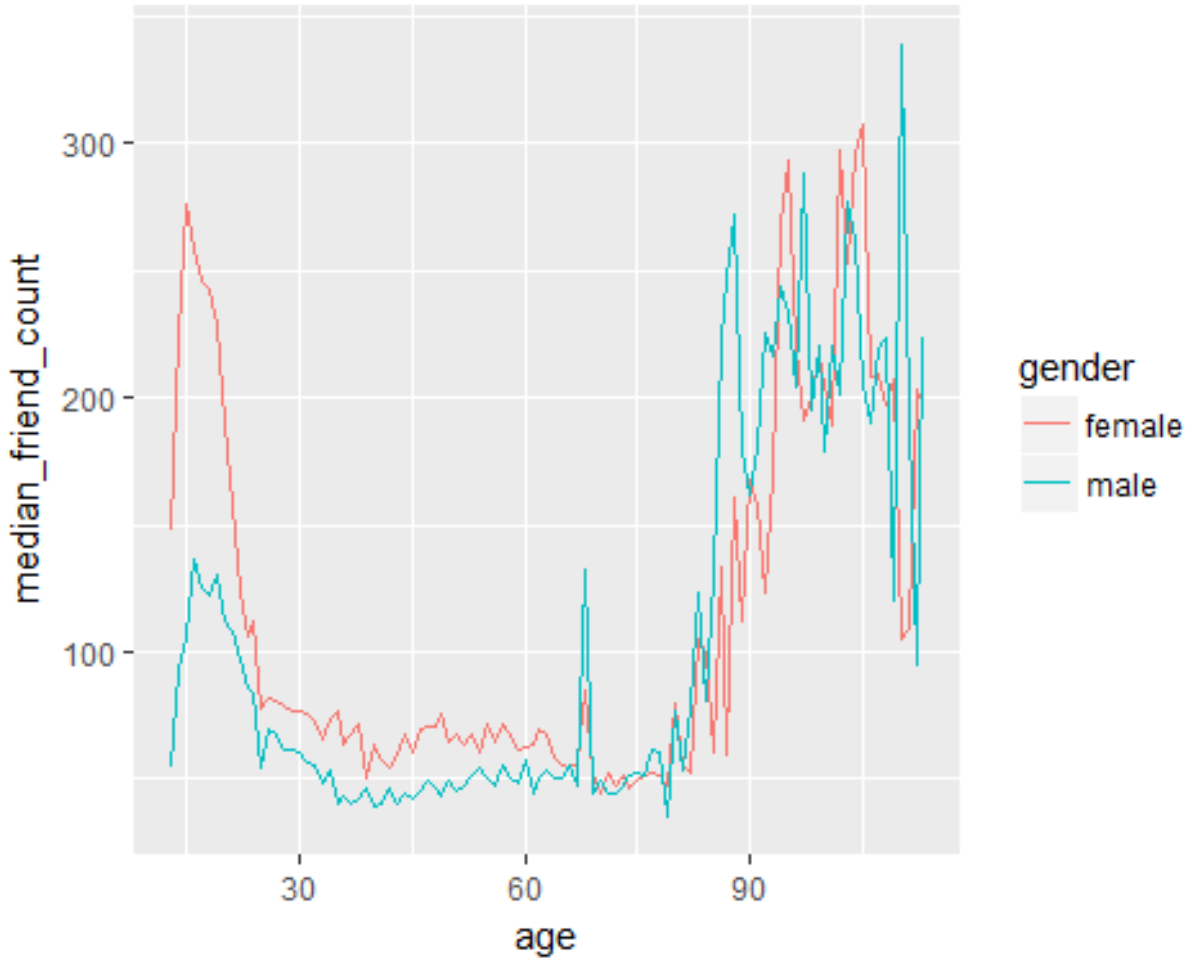
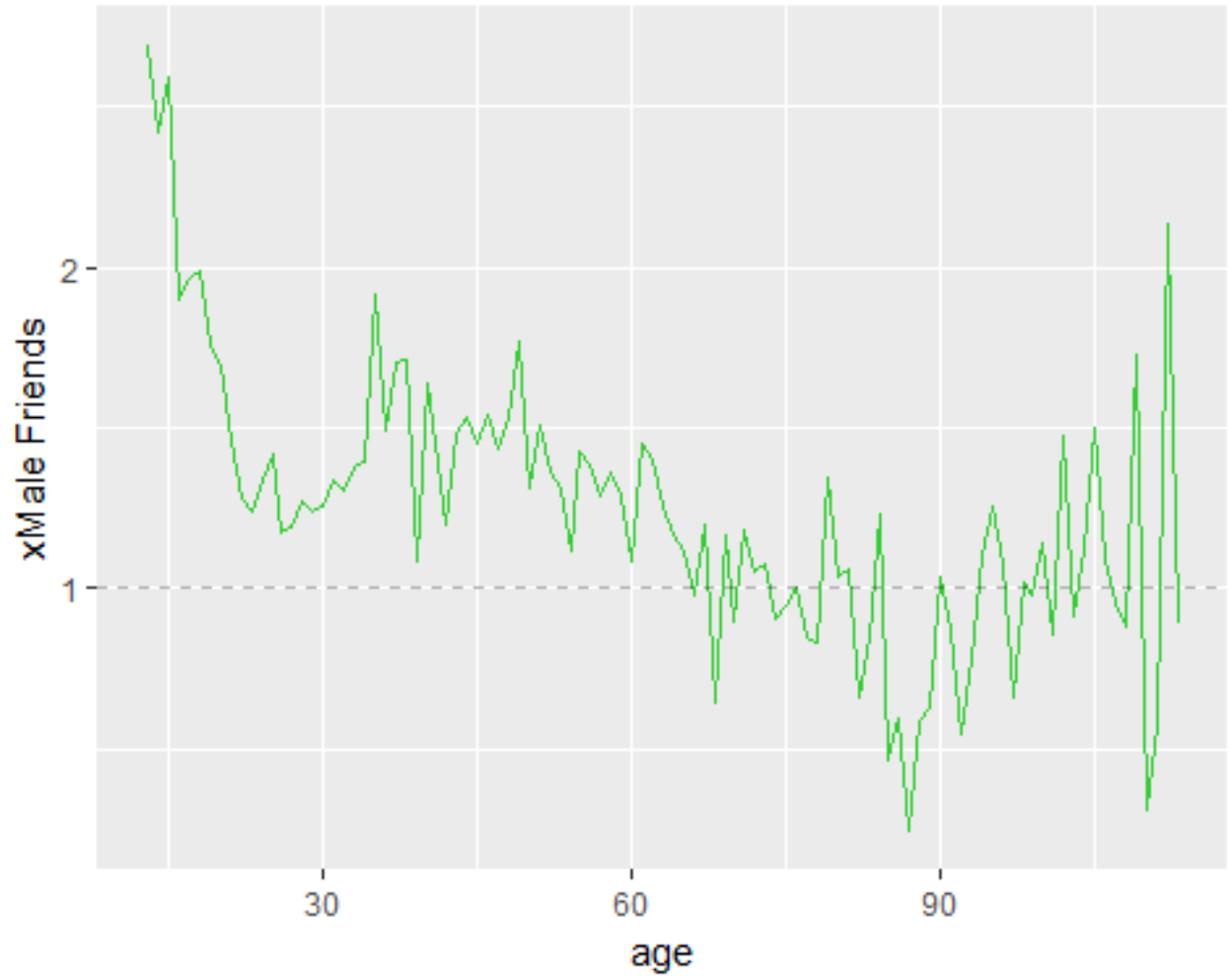
Facebook

