Homework 5

Nathaniel Haulk

10/28/2021

```
library("devtools")

#devtools::install_github("daijiang/neonDivData")

library("neonDivData")

library("dplyr")
```

Question 1:

```
#sort(unique(data_plant$taxon_name))

## Pulls the genus for each plant
data_plant$genus = sub(" .*", "", data_plant$taxon_name)

## Selects a random number 100 times between 1 and the length of data_plant
i = sample(1:nrow(data_plant), 100, replace=FALSE)

## Records the genus at the random
genus_samp = data_plant$genus[i]

## Prints out 100 genus
print(genus_samp)
```

```
##   [1] "Carya"           "Vaccinium"       "Bouteloua"       "Uvularia"
##   [5] "Gutierrezia"     "Juniperus"       "Ulmus"           "Symphyotrichum"
##   [9] "Pseudoroegneria" "Celastrus"       "Viola"           "Achlys"
##  [13] "Poa"             "Nandina"         "Dalea"           "Pneumatopteris"
##  [17] "Prenanthes"      "Oxalis"          "Robinia"         "Saccharum"
##  [21] "Ledum"           "Alnus"           "Helianthemum"    "Prunus"
##  [25] "Oligoneuron"     "Phlox"           "Sericocarpus"    "Bromus"
##  [29] "Toxicodendron"   "Cheirodendron"   "Amaranthus"      "Lithospermum"
##  [33] "Dactylis"        "Euphorbia"       "Perilla"         "Luzula"
##  [37] "Leersia"         "Alnus"           "Ledum"           "Coprosma"
##  [41] "Tragia"          "Acalypha"        "Acer"            "Eriophorum"
##  [45] "Viola"           "Magnolia"        "Rubus"           "Symphyotrichum"
##  [49] "Antennaria"      "Polystichum"     "Solidago"        "Acer"
##  [53] "Bouteloua"       "Hymenopappus"    "Eriophorum"      "Sphaeralcea"
```

```
##  [57] "Brachyelytrum"   "Artemisia"       "Sporobolus"      "Eriogonum"
##  [61] "Psoralidium"     "Eupatorium"      "Rubus"           "Lotus"
##  [65] "Vaccinium"       "Trientalis"      "Pleuraphis"      "Carex"
##  [69] "Pedicularis"     "Geum"            "Evolvulus"       "Trientalis"
##  [73] "Galium"          "Goodyera"        "Oxalis"          "Potentilla"
##  [77] "Lechea"          "Fagus"           "Prunus"          "Bouteloua"
##  [81] "Calamagrostis"   "Chamerion"       "Passiflora"      "Galium"
##  [85] "Carya"           "Schoenoplectus"  "Oryzopsis"       "Pinus"
##  [89] "Erythroxylum"    "Elymus"          "Empetrum"        "Styphelia"
##  [93] "Carex"           "Lupinus"         "Acer"            "Bromus"
##  [97] "Pteridium"       "Paronychia"      "Anemone"         "Hypochaeris"
```

