Assignment 7, Part II

Ellen Bledsoe

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```
2. Vectors (10 pts)
## [1] "2a:"
## [1] 23 24 40
## [1] "2b:"
## [1] TRUE FALSE FALSE
## [1] "2c:"
## [1] 0 0 4
## [1] "2d:"
## [1] "(woo)" "(hey)" NA
3. Dugout Data (15 pts)
## Rows: 102 Columns: 16
## -- Column specification -----
## Delimiter: ","
## chr (8): Site_ID, Date, Soil Salinity, pH, Soil Zone, Location of nearest o...
## dbl (7): latitude, longitude, Elevation.m, ion Concentration in groundwater...
## time (1): Time
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.
## # A tibble: 102 x 16
##
     Site_ID Date
                      Time
                             latitude longitude SoilSalinity pH
                                                                       SoilZone
                                                            <chr>
##
     <chr>
             <chr>
                      <time>
                                <dbl>
                                          <dbl> <chr>
                                                                        <chr>>
## 1 5
             24-Aug-17 10:03
                                 51.4
                                          -103. moderate
                                                            alkaline
                                                                       dark gr~
                                          -102. very slight unclassifi~ black
## 2 20
             24-Jul-17 11:41
                                 50.1
## 3 36
             10-Aug-17 15:05
                                 52.5
                                          -105. very slight alkaline
                                                                       dark gr~
## 4 49
             24-Jul-17 13:15
                                 50.0
                                          -102. slight
                                                            unclassifi~ black
## 5 51
             24-Jul-17 16:19
                                 50.0
                                          -102. slight
                                                            unclassifi~ black
## 6 52
             25-Jul-17 11:27
                                 49.9
                                          -102. slight
                                                            unclassifi~ black
```

```
## 7 65
              11-Aug-17 11:50
                                    52.6
                                             -110. very slight slightly a~ dark br~
## 8 68
              8-Aug-17 09:30
                                    50.6
                                             -105. very slight
                                                                alkaline
                                                                             brown
                                             -103. slight
## 9 10A
              24-Aug-17 12:25
                                    51.8
                                                                 alkaline
                                                                             dark gr~
## 10 10B
                                             -103. slight
                                                                 alkaline
                                                                             dark gr~
              24-Aug-17 13:14
                                    51.8
## # i 92 more rows
## # i 8 more variables: Elevation.m <dbl>,
       'Location of nearest observation well' <chr>,
       'ion Concentration in groundwater (mg/L)' <dbl>, MajorSalts <chr>,
## #
       Anion <chr>, '2017 Well groundwater depth' <dbl>,
       'dugout elevation above groundwater' <dbl>, Surface_Sal.ppt <dbl>
## [1] "3a:"
## # A tibble: 85 x 16
##
      Site_ID Date
                                latitude longitude SoilSalinity pH
                                                                             SoilZone
                        Time
                                                                             <chr>
                                             <dbl> <chr>
##
      <chr>
              <chr>>
                        <time>
                                   <dbl>
                                                                 <chr>
              24-Jul-17 11:41
                                                                unclassifi~ black
##
   1 20
                                    50.1
                                             -102. very slight
## 2 36
              10-Aug-17 15:05
                                    52.5
                                             -105. very slight
                                                                alkaline
                                                                             dark gr~
## 3 49
              24-Jul-17 13:15
                                    50.0
                                             -102. slight
                                                                unclassifi~ black
## 4 51
              24-Jul-17 16:19
                                    50.0
                                             -102. slight
                                                                unclassifi~ black
## 5 52
              25-Jul-17 11:27
                                    49.9
                                             -102. slight
                                                                unclassifi~ black
                                             -110. very slight
## 6 65
              11-Aug-17 11:50
                                    52.6
                                                                slightly a~ dark br~
## 7 68
              8-Aug-17 09:30
                                    50.6
                                             -105. very slight
                                                                alkaline
                                                                             brown
## 8 10A
                                    51.8
                                             -103. slight
                                                                 alkaline
              24-Aug-17 12:25
                                                                             dark gr~
## 9 10B
                                    51.8
                                             -103. slight
                                                                             dark gr~
              24-Aug-17 13:14
                                                                 alkaline
## 10 10C
              24-Aug-17 10:30
                                    51.8
                                              103. very slight alkaline
                                                                             dark gr~
## # i 75 more rows
## # i 8 more variables: Elevation.m <dbl>,
       'Location of nearest observation well' <chr>,
       'ion Concentration in groundwater (mg/L)' <dbl>, MajorSalts <chr>,
## #
       Anion <chr>, '2017 Well groundwater depth' <dbl>,
       'dugout elevation above groundwater' <dbl>, Surface_Sal.ppt <dbl>
## [1] "3b:"
## # A tibble: 94 x 16
##
      Site ID Date
                               latitude longitude SoilSalinity pH
                                                                             SoilZone
                        Time
      <chr>
              <chr>
                        <time>
                                   <dbl>
                                             <dbl> <chr>
                                                                 <chr>>
                                                                             <chr>
              24-Aug-17 12:25
                                             -103. slight
##
  1 10A
                                    51.8
                                                                 alkaline
                                                                             dark gr~
## 2 10B
              24-Aug-17 13:14
                                    51.8
                                             -103. slight
                                                                 alkaline
                                                                             dark gr~
## 3 10C
              24-Aug-17 10:30
                                    51.8
                                              103. very slight
                                                                alkaline
                                                                             dark gr~
## 4 10D
              24-Aug-17 11:39
                                    51.8
                                             -103. very slight
                                                                             dark gr~
                                                                alkaline
## 5 14A
              12-Jul-17 10:15
                                    51.0
                                             -105. very slight
                                                                alkaline
                                                                             brown
## 6 14B
              12-Jul-17 12:50
                                    51.0
                                             -105. very slight
                                                                alkaline
                                                                             black
##
  7 15A
              3-Aug-17 11:41
                                    49.6
                                             -102. slight
                                                                neutral to~ dark gr~
##
  8 15B
              3-Aug-17 14:15
                                    49.5
                                             -102. slight
                                                                neutral to~ dark gr~
## 9 22B
                                    51.1
                                              106. very slight
                                                                             brown
              8-Aug-17 12:28
                                                                alkaline
## 10 24A
                                    49.9
              14-Aug-17 14:15
                                             -110. slight
                                                                neutral to~ brown
## # i 84 more rows
## # i 8 more variables: Elevation.m <dbl>,
       'Location of nearest observation well' <chr>,
       'ion Concentration in groundwater (mg/L)' <dbl>, MajorSalts <chr>,
## #
       Anion <chr>, '2017 Well groundwater depth' <dbl>,
       'dugout elevation above groundwater' <dbl>, Surface_Sal.ppt <dbl>
## #
```