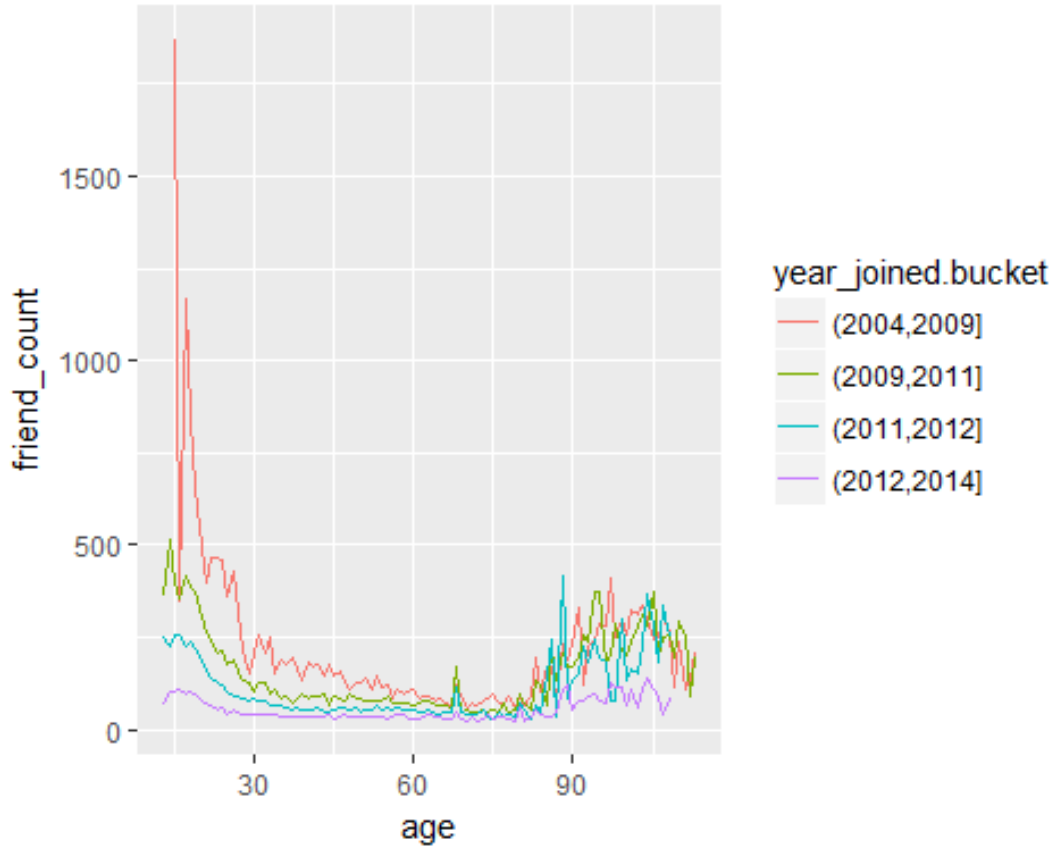
```
#Grouping by age and gender
pf.fc_by_age_gender <- pf %>%
  filter(!is.na(gender)) %>%
  group_by(age, gender) %>%
  summarise(mean_friend_count = mean(friend_count),
            median_friend_count = median(friend_count),
            n = n()) %>%
  ungroup() %>%
  arrange(age)

#putting color in an aesthetic wrapper in the line
ggplot(pf.fc_by_age_gender, aes(x=age, y=median_friend_count))
+geom_line(aes(color=gender))
```



