

# Atividade 3

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*29 de setembro de 2019*

**Questão 1:** Use na função `read_csv` o argumento `na=c(“”, “-”, “NA”)` para que linhas com traço ou vazias sejam convertidas para NA. Observe as colunas presentes nos datasets usando a função `glimpse`.

```
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.2.1 --
## v ggplot2 3.2.1    v purrr  0.3.2
## v tibble  2.1.3    v dplyr  0.8.3
## v tidyr   1.0.0    v stringr 1.4.0
## v readr   1.3.1    v forcats 0.4.0

## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()

hero_powers<-read_csv("super_hero_powers.csv", na=c("", "-", "NA"))

## Parsed with column specification:
## cols(
##   .default = col_logical(),
##   hero_names = col_character()
## )

## See spec(...) for full column specifications.

dim(hero_powers)

## [1] 667 168

heroes_information<-read_csv("heroes_information.csv",na=c("", "-", "NA"))

## Warning: Missing column names filled in: 'X1' [1]

## Parsed with column specification:
## cols(
##   X1 = col_double(),
##   name = col_character(),
##   Gender = col_character(),
##   `Eye color` = col_character(),
##   Race = col_character(),
##   `Hair color` = col_character(),
##   Height = col_double(),
##   Publisher = col_character(),
##   `Skin color` = col_character(),
##   Alignment = col_character(),
##   Weight = col_double()
```

```
## )
dim(heroes_information)

## [1] 734 11
glimpse(hero_powers)

## Observations: 667
## Variables: 168
## $ hero_names      <chr> "3-D Man", "A-Bomb", "Abe Sapie...
## $ Agility         <lgl> TRUE, FALSE, TRUE, FALSE, FALSE...
## $ `Accelerated Healing` <lgl> FALSE, TRUE, TRUE, FALSE, TRUE,...
## $ `Lantern Power Ring` <lgl> FALSE, FALSE, FALSE, TRUE, FALS...
## $ `Dimensional Awareness` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Cold Resistance` <lgl> FALSE, FALSE, TRUE, FALSE, FALS...
## $ Durability      <lgl> FALSE, TRUE, TRUE, FALSE, FALSE...
## $ Stealth         <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Energy Absorption` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Flight          <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Danger Sense` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Underwater breathing` <lgl> FALSE, FALSE, TRUE, FALSE, FALS...
## $ Marksmanship    <lgl> FALSE, FALSE, TRUE, FALSE, FALS...
## $ `Weapons Master` <lgl> FALSE, FALSE, TRUE, FALSE, FALS...
## $ `Power Augmentation` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Animal Attributes` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Longevity       <lgl> FALSE, TRUE, TRUE, FALSE, FALSE...
## $ Intelligence    <lgl> FALSE, FALSE, TRUE, FALSE, TRUE...
## $ `Super Strength` <lgl> TRUE, TRUE, TRUE, FALSE, TRUE, ...
## $ Cryokinesis     <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Telepathy       <lgl> FALSE, FALSE, TRUE, FALSE, FALS...
## $ `Energy Armor` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Energy Blasts` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Duplication     <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Size Changing` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Density Control` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Stamina        <lgl> TRUE, TRUE, TRUE, FALSE, TRUE, ...
## $ `Astral Travel` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Audio Control` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Dexterity       <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Omnitrix        <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Super Speed` <lgl> TRUE, FALSE, FALSE, FALSE, TRUE...
## $ Possession      <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Animal Oriented Powers` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Weapon-based Powers` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Electrokinesis  <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Darkforce Manipulation` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Death Touch` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Teleportation   <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Enhanced Senses` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Telekinesis     <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Energy Beams` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Magic           <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Hyperkinesis    <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Jump            <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
```