```
## [1] "3c:"
## # A tibble: 102 x 16
     Site_ID Date
                               latitude longitude SoilSalinity pH
                       Time
                                                                          SoilZone
##
      <chr>
             <chr>>
                        <time>
                                  <dbl>
                                           <dbl> <chr>
                                                              <chr>>
                                                                           <chr>
##
   1 5
              24-Aug-17 10:03
                                  51.4
                                           -103. moderate
                                                               alkaline
                                                                          dark gr~
## 2 20
             24-Jul-17 11:41
                                  50.1
                                           -102. very slight unclassifi~ black
## 3 36
             10-Aug-17 15:05
                                  52.5
                                           -105. very slight alkaline
                                                                          dark gr~
## 4 49
             24-Jul-17 13:15
                                  50.0
                                           -102. slight
                                                              unclassifi~ black
## 5 51
             24-Jul-17 16:19
                                  50.0
                                           -102. slight
                                                              unclassifi~ black
## 6 52
             25-Jul-17 11:27
                                  49.9
                                           -102. slight
                                                              unclassifi~ black
## 7 65
                                  52.6
                                           -110. very slight slightly a~ dark br~
             11-Aug-17 11:50
## 8 68
             8-Aug-17 09:30
                                  50.6
                                           -105. very slight alkaline
                                                                          brown
## 9 10A
             24-Aug-17 12:25
                                  51.8
                                           -103. slight
                                                              alkaline
                                                                          dark gr~
## 10 10B
             24-Aug-17 13:14
                                  51.8
                                           -103. slight
                                                              alkaline
                                                                          dark gr~
## # i 92 more rows
## # i 8 more variables: Elevation.m <dbl>,
       'Location of nearest observation well' <chr>,
       'ion Concentration in groundwater (mg/L)' <dbl>, MajorSalts <chr>,
       Anion <chr>, '2017 Well groundwater depth' <dbl>,
## #
       'dugout elevation above groundwater' <dbl>, Surface_Sal.ppt <dbl>
4. Santa Cruz Rodents (20 pts)
## Rows: 51 Columns: 15
## -- Column specification --------
## Delimiter: ","
       (10): Site, Trap ID, Species, Status (R/N), Sex, Tail length, Hair samp...
         (4): Total Weight, Bag weight, Animal Weight, Hind foot length
## date (1): Date
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.
## [1] "Read in data:"
## [1] "4a:"
## # A tibble: 2 x 15
               Site 'Trap ID' Species 'Status (R/N)' Sex
                                                             'Total Weight'
    Date
     <date>
                <chr> <chr>
                                <chr>
                                        <chr>
                                                      <chr>
                                                                      <dbl>
## 1 2022-11-14 <NA> 4J
                               SIOC?
                                        N
                                                      <NA>
                                                                        NA
## 2 2022-11-18 <NA> D6
                               DIME?
                                       N
                                                                        44
## # i 8 more variables: 'Bag weight' <dbl>, 'Animal Weight' <dbl>,
       'Hind foot length' <dbl>, TailLength <chr>, HairSample <chr>,
      Position <chr>, Handler <chr>, Notes <chr>
## [1] "4b:"
## # A tibble: 51 x 15
                          'Trap ID' Species 'Status (R/N)' Sex
                Site
                                                                 'Total Weight'
```

<chr>

<chr>

<dbl>

<chr>

<chr>

<chr>

##

<date>

