# amazon Reviews

Curtis, Joe, Nate, and Ryan

# Overview

- Project Objective
  - Outline
- Methods and Tools
  - AWS
  - R
  - Python
- Build Model
- Descriptive Analysis

# Project Goal

- Summary :

This project will entail web scraping, text mining, and predictive models with the objective of predicting "Review" (y/n) and/or the rating (number of stars). This approach seeks to help sellers target the reviewers most likely to review their product with a high rating, which will also be seen as helpful to other shoppers.

- Key Idea: Want to find text that leads to a good review.

# Team Timeline Outline

**Get Data**
- October 23rd

**Clean and Design**
- October 30th

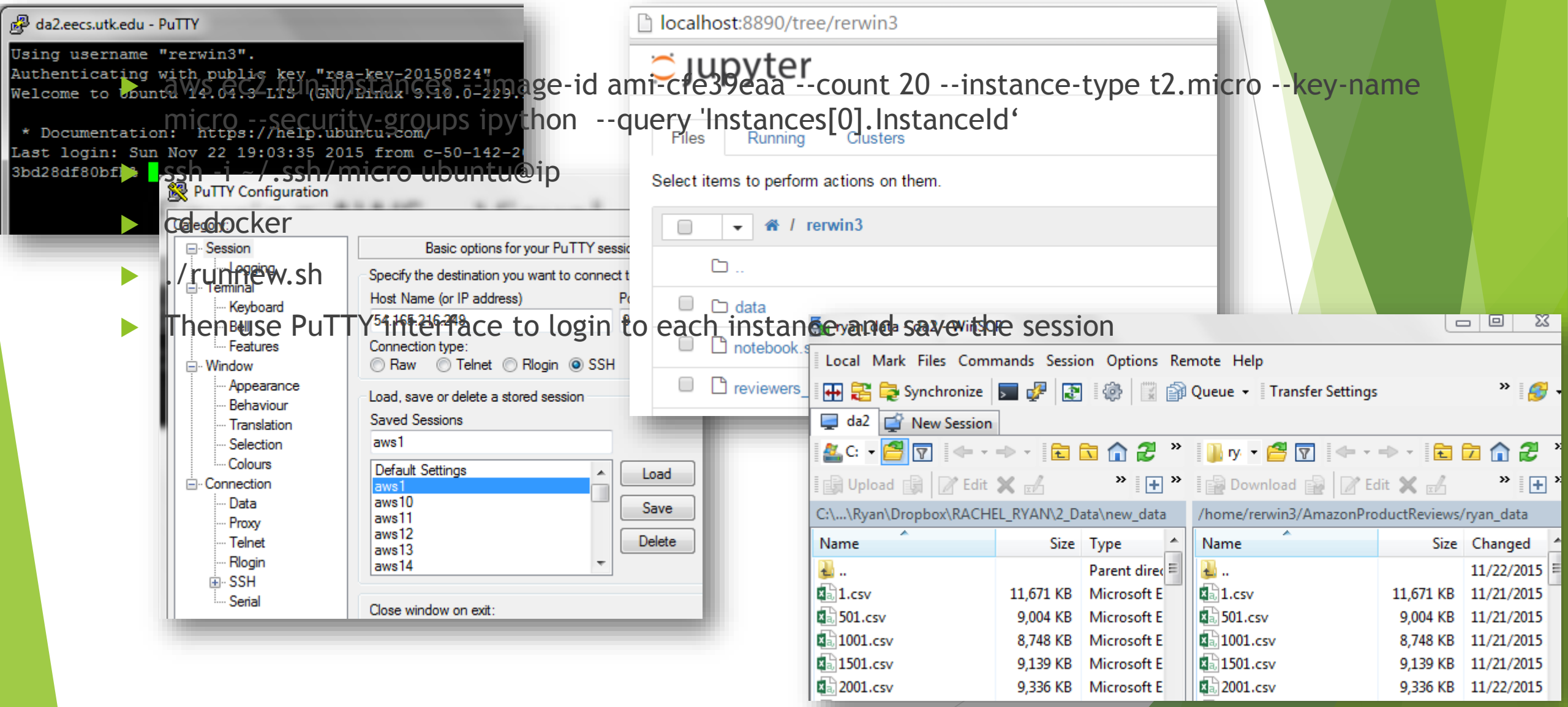
**Build Model**
- November 13th

**Analyze Results and Present**
- November 25th

| Team Member | Responsibilities |
| --- | --- |
| Ryan | • Project Manager tasks<br>• Utilize R to pull in Data<br>• AWS<br>• Support Role |
| Curtis & Nate | • Utilize Python to pull data<br>• Tasks that require python<br>• Support Role |
| Joe | • Model Developer<br>• Interpret Results<br>• Support Role |

