fish_consuption

S/17/436

2023-06-17

Required Packages

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.2     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.2     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
## v purrr     1.0.1
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(tinytex)
library(janitor)
```

```
##
## Attaching package: 'janitor'
##
## The following objects are masked from 'package:stats':
##
##     chisq.test, fisher.test
```

Import the data set

```
fish_consumption <- read.csv("../data/data.csv")
head(fish_consumption)
```

```
##   X1..Grama.Niladhari.Division X2..Gender X3..Age.of.the.child..Years.
## 1                      rambewa     female                           10
## 2           pandukabhayapura       male                            5
## 3                      rambewa       male                            8
## 4         diviya udabendawewa       male                            5
## 5                sadamalgama       male                            4
## 6                sadamalgama     female                            7
```

```
##   X4..Weight.of.the.child..kg..
## 1                            28
## 2                          21.4
## 3                            35
## 4                            18
## 5                           6.5
## 6                            21
##   X5..How.would.you.rate.your.child.s.Overall.Academic.performances.....
## 1                                                                Very Good
## 2                                                                     Fair
## 3                                                                Excellent
## 4                                                                     Good
## 5                                                                     Good
## 6                                                                     Fair
##   X6..Number.of.people.who.live.in.your.household
## 1                                               5
## 2                                               4
## 3                                               4
## 4                                               7
## 5                                               7
## 6                                               5
##   X7..What.animal.protein.sources.do.you.give.your.child.the.most.
## 1      Meat (Chicken,Beef, Pork, etc.), Fish, Eggs, Dairy Products
## 2                           Meat (Chicken,Beef, Pork, etc.), Eggs
## 3      Meat (Chicken,Beef, Pork, etc.), Fish, Eggs, Dairy Products
## 4                                                Dairy Products
## 5                                                Dairy Products
## 6      Meat (Chicken,Beef, Pork, etc.), Fish, Eggs, Dairy Products
##   X8..Is.seafood.available.frequently.in.your.area.
## 1                                               No
## 2                                              Yes
## 3                                               No
## 4                                            Maybe
## 5                                              Yes
## 6                                            Maybe
##   X9..Does.your.child.eat.freshwater.fish.
## 1                                      Yes
## 2                                      Yes
## 3                                      Yes
## 4                                       No
## 5                                      Yes
## 6                                      Yes
##   X9...A..If.Yes..mention.the.most.preferred.freshwater.fish.type.of.the.child.
## 1                                                                       Tilapia
## 2                                                                 Not mentioned
## 3                                                                        Loolla
## 4                                                                 Not mentioned
## 5                                                                      Tilapia
## 6                                                                      Tilapia
##   X9...B..If.no..what.is.the.reason.
## 1
## 2
## 3
## 4    Dislike of the taste or texture
```

```
## 5
## 6
##   X9...C..If.your.child.hesitates.to.eat.freshwater.fish..what.are.the.methods.you.used.to.encourage
## 1                         Cook in different ways to make it more appealing (Fish cutlets, Fish patti
## 2
## 3                         Cook in different ways to make it more appealing (Fish cutlets, Fish patti
## 4
## 5                         Cook in different ways to make it more appealing (Fish cutlets, Fish patti
## 6
##   X10..Why.does.your.child.prefer.freshwater.fish.
## 1                 Awareness of nutritional quality
## 2                                  As a food habit
## 3                                     Milder taste
## 4
## 5                                  As a food habit
## 6                    Milder taste, As a food habit
##   X11..What.is.the.reason.for.including.freshwater.fish.in.your.child.s.diet.
## 1         Nutritional benefits, Health benefits, Freshness, Readily available
## 2                                                 Nutritional benefits, Taste
## 3                                                        Nutritional benefits
## 4
## 5                                                        Nutritional benefits
## 6                                       Nutritional benefits, Health benefits
##   X12..Has.the.amount.of.freshwater.fish.your.family..consumed.changed.over.the.last.3.years.
## 1                                                                                   No change
## 2                                                                                   Decreased
## 3                                                                                   No change
## 4                                                                                Not mentioned
## 5                                                                                   Decreased
## 6                                                                                   Decreased
##       X13..If.changed..what.is.the.reason.
## 1
## 2 High consumption of other animal sources
## 3
## 4
## 5                                Expensive
## 6                                Inflation
##   X14..Have.you.ever.received.any.guidance.or.recommendation.from.a.healthcare.professional.regardin
## 1
## 2
## 3
## 4
## 5
## 6
##   X15..Have.you.ever.limited.your.child.s.freshwater.fish.consumption.due.to.any.reason.
## 1                                                                                     No
## 2                                                                                     No
## 3                                                                                     No
## 4
## 5                                                                                  Maybe
## 6                                                                                     No
##                X16..If.Yes..what.is.the.reason.
## 1
## 2
```

```
## 3
## 4
## 5 Due to some health conditions of the children
## 6
##   X17...Freshwater.fish.is.a.healthy.source.of.animal.protein.and.provide.other.important.nutrients.i
## 1                                                                                                    S
## 2
## 3
## 4
## 5
## 6
##   X18..How.often.does.your.child.eat.freshwater.fish.
## 1                                    Twice a week
## 2                                 Every few months
## 3                                 3-4 times a week
## 4
## 5                                     Once a week
## 6                                    Twice a week
##   X19..When.the.child.eats.freshwater.fish..what.is.the.average.amount.per.day.
## 1                                                                     Two meals
## 2                                                                     Two meals
## 3                                                                     Two meals
## 4
## 5                                                                      One meal
## 6                                                                     Two meals
##   X20..How.many.pieces.the.child.eats.per.meal.
## 1                                             2
## 2                                             2
## 3                                             2
## 4
## 5                                             2
## 6                                             2
##     X21.What.is.your.child.s.favorite.way.of.preparing.freshwater.fish.
## 1                                                             Fried fish
## 2                                 Curry (With coconut milk), Fried fish
## 3                                             Curry (With coconut milk)
## 4
## 5                                      Fish cutlet, Patties, Sandwiches
## 6 Curry (With coconut milk), Fried fish, Fish cutlet/patties/sandwiches
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Tilapi
## 1                                                                                          Less than 2
## 2                                                                                          Less than 2
## 3                                                                                          Less than 2
## 4
## 5                                                                                          More than 6
## 6                                                                                          Less than 2
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Koral
## 1
## 2
## 3                                                                                          No purchasi
## 4
## 5
## 6                                                                                        Less than 2 k
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Hunga
```

```
## 1
## 2
## 3                                                                                          No purchasing
## 4
## 5
## 6
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Loolla
## 1
## 2
## 3                                                                                          Less than 2 I
## 4
## 5
## 6                                                                                          Less than 2 I
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Pethiy
## 1
## 2
## 3                                                                                            No purchasi
## 4
## 5
## 6
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Aandha
## 1
## 2
## 3                                                                                           No purchasin
## 4
## 5
## 6
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Kaway
## 1
## 2
## 3                                                                                            No purchasi
## 4
## 5
## 6
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Ankut
## 1
## 2
## 3                                                                                            No purchasi
## 4
## 5
## 6
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Magura
## 1
## 2
## 3                                                                                           No purchasin
## 4
## 5
## 6
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Karadu
## 1
## 2
## 3                                                                                                No purc
## 4
## 5
```

```
## 6
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Carp.S
## 1
## 2
## 3                                                                                          No purcha
## 4
## 5
## 6
##   X22.What.type.of.freshwater.fish.usually.purchase.in.your.household.and.how.much.per.month...Other
## 1
## 2
## 3                                                                                      No purchasing
## 4
## 5
## 6
##   X22...b..If.you.consume.fish.other.than.the.above.mentioned.species..please.mention.it.here.
## 1
## 2
## 3
## 4
## 5
## 6
##   X23.What.are.the.most.frequently.purchasing.processed.freshwater.fish.products.in.your.household.pe
## 1
## 2
## 3
## 4
## 5
## 6
##   X23.What.are.the.most.frequently.purchasing.processed.freshwater.fish.products.in.your.household.pe
## 1
## 2
## 3
## 4
## 5
## 6
##   X23.What.are.the.most.frequently.purchasing.processed.freshwater.fish.products.in.your.household.pe
## 1
## 2
## 3
## 4
## 5
## 6
##   X23...b..If.you.consume.fish.product.other.than.the.above.mentioned.processed.product..please.menti
## 1
## 2
## 3
## 4
## 5
## 6
##   X24..What.are.the.barriers.to.increasing.freshwater.fish.consumption.
## 1                                                              Expensive
## 2              Fewer places to purchase, Expensive, Fish yield is low,
## 3                                                              Expensive
```

```
## 4
## 5                                                                 Expensive
## 6                                                                 Expensive
##   X25..Where.do.you.usually.get.the.fish.from.
## 1                            Fish stall, Fair
## 2                                  Fish stall
## 3                                  Fish stall
## 4
## 5                           Delivery vehicles
## 6          Fish stall, Directly from fishermen
##   X26..Have.you.noticed.any.allergies.symptoms.of.your.child.after.eating.Freshwater.fish.
## 1                                                                                        No
## 2                                                                                        No
## 3                                                                                        No
## 4
## 5                                                                                        No
## 6                                                                                        No
##   X27..If.Yes..please.mention.the.fish.species.s
## 1
## 2
## 3
## 4
## 5
## 6
##   X28..If.Yes..which.symptoms.have.you.observed...You.can.select.more.than.one.option.
## 1
## 2
## 3
## 4
## 5
## 6
```

Rename the data set

```
fish_consumption<- clean_names(dat = fish_consumption, case = "snake")
glimpse(fish_consumption)
```

```
## Rows: 384
## Columns: 46
## $ x1_grama_niladhari_division
## $ x2_gender
## $ x3_age_of_the_child_years
## $ x4_weight_of_the_child_kg
## $ x5_how_would_you_rate_your_child_s_overall_academic_performances
## $ x6_number_of_people_who_live_in_your_household
## $ x7_what_animal_protein_sources_do_you_give_your_child_the_most
## $ x8_is_seafood_available_frequently_in_your_area
## $ x9_does_your_child_eat_freshwater_fish
## $ x9_a_if_yes_mention_the_most_preferred_freshwater_fish_type_of_the_child
## $ x9_b_if_no_what_is_the_reason
## $ x9_c_if_your_child_hesitates_to_eat_freshwater_fish_what_are_the_methods_you_used_to_encourage_impr
## $ x10_why_does_your_child_prefer_freshwater_fish
```

```
## $ x11_what_is_the_reason_for_including_freshwater_fish_in_your_child_s_diet
## $ x12_has_the_amount_of_freshwater_fish_your_family_consumed_changed_over_the_last_3_years
## $ x13_if_changed_what_is_the_reason
## $ x14_have_you_ever_received_any_guidance_or_recommendation_from_a_healthcare_professional_regarding
## $ x15_have_you_ever_limited_your_child_s_freshwater_fish_consumption_due_to_any_reason
## $ x16_if_yes_what_is_the_reason
## $ x17_freshwater_fish_is_a_healthy_source_of_animal_protein_and_provide_other_important_nutrients_fo
## $ x18_how_often_does_your_child_eat_freshwater_fish
## $ x19_when_the_child_eats_freshwater_fish_what_is_the_average_amount_per_day
## $ x20_how_many_pieces_the_child_eats_per_meal
## $ x21_what_is_your_child_s_favorite_way_of_preparing_freshwater_fish
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_tilapia
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_korali
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_hunga
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_loolla
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_pethiya
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_aandha
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_kawayya
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_ankutta
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_magura
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_karadu_
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_carp_sp
## $ x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_other
## $ x22_b_if_you_consume_fish_other_than_the_above_mentioned_species_please_mention_it_here
## $ x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_products_in_your_household_p
## $ x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_products_in_your_household_p
## $ x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_products_in_your_household_p
## $ x23_b_if_you_consume_fish_product_other_than_the_above_mentioned_processed_product_please_mention_
## $ x24_what_are_the_barriers_to_increasing_freshwater_fish_consumption
## $ x25_where_do_you_usually_get_the_fish_from
## $ x26_have_you_noticed_any_allergies_symptoms_of_your_child_after_eating_freshwater_fish
## $ x27_if_yes_please_mention_the_fish_species_s
## $ x28_if_yes_which_symptoms_have_you_observed_you_can_select_more_than_one_option
```

