Analyzing Pokemon Games

28th September 2023

Ask

Introduction

This is my Capstone Project for the Google Data Analytics Certificate. For this I have chosen to do my own route.

I am a junior data analyst at the Pokemon Company and I have been brought in to assist the creative team in finding inspiration for the next games by looking over the various creatures from previous games.

The Pokemon Company is an international franchise that sells RPG (Role-Playing Games) video games and other products based on creatures from their games. In their video games, players catch, train, and battle creatures called 'Pokemon'. A key feature of battling in the games is type match ups. Pokemon come in 18 different types, a pokemon can be either a single type or a dual type (two types). Depending on a Pokemon's type they may be weak or strong against the other opponent's Pokemon.

Key Stakeholders

- Tsunekazu Ishihara, CEO of the Pokemon Company

- Ken Sugimori, Character designer and art director of the entire franchise

- The creatives teams from Pokemon, Game Freak, and Creatures creative teams

Business Task

Look over Pokemon type and type combinations from previous games to find out how many Pokemon there are of each type.

Prepare

Data Sources:

Went to Kaggle and downloaded the Complete Pokemon Dataset (Gen I-IX). The dataset contains all 1010 Pokemon.

From Kaggle I also downloaded a video game sales dataset to compare the numbers of copies sold of the various Pokemon games throughout the years.

I also gathered information about money sales for the Pokemon games from a Pokemon website and entered the sales numbers into the sales dataset.

I uploaded the Pokemon dataset and video game sales dataset to google sheets. I prefer sheets over Excel because I find it much more user friendly. I first checked for duplicates and deleted them. To confirm the dataset's reliability I compared the dataset to the official Pokedex online that contained information on every single Pokemon available. I manually entered all missing entries into the dataset, mostly some recent variants from newer games. There were also some misspelled entries that I corrected. I noticed there were two columns for type. While most Pokemon are two types this makes searching and filtering through the dataset harder for finding Pokemon based on type. I used the CONCATENATE function and merged the two columns into one and converted the type values to text. The Pokemon dataset was set, I had the rows organized by generation for easy comparison to see how the types had evolved over the years.

For the video game sales dataset, I filtered for Pokemon titled games only then copied and pasted those entries into another sheet. I created a column for revenue and entered the data from the Pokemon sales website.

I stored all the files for the project onto my laptop in a folder labeled "Capstone Project". In the folder I had another folder for the Pokemon dataset and another folder for the video game sales dataset. I also created separate folders for images and charts that I would create in Tableau.

Process

- Began by selecting the header row, clicked view, clicked freeze, clicked freeze row 1. This way as I'm scrolling I'll be able to see the header row.

- After experimenting with a few functions, I decided to use the COUNTIFS function because it allows me to search under more than one argument. In this case I needed to search Pokemon that were not only the same type but also belonged to the same generation.
- Using the COUNTIFS function calculated how many Pokemon of each type and dual type in each generation.

N2 =COUNTIFS(C2:C199,"*Normal*",L2:L199,"1")

#	Name	Type(s)	Variant	Total	HP	Attack	Defense	Sp.Atk	Sp.Def	Speed	Generation		N
1	Bulbasaur	Grass Poison		318	45	49	49	65	65	45	1	Normal	25
2	Ivysaur	Grass Poison		405	60	62	63	80	80	60	1	Fire	16
3	Venusaur	Grass Poison		525	80	82	83	100	100	80	1	Water	35
3	Venusaur	Grass Poison		625	80	100	123	122	120	80	1	Grass	17
4	Charmander	Fire		309	39	52	43	60	50	65	1	Bug	14
5	Charmeleon	Fire		405	58	64	58	80	65	80	1	Electric	12
6	Charizard	Fire Dragon	Mega X	634	78	130	111	130	85	100	1	Ice	4
6	Charizard	Fire Flying	Mega Y	634	78	104	78	159	115	100	1	Fighting	9
6	Charizard	Fire Flying		534	78	84	78	109	85	100	1	Ghost	4
7	Squirtle	Water		314	44	48	65	50	64	43	1	Poison	36
8	Wartortle	Water		405	59	63	80	65	80	58	1	Steel	2
9	Blastoise	Water	Mega	630	79	103	120	135	115	78	1	Dark	1
9	Blastoise	Water		530	79	83	100	85	105	78	1	Fairy	5
10	Caterpie	Bug		195	45	30	35	20	20	45	1	Dragon	4
11	Metapod	Bug		205	50	20	55	25	25	30	1	Psychic	18
12	Butterfree	Bug Flying		395	60	45	50	90	80	70	1	Flying	23
13	Weedle	Bug Poison		195	40	35	30	20	20	50	1	Rock	14
14	Kakuna	Bug Poison		205	45	25	50	25	25	35	1	Ground	14
15	Beedrill	Bug Poison	Mega	495	65	150	40	15	80	145	1		
15	Beedrill	Bug Poison		395	65	90	40	45	80	75	1		
16	Pidgey	Normal Flying		251	40	45	40	35	35	56	1		
17	Pidgeotto	Normal Flying		349	63	60	55	50	50	71	1		
18	Pidgeot	Normal Flying	Mega	579	83	80	80	135	80	121	1		
18	Pidgeot	Normal Flying		479	83	80	75	70	70	101	1		