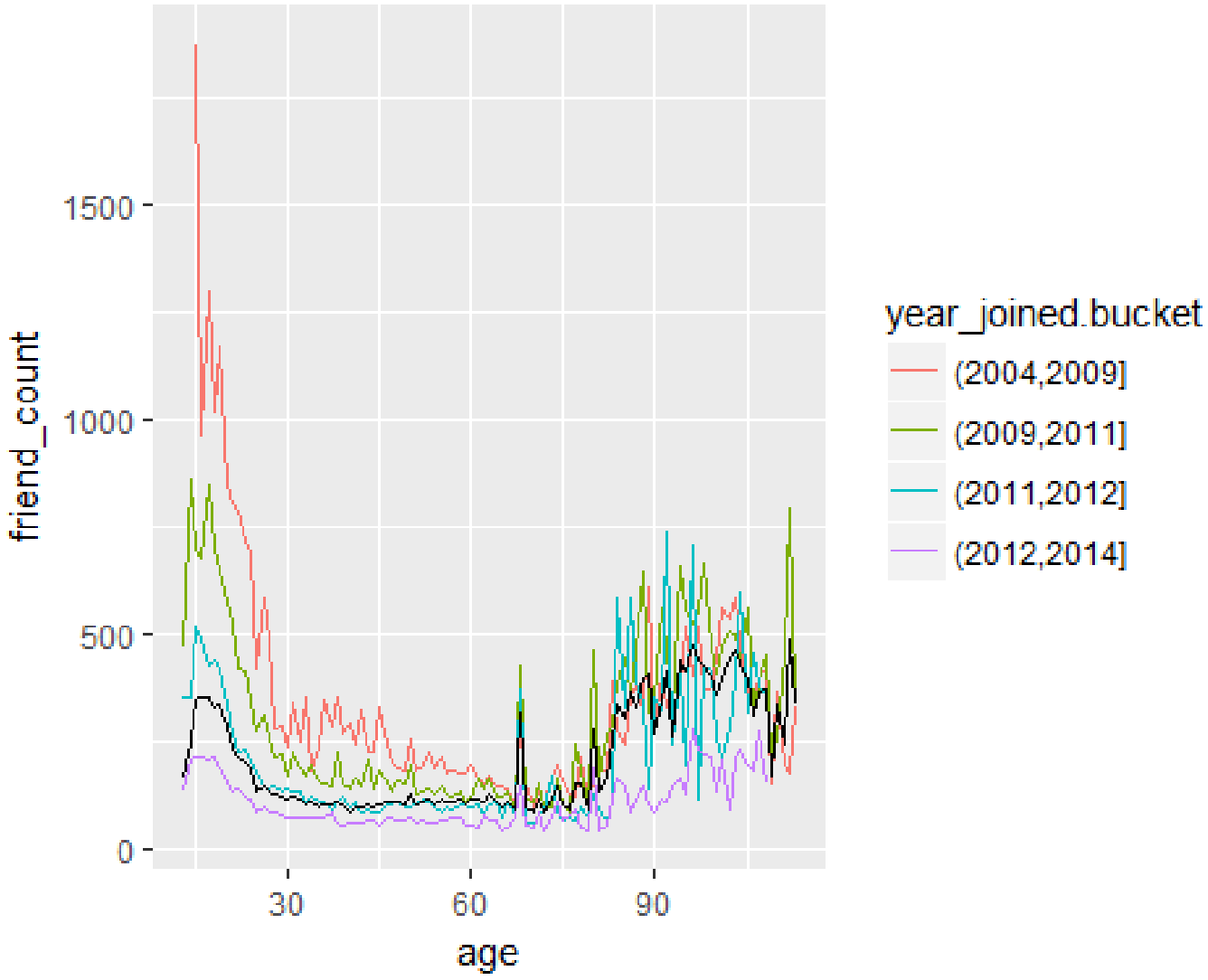
```r
#Creating a wide dataframe
library(reshape2)
pf.fc_by_age_gender.wide <- dcast(pf.fc_by_age_gender,
                                  age ~ gender,
                                  value.var = 'median_friend_count')

#Plotting the multiple of friends that females have compared to men
ggplot(pf.fc_by_age_gender.wide, aes(x=age, y=female/male))
+geom_line(color='lime green') +
  geom_hline(yintercept = 1, alpha =0.3, linetype=2)+
  ylab('xMale Friends')
```



```r
#Creating a variable year joined by subtracting tenure(days) from data date
pf$year_joined <- floor(2014 - (pf$tenure/365))

summary(pf$year_joined)

##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
##    2005    2012    2012    2012    2013    2014       2

table(pf$year_joined)


##  2005  2006  2007  2008  2009  2010  2011  2012  2013  2014
##     9    15   581  1507  4557  5448  9860 33366 43588    70

#Dividing up the years joined with cut function
pf$year_joined.bucket <- cut(pf$year_joined, breaks = c(2004,2009,2011,2012,
2014))
table(pf$year_joined.bucket)
## (2004,2009] (2009,2011] (2011,2012] (2012,2014]
##        6669       15308       33366       43658

#Plotting the different lines for each year joined bucket
ggplot(subset(pf, !is.na(pf$year_joined.bucket)), aes(x=age,
y=friend_count))+geom_line(aes(color=year_joined.bucket), stat='summary',
fun.y=median)
```



```r
#Plotting the mean but also adding the grandmean
ggplot(subset(pf, !is.na(pf$year_joined.bucket)), aes(x=age,
y=friend_count))+
  geom_line(aes(color=year_joined.bucket), stat='summary', fun.y=mean)+
  geom_line(stat='summary', fun.y=mean)
```



