# POKEMON DATASET

# **PROJECT MEMBERS:**

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# **Introduction about Database:**

THIS DATABASE IS ABOUT "POKEMON". This dataset contains information about Pokémon from all Seven Generations of Pokémon. The information contained in this dataset include Base Stats, Performance against Other Types, Height, Weight, Classification, Egg Steps, Experience Points, Abilities, etc.

#### Content

- name: The English name of the Pokemon
- japanese\_name: The Original Japanese name of the Pokemon
- pokedex\_number: The entry number of the Pokemon in the National Pokedex
- percentage\_male: The percentage of the species that are male. Blank if the Pokemon is genderless.
- type1: The Primary Type of the Pokemon
- type2: The Secondary Type of the Pokemon
- classification: The Classification of the Pokemon as described by the Sun and Moon Pokedex
- height\_m: Height of the Pokemon in metres
- weight\_kg: The Weight of the Pokemon in kilograms
- capture\_rate: Capture Rate of the Pokemon
- baseeggsteps: The number of steps required to hatch an egg of the Pokemon
- abilities: A stringified list of abilities that the Pokemon is capable of having
- experience\_growth: The Experience Growth of the Pokemon

- base\_happiness: Base Happiness of the Pokemon
- against\_?: Eighteen features that denote the amount of damage taken against an attack of a particular type
- · hp: The Base HP of the Pokemon
- attack: The Base Attack of the Pokemon
- defense: The Base Defense of the Pokemon
- sp\_attack: The Base Special Attack of the Pokemon
- sp\_defense: The Base Special Defense of the Pokemon
- · speed: The Base Speed of the Pokemon
- generation: The numbered generation which the Pokemon was first introduced
- is\_legendary: Denotes if the Pokemon is legendary.

## **VIEW OF DATABASE IS:**

View(pokemon)

•	abilities	against_bug 🕏	against_dark 🕏	against_dragon 🗘 a	gai		
1	['Overgrow', 'Chlorophyll']	1.00	1.0	1.0			
2	['Blaze', 'Solar Power']	0.50	1.0	1.0			
3	['Blaze', 'Solar Power']	0.25	1.0	1.0			
4	['Torrent', 'Rain Dish']	1.00	1.0	1.0			
5	['Shield Dust', 'Run Away']	1.00	1.0	1.0			
6	['Compoundeyes', 'Tinted Lens'] ['Shield Dust', 'Ru	un 0.50	1.0	1.0			
7	['Shield Dust', 'Run Away']	0.50	1.0	1.0			
8	['Keen Eye', 'Tangled Feet', 'Big Pecks']	0.50	1.0	1.0			
9	['Run Away', 'Guts', 'Hustle', 'Gluttony', 'Hustle', 'Thick Fat']	1.00	1.0	1.0			
10	['Intimidate', 'Shed Skin', 'Unnerve']	0.50	1.0	1.0			
11	['Static', 'Lightningrod']	1.00	1.0	1.0			
12	['Sand Veil', 'Sand Rush', 'Snow Cloak', 'Slush Rush']	1.00	1.0	1.0			

# STRUCTURE OF DATABASE IS: Str(pokemon)

```
'max' / getOption("max.print") -- omitted 54 m
str(pokemon)
'data.frame':
               78 obs. of 41 variables:
$ abilities : chr "['Overgrow', 'Chlorophyll']" "['Blaze', 'Solar Power']" "
'Blaze', 'Solar Power']" "['Torrent', 'Rain Dish']" ...
$ against bug
                   : num 1 0.5 0.25 1 1 0.5 0.5 0.5 1 0.5 ...
$ against dark
                   : num
                          1 1 1 1 1 1 1 1 1 1 ...
$ against dragon
                   : num
                          1 1 1 1 1 1 1 1 1 1 ...
$ against_electric : num
                          0.5 1 2 2 1 2 1 2 1 1 ...
                          0.5 0.5 0.5 1 1 1 0.5 1 1 0.5 ...
$ against_fairy
                   : num
$ against fight
                   : num
                          0.5 1 0.5 1 0.5 0.25 0.25 1 2 0.5 ...
$ against fire
                          2 0.5 0.5 0.5 2 2 2 1 1 1 ...
                   : num
 against_flying
                          2 1 1 1 2 2 2 1 1 1 ...
                   : num
$ against ghost
                          1111111001...
                   : num
                          0.25 0.5 0.25 2 0.5 0.25 0.25 0.5 1 0.5 ...
$ against_grass
                   : num
$ against_ground
                   : num
                          1 2 0 1 0.5 0 1 0 1 2 ...
$ against ice
                   : num
                          2 0.5 1 0.5 1 2 1 2 1 1 ...
 against_normal
                     num
                          1 1 1 1 1 1 1 1 1 1 1 ...
$ against_poison
                   : num
                          1 1 1 1 1 1 0.5 1 1 0.5 ...
                          2 1 1 1 1 1 2 1 1 2 ...
$ against_psychic
                   : num
 $ against_ground
                    : num
                           1 2 0 1 0.5 0 1 0 1 2 ...
                    : num
                            2 0.5 1 0.5 1 2 1 2 1 1 ...
 $ against_ice
 $ against normal
                    : num
                           11111111111...
 $ against_poison
                    : num
                           1 1 1 1 1 1 0.5 1 1 0.5
 $ against_psychic : num
                           2 1 1 1 1 1 2 1 1
 $ against_rock
                    : num
                           1 2 4 1 2 4 2 2 1 1
 $ against_steel
                           1 0.5 0.5 0.5 1 1 1 1 1 1 ...
                   : num
 $ against water
                    : num
                           0.5 2 2 0.5 1 1 1 1 1 1 ...
 $ attack
                           49 52 104 48 30 45 35 45 56 60 ...
                    : int
 $ base_egg_steps
                    : int
                           5120 5120 5120 5120 3840 3840 3840 3840 3840 5120 ...
 $ base_happiness : int 70 70 70 70 70 70 70 70 70 70 ...
                    : int 318 309 634 314 195 395 195 251 253 288 ...
 $ base_total
                    : chr "45" "45" "45" "45" ...
 $ capture rate
                    : chr "Seed PokÃ@mon" "Lizard PokÃ@mon" "Flame PokÃ@mon" "Tiny Tu
 $ classfication
rtle PokÃ@mon" ...
                    : int 49 43 78 65 35 50 30 40 35 44 ...
 $ defense
 $ experience growth: int 1059860 1059860 1059860 1059860 1000000 1000000 1000000 105
9860 1000000 1000000 ...
                    : num 0.7 0.6 1.7 0.5 0.3 1.1 0.3 0.3 NA 2 ...
 $ height m
                    : int 45 39 78 44 45 60 40 40 30 35 ...
 $ hp
 $ japanese name
                           "Fushigidaneaf•a,•a,°af\200af\215" "Hitokageaf'af\210a,«a
                   : chr
 "Lizardonafaa, 9af¼af‰afa" "Zenigamea, ¼af ⟨a, ¬af;" ...
                    : chr "Bulbasaur" "Charmander" "Charizard" "Squirtle" ...
 $ Pokemon name
   percentage male
                    : num 88.1 88.1 88.1 88.1 50 50 50 50 50 50 ...
 $ pokedex number
                    : int
                           1 4 6 7 10 12 13 16 19 23 ...
                    : int 65 60 159 50 20 90 20 35 25 40 ...
 $ sp attack
```

