

Extension Analysis

MIA

Fall 2014

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1 Introduction

One of the basic features and strengths of XBRL is the ability to create custom elements, or extensions. In the SEC implementation of XBRL, filers may create extensions within certain guidelines. However, it has been observed that filers create extensions which are materially identical to existing standard elements. Unnecessary extensions impair the usability of XBRL data by introducing meaningless variability. Several studies have shown that approximately 50% of extensions are unnecessary, while a recent SEC Staff Observation from the SEC found that a significant number of extensions are reasonable and appropriate. Further, the SEC has stated that extension rates will be reduced as filers learn more about XBRL.

2 Objectives and Questions

Objectives of this analysis are:

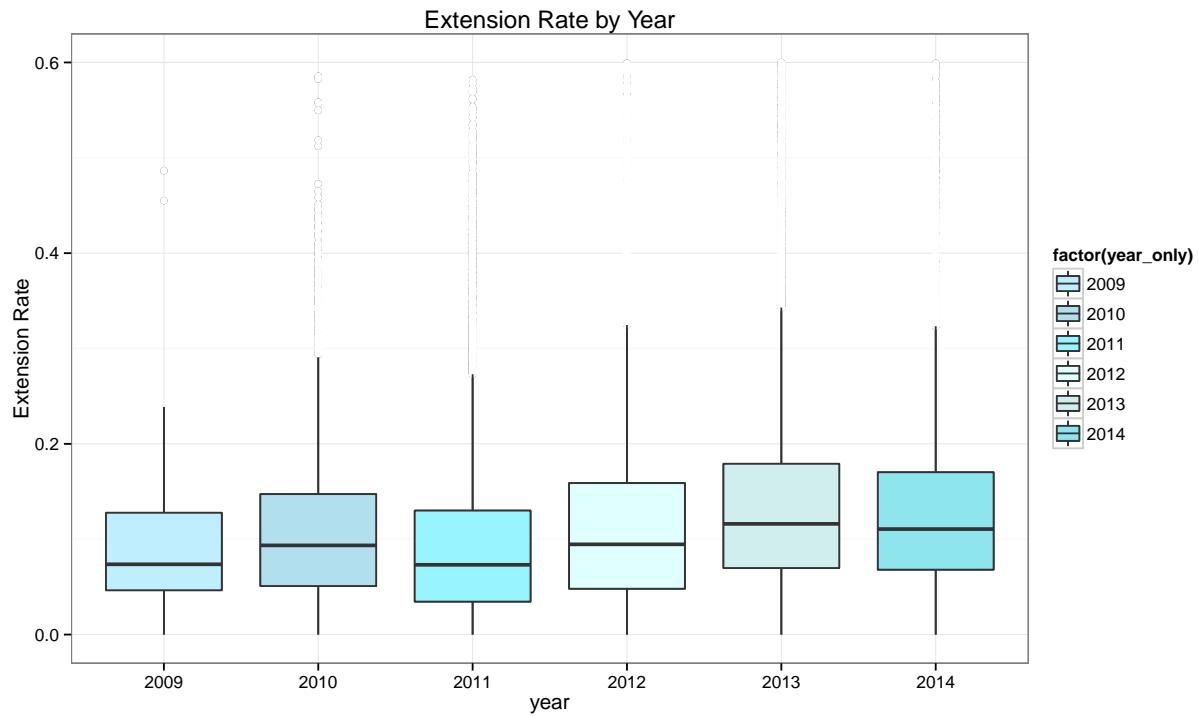
- To analyze extension rates in XBRL filings across various dimensions to discover trends in rates over time.
- To provide a framework for identifying unnecessary extensions, analyze a sample of filings and compare to earlier research findings regarding the rate of unnecessary extensions.
- To recommend actions to reduce the rate of unnecessary extensions.

Questions:

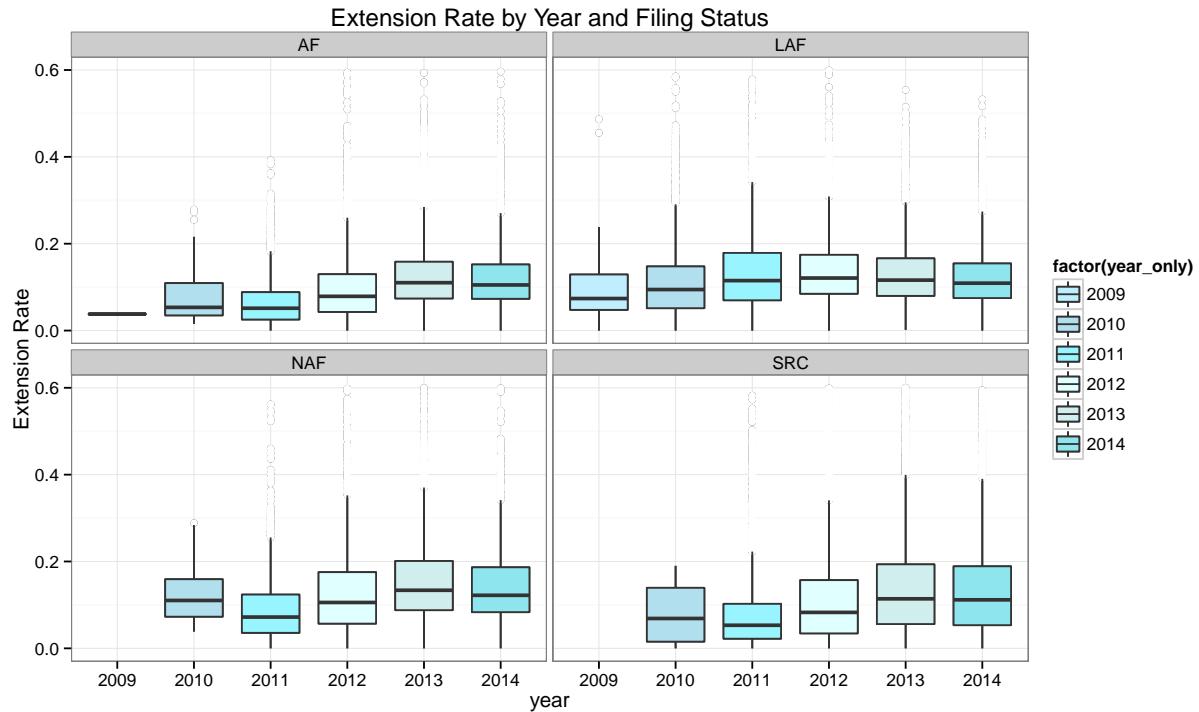
- What are the general demographics of extensions?
What factors have a strong association with extensions?
- What is the impact of extensions on the data set?
- What is the impact of unnecessary extensions on the data set?
- Are extension rates changing over time?
- Is there any indication that filers are ‘learning’ over time?