|                                      |  |
|--------------------------------------|--|
| ## \$ Clairvoyance                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Dimensional Travel`           | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Power Sense`                  | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Shapeshifting                  | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Peak Human Condition`         | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Immortality                    | <lg1> FALSE, FALSE, TRUE, FALSE, FALS... |
| ## \$ Camouflage                     | <lg1> FALSE, TRUE, FALSE, FALSE, FALS... |
| ## \$ `Element Control`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Phasing                        | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Astral Projection`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Electrical Transport`         | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Fire Control`                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Projection                     | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Summoning                      | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Enhanced Memory`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Reflexes                       | <lg1> FALSE, FALSE, TRUE, FALSE, FALS... |
| ## \$ Invulnerability                | <lg1> FALSE, FALSE, FALSE, FALSE, TRU... |
| ## \$ `Energy Constructs`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Force Fields`                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Self-Sustenance`              | <lg1> FALSE, TRUE, FALSE, FALSE, FALS... |
| ## \$ `Anti-Gravity`                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Empathy                        | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Power Nullifier`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Radiation Control`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Psionic Powers`               | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Elasticity                     | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Substance Secretion`          | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Elemental Transmogrification` | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Technopath/Cyberpath`         | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Photographic Reflexes`        | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Seismic Power`                | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Animation                      | <lg1> FALSE, FALSE, FALSE, FALSE, TRU... |
| ## \$ Precognition                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Mind Control`                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Fire Resistance`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Power Absorption`             | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Enhanced Hearing`             | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Nova Force`                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Insanity                       | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Hypnokinesis                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Animal Control`               | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Natural Armor`                | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Intangibility                  | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Enhanced Sight`               | <lg1> FALSE, FALSE, TRUE, FALSE, FALS... |
| ## \$ `Molecular Manipulation`       | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Heat Generation`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Adaptation                     | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Gliding                        | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Power Suit`                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Mind Blast`                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Probability Manipulation`     | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Gravity Control`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Regeneration                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Light Control`                | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |

|                                      |  |
|--------------------------------------|--|
| ## \$ Echolocation                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Levitation                     | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Toxin and Disease Control`    | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Banish                         | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Energy Manipulation`          | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Heat Resistance`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Natural Weapons`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Time Travel`                  | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Enhanced Smell`               | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Illusions                      | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Thirstokinesis                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Hair Manipulation`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Illumination                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Omnipotent                     | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Cloaking                       | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Changing Armor`               | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Power Cosmic`                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Biokinesis                     | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Water Control`                | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Radiation Immunity`           | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Vision - Telescopic`          | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Toxin and Disease Resistance` | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Spatial Awareness`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Energy Resistance`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Telepathy Resistance`         | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Molecular Combustion`         | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Omnilingualism                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Portal Creation`              | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Magnetism                      | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Mind Control Resistance`      | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Plant Control`                | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Sonar                          | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Sonic Scream`                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Time Manipulation`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Enhanced Touch`               | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Magic Resistance`             | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Invisibility                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Sub-Mariner`                  | <lg1> FALSE, FALSE, TRUE, FALSE, FALS... |
| ## \$ `Radiation Absorption`         | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Intuitive aptitude`           | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Vision - Microscopic`         | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Melting                        | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Wind Control`                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Super Breath`                 | <lg1> FALSE, FALSE, FALSE, FALSE, TRU... |
| ## \$ Wallcrawling                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Vision - Night`               | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Vision - Infrared`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Grim Reaping`                 | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Matter Absorption`            | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `The Force`                    | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Resurrection                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Terrakinesis                   | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ `Vision - Heat`                | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |
| ## \$ Vitakinesis                    | <lg1> FALSE, FALSE, FALSE, FALSE, FAL... |

```
## $ `Radar Sense` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Qwardian Power Ring` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Weather Control` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Vision - X-Ray` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Vision - Thermal` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Web Creation` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Reality Warping` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Odin Force` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Symbiote Costume` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Speed Force` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Phoenix Force` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Molecular Dissipation` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ `Vision - Cryo` <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Omnipresent <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
## $ Omniscient <lgl> FALSE, FALSE, FALSE, FALSE, FAL...
```

```
glimpse(heroes_information)
```

```
## Observations: 734
## Variables: 11
## $ X1 <dbl> 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,...
## $ name <chr> "A-Bomb", "Abe Sapien", "Abin Sur", "Abomination"...
## $ Gender <chr> "Male", "Male", "Male", "Male", "Male", "Male", "...
## $ `Eye color` <chr> "yellow", "blue", "blue", "green", "blue", "blue"...
## $ Race <chr> "Human", "Ichthyo Sapien", "Ungaran", "Human / Rad...
## $ `Hair color` <chr> "No Hair", "No Hair", "No Hair", "No Hair", "Blac...
## $ Height <dbl> 203, 191, 185, 203, -99, 193, -99, 185, 173, 178,...
## $ Publisher <chr> "Marvel Comics", "Dark Horse Comics", "DC Comics"...
## $ `Skin color` <chr> NA, "blue", "red", NA, NA, NA, NA, NA, NA, NA...
## $ Alignment <chr> "good", "good", "good", "bad", "bad", "bad", "goo...
## $ Weight <dbl> 441, 65, 90, 441, -99, 122, -99, 88, 61, 81, 104,...
```