```
names(fish_consumption)
```

```
##  [1] "x1_grama_niladhari_division"
##  [2] "x2_gender"
##  [3] "x3_age_of_the_child_years"
##  [4] "x4_weight_of_the_child_kg"
##  [5] "x5_how_would_you_rate_your_child_s_overall_academic_performances"
##  [6] "x6_number_of_people_who_live_in_your_household"
##  [7] "x7_what_animal_protein_sources_do_you_give_your_child_the_most"
##  [8] "x8_is_seafood_available_frequently_in_your_area"
##  [9] "x9_does_your_child_eat_freshwater_fish"
## [10] "x9_a_if_yes_mention_the_most_preferred_freshwater_fish_type_of_the_child"
## [11] "x9_b_if_no_what_is_the_reason"
## [12] "x9_c_if_your_child_hesitates_to_eat_freshwater_fish_what_are_the_methods_you_used_to_encourage_
## [13] "x10_why_does_your_child_prefer_freshwater_fish"
## [14] "x11_what_is_the_reason_for_including_freshwater_fish_in_your_child_s_diet"
## [15] "x12_has_the_amount_of_freshwater_fish_your_family_consumed_changed_over_the_last_3_years"
## [16] "x13_if_changed_what_is_the_reason"
## [17] "x14_have_you_ever_received_any_guidance_or_recommendation_from_a_healthcare_professional_regar
## [18] "x15_have_you_ever_limited_your_child_s_freshwater_fish_consumption_due_to_any_reason"
```

```
## [19] "x16_if_yes_what_is_the_reason"
## [20] "x17_freshwater_fish_is_a_healthy_source_of_animal_protein_and_provide_other_important_nutrients
## [21] "x18_how_often_does_your_child_eat_freshwater_fish"
## [22] "x19_when_the_child_eats_freshwater_fish_what_is_the_average_amount_per_day"
## [23] "x20_how_many_pieces_the_child_eats_per_meal"
## [24] "x21_what_is_your_child_s_favorite_way_of_preparing_freshwater_fish"
## [25] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_tila
## [26] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_kora
## [27] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_hung
## [28] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_lool
## [29] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_petl
## [30] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_aano
## [31] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_kawa
## [32] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_anku
## [33] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_magu
## [34] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_kara
## [35] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_carp
## [36] "x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_how_much_per_month_othe
## [37] "x22_b_if_you_consume_fish_other_than_the_above_mentioned_species_please_mention_it_here"
## [38] "x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_products_in_your_householo
## [39] "x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_products_in_your_householo
## [40] "x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_products_in_your_householo
## [41] "x23_b_if_you_consume_fish_product_other_than_the_above_mentioned_processed_product_please_menti
## [42] "x24_what_are_the_barriers_to_increasing_freshwater_fish_consumption"
## [43] "x25_where_do_you_usually_get_the_fish_from"
## [44] "x26_have_you_noticed_any_allergies_symptoms_of_your_child_after_eating_freshwater_fish"
## [45] "x27_if_yes_please_mention_the_fish_species_s"
## [46] "x28_if_yes_which_symptoms_have_you_observed_you_can_select_more_than_one_option"
```

```
fish_consumption <- fish_consumption %>%
rename(Division = x1_grama_niladhari_division,
       Gender = x2_gender,
       Age = x3_age_of_the_child_years,
       Weight = x4_weight_of_the_child_kg,
       Academic_performance = x5_how_would_you_rate_your_child_s_overall_academic_performances,
       number_of_family_members = x6_number_of_people_who_live_in_your_household,
       animal_protein =  x7_what_animal_protein_sources_do_you_give_your_child_the_most,
       seafood_availability = x8_is_seafood_available_frequently_in_your_area,
       eat_freshwater_fish = x9_does_your_child_eat_freshwater_fish,
       fish_type = x9_a_if_yes_mention_the_most_preferred_freshwater_fish_type_of_the_child,
       reason = x9_b_if_no_what_is_the_reason,
       improve_consumption = x9_c_if_your_child_hesitates_to_eat_freshwater_fish_what_are_the_methods_y
       reason_to_prefer = x10_why_does_your_child_prefer_freshwater_fish,
       reason_to_include =  x11_what_is_the_reason_for_including_freshwater_fish_in_your_child_s_diet,
       consumption_changing = x12_has_the_amount_of_freshwater_fish_your_family_consumed_changed_over_t
       reason_to_change = x13_if_changed_what_is_the_reason,
       healthcare_guidance = x14_have_you_ever_received_any_guidance_or_recommendation_from_a_healthcar
       limit_the_consumption = x15_have_you_ever_limited_your_child_s_freshwater_fish_consumption_due_t
       reason_to_limit_change = x16_if_yes_what_is_the_reason,
       freshwater_fish_nut = x17_freshwater_fish_is_a_healthy_source_of_animal_protein_and_provide_othe
       time_range =  x18_how_often_does_your_child_eat_freshwater_fish,
       avg_amount = x19_when_the_child_eats_freshwater_fish_what_is_the_average_amount_per_day,
       num_of_pieces = x20_how_many_pieces_the_child_eats_per_meal,
       preparing_way = x21_what_is_your_child_s_favorite_way_of_preparing_freshwater_fish,
```

```
      amount_permonth_Tilapia = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and
      amount_permonth_Korali = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_
      amount_permonth_Hunga = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_l
      amount_permonth_Loolla = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_
      amount_permonth_Pethiya = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and
      amount_permonth_Aandha = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_
      amount_permonth_Kawayya = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and
      amount_permonth_Ankutta = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and
      amount_permonth_Magura = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_
      amount_permonth_Kanradu.issa = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household
      amount_permonth_Crap.spp = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_an
      amount_permonth_Other = x22_what_type_of_freshwater_fish_usually_purchase_in_your_household_and_l
      other_species = x22_b_if_you_consume_fish_other_than_the_above_mentioned_species_please_mention_
      processed_dried_fish = x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_proc
      processed_smoked_fish = x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_pro
      processed_other = x23_what_are_the_most_frequently_purchasing_processed_freshwater_fish_products_
      other_fish_product = x23_b_if_you_consume_fish_product_other_than_the_above_mentioned_processed_p
      increasing_barriers = x24_what_are_the_barriers_to_increasing_freshwater_fish_consumption,
      buying_place = x25_where_do_you_usually_get_the_fish_from,
      allergies = x26_have_you_noticed_any_allergies_symptoms_of_your_child_after_eating_freshwater_fis
      allergy_species = x27_if_yes_please_mention_the_fish_species_s,
      symptoms = x28_if_yes_which_symptoms_have_you_observed_you_can_select_more_than_one_option)


glimpse(fish_consumption)
```

```
## Rows: 384
## Columns: 46
## $ Division                  <chr> "rambewa", "pandukabhayapura", "rambewa",~
## $ Gender                    <chr> "female", "male", "male", "male", "male",~
## $ Age                       <dbl> 10, 5, 8, 5, 4, 7, 10, 5, 9, 8, 7, 8, 8, ~
## $ Weight                    <chr> "28", "21.4", "35", "18", "6.5", "21", "2~
## $ Academic_performance      <chr> "Very Good", "Fair", "Excellent", "Good",~
## $ number_of_family_members  <chr> "5", "4", "4", "7", "7", "5", "5", "4", "~
## $ animal_protein            <chr> "Meat (Chicken,Beef, Pork, etc.), Fish, E~
## $ seafood_availability      <chr> "No", "Yes", "No", "Maybe", "Yes", "Maybe~
## $ eat_freshwater_fish       <chr> "Yes", "Yes", "Yes", "No", "Yes", "Yes", ~
## $ fish_type                 <chr> "Tilapia", "Not mentioned", "Loolla", "No~
## $ reason                    <chr> "", "", "", "Dislike of the taste or text~
## $ improve_consumption       <chr> "Cook in different ways to make it more a~
## $ reason_to_prefer          <chr> "Awareness of nutritional quality", "As a~
## $ reason_to_include         <chr> "Nutritional benefits, Health benefits, F~
## $ consumption_changing      <chr> "No change", "Decreased", "No change", "N~
## $ reason_to_change          <chr> "", "High consumption of other animal sou~
## $ healthcare_guidance       <chr> "No", "No", "No", "Not mentioned", "No", ~
## $ limit_the_consumption     <chr> "No", "No", "No", "", "Maybe", "No", "No"~
## $ reason_to_limit_change    <chr> "", "", "", "", "Due to some health condi~
## $ freshwater_fish_nut       <chr> "Strongly agree", "Agree", "Agree", "", "~
## $ time_range                <chr> "Twice a week", "Every few months", "3-4 ~
## $ avg_amount                <chr> "Two meals", "Two meals", "Two meals", ""~
## $ num_of_pieces             <chr> "2", "2", "2", "", "2", "2", "2", "1", ""~
## $ preparing_way             <chr> "Fried fish", "Curry (With coconut milk),~
## $ amount_permonth_Tilapia   <chr> "Less than 2 kg", "Less than 2 kg", "Less~
```

```
## $ amount_permonth_Korali       <chr> "", "", "No purchasing", "", "", "Less th~
## $ amount_permonth_Hunga        <chr> "", "", "No purchasing", "", "", "", "No ~
## $ amount_permonth_Loolla       <chr> "", "", "Less than 2 kg", "", "", "Less t~
## $ amount_permonth_Pethiya      <chr> "", "", "No purchasing", "", "", "", "No ~
## $ amount_permonth_Aandha       <chr> "", "", "No purchasing", "", "", "", "No ~
## $ amount_permonth_Kawayya      <chr> "", "", "No purchasing", "", "", "", "No ~
## $ amount_permonth_Ankutta      <chr> "", "", "No purchasing", "", "", "", "No ~
## $ amount_permonth_Magura       <chr> "", "", "No purchasing", "", "", "", "No ~
## $ amount_permonth_Kanradu.issa <chr> "", "", "No purchasing", "", "", "", "2 -~
## $ amount_permonth_Crap.spp     <chr> "", "", "No purchasing", "", "", "", "Les~
## $ amount_permonth_Other        <chr> "", "", "No purchasing", "", "", "", "No ~
## $ other_species                <chr> "", "", "", "", "", "", "", "", "", "", "~
## $ processed_dried_fish         <chr> "Less than 0.5 kg", "", "0.5 - 1 kg", "",~
## $ processed_smoked_fish        <chr> "Less than 0.5 kg", "", "0.5 - 1 kg", "",~
## $ processed_other              <chr> "", "", "", "", "", "", "No purchasing", ~
## $ other_fish_product           <chr> "", "", "", "", "", "", "Tilapia ", "", "~
## $ increasing_barriers          <chr> "Expensive", "Fewer places to purchase, E~
## $ buying_place                 <chr> "Fish stall, Fair", "Fish stall", "Fish s~
## $ allergies                    <chr> "No", "No", "No", "", "No", "No", "No", "~
## $ allergy_species              <chr> "", "", "", "", "", "", "", "", "", "", "~
## $ symptoms                     <chr> "", "", "", "", "", "", "", "", "", "", "~
```

View data set after the rename

```
view(fish_consumption)
head(fish_consumption)
```

```
##              Division Gender Age Weight Academic_performance
## 1             rambewa female  10     28            Very Good
## 2    pandukabhayapura   male   5   21.4                 Fair
## 3             rambewa   male   8     35            Excellent
## 4 diviya udabendawewa   male   5     18                 Good
## 5         sadamalgama   male   4    6.5                 Good
## 6         sadamalgama female   7     21                 Fair
##   number_of_family_members
## 1                        5
## 2                        4
## 3                        4
## 4                        7
## 5                        7
## 6                        5
##                                          animal_protein
## 1 Meat (Chicken,Beef, Pork, etc.), Fish, Eggs, Dairy Products
## 2                      Meat (Chicken,Beef, Pork, etc.), Eggs
## 3 Meat (Chicken,Beef, Pork, etc.), Fish, Eggs, Dairy Products
## 4                                          Dairy Products
## 5                                          Dairy Products
## 6 Meat (Chicken,Beef, Pork, etc.), Fish, Eggs, Dairy Products
##   seafood_availability eat_freshwater_fish     fish_type
## 1                   No                 Yes       Tilapia
## 2                  Yes                 Yes Not mentioned
## 3                   No                 Yes        Loolla
```

```
## 4                Maybe                  No Not mentioned
## 5                  Yes                 Yes      Tilapia
## 6                Maybe                 Yes      Tilapia
##                           reason
## 1
## 2
## 3
## 4 Dislike of the taste or texture
## 5
## 6
##                                                                                                                improve_
## 1 Cook in different ways to make it more appealing (Fish cutlets, Fish patties, Fish biriyani, Fish s
## 2
## 3 Cook in different ways to make it more appealing (Fish cutlets, Fish patties, Fish biriyani, Fish s
## 4                                                                                                      Serve with their fav
## 5 Cook in different ways to make it more appealing (Fish cutlets, Fish patties, Fish biriyani, Fish s
## 6
##                   reason_to_prefer
## 1 Awareness of nutritional quality
## 2                  As a food habit
## 3                     Milder taste
## 4
## 5                  As a food habit
## 6    Milder taste, As a food habit
##                                                  reason_to_include
## 1 Nutritional benefits, Health benefits, Freshness, Readily available
## 2                                    Nutritional benefits, Taste
## 3                                           Nutritional benefits
## 4
## 5                                           Nutritional benefits
## 6                          Nutritional benefits, Health benefits
##   consumption_changing                          reason_to_change
## 1            No change
## 2            Decreased High consumption of other animal sources
## 3            No change
## 4        Not mentioned
## 5            Decreased                                Expensive
## 6            Decreased                                Inflation
##   healthcare_guidance limit_the_consumption
## 1                  No                    No
## 2                  No                    No
## 3                  No                    No
## 4       Not mentioned
## 5                  No                 Maybe
## 6                  No                    No
##                        reason_to_limit_change freshwater_fish_nut
## 1                                              Strongly agree
## 2                                                       Agree
## 3                                                       Agree
## 4
## 5 Due to some health conditions of the children               Agree
## 6                                                       Agree
##         time_range avg_amount num_of_pieces
## 1     Twice a week  Two meals             2
```