# SUMMARY OF DATABSE IS:

Summary(pokemon)

```
b T2_TeRelinal.A
> summary(pokemon)
 abilities
                    against bug
                                    against dark
                                                   against dragon
                   Min. :0.2500
                                   Min. :0.500
 Length:78
                                                   Min. :0.000
                                    1st Qu.:1.000
                   1st Ou.:0.5000
                                                   1st Qu.:1.000
 Class :character
                                                   Median :1.000
Mode :character
                   Median :0.7500
                                   Median :1.000
                   Mean :0.9391
                                   Mean :1.109
                                                   Mean :1.013
                   3rd Qu.:1.0000
                                    3rd Qu.:1.000
                                                   3rd Qu.:1.000
                   Max. :4.0000
                                   Max. :2.000
                                                   Max. :2.000
 against electric against fairy
                                  against fight
                                                  against fire
                                                                 against flying
                                 Min. :0.000
                                                 Min. :0.250
Min. :0.0000
                 Min. :0.2500
                                                                 Min. :0.250
                                                 1st Ou.:0.500
 1st Ou.:0.5000
                 1st Ou.:0.5000
                                  1st Ou.:0.500
                                                                 1st Ou.:0.500
Median :1.0000
                 Median :1.0000
                                 Median :1.000
                                                 Median :1.000
                                                                 Median :1.000
       :0.9808
                        :0.9872
                                 Mean :1.083
                                                 Mean
                                                        :1.224
                                                                       :1.154
                 Mean
                                                                Mean
 3rd Qu.:1.0000
                 3rd Qu.:1.0000
                                  3rd Qu.:1.000
                                                 3rd Qu.:2.000
                                                                 3rd Qu.:1.000
       :4.0000
                       :2.0000
                                 Max. :4.000
                                                       :4.000
                                                                       :4.000
Max.
                 Max.
                                                 Max.
                                                                 Max.
 against ghost
                against grass
                              against ground
                                               against ice
                                                              against normal
                                              Min. :0.250
Min. :0.000
                Min. :0.25
                              Min. :0.000
                                                             Min. :0.0000
 1st Ou.:1.000
                1st Ou.:0.50
                              1st Ou.:0.500
                                              1st Ou.:0.500
                                                              1st Ou.:0.5000
                Median :1.00
                              Median :1.000
                                              Median :1.000
                                                              Median :1.0000
Median :1.000
                                                     :1.288
       :1.135
                Mean :1.00
                              Mean :1.304
                                                                    :0.8045
Mean
                                              Mean
                                                              Mean
 3rd Qu.:1.000
                3rd Qu.:1.00
                               3rd Qu.:2.000
                                              3rd Qu.:2.000
                                                              3rd Qu.:1.0000
       :2.000
                      :4.00
                                     :4.000
                                                     :4.000
Max.
                Max.
                              Max.
                                              Max.
                                                             Max.
                                                                    :1.0000
against poison against psychic against rock against steel against water
      :2.000
                Max.
                      :4.00
                              Max.
                                      :4.000
                                               Max.
                                                      :4.000
Max.
                                                               Max.
                                                                      :1.0000
against poison
                against psychic
                                 against rock
                                                 against steel
                                                                 against water
Min. :0.0000
                                                 Min. :0.250
                Min. :0.000
                                Min. :0.250
                                                                 Min. :0.250
1st Qu.:0.5000
                1st Qu.:0.625
                                 1st Qu.:1.000
                                                 1st Qu.:0.500
                                                                 1st Qu.:0.500
Median :1.0000
                Median :1.000
                                                 Median :1.000
                                 Median :1.000
                                                                 Median :1.000
Mean :0.7724
                Mean :1.022
                                Mean :1.311
                                                 Mean :1.022
                                                                       :1.218
                                                                 Mean
3rd Ou.:1.0000
                 3rd Ou.:1.000
                                                 3rd Ou.:1.000
                                 3rd Ou.:2.000
                                                                 3rd Ou.:2.000
Max.
      :2.0000
                Max.
                       :2.000
                                Max.
                                        :4.000
                                                 Max.
                                                        :4.000
                                                                 Max.
                                                                        :4.000
   attack
                                 base happiness
                                                    base total
                base_egg_steps
Min. : 20.00
                Min. : 1280
                                Min. : 0.00
                                                  Min. :195.0
1st Ou.: 49.25
                1st Qu.: 5120
                                 1st Qu.: 70.00
                                                  1st Qu.:303.5
Median : 65.50
                Median : 5120
                                Median : 70.00
                                                  Median :357.5
                Mean : 7450
Mean : 72.59
                                 Mean : 66.09
                                                  Mean
                                                        :406.7
3rd Qu.: 90.00
                 3rd Qu.: 6400
                                 3rd Qu.: 70.00
                                                  3rd Qu.:502.2
      :185.00
                Max.
                       :30720
                                       :140.00
                                                         :700.0
Max.
                                 Max.
                                                  Max.
                   classfication
                                         defense
capture rate
                                                      experience growth
Length:78
                   Length:78
                                     Min. : 15.0
                                                      Min. : 800000
Class :character
                   Class :character
                                      1st Qu.: 45.0
                                                      1st Qu.:1000000
                                      Median : 73.5
                                                      Median :1059860
Mode :character
                   Mode :character
                                      Mean : 75.5
                                                      Mean
                                                            :1086636
                                      3rd Qu.:100.0
                                                      3rd Qu.:1250000
                                      Max.
                                             :230.0
                                                      Max.
                                                            :1640000
```

```
percentage_male pokedex_number
                                sp_attack
                                                 sp_defense
Min.
      : 0.00
               Min. : 1.0
                                     : 10.00
                                                      : 20.00
                              Min.
                                               Min.
1st Qu.:50.00
               1st Qu.: 79.5
                              1st Qu.: 40.00
                                               1st Qu.: 50.00
Median :50.00
               Median :207.5
                              Median : 60.00
                                               Median : 60.00
                              Mean : 66.37
Mean
      :53.78
               Mean :266.1
                                               Mean
                                                      : 70.21
3rd Qu.:50.00
               3rd Qu.:379.8
                              3rd Qu.: 90.00
                                               3rd Qu.: 95.00
                                     :159.00
Max.
      :88.10
               Max. :793.0
                              Max.
                                               Max.
                                                      :150.00
      :10
NA's
                                  Secondary_Type
                Primary_Type
                                                       weight kg
   speed
      : 10.00
                Length:78
                                  Length:78
Min.
                                                     Min. : 0.10
1st Qu.: 40.75
                Class :character
                                  Class :character
                                                     1st Qu.:
                                                              7.20
Median : 55.50
                Mode :character
                                        :character
                                                     Median : 26.60
                                  Mode
Mean : 59.55
                                                     Mean : 71.74
3rd Qu.: 75.75
                                                     3rd Qu.: 62.40
Max.
      :150.00
                                                     Max.
                                                           :750.00
                                                     NA's
                                                            :3
generation is legendary
          Min. :0.0000
1:32
2:14
          1st Qu.:0.0000
3:13
          Median :0.0000
4: 6
          Mean
                 :0.1026
5: 5
          3rd Qu.:0.0000
6: 5
                 :1.0000
          Max.
7: 3
```