3 Extensions in filings

3.1 Definition of extensions

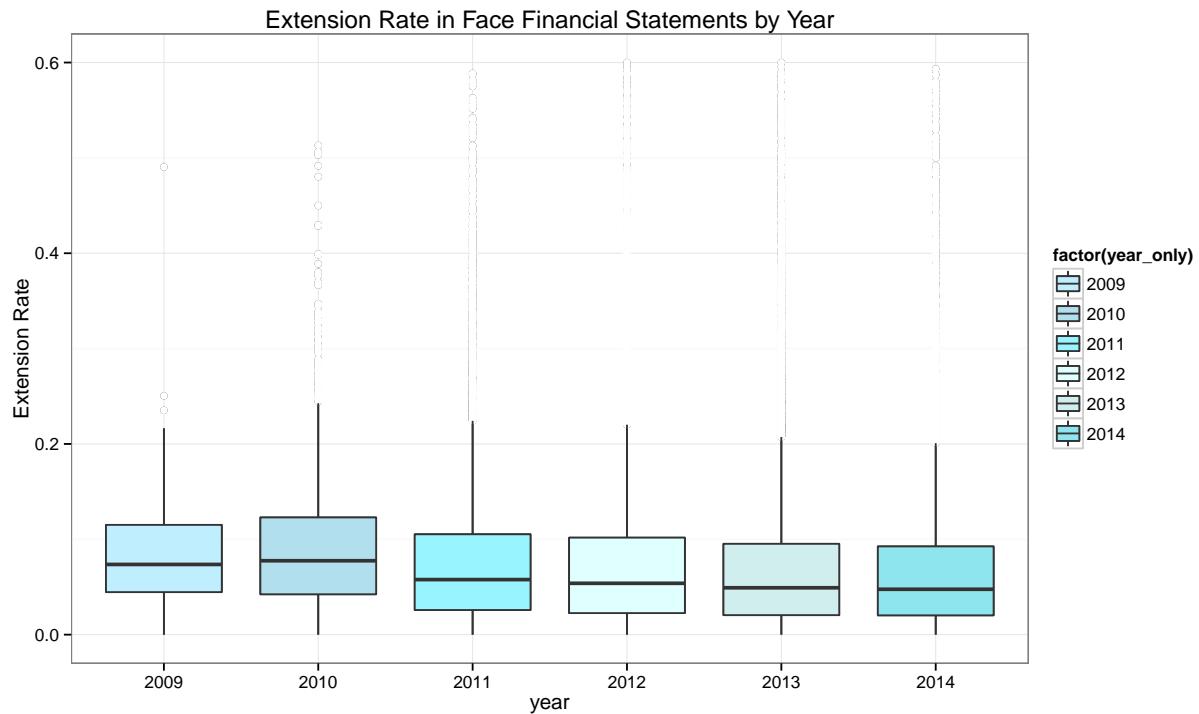


3.2 Identifying unnecessary extensions

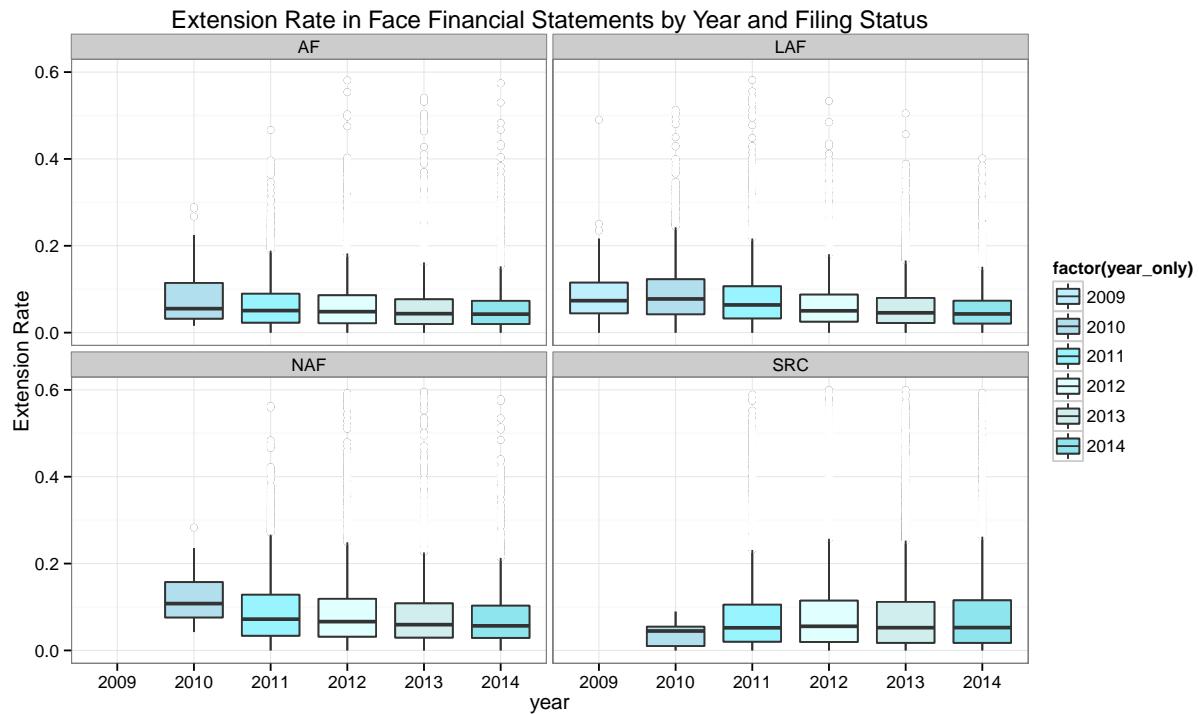


4 Extended facts in entire filing

4.1 Entire population by filing year

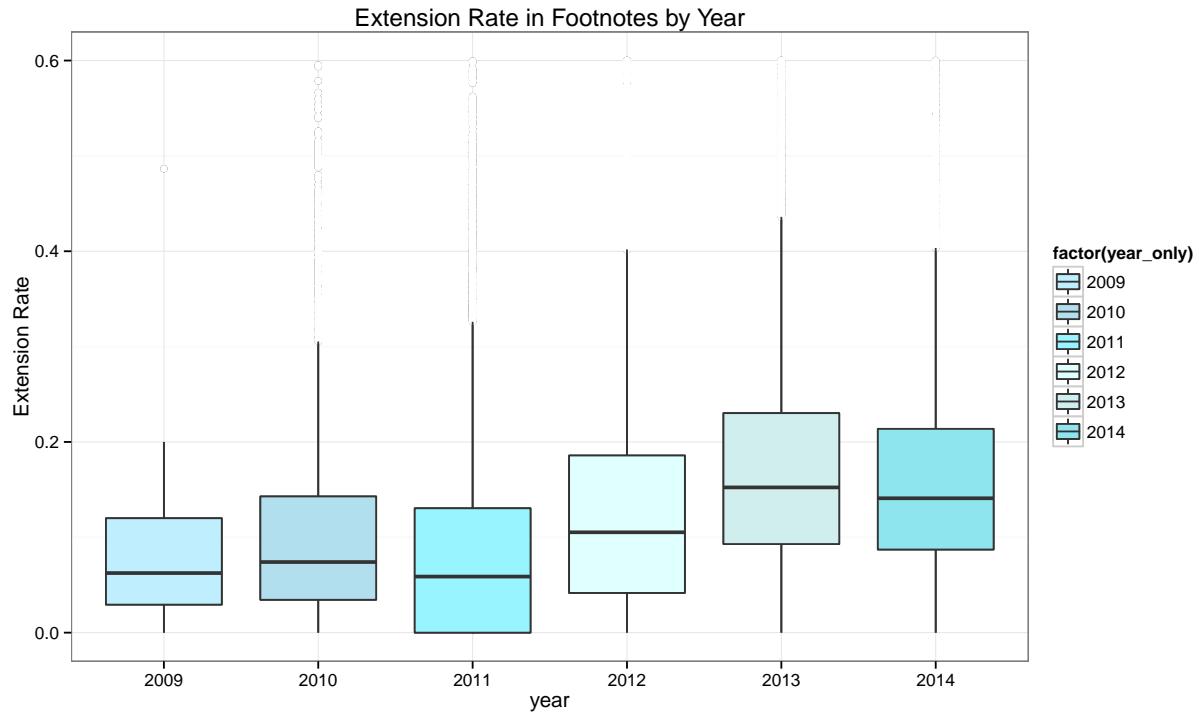


4.2 By SEC filing status and filing year

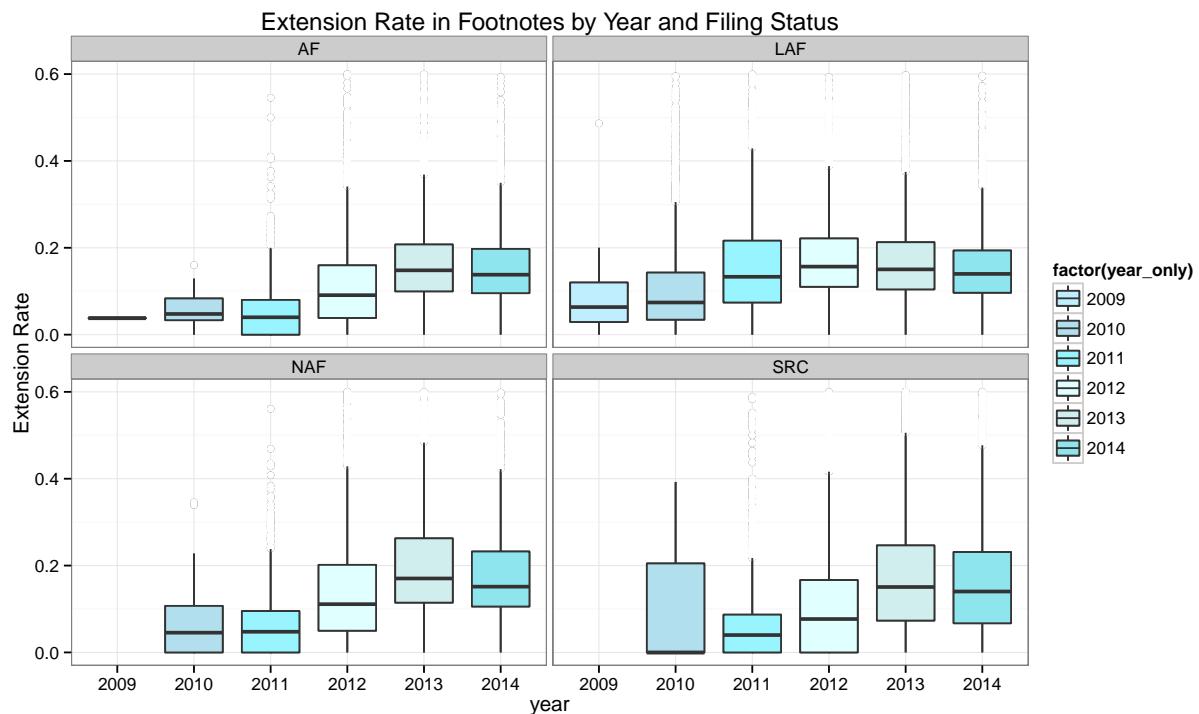


5 Extended facts in footnotes

5.1 Entire population by filing year



5.2 By SEC filing status and filing year



6 Factors which impact extension rates

6.1 Effect of taxonomy version on extensions

6.1.1 Entire population by filing year

6.1.2 By taxonomy version

6.1.3 BY SEC filing status and filing year

6.1.4 Face financial statements

6.1.5 By taxonomy version

6.1.6 BY SEC filing status and filing year

6.2 Effect of filing size on extensions

6.2.1 Number of facts in filings by filing year

6.2.2 Number of facts in filings by SEC filing status and filing year

7 Effect of extensions on data set

8 Identifying unnecessary extensions

8.1 Method

8.2 Sample

8.2.1 Line Items

8.2.2 Axes

8.3 Extrapolation

8.4 Effect of removing unnecessary extensions

9 Reducing the rate of unnecessary extensions

10 Conclusion

11 Data Collection and Study Design

11.1 Data Collection

Data was collected from all public companies who are required to file through the SEC. The data was obtained from the XBRL database by using PostgreSQL queries. The code can be provided upon request.

11.2 Study Design

This is an observational study so inferences are restricted associations for the sample examined. The variables considered in this study were:

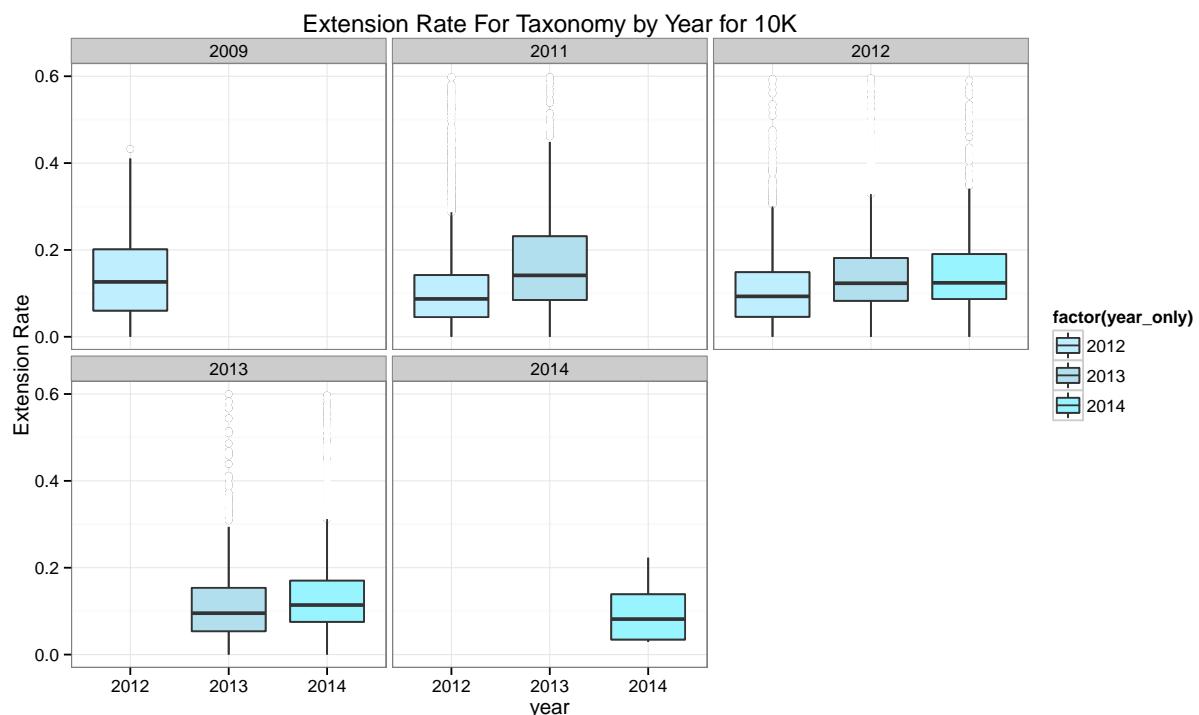
- Creation Software: Software used to create filing.
- Standard Industry Code:
- Filer status: Four categories, large accelerated filers, accelerated filers, non accelerated filers, and small reporting companies.

