yuanhaoliu2v

yuanhao

March 25, 2019

library(tidyverse)

## Warning: package 'tidyverse' was built under R version 3.4.4

library(tidytext)

## Warning: package 'tidytext' was built under R version 3.4.4

library(ggplot2)  
library(scales)

data <- read\_csv('C:/Users/liuyu/Desktop/padgett project scattertext/data code results for March1/chapter3change.csv')  
data

## # A tibble: 249 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## # ... with 239 more rows, and 81 more variables: fre\_of\_no\_office <int>,  
## # fre\_of\_office <int>, lib\_sum <dbl>, no\_faction\_sum <dbl>,  
## # P.G.\_sum <dbl>, no\_office\_sum <dbl>, office\_sum <dbl>,  
## # lib\_speech <dbl>, no\_faction\_speech <dbl>, P.G.\_speech <dbl>,  
## # no\_office\_speech <dbl>, office\_speech <dbl>, Civic\_faction <dbl>,  
## # no\_faction\_faction <dbl>, P.G.\_faction <dbl>, no\_office\_faction <dbl>,  
## # office\_faction <dbl>, fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>,  
## # fre\_of\_RI <int>, AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>,  
## # AL\_speech <dbl>, no\_faction2\_speech <dbl>, RI\_speech <dbl>,  
## # AL\_faction <dbl>, no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = no\_faction2\_no\_office\_faction, y = no\_faction2\_office\_faction, color = ((no\_faction2\_no\_office\_faction - no\_faction2\_office\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "no\_faction2\_no\_office\_faction" , y = "no\_faction2\_office\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

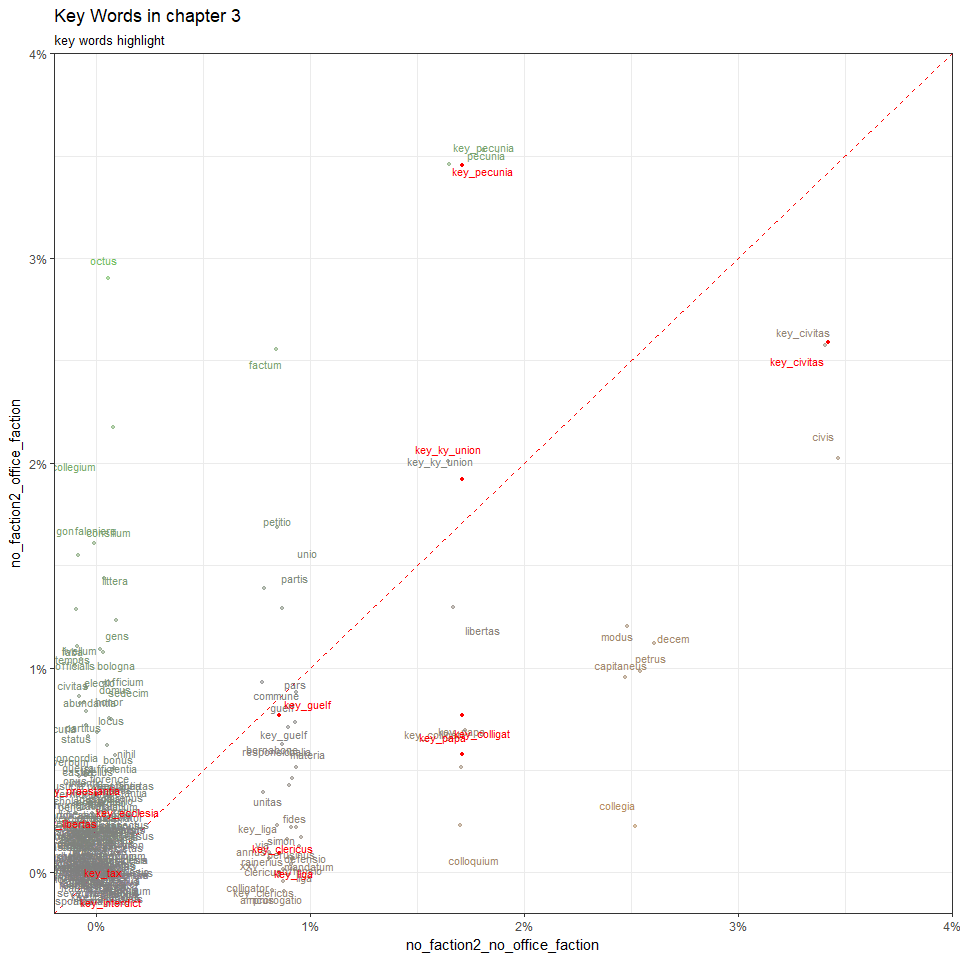
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 7 rows containing missing values (geom\_point).

## Warning: Removed 2 rows containing missing values (geom\_point).

## Warning: Removed 7 rows containing missing values (geom\_text).

## Warning: Removed 2 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = RI\_no\_office\_faction, y = RI\_office\_faction, color = ((RI\_no\_office\_faction - RI\_office\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "RI\_no\_office\_faction" , y = "RI\_office\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