- NUMBER OF ROW AND COLUMN IN POKEMON
- nrow(pokemon)
- ncol(pokemon)

```
> nrow(pokemon)
[1] 801
> ncol(pokemon)
[1] 41
> |
```

## **DATA CLEANING:**

pokemon\$generation<- as.factor(pokemon\$generation)</pre>

#printing missing values by creating a new data frame.
a<-data.frame("Variable"=c(colnames(pokemon)), "Missing
Values"=sapply(pokemon, function(x) sum(is.na(x))), row.names = NULL)
print(a)</pre>

```
tion(x) sum(is.na(x))), row.names = NULL)
 > print(a)
             Variable Missing.Values
            abilities
          against_bug
                                   0
         against_dark
                                   0
       against_dragon
     against_electric
        against_fairy
        against_fight
 8
         against_fire
       against_flying
 10
        against_ghost
                                   0
 11
        against_grass
                                   0
 12
       against_ground
                                   0
 13
          against_ice
                                   0
 14
       against normal
                                   0
 15
       against_poison
                                   0
 16
      against_psychic
                                   0
         against_rock
 18
        against_steel
                                   0
 19
        against_water
                                   0
 20
                                   0
               attack
       base_egg_steps
                                   0
 22
       base_happiness
 23
           base_total
  30
         japanese_name
  31
          Pokemon name
                                     0
                                    10
       percentage male
  33
        pokedex_number
                                     0
  34
                                     0
             sp_attack
  35
            sp_defense
                                     0
  36
                                     0
                 speed
          Primary Type
                                     0
  38
        Secondary_Type
  39
             weight kg
  40
            generation
                                     0
  41
          is_legendary
f1<- function(a){
 uni<- unique(a)
 uni[which.max(tabulate(match(a,uni)))]
}
pokemon$generation[is.na(pokemon$generation)] = f1(pokemon$generation)
b<-data.frame("Variable"=c(colnames(pokemon)), "Missing
Values"=sapply(pokemon, function(x) sum(is.na(x))), row.names = NULL)
print(b)
```

```
> print(b)
             Variable Missing. Values
            abilities
                                     0
                                     0
          against_bug
3
         against_dark
                                     0
4
      against_dragon
                                     0
    against_electric
                                     0
6
        against_fairy
                                     0
7
        against_fight
                                     0
         against_fire
                                     0
      against_flying
                                     0
10
       against ghost
                                     0
11
       against grass
                                     0
      against_ground
12
13
                                     0
          against ice
14
      against_normal
                                     0
15
      against_poison
                                     0
16
     against_psychic
                                     0
17
         against_rock
18
        against_steel
                                     0
19
                                     0
        against_water
```

library("dplyr")
pokemon= distinct(pokemon, against\_fire, against\_ground,against\_ice,
against\_bug, .keep\_all = TRUE)
print(pokemon)

```
> print(pokemon)
                                                                                                                                               abilities
                                                                                                         ['Overgrow', 'Chlorophyll']
1
                                                                                                               ['Blaze', 'Solar Power']
['Blaze', 'Solar Power']
                                                                                                         ['Torrent', 'Rain Dish']
['Shield Dust', 'Run Away']
6
                                                                                                 ['Compoundeyes', 'Tinted Lens']
                                                                                                         ['Shield Dust', 'Run Away']
                         ['Keen Eye', 'Tangled Feet', 'Big Pecks']
['Run Away', 'Guts', 'Hustle', 'Gluttony', 'Hustle', 'Thick Fat']
['Intimidate', 'Shed Skin', 'Unnerve']
8
9
10
                                                ['Static', 'Lightningrod']

['Sand Veil', 'Sand Rush', 'Snow Cloak', 'Slush Rush']

['Poison Point', 'Rivalry', 'Sheer Force']

['Cute Charm', 'Magic Guard', 'Friend Guard']

['Inner Focus', 'Infiltrator']
11
12
13
14
15
['Effect Spore', 'Dry Skin', 'Damp']

['Water Absorb', 'Damp', 'Swift Swim']

['Synchronize', 'Inner Focus', 'Magic Guard']

['Rock Head', 'Sturdy', 'Sand Veil', 'Magnet Pull', 'Sturdy', 'Galvanize']
```

24				['Chlorophyll'	'Harvest']
	ainst_bug agair	nst_dark agains	t_dragon against		
1	1.00	1.0	1.0	0.5	0.5
2	0.50	1.0	1.0	1.0	0.5
3	0.25	1.0	1.0	2.0	0.5
4	1.00	1.0	1.0	2.0	1.0
5	1.00	1.0	1.0	1.0	1.0
6	0.50	1.0	1.0	2.0	1.0
7	0.50	1.0	1.0	1.0	0.5
8	0.50	1.0	1.0	2.0	1.0
9	1.00	1.0	1.0	1.0	1.0
10	0.50	1.0	1.0	1.0	0.5
11	1.00	1.0	1.0	0.5	1.0
12	1.00	1.0	1.0	0.0	1.0
13	0.50	1.0	1.0	0.0	0.5
14	0.50	0.5	0.0	1.0	1.0
15	0.25	1.0	1.0	2.0	0.5
16	2.00	1.0	1.0	0.5	1.0
17	0.50	0.5	1.0	2.0	2.0
18	2.00	2.0	1.0	1.0	1.0
19	1.00	1.0	1.0	0.0	1.0
20	2.00 0.50	2.0 1.0	1.0 0.5	2.0 0.5	1.0 0.5
21 22	1.00	1.0	1.0	2.0	
23	0.25	2.0	1.0	1.0	1.0 0.5
24	4.00	2.0	1.0	0.5	1.0
24	4.00	2.0	1.0	0.5	1.0
ag	gainst_fight ag	gainst_fire aga	inst_flying aga	inst_ghost agai	nst_grass
1	0.50	2.0	2.00	1	0.25
2	1.00	0.5	1.00	1	0.50
3	0.50	0.5	1.00	1	0.25
4	1.00	0.5	1.00	1	2.00
5	0.50	2.0	2.00	1	0.50
6	0.25	2.0	2.00	1	0.25
7	0.25	2.0	2.00	1	0.25
8	1.00	1.0	1.00	0	0.50
9	2.00	1.0	1.00	0	1.00
10	0.50	1.0	1.00	1	0.50
11	1.00	1.0	0.50	1	1.00
12	1.00	1.0	1.00	1	2.00
13	0.50	1.0	1.00	1	1.00
14	0.50	1.0	1.00	1	1.00
15	0.25	1.0	1.00	1	0.25
16	0.50	4.0	4.00	1	0.25
17	1.00	0.5	2.00	1	2.00
18	0.50	1.0	1.00	2	1.00
19	2.00	0.5	0.50	1	4.00
20	0.50	0.5	1.00	2	2.00
21	2.00	2.0	0.25	1	0.50
22	2.00	1.0	1.00	1	2.00
23	0.00	1.0	1.00	2	0.50
24	0.50	2.0	2.00	2	0.50
ag	gainst_ground a	against_ice aga	ainst_normal aga	inst_poison aga	inst_psychic