Tabs: **Pokedex_Cleaned** | Pokemon_Types

- Set up a second sheet for calculating pokemon types for each generation labeled "Pokemon_Types".
- Filtered through spreadsheets by single type, dual type, and generation.
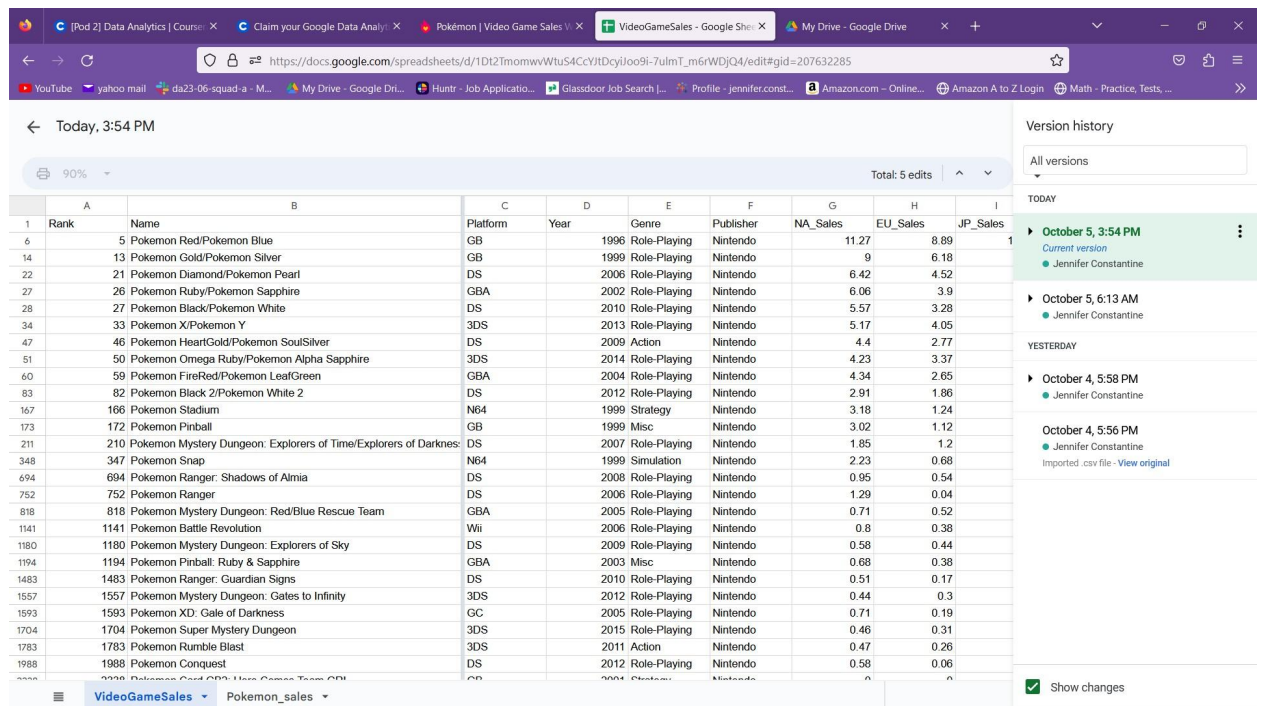
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Generation 1	Normal	23	Normal combos	10	Generation 2	Normal	15	Normal combos		Generation 3	Normal	18	Normal combos	
	Fire	12	Fire combos	2		Fire	10	Fire combos			Fire	8	Fire combos	
	Water	32	Water combo	6		Water	18	Water combo			Water	30	Water combo	
	Grass	15	Grass combo	14		Grass	10	Grass combo			Grass	17	Grass combo	
	Bug	12	Bug combo	9		Bug	10	Bug combo			Bug	14	Bug combo	
	Electric	10	Electric combo	3		Electric	8	Electric combo			Electric	4	Electric combo	
	Ice	5	Ice combo	5		Ice	1	Ice combo			Ice	7	Ice combo	
	Fighting	8	Fighting combo	1		Fighting	3	Fighting combo			Fighting	7	Fighting combo	
	Ghost	3	Ghost combo	3		Ghost	1	Ghost combo			Ghost	6	Ghost combo	
	Poison	34	Poison combo	24		Poison	4	Poison combo			Poison	5	Poison combo	
	Steel	2	Steel combo	2		Steel	4	Steel combo			Steel	9	Steel combo	
	Dark	0	Dark combo	0		Dark	6	Dark combo			Dark	10	Dark combo	
	Fairy	5	Fairy combo	3		Fairy	8	Fairy combo			Fairy	5	Fairy combo	
	Dragon	3	Dragon combo	1		Dragon	1	Dragon combo			Dragon	9	Dragon combo	
	Psychic	14	Psychic combo	7		Psychic	10	Psychic combo			Psychic	19	Psychic combo	
	Flying	19	Flying combo	19		Flying	19	Flying combo			Flying	12	Flying combo	
	Rock	11	Rock combo	11		Rock	7	Rock combo			Rock	12	Rock combo	
	Ground	14	Ground combo	8		Ground	10	Ground combo			Ground	14	Ground combo	
	Total Pokemon	154				Total Pokemon	100				Total Pokemon	139		
Generation 5	Normal	18	Normal combos		Generation 6	Normal	12	Normal combos		Generation 7	Normal	14	Normal combos	
	Fire	14	Fire combos			Fire	13	Fire combos			Fire	9	Fire combos	
	Water	20	Water combo			Water	15	Water combo			Water	14	Water combo	
	Grass	20	Grass combo			Grass	17	Grass combo			Grass	14	Grass combo	
	Bug	18	Bug combo			Bug	7	Bug combo			Bug	11	Bug combo	
	Electric	12	Electric combo			Electric	4	Electric combo			Electric	11	Electric combo	