```
## 2 Every few months  Two meals             2
## 3 3-4 times a week  Two meals             2
## 4
## 5      Once a week   One meal             2
## 6     Twice a week  Two meals             2
##                                                          preparing_way
## 1                                                           Fried fish
## 2                                  Curry (With coconut milk), Fried fish
## 3                                               Curry (With coconut milk)
## 4
## 5                                       Fish cutlet, Patties, Sandwiches
## 6 Curry (With coconut milk), Fried fish, Fish cutlet/patties/sandwiches
##   amount_permonth_Tilapia amount_permonth_Korali amount_permonth_Hunga
## 1          Less than 2 kg
## 2          Less than 2 kg
## 3          Less than 2 kg          No purchasing         No purchasing
## 4
## 5          More than 6 kg
## 6          Less than 2 kg         Less than 2 kg
##   amount_permonth_Loolla amount_permonth_Pethiya amount_permonth_Aandha
## 1
## 2
## 3         Less than 2 kg           No purchasing          No purchasing
## 4
## 5
## 6         Less than 2 kg
##   amount_permonth_Kawayya amount_permonth_Ankutta amount_permonth_Magura
## 1
## 2
## 3           No purchasing           No purchasing          No purchasing
## 4
## 5
## 6
##   amount_permonth_Kanradu.issa amount_permonth_Crap.spp amount_permonth_Other
## 1
## 2
## 3                No purchasing            No purchasing         No purchasing
## 4
## 5
## 6
##   other_species processed_dried_fish processed_smoked_fish processed_other
## 1                    Less than 0.5 kg      Less than 0.5 kg
## 2
## 3                         0.5 - 1 kg            0.5 - 1 kg
## 4
## 5                      More than 2 kg
## 6                    Less than 0.5 kg      Less than 0.5 kg
##   other_fish_product                                        increasing_barriers
## 1                                                                   Expensive
## 2                   Fewer places to purchase, Expensive, Fish yield is low,
## 3                                                                   Expensive
## 4
## 5                                                                   Expensive
## 6                                                                   Expensive
```

```
##                          buying_place allergies allergy_species symptoms
## 1                    Fish stall, Fair        No
## 2                          Fish stall        No
## 3                          Fish stall        No
## 4
## 5                    Delivery vehicles        No
## 6 Fish stall, Directly from fishermen        No
```

```
attach(fish_consumption)
```

Number of observations

```
dim(fish_consumption)
```

```
## [1] 384  46
```

```
#This data set contains 384 obseravtions and 46 columns.
```

```
colSums(is.na(fish_consumption))
```

```
##                     Division                       Gender
##                            0                            0
##                          Age                       Weight
##                            0                            0
##         Academic_performance     number_of_family_members
##                            0                            0
##               animal_protein         seafood_availability
##                            0                            0
##          eat_freshwater_fish                    fish_type
##                            0                            0
##                       reason          improve_consumption
##                            0                            0
##             reason_to_prefer            reason_to_include
##                            0                            0
##         consumption_changing             reason_to_change
##                            0                            0
##          healthcare_guidance        limit_the_consumption
##                            0                            0
##       reason_to_limit_change          freshwater_fish_nut
##                            0                            0
##                   time_range                   avg_amount
##                            0                            0
##                num_of_pieces                preparing_way
##                            0                            0
##      amount_permonth_Tilapia       amount_permonth_Korali
##                            0                            0
##        amount_permonth_Hunga       amount_permonth_Loolla
##                            0                            0
##      amount_permonth_Pethiya       amount_permonth_Aandha
##                            0                            0
```

```
##      amount_permonth_Kawayya      amount_permonth_Ankutta
##                            0                            0
##       amount_permonth_Magura amount_permonth_Kanradu.issa
##                            0                            0
##     amount_permonth_Crap.spp        amount_permonth_Other
##                            0                            0
##                other_species         processed_dried_fish
##                            0                            0
##        processed_smoked_fish              processed_other
##                            0                            0
##           other_fish_product          increasing_barriers
##                            0                            0
##                 buying_place                    allergies
##                            0                            0
##              allergy_species                     symptoms
##                            0                            0

#Looking good! there areno any NA values in the data set.
```

Summary of the data

```
summary(fish_consumption)
```

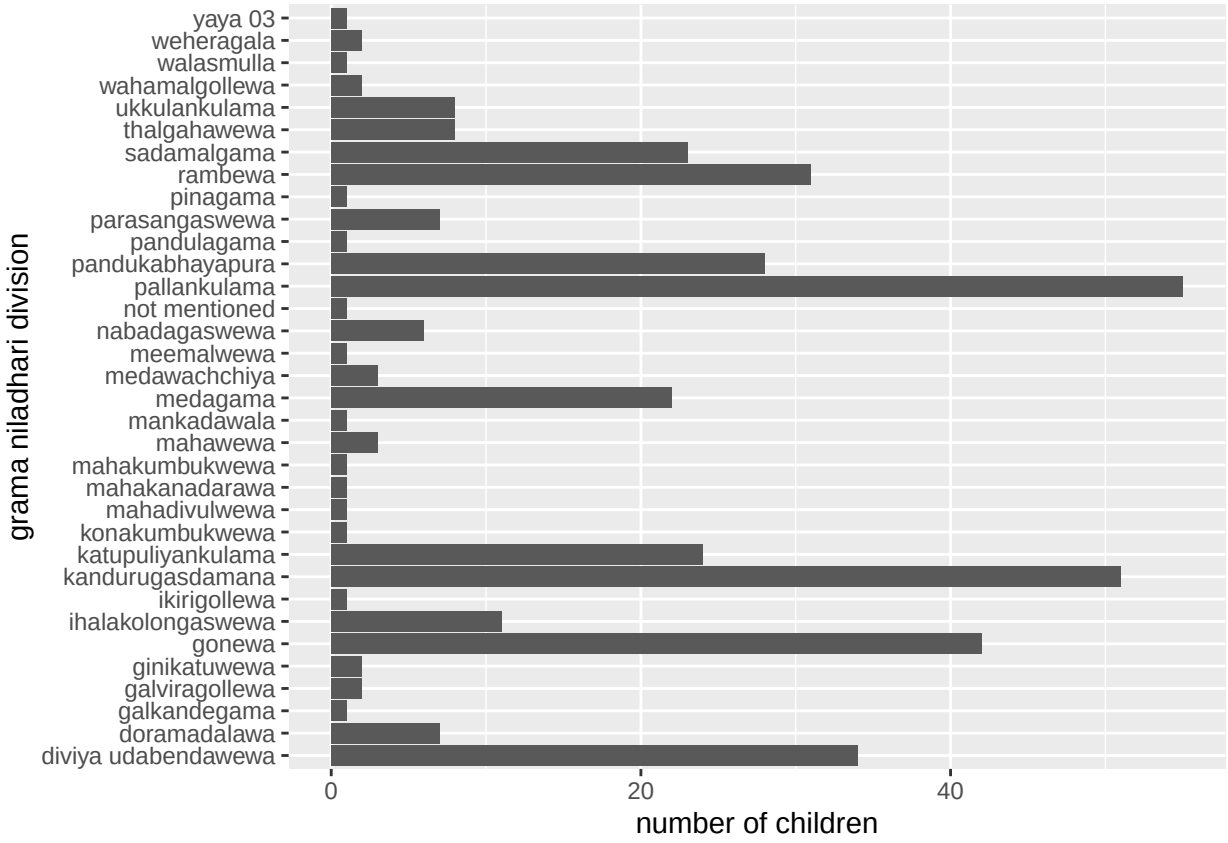
```
##    Division            Gender               Age            Weight
##  Length:384         Length:384         Min.   : 3.000   Length:384
##  Class :character   Class :character   1st Qu.: 5.000   Class :character
##  Mode  :character   Mode  :character   Median : 7.000   Mode  :character
##                                        Mean   : 6.753
##                                        3rd Qu.: 9.000
##                                        Max.   :10.000
##  Academic_performance number_of_family_members animal_protein
##  Length:384           Length:384               Length:384
##  Class :character     Class :character         Class :character
##  Mode  :character     Mode  :character         Mode  :character
##
##
##
##  seafood_availability eat_freshwater_fish  fish_type           reason
##  Length:384           Length:384          Length:384         Length:384
##  Class :character     Class :character    Class :character   Class :character
##  Mode  :character     Mode  :character    Mode  :character   Mode  :character
##
##
##
##  improve_consumption reason_to_prefer   reason_to_include  consumption_changing
##  Length:384          Length:384         Length:384         Length:384
##  Class :character    Class :character   Class :character   Class :character
##  Mode  :character    Mode  :character   Mode  :character   Mode  :character
##
##
##
##  reason_to_change   healthcare_guidance limit_the_consumption
```

```
##  Length:384         Length:384          Length:384
##  Class :character   Class :character    Class :character
##  Mode  :character   Mode  :character    Mode  :character
##
##
##
##  reason_to_limit_change freshwater_fish_nut  time_range
##  Length:384             Length:384          Length:384
##  Class :character       Class :character    Class :character
##  Mode  :character       Mode  :character    Mode  :character
##
##
##
##   avg_amount        num_of_pieces      preparing_way
##  Length:384         Length:384         Length:384
##  Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character
##
##
##
##  amount_permonth_Tilapia amount_permonth_Korali amount_permonth_Hunga
##  Length:384              Length:384             Length:384
##  Class :character        Class :character       Class :character
##  Mode  :character        Mode  :character       Mode  :character
##
##
##
##  amount_permonth_Loolla amount_permonth_Pethiya amount_permonth_Aandha
##  Length:384             Length:384              Length:384
##  Class :character       Class :character        Class :character
##  Mode  :character       Mode  :character        Mode  :character
##
##
##
##  amount_permonth_Kawayya amount_permonth_Ankutta amount_permonth_Magura
##  Length:384              Length:384              Length:384
##  Class :character        Class :character        Class :character
##  Mode  :character        Mode  :character        Mode  :character
##
##
##
##  amount_permonth_Kanradu.issa amount_permonth_Crap.spp amount_permonth_Other
##  Length:384                   Length:384               Length:384
##  Class :character             Class :character         Class :character
##  Mode  :character             Mode  :character         Mode  :character
##
##
##
##  other_species      processed_dried_fish processed_smoked_fish
##  Length:384         Length:384           Length:384
##  Class :character   Class :character     Class :character
##  Mode  :character   Mode  :character     Mode  :character
##
##
```