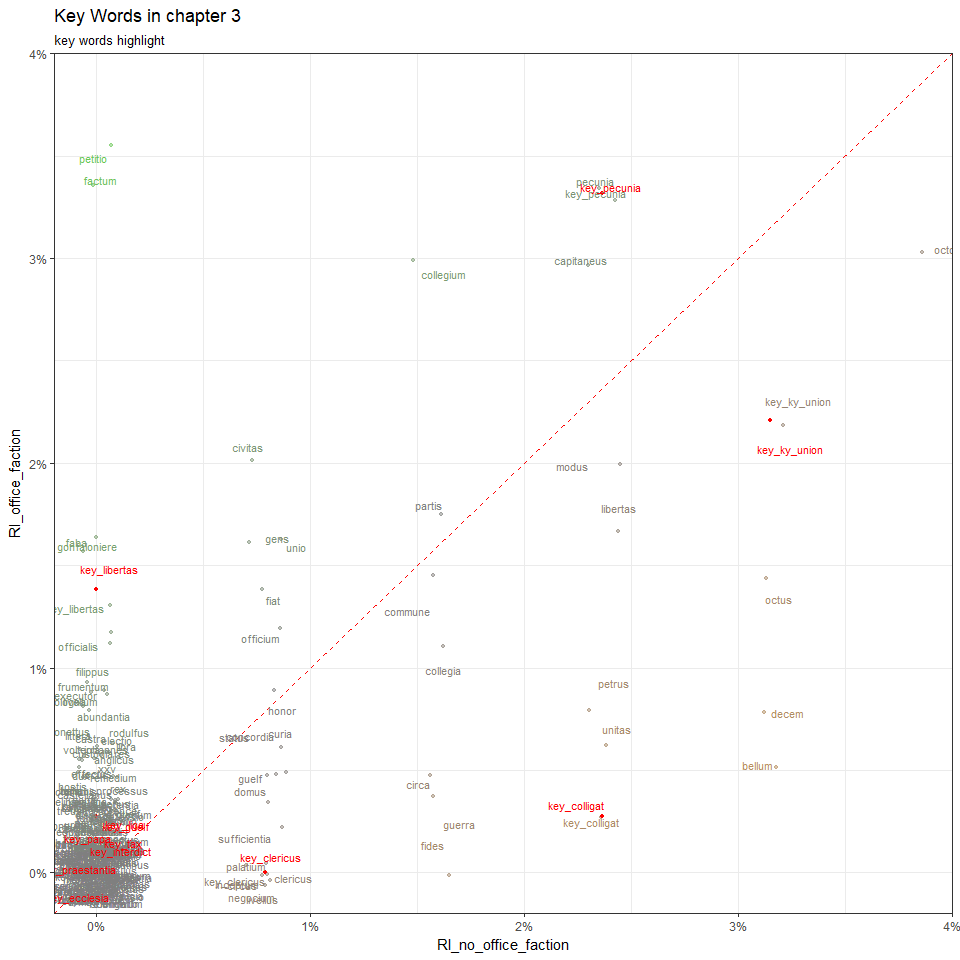
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 6 rows containing missing values (geom\_point).

## Warning: Removed 3 rows containing missing values (geom\_point).

## Warning: Removed 6 rows containing missing values (geom\_text).

## Warning: Removed 3 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = AL\_no\_office\_faction, y = AL\_office\_faction, color = ((AL\_no\_office\_faction - AL\_office\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "AL\_no\_office\_faction" , y = "AL\_office\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

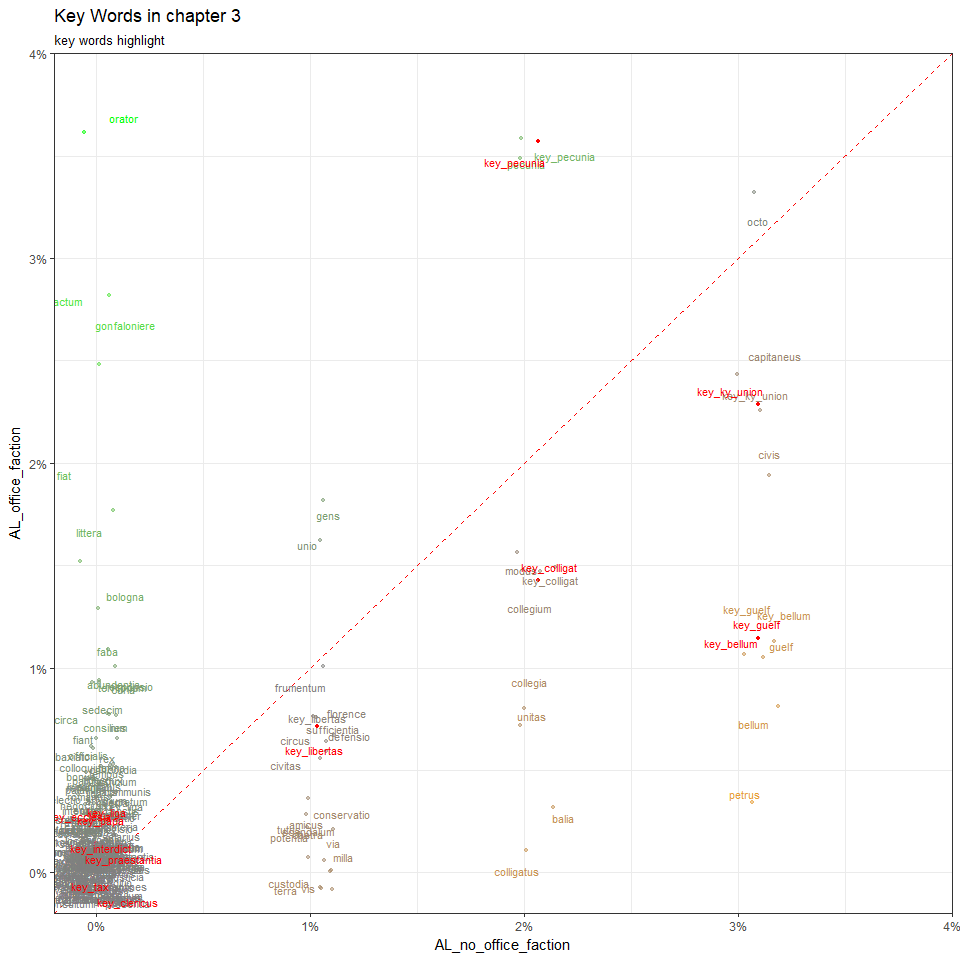
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 8 rows containing missing values (geom\_point).

