Scoped verbs:
A subtitle

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Data Challenge Lab

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

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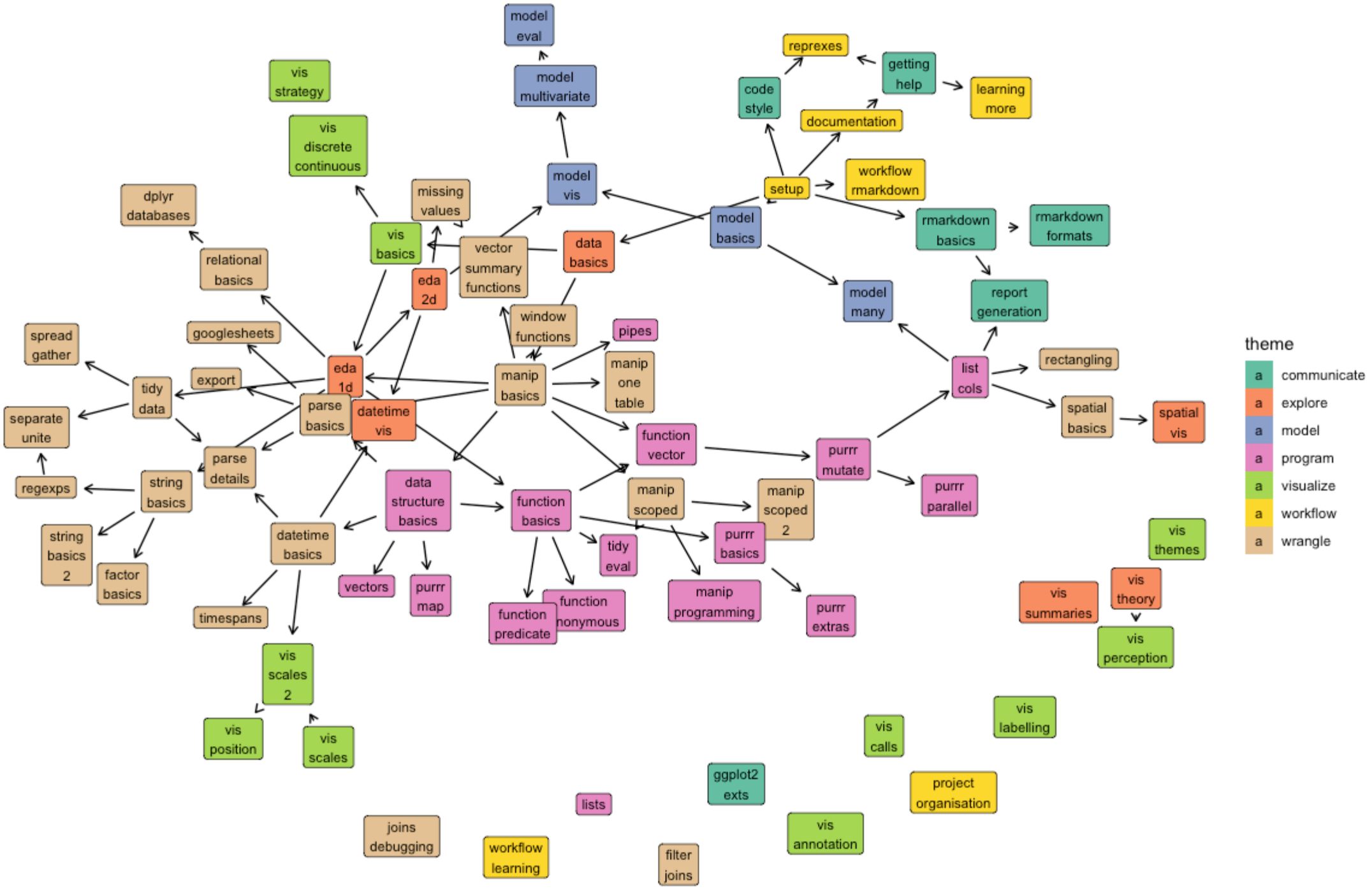
Hosted on GitHub Pages. View source.