	against_ground	against_ice a	gainst_no	ormal aga	ainst_poison	against_psychic	
1	1.00	2.00		1.0	1.00	2.0	
2	2.00	0.50		1.0	1.00	1.0	
3	0.00	1.00		1.0	1.00	1.0	
4	1.00	0.50		1.0	1.00	1.0	
5	0.50	1.00		1.0	1.00	1.0	
6	0.00	2.00		1.0	1.00	1.0	
7	1.00	1.00		1.0	0.50	2.0	
8	0.00	2.00		1.0	1.00	1.0	
9	1.00	1.00		1.0	1.00	1.0	
10	2.00	1.00		1.0	0.50	2.0	
11	2.00	1.00		1.0	1.00	1.0	
12	1.00	2.00		1.0	0.50	1.0	
13	2.00	2.00		1.0	0.25	2.0	
14	1.00	1.00		1.0	2.00	1.0	
15	0.00	2.00		1.0	0.50	2.0	
16	0.25	2.00		1.0	2.00	1.0	
17	1.00	0.50		1.0	1.00	2.0	
18	1.00	1.00		1.0	1.00	0.5	
19	2.00	2.00		0.5	0.25	1.0	
20	1.00	0.50		1.0	1.00	0.5	
21	4.00	0.50		0.5	0.00	0.5	
22	1.00	0.25		1.0	1.00	1.0	
24	hasa total cant	1.00	class#	U.S	dofonce ovne	5120	oiaht m
4	base_total capt			okÃ@mon	49	erience_growth h	
1	318 309	45 45	Lizard P		43	1059860	0.7
2				okã@mon		1059860	0.6
	634	45			78 65	1059860	1.7
4 5 6	314		Turtle P	okā@mon	65	1059860	0.5
5	195 395	255			35	1000000	0.3
7			tterfly P		50	1000000	1.1
8	195	255		okÃ@mon	30	1000000	0.3
9	251		ny Bird P	okā©mon	40	1059860	0.3
	253	255		okA©mon okémon	35	1000000	NA 2. a
10	288	255		oka©mon okã©mon	44	1000000	2.0
11 12	320 300	190 255		okā©mon	40 90	1000000	0.4
				okā©mon		1000000 1059860	NA 1 2
13	505	45			87		1.3
14	323	150		okémon okémon	48 35	800000	0.6
15	245	255				1000000	0.8
16	285		ushroom P		55	1000000	0.3
17	510		Tadpole P	okA©mon okémon	95 15	1059860	1.3
18	310	200		oka©mon okã©mon	15	1059860	0.9
19	300	255			100	1059860	NA 1 2
20	315	190		okÃ@mon	65	1000000	1.2
21	325	190	Magnet P		70	1000000	0.3
22	475		ea Lion P		80	1000000	1.7
23	310	190		okÃ@mon	30	1059860	1.3
24	325	90	Egg P	okÃ@mon	80	1250000	0.4

	hp	<pre>japanese_name</pre>	Pokemon_name percer	ntage_male pokedex	_number
1	45	Fushigidaneãf•ã, •ã, ®ãf€ãf\u	008d Bulbasaur	88.1	1
2	39	Hitokageãf'ãf^ã,«ã,²	Charmander	88.1	4
3	78	Lizardonãfªã,¶ãf¼ãf‰ãf³	Charizard	88.1	6
4	44	Zenigameã,¼ãf∢ã,¬ãf¡	Squirtle	88.1	7
5	45	Caterpieã,ãf£ã,¿ãf"ãf%	Caterpie	50.0	10
6	60	Butterfreeãf\u0090ã,¿ãf•ãfª	ãf¼ Butterfree	50.0	12
7	40	Beedleãf"ãf¼ãf‰ãf«	Weedle	50.0	13
8	40	Poppoãf\u009dãffãf\u009d	Pidgey	50.0	16
9	30	Korattaã,³ãf©ãffã,¿	Rattata	50.0	19
10	35	Arboã,¢ãf¼ãfœ	Ekans	50.0	23
11	35	Pikachuãf"ã,«ãf\u0081ãf¥ã,¦	Pikachu	50.0	25
12	50	Sandã,μンド	Sandshrew	50.0	27
13	90	Nidoqueenãf∢ãf‰ã,¯ã,¤ãf³	Nidoqueen	0.0	31
14	70	Pippiãf"ãffãf"	Clefairy	24.6	35
15	40	Zubatã,ºãf\u0090ãffãf^	Zubat	50.0	41
16	35	Parasãf'ãf©ã,¹	Paras	50.0	46
17	90	Nyorobonãf‹ãf§ãfãfœãf³	Poliwrath	50.0	62
18	25	Caseyã,±ãf¼ã,∙ã,£		75.4	63
19	40	Isitsubuteã,¤ã,∙ãf"ãf–ãf†	Geodude	50.0	74
20	90			50.0	79
21	25	Coilã,³ã,¤ãƒ«	Magnemite	NA	81
22	90	Jugonã, ãf¥ã, ãf³	Dewgong	50.0	87

```
is_legendary
                     0
1
2
3
4
5
6
7
                     0
                     0
                     0
                     0
                     0
                     0
8
                     0
9
                     0
10
                     0
11
                     0
12
                     0
13
                     0
                     0
14
15
                     0
                     0
16
17
                     0
18
                     0
19
                     0
20
                     0
21
                     0
                     0
```

• MEAN OF GRASS TYPE POKEMON ATTACK

```
> mean(grass_pokemon$sp_attack)
[1] 74.32051
```

• MIN SPEED OF FIRE TYPE POKEMON

> min(fire\_pokemon\$speed)
[1] 20

MAX SPEED OF WATER TYPE POKEMON

```
> max(water_pokemon$speed)
[1] 132
>
```

TABLE FORM OF LEGENDARY POKEMON, GENERATION AND PRIMARY TYPE

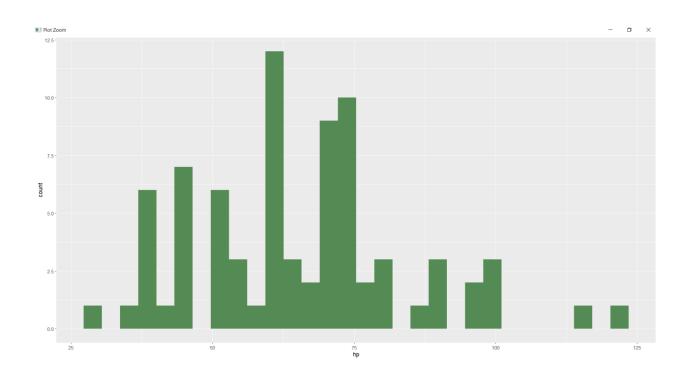
```
> table(pokemon$is_legendary)
 0 1
731 70
> table(pokemon$generation)
 1 2 3 4 5 6 7
151 100 135 107 156 72 80
> table(pokemon$Primary_Type)
                  dragon electric fairy fighting
                                                      fire
                                                            flying
    bug
            dark
                             39
     72
             29
                     27
                                                       52
                                      18
                                               28
  ghost
           grass
                  ground
                             ice normal
                                           poison psychic
                                                              rock
             78
                      32
                             23
                                     105
                                               32
                                                       53
                                                                45
     27
   steel
           water
            114
     24
```

