The first round of the 2020 High School Swimming State-Off Tournament is in the books and saw California (1), Texas (2), Florida, and Pennsylvania (5) advance.

Before beginning the next round there are a few administrative details I'd like to cover.

1. First and foremost: `SwimmeR` version 0.4.1 is now available on CRAN! The State-Off has been the first major outing for my `SwimmeR` package. We've used it extensively to read in and parse swimming results from a variety of sources, including "normal" html web pages, Hy-Tek real time results pages, and .pdf files. It's performed admirably, but some bugs have revealed themselves behind the scenes. Version 0.4.1 contains bug fixes plus a host of new features:

- A version of `results_score`, the function we developed during the State-Off. It handles timed finals style meets (like the State-Off) but also scores prelims-finals style meets, a more common and also more complex format.

```
library(stringr)
library(dplyr)
library(purrr)
library(SwimmeR)
library(flextable)

base <- "http://sidearmstats.com/auburn/swim/200218F0"
event_numbers <-
  1:42 # sequence of numbers, total of 42 events across men and women
event_numbers <-
  str_pad(event_numbers,
          width = 2,
          side = "left",
          pad = "0") # add leading zeros to single digit numbers
SEC_Links <-
  paste0(base, event_numbers, ".htm") # paste together base urls and sequence of
numbers (with leading zeroes as needed)

SEC_Results <-
  map(SEC_Links, read_results, node = "pre") %>% # map SwimmeR::read_results
over the list of links
  map(
    swim_parse,
    typo = c(
      "A&M",
      "FLOR",
      "Celaya-Hernande",
      # names which were cut off, and missing the last, first structure
      "Hernandez-Tome",
      "Garcia Varela,",
      "Von Biberstein,"
    ),
    replacement = c(
      "AM",
      "Florida",
      "Celaya, Hernande",
      # replacement names that artificially impose last, first structure.  Names
can be fixed after parsing
      "Hernandez, Tome",
      "Garcia, Varela",
      "Von, Biberstein"
    )
```

```
  ) %>%
  bind_rows()


# some diving finals results don't list places 9-24, which do score.  we can get
those divers from the prelim results
SEC_Diving_Prelims_Links <-
  c(
    "http://sidearmstats.com/auburn/swim/200218P015.htm",
    # M 1m prelims
    "http://sidearmstats.com/auburn/swim/200218P001.htm",
    # W 1m prelims
    "http://sidearmstats.com/auburn/swim/200218P022.htm",
    # W 3m prelims
    "http://sidearmstats.com/auburn/swim/200218P029.htm",
    # M platform prelims
    "http://sidearmstats.com/auburn/swim/200218P040.htm"
  ) # W platform prelims

SEC_Diving_Prelims <-
  map(SEC_Diving_Prelims_Links, read_results, node = "pre") %>% # map
SwimmeR::read_results over the list of links
  map(
    swim_parse,
    typo = c("A&M", "FLOR", "Celaya-Hernande", "Garcia Varela,"),
    replacement = c("AM", "Florida", "Celaya, Hernande", "Garcia, Varela")
  ) %>%
  bind_rows()

SEC_Diving_Prelims <- SEC_Diving_Prelims %>%
  anti_join(SEC_Results, by = c("Name", "School", "Event")) # make sure divers
aren't counted twice for a given event

SEC_Results <- bind_rows(SEC_Results, SEC_Diving_Prelims)

SEC_Results <-
  SEC_Results %>% # actual use of new results_score function
  results_score(
    events = unique(SEC_Results$Event),
    meet_type = "prelims_finals",
    lanes = 8,
    scoring_heats = 3,
    point_values = c(
      32,
      28,
      27,
      26,
      25,
      24,
      23,
      22,
      20,
      17,
      16,
      15,
      14,
      13,
```

```
      12,
      11,
      9,
      7,
      6,
      5,
      4,
      3,
      2,
      1
    )
  )

SEC_Results_Gender <- SEC_Results %>%
  mutate(Gender = case_when(str_detect(Event, "Men") ~ "M",
                            str_detect(Event, "Women") ~ "F")) %>%
  group_by(School, Gender) %>%
  summarise(Score = sum(Points, na.rm = TRUE)) %>%
  arrange(desc(Score)) %>%
  arrange(Gender) %>%
  ungroup() %>%
  group_split(Gender)
```

The scored results match the official results for women:

```
SEC_Results_Gender[[1]] %>%
  flextable() %>%
  bold(part = "header") %>%
  bg(bg = "#D3D3D3", part = "header") %>%
  autofit()
```

School	Gender	Score
Tennessee	F	1108.0
Florida	F	1079.5
Kentucky	F	987.5
Georgia	F	986.0
Auburn	F	866.0
Texas AM	F	851.0
Alabama	F	748.0
Missouri	F	500.0
South Carolina	F	427.0
Arkansas	F	422.0
LSU	F	417.0
Vanderbilt	F	150.0

Scores also match for men:

```
SEC_Results_Gender[[2]] %>%
  flextable() %>%
  bold(part = "header") %>%
  bg(bg = "#D3D3D3", part = "header") %>%
  autofit()
```

School	Gender	Score
Florida	M	1194.0
Texas AM	M	975.5
Georgia	M	953.5
Alabama	M	935.5
Missouri	M	846.5
Tennessee	M	817.0
Kentucky	M	724.0
Auburn	M	697.0
LSU	M	517.0
South Carolina	M	504.0

```
                    Men - Team Rankings - Through Event 42

 1. University of Florida            1194   2. Texas A&M University            975.5
 3. Georgia, University of          953.5   4. University of Alabama           935.5
 5. Missouri                        846.5   6. Tennessee, University of, Knox    817
 7. Kentucky, University of           724   8. Auburn University                 697
 9. Louisiana State University        517  10. South Carolina, University of,    504
```

