Hengst Chapter 2: B)

2019 and 2020 temperature ranges

Show code and file header information for 2019. Provide an equivalent and more succinct report for 2020. First loading the data.

```
library(magrittr)
alltemps19 <- readr::read_csv("./trapview_temps_degf_y19.csv")
```

```
##
## -- Column specification --------------------------------------------------------
## cols(
##   site = col_character(),
##   Date_time = col_datetime(format = ""),
##   degf_avg = col_double(),
##   degf_lo = col_double(),
##   degf_hi = col_double(),
##   rh_avg = col_double()
## )
```

```
alltemps19
```

```
## # A tibble: 18,969 x 6
##    site      Date_time           degf_avg degf_lo degf_hi rh_avg
##    <chr>     <dttm>                 <dbl>   <dbl>   <dbl>  <dbl>
##  1 UCKearney 2019-05-16 17:00:00     56.1    55.4    56.8   83.0
##  2 UCKearney 2019-05-16 18:00:00     57.5    56.1    58.6   81.7
##  3 UCKearney 2019-05-16 19:00:00     55.0    53.8    56.8   90.4
##  4 UCKearney 2019-05-16 20:00:00     53.5    52.9    54.1   95.1
##  5 UCKearney 2019-05-16 21:00:00     52.4    52      52.9   97.7
##  6 UCKearney 2019-05-16 22:00:00     52.3    52      52.7   97.2
##  7 UCKearney 2019-05-16 23:00:00     53.1    52.7    53.6   90.3
##  8 UCKearney 2019-05-17 00:00:00     53.2    52.7    53.8   89.2
##  9 UCKearney 2019-05-17 01:00:00     52.3    51.6    53.1   93.3
## 10 UCKearney 2019-05-17 02:00:00     52.5    52.2    52.9   91.6
## # ... with 18,959 more rows
```

2019 <61F: Percent nights by month

Table of the proportion of nights per month in which the temperature fell into the upper end of the range identified by Landolt and Curtis as influencing mating.

```
alltemps19 %>%
  dplyr::mutate(mnth = lubridate::month(Date_time, label = TRUE, abbr = TRUE),
                day_of_mnth = lubridate::mday(Date_time)) %>%
  dplyr::group_by(site, mnth, day_of_mnth) %>%
  dplyr::summarise(degf_lo = min(degf_lo)) %>%
  dplyr::mutate(lt66 = ifelse(degf_lo < 66,1,0),
         lt52 = ifelse(degf_lo <= 52,1,0)) %>%
  dplyr::filter(!is.na(degf_lo)) %>%
```

```
  dplyr::group_by(site,mnth) %>%
  dplyr::summarise(lt66 = sum(lt66),
            lt52 = sum(lt52),
            nObs = dplyr::n(),
            pct_lt66 = 100*lt66/nObs,
            pct_lt52 = 100*lt52/nObs) %>%
  dplyr::select(site,mnth,pct_lt66) %>%
  tidyr::pivot_wider(id_cols = site,
                     names_from = mnth,
                     values_from = pct_lt66,
                     values_fill = 0) %>%
  dplyr::select(site,May,Jun,Jul,Aug,Sep,Oct,Nov)  %>%
  knitr::kable(., "latex")
```

```
## `summarise()` has grouped output by 'site', 'mnth'. You can override using the `.groups` argument.
```

```
## `summarise()` has grouped output by 'site'. You can override using the `.groups` argument.
```

site	May	Jun	Jul	Aug	Sep	Oct	Nov
MWoolf_east	0	70.37037	74.19355	70.96774	96.66667	100	0
MWoolf_west	100	90.00000	83.87097	100.00000	96.66667	100	0
Perez	0	92.59259	96.77419	74.19355	93.33333	100	100
UCKearney	100	86.66667	80.64516	80.64516	96.66667	100	100
usda	100	76.66667	70.96774	74.19355	90.00000	100	0

2020 <61F: Percent nights by month

Again load data and head() two lines. Note that all units are at the same "site" as defined for 2019, so site in 2020 distinguishes which row the trap was in.

```
##
## -- Column specification --------------------------------------------------------
## cols(
##   Date_time = col_datetime(format = ""),
##   degf_avg = col_double(),
##   degf_lo = col_double(),
##   degf_hi = col_double(),
##   rh_avg = col_double(),
##   site = col_character()
## )
```

```
## # A tibble: 2 x 6
##   Date_time           degf_avg degf_lo degf_hi rh_avg site
##   <dttm>                 <dbl>   <dbl>   <dbl>  <dbl> <chr>
## 1 2020-04-22 02:00:00     51.5    50.2    52.5   90.3 MWT1
## 2 2020-04-22 03:00:00     49.5    48.9    49.8   93.8 MWT1
```

```
alltemps20 %>%
  dplyr::mutate(mnth = lubridate::month(Date_time, label = TRUE, abbr = TRUE),
                day_of_mnth = lubridate::mday(Date_time)) %>%
  dplyr::group_by(site, mnth, day_of_mnth) %>%
  dplyr::summarise(degf_lo = min(degf_lo)) %>%
  dplyr::mutate(lt66 = ifelse(degf_lo < 66,1,0),
                lt52 = ifelse(degf_lo <= 52,1,0)) %>%
  dplyr::filter(!is.na(degf_lo)) %>%
  dplyr::group_by(site,mnth) %>%
```

```
  dplyr::summarise(lt66 = sum(lt66),
            lt52 = sum(lt52),
            nObs = dplyr::n(),
            pct_lt66 = 100*lt66/nObs,
            pct_lt52 = 100*lt52/nObs) %>%
  dplyr::select(site,mnth,pct_lt52) %>%
  tidyr::pivot_wider(id_cols = site,
                     names_from = mnth,
                     values_from = pct_lt52,
                     values_fill = 0) %>%
  dplyr::select(site,Feb,Mar,May,Jun,Jul,Aug,Sep) %>%
  knitr::kable(., "latex")
```

```
## `summarise()` has grouped output by 'site', 'mnth'. You can override using the `.groups` argument.
```

```
## `summarise()` has grouped output by 'site'. You can override using the `.groups` argument.
```

site	Feb	Mar	May	Jun	Jul	Aug	Sep
MWT1	0	0	48.14815	20.00000	0	0.000000	0
MWT2	0	95	48.00000	16.66667	0	0.000000	0
MWT3	100	0	41.93548	21.73913	0	3.225807	0
MWT4	0	100	48.14815	18.51852	0	0.000000	0
MWT5	0	0	0.00000	0.00000	0	0.000000	0