CREATING SUBSET OF GRASS, WATER, FIRE, MYSTIC TYPE

```
> #grass-pokemon
> grass_pokemon <- subset(pokemon,Primary_Type=="grass")
> #grass-pokemon
> grass_pokemon <- subset(pokemon,Primary_Type=="grass")
> #fire-Pokemon
> fire_pokemon <- subset(pokemon,Primary_Type == "fire")
> #water-Pokemon
> water_pokemon <- subset(pokemon,Primary_Type == "water")
> psychic_pokemon <- subset(pokemon,Primary_Type == "psychic")
> |
```

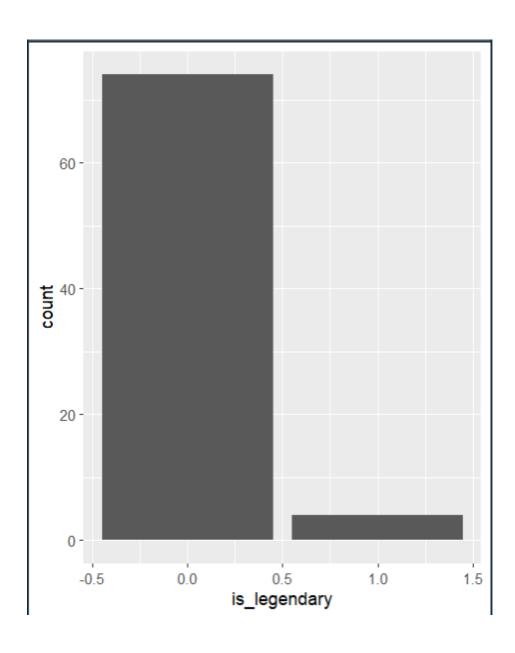
- CREATING HISTOGRAM OF HEALTH OF GRASS TYPE POKEMON
- The bars of the graph are showing the hp of grass type Pokémon.

> ggplot(data = grass\_pokemon,aes(x=hp)) + geom\_histogram(fill= 'palegreen
4')



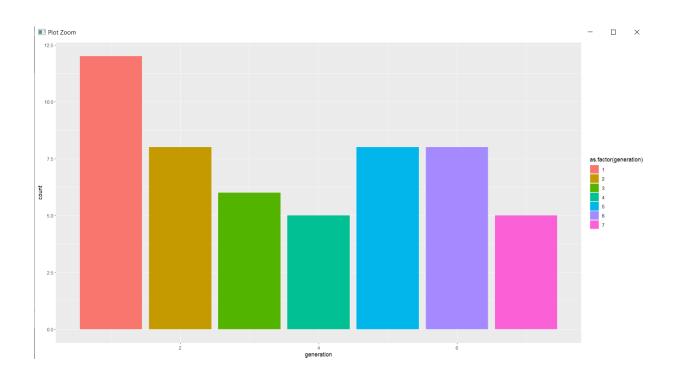
- CREATING BARGRAPH OF LEGENDARY GRASS TYPE POKEMON
- The is showing the count of legendary Pokémon in grass type Pokémon.

> ggplot(data = grass\_pokemon,aes(x=is\_legendary)) + geom\_bar()



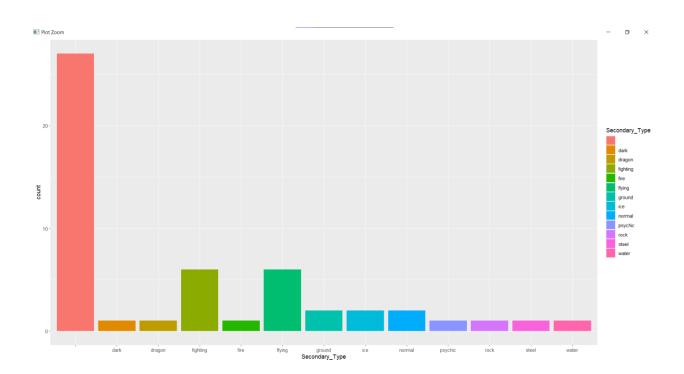
- DIFFERENT TYPE OF GENERATION IN FIRE TYPE POKEMON
- This is showing the different type of generations.

> ggplot(data = fire\_pokemon,aes(x=generation,fill=as.factor(generation))) + geom\_bar()



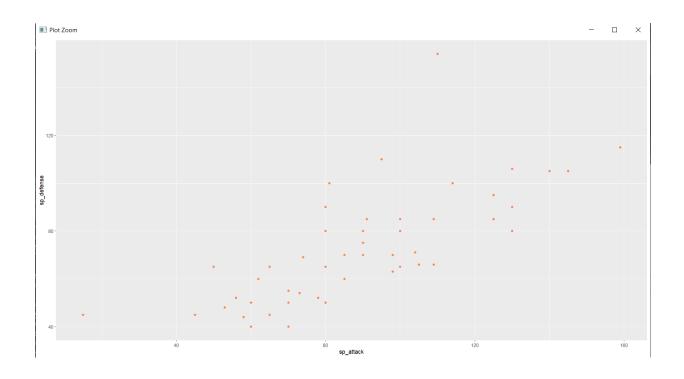
- SECONDARY TYPE OF FIRE TYPE POKEMON
- It is showing the secondary type of fire type Pokémon.

> ggplot(data = fire\_pokemon,aes(x=Secondary\_Type,fill=Secondary\_Type)) + geom\_bar()



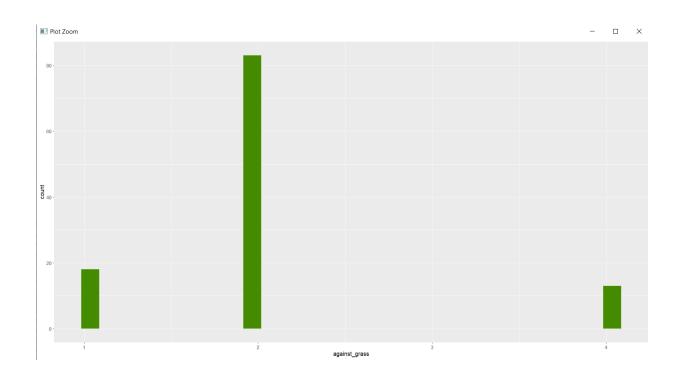
- SPECIAL ATTACK AND SPECIAL DEFENSE POINT GRAPH
- Every Pokémon has different type of attack and defense power, we have shown their sp\_attack and sp\_defense via points in point graph

> ggplot(data = fire\_pokemon,aes(x=sp\_attack,y=sp\_defense)) + geom\_point(col="coral")



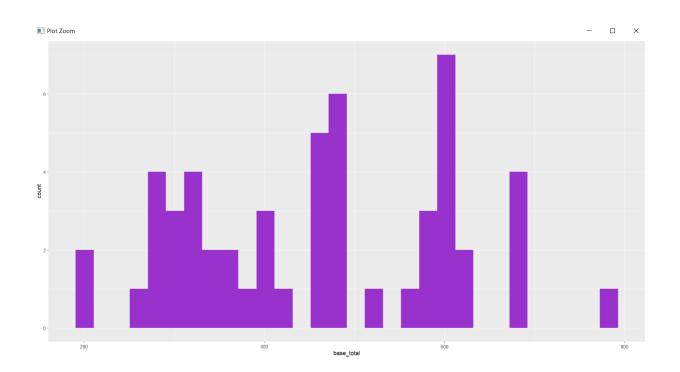
#### • WATER TYPE POKEMON AGAINST GRASS TYPE

