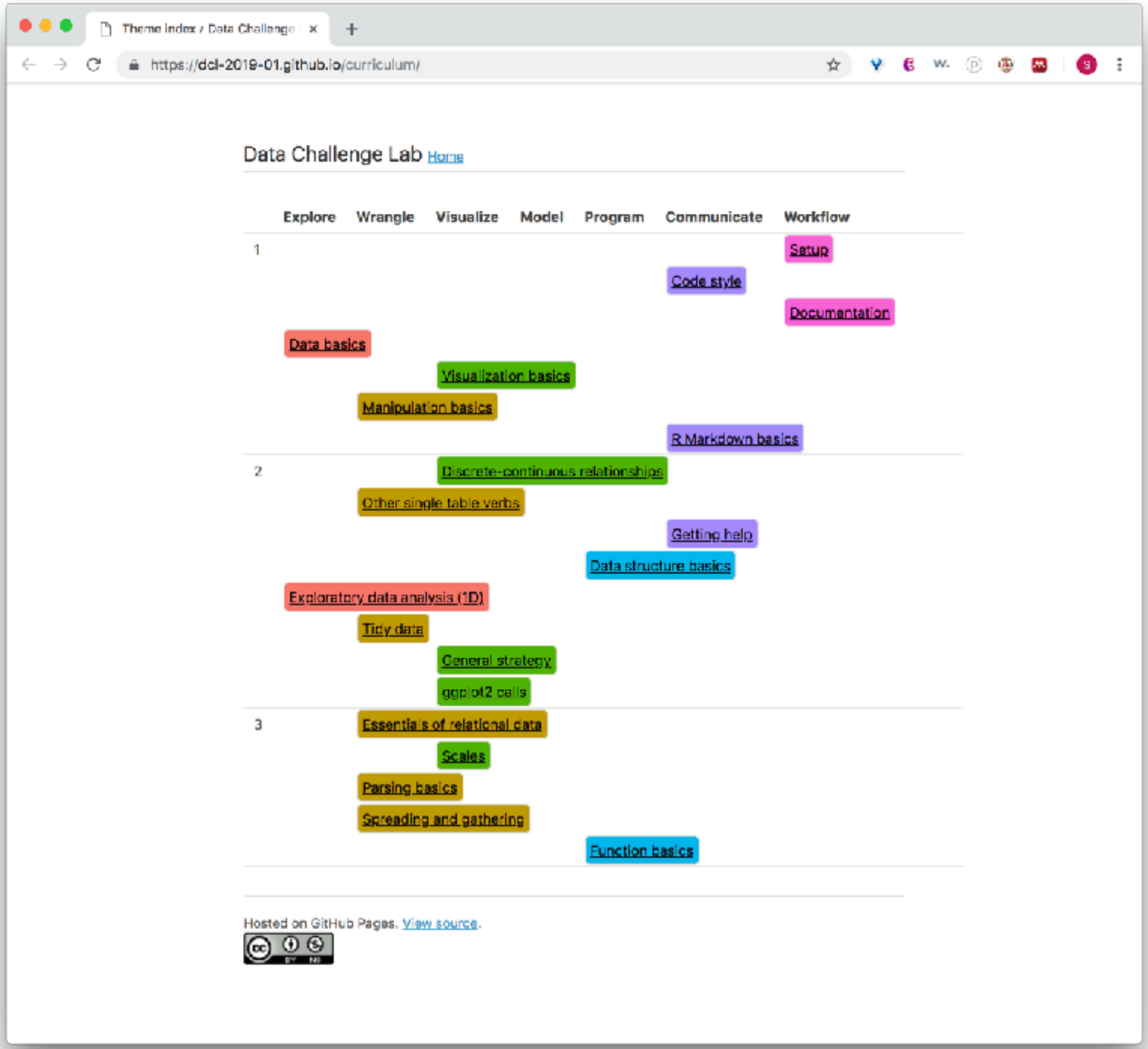