Tabs: Pokedex_Cleaned | **Pokemon_Types**

Began work on the video game sales data by organizing it by revenue to see which games made the most money. Then organized by the number of copies sold.

Analyze

After going over both datasets I found some interesting insights.

The current generation of games, Pokemon Violet and Scarlet, have made the most money. However the first generation games(Pokemon Red, Blue, Green) have sold the most copies. The reason for this is most likely the Violet and Scarlet game sell for $60 for each copy while back in 1996 Pokemon Red and Pokemon Blue (Green existed only in Japan, Blue was made for North America) sold for $40 each. The other reason is probably because of the current state of the country's economy.

Pokemon types have also evolved over the years. For the first few generations there have been a lot of flying, water, and normal type Pokemon. Over the years they introduced new types: Dark and Steel in the generation 2 games(Silver and Gold) and then the Fairy type in generation 6(X and Y). After the third generation of games(Ruby and Sapphire) they added more Dark, Steel, Psychic, Ghost, and Dragon type Pokemon. The four most common types are: Water, Normal, Flying, and Grass. The four least common types are: Ice, Steel, Ghost, and Fairy. To be fair the Fairy type is the newest type which is why there are so few Pokemon of that type.

Also found that there are more dual type Pokemon than single type. For every type, except Normal type, there were more dual type Pokemon. Normal type was the only exception with 79

Pokemon that were only Normal type and 70 Normal dual type. Water was the closest to break even with 81 Water type and 88 dual Water type. Out of all the dual types Flying was the most common dual type with 126 Pokemon. Yet there are only 4 Pokemon that are pure Flying type and one of them is an alternate form of one of them.
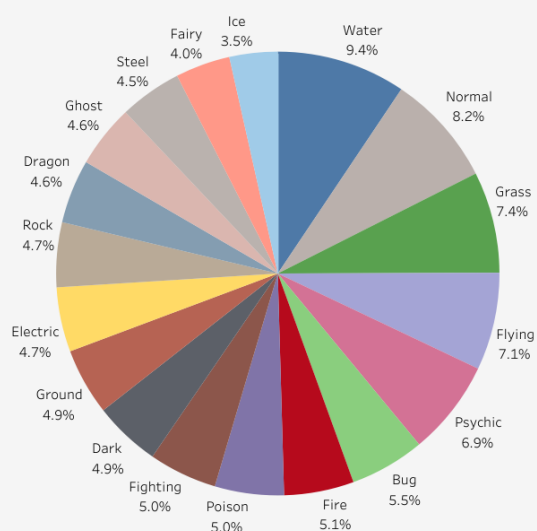
Share