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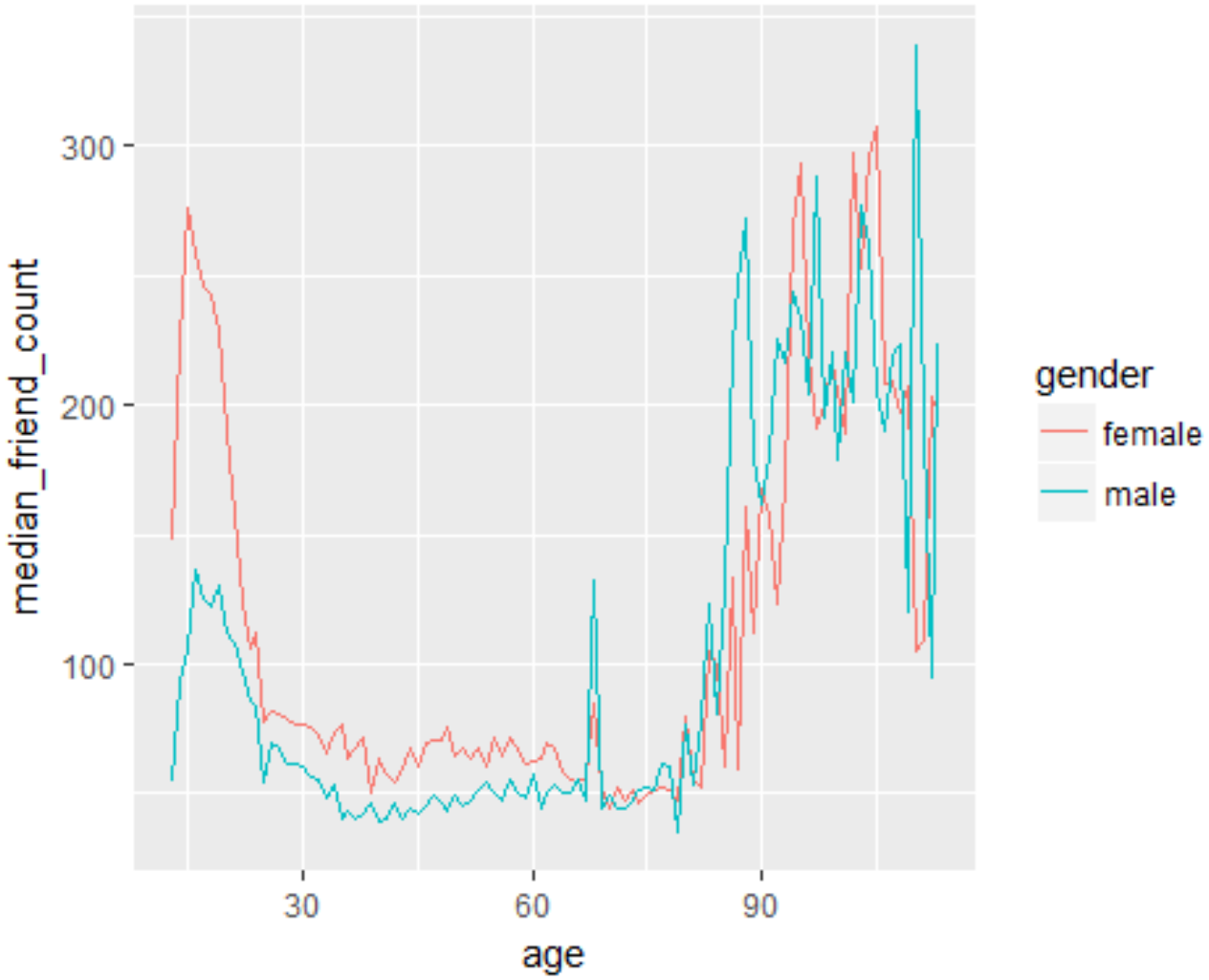
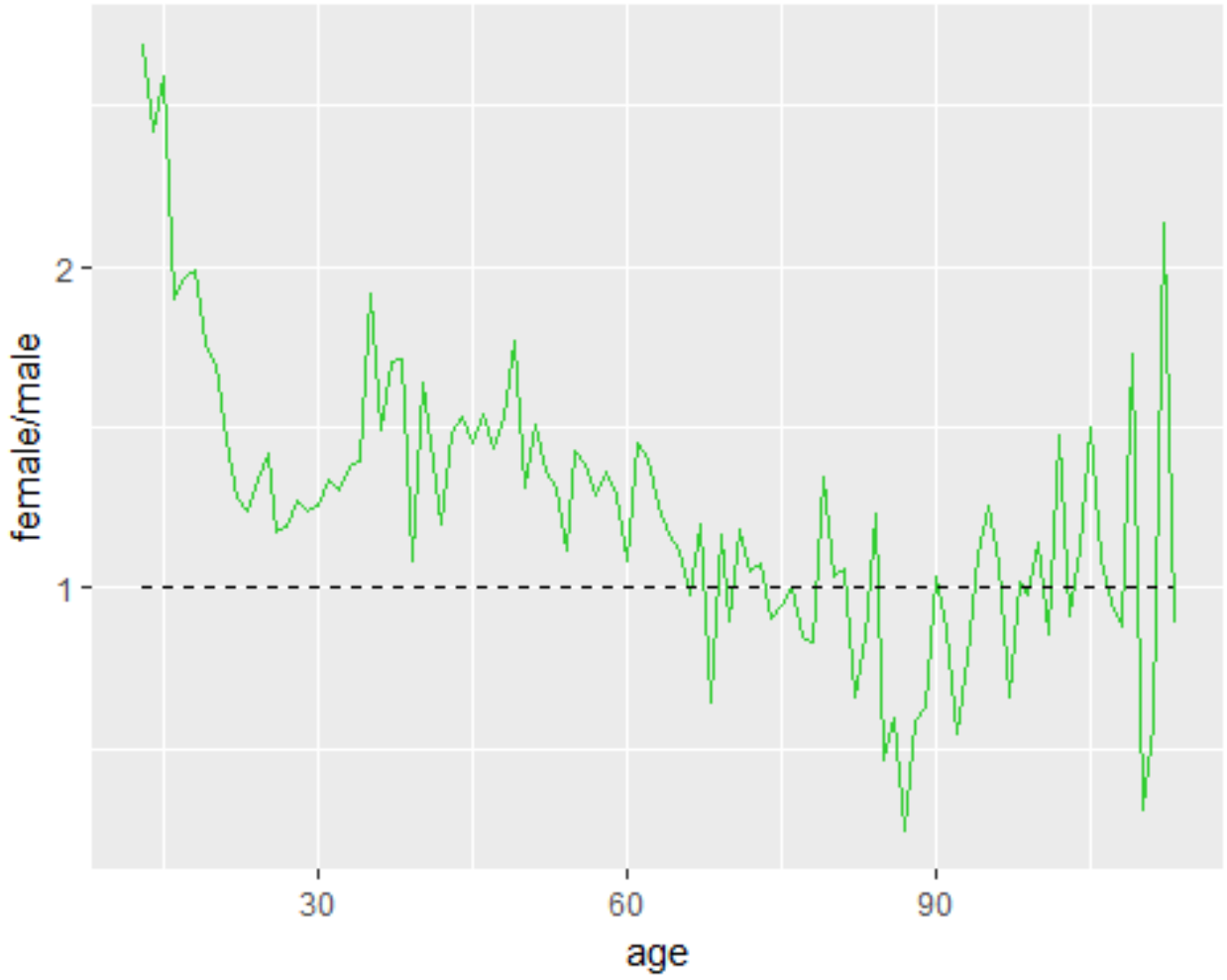
  filter(!is.na(gender)) %>%
  group_by(age, gender) %>%
  summarise(mean_friend_count = mean(friend_count),
            median_friend_count = median(friend_count),
            n = n()) %>%
  ungroup() %>%
  arrange(age)

#putting color in an aesthetic wrapper in the line
ggplot(pf.fc_by_age_gender, aes(x=age, y=median_friend_count))
+geom_line(aes(color=gender))
```



```r
#Creating a wide dataframe
library(reshape2)
pf.fc_by_age_gender.wide <- dcast(pf.fc_by_age_gender,
                                  age ~ gender,
                                  value.var = 'median_friend_count')