```
##
##  processed_other    other_fish_product increasing_barriers buying_place
##  Length:384         Length:384         Length:384          Length:384
##  Class :character   Class :character   Class :character    Class :character
##  Mode  :character   Mode  :character   Mode  :character    Mode  :character
##
##
##
##   allergies         allergy_species      symptoms
##  Length:384         Length:384         Length:384
##  Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character
##
##
##
```

Number of children in relevant divisions

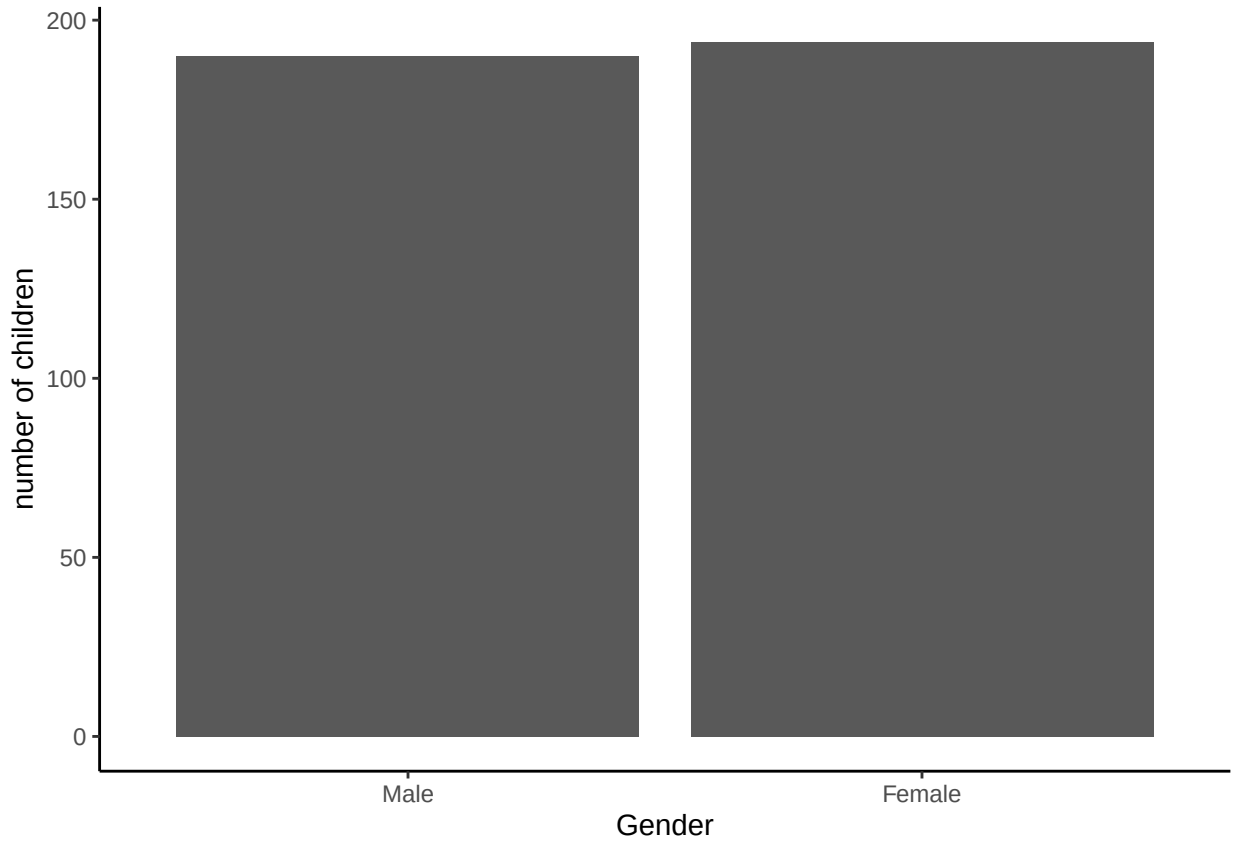
```
fish_consumption %>%
ggplot(mapping = aes(x = Division)) +
geom_bar() +
ylab("number of children") +
xlab("grama niladhari division") +
coord_flip()
```



#Majority of the children that come u with this survey in Pallankulama.

Comparison between Male and Female students

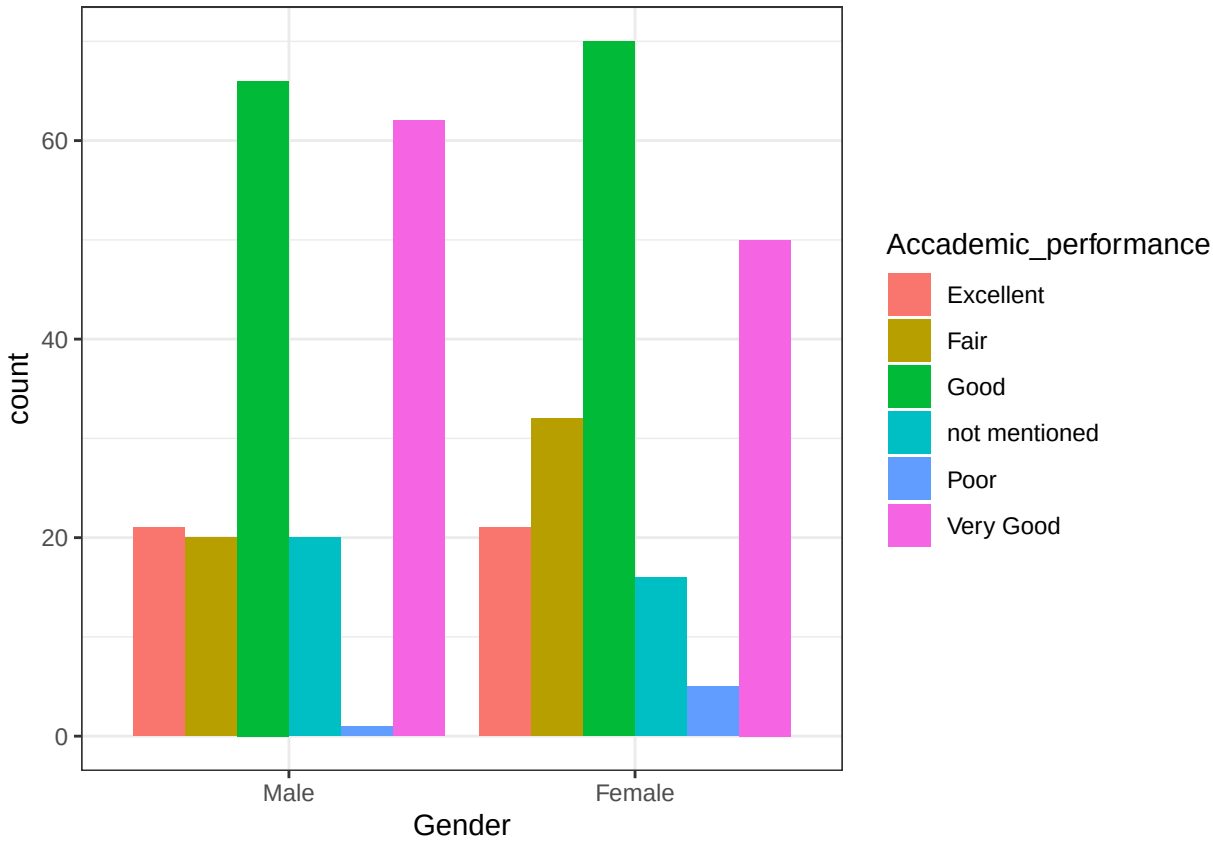
```
fish_consumption %>%
ggplot(mapping = aes(x = Gender)) +
geom_bar() +
scale_x_discrete("Gender", labels = c("Male","Female")) +

ylab("number of children") +
theme_classic()
```



#Female students are highly responsed to this survey compare it with to male students.

Academic Performance of both Male and Female students

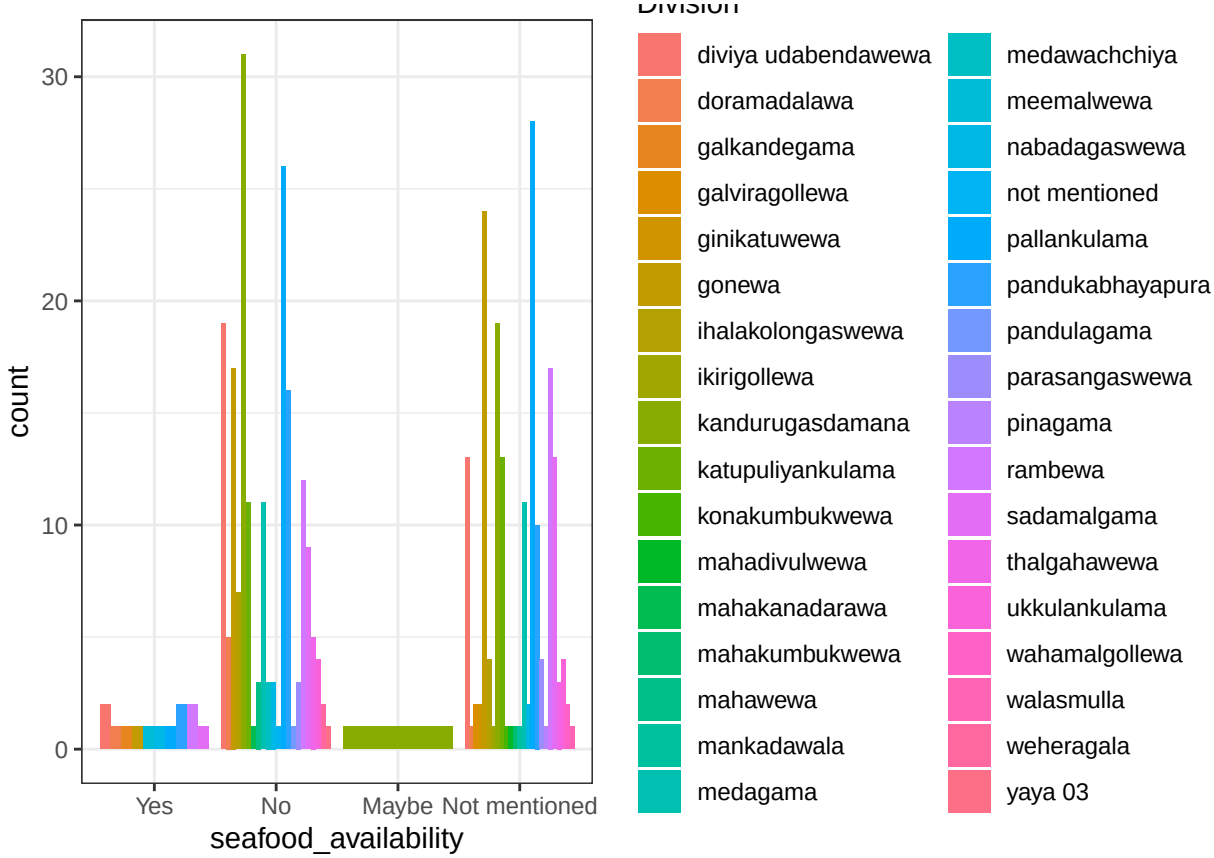
```
fish_consumption %>%
ggplot(mapping = aes(x = Gender))+
geom_bar(aes(fill = Academic_performance), position = "dodge") +
scale_x_discrete("Gender", labels = c("Male","Female") ) +
labs(x = "Gender", y = "count",fill='Accademic_performance') +
theme_bw()
```




```
#Academic performance of both female and male students are looking good. But academic performance of mal
```

Sea food availability of the divisions

```
fish_consumption %>%
ggplot(mapping = aes(x = seafood_availability))+
geom_bar(aes(fill = Division), position = "dodge") +
scale_x_discrete("seafood_availability", labels = c("Yes","No","Maybe","Not mentioned") ) +
labs(x = "seafood_availability", y = "count",fill='Division') +
theme_bw()
```



Fish type according to the division

```
#Omit the data who didn't mentioned the fish type that contains in their divisions
fish_consumption_1 <- filter(fish_consumption, fish_type != "Not mentioned")
                      select(fish_consumption_1, Division, fish_type)
```

```
##                Division                 fish_type
## 1               rambewa                   Tilapia
## 2               rambewa                    Loolla
## 3          sadamalgama                   Tilapia
## 4          sadamalgama                   Tilapia
## 5               gonewa                   Tilapia
## 6          sadamalgama                   Tilapia
## 7               gonewa                  Thilapiya
## 8               gonewa                  Thilapiya
## 9               gonewa                  THILAPIYA
## 10              gonewa                  Thilapiya
## 11              gonewa                  Thilapiya
## 12              gonewa                        All
## 13       pallankulama     Korali, Loolla, Hunga
## 14         walasmulla                     Korali
## 15            rambewa                   Tilapia
## 16              gonewa                  Talapath
## 17            rambewa                    Thilapi
```

```
## 18         pallankulama                  Loolla
## 19         pallankulama                 Tilapia
## 20         pallankulama           Loolla, Korali
## 21         pallankulama                  Korali
## 22  diviya udabendawewa                 Tilapia
## 23  diviya udabendawewa                  Loolla
## 24  diviya udabendawewa                 Tilapia
## 25  diviya udabendawewa                 Tilapia
## 26  diviya udabendawewa                 Tilapia
## 27  diviya udabendawewa                Theppili
## 28  diviya udabendawewa                     All
## 29  diviya udabendawewa                     All
## 30  diviya udabendawewa                  Loolla
## 31  diviya udabendawewa                 Tilapia
## 32  diviya udabendawewa                  Chicken
## 33  diviya udabendawewa                  Loolla
## 34  diviya udabendawewa                Theppili
## 35  diviya udabendawewa                Theppili
## 36  diviya udabendawewa                 Tilapia
## 37  diviya udabendawewa                 Tilapia
## 38         thalgahawewa                Theppili
## 39         pallankulama                 Tilapia
## 40              rambewa                 Tilapia
## 41         pallankulama                Theppili
## 42         pallankulama                  Kawayya
## 43         pallankulama                 Tilapia
## 44  diviya udabendawewa           Loolla,Tilapia
## 45         thalgahawewa                Theppili
## 46         pallankulama                    Hunga
## 47        medawachchiya                 Loolla
## 48        medawachchiya                 Loolla
## 49              rambewa                 Tilapia
## 50         pallankulama                  Loolla
## 51         pallankulama                 Tilapia
## 52         pallankulama                 Tilapia
## 53         pallankulama                Theppili
## 54  diviya udabendawewa                Theppili
## 55  diviya udabendawewa                Theppili
## 56  diviya udabendawewa                 Tilapia
## 57         thalgahawewa                 Loolla
## 58  diviya udabendawewa                 Tilapia
## 59  diviya udabendawewa                Theppili
## 60  diviya udabendawewa                 Tilapia
## 61         thalgahawewa                 Tilapia
## 62  diviya udabendawewa       Loolla , Theppili
## 63  diviya udabendawewa                 Tilapia
## 64               gonewa                  Loolla
## 65               gonewa                 Tilapia
## 66               gonewa                 Tilapia
## 67               gonewa                 Tilapia
## 68               gonewa                 Tilapia
## 69  diviya udabendawewa                 Tilapia
## 70         pallankulama                 Tilapia
## 71               gonewa                Theppili
```