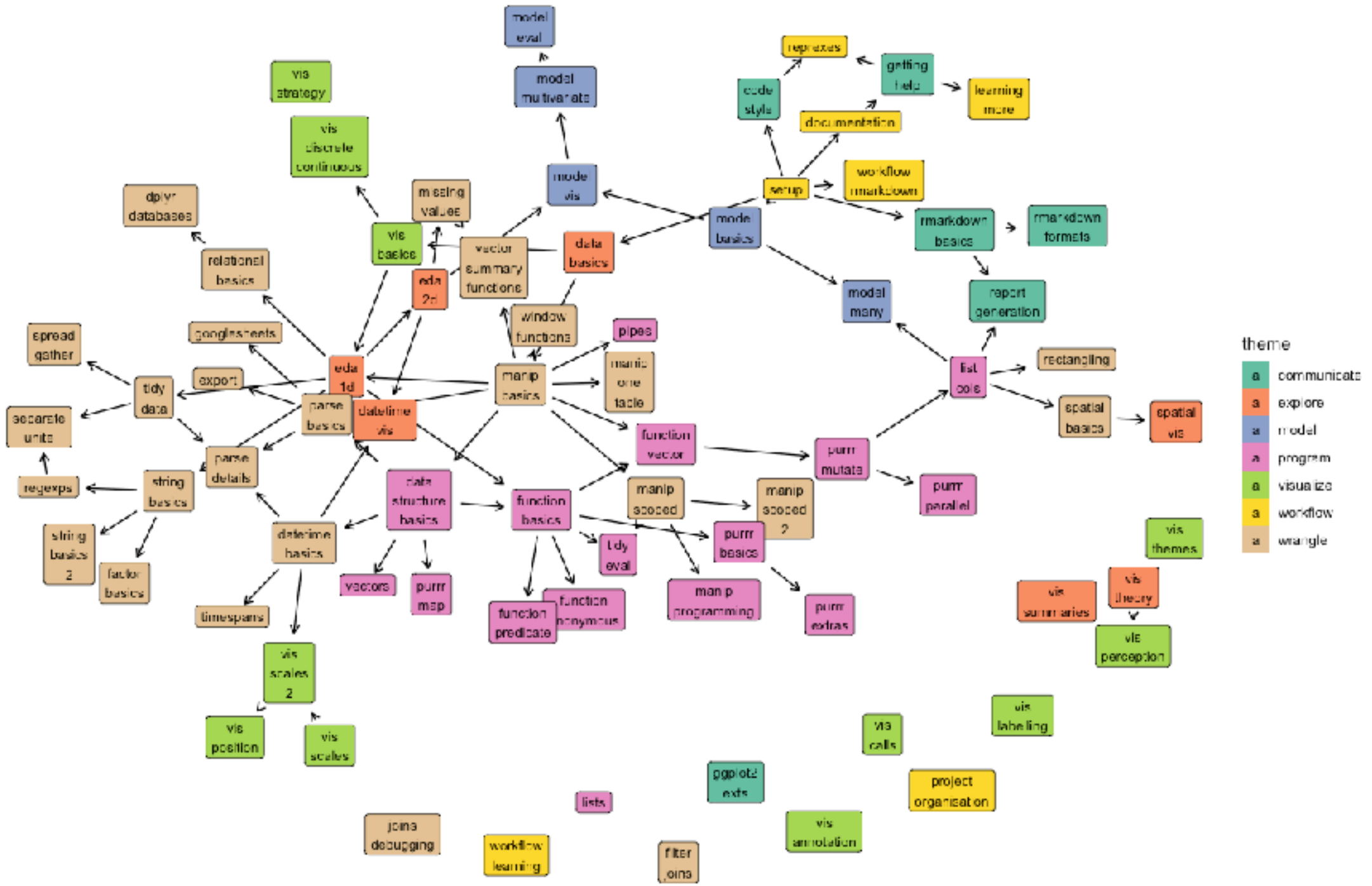
Data Challenge Lab