> ggplot(data = water\_pokemon,aes(x=against\_grass)) + geom\_histogram(fill='chartreuse4')



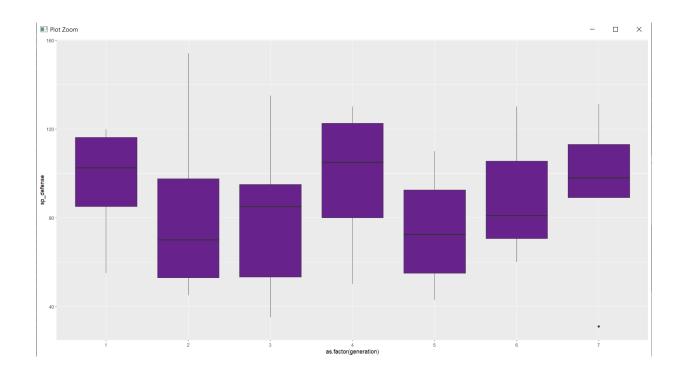
#### • BASE TOTAL OF MYSTIC TYPE POKEMON

## > ggplot(data = psychic\_pokemon,aes(x=base\_total)) + geom\_histogram(fill='darkorchid')

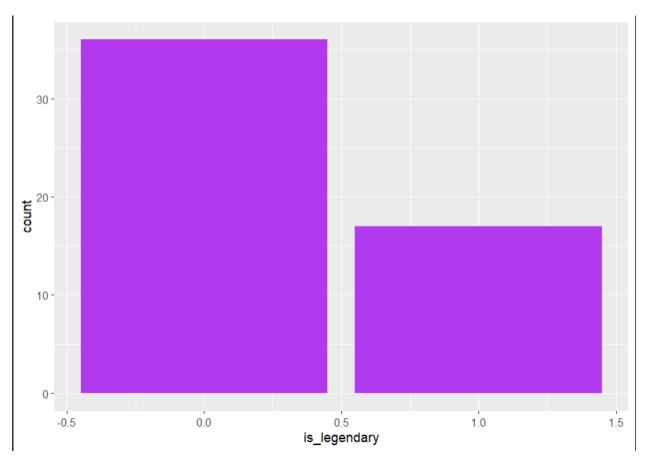


#### • SPECIAL DEFENSE AND GENERATION BOXPLOT OF MYSTIC TYPE

> ggplot(data = psychic\_pokemon,aes(x=as.factor(generation),y=sp\_defense)) + geom\_boxplot(fill='darkorchid4')



### > ggplot(data = psychic\_pokemon,aes(x=is\_legendary)) + geom\_bar(fill='darkorchid2')



# **SOURCE CODE:**

abilities, against\_bug, against\_dark, against\_dragon, against\_electric, against\_fairy, against t\_fight, against\_fire, against\_flying, against\_ghost, against\_grass, against\_ground, against\_ice, against\_normal, against\_poison, against\_psychic, against\_rock, against\_steel, against\_water, attack, base\_egg\_steps, base\_happiness, base\_total, capture\_rate, classfication, defense, experience\_growth, height\_m, hp, japanese\_name, name, percentage\_male, poke dex\_number, sp\_attack, sp\_defense, speed, type1, type2, weight\_kg, generation, is\_legend ary

"['Overgrow',

'Chlorophyll']",1,1,1,0.5,0.5,0.5,2,2,1,0.25,1,2,1,1,2,1,1,0.5,49,5120,70,318,45,Seed Pokémon,49,1059860,0.7,45,Fushigidaneãf • ã, •ã, ®ãf ۋf • ,Bulbasaur,88.1,1,6 5,65,45,grass,poison,6.9,1,0

"['Overgrow',

```
'Chlorophyll']",1,1,1,0.5,0.5,0.5,2,2,1,0.25,1,2,1,1,2,1,1,0.5,62,5120,70,405,45,Seed Pokémon,63,1059860,1.0,60,Fushigisouãf \bullet \tilde{a}, \cdot \tilde{a}
```

'Chlorophyll']",1,1,1,0.5,0.5,0.5,2,2,1,0.25,1,2,1,1,2,1,1,0.5,100,5120,70,625,45,Seed Pokémon,123,1059860,2.0,80,Fushigibanaãf • ã, ·ã, ®ãf • ãf Š,Venusaur,88.1,3,122,120,80,grass,poison,100.0,1,0

"['Blaze', 'Solar

Power']",0.5,1,1,1,0.5,1,0.5,1,1,0.5,2,0.5,1,1,1,2,0.5,2,52,5120,70,309,45,Lizard Pokémon,43,1059860,0.6,39,Hitokageãf 'ãf ^ã, «ã, ²,Charmander,88.1,4,60,50,65,fire,,8.5,1,0

"['Blaze', 'Solar

Power']",0.5,1,1,1,0.5,1,0.5,1,1,0.5,2,0.5,1,1,1,2,0.5,2,64,5120,70,405,45,Flame Pokémon,58,1059860,1.1,58,Lizardoãf aã, ¶ãf ¼ãf %,Charmeleon,88.1,5,80,65,80 ,fire,,19.0,1,0

"['Blaze', 'Solar

Power']",0.25,1,1,2,0.5,0.5,0.5,1,1,0.25,0,1,1,1,1,4,0.5,2,104,5120,70,634,45,Flame Pokémon,78,1059860,1.7,78,Lizardonã $f^a$ ã, ¶ã $f^{1/4}$ ã $f^{1$ 

"['Torrent', 'Rain

Dish']",1,1,1,2,1,1,0.5,1,1,2,1,0.5,1,1,1,1,0.5,0.5,48,5120,70,314,45,Tiny Turtle Pokémon,65,1059860,0.5,44,Zenigameã,  $\frac{1}{4}$ ãf 〈 ã, ¬ãf ¡,Squirtle,88.1,7,50,64,43, water,,9.0,1,0

"['Torrent', 'Rain

Dish']",1,1,1,2,1,1,0.5,1,1,2,1,0.5,1,1,1,1,0.5,0.5,63,5120,70,405,45,Turtle Pokémon,80,1059860,1.0,59,Kameilã, «ãf ¡ãf ¼ãf «,Wartortle,88.1,8,65,80,58,wa ter,,22.5,1,0

"['Torrent', 'Rain

Dish']",1,1,1,2,1,1,0.5,1,1,2,1,0.5,1,1,1,1,0.5,0.5,103,5120,70,630,45,Shellfish Pokémon,120,1059860,1.6,79,Kamexã, «ãf ¡ãf f ã,  $\bar{a}$ , f lastoise,88.1,9,135,115,78,water,,85.5,1,0