# Configuring AWS

- aws ec2 run-instances --image-id ami-cfe39eaa --count 20 --instance-type t2.micro --key-name micro --security-groups ipython  --query 'Instances[0].InstanceId‘
- ssh -i ~/.ssh/micro ubuntu@ip
- cd docker
- ./runnew.sh
- Then use PuTTY interface to login to each instance and save the session



rerwin21/amazon_re | AmazonProductRevi | ItemLookup - Produ | Amazon Web Service | Operations — pytho | Web Scraping: worki

ec2-54-152-30-129.compute-1.amazonaws.com:8787

File Edit Code View Plots Session Build Debug Tools Help

Go to file/function

data_last_step.R | call_last_step.R | Untitled1 *

Source on Save | Run | Source

```r

# load the list of top reviewers ------------------------------------------
reviewers <- read.csv("reviewers_list.csv", stringsAsFactors = F)


# what page to scrape to for reviews
reviewers <- reviewers %>%
  mutate(
    page_num = ceiling(Reviews/10),
    page_num = ifelse(page_num <= 10, page_num, 10)
  )


# grab the url for each person I'm assigned
reviewers <- reviewers %>%
  filter(page_num > 0)


# create the review links
review_links <- .create_links(reviewers$url_name,
                              reviewers$page_num)


# call and store the results ----------------------------------------------
setwd("~/data")

```

1:1 | where are my functions | R Script

Console ~/data/

```
times[j] <- end_loop
```

Environment | History

Import Dataset

Global Environment

| Data | |
|---|---|
| review_links | 487280 obs. |
| reviewers | 9986 obs. |
| **Values** | |
| end_loop | |
| file_name | "2001.csv" |

Files | Plots | Packages | Help | Viewer

New Folder | Upload | Delete

Home

Name

- .Rprofile
- call_last_step.R
- data
- data_last_step.R
- notebook.sh
- products.csv
- R
- reviewers_list.csv
- start.sh

# Python Extraction

- What to Extract
  - Reviewer ID
  - Item Price
  - URL
  - Item Description
  - Rating
  - Summary of Review
  - Item Category

# Troubleshooting

- Separate Fields
- Comments
- VPN
- Run time

## ≈ 300,000 Reviews

- Code
  1. Class
  2. Driver
  3. Function

# Snip it- Driver

```
#Driver
with open('/home/jhughe39/AmazonProductReviews/python_implementation/reviews4.csv', 'w', newline='
') as csvfile:

    # header for csv file
    fn = ['reviewerName', 'reviewerUrl', 'itemNo', 'itemTitle', 'itemUrl', 'itemBrand', 'itemPrice
',
          'itemCategory', 'dateReviewed', 'Rating', 'Summary', 'Description']

    # open csv file for writing
    reviewWriter = csv.DictWriter(csvfile, delimiter=',', fieldnames=fn)
    reviewWriter.writeheader()

    f = open("/home/jhughe39/AmazonProductReviews/python_implementation/ReviewURLs.txt","r")

    for url in f:
        review = get_review(url)
        time.sleep(3)
        if review.itemNo != 'none' and review.reviewerUrl != 'none':
            reviewWriter.writerow(review.__dict__)
```

Scrape Data

Find Most Common Words (Cluster Analysis)

