Methodology

The data used is a compilation of battle logs from the Pokémon Showdown servers. Each battle log is stored as a separate .json file. The data spans across the year 2015, composed of four different months of data. The four months are March, June, September, and December. There are no lapses in data, i.e. each day of each month has numerous battle logs to account for. No dramatic overhaul was done to the Pokémon battling format at this time, though some minor adjustments were made. Furthermore only ranked games are included in the dataset. Ranked battles are battles that count towards a players global ranking in Pokémon Showdown. For each battle, players stand to gain or lose ranking points depending on whether they win or lose the battle.

Specific usage statistics are found in a subsidiary website, found at http://sweepercalc.com/stats/. The usage statistics track the frequency of use for specific Pokémon, items, abilities, and a host of other relevant variables for Pokémon battling.

A number of links redirect users to the host site of this game: Smogon University. The host site can be found at http://www.smogon.com/. This website offers a wide variety of resources, similar to those found at the Pokémon Showdown website. Most importantly the Smogon forums are a prominent site for discussion of Pokémon battling strategies.

Pokémon Battling Basics

The Pokémon battle starts with Pokémon being sent out. For the purposes of the data used, one Pokémon is sent out for each opponent, totalling two Pokémon being out at any given time. Following this, each Pokémon has 4 moves to choose from, along with the option to switch to a different Pokémon (when applicable). After both players make a decision, the moves are weighted for priority and speed to determine the order of play. If both players decide not to switch one Pokémon will attack the other, after which the next Pokémon will do the same if it has not fainted. After each move has been executed the turn ends and the process is repeated. When one of the Pokémon faints, the player whose Pokémon fainted will be prompted to select another Pokémon from the bench. The first player to lose all of their Pokémon loses the battle.

Battle Formats

The data used for this study include two different Pokémon battling formats. The two formats are known as Over Used and Random Battles, abbreviated as OU and Randbats respectively. Both formats have teams of six Pokémon and only allow one Pokémon to be out at any given time. While both battle formats are subsets of what are known as single battles, each has their own unique spin on the Pokémon battling format.

Random Battles are the most frequently played format. Neither player gets to decide on their initial Pokémon nor do they have any input on the composition of the team. The format uses an algorithm to determine team compositions. However it is important to note that there are restrictions to the Randbats format that center around team composition and move composition for specific Pokémon.

The Over Used battle format includes team composition. By including team composition, players are able to decide what Pokémon to include on their team, the moves of each Pokémon, and other factors such as held items and abilities. Further restrictions to the OU format include banning specific Pokémon. The restricted Pokémon are included in the "Uber" tier along with the Pokémon Mega-Rayquaza. Additionally certain "hidden" abilities are locked for Pokémon.

Pokémon Attributes

Generally, there are a number of factors that are specific to each Pokémon. Some of these factors are considered static, meaning that they do not change over the course of the battle. These types of factors are noted as "Fixed" Attributes. However there are some factors that are generally regarded as Fixed Attributes

but are affected by certain moves, at least when the Pokémon is sent out. These types of factors are a distinct subcategory of "Variable Attributes", and will be outlined further. Additionally there are attributes that are inherently influenced throughout the course of the battle. These are noted as "Variable Attributes". The terminology is largely taken from the Ho et al. paper for ease of translation.

Pokémon Types

Currently there are 18 different Pokémon types. However, a Pokémon can be at most two different types. This means that there are actually

The type(s) of each Pokémon influence not only the potential weaknesses of each Pokémon, but also influence the amount of damage certain type-specific moves are able to do. Each Pokémon has at least one and at most two types. If a Pokémon uses a damaging move whose type corresponds to type of the Pokémon that used it, that Pokémon gets a same type attack bonus, abbreviated as a "stab" bonus. This causes the move to do 50% more damage, potentially 100% if the Pokémon also has the ability Adaptability.

Pokémon Fixed Attributes

Fixed attributes include the type(s) of the Pokémon, the four moves the Pokémon has learned, the one item the Pokémon holds, the Pokémon's one selected ability, the level of the Pokémon, and the Pokémon's baseline stats. The latter factor is divided into six categories. These categories include (baseline) Health, Attack, Special Attack, Defense, Special Defense, and Speed. There is further nuance with the inclusion of Pokémon natures and Individual Values, or IVs. These factors influence the base stats of each Pokémon. However due to the sheer number of trivial combinations of IV spreads and nature choices, these two factors will not be a pivotal aspect of framework used.

Pokémon Variable Attributes

Variable Attributes include the current health of the Pokémon, the status of the Pokémon, the volatile status of the Pokémon, boost data of the Pokémon, and whether the Pokémon in question is currently active.