"['Shield Dust', 'Run

Away']",1,1,1,1,1,0.5,2,2,1,0.5,0.5,1,1,1,1,2,1,1,30,3840,70,195,255,Worm Pokémon,35,1000000,0.3,45,Caterpieã, -ãf £ã, ¿ãf " ãf ¼,Caterpie,50,10,20,20, 45,bug,,2.9,1,0

['Shed Skin'],1,1,1,1,1,0.5,2,2,1,0.5,0.5,1,1,1,1,2,1,1,20,3840,70,205,120,Cocoon Pokémon,55,1000000,0.7,50,Transelãf  $\tilde{a}f$   $\tilde{a$ 

"['Compoundeyes', 'Tinted

Lens']",0.5,1,1,2,1,0.25,2,2,1,0.25,0,2,1,1,1,4,1,1,45,3840,70,395,45,Butterfly Pokémon,50,1000000,1.1,60,Butterfreeãf • ã, ¿ãf • ãf <sup>a</sup>ãf <sup>1</sup>/<sub>4</sub>,Butterfree,50,12,90,80,70,bug,flying,32.0,1,0

```
"['Shield Dust', 'Run
Away']",0.5,1,1,1,0.5,0.25,2,2,1,0.25,1,1,1,0.5,2,2,1,1,35,3840,70,195,255,Hairy
Pokémon,30,1000000,0.3,40,Beedleãf " ãf ¼ãf %ãf «,Weedle,50,13,20,20,50,bug
,poison, 3.2, 1, 0
['Shed Skin'],0.5,1,1,1,0.5,0.25,2,2,1,0.25,1,1,1,0.5,2,2,1,1,25,3840,70,205,120,Cocoon
Pokémon,50,1000000,0.6,45,Cocoonã, {}^{3}ã, {}^{-}ãf^{1}4ãf^{3},Kakuna,50,14,25,25,35,bug,p
oison,10.0,1,0
"['Swarm',
'Sniper']",0.5,1,1,1,0.5,0.25,2,2,1,0.25,1,1,1,0.5,2,2,1,1,150,3840,70,495,45,Poison Bee
Pokémon,40,1000000,1.0,65,Spearã, {}^{1}ãf "ã, {}^{2}ãf "Å,Beedrill,50,15,15,80,145,bug,
poison, 29.5, 1,0
"['Keen Eye', 'Tangled Feet', 'Big
Pecks']",0.5,1,1,2,1,1,1,1,0,0.5,0,2,1,1,1,2,1,1,45,3840,70,251,255,Tiny Bird
Pokémon,40,1059860,0.3,40,Poppoãf \bullet \tilde{a}f f \tilde{a}f \bullet,Pidgey,50,16,35,35,56,normal,fly
ing,1.8,1,0
"['Keen Eye', 'Tangled Feet', 'Big
Pecks']",0.5,1,1,2,1,1,1,1,0,0.5,0,2,1,1,1,2,1,1,60,3840,70,349,120,Bird
Pokémon,55,1059860,1.1,63,Pigeonãf" ã, \tilde{a}f §ãf ³,Pidgeotto,50,17,50,50,71,nor
mal, flying, 30.0, 1, 0
"['Keen Eye', 'Tangled Feet', 'Big
Pecks']",0.5,1,1,2,1,1,1,1,0,0.5,0,2,1,1,1,2,1,1,80,3840,70,579,45,Bird
Pokémon,80,1059860,1.5,83,Pigeotãf" ã, \tilde{a}f §ãf f ãf \hat{a} ,Pidgeot,50,18,135,80,12
1,normal,flying,39.5,1,0
```

"['Run Away', 'Guts', 'Hustle', 'Gluttony', 'Hustle', 'Thick

Fat']",1,1,1,1,1,2,1,1,0,1,1,1,1,1,1,1,1,56,3840,70,253,255,Mouse

Pokémon,35,1000000,,30,Korattaã,  $^3$ ãf©ãf f ã, ¿,Rattata,50,19,25,35,72,normal, dark,,1,0

"['Run Away', 'Guts', 'Hustle', 'Gluttony', 'Hustle', 'Thick

Pokémon,70,1000000,,75,Rattaãf ©ãf f ã, ¿,Raticate,50,20,40,80,77,normal,dark,, 1,0

"['Keen Eye', 'Sniper']",0.5,1,1,2,1,1,1,1,0,0.5,0,2,1,1,1,2,1,1,60,3840,70,262,255,Tiny Bird

Pokémon,30,1000000,0.3,40,Onisuzumeã,  ${}^a$ ãf (ã,  ${}^a$ ãf (ã,  ${}^o$ ãf |,Spearow,50,21,31,31,70,normal,flying,2.0,1,0

"['Keen Eye', 'Sniper']",0.5,1,1,2,1,1,1,1,0,0.5,0,2,1,1,1,2,1,1,90,3840,70,442,90,Beak Pokémon,65,1000000,1.2,65,Onidrillã,  ${}^a\tilde{a}f$   ${}^c\tilde{a}f$   ${}^a\tilde{a}f$  «,Fearow,50,22,61,61,100 ,normal,flying,38.0,1,0