## Warning: Removed 2 rows containing missing values (geom\_point).

## Warning: Removed 8 rows containing missing values (geom\_text).

## Warning: Removed 2 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = P.G.\_no\_office\_faction, y = P.G.\_office\_faction, color = ((P.G.\_no\_office\_faction - P.G.\_office\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.00165, height = 0.00165), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "P.G.\_no\_office\_faction" , y = "P.G.\_office\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

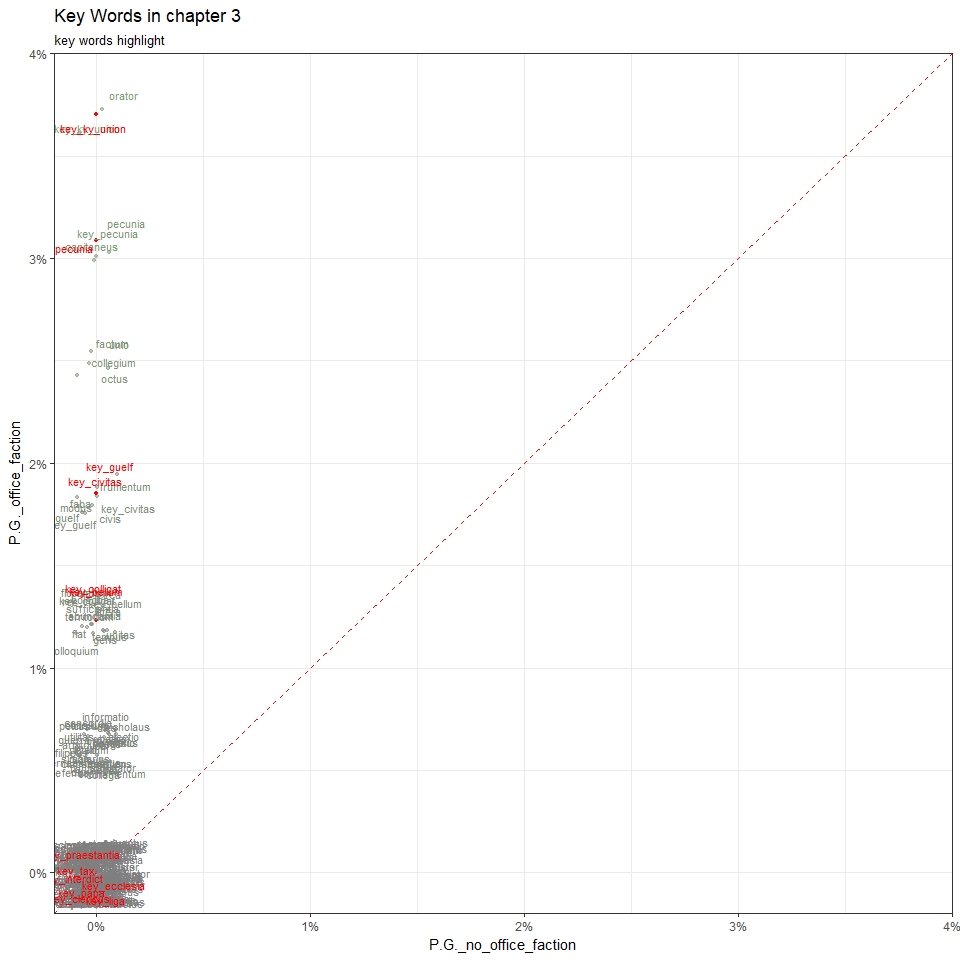
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 12 rows containing missing values (geom\_point).

## Warning: Removed 2 rows containing missing values (geom\_point).

## Warning: Removed 12 rows containing missing values (geom\_text).

## Warning: Removed 2 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = no\_faction\_no\_office\_faction, y = no\_faction\_office\_faction, color = ((no\_faction\_no\_office\_faction - no\_faction\_office\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "no\_faction\_no\_office\_faction" , y = "no\_faction\_office\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

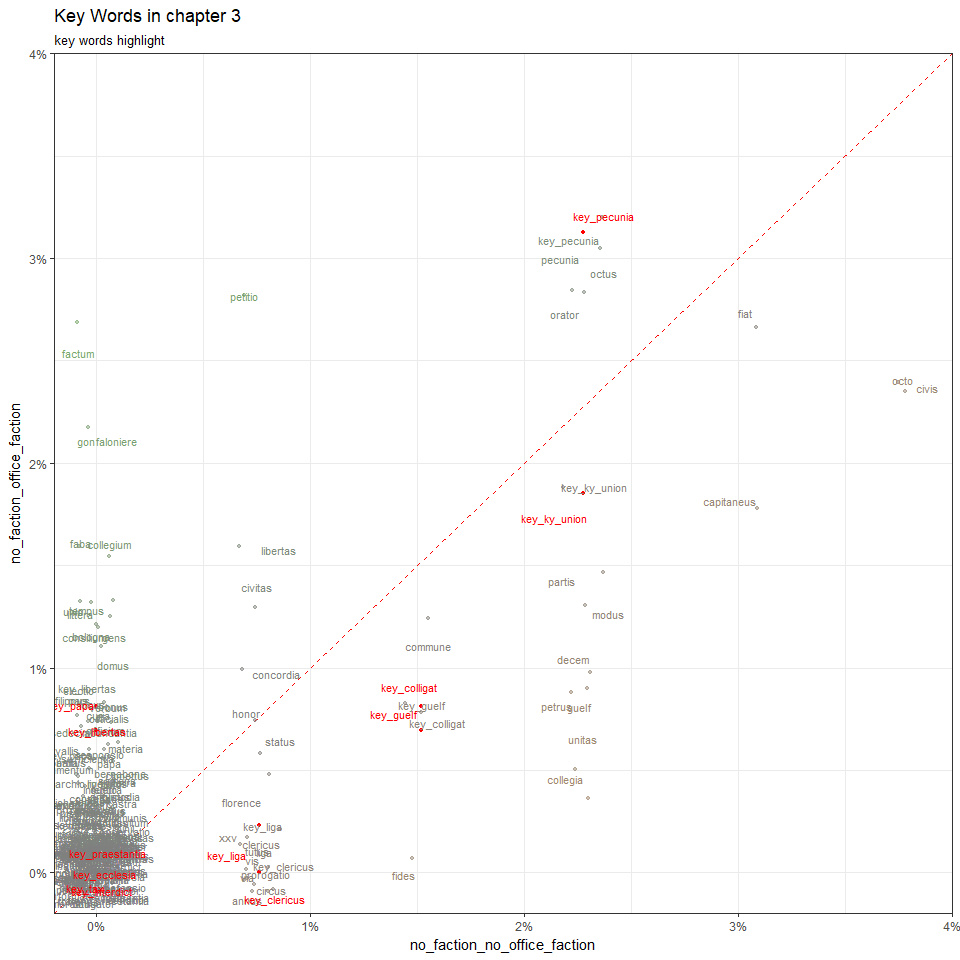
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 5 rows containing missing values (geom\_point).