**Questão 2:** Use a função `janitor::clean_names()` para limpar os nomes das colunas.

```
library(janitor)
```

```
##
## Attaching package: 'janitor'
## The following objects are masked from 'package:stats':
##
##   chisq.test, fisher.test
##
## (hero_powers<- clean_names(hero_powers)) #limpar os nomes das colunas
```

```
## # A tibble: 667 x 168
##   hero_names agility accelerated_hear~ lantern_power_r~ dimensional_awa~
##   <chr>      <lgl>      <lgl>      <lgl>      <lgl>
## 1 3-D Man    TRUE      FALSE      FALSE      FALSE
## 2 A-Bomb     FALSE     TRUE      FALSE      FALSE
## 3 Abe Sapien TRUE     TRUE      FALSE      FALSE
## 4 Abin Sur   FALSE     FALSE     TRUE      FALSE
## 5 Abominati~ FALSE     TRUE      FALSE      FALSE
```

```
## 6 Abraxas      FALSE  FALSE                FALSE                TRUE
## 7 Absorbing~  FALSE  FALSE                FALSE                FALSE
## 8 Adam Monr~   FALSE  TRUE                 FALSE                FALSE
## 9 Adam Stra~   FALSE  FALSE                FALSE                FALSE
## 10 Agent Bob   FALSE  FALSE                FALSE                FALSE
## # ... with 657 more rows, and 163 more variables: cold_resistance <lgl>,
## #   durability <lgl>, stealth <lgl>, energy_absorption <lgl>,
## #   flight <lgl>, danger_sense <lgl>, underwater_breathing <lgl>,
## #   marksmanship <lgl>, weapons_master <lgl>, power_augmentation <lgl>,
## #   animal_attributes <lgl>, longevity <lgl>, intelligence <lgl>,
## #   super_strength <lgl>, cryokinesis <lgl>, telepathy <lgl>,
## #   energy_armor <lgl>, energy_blasts <lgl>, duplication <lgl>,
## #   size_changing <lgl>, density_control <lgl>, stamina <lgl>,
## #   astral_travel <lgl>, audio_control <lgl>, dexterity <lgl>,
## #   omnitrix <lgl>, super_speed <lgl>, possession <lgl>,
## #   animal_oriented_powers <lgl>, weapon_based_powers <lgl>,
## #   electrokinesis <lgl>, darkforce_manipulation <lgl>, death_touch <lgl>,
## #   teleportation <lgl>, enhanced_senses <lgl>, telekinesis <lgl>,
## #   energy_beams <lgl>, magic <lgl>, hyperkinesis <lgl>, jump <lgl>,
## #   clairvoyance <lgl>, dimensional_travel <lgl>, power_sense <lgl>,
## #   shapeshifting <lgl>, peak_human_condition <lgl>, immortality <lgl>,
## #   camouflage <lgl>, element_control <lgl>, phasing <lgl>,
## #   astral_projection <lgl>, electrical_transport <lgl>,
## #   fire_control <lgl>, projection <lgl>, summoning <lgl>,
## #   enhanced_memory <lgl>, reflexes <lgl>, invulnerability <lgl>,
## #   energy_constructs <lgl>, force_fields <lgl>, self_sustenance <lgl>,
## #   anti_gravity <lgl>, empathy <lgl>, power_nullifier <lgl>,
## #   radiation_control <lgl>, psionic_powers <lgl>, elasticity <lgl>,
## #   substance_secretion <lgl>, elemental_transmogrification <lgl>,
## #   technopath_cyberpath <lgl>, photographic_reflexes <lgl>,
## #   seismic_power <lgl>, animation <lgl>, precognition <lgl>,
## #   mind_control <lgl>, fire_resistance <lgl>, power_absorption <lgl>,
## #   enhanced_hearing <lgl>, nova_force <lgl>, insanity <lgl>,
## #   hypnokinesis <lgl>, animal_control <lgl>, natural_armor <lgl>,
## #   intangibility <lgl>, enhanced_sight <lgl>,
## #   molecular_manipulation <lgl>, heat_generation <lgl>, adaptation <lgl>,
## #   gliding <lgl>, power_suit <lgl>, mind_blast <lgl>,
## #   probability_manipulation <lgl>, gravity_control <lgl>,
## #   regeneration <lgl>, light_control <lgl>, echolocation <lgl>,
## #   levitation <lgl>, toxin_and_disease_control <lgl>, banish <lgl>,
## #   energy_manipulation <lgl>, heat_resistance <lgl>, ...
```

```
(heroes_information<-clean_names(heroes_information))
```

```
## # A tibble: 734 x 11
##       x1 name  gender eye_color race  hair_color height publisher
##   <dbl> <chr> <chr>   <chr>   <chr> <chr>      <dbl> <chr>
## 1     0 A-Bo~ Male   yellow  Human  No Hair    203 Marvel C~
## 2     1 Abe ~ Male   blue    Icth~  No Hair    191 Dark Hor~
## 3     2 Abin~ Male   blue    Unga~  No Hair    185 DC Comics
## 4     3 Abom~ Male   green   Huma~  No Hair    203 Marvel C~
## 5     4 Abra~ Male   blue    Cosm~  Black     -99 Marvel C~
## 6     5 Abso~ Male   blue    Human  No Hair    193 Marvel C~
## 7     6 Adam~ Male   blue    <NA>   Blond     -99 NBC - He~
## 8     7 Adam~ Male   blue    Human  Blond     185 DC Comics
```

```
## 9      8 Agen~ Female blue      <NA> Blond      173 Marvel C~
## 10     9 Agen~ Male  brown      Human Brown      178 Marvel C~
## # ... with 724 more rows, and 3 more variables: skin_color <chr>,
## # alignment <chr>, weight <dbl>
```