```
1 2022-11-14 Heritage 4C
                                      SIOC
                                                              F
                                                                                134
##
    2 2022-11-14 <NA>
                                      SIOC
                                                              М
                                                                                136
                           4D
                                              N
   3 2022-11-14 <NA>
                           4I
                                      SIOC
                                                              <NA>
                                                                                 90
  4 2022-11-14 <NA>
                           2H
                                      REME
                                                                                 38
                                              N
                                                              М
    5 2022-11-14 <NA>
                           4.1
                                      SIOC?
                                              N
                                                              <NA>
                                                                                 NA
##
   6 2022-11-14 <NA>
                           2F
                                      REME
                                              N
                                                              F
                                                                                 22
   7 2022-11-15 <NA>
                           4C
                                      SIOC
                                              R
                                                              <NA>
                                                                                 NA
  8 2022-11-15 <NA>
                                      SIOC
##
                           4H
                                              N
                                                              F
                                                                                 95
## 9 2022-11-15 <NA>
                           1H
                                      REME
                                              N
                                                              <NA>
                                                                                 26
## 10 2022-11-15 <NA>
                                                                                 35
                           1B
                                      REME
## # i 41 more rows
## # i 8 more variables: 'Bag weight' <dbl>, 'Animal Weight' <dbl>,
       'Hind foot length' <dbl>, TailLength <chr>, HairSample <chr>,
       Position <chr>, Handler <chr>, Notes <chr>
## [1] "4c"
## # A tibble: 51 x 15
                           'Trap ID' Species 'Status (R/N)' Sex
                                                                     'Total Weight'
      Date
                 Site
                           <chr>
##
      <date>
                  <chr>
                                      <chr>
                                              <chr>>
                                                                              <dbl>
                                                              <chr>
##
   1 2022-11-14 Heritage 4C
                                      SIOC
                                              N
                                                              F
                                                                                134
##
   2 2022-11-14 <NA>
                           4D
                                      SIOC
                                              N
                                                              М
                                                                                136
   3 2022-11-14 <NA>
                           4I
                                      SIOC
                                              N
                                                              <NA>
                                                                                 90
  4 2022-11-14 <NA>
##
                           2H
                                      REME
                                                                                 38
                                              N
                                                              М
##
   5 2022-11-14 <NA>
                           4J
                                      SIOC
                                              N
                                                              <NA>
                                                                                 NA
## 6 2022-11-14 <NA>
                           2F
                                                              F
                                      REME
                                              N
                                                                                 22
  7 2022-11-15 <NA>
                           4C
                                      SIOC
                                              R
                                                              <NA>
                                                                                 NΑ
## 8 2022-11-15 <NA>
                           4H
                                      SIOC
                                              N
                                                                                 95
## 9 2022-11-15 <NA>
                                                                                 26
                           1H
                                      REME
                                              N
                                                              <NA>
## 10 2022-11-15 <NA>
                           1B
                                      REME
                                                                                 35
## # i 41 more rows
## # i 8 more variables: 'Bag weight' <dbl>, 'Animal Weight' <dbl>,
       'Hind foot length' <dbl>, TailLength <chr>, HairSample <chr>,
       Position <chr>, Handler <chr>, Notes <chr>
## [1] "4d:"
## # A tibble: 51 x 15
                           'Trap ID' Species 'Status (R/N)' Sex
                                                                     'Total Weight'
##
      Date
                 Site
##
      <date>
                  <chr>
                           <chr>
                                      <chr>
                                              <chr>
                                                              <chr>
                                                                              <dbl>
##
                                      SIOC
                                                              F
                                                                                134
    1 2022-11-14 Heritage 4C
                                              N
   2 2022-11-14 <NA>
                           4D
                                      SIOC
                                                              Μ
                                                                                136
   3 2022-11-14 <NA>
                                      SIOC
##
                                                                                 90
                           4I
                                              N
                                                              <NA>
    4 2022-11-14 <NA>
                           2H
                                      REME
                                              N
                                                                                 38
   5 2022-11-14 <NA>
##
                           4J
                                      SIOC
                                              N
                                                              <NA>
                                                                                 NΑ
   6 2022-11-14 <NA>
                           2F
                                      REME
                                                              F
                                                                                 22
  7 2022-11-15 <NA>
                           4C
##
                                      SIOC
                                                              <NA>
                                                                                 NΑ
                                              R
    8 2022-11-15 <NA>
                                                              F
                           4H
                                      SIOC
                                              N
                                                                                 95
## 9 2022-11-15 <NA>
                                                                                 26
                           1H
                                      REME
                                              N
                                                              <NA>
## 10 2022-11-15 <NA>
                           1B
                                      REME
                                                                                 35
## # i 41 more rows
## # i 8 more variables: 'Bag weight' <dbl>, 'Animal Weight' <dbl>,
       'Hind foot length' <dbl>, TailLength <chr>, HairSample <chr>,
       Position <chr>, Handler <chr>, Notes <chr>
```