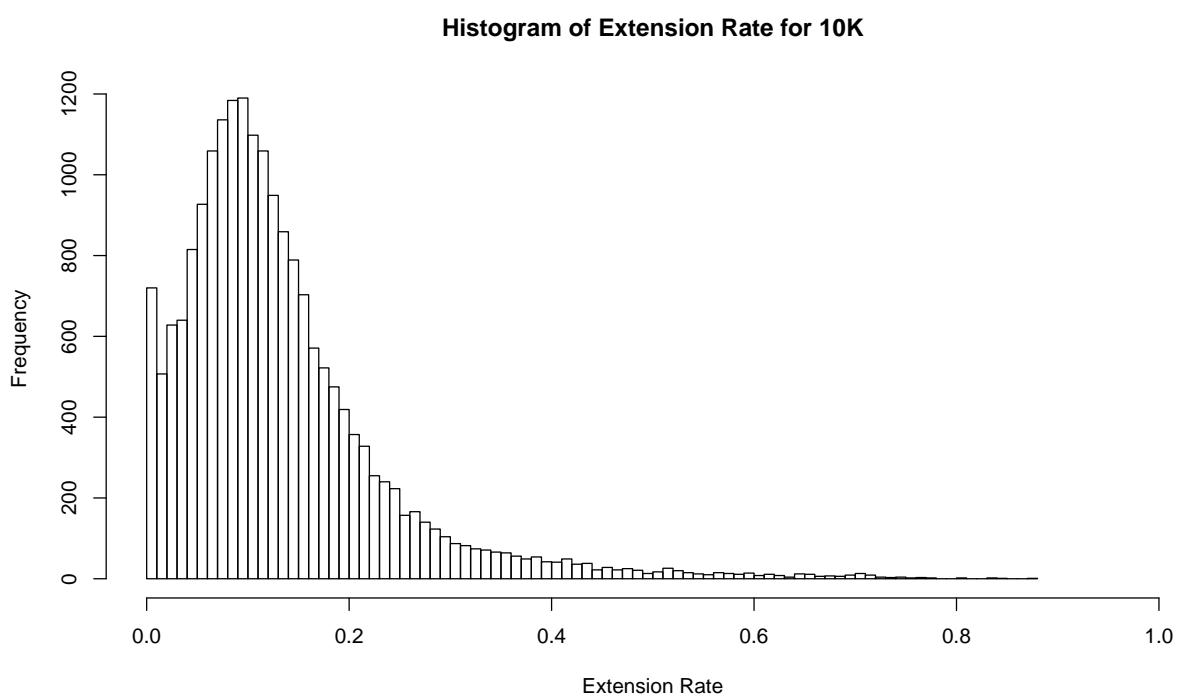
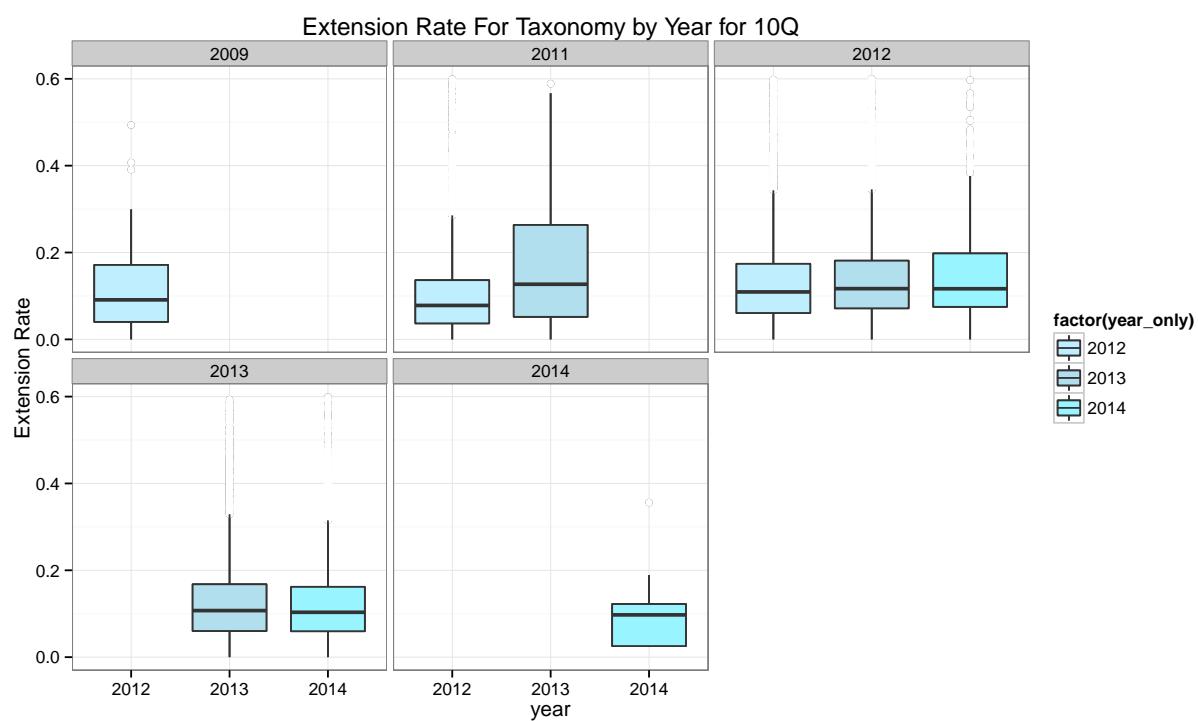
- Reference number:
- Company Name: Name of company
- Year: Year of filing
- Taxonomy: Taxonomy which the company filed under.
- Extension rate: extended element over the total number of elements (extended element + standard element).
- Form Type: If filing a 10K or 10Q.

12 Analysis

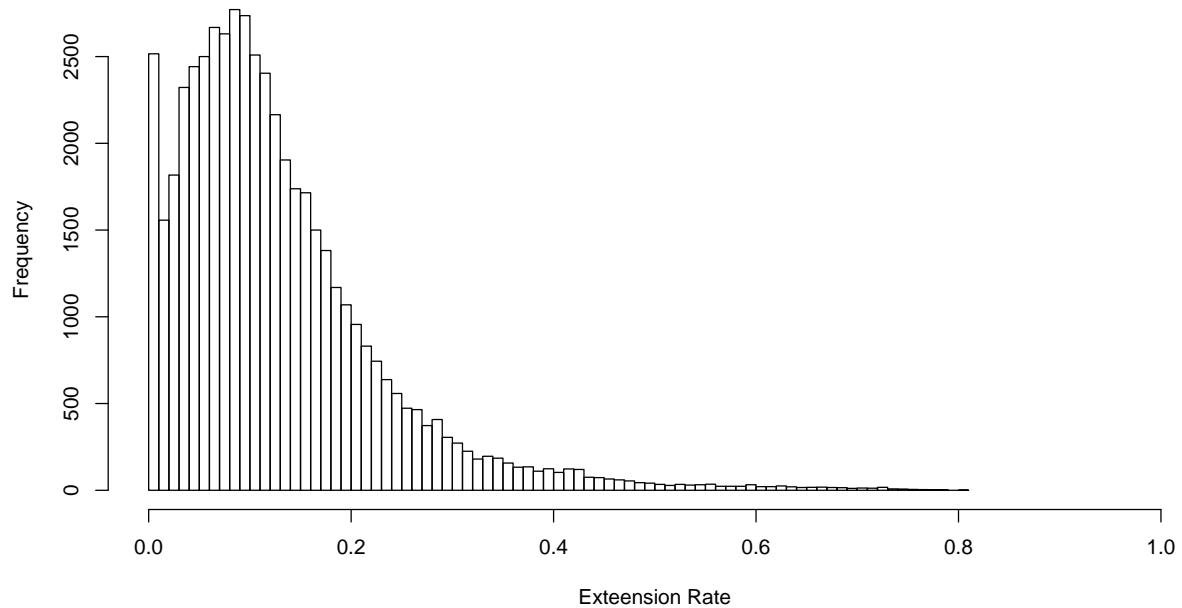
All the analysis below are from years 2012-2014 unless specified.