**Questão 3:** No caso de `hero_info`, remova a primeira coluna.

```
(heroes_information<-select(heroes_information,-x1))
```

```
## # A tibble: 734 x 10
##   name gender eye_color race hair_color height publisher skin_color
##   <chr> <chr> <chr>    <chr> <chr>    <dbl> <chr>    <chr>
## 1 A-Bo~ Male  yellow Human No Hair    203 Marvel C~ <NA>
## 2 Abe ~ Male  blue   Icth~ No Hair    191 Dark Hor~ blue
## 3 Abin~ Male  blue   Unga~ No Hair    185 DC Comics red
## 4 Abom~ Male  green  Huma~ No Hair    203 Marvel C~ <NA>
## 5 Abra~ Male  blue   Cosm~ Black     -99 Marvel C~ <NA>
## 6 Abso~ Male  blue   Human No Hair    193 Marvel C~ <NA>
## 7 Adam~ Male  blue   <NA> Blond     -99 NBC - He~ <NA>
## 8 Adam~ Male  blue   Human Blond    185 DC Comics <NA>
## 9 Agen~ Female blue   <NA> Blond    173 Marvel C~ <NA>
## 10 Agen~ Male  brown  Human Brown    178 Marvel C~ <NA>
## # ... with 724 more rows, and 2 more variables: alignment <chr>,
## # weight <dbl>
```