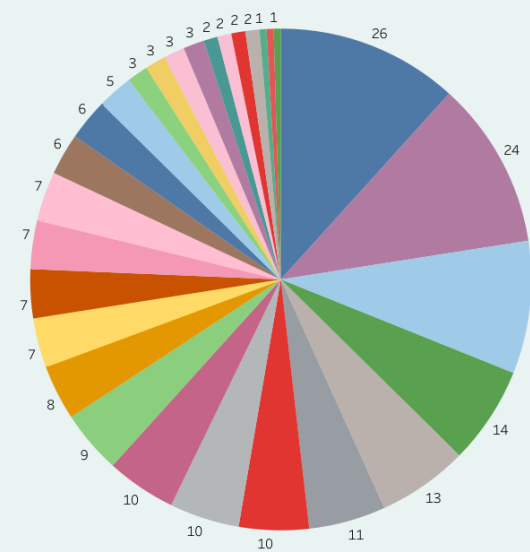**Pokemon Sales by # of Games Sold**
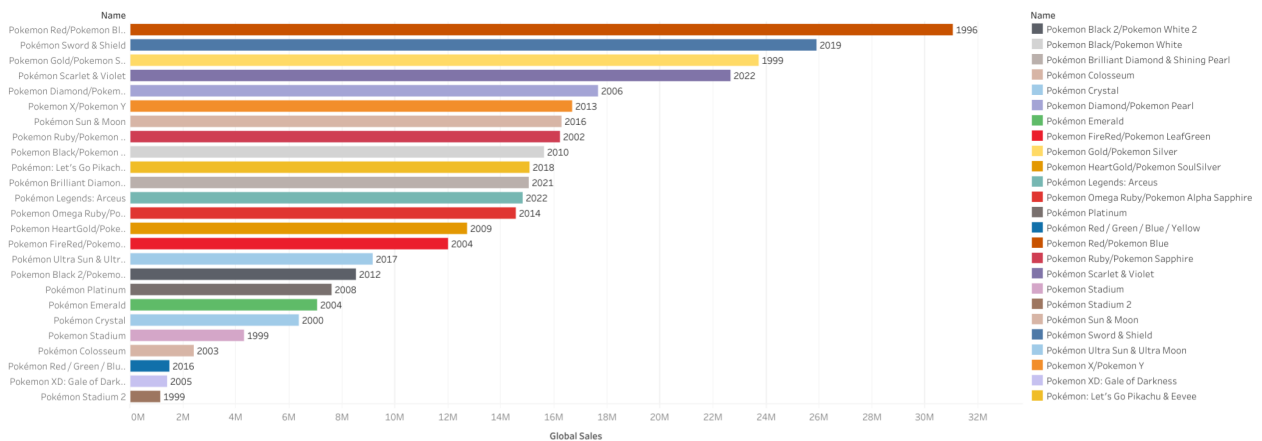
Pokemon Single and Dual Type
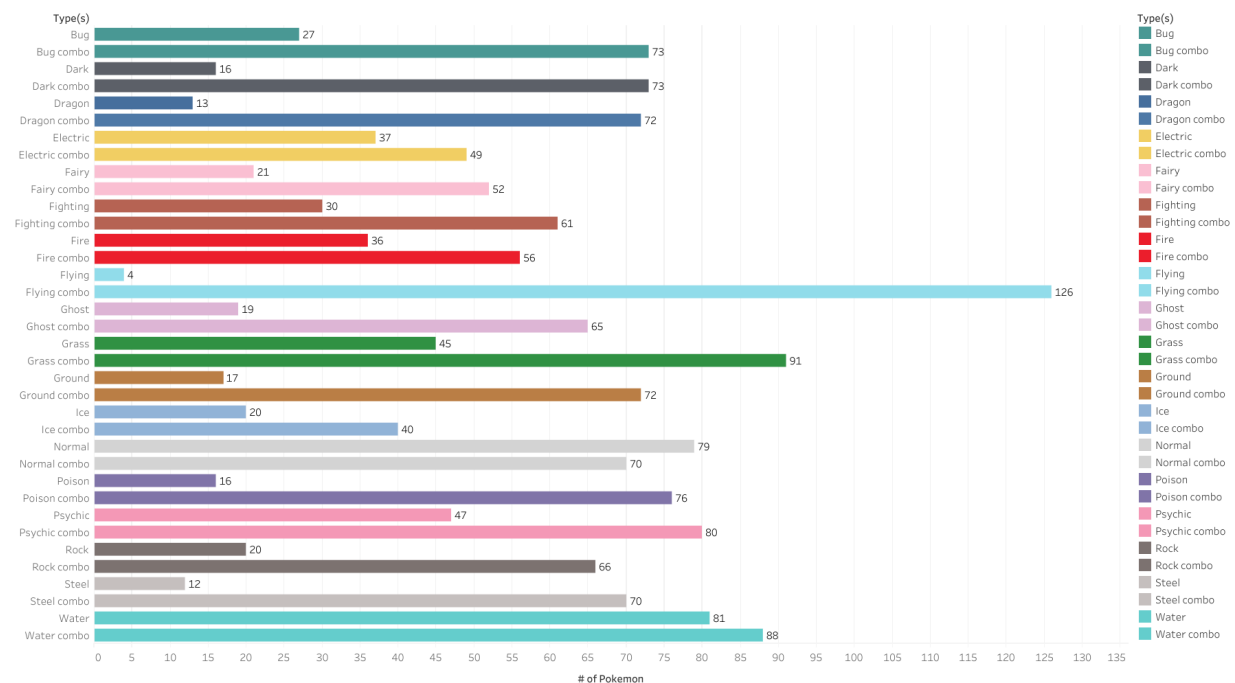
Total Percent of each Type