12.1 Preliminary Plots



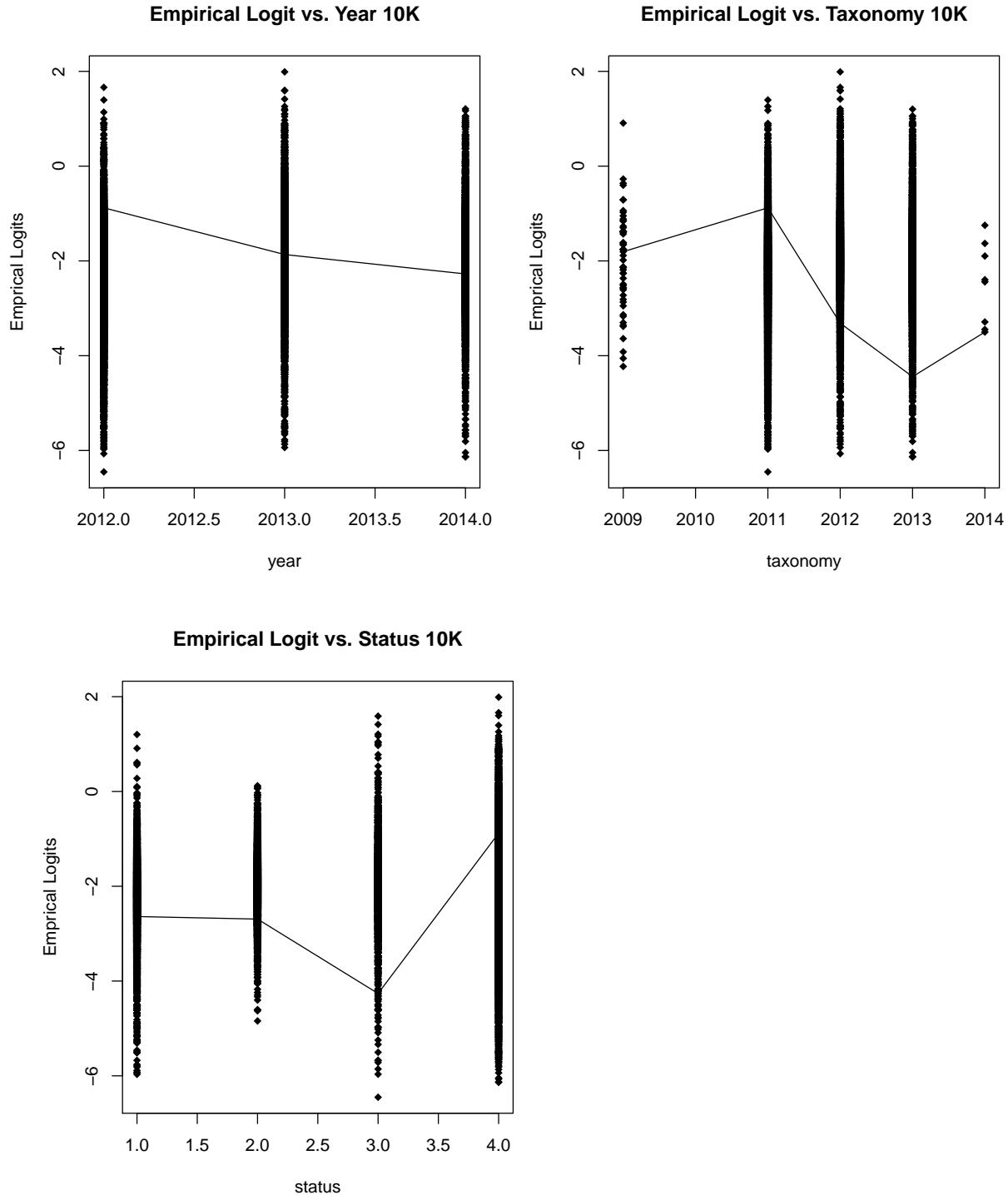


Histogram of Extension Rate for 10Q



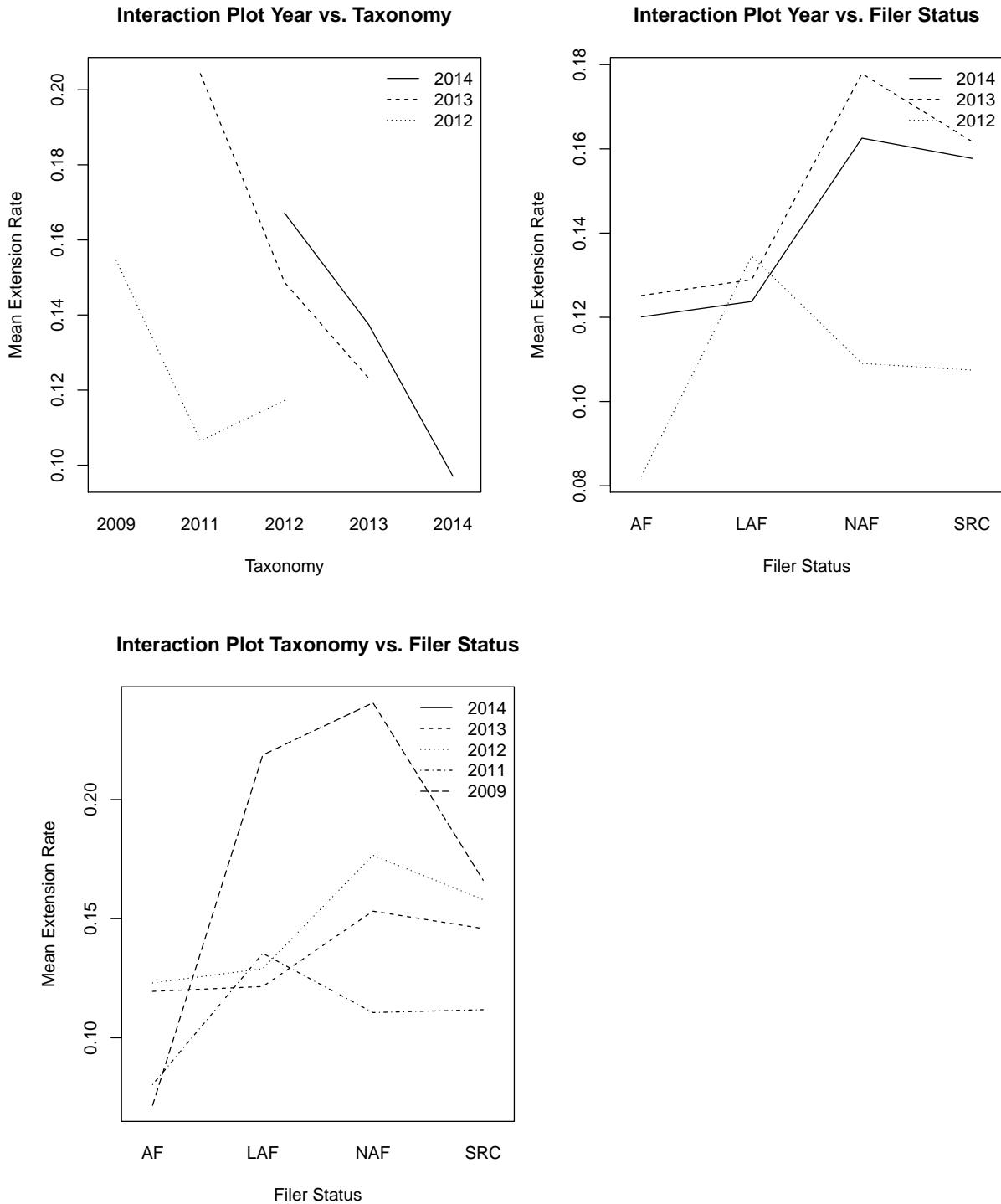
12.1.1 Linearity Check

Before fitting a logistic regression we need to make sure we have met the linearity assumption. In other words, the relation $\text{logit}(\text{extensionrate})$ vs the predictors is linear.



From the above plots we can see that the linearity assumption is adequately met.

12.1.2 Interactions



Interaction terms are needed for this model since taxonomy depends on year and vice versa. To determine if an interaction between taxonomy and filer status or year and filer status is needed we will use the plots above to investigate. From the above interaction plot (the first plot) we see that interactions between year and taxonomy is needed. The need for interactions is indicated by the lack of overlap in terms of mean extension rate. For example the line for year 2012 and taxonomy 2012 intersect at about .12 mean extension

rate, whereas, the line for year 2013 and taxonomy 2012 intersect at about .15. If there was no need for interaction we would expect at the intersections for both lines at taxonomy 2012 to have the same mean extension rate. Since they do not we need to include interactions between year and taxonomy in the model. In the other two above interaction plots we also see we need an interaction between taxonomy and filer status, and between year and filer status.

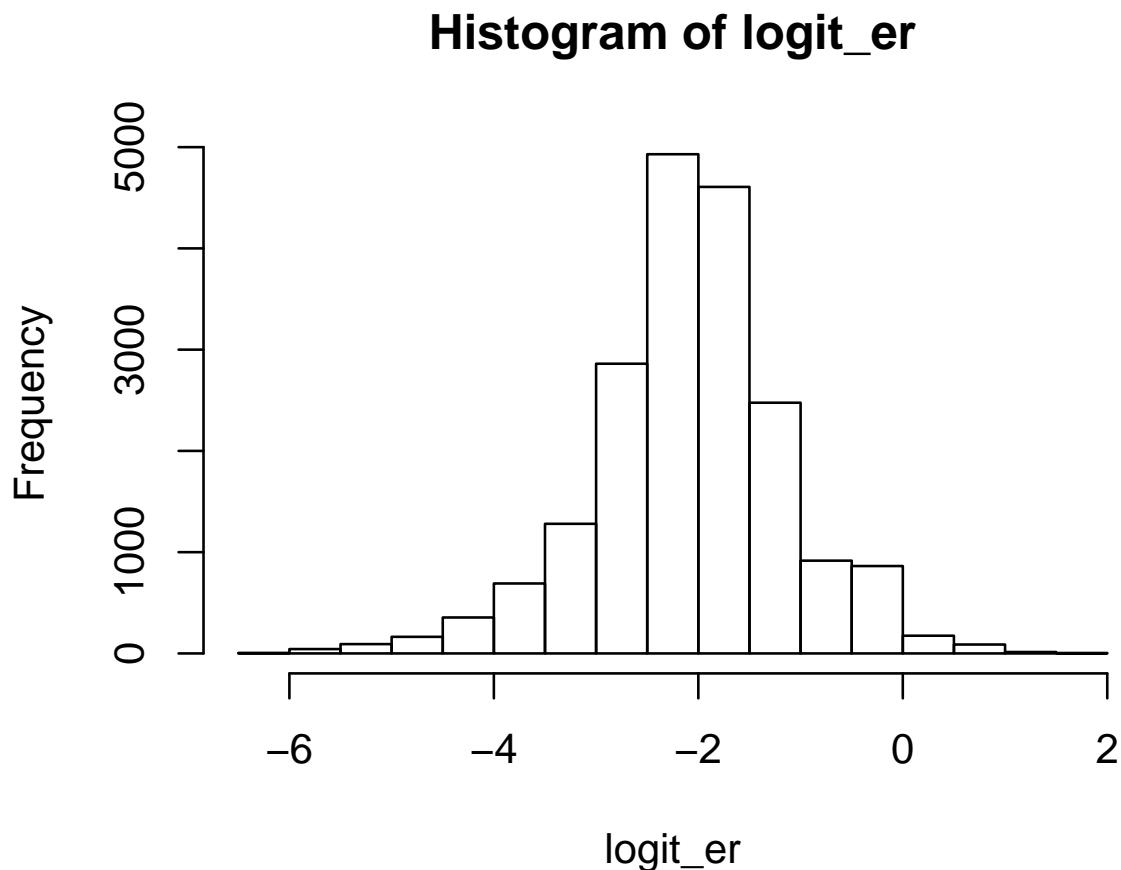
12.2 First Model

The response, extension rate, is a binomial count out of a total. Due to the nature of the response a multiple logistic regression is fitted. Initially, the predictors chosen to use in the model are year (as a categorical variable), taxonomy (as a categorical variable), and filer status. The data set that is used to fit the model is a subset of the data (described in section 3.1) from years 2012 and up. The choice of considering data on years 2012 and up was due the requirement of filers to file with XBRL in the year 2012.