https://dcl-2019-01.github.io/curriculum/



https://github.com/dcl-2019-01/curriculum

vis basics

vector summary functions

data basics

basics

basics

formats

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model many

report generation

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manip basics

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function vector

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data structure basics

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purrr basics

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vis summaries

vis labelling

vis calls

https://github.com/dcl-2019-01/curriculum

dplyr verbs

mutate()

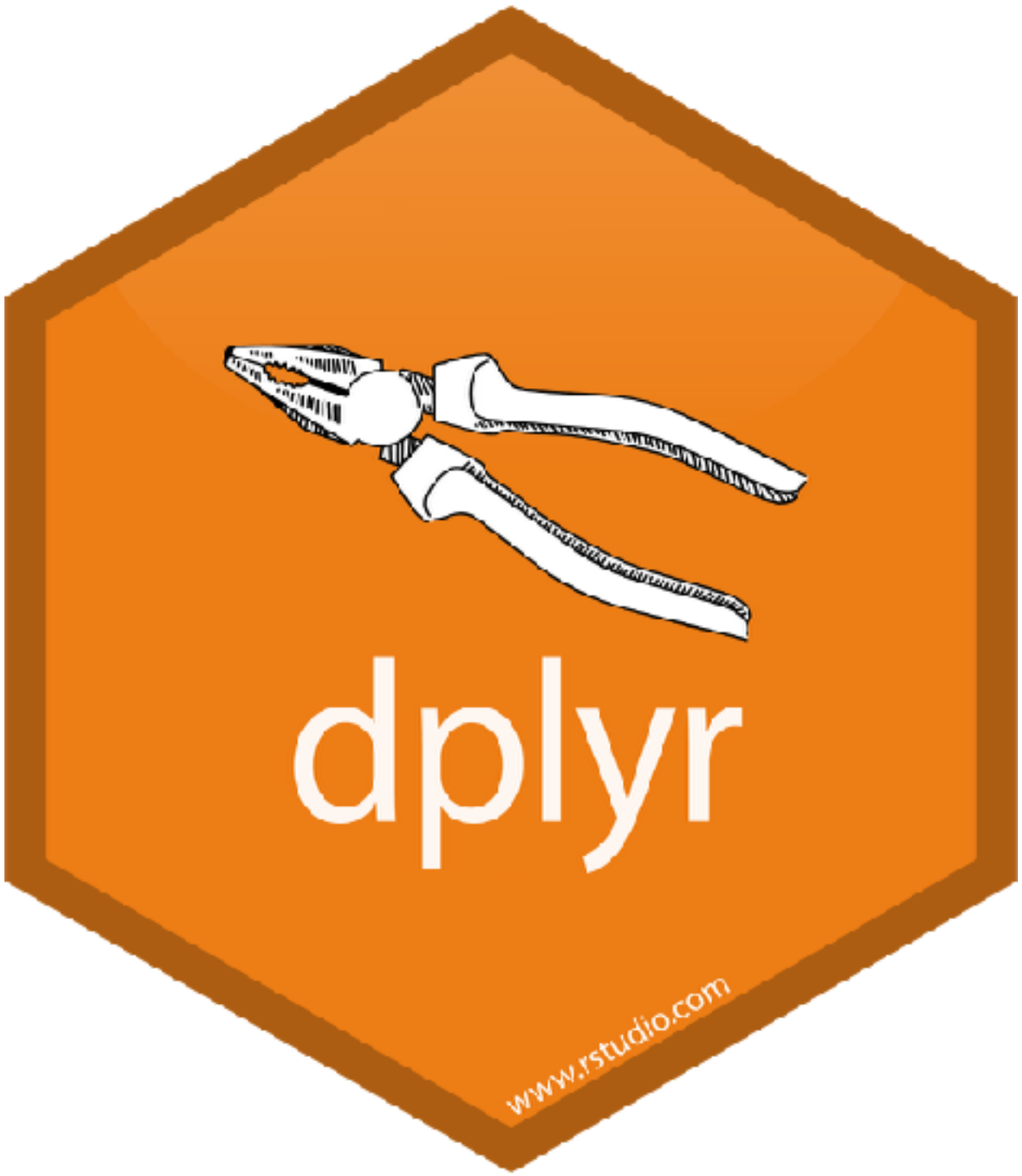
summarize()

filter()

rename()

select()

group_by()