#Plotting the multiple of friends that females have compared to men
ggplot(pf.fc_by_age_gender.wide, aes(x=age, y=female/male)) +
  geom_line(color='lime green')+
  geom_line(y=1, linetype=2)
```



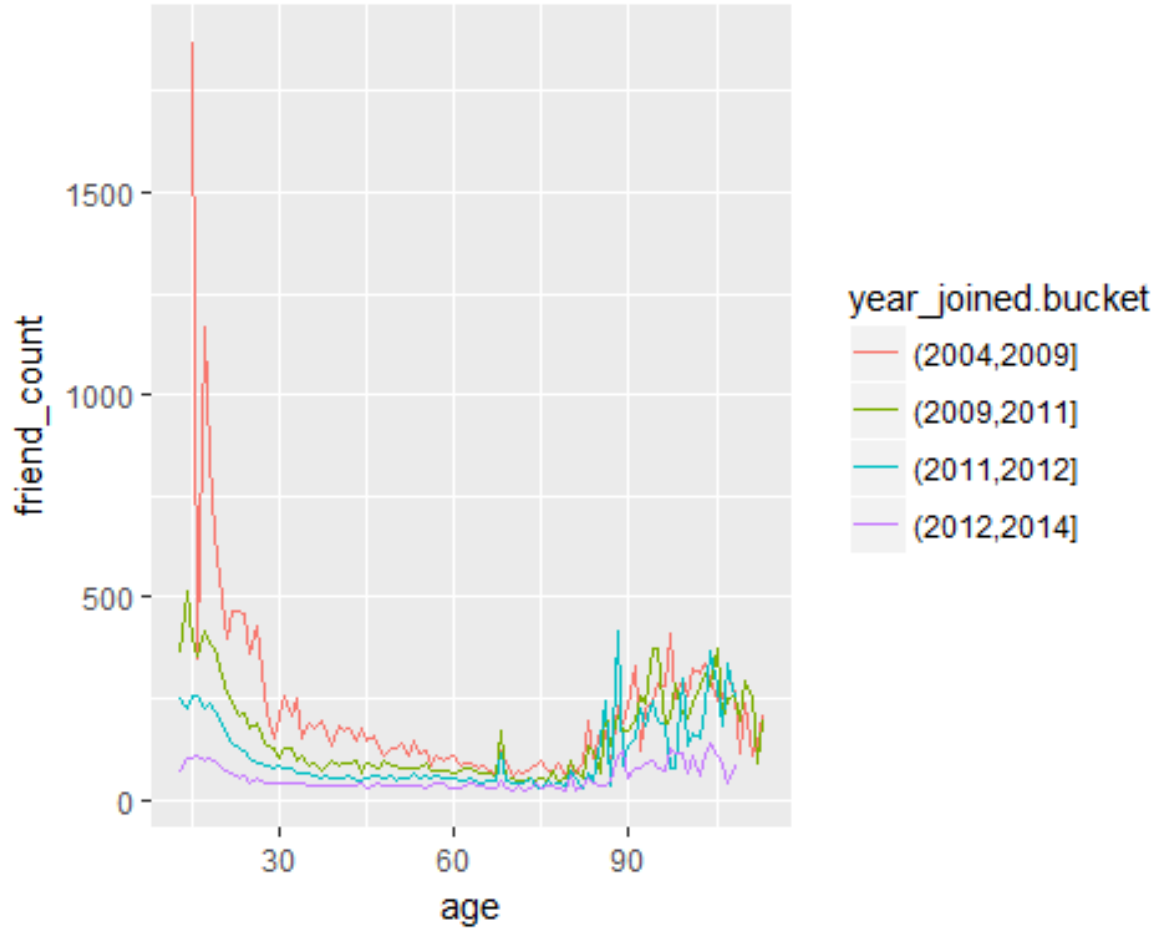
```r
#Creating a variable year joined by subtracting tenure(days) from date of
sample (2014)
pf$year_joined <- floor(2014 - (pf$tenure/365))
summary(pf$year_joined)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
##    2005    2012    2012    2012    2013    2014       2
```

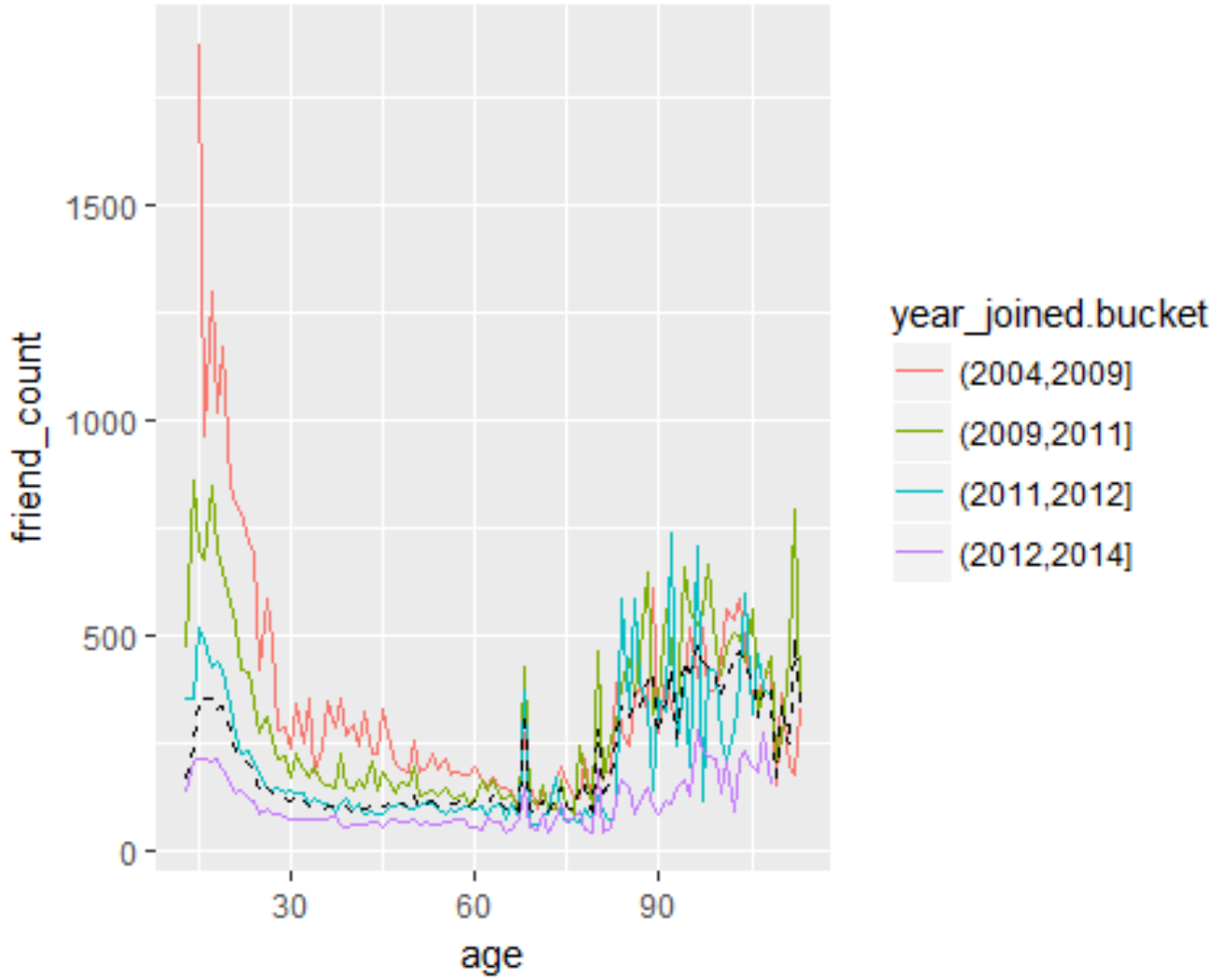
```r
pf$year_joined.bucket <- cut(pf$year_joined, breaks = c(2004,2009,2011,2012,
2014))
table(pf$year_joined.bucket)
```