12.2.1 Fit in R

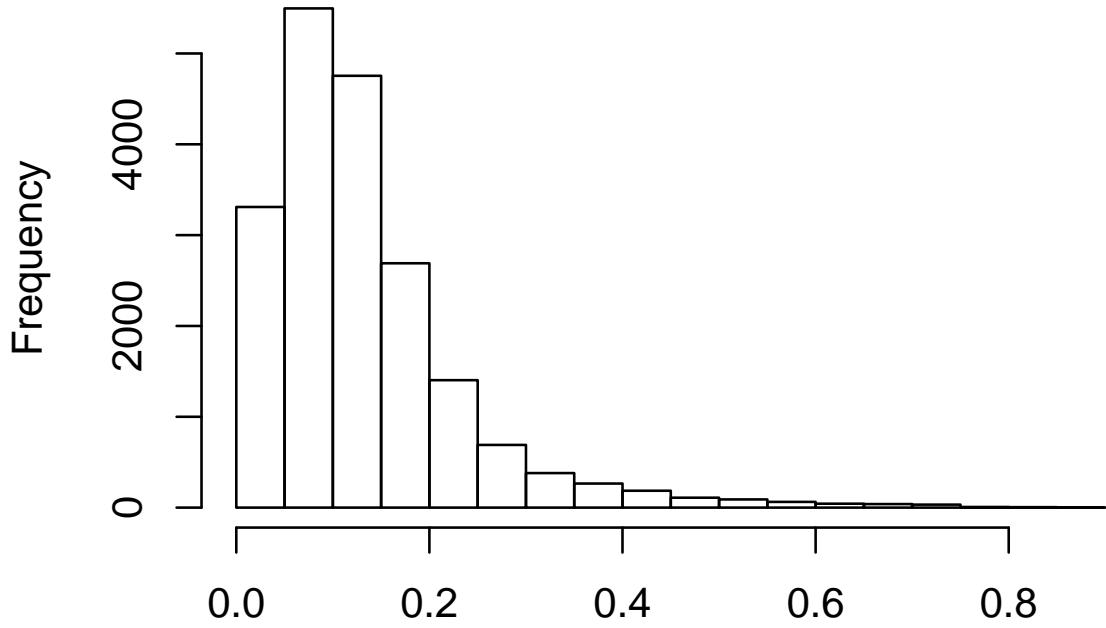
```
filer_cat<-relevel(factor(all_data_2012_10K$filer_category), "LAF")

logit_er<- log((all_data_2012_10K$extension_rate)/(1-all_data_2012_10K$extension_rate))
logit_er<-ifelse(logit_er== -Inf, 0.000000000001, logit_er)
hist(logit_er)
```



```
hist(all_data_2012_10K$extension_rate)
```

Histogram of all_data_2012_10K\$extension_rate



```
fit_10K<-glm(logit_er~factor(year_only) + factor(taxonomy_year)+filer_cat)^2  
 ,data=all_data_2012_10K)
```

```
bin_fit_10K<-glm(extension_rate~(factor(year_only) + factor(taxonomy_year)+filer_cat)^2  
 ,family=quasibinomial,data=all_data_2012_10K)
```

```
#bin_fit_10K2<-glm(extension_rate~(factor(year_only) + factor(taxonomy_year)+filer_cat)^2 + SIT + creat_soft  
 #  
 #,family=quasibinomial,data=all_data_2012_10K)  
##fits better smaller residual deviance
```

```
#plot(bin_fit_10K2)
```

```
pchisq(1511.6,19536)
```

```
[1] 0
```

```
#pchisq(1253.8,19493)
```

```

#bin_fit_10K_ni<-glm(extension_rate~factor(year_only) + factor(taxonomy_year) + factor(filer_category)
#                               ,family=quasibinomial, data=all_data_2012_10K)

#anova(bin_fit_10K_ni,bin_fit_10K)
#pchisq(37.8, df=18, lower.tail=FALSE)
##model with interactions is better, small pvalue.
##An alternative to fitting the above model.
#bayes<-bayesglm(extension_rate~(factor(year_only) + factor(taxonomy_year)+filer_cat)^2
#                   ,family=quasibinomial, data=all_data_2012_10K)

#summary(bin_fit_10K_12)
#summary(bin_fit_10K_13)
#summary(bin_fit_10K_14)

```

12.2.2 Model Coefficients

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-1.2731	0.1505	-8.46	0.0000
factor(year_only)2013	-0.1380	0.0718	-1.92	0.0545
factor(year_only)2014	-0.0761	0.0752	-1.01	0.3117
factor(taxonomy_year)2011	-0.6097	0.1521	-4.01	0.0001
factor(taxonomy_year)2012	-0.5032	0.1602	-3.14	0.0017
factor(taxonomy_year)2013	-0.6232	0.1688	-3.69	0.0002
factor(taxonomy_year)2014	-0.5477	0.8825	-0.62	0.5349
filer_catAF	-1.2886	0.2944	-4.38	0.0000
filer_catNAF	0.1238	0.6990	0.18	0.8594
filer_catSRC	-0.3402	0.2580	-1.32	0.1872
factor(year_only)2013:factor(taxonomy_year)2011	0.4854	0.0698	6.95	0.0000
factor(year_only)2013:factor(taxonomy_year)2012	-0.0193	0.0466	-0.41	0.6785
factor(year_only)2013:filer_catAF	0.3428	0.0871	3.94	0.0001
factor(year_only)2014:filer_catAF	0.2592	0.1111	2.33	0.0197
factor(year_only)2013:filer_catNAF	0.6450	0.1032	6.25	0.0000
factor(year_only)2014:filer_catNAF	0.8064	0.1320	6.11	0.0000
factor(year_only)2013:filer_catSRC	0.5991	0.0609	9.84	0.0000
factor(year_only)2014:filer_catSRC	0.7641	0.0825	9.27	0.0000
factor(taxonomy_year)2011:filer_catAF	0.7165	0.2967	2.41	0.0158
factor(taxonomy_year)2012:filer_catAF	0.9343	0.3061	3.05	0.0023
factor(taxonomy_year)2013:filer_catAF	1.0023	0.3151	3.18	0.0015
factor(taxonomy_year)2011:filer_catNAF	-0.3588	0.7004	-0.51	0.6084
factor(taxonomy_year)2012:filer_catNAF	-0.3504	0.7061	-0.50	0.6198
factor(taxonomy_year)2013:filer_catNAF	-0.6517	0.7118	-0.92	0.3599
factor(taxonomy_year)2011:filer_catSRC	0.0844	0.2595	0.33	0.7450
factor(taxonomy_year)2012:filer_catSRC	0.0630	0.2647	0.24	0.8117
factor(taxonomy_year)2013:filer_catSRC	-0.1713	0.2710	-0.63	0.5273
factor(taxonomy_year)2014:filer_catSRC	-0.8127	0.9844	-0.83	0.4091

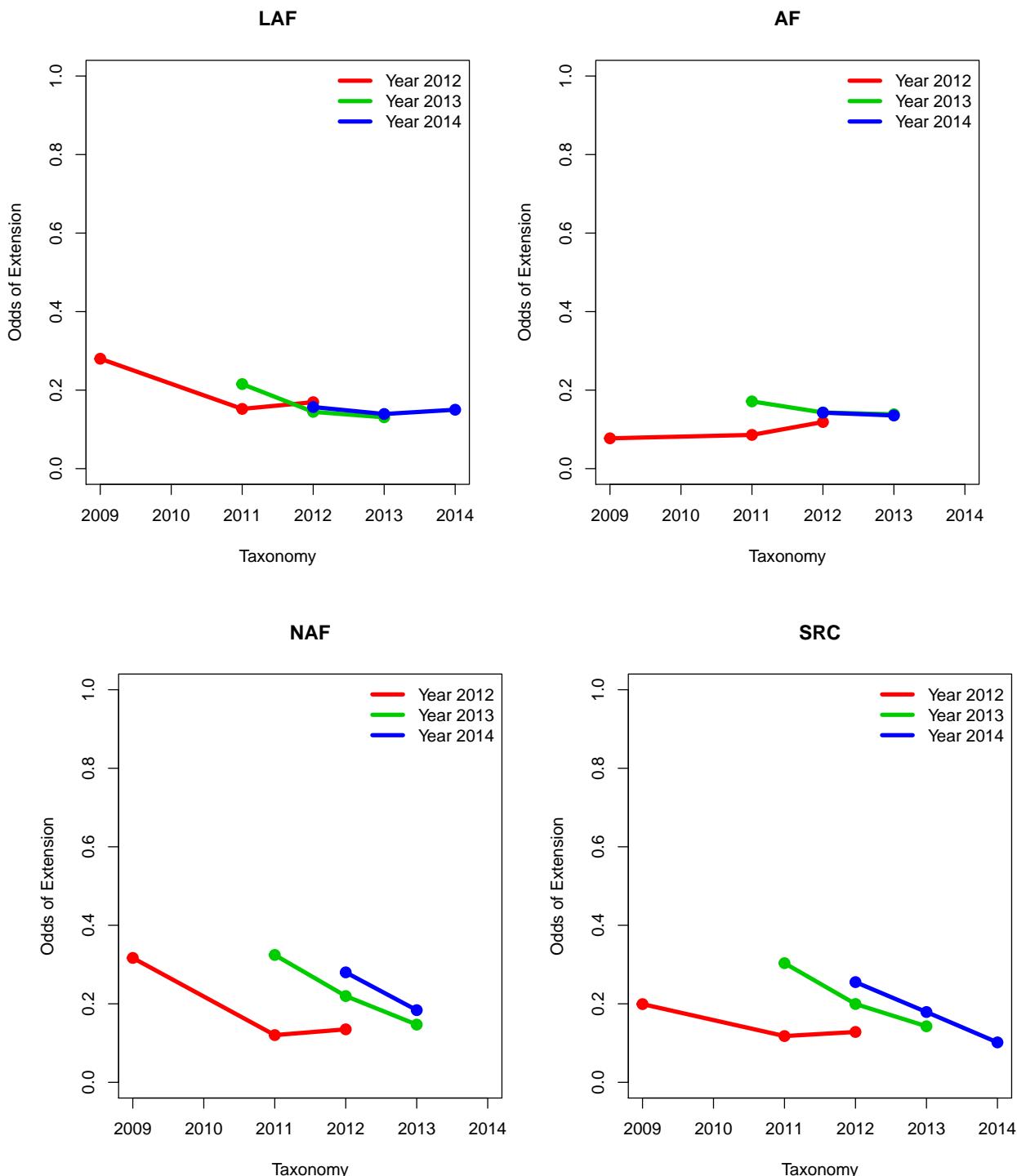
Table 1: Binomial Fit for 10K Response Extension Rate