Type Legend
- Water
- Normal
- Grass
- Flying
- Psychic
- Bug
- Fire
- Poison
- Fighting
- Dark
- Ground
- Electric
- Rock
- Dragon
- Ghost
- Steel
- Fairy
- Ice

Water 9.4%
Normal 8.2%
Grass 7.4%
Flying 7.1%
Psychic 6.9%
Bug 5.5%
Fire 5.1%
Poison 5.0%
Fighting 5.0%
Dark 4.9%
Ground 4.9%
Electric 4.7%
Rock 4.7%
Dragon 4.6%
Ghost 4.6%
Steel 4.5%
Fairy 4.0%
Ice 3.5%

Generation 1 Types

Type Legend
- Water
- Poison Combo
- Flying Combo
- Grass Combo
- Normal
- Rock Combo
- Fire
- Normal Combo
- Poison
- Bug Combo
- Ground Combo
- Electric
- Fighting
- Psychic
- Psychic Combo
- Ground
- Water Combo
- Ice Combo
- Bug
- Electric Combo
- Fairy Combo
- Ghost Combo
- Dragon
- Fairy
- Fire Combo
- Steel Combo
- Dragon Combo
- Fighting Combo
- Grass

26, 24, 19, 14, 13, 11, 10, 10, 10, 9, 8, 7, 7, 7, 6, 6, 5, 3, 3, 3, 3, 2, 2, 2, 1, 1

*Dark, Steel, and Fairy types did not exist at the time the first generation of games came out in 1996. When these types were introduced in later games they added them to older generation of creatures. This chart represents the types this generation currently has not when they were first introduced. Only a handful of creatures got the new types.