"['Intimidate', 'Shed Skin',

'Unnerve']",0.5,1,1,1,0.5,0.5,1,1,1,0.5,2,1,1,0.5,2,1,1,1,60,5120,70,288,255,Snake Pokémon,44,1000000,2.0,35,Arboã, ¢ãf ¼ãf œ,Ekans,50,23,40,54,55,poison,,6.9,1 ,0

```
"['Intimidate', 'Shed Skin',
'Unnerve']",0.5,1,1,1,0.5,0.5,1,1,1,0.5,2,1,1,0.5,2,1,1,1,95,5120,70,448,90,Cobra
Pokémon,69,1000000,3.5,60,Arbokã, \phi \tilde{a} f \sqrt{a} f \tilde{d} \tilde{a}, -,Arbok,50,24,65,79,80,p
oison,,65.0,1,0
"['Static',
Pokémon,40,1000000,0.4,35,Pikachuãf" \tilde{a}, «\tilde{a}f \bullet \tilde{a}f + \tilde{a}, ¦,Pikachu,50,25,50,50,90,
electric,,6.0,1,0
"['Static', 'Lightningrod', 'Surge
Surfer']",1,1,1,0.5,1,1,1,0.5,1,1,2,1,1,1,1,1,0.5,1,85,2560,70,485,75,Mouse
Pokémon,50,1000000,,60,Raichuãf ©ã, \sharp \tilde{a}f + \tilde{a}f + \tilde{a}f + \tilde{a}f, Raichu,50,26,95,85,110,elec
tric, electric, 1,0
"['Sand Veil', 'Sand Rush', 'Snow Cloak', 'Slush
Rush']",1,1,1,0,1,1,1,1,1,2,1,2,1,0.5,1,0.5,1,2,75,5120,70,300,255,Mouse
Pokémon,90,1000000,,50,Sandã, \mu \tilde{a} f \tilde{
 1,0
"['Sand Veil', 'Sand Rush', 'Snow Cloak', 'Slush
Rush']",1,1,1,0,1,1,1,1,1,2,1,2,1,0.5,1,0.5,1,2,100,5120,70,450,90,Mouse
Pokémon,120,1000000,,75,Sandpanã, \mu \tilde{a} f^3 \tilde{a} f \% \tilde{a} f^i \tilde{a} f^3,Sandslash,50,28,25,65,6
5, ground, ice., 1,0
"['Poison Point', 'Rivalry',
'Hustle']",0.5,1,1,1,0.5,0.5,1,1,1,0.5,2,1,1,0.5,2,1,1,1,47,5120,70,275,235,Poison Pin
Pokémon,52,1059860,0.4,55,Nidoran?ãf \land ãf \%ãf ©ãf ³â™€,Nidoran♀,0,29,40
,40,41,poison,,7.0,1,0
"['Poison Point', 'Rivalry',
'Hustle']",0.5,1,1,1,0.5,0.5,1,1,1,0.5,2,1,1,0.5,2,1,1,1,62,5120,70,365,120,Poison Pin
Pokémon,67,1059860,0.8,70,Nidorinaãf \in \tilde{a}f \% \tilde{a}f \% \tilde{a}f \% \tilde{a}f \% \tilde{b},Nidorina,0,30,55,55,5
6,poison,,20.0,1,0
"['Poison Point', 'Rivalry', 'Sheer
Force']",0.5,1,1,0,0.5,0.5,1,1,1,1,2,2,1,0.25,2,0.5,1,2,92,5120,70,505,45,Drill
Pokémon,87,1059860,1.3,90,Nidoqueenãf \in \tilde{a}f \% \tilde{a}, \tilde{a}, \tilde{a}, \tilde{a}, \tilde{a}, \tilde{a}, Nidoqueen,0,31,75,
85,76,poison,ground,60.0,1,0
"['Poison Point', 'Rivalry',
'Hustle']",0.5,1,1,1,0.5,0.5,1,1,1,0.5,2,1,1,0.5,2,1,1,1,57,5120,70,273,235,Poison Pin
Pokémon,40,1059860,0.5,46,Nidoran?\tilde{a}f \wedge \tilde{a}f \% \tilde{a}f \otimes \tilde{a}f \wedge \tilde{a}f \otimes \tilde{a}f \wedge \tilde{a}f \wedge \tilde{a}f \otimes \tilde{a}f \otimes \tilde{a}f \wedge \tilde
40,40,50,poison,,9.0,1,0
"['Poison Point', 'Rivalry',
'Hustle']",0.5,1,1,1,0.5,0.5,1,1,1,0.5,2,1,1,0.5,2,1,1,1,72,5120,70,365,120,Poison Pin
Pokémon,57,1059860,0.9,61,Nidorinoãf < \tilde{a}f \% \tilde{a}f ^{a} \tilde{a}f ^{b} \tilde{a}f ^{b},Nidorino,100,33,55,5
5,65,poison,,19.5,1,0
"['Poison Point', 'Rivalry', 'Sheer
Force']",0.5,1,1,0,0.5,0.5,1,1,1,1,2,2,1,0.25,2,0.5,1,2,102,5120,70,505,45,Drill
```

```
Pokémon,77,1059860,1.4,81,Nidokingãf \langle \tilde{a}f \% \tilde{a}, -\tilde{a}f ^3 \tilde{a}, ^\circ,Nidoking,100,34,85,75,
85, poison, ground, 62.0, 1, 0
"['Cute Charm', 'Magic Guard', 'Friend
Guard']",0.5,0.5,0,1,1,0.5,1,1,1,1,1,1,1,1,2,1,1,2,1,45,2560,140,323,150,Fairy
Pokémon,48,800000,0.6,70,Pippiãf " ãf f ãf " ,Clefairy,24.6,35,60,65,35,fairy,,7.5,
1.0
"['Cute Charm', 'Magic Guard',
'Unaware']",0.5,0.5,0,1,1,0.5,1,1,1,1,1,1,1,1,2,1,70,2560,140,483,25,Fairy
Pokémon,73,800000,1.3,95,Pixyãf " ã, \bar{a}, \bar{a}
0.0,1,0
"['Flash Fire', 'Drought', 'Snow Cloak', 'Snow
Warning']",0.5,1,1,1,0.5,1,0.5,1,1,0.5,2,0.5,1,1,1,2,0.5,2,41,5120,70,299,190,Fox
Pokémon,40,1000000,,38,Rokonãf-ã, {}^{3}ãf3,Vulpix,24.6,37,50,65,65,fire,ice,,1,0
"['Flash Fire', 'Drought', 'Snow Cloak', 'Snow
Warning']",0.5,1,1,1,0.5,1,0.5,1,1,0.5,2,0.5,1,1,1,2,0.5,2,67,5120,70,505,75,Fox
Pokémon,75,1000000,,73,Kyukonã, -\tilde{a}f + \tilde{a}, \tilde{a}, \tilde{a}f + \tilde{a}, Ninetales,24.6,38,81,100,109,
fire,ice.,1,0
"['Cute Charm', 'Competitive', 'Friend
Guard']",0.5,0.5,0,1,1,1,1,1,1,0,1,1,1,1,2,1,1,2,1,45,2560,70,270,170,Balloon
Pokémon,20,800000,0.5,115,Purinãf - \tilde{a} f^{a} \tilde{a} f^{3},Jigglypuff,24.6,39,45,25,20,normal,f
airy,5.5,1,0
"['Cute Charm', 'Competitive',
'Frisk']",0.5,0.5,0,1,1,1,1,1,0,1,1,1,1,2,1,1,2,1,70,2560,70,435,50,Balloon
Pokémon,45,800000,1.0,140,Pukurinãf - \tilde{a} f^{a} \tilde{a} f^{3},Wigglytuff,24.6,40,85,50,45,
normal, fairy, 12.0, 1,0
"['Inner Focus',
'Infiltrator']",0.25,1,1,2,0.5,0.25,1,1,1,0.25,0,2,1,0.5,2,2,1,1,45,3840,70,245,255,Bat
Pokémon,35,1000000,0.8,40,Zubatã, {}^{\circ}ãf • ãf f ãf ^ ,Zubat,50,41,30,40,55,poison,
flying,7.5,1,0
"['Inner Focus',
'Infiltrator']",0.25,1,1,2,0.5,0.25,1,1,1,0.25,0,2,1,0.5,2,2,1,1,80,3840,70,455,90,Bat
Pokémon,70,1000000,1.6,75,Golbatã, \tilde{a}f \ll \tilde{a}f = \tilde{a}f + \tilde{a}f, Golbat,50,42,65,75,90,p
oison, flying, 55.0, 1,0
"['Chlorophyll', 'Run
Away']",1,1,1,0.5,0.5,0.5,2,2,1,0.25,1,2,1,1,2,1,1,0.5,50,5120,70,320,255,Weed
Pokémon,55,1059860,0.5,45,NazonokusaãfŠã, \sqrt[3]{a}fŽã, -ã, \mu,Oddish,50,43,75,
65,30,grass,poison,5.4,1,0
"['Chlorophyll',
'Stench']",1,1,1,0.5,0.5,0.5,2,2,1,0.25,1,2,1,1,2,1,1,0.5,65,5120,70,395,120,Weed
Pokémon,70,1059860,0.8,60,Kusaihanaã, \bar{a}, \mu \tilde{a}, \mu \tilde{a}, \bar{a} \tilde{b},Gloom,50,44,85,75,
40,grass,poison,8.6,1,0
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"['Chlorophyll', 'Effect