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



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

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dplyr verbs

mutate()

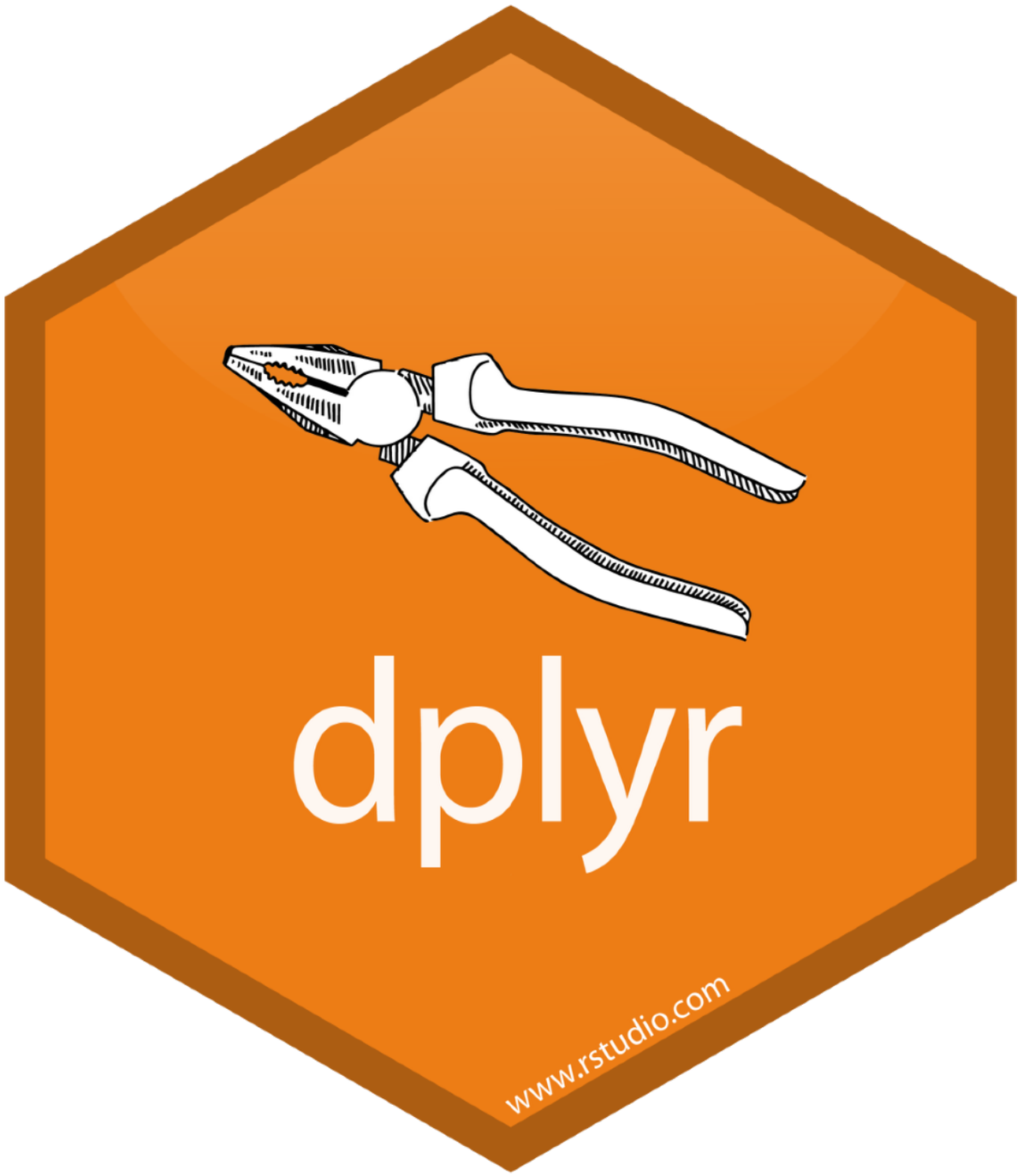
summarize()

filter()

rename()

select()

group_by()


dplyr
www.rstudio.com

dplyr

select helpers

predicate functions

anonymous functions

...

logic

Scoped verb basics [wrangle]

(Builds on: Manipulation basics)
(Leads to: Programming with dplyr, Scoped verbs with predicates, Tidy evaluation)

You'll often want to operate on multiple columns at the same time. Luckily, there are **scoped** versions of dplyr verbs that allow you to apply that verb to multiple columns at once.

Scoped verbs are powerful. They allow you to quickly carry out complex wrangling that would otherwise be much more difficult.

Each dplyr verb comes in three scoped variants. The name of each variant consists of the dplyr verb plus one of three suffixes: `_at`, `_all`, or `_if`. In this reading, you'll learn about the `_all` and `_at` scoped verbs.

_all and _at scoped verbs

x is a simple tibble.