Question 2:

```
data_plant$taxon_name2 = sub("(\\w\\s\\w+).*", "\\1", data_plant$taxon_name)

## Selects a random number 100 times between 1 and the length of data_plant
i = sample(1:nrow(data_plant), 100, replace=FALSE)

## Records the genus and species name at the random
taxon2_samp = data_plant$taxon_name2[i]

print(taxon2_samp)
```

```
##   [1] "Apocynum cannabinum"         "Quercus wislizeni"
##   [3] "Carex blanda"                "Cornus florida"
##   [5] "Opuntia engelmannii"         "Aesculus flava"
##   [7] "Betula lenta"                "Artemisia frigida"
##   [9] "Physalis sp"                 "Ulmus alata"
##  [11] "Dichanthelium oligosanthes"  "Portulaca umbraticola"
##  [13] "Tradescantia occidentalis"   "Phlox stolonifera"
##  [15] "Axonopus sp"                 "Cyperus retrorsus"
##  [17] "Trifolium microcephalum"     "Physalis arenicola"
##  [19] "Arnica cordifolia"           "Vitis sp"
##  [21] "Machaeranthera pinnatifida"  "Plantago spp"
##  [23] "Coptis trifolia"             "Rubus ursinus"
##  [25] "Pectocarya sp"               "Corylus cornuta"
##  [27] "Opuntia polyacantha"         "Nyssa sylvatica"
##  [29] "Prunus serotina"             "Carex sp"
##  [31] "Bidens cernua"               "Oplismenus hirtellus"
##  [33] "Celtis occidentalis"         "Desmodium nudiflorum"
##  [35] "Centrosema virginianum"      "Populus tremuloides"
##  [37] "Allium campanulatum"         "Artemisia ludoviciana"
##  [39] "Opuntia sp"                  "Vitis sp"
##  [41] "Scutellaria multiglandulosa" "Monarda fistulosa"
##  [43] "Parthenocissus quinquefolia" "Elymus sp"
##  [45] "Ionactis linariifolius"      "Bouteloua gracilis"
##  [47] "Cyperus sp"                  "Smilax tamnoides"
##  [49] "Pascopyrum smithii"          "Morus rubra"
##  [51] "Fragaria virginiana"         "Pleuraphis jamesii"
##  [53] "Boehmeria cylindrica"        "Paspalum notatum"
```

```
##  [55] "Andropogon capillipes"       "Myosotis macrosperma"
##  [57] "Solanum carolinense"         "Hamamelis virginiana"
##  [59] "Rudbeckia hirta"             "Rubus ursinus"
##  [61] "Botrychium virginianum"      "Ceanothus sp"
##  [63] "Amphicarpaea bracteata"      "Parthenocissus quinquefolia"
##  [65] "Carya cordiformis"           "Bignonia capreolata"
##  [67] "Tragia urens"                "Mitchella repens"
##  [69] "Carex meadii"                "Pedicularis sp"
##  [71] "Duchesnea indica"            "Muhlenbergia porteri"
##  [73] "Aristida ternipes"           "Schizachyrium scoparium"
##  [75] "Hymenothrix wislizeni"       "Viburnum sp"
##  [77] "Bromus tectorum"             "Acer pensylvanicum"
##  [79] "Elymus elymoides"            "Arisaema triphyllum"
##  [81] "Carex spp"                   "Asimina incana"
##  [83] "Acer rubrum"                 "Polygonum punctatum"
##  [85] "Trisetum interruptum"        "Digitaria californica"
##  [87] "Saxifraga cernua"            "Opuntia phaeacantha"
##  [89] "Rubus hispidus"              "Rubus chamaemorus"
##  [91] "Aphanostephus ramosissimus"  "Populus tremuloides"
##  [93] "Polygonum cespitosum"        "Bursera simaruba"
##  [95] "Acalypha virginica"          "Bouteloua barbata"
##  [97] "Symphyotrichum patens"       "Pseudabutilon umbellatum"
##  [99] "Betula sp"                   "Woodwardia areolata"
```

Question 3

```
n_1 = data_plant %>%
  group_by(siteID) %>%
  summarise(richness_1m2 = sum(sample_area_m2 == "1"))

n_10 = data_plant %>%
  group_by(siteID) %>%
  summarise(richness_10m2 = sum(sample_area_m2 == "1" | sample_area_m2 == "10"))

n_100 = data_plant %>%
  group_by(siteID) %>%
  summarise(richness_100m2 = sum(sample_area_m2 == "1" | sample_area_m2 == "10"| sample_area_m2 == "100

n_all = left_join(n_1 ,n_10) %>%
  left_join(n_100)
```

```
## Joining, by = "siteID"
## Joining, by = "siteID"
```

```
print(n_all)
```

```
## # A tibble: 47 x 4
##    siteID richness_1m2 richness_10m2 richness_100m2
##    <chr>         <int>         <int>          <int>
##  1 ABBY           7587         13603          16946
```

```
##  2 BARR           4615          6041          6616
##  3 BART           5875         10659         13354
##  4 BLAN           8803         15270         19798
##  5 BONA           4091          5925          6983
##  6 CLBJ          10226         15656         18328
##  7 CPER          23663         37876         44284
##  8 DCFS          12067         16649         19622
##  9 DEJU           8673         13000         14918
## 10 DELA          12012         22521         29326
## # ... with 37 more rows
```