

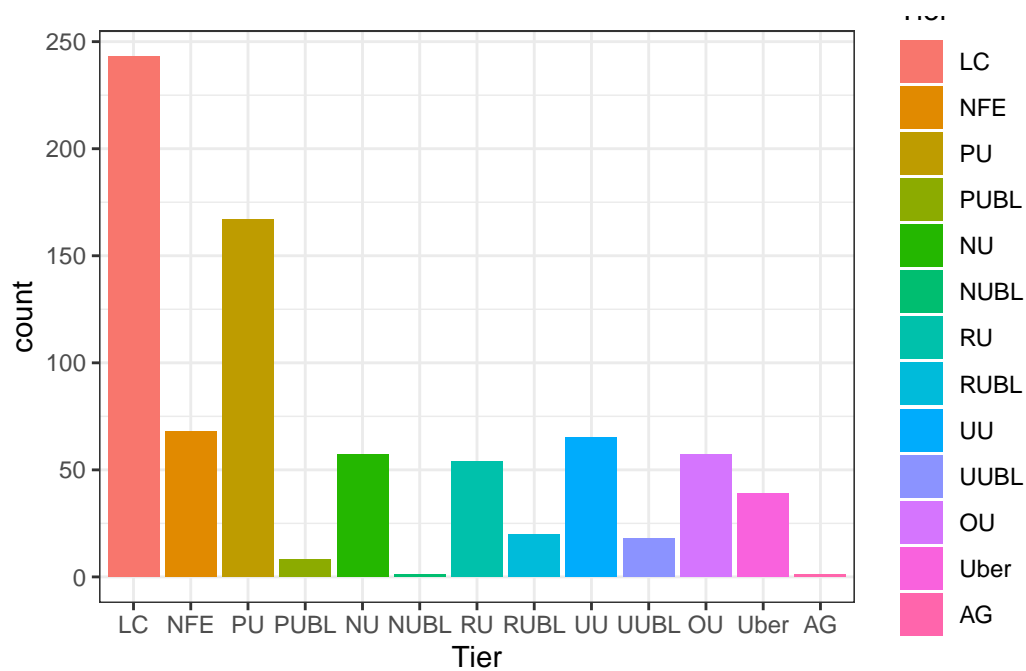
A Statistical Analysis of Gen 6 Pokémon and Their Competitive Viability