Build Model

- What words lead to a positive review

Random Forest Model
Response: 5 Star Rating

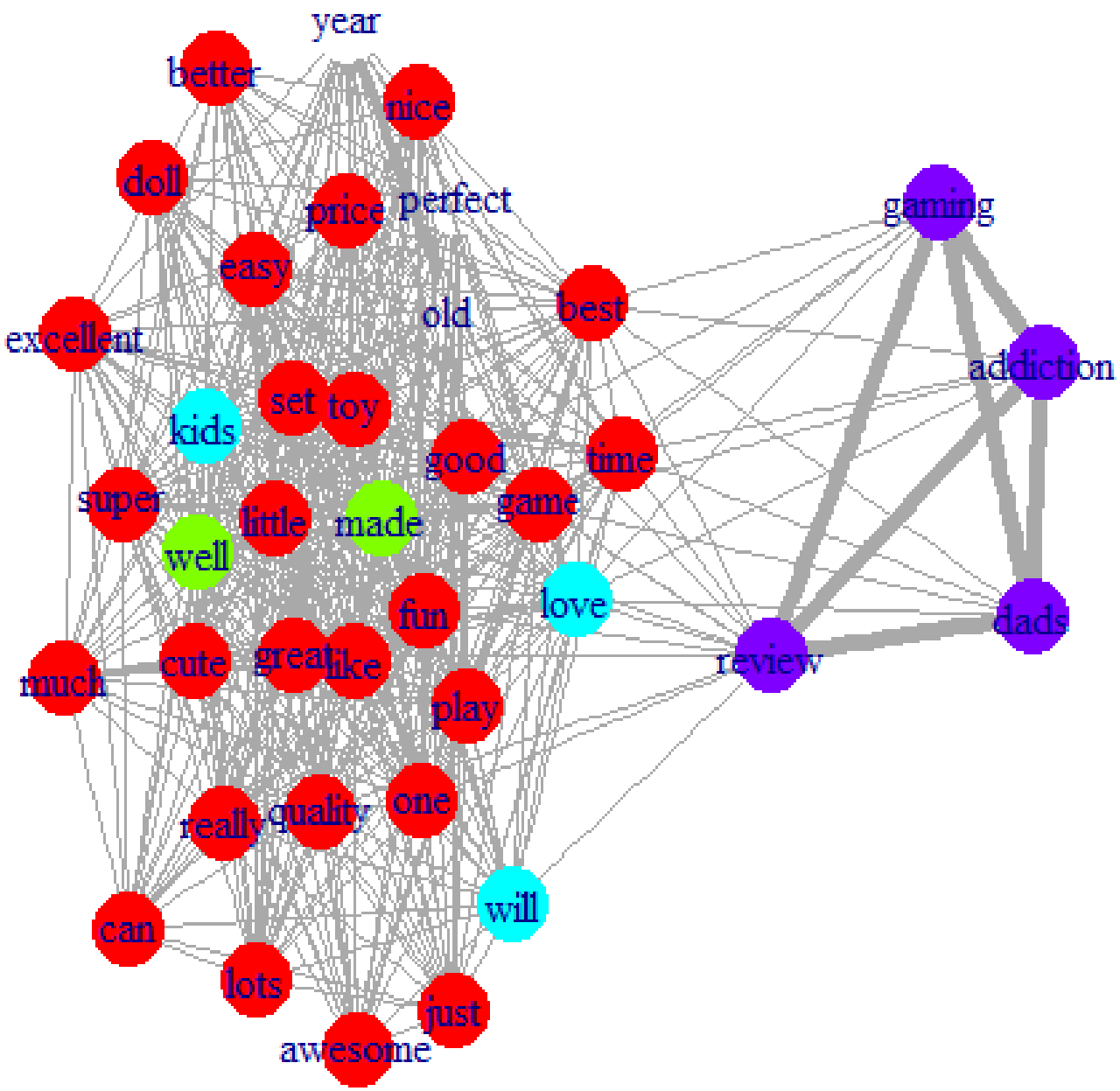
# Top Item Categories

- Books
- Kindle Store
- Toys and Games
- Health and Beauty
- Electronics
- Amazon Video

# Example - Toys and Games

- Text analysis
  - Review Summary
  - Item Description
  - Brand Names
  - Product Names