```
## 72              gonewa                 Theppili
## 73              gonewa                  Tilapia
## 74              gonewa                  Tilapia
## 75              gonewa                  Tilapia
## 76              gonewa                  Tilapia
## 77              gonewa                    Korali
## 78              gonewa                  Tilapia
## 79        thalgahawewa                 Theppili
## 80              gonewa                  Tilapia
## 81              gonewa                   Loolla
## 82              gonewa                  Tilapia
## 83            medagama                  Tilapia
## 84    kandurugasdamana                  Tilapia
## 85            medagama                  Tilapia
## 86            medagama                  Tilapia
## 87            medagama                   Loolla
## 88            medagama      Loolla and Theppili
## 89    kandurugasdamana                   Loolla
## 90            medagama                  Tilapia
## 91         sadamalgama                 Theppili
## 92            medagama Tilapia, Loolla, Pethiya
## 93            medagama                  Tilapia
## 94    kandurugasdamana                  Tilapia
## 95            medagama                     Lellu
## 96      parasangaswewa                 Theppili
## 97    kandurugasdamana          Tilapia, Loolla
## 98            medagama                 Theppili
## 99            medagama                    Korali
## 100           medagama          Tilapia, Loolla
## 101   kandurugasdamana                   Tilapia
## 102           medagama                   Loolla
## 103           medagama                  Korali
## 104   kandurugasdamana                  Tilapia
## 105  katupuliyankulama                     Eggs
## 106  katupuliyankulama                 Theppili
## 107       doramadalawa                 Theppili
## 108        sadamalgama                  Theppili
## 109   pandukabhayapura          Loolla,Theppili
## 110       doramadalawa                   Tilapia
## 111        sadamalgama                   Loolla
## 112      ukkulankulama          Theppili,Loolla
## 113            rambewa                   Loolla
## 114   pandukabhayapura        Not specified spp.
## 115            rambewa                 Theppili
## 116       doramadalawa                  Theppili
## 117        sadamalgama                   Loolla
## 118       doramadalawa                  Tilapia
## 119            yaya 03                 Theppili
## 120       pallankulama                   Loolla
## 121   pandukabhayapura                  Tilapia
## 122  katupuliyankulama                 Theppili
## 123   kandurugasdamana                   Tilapia
## 124       pallankulama                  Theppili
## 125   pandukabhayapura                  Tilapia
```

```
## 126       mahadivulwewa               Tilapia
## 127       not mentioned                 Korali
## 128        doramadalawa               Tilapia
## 129   katupuliyankulama              Theppili
## 130        doramadalawa              Theppili
## 131    kandurugasdamana              Theppili
## 132    kandurugasdamana               Tilapia
## 133   katupuliyankulama              Theppili
## 134      parasangaswewa               Tilapia
## 135   katupuliyankulama              Theppili
## 136   katupuliyankulama               Tilapia
## 137      parasangaswewa                Korali
## 138    pandukabhayapura                Kawayya
## 139    kandurugasdamana               Tilapia
## 140    pandukabhayapura                Loolla
## 141    pandukabhayapura              Theppili
## 142    kandurugasdamana               Tilapia
## 143    kandurugasdamana               Tilapia
## 144    pandukabhayapura                Loolla
## 145    pandukabhayapura                Loolla
## 146    kandurugasdamana              Theppili
## 147    kandurugasdamana              Theppili
## 148    kandurugasdamana               Tilapia
## 149    pandukabhayapura              Theppili
## 150    kandurugasdamana                Loolla
## 151    pandukabhayapura                Loolla
## 152    kandurugasdamana               Tilapia
## 153    kandurugasdamana               Tilapia
## 154    kandurugasdamana               Tilapia
## 155            mahawewa                Loolla
## 156    kandurugasdamana               Tilapia
## 157    kandurugasdamana              Theppili
## 158    kandurugasdamana               Tilapia
## 159    pandukabhayapura               Tilapia
## 160    kandurugasdamana               Tilapia
## 161         sadamalgama              Theppili
## 162      wahamalgollewa                Loolla
## 163      parasangaswewa              Theppili
## 164   katupuliyankulama              Theppili
## 165   katupuliyankulama              Theppili
## 166         sadamalgama               Tilapia
## 167         sadamalgama              Theppili
## 168       pallankulama              Theppili
## 169       doramadalawa               Tilapia
## 170       pallankulama              Theppili
## 171   katupuliyankulama                Korali
## 172      parasangaswewa                Loolla
## 173  ihalakolongaswewa                Korali
## 174   katupuliyankulama                Korali
## 175         sadamalgama               Kawayya
## 176         sadamalgama                Loolla
## 177          weheragala                Loolla
## 178             rambewa                Loolla
## 179       pallankulama                  Korali
```

```
## 180        pallankulama                Theppili
## 181             rambewa                  Loolla
## 182        pallankulama                 Tilapia
## 183        pallankulama                  Korali
## 184        pallankulama                  Korali
## 185       medawachchiya                  Loolla
## 186        pallankulama                  Loolla
## 187   ihalakolongaswewa                 Tilapia
## 188   ihalakolongaswewa                 Tilapia
## 189   ihalakolongaswewa                 Tilapia
## 190   ihalakolongaswewa                Theppili
## 191      wahamalgollewa                Theppili
## 192      galviragollewa                  Loolla
## 193      galviragollewa                 Tilapia
## 194   ihalakolongaswewa                 Tilapia
## 195   ihalakolongaswewa                 Kawayya
## 196        pallankulama                Theppili
## 197              gonewa                 Tilapia
## 198      mahakanadarawa                 Tilapia
## 199        pallankulama                Theppili
## 200       ukkulankulama                  Korali
## 201             rambewa                 Tilapia
## 202       nabadagaswewa       Tilapia & Theppili
## 203        ikirigollewa                  Korali
## 204             rambewa                Theppili
## 205             rambewa                 Tilapia
## 206             rambewa                 Tilapia
## 207        pallankulama                 Tilapia
## 208       nabadagaswewa                     All
## 209       nabadagaswewa                 Tilapia
## 210              gonewa                 Tilapia
## 211       nabadagaswewa                  Loolla
## 212         sadamalgama                Theppili
## 213        galkandegama  Theppili,Loolla,Tilapia
## 214          meemalwewa                     All
## 215             rambewa                  Loolla
## 216        pallankulama                Theppili
## 217         sadamalgama                 Tilapia
## 218       nabadagaswewa                  Korali
## 219       ukkulankulama                 Tilapia
## 220        pallankulama                  Korali
## 221 diviya udabendawewa                 Tilapia
## 222        pallankulama                  Korali
## 223       ukkulankulama                 Kawayya
## 224          weheragala                   Hunga
```

```
table_1 <- table(fish_type, Division)
table_1
```

```
##                           Division
## fish_type                  diviya udabendawewa doramadalawa galkandegama
##   All                                        2            0            0
##   Chicken                                    1            0            0
##   Eggs                                       0            0            0
```

```
##   Hunga                                  0            0            0
##   Hunga                                  0            0            0
##   Kawayya                                0            0            0
##   Kawayya                                0            0            0
##   Korali                                 0            0            0
##   Korali                                 0            0            0
##   Korali, Loolla, Hunga                  0            0            0
##   Lellu                                  0            0            0
##   Loolla                                 0            0            0
##   Loolla                                 3            0            0
##   Loolla , Theppili                      1            0            0
##   Loolla and Theppili                    0            0            0
##   Loolla, Korali                         0            0            0
##   Loolla,Theppili                        0            0            0
##   Loolla,Tilapia                         1            0            0
##   Not mentioned                          7            0            0
##   Not specified spp.                     0            0            0
##   Talapath                               0            0            0
##   Theppili                               0            1            0
##   Theppili                               6            2            0
##   Theppili,Loolla                        0            0            0
##   Theppili,Loolla,Tilapia                0            0            1
##   Thilapi                                0            0            0
##   Thilapiya                              0            0            0
##   THILAPIYA                              0            0            0
##   Tilapia                                0            1            0
##   Tilapia                               13            3            0
##   Tilapia & Theppili                     0            0            0
##   Tilapia, Loolla                        0            0            0
##   Tilapia, Loolla, Pethiya               0            0            0
##                            Division
## fish_type                   galviragollewa ginikatuwewa gonewa
##   All                                   0            0      1
##   Chicken                               0            0      0
##   Eggs                                  0            0      0
##   Hunga                                 0            0      0
##   Hunga                                 0            0      0
##   Kawayya                               0            0      0
##   Kawayya                               0            0      0
##   Korali                                0            0      1
##   Korali                                0            0      0
##   Korali, Loolla, Hunga                 0            0      0
##   Lellu                                 0            0      0
##   Loolla                                0            0      0
##   Loolla                                1            0      2
##   Loolla , Theppili                     0            0      0
##   Loolla and Theppili                   0            0      0
##   Loolla, Korali                        0            0      0
##   Loolla,Theppili                       0            0      0
##   Loolla,Tilapia                        0            0      0
##   Not mentioned                         0            2     16
##   Not specified spp.                    0            0      0
##   Talapath                              0            0      1
##   Theppili                              0            0      0
```

```
##   Theppili                              0            0      2
##   Theppili,Loolla                       0            0      0
##   Theppili,Loolla,Tilapia               0            0      0
##   Thilapi                               0            0      0
##   Thilapiya                             0            0      4
##   THILAPIYA                             0            0      1
##   Tilapia                               0            0      0
##   Tilapia                               1            0     14
##   Tilapia & Theppili                    0            0      0
##   Tilapia, Loolla                       0            0      0
##   Tilapia, Loolla, Pethiya              0            0      0
##                           Division
## fish_type                  ihalakolongaswewa ikirigollewa kandurugasdamana
##   All                                     0            0                 0
##   Chicken                                 0            0                 0
##   Eggs                                    0            0                 0
##   Hunga                                   0            0                 0
##   Hunga                                   0            0                 0
##   Kawayya                                 0            0                 0
##   Kawayya                                 1            0                 0
##   Korali                                  0            0                 0
##   Korali                                  1            1                 0
##   Korali, Loolla, Hunga                   0            0                 0
##   Lellu                                   0            0                 0
##   Loolla                                  0            0                 0
##   Loolla                                  0            0                 2
##   Loolla , Theppili                       0            0                 0
##   Loolla and Theppili                     0            0                 0
##   Loolla, Korali                          0            0                 0
##   Loolla,Theppili                         0            0                 0
##   Loolla,Tilapia                          0            0                 0
##   Not mentioned                           4            0                28
##   Not specified spp.                      0            0                 0
##   Talapath                                0            0                 0
##   Theppili                                0            0                 0
##   Theppili                                1            0                 4
##   Theppili,Loolla                         0            0                 0
##   Theppili,Loolla,Tilapia                 0            0                 0
##   Thilapi                                 0            0                 0
##   Thilapiya                               0            0                 0
##   THILAPIYA                               0            0                 0
##   Tilapia                                 0            0                 3
##   Tilapia                                 4            0                13
##   Tilapia & Theppili                      0            0                 0
##   Tilapia, Loolla                         0            0                 1
##   Tilapia, Loolla, Pethiya                0            0                 0
##                           Division
## fish_type                  katupuliyankulama konakumbukwewa mahadivulwewa
##   All                                     0              0             0
##   Chicken                                 0              0             0
##   Eggs                                    1              0             0
##   Hunga                                   0              0             0
##   Hunga                                   0              0             0
##   Kawayya                                 0              0             0
```