dplyr
www.rstudio.com

dplyr

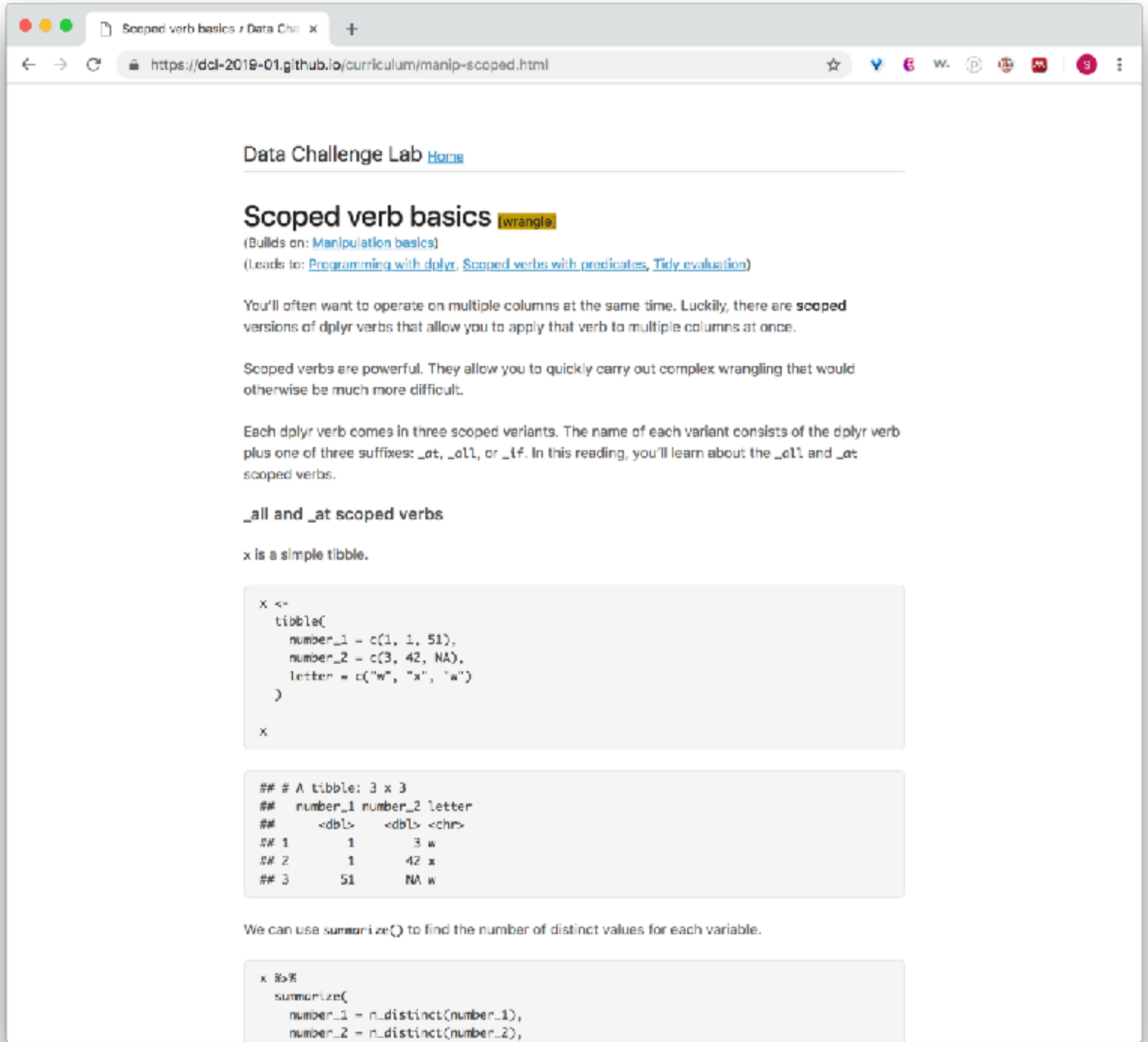
select helpers

predicate functions

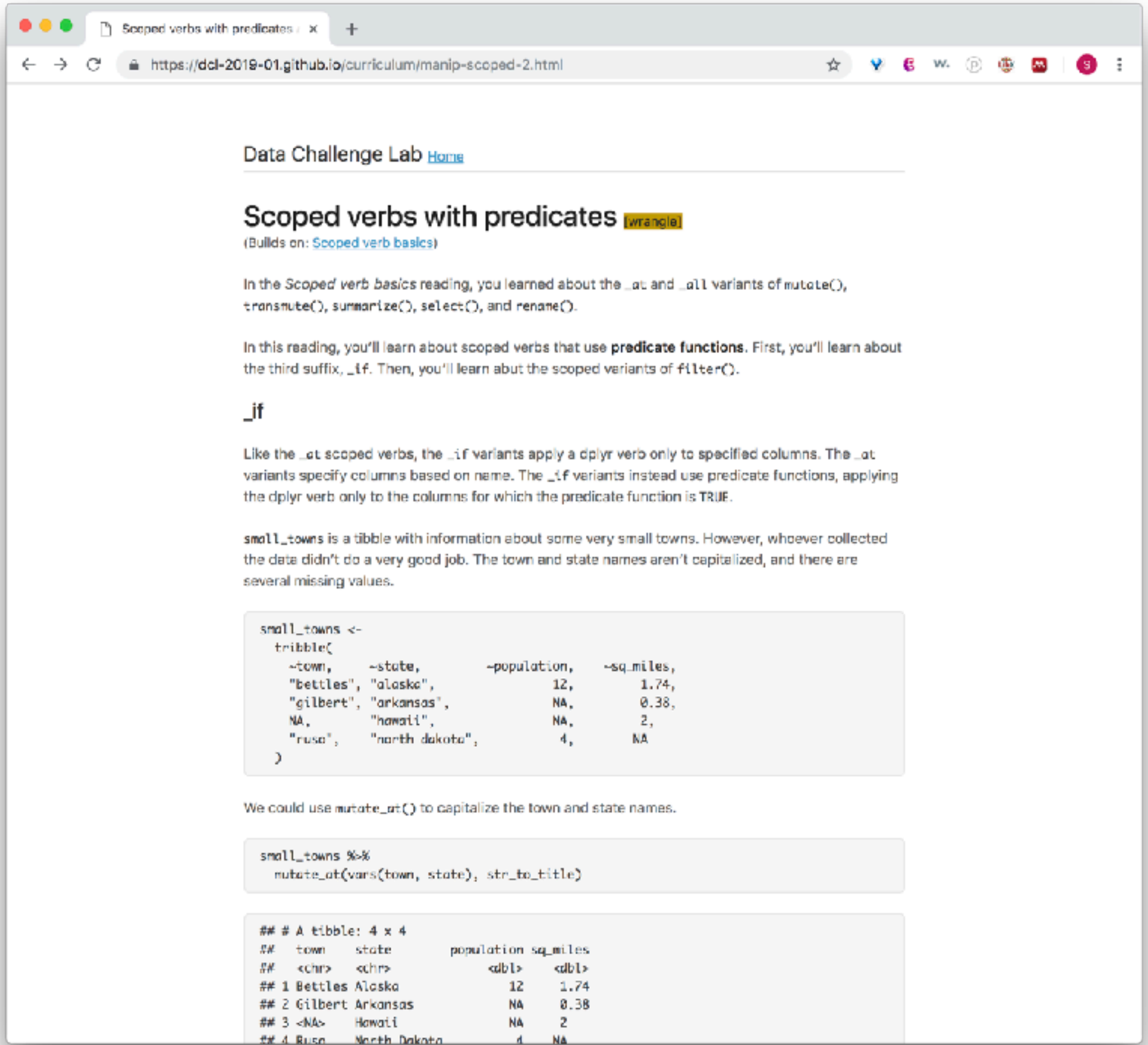
anonymous functions

...

logic



https://dcl-2018-04.github.io/curriculum/manip-scoped.html



https://dcl-2019-01.github.io/curriculum/manip-scoped-2.html

```r
small_towns <-
  tribble(
    ~town,      ~state,          ~population,    ~sq_miles,
    "bettles", "alaska",                  12,         1.74,
    "gilbert", "arkansas",                NA,         0.38,
    NA,         "hawaii",                 NA,         2,
    "ruso",     "north dakota",            4,        NA
  )

small_towns
```

```
## # A tibble: 4 x 4
##   town     state        population sq_miles
##   <chr>    <chr>             <dbl>    <dbl>
## 1 bettles  alaska               12     1.74
## 2 gilbert  arkansas             NA     0.38
## 3 <NA>     hawaii               NA     2
## 4 ruso     north dakota          4    NA
```

Simple case

```
small_towns %>%
  summarize(
    town = n_distinct(town),
    state = n_distinct(state),
    population = n_distinct(population),
    sq_miles = n_distinct(sq_miles)
  )
```

```
## # A tibble: 1 x 4
##    town state population sq_miles
##   <int> <int>      <int>    <int>
## 1     4     4          3        4
```

duplication!