Generation 2 Types

Type Legend
- Flying Combo
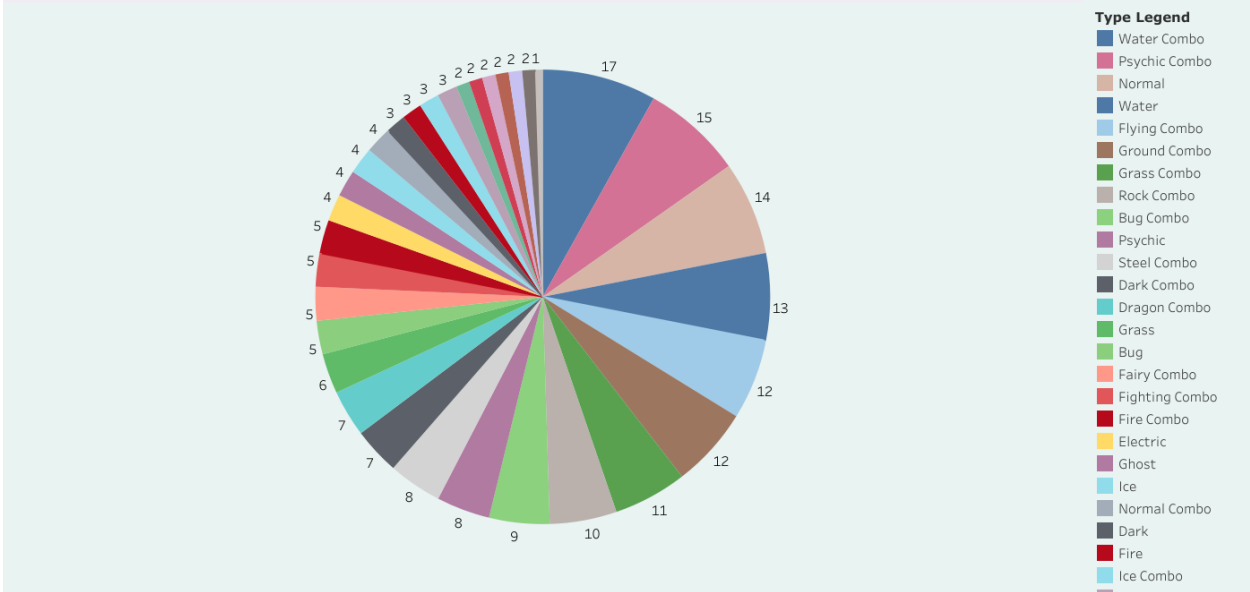- Normal
- Water Combo
- Bug Combo
- Water
- Electric
- Fire
- Grass
- Ground Combo
- Psychic Combo
- Rock Combo
- Dark Combo
- Fairy
- Fairy Combo
- Fire Combo
- Grass Combo
- Ground
- Normal Combo
- Poison Combo
- Psychic
- Steel Combo
- Electric Combo
- Fighting
- Ice Combo
- Bug
- Dark
- Dragon Combo
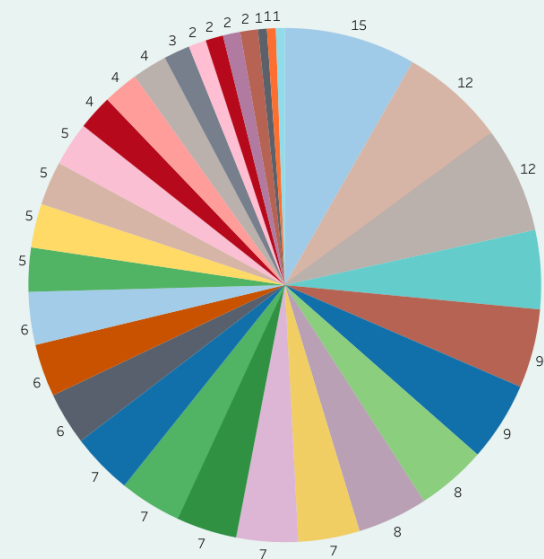- Fighting Combo
- Ghost
- Rock
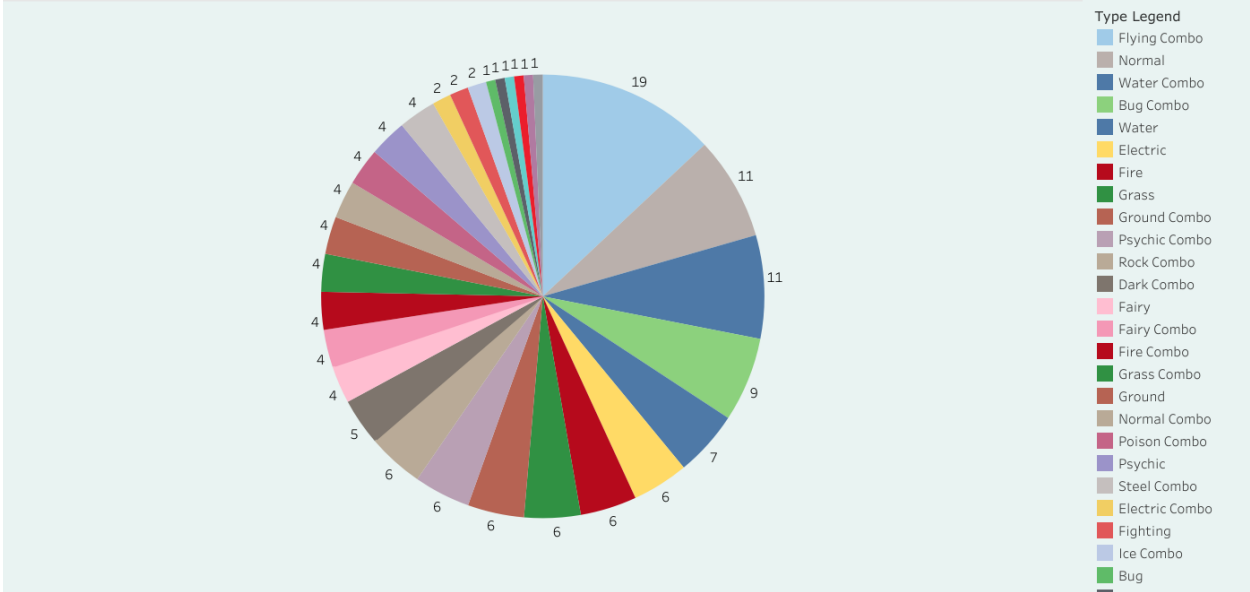
*Dark and Steel types were first introduced in the Generation 2 games. Fairy would not be introduced into the games until Generation 6. This Chart represents the types as they are now not when the games first came out in 1999.

Generation 3 Types

Type Legend
- Water Combo
- Psychic Combo
- Normal
- Water
- Flying Combo
- Ground Combo
- Grass Combo
- Rock Combo
- Bug Combo
- Psychic
- Steel Combo
- Dark Combo
- Dragon Combo
- Grass
- Bug
- Fairy Combo
- Fighting Combo
- Fire Combo
- Electric
- Ghost
- Ice
- Normal Combo
- Dark
- Fire
- Ice Combo
- Poison
- Dragon
- Fighting
- Ghost Combo
- Ground
- Poison Combo
- Rock
- Steel