  - Response – 5 Star Rating


year
better
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game
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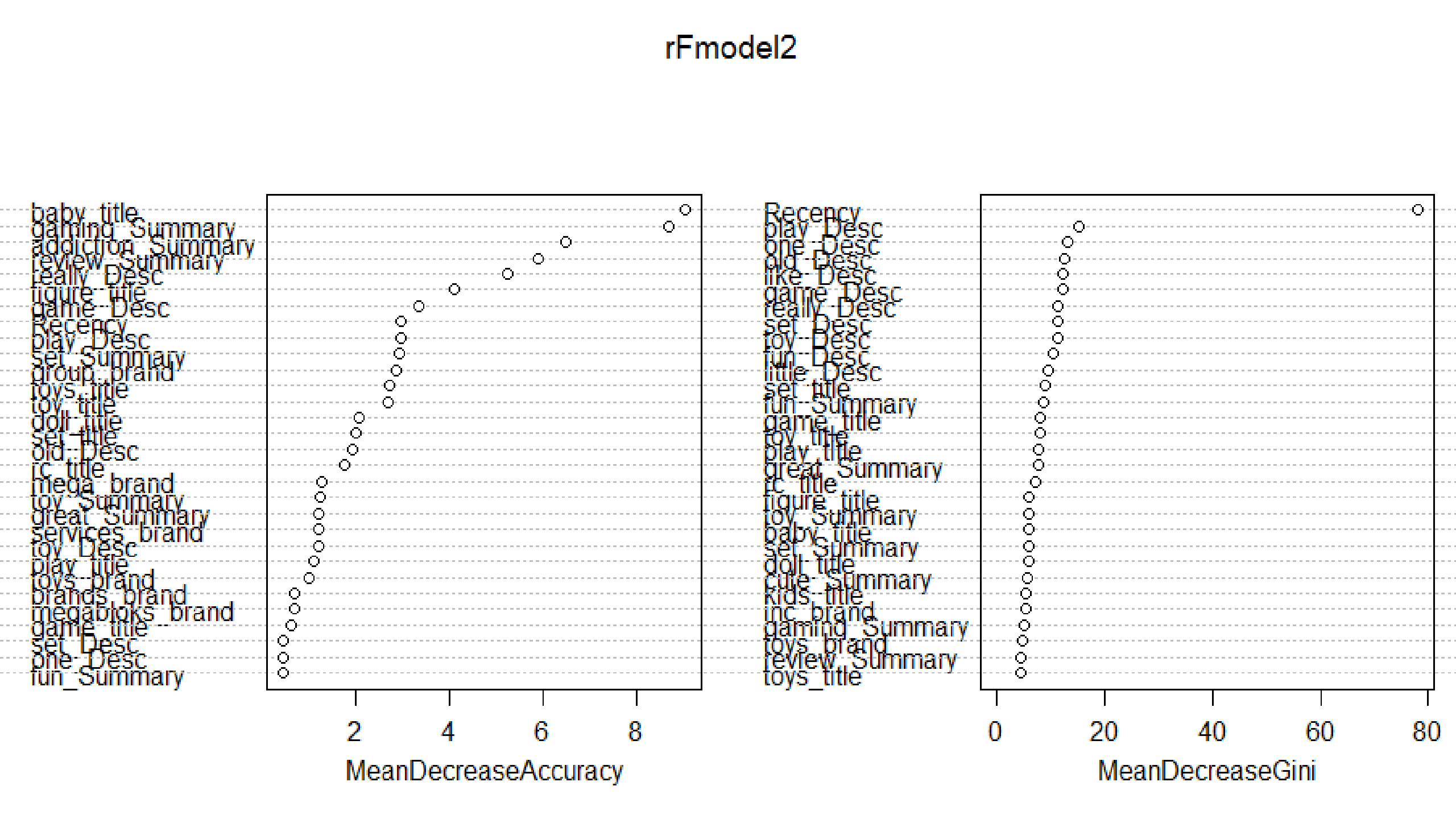
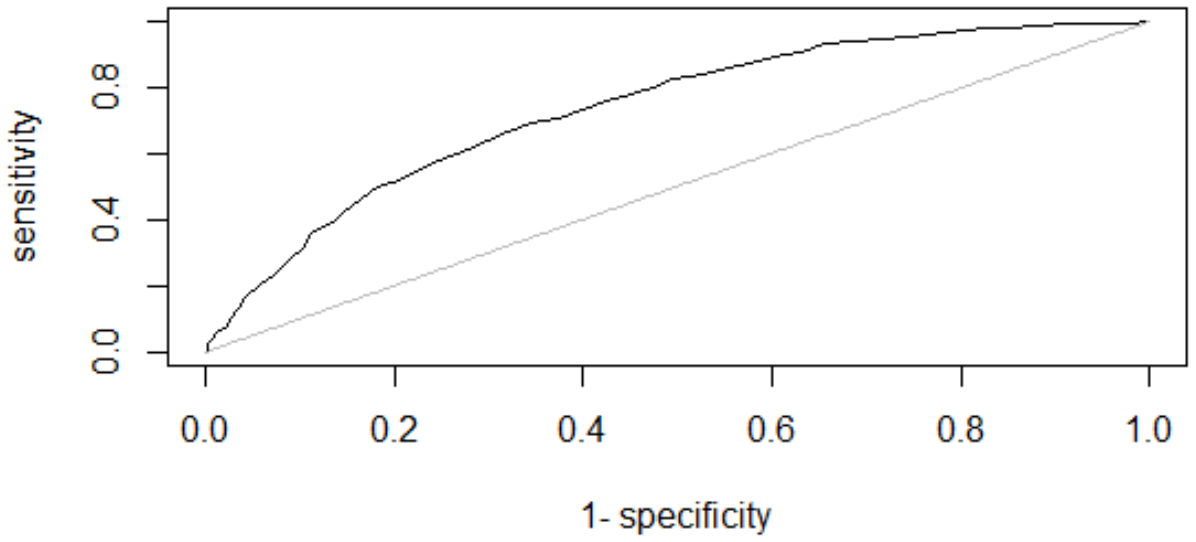
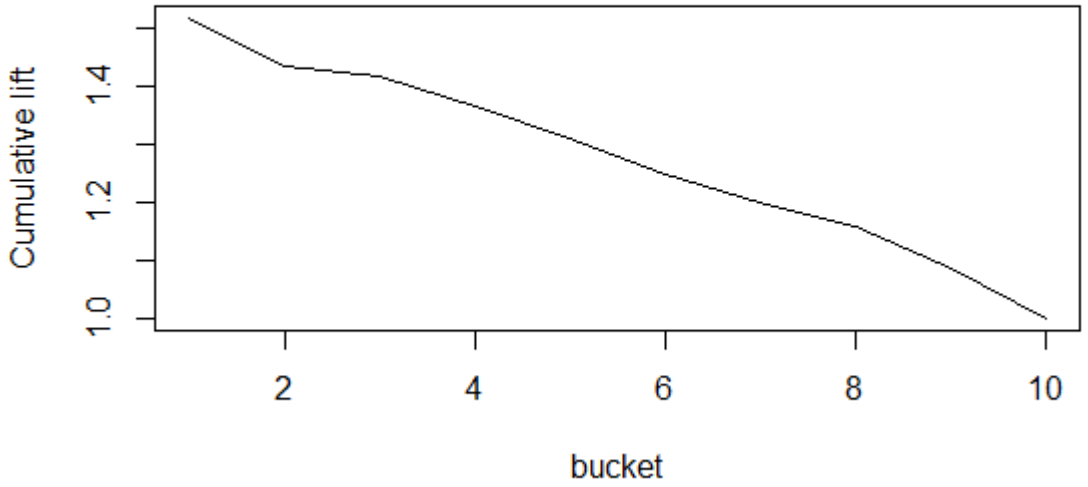