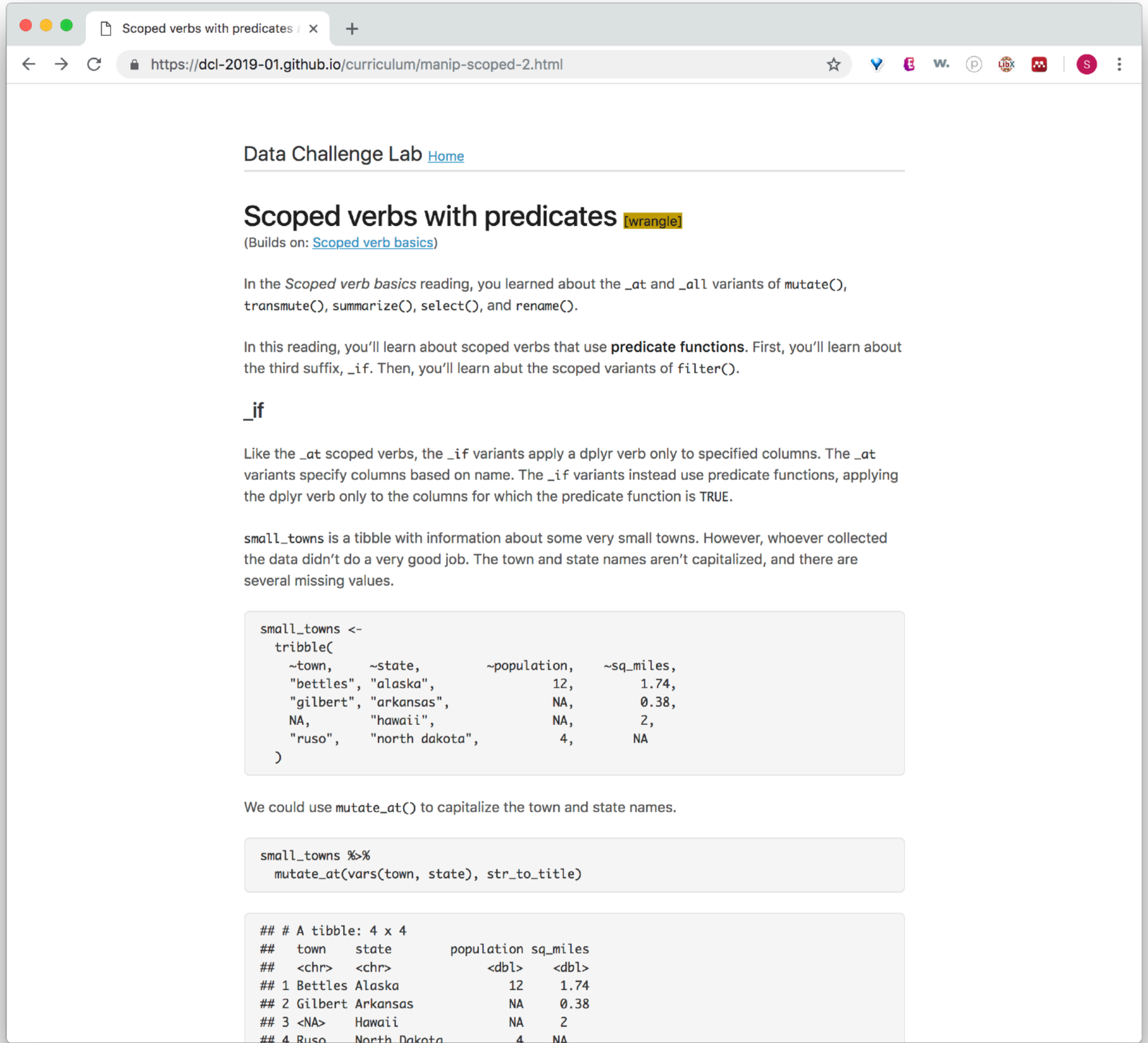
```
x <-
  tibble(
    number_1 = c(1, 1, 51),
    number_2 = c(3, 42, NA),
    letter = c("w", "x", "w")
  )

x
```

```
## # A tibble: 3 x 3
##   number_1 number_2 letter
##      <dbl>    <dbl> <chr>
## 1        1        3 w
## 2        1       42 x
## 3       51       NA w
```

We can use `summarize()` to find the number of distinct values for each variable.

```
x %>%
  summarize(
    number_1 = n_distinct(number_1),
    number_2 = n_distinct(number_2),
```

https://dcl-2019-01.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/dcl-docs/cheat-sheets/blob/master/manip-scoped/manip-scoped-cheat-sheet.md

Slides

https://github.com/skaltman/slides/

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