## Warning: Removed 3 rows containing missing values (geom\_point).

## Warning: Removed 5 rows containing missing values (geom\_text).

## Warning: Removed 3 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = Civic\_no\_office\_faction, y = Civic\_office\_faction, color = ((Civic\_no\_office\_faction - Civic\_office\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "Civic\_no\_office\_faction" , y = "Civic\_office\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

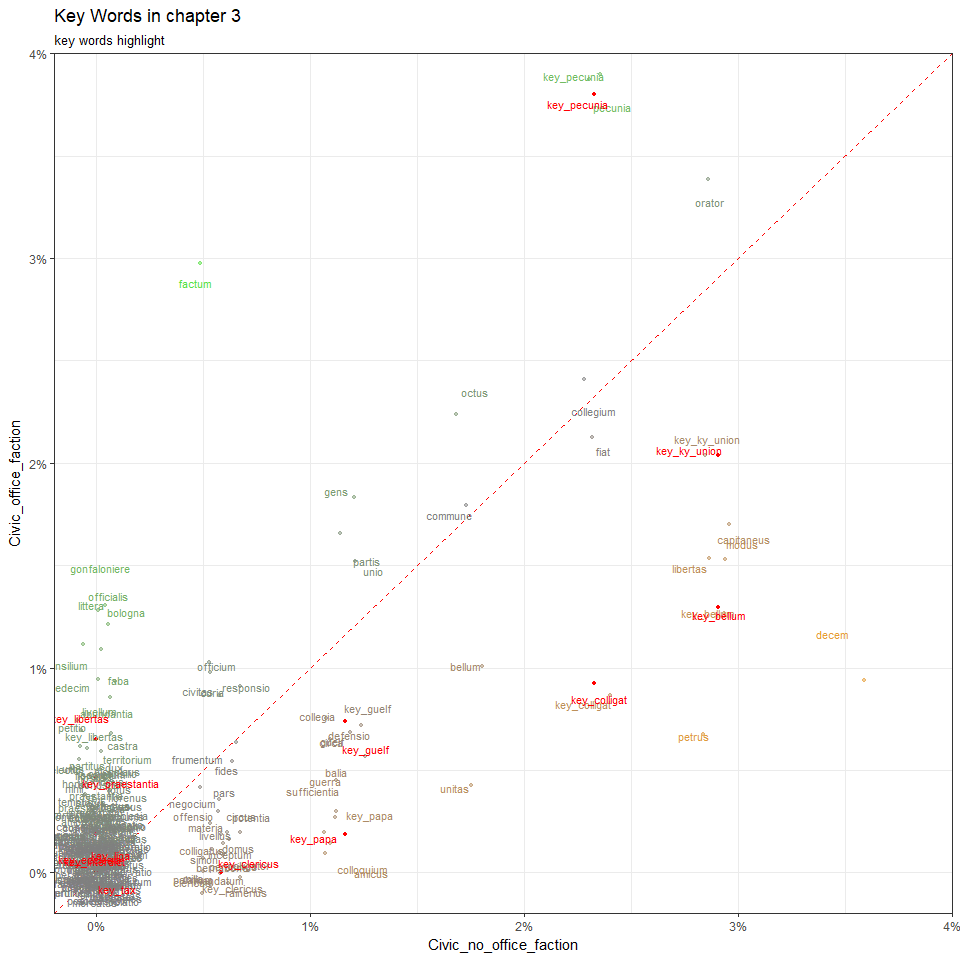
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 5 rows containing missing values (geom\_point).