rFmodel2
baby_title
gaming_Summary
addiction_Summary
review_Summary
really_Desc
figure_title
game_Desc
Recency
play_Desc
set_Summary
group_brand
toys_title
toy_title
doll_title
set_title
old_Desc
rc_title
mega_brand
toy_Summary
great_Summary
services_brand
toy_Desc
play_title
toys_brand
brands_brand
megabloks_brand
game_title
set_Desc
one_Desc
fun_Summary
2
4
6
8
MeanDecreaseAccuracy
Recency
play_Desc
one_Desc
old_Desc
like_Desc
game_Desc
really_Desc
set_Desc
toy_Desc
fun_Desc
little_Desc
set_title
fun_Summary
game_title
toy_title
play_title
great_Summary
rc_title
figure_title
toy_Summary
baby_title
set_Summary
doll_title
cute_Summary
kids_title
inc_brand
gaming_Summary
toys_brand
review_Summary
toys_title
0
20
40
60
80
MeanDecreaseGini

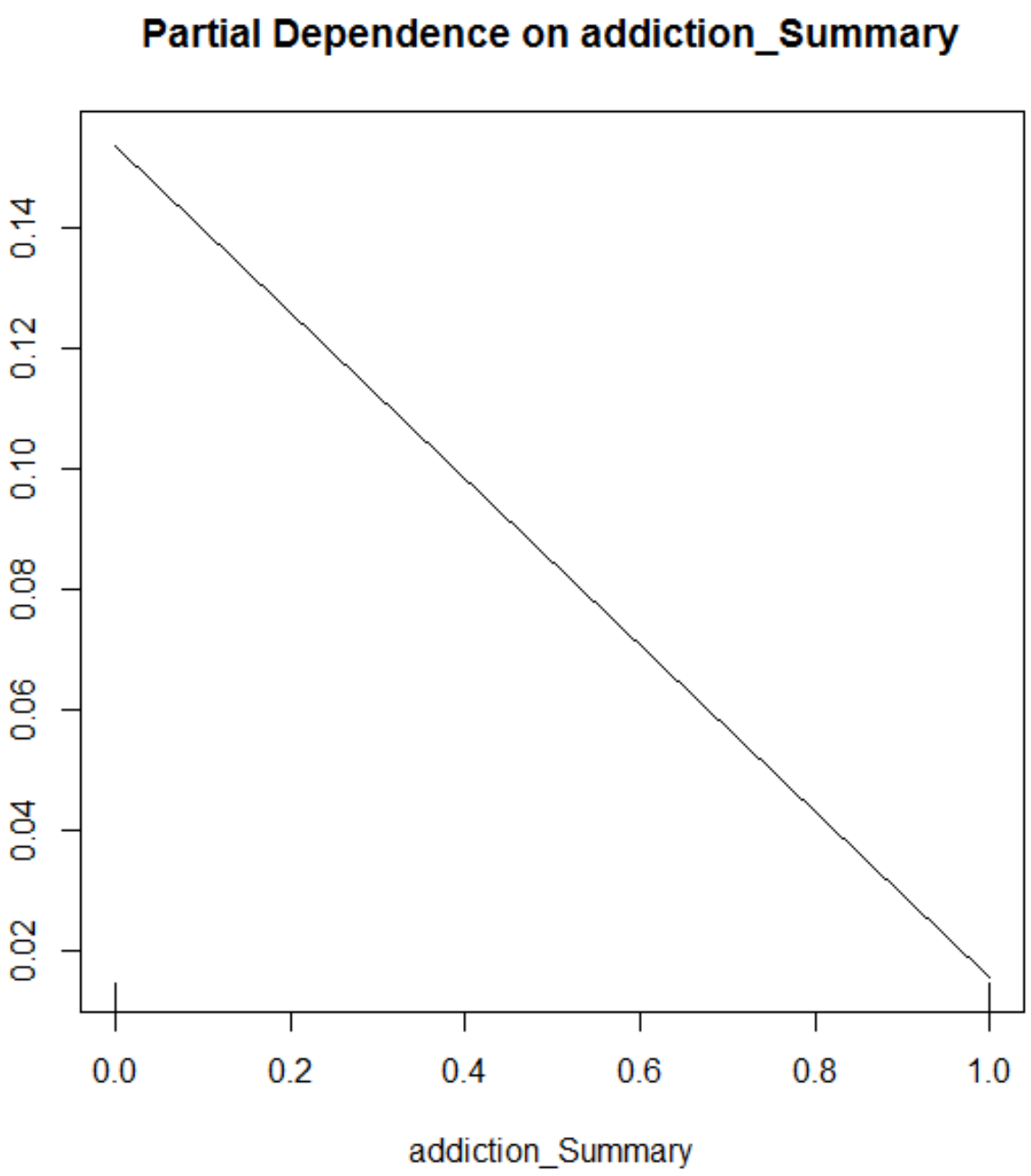
# Model Performance

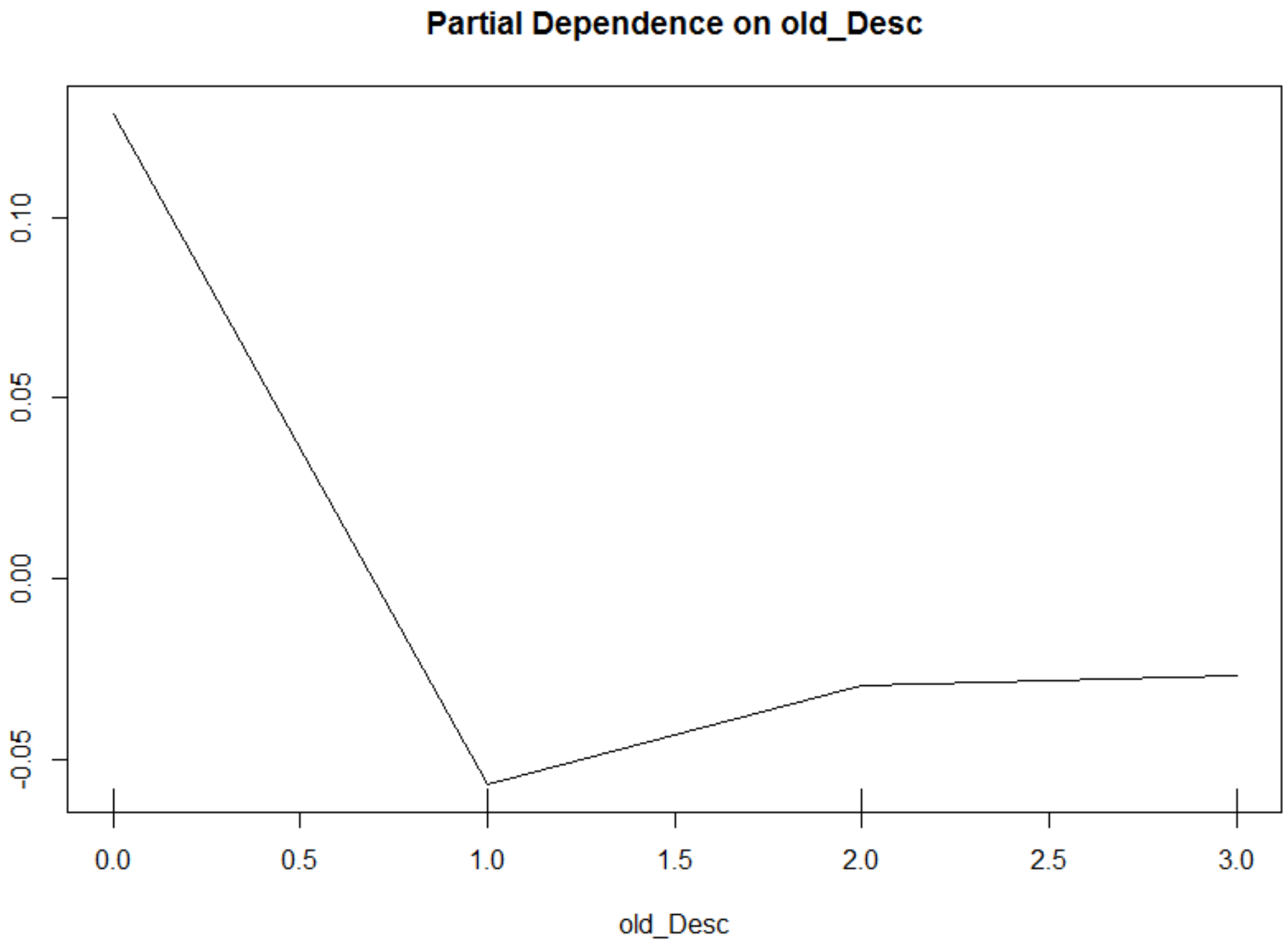
AUC - 0.75 - 0.80

Lift Curve - 1.5




Partial Dependence on addiction_Summary
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.0
0.2
0.4
0.6
0.8
1.0
addiction_Summary


Partial Dependence on old_Desc
0.10
0.05
0.00
-0.05
0.0
0.5
1.0
1.5
2.0
2.5
3.0
old_Desc

# End

Any questions?