Format

dplyr verb

mutate
summarize
filter
rename
...

+

suffix

_all

at

_if

Simple case

```
small_towns %>%
  summarize_all(           )
```

```
## # A tibble: 1 x 4
##    town state population sq_miles
##   <int> <int>      <int>    <int>
## 1     4     4          3        4
```

```
## # A tibble: 4 x 4
##   town    state        population sq_miles
##   <chr>   <chr>             <dbl>    <dbl>
## 1 bettles alaska               12     1.74
## 2 gilbert arkansas             NA     0.38
## 3 <NA>    hawaii               NA     2
## 4 ruso    north dakota          4    NA
```

_at

```
small_towns %>%
  mutate_at(                                    )
```

```
## # A tibble: 4 x 4
##   town    state        population sq_miles
##   <chr>   <chr>             <dbl>    <dbl>
## 1 Bettles Alaska               12     1.74
## 2 Gilbert Arkansas             NA     0.38
## 3 <NA>    Hawaii               NA     2
## 4 Ruso    North Dakota          4    NA
```

...

mutate_all(.tbl, .funs, ...)

```
small_towns %>%
  summarize_at(vars(population, sq_miles), median,                    )
```

Anonymous functions

```
small_towns %>%
  summarize_all(~                    ))
```

Anonymous functions

```
ugly_names <-
  tibble(
    Var.1 = c(1, 2),
    Var.2 = c(3, 4)
  )
```

```
small_towns %>%
  mutate_at(vars(town, state), str_to_title)
```

```
## # A tibble: 4 x 4
##   town    state        population sq_miles
##   <chr>   <chr>             <dbl>    <dbl>
## 1 Bettles Alaska               12     1.74
## 2 Gilbert Arkansas             NA     0.38
## 3 <NA>    Hawaii               NA     2
## 4 Ruso    North Dakota          4    NA
```

Predicate functions

```
small_towns %>%
  mutate_if(is.character, str_to_title)
```

```
## # A tibble: 4 x 4
##   town     state          population sq_miles
##   <chr>    <chr>               <dbl>    <dbl>
## 1 Bettles  Alaska                 12     1.74
## 2 Gilbert  Arkansas               NA     0.38
## 3 <NA>     Hawaii                 NA     2
## 4 Ruso     North Dakota            4    NA
```

filter()

```
## # A tibble: 4 x 4
##   town     state          population sq_miles
##   <chr>    <chr>               <dbl>    <dbl>
## 1 bettles  alaska                 12     1.74
## 2 gilbert  arkansas               NA     0.38
## 3 <NA>     hawaii                 NA     2
## 4 ruso     north dakota            4    NA
```

any_vars(), all_vars()

```
## # A tibble: 4 x 4
##   town     state        population sq_miles
##   <chr>    <chr>             <dbl>    <dbl>
## 1 bettles  alaska               12     1.74
## 2 gilbert  arkansas             NA     0.38
## 3 <NA>     hawaii               NA     2
## 4 ruso     north dakota          4    NA
```

all_vars()

any_vars()

any_vars(), all_vars()

```
small_towns %>%
  filter_at(vars(town, population, sq_miles), all_vars(!is.na(.)))
```

filter_if()

```
small_towns %>%
  filter_if(is.numeric, all_vars(!is.na(.)))
```

Readings

https://dcl-2019-01.github.io/curriculum/manip-scoped.html

https://dcl-2019-01.github.io/curriculum/manip-scoped.html

https://dcl-2019-01.github.io/curriculum/function-predicate.html

https://dcl-2019-01.github.io/curriculum/function-anonymous.html

https://github.com/skaltman/slides/blob/master/manip-scoped-reference.md

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https://datalab.stanford.edu/sign-up

https://github.com/dcl-2019-01/curriculum