## Warning: Removed 2 rows containing missing values (geom\_point).

## Warning: Removed 5 rows containing missing values (geom\_text).

## Warning: Removed 2 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = RI\_faction, y = no\_faction2\_faction, color = ((RI\_faction - no\_faction2\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "RI\_faction" , y = "no\_faction2\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

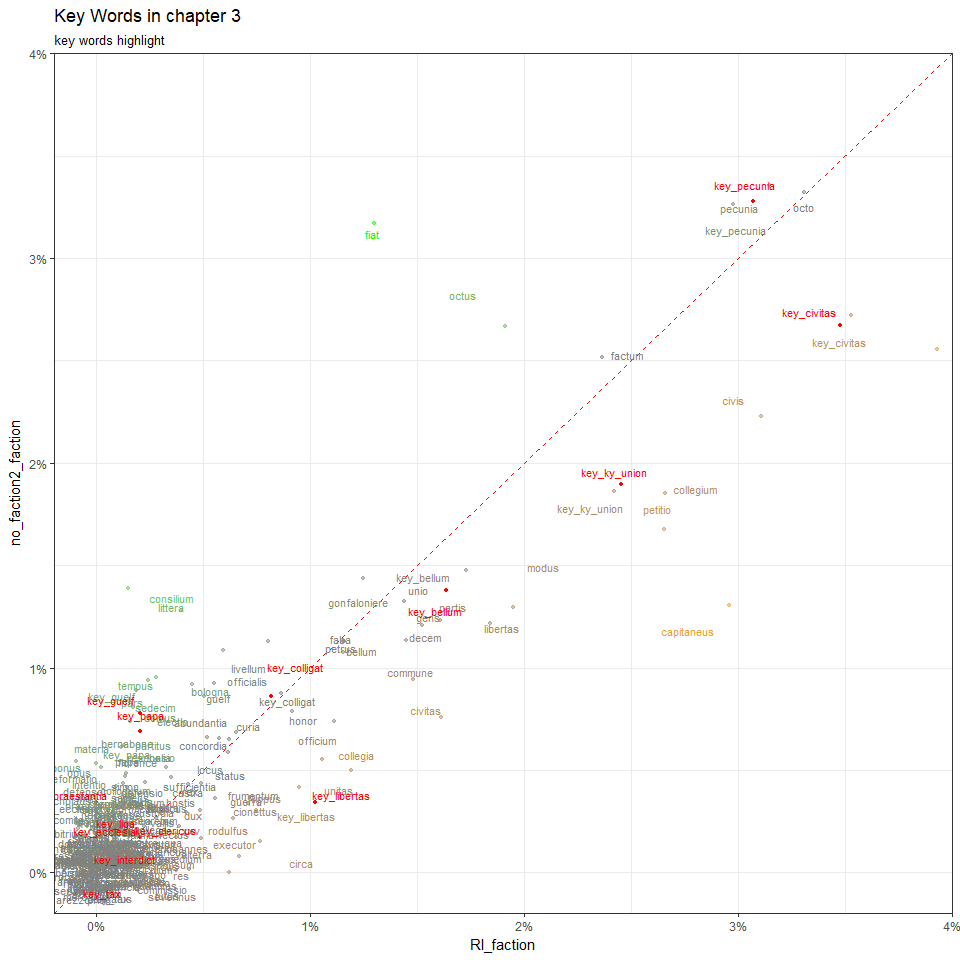
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 2 rows containing missing values (geom\_point).

## Warning: Removed 1 rows containing missing values (geom\_point).

## Warning: Removed 3 rows containing missing values (geom\_text).

## Warning: Removed 1 rows containing missing values (geom\_text).

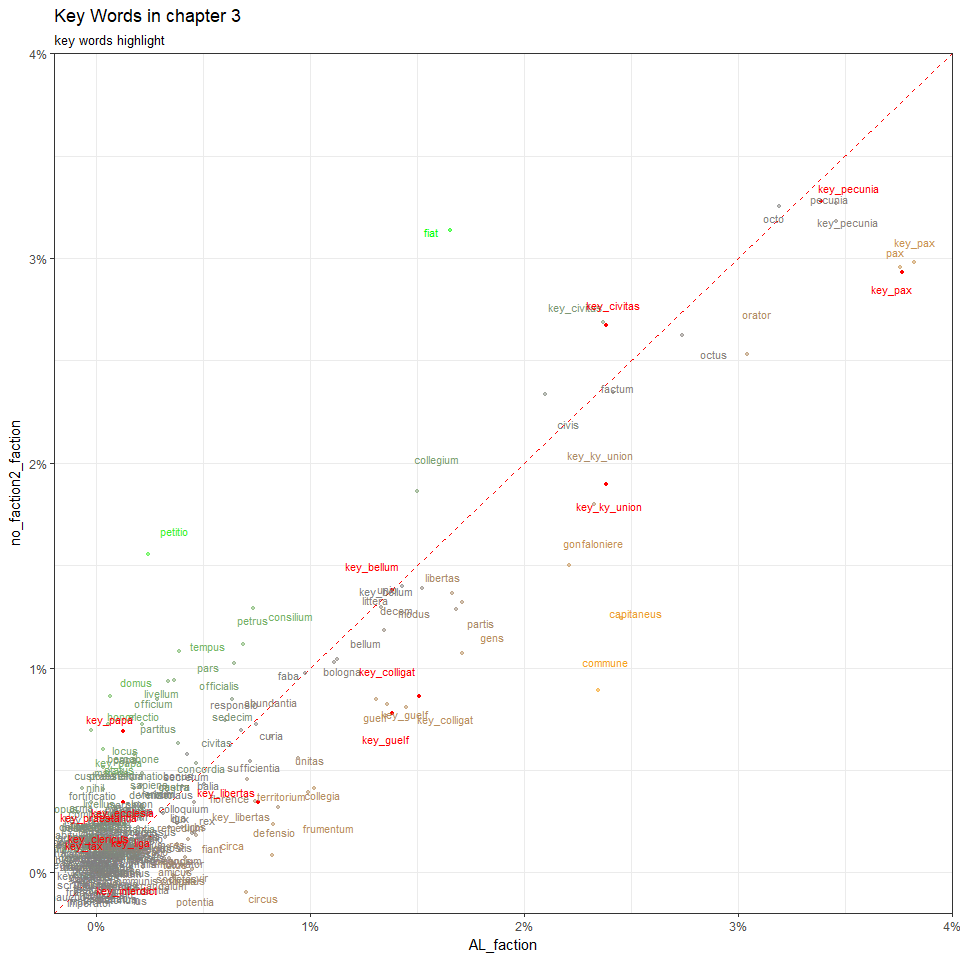


data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = AL\_faction, y = no\_faction2\_faction, color = ((AL\_faction - no\_faction2\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "AL\_faction" , y = "no\_faction2\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