```
##
## (2004,2009] (2009,2011] (2011,2012] (2012,2014]
##        6669       15308       33366       43658
```

```r
#Plotting the different lines for each year joined bucket
ggplot(subset(pf, !is.na(pf$year_joined.bucket)), aes(x=age,
y=friend_count))+
  geom_line(aes(color=year_joined.bucket), stat='summary', fun.y=median)
```



```
#Plotting the mean but also adding the grandmean
ggplot(subset(pf, !is.na(pf$year_joined.bucket)), aes(x=age,
y=friend_count))+
  geom_line(aes(color=year_joined.bucket), stat='summary', fun.y=mean)+
  geom_line(stat='summary', fun.y=mean, linetype=2)
```

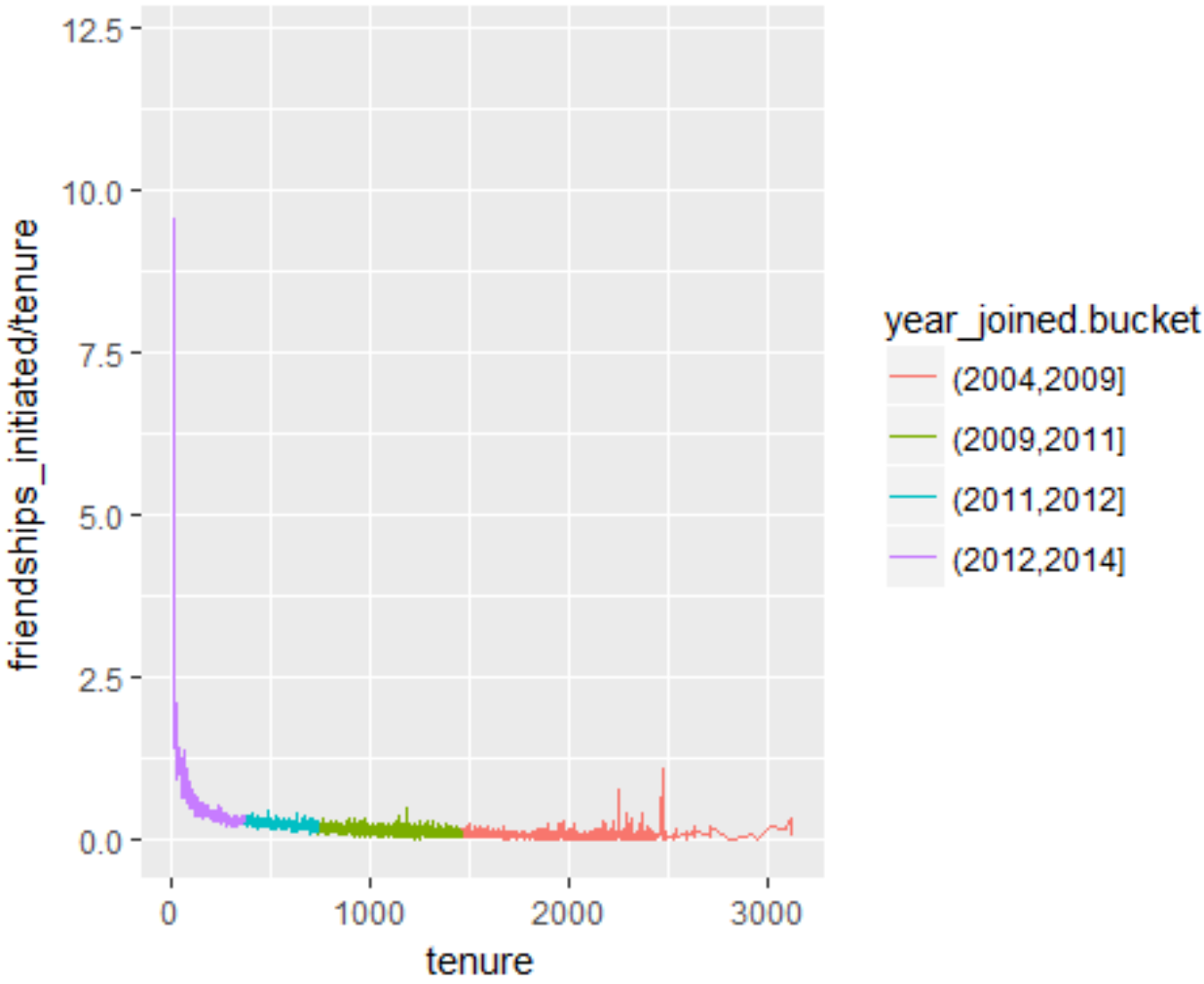


```r
#If we were to look at the fc by day as a rate: (fc/tenure)
with(subset(pf, tenure>0), summary(friend_count/tenure))
```

