A Statistical and Visual Analysis of Municipally-Maintained Trees in the City of Burlington, VT

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1 Introduction

2 Visualization & Analysis

2.1 Data Cleaning

```
# read in csv file
trees <- read.csv("./Burlington_Trees.csv")

# separate Geo.Point column to latitude and longitude
# and convert to numeric variables
trees <- trees %>%
         separate(Geo.Point, c("lat", "long"), ",") %>%
         mutate(lat = as.numeric(lat),
                long = as.numeric(long))

# convert zeros in numeric columns to NA so they will not be included in graphs
# in this case, zero values are due to lack of information, not lack of value,
# so all were converted to NA values to be filtered out later
# repeat for blank values
trees[trees == 0] <- NA
trees[trees == ""] <- NA

# convert dates to better format
trees <- trees %>%
  mutate(modified = as.yearmon(modified, "%m/%Y"))

head(trees)
```

```
##        lat      long zone_id site_id modified park    landuse          site_typ
## 1 44.44855 -73.22863  ward 5    2933     <NA> <NA>  residence              Tree
## 2 44.44970 -73.22843  ward 5    2936     <NA> <NA>  residence              Tree
## 3 44.44975 -73.22844  ward 5    2937     <NA> <NA>  residence              Tree
## 4 44.45999 -73.22088  ward 5      29     <NA> <NA> apartments Planting Stumpite
## 5 44.45991 -73.22088  ward 5      30     <NA> <NA> apartments Planting Stumpite
## 6 44.45978 -73.22089  ward 5      31     <NA> <NA> apartments              Tree
##             species diameter height spread trunks conditn appraise planted
## 1        arborvitae        2      5      5      1      80      240      NA
## 2 linden,littleleaf       16     50     30      1      70     5300      NA
## 3 linden,littleleaf       13     45     25      1      80     4070      NA
```

```
## 4           unknown       NA     NA     NA     NA      NA       NA      NA
## 5           unknown       NA     NA     NA     NA      NA       NA      NA
## 6         mapl,red        41     45     35      1      70    27800      NA
```

```
# number of trees by species
# histogram
```

```
# landuse v species
# multiple bar chart
# see if certain types of trees are more common by business, residential, etc.
```

```
# will
# map of burlington with points as trees and colored by land use type
# map of burlington with points as trees and colored by species
# facet wrap them next to each other!
```

```
# diameter v appraisal
# scatterplot probably
```

3 Machine Learning