12.2.3 Exponentiated Coefficients

year12_tax9_LAF	0.28
year13	0.87
year14	0.93
taxyear11	0.54
taxyear12	0.60
taxyear13	0.54
taxyear14	0.58
AF	0.28
NAF	1.13
SRC	0.71
year2013_taxyear11	1.62
year2013_taxyear12	0.98
year2013_AF	1.41
year2014_AF	1.30
year2013_NAF	1.91
year2014_NAF	2.24
year2013_SRC	1.82
year2014_SRC	2.15
taxyear11AF	2.05
taxyear12AF	2.55
taxyear13AF	2.72
taxyear11NAF	0.70
taxyear12NAF	0.70
taxyear13NAF	0.52
taxyear11SRC	1.09
taxyear12SRC	1.07
taxyear13SRC	0.84
taxyear14SRC	0.44

Table 2: Binomial Fit for 10K Response Extension Rate Odds

12.2.4 Interpretation

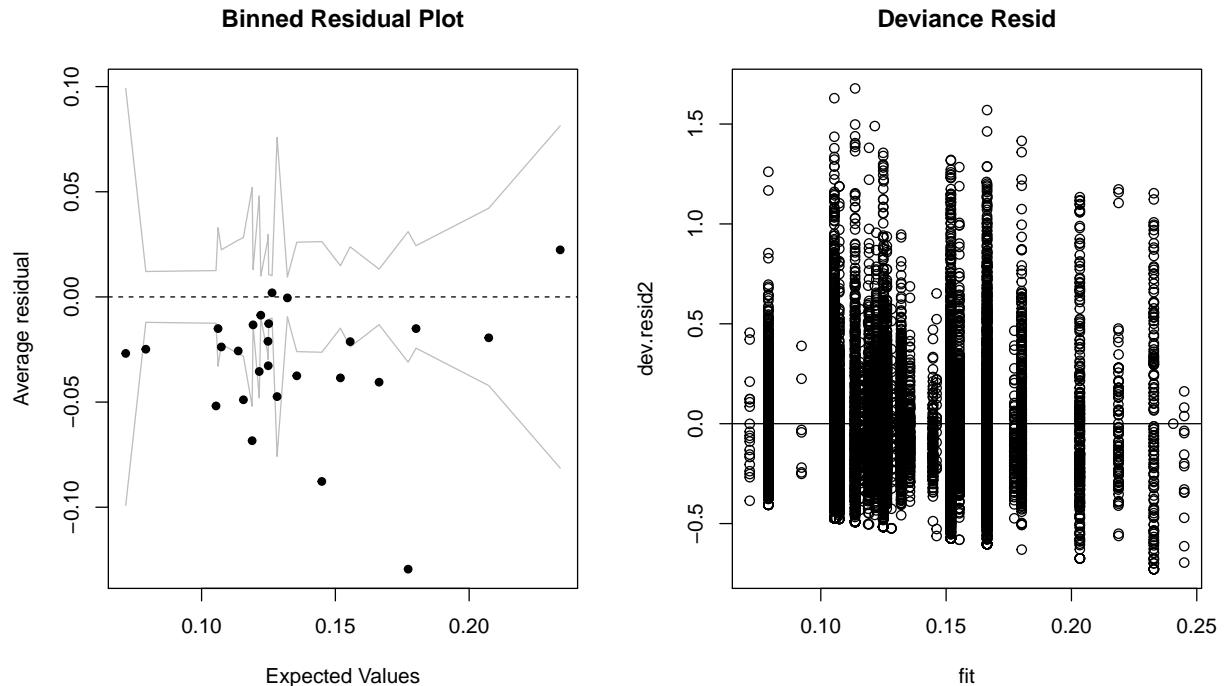


X	LAF	AF	NAF	SRC	taxonomy
year12_tax9	0.28	0.08	0.32	0.20	2009.00
year12_tax11	0.15	0.09	0.12	0.12	2011.00
year12_tax12	0.17	0.12	0.13	0.13	2012.00
year13_tax11	0.22	0.17	0.32	0.30	2011.00
year13_tax12	0.14	0.14	0.22	0.20	2012.00
year13_tax13	0.13	0.14	0.15	0.14	2013.00
year14_tax12	0.16	0.14	0.28	0.26	2012.00
year14_tax13	0.14	0.14	0.18	0.18	2013.00
year14_tax14	0.15			0.10	2014.00

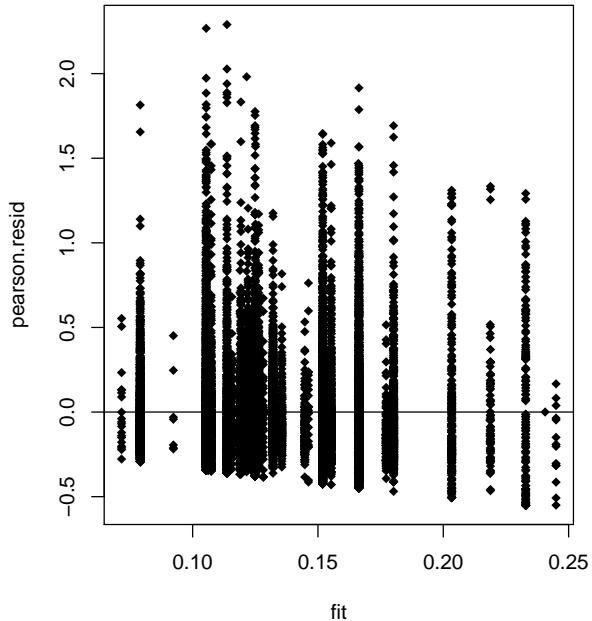
Table 3: Binomial Fit for 10K Response Extension Rate Odds

For LAF there is a decreasing trend in odds of extension as taxonomy increases. For AF we do not see any overwhelming trends. For NAF, there is a decreasing trend in the odds of extension as taxonomy increases. Similarly for SRC, we see a decreasing trend in the odds of an extension as taxonomy increases. From the diagnostic plots on page 7 we see model assumptions are adequately met.

12.2.5 Model Diagnostics



Pearson Resid



12.3 Adding SIC and Creation Software

We decided to add account for (or control for) creation software and standard industry code by adding these variables as predictors in the model. The second model is referred to as the big model in the tables and plots below. For creation software, we specifically wanted to look at the odds of an extension for Workiva. SIC is categorized based on <http://siccode.com/en/> labels. The model below baselines at LAF and Webfilings as the creation software.

12.3.1 Fit in R

```

filer_cat<-relevel(factor(all_data_2012_10K$filer_category), "LAF")
creat_soft<-relevel(factor(all_data_2012_10K$creation_software), "WebFilings")

bin_fit_10K2<-glm(extension_rate~(factor(year_only) + factor(taxonomy_year)+filer_cat)^2 + SIT + creat_soft
,family=quasibinomial,data=all_data_2012_10K)

```

12.3.2 Model Coefficients

```

Call:
glm(formula = extension_rate ~ (factor(year_only) + factor(taxonomy_year) +
    filer_cat)^2 + SIT + creat_soft, family = quasibinomial,
    data = all_data_2012_10K)

```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.0007	-0.1778	-0.0508	0.0998	1.6778