```
##     Min.  1st Qu.   Median     Mean  3rd Qu.     Max.
##   0.0000   0.0775   0.2205   0.6096   0.5658 417.0000
```

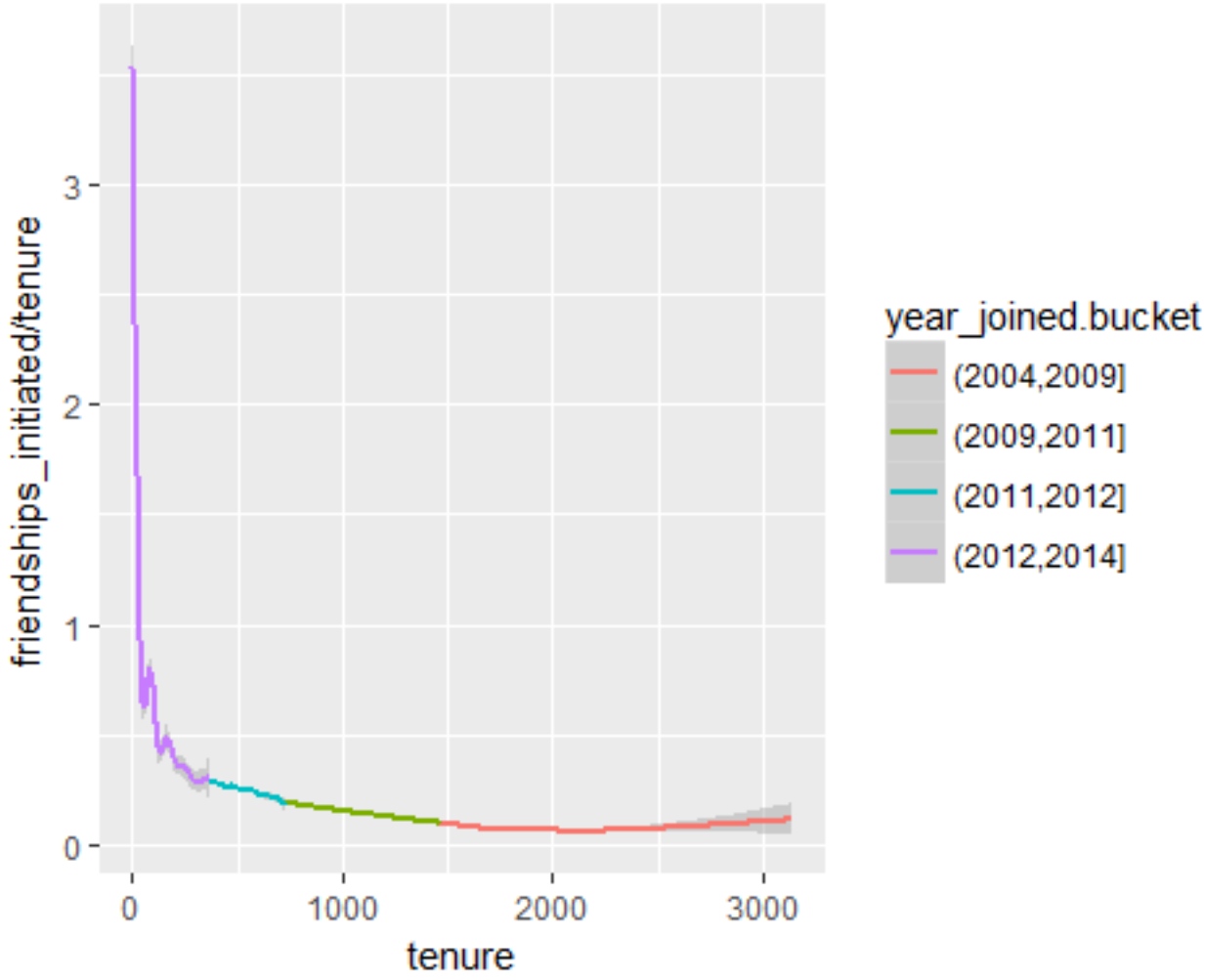
```r
#looking at how many friendships someone initiates based on tenure, colored
by year joined
ggplot(subset(pf, tenure>0), aes(x=tenure, y=friendships_initiated/tenure)) +
  geom_line(aes(color=year_joined.bucket), stat='summary')
```

```
## No summary function supplied, defaulting to `mean_se()
```



```
#With smooth line (using loess)
ggplot(subset(pf, tenure>0), aes(x=tenure, y=friendships_initiated/tenure)) +
  geom_smooth(aes(color=year_joined.bucket))

## `geom_smooth()` using method = 'gam'
```



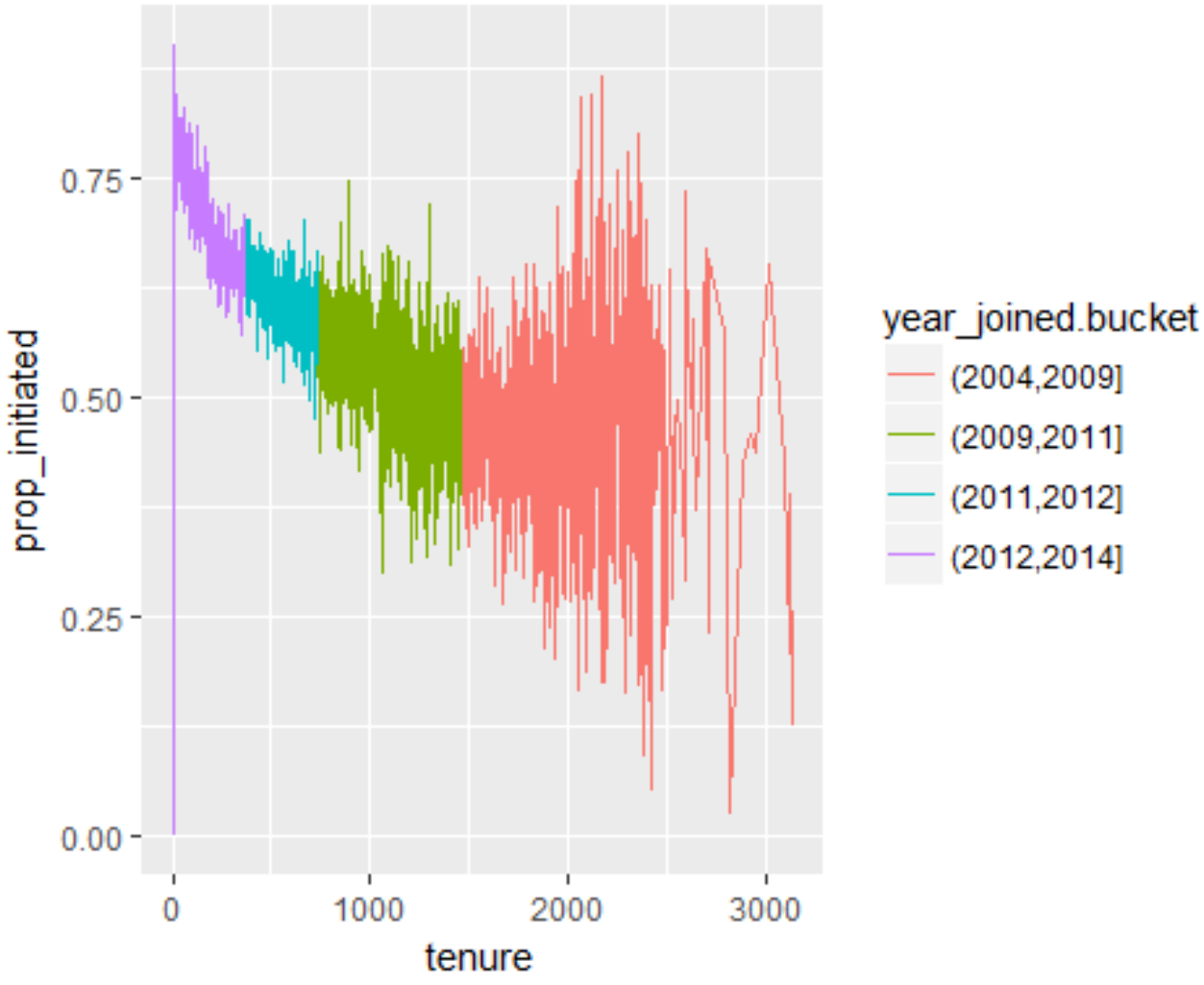
```r
pf <- transform(pf, prop_initiated = ifelse(friend_count>0,
friendships_initiated/friend_count, 0))