*Fairy type was not introduced until Generation 6 games. When it was introduced a handful of creatures from previous titles also got the new type change. This chart represents the types the creatures have now not when it was first released in 2002.
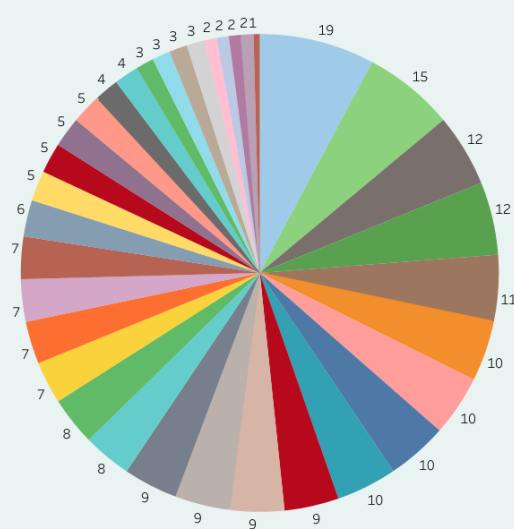
Generation 4 Types

Types Legend
- Flying Combo
- Normal
- Steel Combo
- Dragon Combo
- Ground Combo
- Water
- Bug Combo
- Poison Combo
- Electric Combo
- Ghost Combo
- Grass
- Grass Combo
- Water Combo
- Dark Combo
- Fighting Combo
- Ice Combo
- Bug
- Electric
- Normal Combo
- Psychic
- Fire Combo
- Psychic Combo
- Rock Combo
- Rock
- Fairy Combo
- Fire
- Ghost
- Ground
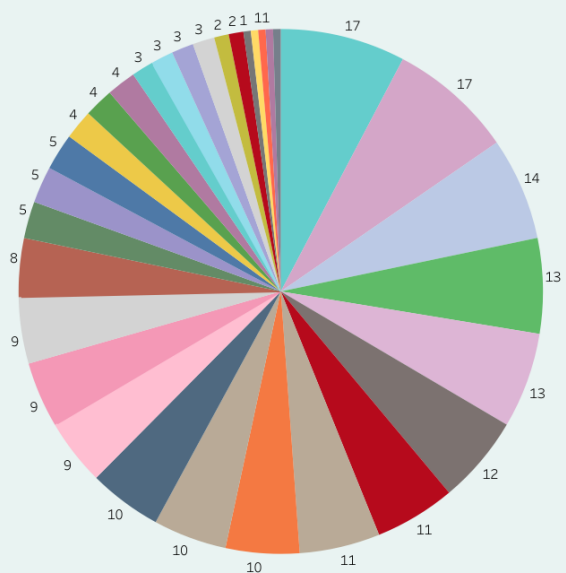- Dark
- Fighting
- Ice

Generation 5 Types

Type Legend
- Flying Combo
- Bug Combo
- Dark Combo
- Grass Combo
- Ground Combo
- Fighting Combo
- Psychic
- Water
- Water Combo
- Fire Combo
- Normal
- Normal Combo
- Steel Combo
- Dragon Combo
- Grass
- Electric Combo
- Fighting
- Ghost Combo
- Rock Combo
- Ice
- Electric
- Fire
- Poison Combo
- Psychic Combo
- Dark
- Dragon
- Bug
- Ice Combo
- Rock
- Steel
- Fairy Combo
- Flying
- Ghost
- Poison
- Ground

Generation 6 Types

17, 17, 14, 13, 13, 12, 11, 11, 10, 10, 10, 10, 9, 9, 9, 8, 5, 5, 5, 4, 4, 4, 3, 3, 3, 3, 2, 2, 1, 11
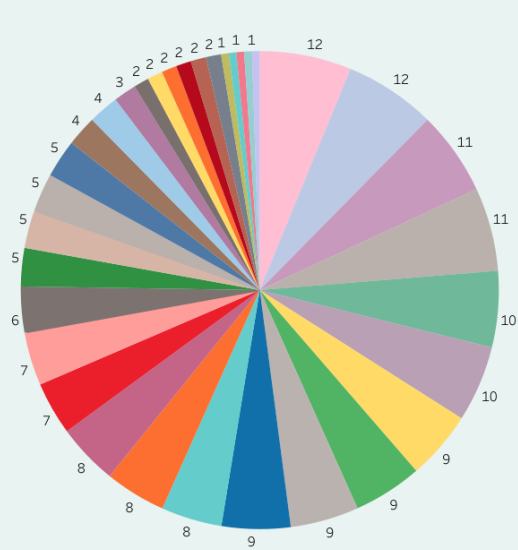
Type Legend
- Dragon Combo
- Ghost Combo
- Flying Combo
- Grass Combo
- Psychic Combo
- Dark Combo
- Fire Combo
- Rock Combo
- Fighting Combo
- Steel Combo
- Water Combo
- Fairy
- Fairy Combo
- Normal Combo
- Ground Combo
- Bug Combo
- Psychic
- Water
- Electric Combo
- Grass
- Poison Combo
- Dragon
- Ice
- Ice Combo
- Normal
- Bug
- Fire
- Dark
- Electric
- Fighting
- Ghost
- Steel

*Generation 6 is when the Fairy type was introduced. Not only did the new creatures have this type but a handful of creatures from previous games also received this new type. This chart is up to date with the games.