**Questão 4:** Em `hero_powers`, converta todas as colunas com exceção da primeira para o tipo lógico.

```
mutate_all(select(hero_powers,-hero_names),as.logical)
cbind(select(hero_powers,hero_names),mutate_all(select(hero_powers,-hero_names),as.logical))
```

**Questão 5:** Em `hero_info`, na coluna `publisher`, observe quantas editoras diferentes existem no dataset. Substitua Marvel Comics por Marvel, DC Comics por DC e todas as outras editoras pelo termo “Outros”.

```
options(tinytex.verbose = TRUE)
library(forcats)
summary(heroes_information%>%
  distinct(publisher))
```

```
## publisher
## Length:25
## Class :character
## Mode :character
```

```
#Criando um fator
heroes_information$publisher<-as.factor(heroes_information$publisher)
```

```

heroes_information<-heroes_information%>%
  mutate(Pub=case_when(publisher=="Marvel Comics" ~ "Marvel",
                        publisher=="DC Comics" ~ "DC",
                        publisher!=c("Marvel Comics", "DC Comics")~ "Outros"))

#verificando
heroes_information%>%count(Pub)

## # A tibble: 4 x 2
##   Pub      n
##   <chr> <int>
## 1 DC      215
## 2 Marvel  388
## 3 Outros  116
## 4 <NA>    15

```

**Questão 6:** Em hero\_info, quais raças são exclusivas do DC Comics?

```

filter(heroes_information,publisher=="DC Comics")%>%count(race)

## # A tibble: 30 x 2
##   race      n
##   <chr> <int>
## 1 Alien      2
## 2 Amazon      2
## 3 Android      4
## 4 Animal      1
## 5 Atlantean      4
## 6 Bizarro      1
## 7 Bolovaxian      1
## 8 Cyborg      2
## 9 Czarnian      1
## 10 Demi-God      1
## # ... with 20 more rows

```

**Questão 7:** Em hero\_info, quais cores de olhos são mais comuns para cada sexo?

```

heroes_information%>%group_by(gender)%>%count(eye_color, sort = TRUE)%>%na.omit()

## # A tibble: 32 x 3
## # Groups:   gender [2]
##   gender eye_color      n
##   <chr> <chr> <int>
## 1 Male  blue    143
## 2 Male  brown   107
## 3 Female blue     76
## 4 Female green    43
## 5 Male  red     37

```



```
## 6 Male green 30
## 7 Male black 17
## 8 Male yellow 16
## 9 Female brown 15
## 10 Male white 13
## # ... with 22 more rows
```

**Questão 8:** Em `hero_powers`, calcule o percentual de heróis que possui cada habilidade descrita nas colunas. Use a função `dplyr::summarise_if` para aplicar a função em todas as colunas da classe `logical`.

```
teste<-hero_powers%>%
  select(-hero_names)%>%
  na.omit()%>%
  summarise_if(is.logical,mean)
teste%>%gather()
```

```
## # A tibble: 167 x 2
##   key          value
##   <chr>        <dbl>
## 1 agility      0.363
## 2 accelerated_healing 0.267
## 3 lantern_power_ring 0.0165
## 4 dimensional_awareness 0.0375
## 5 cold_resistance 0.0705
## 6 durability   0.385
## 7 stealth      0.189
## 8 energy_absorption 0.115
## 9 flight       0.318
## 10 danger_sense 0.0450
## # ... with 157 more rows
```