## Warning: Ignoring unknown parameters: slop



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = AL\_faction, y = RI\_faction, color = ((AL\_faction - RI\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "AL\_faction" , y = "RI\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

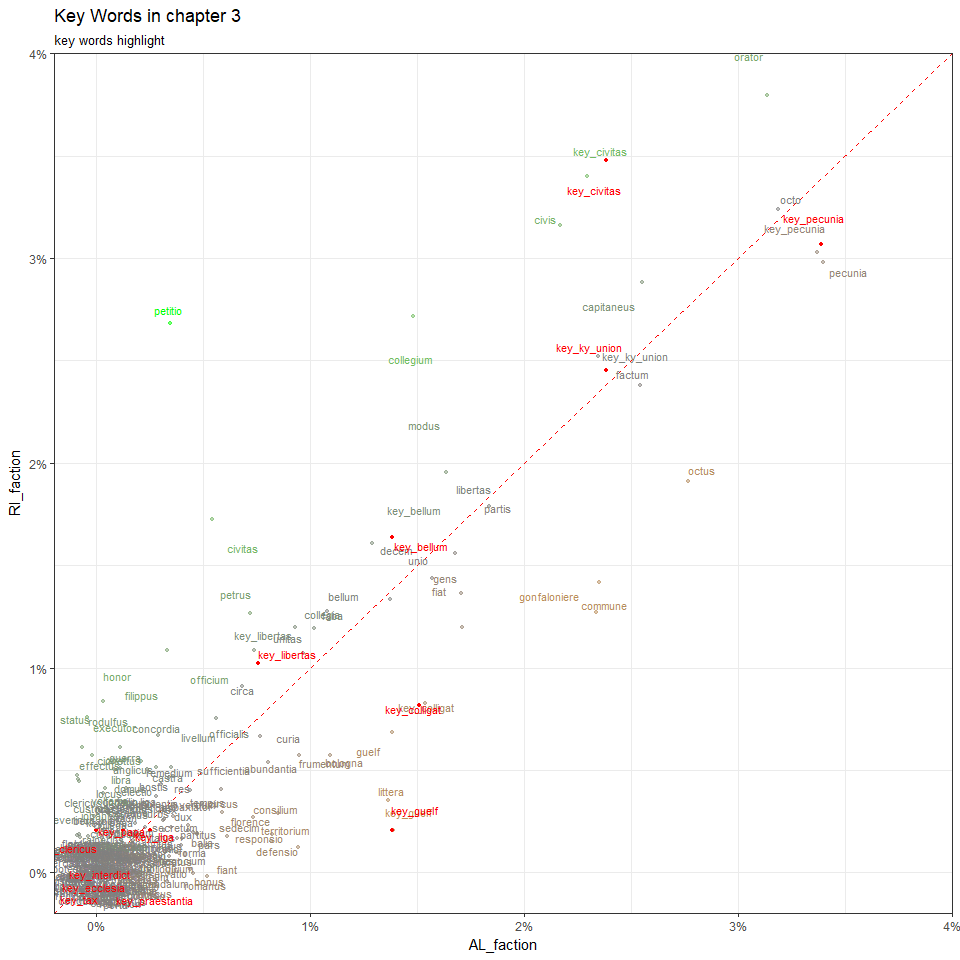
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 2 rows containing missing values (geom\_point).

## Warning: Removed 1 rows containing missing values (geom\_point).

## Warning: Removed 2 rows containing missing values (geom\_text).

## Warning: Removed 1 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = no\_office\_faction, y = office\_faction, color = ((no\_office\_faction - office\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "no\_office\_faction" , y = "office\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

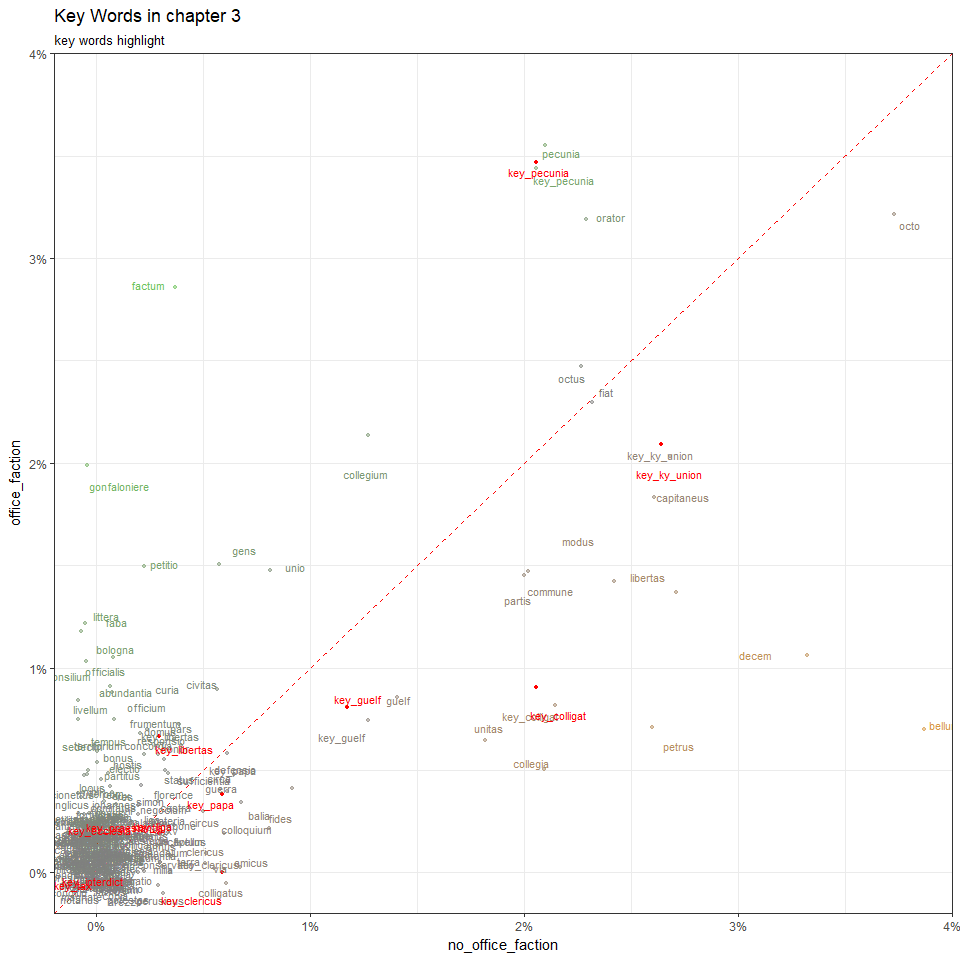
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 5 rows containing missing values (geom\_point).