Generation 7 Types

12, 12, 11, 11, 10, 10, 9, 9, 9, 9, 8, 8, 8, 7, 7, 6, 5, 5, 5, 5, 4, 4, 3, 2, 2, 2, 2, 2, 2, 1, 1, 1

Types
- Fairy Combo
- Flying Combo
- Ghost Combo
- Steel Combo
- Bug Combo
- Psychic Combo
- Electric Combo
- Grass Combo
- Normal Combo
- Water Combo
- Dragon Combo
- Fighting Combo
- Poison Combo
- Fire Combo
- Rock Combo
- Dark Combo
- Grass
- Normal
- Rock
- Water
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- Ice Combo
- Psychic
- Dark
- Electric
- Fighting
- Fire
- Ground
- Steel
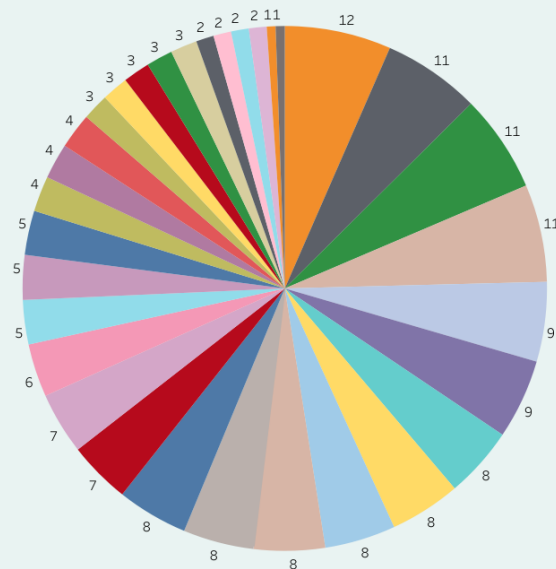- Bug
- Dragon
- Fairy
- Ice
- Poison

Generation 8 Types
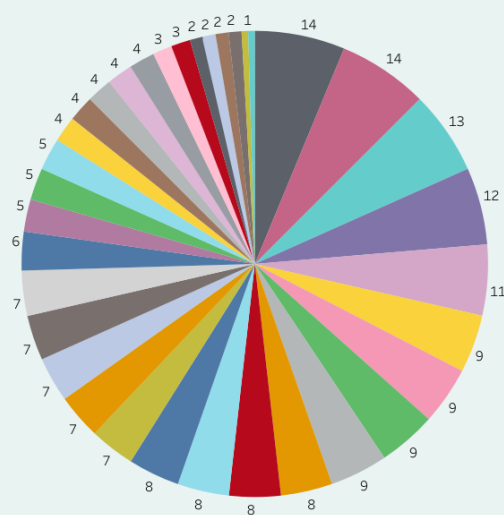
Types Legend
- Dark Combo
- Psychic Combo
- Dragon Combo
- Poison Combo
- Ghost Combo
- Electric Combo
- Fairy Combo
- Grass Combo
- Normal Combo
- Fighting Combo
- Fire Combo
- Ice Combo
- Water Combo
- Bug Combo
- Fighting
- Flying Combo
- Rock Combo
- Steel Combo
- Water
- Ghost
- Grass
- Ice
- Electric
- Ground Combo
- Normal
- Psychic
- Steel
- Fairy
- Fire
- Dark
- Flying
- Ground
- Rock
- Bug
- Dragon

Generation 9 Types

Types Legend
- Fighting Combo
- Dark Combo
- Grass Combo
- Normal Combo
- Flying Combo
- Poison Combo
- Dragon Combo
- Electric Combo
- Ground Combo
- Normal
- Steel Combo
- Water
- Fire Combo
- Ghost Combo
- Fairy Combo
- Ice Combo
- Psychic Combo
- Water Combo
- Bug
- Ghost
- Rock
- Bug Combo
- Electric
- Fire
- Grass
- Rock Combo
- Dark
- Fairy
- Ice
- Psychic
- Fighting
- Steel

Act

Based on the data I collected, for the next generation of Pokemon games it would be a good idea to create more Pokemon that are Fairy, Steel, Dragon, and Ghost type as well as new type combinations of those types.

I also recommend having few or none Flying dual type Pokemon as there is more than enough, make more pure Flying type Pokemon.

When a player starts a new game often the first Pokemon they catch are Normal, Flying, Bug, and Water type. For the next generation of games mix it up by having Fairy, Dragon, Steel, and Ghost type Pokemon show up in the beginning rather than later in the game. This will definitely give a nice surprise especially to older fans of the games.

Another thing I would suggest is more Electric and Fighting type Pokemon to help balance the type match ups.