**Questão 9:** Repita o item anterior usando a abordagem `tidy`: converta o formato do dataframe `hero_powers` para o formato `long`. Ele passará a possuir 3 colunas: `hero_names`, `poder` e `possui_poder` usando a função `tidyr::gather()`. Então, calcule a média da coluna `possui_poder` agrupado pela coluna `poder`.

```
library(forcats)
#Converter powers para long
a<-gather(hero_powers,"poder","possui_poder",-hero_names)

#Media da coluna poder agrupado pela coluna poder
a%>%group_by(poder)%>%summarise(media=mean(possui_poder))
```

```
## # A tibble: 167 x 2
##   poder          media
```

```
##      <chr>                <dbl>
## 1 accelerated_healing    0.267
## 2 adaptation              0.00750
## 3 agility                 0.363
## 4 animal_attributes       0.0375
## 5 animal_control          0.0135
## 6 animal_oriented_powers 0.0600
## 7 animation               0.00750
## 8 anti_gravity            0.00150
## 9 astral_projection       0.0435
## 10 astral_travel          0.00600
## # ... with 157 more rows
```

**Questão 10:** Junte os dois dataframes em um único chamado de hero.

```
(hero<-inner_join(heroes_information, hero_powers,by=c("name"="hero_names")))
```

```
## # A tibble: 660 x 178
##   name gender eye_color race hair_color height publisher skin_color
##   <chr> <chr> <chr>    <chr> <chr>    <dbl> <fct>    <chr>
## 1 A-Bo~ Male   yellow  Human No Hair    203 Marvel C~ <NA>
## 2 Abe ~ Male   blue    Icth~ No Hair    191 Dark Hor~ blue
## 3 Abin~ Male   blue    Unga~ No Hair    185 DC Comics red
## 4 Abom~ Male   green   Huma~ No Hair    203 Marvel C~ <NA>
## 5 Abra~ Male   blue    Cosm~ Black     -99 Marvel C~ <NA>
## 6 Abso~ Male   blue    Human No Hair    193 Marvel C~ <NA>
## 7 Adam~ Male   blue    <NA>  Blond     -99 NBC - He~ <NA>
## 8 Adam~ Male   blue    Human Blond     185 DC Comics <NA>
## 9 Agen~ Male   brown   Human Brown     178 Marvel C~ <NA>
## 10 Agen~ Male   <NA>    <NA> <NA>     191 Marvel C~ <NA>
## # ... with 650 more rows, and 170 more variables: alignment <chr>,
## #   weight <dbl>, Pub <chr>, agility <lgl>, accelerated_healing <lgl>,
## #   lantern_power_ring <lgl>, dimensional_awareness <lgl>,
## #   cold_resistance <lgl>, durability <lgl>, stealth <lgl>,
## #   energy_absorption <lgl>, flight <lgl>, danger_sense <lgl>,
## #   underwater_breathing <lgl>, marksmanship <lgl>, weapons_master <lgl>,
## #   power_augmentation <lgl>, animal_attributes <lgl>, longevity <lgl>,
## #   intelligence <lgl>, super_strength <lgl>, cryokinesis <lgl>,
## #   telepathy <lgl>, energy_armor <lgl>, energy_blasts <lgl>,
## #   duplication <lgl>, size_changing <lgl>, density_control <lgl>,
## #   stamina <lgl>, astral_travel <lgl>, audio_control <lgl>,
## #   dexterity <lgl>, omnitrix <lgl>, super_speed <lgl>, possession <lgl>,
## #   animal_oriented_powers <lgl>, weapon_based_powers <lgl>,
## #   electrokinesis <lgl>, darkforce_manipulation <lgl>, death_touch <lgl>,
## #   teleportation <lgl>, enhanced_senses <lgl>, telekinesis <lgl>,
## #   energy_beams <lgl>, magic <lgl>, hyperkinesis <lgl>, jump <lgl>,
## #   clairvoyance <lgl>, dimensional_travel <lgl>, power_sense <lgl>,
## #   shapeshifting <lgl>, peak_human_condition <lgl>, immortality <lgl>,
## #   camouflage <lgl>, element_control <lgl>, phasing <lgl>,
## #   astral_projection <lgl>, electrical_transport <lgl>,
## #   fire_control <lgl>, projection <lgl>, summoning <lgl>,
```

```
## # enhanced_memory <lgl>, reflexes <lgl>, invulnerability <lgl>,
## # energy_constructs <lgl>, force_fields <lgl>, self_sustenance <lgl>,
## # anti_gravity <lgl>, empathy <lgl>, power_nullifier <lgl>,
## # radiation_control <lgl>, psionic_powers <lgl>, elasticity <lgl>,
## # substance_secretion <lgl>, elemental_transmogrification <lgl>,
## # technopath_cyberpath <lgl>, photographic_reflexes <lgl>,
## # seismic_power <lgl>, animation <lgl>, precognition <lgl>,
## # mind_control <lgl>, fire_resistance <lgl>, power_absorption <lgl>,
## # enhanced_hearing <lgl>, nova_force <lgl>, insanity <lgl>,
## # hypnokinesis <lgl>, animal_control <lgl>, natural_armor <lgl>,
## # intangibility <lgl>, enhanced_sight <lgl>,
## # molecular_manipulation <lgl>, heat_generation <lgl>, adaptation <lgl>,
## # gliding <lgl>, power_suit <lgl>, mind_blast <lgl>,
## # probability_manipulation <lgl>, gravity_control <lgl>,
## # regeneration <lgl>, ...
```