## Warning: Removed 3 rows containing missing values (geom\_point).

## Warning: Removed 5 rows containing missing values (geom\_text).

## Warning: Removed 3 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = Civic\_faction, y = P.G.\_faction, color = ((Civic\_faction - P.G.\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "Civic\_faction" , y = "P.G.\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

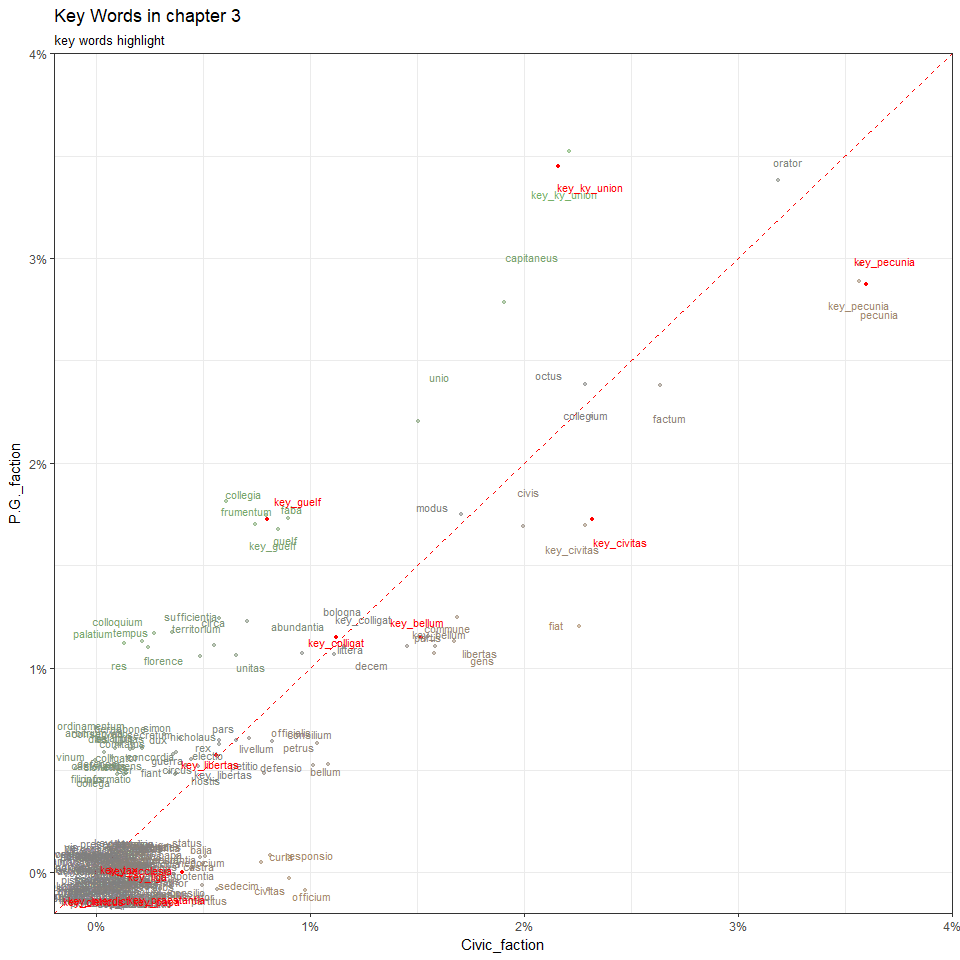
## Warning: Ignoring unknown parameters: slop

## Warning: Removed 4 rows containing missing values (geom\_point).

## Warning: Removed 1 rows containing missing values (geom\_point).

## Warning: Removed 4 rows containing missing values (geom\_text).

## Warning: Removed 1 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = P.G.\_faction, y = no\_faction\_faction, color = ((P.G.\_faction - no\_faction\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "P.G.\_faction" , y = "no\_faction\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