Coefficients: (8 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-1.39390	0.14904	-9.35	< 2e-16 ***
factor(year_only)2013	-0.08994	0.06772	-1.33	0.18414
factor(year_only)2014	-0.02339	0.07112	-0.33	0.74223
factor(taxonomy_year)2011	-0.49291	0.13814	-3.57	0.00036 ***
factor(taxonomy_year)2012	-0.48509	0.14655	-3.31	0.00093 ***
factor(taxonomy_year)2013	-0.55667	0.15484	-3.60	0.00033 ***
factor(taxonomy_year)2014	-0.70210	0.79803	-0.88	0.37898
filer_catAF	-1.21676	0.26663	-4.56	5.1e-06 ***
filer_catNAF	0.02214	0.63212	0.04	0.97206
filer_catSRC	-0.38816	0.23390	-1.66	0.09703 .
SITFIR	0.12813	0.05828	2.20	0.02793 *
SITmanu	-0.12799	0.05820	-2.20	0.02789 *
SITmin	0.08285	0.06022	1.38	0.16890
SITother	0.09442	0.08867	1.06	0.28695
SITPA	-0.43942	0.12157	-3.61	0.00030 ***
SITRT	-0.21128	0.06338	-3.33	0.00086 ***
SITserv	-0.06679	0.05891	-1.13	0.25695
SITTPB	-0.00720	0.06094	-0.12	0.90594
SITWT	-0.24227	0.06863	-3.53	0.00042 ***
creat_soft Sectio Updated	-0.68167	1.10810	-0.62	0.53845
creat_softACI	0.00391	0.03385	0.12	0.90798
creat_softCompliance Xpressware	1.36441	0.04148	32.90	< 2e-16 ***
creat_softCompSci	-0.44702	0.03368	-13.27	< 2e-16 ***
creat_softDataTracks	0.26225	0.03105	8.45	< 2e-16 ***
creat_softDG3	-0.42740	0.26857	-1.59	0.11153

creat_softDoremus	0.37726	0.16759	2.25	0.02439 *
creat_softEdgar Filing	0.12702	0.13800	0.92	0.35736
creat_softEdgar Tech & Bus.	0.10718	0.25795	0.42	0.67777
creat_softEDGARbiz	-0.55000	0.22211	-2.48	0.01329 *
creat_softEDGARSuite	1.71552	0.55639	3.08	0.00205 **
creat_softEz-XBRL	0.34121	0.03144	10.85	< 2e-16 ***
creat_softFilePoint	0.21374	0.47247	0.45	0.65100
creat_softIBM	0.24257	0.03722	6.52	7.3e-11 ***
creat_softMerrill	0.04851	0.02463	1.97	0.04890 *
creat_softNeoClarus	1.56702	0.04142	37.84	< 2e-16 ***
creat_softNovaworks	0.25984	0.02641	9.84	< 2e-16 ***
creat_softOracle Hyperion	0.07897	0.27246	0.29	0.77195
creat_softOther	-0.02254	0.08776	-0.26	0.79733
creat_softP3XBRL	0.30934	0.09039	3.42	0.00062 ***
creat_softQXInteractive	0.59870	0.03640	16.45	< 2e-16 ***
creat_softRivet	0.01844	0.02577	0.72	0.47436
creat_softRR Donnelley	0.10372	0.01958	5.30	1.2e-07 ***
creat_softSECUREX	0.21095	0.08415	2.51	0.01219 *
creat_softSmartXBRL	-0.04419	0.13795	-0.32	0.74874
creat_softThomson Reuters	0.09434	0.03080	3.06	0.00219 **
creat_softTrintech	-0.17435	0.55336	-0.32	0.75271
creat_softUBmatrixtm) Report Builder htt0ther	0.10048	0.97267	0.10	0.91773
creat_softversion 4.1.0 \n0ther	1.13715	0.66376	1.71	0.08669 .
creat_softVintage Filings	-0.28701	0.08840	-3.25	0.00117 **
creat_softXBRL Converter	-0.95155	0.27105	-3.51	0.00045 ***
creat_softXBROther	-0.25736	0.14020	-1.84	0.06643 .
creat_softXWand	0.26517	0.07648	3.47	0.00053 ***
creat_softZ-K Global	-0.00801	0.20346	-0.04	0.96859
factor(year_only)2013:factor(taxonomy_year)2011	0.21485	0.06552	3.28	0.00104 **
factor(year_only)2014:factor(taxonomy_year)2011	NA	NA	NA	NA
factor(year_only)2013:factor(taxonomy_year)2012	0.04093	0.04332	0.94	0.34481
factor(year_only)2014:factor(taxonomy_year)2012	NA	NA	NA	NA
factor(year_only)2013:factor(taxonomy_year)2013	NA	NA	NA	NA
factor(year_only)2014:factor(taxonomy_year)2013	NA	NA	NA	NA
factor(year_only)2013:factor(taxonomy_year)2014	NA	NA	NA	NA
factor(year_only)2014:factor(taxonomy_year)2014	NA	NA	NA	NA
factor(year_only)2013:filer_catAF	0.23059	0.08182	2.82	0.00483 **
factor(year_only)2014:filer_catAF	0.15867	0.10377	1.53	0.12624
factor(year_only)2013:filer_catNAF	0.59318	0.09684	6.13	9.2e-10 ***
factor(year_only)2014:filer_catNAF	0.76119	0.12280	6.20	5.8e-10 ***
factor(year_only)2013:filer_catSRC	0.43287	0.05812	7.45	9.9e-14 ***
factor(year_only)2014:filer_catSRC	0.61320	0.07795	7.87	3.8e-15 ***
factor(taxonomy_year)2011:filer_catAF	0.62290	0.26874	2.32	0.02047 *
factor(taxonomy_year)2012:filer_catAF	0.94039	0.27807	3.38	0.00072 ***
factor(taxonomy_year)2013:filer_catAF	1.00892	0.28660	3.52	0.00043 ***
factor(taxonomy_year)2014:filer_catAF	NA	NA	NA	NA
factor(taxonomy_year)2011:filer_catNAF	-0.32821	0.63332	-0.52	0.60430
factor(taxonomy_year)2012:filer_catNAF	-0.27578	0.63902	-0.43	0.66607
factor(taxonomy_year)2013:filer_catNAF	-0.58584	0.64440	-0.91	0.36329
factor(taxonomy_year)2014:filer_catNAF	NA	NA	NA	NA
factor(taxonomy_year)2011:filer_catSRC	-0.14110	0.23524	-0.60	0.54864
factor(taxonomy_year)2012:filer_catSRC	0.07449	0.24058	0.31	0.75684
factor(taxonomy_year)2013:filer_catSRC	-0.17467	0.24669	-0.71	0.47890
factor(taxonomy_year)2014:filer_catSRC	-0.53169	0.89094	-0.60	0.55066

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

(Dispersion parameter for quasibinomial family taken to be 0.0695068)

Null deviance: 1648.9 on 19563 degrees of freedom
Residual deviance: 1253.8 on 19493 degrees of freedom
AIC: NA

Number of Fisher Scoring iterations: 5

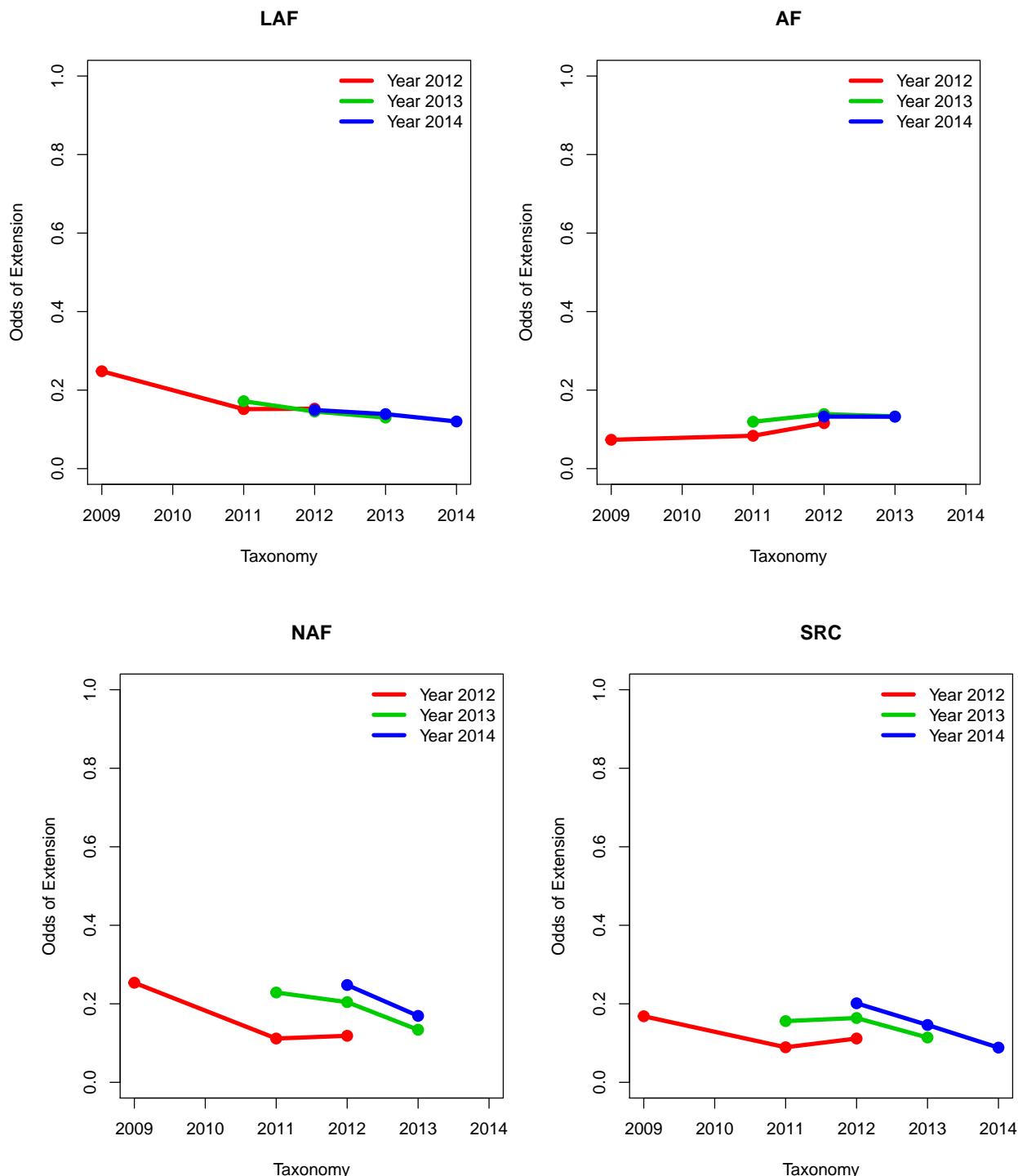
12.3.3 Exponentiated Coefficients

The following odds are based off of using Workiva as the creation software.

year12_tax9_LAF	0.25
year13	0.91
year14	0.98
taxyear11	0.61
taxyear12	0.62
taxyear13	0.57
taxyear14	0.50
AF	0.30
NAF	1.02
SRC	0.68
year2013_taxyear11	1.24
year2013_taxyear12	1.04
year2013_AF	1.26
year2014_AF	1.17
year2013_NAF	1.81
year2014_NAF	2.14
year2013_SRC	1.54
year2014_SRC	1.85
taxyear11AF	1.86
taxyear12AF	2.56
taxyear13AF	2.74
taxyear11NAF	0.72
taxyear12NAF	0.76
taxyear13NAF	0.56
taxyear11SRC	0.87
taxyear12SRC	1.08
taxyear13SRC	0.84
taxyear14SRC	0.59

Table 4: Binomial Fit for 10K Response Extension Rate Odds Big Model

12.3.4 Model Interpretation



X	LAF	AF	NAF	SRC	taxonomy
year12_tax9	0.25	0.07	0.25	0.17	2009.00
year12_tax11	0.15	0.08	0.11	0.09	2011.00
year12_tax12	0.15	0.12	0.12	0.11	2012.00
year13_tax11	0.17	0.12	0.23	0.16	2011.00
year13_tax12	0.15	0.14	0.20	0.16	2012.00
year13_tax13	0.13	0.13	0.13	0.11	2013.00
year14_tax12	0.15	0.13	0.25	0.20	2012.00
year14_tax13	0.14	0.13	0.17	0.15	2013.00
year14_tax14	0.12		0.09		2014.00

Table 5: Binomial Fit for 10K Response Extension Rate Odds Big Model

We accounted for standard industry code and creation software by including these variables in the model. The following analyses are based off of using Workiva as the creation software. For LAF there is a decreasing trend in odds of extension as taxonomy increases. For AF we do not see any overwhelming trends. For NAF, there is a decreasing trend in the odds of extension as taxonomy increases. Similarly for SRC, we see a decreasing trend in the odds of an extension as taxonomy increases. From the diagnostic plots on page 7 we see model assumptions are adequately met.