```
##   Kawayya                                0             0             0
##   Korali                                 0             0             0
##   Korali                                 2             0             0
##   Korali, Loolla, Hunga                  0             0             0
##   Lellu                                  0             0             0
##   Loolla                                 0             0             0
##   Loolla                                 0             0             0
##   Loolla , Theppili                      0             0             0
##   Loolla and Theppili                    0             0             0
##   Loolla, Korali                         0             0             0
##   Loolla,Theppili                        0             0             0
##   Loolla,Tilapia                         0             0             0
##   Not mentioned                         13             1             0
##   Not specified spp.                     0             0             0
##   Talapath                               0             0             0
##   Theppili                               0             0             0
##   Theppili                               7             0             0
##   Theppili,Loolla                        0             0             0
##   Theppili,Loolla,Tilapia                0             0             0
##   Thilapi                                0             0             0
##   Thilapiya                              0             0             0
##   THILAPIYA                              0             0             0
##   Tilapia                                0             0             0
##   Tilapia                                1             0             1
##   Tilapia & Theppili                     0             0             0
##   Tilapia, Loolla                        0             0             0
##   Tilapia, Loolla, Pethiya               0             0             0
##                            Division
## fish_type                   mahakanadarawa mahakumbukwewa mahawewa mankadawala
##   All                                   0              0        0           0
##   Chicken                               0              0        0           0
##   Eggs                                  0              0        0           0
##   Hunga                                 0              0        0           0
##   Hunga                                 0              0        0           0
##   Kawayya                               0              0        0           0
##   Kawayya                               0              0        0           0
##   Korali                                0              0        0           0
##   Korali                                0              0        0           0
##   Korali, Loolla, Hunga                 0              0        0           0
##   Lellu                                 0              0        0           0
##   Loolla                                0              0        0           0
##   Loolla                                0              0        1           0
##   Loolla , Theppili                     0              0        0           0
##   Loolla and Theppili                   0              0        0           0
##   Loolla, Korali                        0              0        0           0
##   Loolla,Theppili                       0              0        0           0
##   Loolla,Tilapia                        0              0        0           0
##   Not mentioned                         0              1        2           1
##   Not specified spp.                    0              0        0           0
##   Talapath                              0              0        0           0
##   Theppili                              0              0        0           0
##   Theppili                              0              0        0           0
##   Theppili,Loolla                       0              0        0           0
##   Theppili,Loolla,Tilapia               0              0        0           0
```

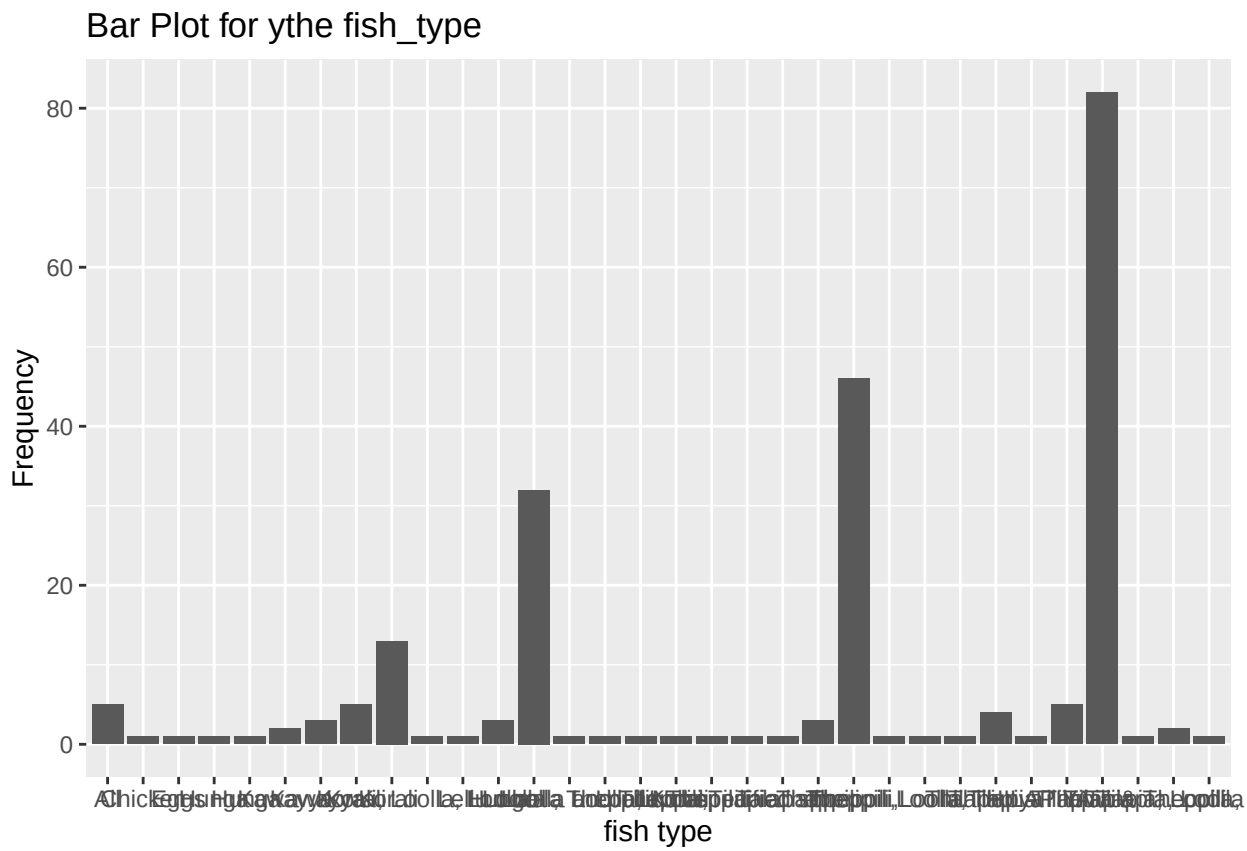
```
##   Thilapi                                0             0       0           0
##   Thilapiya                              0             0       0           0
##   THILAPIYA                              0             0       0           0
##   Tilapia                                0             0       0           0
##   Tilapia                                1             0       0           0
##   Tilapia & Theppili                     0             0       0           0
##   Tilapia, Loolla                        0             0       0           0
##   Tilapia, Loolla, Pethiya               0             0       0           0
##                            Division
## fish_type                   medagama medawachchiya meemalwewa nabadagaswewa
##   All                              0             0          1             1
##   Chicken                          0             0          0             0
##   Eggs                             0             0          0             0
##   Hunga                            0             0          0             0
##   Hunga                            0             0          0             0
##   Kawayya                          0             0          0             0
##   Kawayya                          0             0          0             0
##   Korali                           1             0          0             0
##   Korali                           1             0          0             1
##   Korali, Loolla, Hunga            0             0          0             0
##   Lellu                            1             0          0             0
##   Loolla                           1             0          0             0
##   Loolla                           1             3          0             1
##   Loolla , Theppili                0             0          0             0
##   Loolla and Theppili              1             0          0             0
##   Loolla, Korali                   0             0          0             0
##   Loolla,Theppili                  0             0          0             0
##   Loolla,Tilapia                   0             0          0             0
##   Not mentioned                    8             0          0             1
##   Not specified spp.               0             0          0             0
##   Talapath                         0             0          0             0
##   Theppili                         0             0          0             0
##   Theppili                         1             0          0             0
##   Theppili,Loolla                  0             0          0             0
##   Theppili,Loolla,Tilapia          0             0          0             0
##   Thilapi                          0             0          0             0
##   Thilapiya                        0             0          0             0
##   THILAPIYA                        0             0          0             0
##   Tilapia                          0             0          0             0
##   Tilapia                          5             0          0             1
##   Tilapia & Theppili               0             0          0             1
##   Tilapia, Loolla                  1             0          0             0
##   Tilapia, Loolla, Pethiya         1             0          0             0
##                            Division
## fish_type                   not mentioned pallankulama pandukabhayapura
##   All                               0             0                0
##   Chicken                           0             0                0
##   Eggs                              0             0                0
##   Hunga                             0             1                0
##   Hunga                             0             0                0
##   Kawayya                           0             1                1
##   Kawayya                           0             0                0
##   Korali                            1             1                0
##   Korali                            0             5                0
```

```
##   Korali, Loolla, Hunga                0            1                0
##   Lellu                                0            0                0
##   Loolla                               0            1                0
##   Loolla                               0            3                4
##   Loolla , Theppili                    0            0                0
##   Loolla and Theppili                  0            0                0
##   Loolla, Korali                       0            1                0
##   Loolla,Theppili                      0            0                1
##   Loolla,Tilapia                       0            0                0
##   Not mentioned                        0           24               16
##   Not specified spp.                   0            0                1
##   Talapath                             0            0                0
##   Theppili                             0            1                0
##   Theppili                             0            8                2
##   Theppili,Loolla                      0            0                0
##   Theppili,Loolla,Tilapia              0            0                0
##   Thilapi                              0            0                0
##   Thilapiya                            0            0                0
##   THILAPIYA                            0            0                0
##   Tilapia                              0            0                0
##   Tilapia                              0            8                3
##   Tilapia & Theppili                   0            0                0
##   Tilapia, Loolla                      0            0                0
##   Tilapia, Loolla, Pethiya             0            0                0
##                           Division
## fish_type                  pandulagama parasangaswewa pinagama rambewa
##   All                              0              0        0       0
##   Chicken                          0              0        0       0
##   Eggs                             0              0        0       0
##   Hunga                            0              0        0       0
##   Hunga                            0              0        0       0
##   Kawayya                          0              0        0       0
##   Kawayya                          0              0        0       0
##   Korali                           0              0        0       0
##   Korali                           0              1        0       0
##   Korali, Loolla, Hunga            0              0        0       0
##   Lellu                            0              0        0       0
##   Loolla                           0              0        0       1
##   Loolla                           0              1        0       4
##   Loolla , Theppili                0              0        0       0
##   Loolla and Theppili              0              0        0       0
##   Loolla, Korali                   0              0        0       0
##   Loolla,Theppili                  0              0        0       0
##   Loolla,Tilapia                   0              0        0       0
##   Not mentioned                    1              2        1      16
##   Not specified spp.               0              0        0       0
##   Talapath                         0              0        0       0
##   Theppili                         0              0        0       0
##   Theppili                         0              2        0       2
##   Theppili,Loolla                  0              0        0       0
##   Theppili,Loolla,Tilapia          0              0        0       0
##   Thilapi                          0              0        0       1
##   Thilapiya                        0              0        0       0
##   THILAPIYA                        0              0        0       0
```

```
##   Tilapia                          0             0        0       1
##   Tilapia                          0             1        0       6
##   Tilapia & Theppili               0             0        0       0
##   Tilapia, Loolla                  0             0        0       0
##   Tilapia, Loolla, Pethiya         0             0        0       0
##                           Division
## fish_type                  sadamalgama thalgahawewa ukkulankulama
##   All                              0            0              0
##   Chicken                          0            0              0
##   Eggs                             0            0              0
##   Hunga                            0            0              0
##   Hunga                            0            0              0
##   Kawayya                          0            0              0
##   Kawayya                          1            0              1
##   Korali                           0            0              0
##   Korali                           0            0              1
##   Korali, Loolla, Hunga            0            0              0
##   Lellu                            0            0              0
##   Loolla                           0            0              0
##   Loolla                           3            1              0
##   Loolla , Theppili                0            0              0
##   Loolla and Theppili              0            0              0
##   Loolla, Korali                   0            0              0
##   Loolla,Theppili                  0            0              0
##   Loolla,Tilapia                   0            0              0
##   Not mentioned                    9            3              4
##   Not specified spp.               0            0              0
##   Talapath                         0            0              0
##   Theppili                         1            0              0
##   Theppili                         4            3              0
##   Theppili,Loolla                  0            0              1
##   Theppili,Loolla,Tilapia          0            0              0
##   Thilapi                          0            0              0
##   Thilapiya                        0            0              0
##   THILAPIYA                        0            0              0
##   Tilapia                          0            0              0
##   Tilapia                          5            1              1
##   Tilapia & Theppili               0            0              0
##   Tilapia, Loolla                  0            0              0
##   Tilapia, Loolla, Pethiya         0            0              0
##                           Division
## fish_type                  wahamalgollewa walasmulla weheragala yaya 03
##   All                                 0          0          0       0
##   Chicken                             0          0          0       0
##   Eggs                                0          0          0       0
##   Hunga                               0          0          0       0
##   Hunga                               0          0          1       0
##   Kawayya                             0          0          0       0
##   Kawayya                             0          0          0       0
##   Korali                              0          1          0       0
##   Korali                              0          0          0       0
##   Korali, Loolla, Hunga               0          0          0       0
##   Lellu                               0          0          0       0
##   Loolla                              0          0          0       0
```