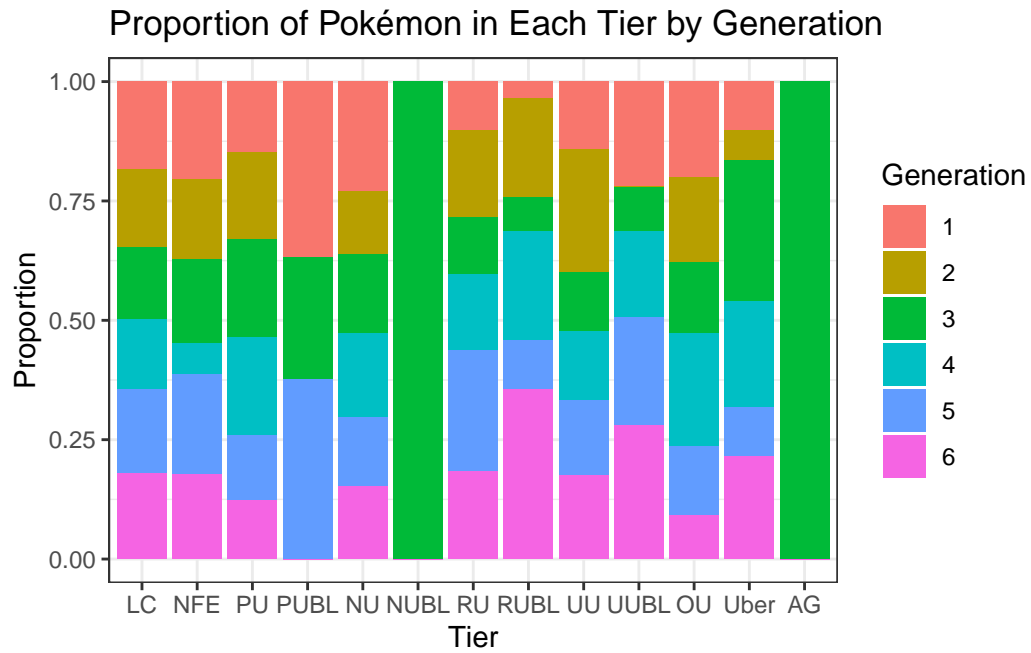
STA210 Final Project

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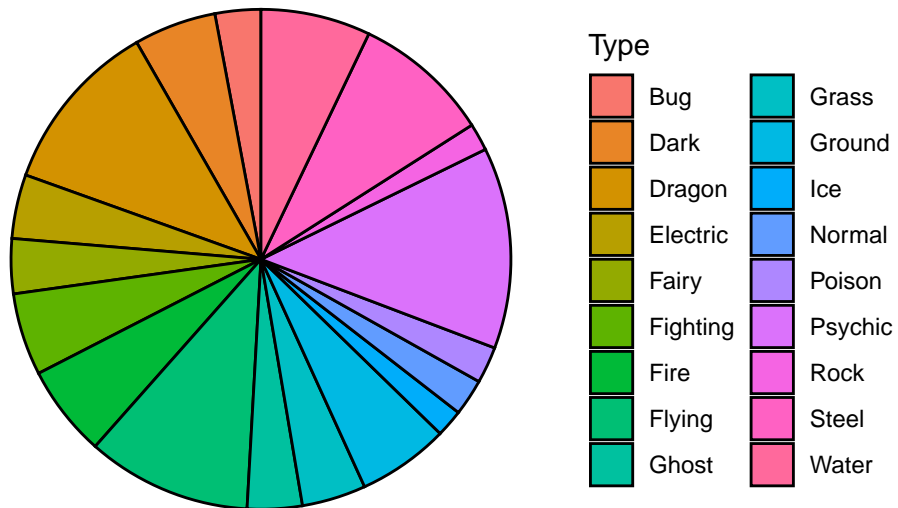
```
smogon$DualType <- ifelse(smogon$Type.2 == "", smogon$Type.1,  
                           paste(smogon$Type.1, "/", smogon$Type.2))
```

Exploratory Data Analysis





Distribution of Pokémon Types in OU and Above



Methodology

```
smogon <- smogon |>
  mutate(Banned = ifelse(Tier %in% c("Uber", "AG"), 1, 0))

model1 <- glm(Banned ~ HP + Attack + Defense + Sp..Atk + Sp..Def + Speed,
              data = smogon, family = "binomial")
summary(model1)
```

Call:

```
glm(formula = Banned ~ HP + Attack + Defense + Sp..Atk + Sp..Def +
     Speed, family = "binomial", data = smogon)
```

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	-17.072655	2.128350	-8.022	1.04e-15	***
HP	0.016980	0.010737	1.581	0.113783	
Attack	0.025850	0.007688	3.362	0.000772	***
Defense	0.022316	0.009663	2.309	0.020924	*
Sp..Atk	0.038567	0.007910	4.876	1.09e-06	***
Sp..Def	0.013398	0.009936	1.348	0.177516	
Speed	0.033701	0.009829	3.429	0.000606	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 317.42 on 797 degrees of freedom
Residual deviance: 147.70 on 791 degrees of freedom
AIC: 161.7

Number of Fisher Scoring iterations: 8

```
library(MASS)
```

Attaching package: 'MASS'

The following object is masked from 'package:dplyr':

```
select
```

```
model2 <- polr(factor(Tier) ~ HP + Attack + Defense + Sp..Atk + Sp..Def  
              + Speed, data = smogon)  
summary(model2)
```

Re-fitting to get Hessian

Call:

```
polr(formula = factor(Tier) ~ HP + Attack + Defense + Sp..Atk +  
      Sp..Def + Speed, data = smogon)
```

Coefficients:

	Value	Std. Error	t value
HP	0.03636	0.003526	10.311
Attack	0.02778	0.003044	9.126
Defense	0.02916	0.003094	9.426
Sp..Atk	0.02772	0.002941	9.425
Sp..Def	0.02436	0.003596	6.773
Speed	0.04134	0.003264	12.666

Intercepts:

	Value	Std. Error	t value
LC NFE	11.0675	0.4879	22.6861
NFE PU	12.3243	0.5340	23.0779
PU PUBL	14.7709	0.6188	23.8688
PUBL NU	14.8704	0.6211	23.9425
NU NUBL	15.5980	0.6386	24.4253
NUBL RU	15.6112	0.6389	24.4336
RU RUBL	16.3665	0.6587	24.8465
RUBL UU	16.6717	0.6669	25.0001
UU UUBL	17.8305	0.7012	25.4300
UUBL OU	18.2237	0.7124	25.5816
OU Uber	20.1297	0.7814	25.7625
Uber AG	25.6978	1.3925	18.4543

Residual Deviance: 2129.518

AIC: 2165.518

```
exp(coef(model2))
```

HP	Attack	Defense	Sp..Atk	Sp..Def	Speed
1.037027	1.028173	1.029590	1.028106	1.024656	1.042202