- The ability to read in .hy3 files. Hy-Tek .hy3 files are another form of results, intended to be read into Team Manager. As of version 0.4.1 `SwimmeR` can now also read them. This feature is *not* complete and will evolve in future releases. Bug reports are welcome at the SwimmeR github page. Here though we can use it to read in results from the USA Swimming 2019 December Sectional Meet for CA and NV.

```
temp <- tempfile()
temp2 <- tempfile()
url <-
  "http://www.pacswim.org/userfiles/meets/documents/1691/meet-results-speedo-sectionals-2019-ca-nv-december-2019-13dec2019-003.zip"

download.file(url, temp)
unzip(zipfile = temp, exdir = temp2)
raw_results <-
  read_results(
    file.path(
      temp2,
      "Meet Results-Speedo Sectionals 2019 CA-NV December 2019-13Dec2019-003.hy3"
    )
  )
unlink(c(temp, temp2))

results <- swim_parse(raw_results) %>%
  mutate(Event = str_replace(Event, "NA", "Yard"))

results %>%
  filter(Event == "100 Yard Butterfly",
```

```
        Gender == "M") %>%
  select(Name, Team = School, Prelims_Time, Finals_Time) %>%
  arrange(Finals_Time) %>%
  head(5) %>%
  flextable() %>%
  bold(part = "header") %>%
  bg(bg = "#D3D3D3", part = "header") %>%
  autofit()
```

Name	Team	Prelims_Time	Finals_Time
Fischer, Brandon	C1LAC	49.20	48.07
Antoniuk, Konrad	Paseo Aquatics Swim Team	50.48	50.03
Toland, Brandon	Golden West Swim Club	50.30	50.06
Kim, William	Monterey Park Manta Rays	50.93	50.16
Bowman, Andrew	San Clemente Aquatics	50.95	50.30

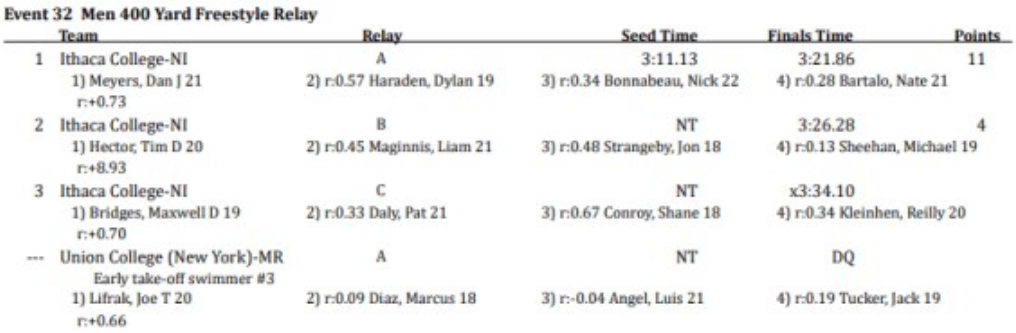
- Recording of DQ and Exhibition swims in the output of `swim_parse`, as the columns `DQ` and `Exhibition` respectively. This ended up being important for `results_score`, since Exhibition and DQ swimmers can't score.

```
Ithaca_Union <-
  swim_parse(
    read_results(
      "https://athletics.ithaca.edu/services/download_file.ashx?file_location=https://s3.
amazonaws.com/sidearm.sites/bombers.ithaca.edu/documents/2020/2/1/ithaca_vs_union_2020.pdf"
    )
  )

Ithaca_Union %>%
  filter(Event == "Men 400 Yard Freestyle Relay") %>%
  select(Place, School, Finals_Time, Exhibition, DQ) %>%
  flextable() %>%
  bold(part = "header") %>%
  bg(bg = "#D3D3D3", part = "header") %>%
  autofit()
```

Place	School	Finals_Time	Exhibition	DQ
1	Ithaca College-NI	3:21.86	0	0
2	Ithaca College-NI	3:26.28	0	0
3	Ithaca College-NI	3:34.10	1	0
NA	Union College (New York)-MR		0	1

We can see that in the Mens 400 Yard Freestyle Relay the third place relay was exhibition (`Exhibition == 1`) and that another relay was disqualified (`DQ == 1`).



Event 32 Men 400 Yard Freestyle Relay

	Team	Relay	Seed Time	Finals Time	Points
1	Ithaca College-NI	A	3:11.13	3:21.86	11
	1) Meyers, Dan J 21	2) r:0.57 Haraden, Dylan 19	3) r:0.34 Bonnabeau, Nick 22	4) r:0.28 Bartalo, Nate 21	
	r:+0.73				
2	Ithaca College-NI	B	NT	3:26.28	4
	1) Hector, Tim D 20	2) r:0.45 Maginnis, Liam 21	3) r:0.48 Strangeby, Jon 18	4) r:0.13 Sheehan, Michael 19	
	r:+8.93				
3	Ithaca College-NI	C	NT	x3:34.10	
	1) Bridges, Maxwell D 19	2) r:0.33 Daly, Pat 21	3) r:0.67 Conroy, Shane 18	4) r:0.34 Kleinhen, Reilly 20	
	r:+0.70				
---	Union College (New York)-MR	A	NT	DQ	
	Early take-off swimmer #3				
	1) Lifrak, Joe T 20	2) r:0.09 Diaz, Marcus 18	3) r:-0.04 Angel, Luis 21	4) r:0.19 Tucker, Jack 19	
	r:+0.66				