```
##   Loolla                          1         0         1       0
##   Loolla , Theppili               0         0         0       0
##   Loolla and Theppili             0         0         0       0
##   Loolla, Korali                  0         0         0       0
##   Loolla,Theppili                 0         0         0       0
##   Loolla,Tilapia                  0         0         0       0
##   Not mentioned                   0         0         0       0
##   Not specified spp.              0         0         0       0
##   Talapath                        0         0         0       0
##   Theppili                        0         0         0       0
##   Theppili                        1         0         0       1
##   Theppili,Loolla                 0         0         0       0
##   Theppili,Loolla,Tilapia         0         0         0       0
##   Thilapi                         0         0         0       0
##   Thilapiya                       0         0         0       0
##   THILAPIYA                       0         0         0       0
##   Tilapia                         0         0         0       0
##   Tilapia                         0         0         0       0
##   Tilapia & Theppili              0         0         0       0
##   Tilapia, Loolla                 0         0         0       0
##   Tilapia, Loolla, Pethiya        0         0         0       0
```

```r
ggplot(fish_consumption_1, aes(x = fish_type)) +
  geom_bar() +
  xlab("fish type") +
  ylab("Frequency") +
  ggtitle("Bar Plot for ythe fish_type")
```



The relationship between Age and Weight

```
#liminate the data who not mentioned their weights
fish_consumption_2 <- filter(fish_consumption, Weight != "not mentioned")
                      select(fish_consumption_2, Age, Weight)
```

```
##      Age Weight
## 1   10.0     28
## 2    5.0   21.4
## 3    8.0     35
## 4    5.0     18
## 5    4.0    6.5
## 6    7.0     21
## 7   10.0     22
## 8    5.0     13
## 9    9.0     24
## 10   8.0     20
## 11   7.0     18
## 12   8.0     17
## 13   8.0     18
## 14   8.0     14
## 15  10.0     30
## 16   4.0      7
## 17   7.0   24.7
```

```
## 18   3.0     10
## 19   6.0     18
## 20   8.0     15
## 21   5.0     18
## 22   3.0     10
## 23   6.0     22
## 24   6.0     18
## 25   9.0     16
## 26   7.0     19
## 27   9.0     18
## 28   7.0     16
## 29  10.0     29
## 30   9.0     35
## 31   9.0     19
## 32   9.0     15
## 33   9.0     30
## 34   6.0     17
## 35  10.0     25
## 36   7.0     18
## 37   7.0     16
## 38   7.0     15
## 39   7.0     22
## 40   7.0   17.5
## 41   7.0     20
## 42   8.0     32
## 43   7.0   16.5
## 44   8.0     15
## 45   5.0     15
## 46  10.0   21.6
## 47   4.0   10.2
## 48  10.0   22.2
## 49   5.0     16
## 50   4.0  14.25
## 51   7.0   33.5
## 52   7.0     14
## 53   9.0   21.1
## 54   9.0     27
## 55   5.0     16
## 56   4.5   13.3
## 57   4.0   16.3
## 58   9.0     25
## 59   9.0   14.7
## 60   9.0     25
## 61   9.0     33
## 62   6.0   14.8
## 63   3.0   13.2
## 64   4.0   14.2
## 65   5.0   14.8
## 66   5.0     13
## 67   4.0   12.8
## 68   5.0   12.6
## 69   3.5     11
## 70   4.0   14.9
## 71   4.0   14.5
```

```
## 72   4.0   11.8
## 73   4.0   15.5
## 74   5.0   18.2
## 75   5.0   14.8
## 76   4.0   12.9
## 77   5.0   14.4
## 78   8.0     24
## 79   5.0     16
## 80   9.0   22.9
## 81   9.0     24
## 82   6.0     20
## 83   9.0     43
## 84   6.0     17
## 85   8.0     26
## 86   9.0     17
## 87   9.0     20
## 88  10.0     23
## 89   7.0     21
## 90   7.0     16
## 91   6.0     15
## 92   9.0     23
## 93  10.0     35
## 94   8.0     21
## 95   8.0     20
## 96   6.0     16
## 97   8.0     22
## 98   7.0     14
## 99   8.0     20
## 100  6.0   15.3
## 101  7.0     20
## 102  9.0     33
## 103  5.0     16
## 104 10.0   19.5
## 105 10.0     19
## 106  8.0     16
## 107 10.0     27
## 108  8.0     20
## 109 10.0     27
## 110  6.0     14
## 111  5.0     15
## 112 10.0     25
## 113  9.0     21
## 114  8.0   21.5
## 115  8.0     19
## 116  8.0     23
## 117  7.0     17
## 118  8.0     28
## 119  8.0     20
## 120  7.0     19
## 121  7.0     18
## 122  7.0     17
## 123  7.0     17
## 124  7.0   13.5
## 125  4.0   18.5
```

```
## 126  4.0   12.5
## 127  5.0     17
## 128  9.0     18
## 129  9.0     15
## 130  9.0     15
## 131  8.0     21
## 132  8.0     20
## 133  5.0     13
## 134  6.0     15
## 135  8.0     28
## 136  8.0     18
## 137  9.0     20
## 138  9.0     30
## 139  8.0     30
## 140  8.0     18
## 141  8.0     22
## 142  8.0     25
## 143  9.0   21.5
## 144  8.0     20
## 145  8.0     15
## 146  7.0     16
## 147  7.0     23
## 148  6.0     24
## 149  4.0     16
## 150  5.0     14
## 151  7.0     13
## 152  7.0     21
## 153  7.0     21
## 154  9.0     32
## 155 10.0     40
## 156 10.0     28
## 157 10.0     30
## 158 10.0     20
## 159  9.0     19
## 160 10.0     22
## 161 10.0     21
## 162  8.0     23
## 163  7.0     20
## 164  7.0     20
## 165  9.0     35
## 166  6.0     12
## 167  6.0     18
## 168  9.0     24
## 169 10.0     31
## 170 10.0     15
## 171  9.0     20
## 172 10.0     22
## 173 10.0     22
## 174  4.0   14.6
## 175  8.0     23
## 176  4.0     11
## 177 10.0     21
## 178  4.0   14.7
## 179  4.0   12.5
```

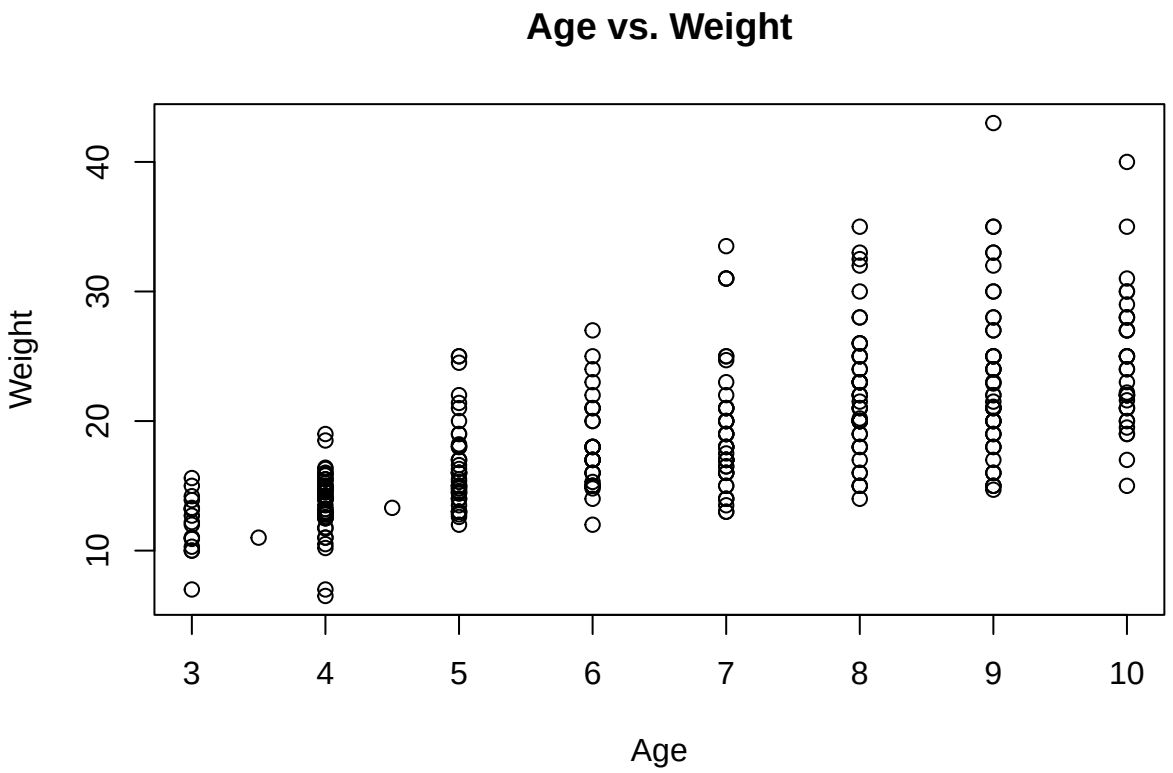
```
## 180  5.0     14
## 181  9.0     21
## 182  9.0     28
## 183  9.0     20
## 184  8.0   20.2
## 185  9.0     22
## 186  9.0     22
## 187  9.0     21
## 188 10.0     25
## 189  5.0   15.5
## 190  5.0   15.3
## 191  4.0   15.5
## 192  4.0   14.1
## 193  5.0     19
## 194  4.0   16.4
## 195  3.0   12.7
## 196 10.0     17
## 197  3.0   10.3
## 198  6.0     21
## 199  6.0     27
## 200  9.0     23
## 201  9.0     24
## 202  9.0     20
## 203  9.0     18
## 204  9.0     27
## 205  8.0     26
## 206  6.0     15
## 207  5.0     25
## 208  6.0     17
## 209  7.0     21
## 210  7.0     18
## 211  7.0     19
## 212  7.0     17
## 213  7.0     25
## 214  7.0     17
## 215  7.0     15
## 216  7.0     20
## 217  7.0     19
## 218 10.0     22
## 219  7.0     17
## 220  6.0     18
## 221  6.0     17
## 222  6.0     21
## 223  5.0     16
## 224  9.0     25
## 225 10.0     24
## 226 10.0     19
## 227 10.0     20
## 228  8.0     25
## 229  5.0     18
## 230 10.0     24
## 231  8.0     22
## 232  8.0     20
## 233 10.0     25
```

```
## 234 10.0    27
## 235  9.0    19
## 236  4.0    16
## 237  5.0    21
## 238 10.0    28
## 239  3.0     7
## 240  5.0  14.5
## 241  4.0  15.8
## 242  4.0  12.6
## 243  8.0    21
## 244  9.0    25
## 245  9.0    28
## 246  9.0    16
## 247  6.0    23
## 248  6.0    16
## 249  3.0    15
## 250  5.0  18.1
## 251  4.0  14.8
## 252  4.0    14
## 253  4.0    13
## 254  4.0  12.8
## 255  4.0  14.5
## 256  8.0    24
## 257  8.0    23
## 258  8.0    26
## 259  8.0    20
## 260  7.0    17
## 261  7.0  16.5
## 262  4.0    14
## 263  5.0  24.5
## 264  5.0  12.8
## 265  8.0    23
## 266  9.0    16
## 267  6.0    17
## 268  6.0    16
## 269  5.0  13.5
## 270  6.0    18
## 271  6.0    15
## 272  6.0    20
## 273  6.0    21
## 274  9.0    21
## 275  7.0    18
## 276  8.0    19
## 277  8.0    16
## 278  7.0    25
## 279  4.0    14
## 280  6.0    17
## 281  8.0    23
## 282  4.0  14.8
## 283  7.0    14
## 284 10.0    21
## 285  5.0    12
## 286  6.0    18
## 287  7.0    13
```

```
## 288  7.0     19
## 289  4.0   10.5
## 290  4.0   11.7
## 291  4.0   12.5
## 292  5.0     14
## 293  3.0   13.3
## 294  4.0     14
## 295  5.0     15
## 296  4.0     14
## 297  3.0   14.2
## 298  4.0   15.5
## 299  3.0     11
## 300  3.0   12.2
## 301  3.0     11
## 302  3.0   10.9
## 303  5.0   14.5
## 304  5.0     17
## 305  4.0     11
## 306  4.0     15
## 307  5.0     17
## 308  5.0   14.6
## 309  3.0   13.9
## 310  3.0   13.2
## 311  5.0   16.6
## 312  4.0   15.9
## 313  5.0     15
## 314  5.0   16.3
## 315  4.0   13.2
## 316  4.0     14
## 317  4.0   13.9
## 318  4.0   15.2
## 319  4.0   14.1
## 320  3.0   15.6
## 321  4.0   13.2
## 322  4.0   13.5
## 323  5.0     22
## 324  4.0     19
## 325  6.0     25
## 326  7.0     31
## 327  8.0     33
## 328  5.0     20
## 329  3.0     12
## 330  7.0     31
## 331  8.0     25
## 332  7.0     31
## 333  8.0   32.5
## 334  5.0     19
## 335  4.0     15
## 336  5.0     13
## 337  4.0     13
## 338  5.0     25
```