**Questão 11:** No novo dataframe hero calcule o percentual de heróis de cada editora que são telepatas.

```
hero%>%group_by(publisher)%>%summarise(media = mean(telepathy))
```

```
## Warning: Factor `publisher` contains implicit NA, consider using
## `forcats::fct_explicit_na`

## # A tibble: 25 x 2
##   publisher      media
##   <fct>         <dbl>
## 1 ABC Studios    0.25
## 2 Dark Horse Comics 0.111
## 3 DC Comics     0.0969
## 4 George Lucas  0.385
## 5 Hanna-Barbera  0
## 6 HarperCollins  0
## 7 Icon Comics    0
## 8 IDW Publishing  0
## 9 Image Comics   0.214
## 10 J. K. Rowling  1
## # ... with 15 more rows
```

**Questão 12:** No dataframe hero, selecione as colunas names, publisher, flight, weight, filtre os heróis que podem voar e retorne os 10 de maior peso.

```
(voar<-hero%>%
  select(name,publisher,flight,weight)%>%
  filter(flight==TRUE)%>%top_n(weight, n=10)%>%
  arrange(desc(weight)))
```

```
## # A tibble: 10 x 4
##   name      publisher      flight weight
```

```
##      <chr>      <fct>      <lgl>      <dbl>
##  1 Darkseid    DC Comics    TRUE      817
##  2 Thanos      Marvel Comics TRUE      443
##  3 Onslaught   Marvel Comics TRUE      405
##  4 Spawn       Image Comics TRUE      405
##  5 Machine Man Marvel Comics TRUE      383
##  6 Living Brain Marvel Comics TRUE      360
##  7 MODOK       Marvel Comics TRUE      338
##  8 Ultron      Marvel Comics TRUE      331
##  9 Thor        Marvel Comics TRUE      288
## 10 Gladiator   Marvel Comics TRUE      268
```

**Questão 13:** Salve o dataframe chamado hero no arquivo hero\_completo.csv usando a função readr::write\_csv().

```
write_csv(x = hero, path = "herois_completo.csv")
```