summary(pf$prop_initiated)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.0000  0.4400  0.6184  0.5958  0.7795  1.0000
```

```r
#plotting the proportion of friendships initiated over tenure
ggplot(pf, aes(x=tenure, y=prop_initiated)) +
  geom_line(aes(color=year_joined.bucket), stat='summary', fun.y=median)
```

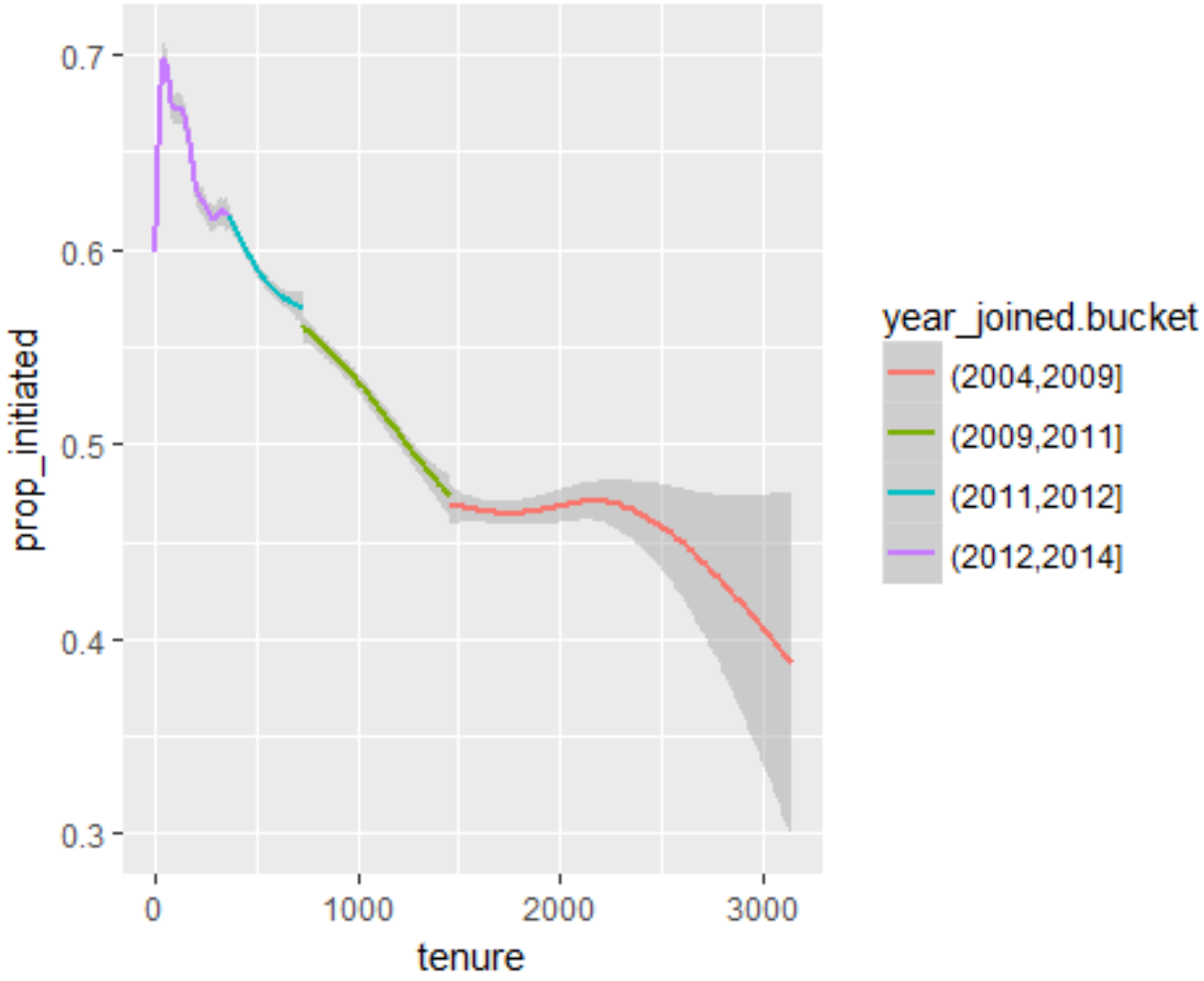
```
## Warning: Removed 2 rows containing non-finite values (stat_summary).
```



```
#Looking at it wiht a smooth line
ggplot(pf, aes(x=tenure, y=prop_initiated)) +
  geom_smooth(aes(color=year_joined.bucket))

## `geom_smooth()` using method = 'gam'

## Warning: Removed 2 rows containing non-finite values (stat_smooth).
```



```r
#calculating the average proportion of friends inidiated for 2012> group
mean(subset(pf, year_joined > 2012)$prop_initiated)
```

```
## [1] 0.6430155
```

```r
library(GGally)

theme_set(theme_minimal(20))

#Using a random seed and generating a scatterplot matrix
set.seed(1836)
pf_subset <- pf[, c(2:15)]
names(pf_subset)
```

```
##  [1] "age"                    "dob_day"
##  [3] "dob_year"               "dob_month"
##  [5] "gender"                 "tenure"
##  [7] "friend_count"           "friendships_initiated"
##  [9] "likes"                  "likes_received"
## [11] "mobile_likes"           "mobile_likes_received"
## [13] "www_likes"              "www_likes_received"
```

```r
ggpairs(pf_subset[sample.int(nrow(pf_subset), 1000),])
```