```
#Convert Age and Weight as numeric values
{fish_consumption_2$Age <- as.numeric(fish_consumption_2$Age)
```

```r
fish_consumption_2$Weight <- as.numeric(fish_consumption_2$Weight)}

#Plot Age aganist the Weight
plot(fish_consumption_2$Age, fish_consumption_2$Weight, xlab = "Age", ylab = "Weight", main = "Age vs. W
```



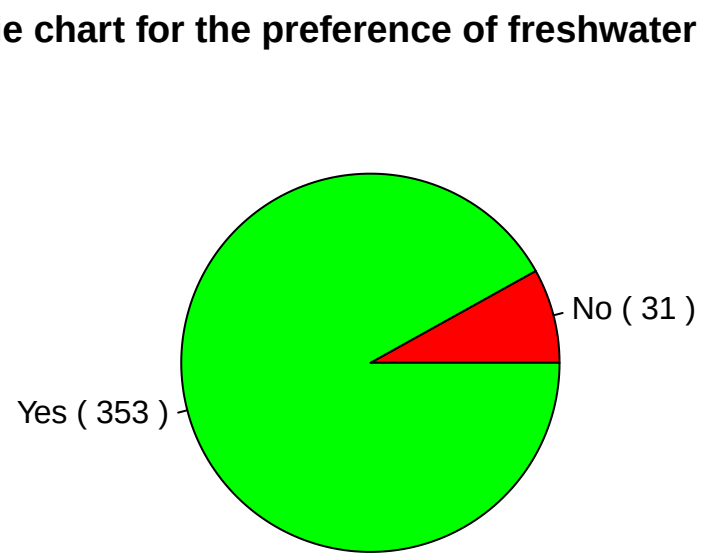

```r
#Calculate the correlation coefficient
correlation <- cor(fish_consumption_2$Age, fish_consumption_2$Weight)
correlation
```

```
## [1] 0.6656333
```

```
#By looking at the plot and correlation coefficient, there is a modarate positive relationship between A
```

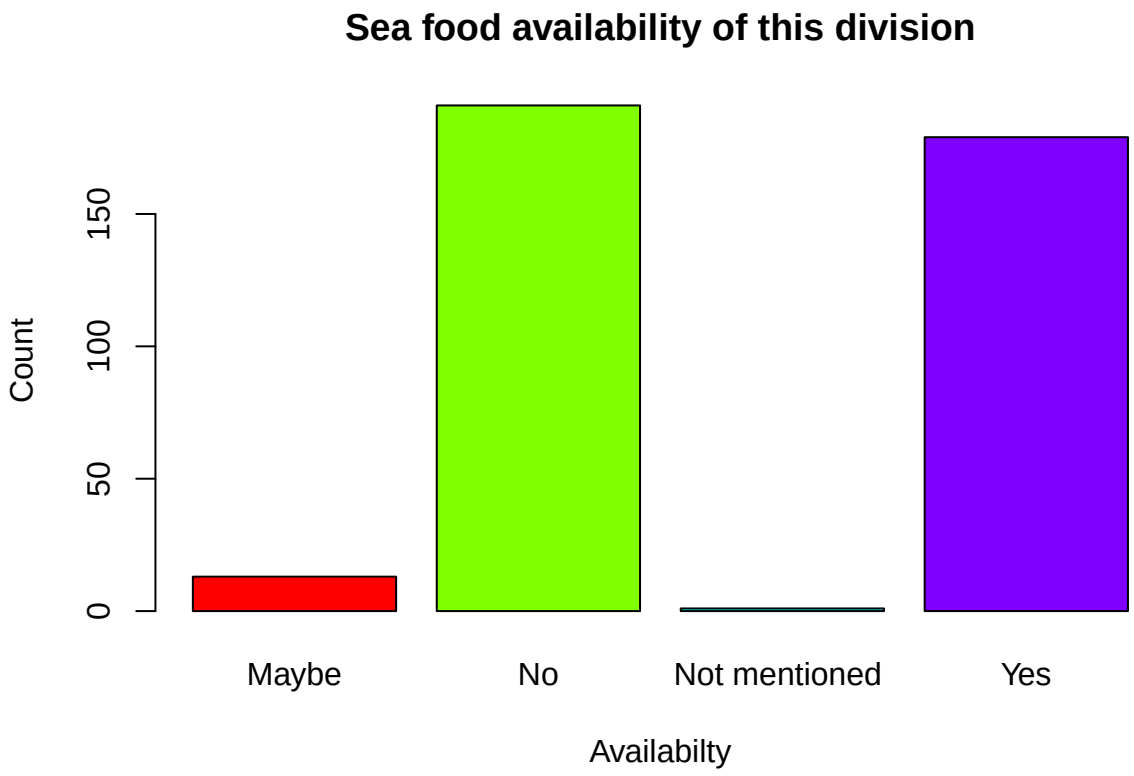
Eat or not freshwater fish

```r
# Calculate the frequencies of "yes" and "no"
counts <- table(eat_freshwater_fish)

# Assign colors to each category
colors <- c("red", "green")

# Create a pie chart with counts and colored segments
pie(counts, labels = paste(names(counts), "(", counts, ")"),
    main = "Pie chart for the preference of freshwater fish", col = colors)
```



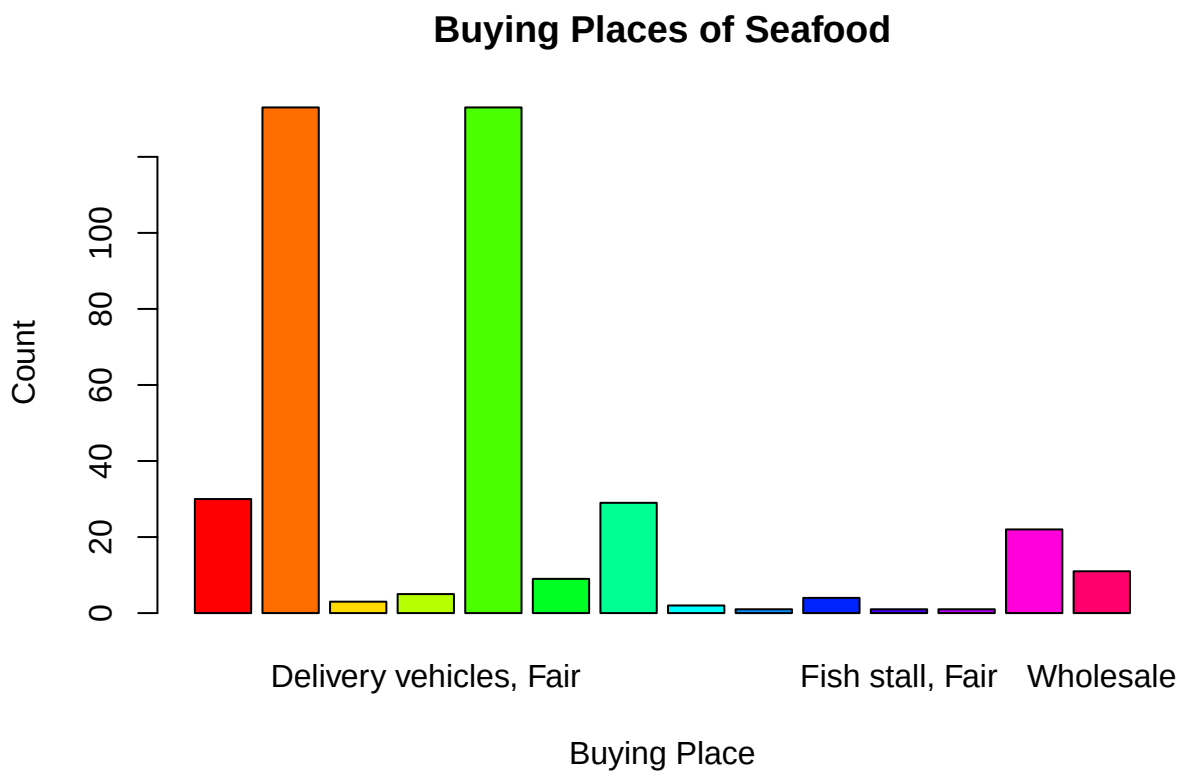
Sea food availability

```
# Calculate the frequencies of each state
availability_counts <- table(seafood_availability)

# Create a stacked bar plot
barplot(availability_counts, col = rainbow(length(availability_counts)),
        xlab = "Availabilty", ylab = "Count", main = "Sea food availability of this division")
```



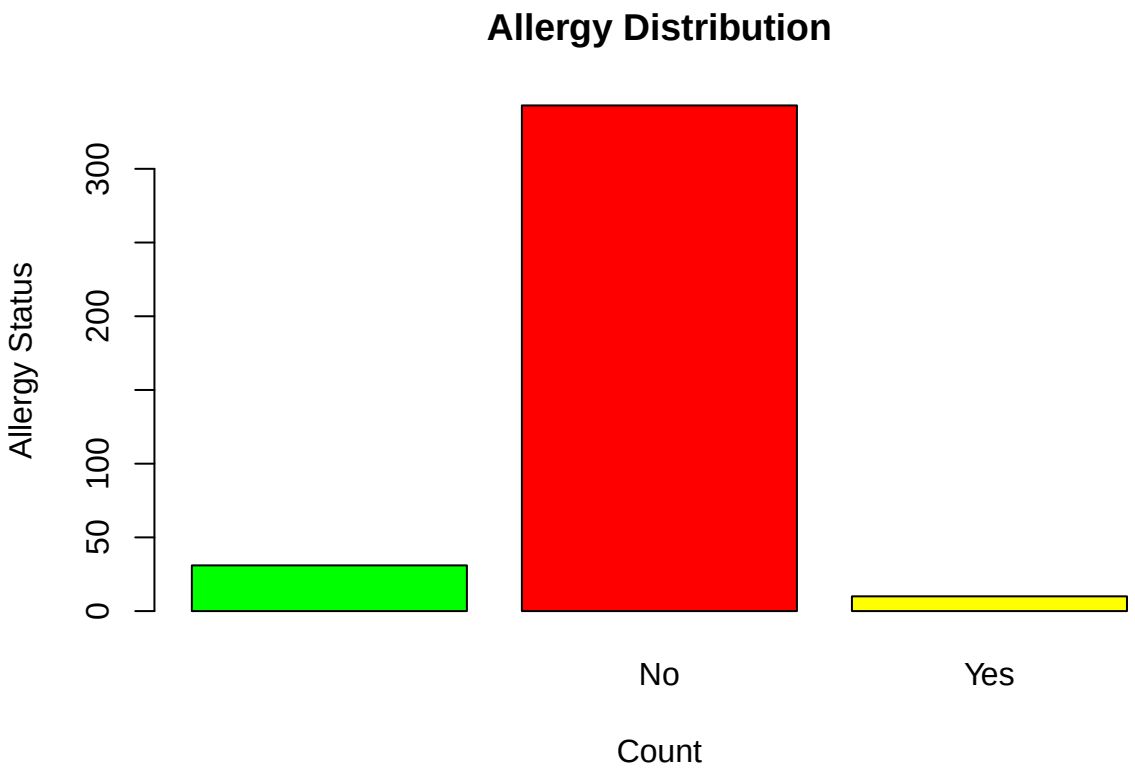
Sea food buying places

```
# Calculate the frequencies of each buying place
buying_place_counts <- table(buying_place)

# Create a bar plot
barplot(buying_place_counts, col = rainbow(length(buying_place_counts)),
        xlab = "Buying Place", ylab = "Count", main = "Buying Places of Seafood")
```



Allergy distribution

```
# Calculate the frequencies of each response
allergy_counts <- table(allergies)

# Create a horizontal bar plot
barplot(allergy_counts, horiz = FALSE, col = c("green", "red","yellow"),
        xlab = "Count", ylab = "Allergy Status", main = "Allergy Distribution")
```



Identify the Allergy Species

```
#Omit the data who didn't mentioned the fish type that contains in their divisions
fish_consumption_3 <- filter(fish_consumption, allergies == "Yes")
                      select(fish_consumption_3, allergies, allergy_species)
```

```
##    allergies allergy_species
## 1        Yes           Hunga
## 2        Yes
## 3        Yes
## 4        Yes
## 5        Yes
## 6        Yes
## 7        Yes
## 8        Yes
## 9        Yes
## 10       Yes
```

```
table_3 <- table(allergies, allergy_species)
table_3
```

```
##          allergy_species
## allergies     Hunga
```

```
##            31     0
##       No  343     0
##       Yes   9     1

#The one and olny allergy species is Hunga
```

Increasing barriers

```r
# Calculate the frequencies of each buying place
barriers_counts <- table(increasing_barriers)

# Create a bar plot
barplot(barriers_counts, col = rainbow(length(barriers_counts)),
        xlab = "Increasing barriers", ylab = "Count", main = "Increasing barriers")
```