## Warning: Ignoring unknown parameters: slop

## Warning: Removed 3 rows containing missing values (geom\_point).

## Warning: Removed 1 rows containing missing values (geom\_point).

## Warning: Removed 3 rows containing missing values (geom\_text).

## Warning: Removed 1 rows containing missing values (geom\_text).



data1 <- data[1:15,]  
data1

## # A tibble: 15 x 86  
## `key words` sum fre\_of\_lib fre\_of\_no\_faction fre\_of\_P.G.  
## <chr> <int> <int> <int> <int>  
## 1 key\_bellum 35 19 13 2  
## 2 key\_ecclesia 3 2 1 0  
## 3 key\_papa 10 4 6 0  
## 4 key\_clericus 2 1 1 0  
## 5 key\_interdict 0 0 0 0  
## 6 key\_guelf 21 10 8 3  
## 7 key\_ky\_union 53 27 19 6  
## 8 key\_libertas 15 7 7 1  
## 9 key\_liga 5 2 3 0  
## 10 key\_colligat 26 14 9 2  
## 11 key\_pecunia 80 45 30 5  
## 12 key\_praestantia 5 5 0 0  
## 13 key\_tax 0 0 0 0  
## 14 key\_civitas 67 29 32 3  
## 15 key\_pax 87 46 33 8  
## # ... with 81 more variables: fre\_of\_no\_office <int>, fre\_of\_office <int>,  
## # lib\_sum <dbl>, no\_faction\_sum <dbl>, P.G.\_sum <dbl>,  
## # no\_office\_sum <dbl>, office\_sum <dbl>, lib\_speech <dbl>,  
## # no\_faction\_speech <dbl>, P.G.\_speech <dbl>, no\_office\_speech <dbl>,  
## # office\_speech <dbl>, Civic\_faction <dbl>, no\_faction\_faction <dbl>,  
## # P.G.\_faction <dbl>, no\_office\_faction <dbl>, office\_faction <dbl>,  
## # fre\_of\_AL <int>, fre\_of\_no\_faction2 <int>, fre\_of\_RI <int>,  
## # AL\_sum <dbl>, no\_faction2\_sum <dbl>, RI\_sum <dbl>, AL\_speech <dbl>,  
## # no\_faction2\_speech <dbl>, RI\_speech <dbl>, AL\_faction <dbl>,  
## # no\_faction2\_faction <dbl>, RI\_faction <dbl>,  
## # fre\_of\_lib\_no\_office <int>, fre\_of\_lib\_office <int>,  
## # lib\_no\_office\_sum <dbl>, lib\_office\_sum <dbl>,  
## # lib\_no\_office\_speech <dbl>, lib\_office\_speech <dbl>,  
## # Civic\_no\_office\_faction <dbl>, Civic\_office\_faction <dbl>,  
## # fre\_of\_no\_faction\_no\_office <int>, fre\_of\_no\_faction\_office <int>,  
## # no\_faction\_no\_office\_sum <dbl>, no\_faction\_office\_sum <dbl>,  
## # no\_faction\_no\_office\_speech <dbl>, no\_faction\_office\_speech <dbl>,  
## # no\_faction\_no\_office\_faction <dbl>, no\_faction\_office\_faction <dbl>,  
## # `fre\_of\_P.G.\_no office` <int>, fre\_of\_P.G.\_office <int>,  
## # P.G.\_no\_office\_sum <dbl>, P.G.\_office\_sum <dbl>,  
## # P.G.\_no\_office\_speech <int>, P.G.\_office\_speech <dbl>,  
## # P.G.\_no\_office\_faction <dbl>, P.G.\_office\_faction <dbl>,  
## # fre\_of\_AL\_no\_office <int>, fre\_of\_AL\_office <int>,  
## # AL\_no\_office\_sum <dbl>, AL\_office\_sum <dbl>,  
## # AL\_no\_office\_speech <dbl>, AL\_office\_speech <dbl>,  
## # AL\_no\_office\_faction <dbl>, AL\_office\_faction <dbl>,  
## # fre\_of\_no\_faction2\_no\_office <int>, fre\_of\_no\_faction2\_office <int>,  
## # no\_faction2\_no\_office\_sum <dbl>, no\_faction2\_office\_sum <dbl>,  
## # no\_faction2\_no\_office\_speech <dbl>, no\_faction2\_office\_speech <dbl>,  
## # no\_faction2\_no\_office\_faction <dbl>, no\_faction2\_office\_faction <dbl>,  
## # fre\_of\_RI\_no\_office <int>, fre\_of\_RI\_office <int>,  
## # RI\_no\_office\_sum <dbl>, RI\_office\_sum <dbl>,  
## # RI\_no\_office\_speech <dbl>, RI\_office\_speech <dbl>,  
## # RI\_no\_office\_faction <dbl>, RI\_office\_faction <dbl>,  
## # fre\_of\_Allargat <int>, Allargat\_faction <dbl>, fre\_of\_Ristretto <int>,  
## # Ristretto\_faction <dbl>

ggplot(data, aes(x = Civic\_faction, y = no\_faction\_faction, color = ((Civic\_faction - no\_faction\_faction)\*200))) +  
 geom\_abline(color = "red", lty = 2, slop = 1, intercept = 0) +  
 geom\_jitter(size = 1, alpha = 0.5, width = 0.001, height = 0.001) +  
 geom\_point(data = data1, color = 'red', size = 1) +  
 geom\_text(aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3) +  
 geom\_text(data = data1, aes(label = `key words`), position = position\_jitter(width=0.0015, height = 0.0015), size = 3, color = 'red') +  
 theme\_bw() +  
 scale\_x\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_y\_continuous(expand = c(0,0), limits = c(-0.002, 0.04), labels = percent\_format()) +  
 scale\_color\_gradient2(low = 'green', mid = 'grey50', high = 'orange') +  
 theme(legend.position="none") +  
 labs(x = "Civic\_faction" , y = "no\_faction\_faction",  
 title = "Key Words in chapter 3",  
 subtitle = "key words highlight")

## Warning: Ignoring unknown parameters: slop

## Warning: Removed 1 rows containing missing values (geom\_point).

## Warning: Removed 1 rows containing missing values (geom\_text).