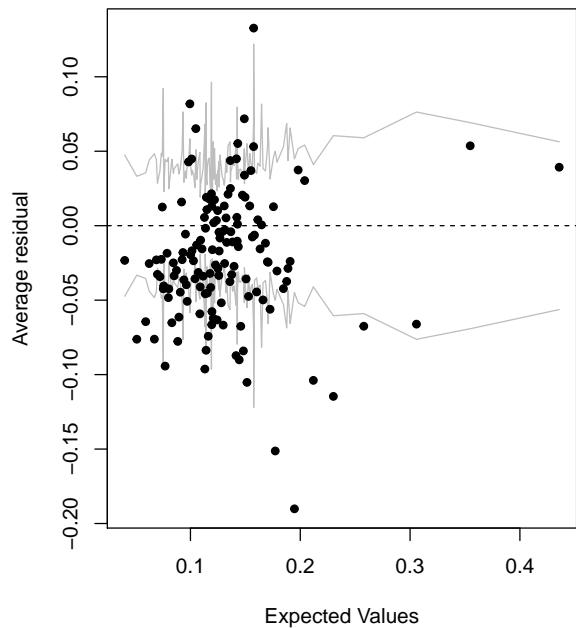
For 10 out of 33 creation software the odds of an extension are decreased relative to using Workiva as the creation software. However, for the other 23 the odds of an extension increase relative to using Workiva as the creation software. This is illustrated in the table below, anything over 1 is an increase in odds, anything less than 1 is a decrease in odds since this is a multiplicative model.

Sectio	Updated	0.51
	ACI	1.00
Compliance	Xpressware	3.91
	Compsci	0.64
DataTracks		1.30
	DG3	0.65
Doremus		1.46
Edgar_Filing		1.14
Edgar_TechBus		1.11
	EDGARBiz	0.58
	EDGARsuite	5.56
Ez_XBRL		1.41
FilePoint		1.24
	IBM	1.27
Merrill		1.05
NeoClarus		4.79
Novaworks		1.30
Oracle_Hyperion		1.08
	Other	0.98
P3XBRL		1.36
QXInteractive		1.82
Rivet		1.02
RR_Donnelley		1.11
SECUREX		1.23
SmartXBRL		0.96
ThomsonReuters		1.10
Trintech		0.84
UBmatrixtm		1.11
version_4.1.0_other		3.12
Vintage_Filings		0.75
XBRL_Converter		0.39
XBROther		0.77
XWand		1.30
ZK_global		0.99

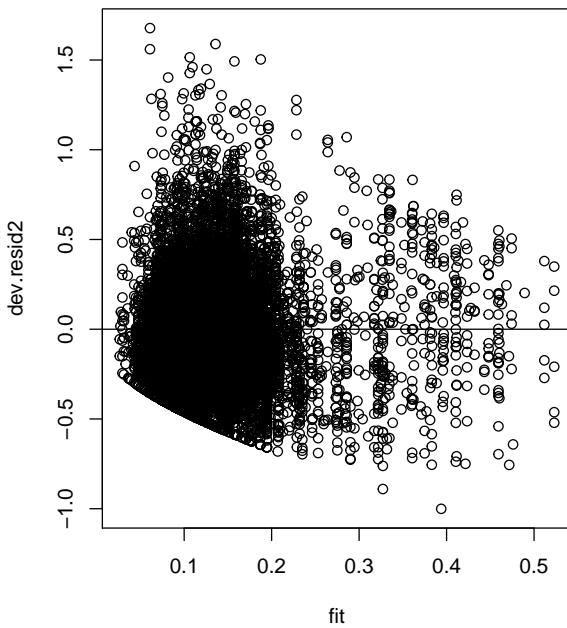
Table 6: Adjustments for Creation Software Baseline Workiva

12.3.5 Model Diagnostics

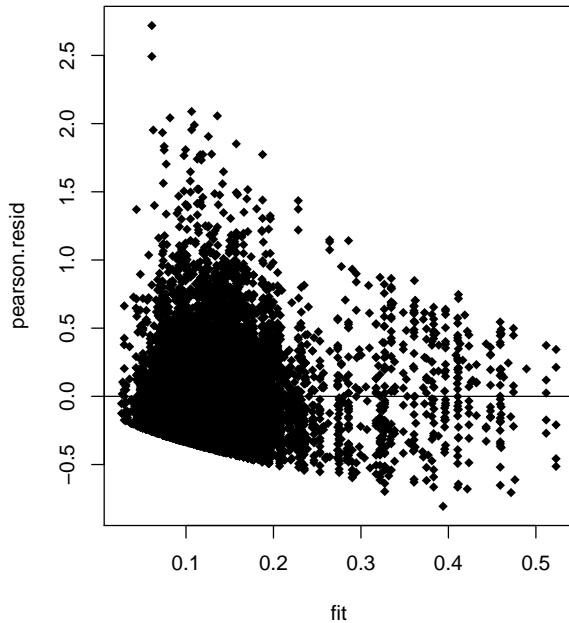
Binned Residual Plot Big Model



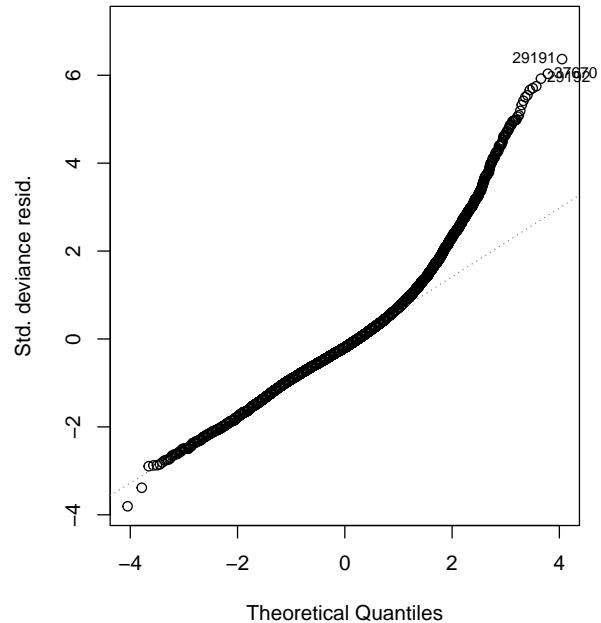
Deviance Resid Big Model



Pearson Resid Big Model



Normal Q–Q



12.4 Subsetting all data, face statements 10K

12.4.1 Fit in R

```

filer_cat<-relevel(factor(all_data_2012_10Kfs$filer_category), "LAF")

bin_fit_10Kfs<-glm(extension_rate~factor(year_only) + factor(taxonomy_year)+filer_cat)^2
,family=quasibinomial, data=all_data_2012_10Kfs)

```

12.4.2 Coefficients

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-2.2362	0.2248	-9.95	0.0000
factor(year_only)2013	-0.0034	0.1021	-0.03	0.9738
factor(year_only)2014	0.0874	0.1096	0.80	0.4252
factor(taxonomy_year)2011	-0.3994	0.2272	-1.76	0.0787
factor(taxonomy_year)2012	-0.4456	0.2390	-1.86	0.0622
factor(taxonomy_year)2013	-0.6235	0.2511	-2.48	0.0130
factor(taxonomy_year)2014	0.0748	1.0201	0.07	0.9416
filer_catAF	-0.3220	0.3511	-0.92	0.3591
filer_catNAF	1.1376	0.7536	1.51	0.1312
filer_catSRC	0.6561	0.3154	2.08	0.0375
factor(year_only)2013:factor(taxonomy_year)2011	0.2936	0.0912	3.22	0.0013
factor(year_only)2013:factor(taxonomy_year)2012	-0.0428	0.0631	-0.68	0.4976
factor(year_only)2013:filer_catAF	0.0784	0.1207	0.65	0.5160
factor(year_only)2014:filer_catAF	-0.0127	0.1569	-0.08	0.9354
factor(year_only)2013:filer_catNAF	0.1822	0.1358	1.34	0.1796
factor(year_only)2014:filer_catNAF	0.3723	0.1774	2.10	0.0359
factor(year_only)2013:filer_catSRC	0.1702	0.0861	1.98	0.0481
factor(year_only)2014:filer_catSRC	0.2846	0.1170	2.43	0.0150
factor(taxonomy_year)2011:filer_catAF	0.4810	0.3541	1.36	0.1743
factor(taxonomy_year)2012:filer_catAF	0.2985	0.3700	0.81	0.4199
factor(taxonomy_year)2013:filer_catAF	0.3598	0.3855	0.93	0.3507
factor(taxonomy_year)2011:filer_catNAF	-0.5933	0.7554	-0.79	0.4322
factor(taxonomy_year)2012:filer_catNAF	-0.8448	0.7650	-1.10	0.2695
factor(taxonomy_year)2013:filer_catNAF	-1.0807	0.7750	-1.39	0.1632
factor(taxonomy_year)2011:filer_catSRC	-0.1438	0.3176	-0.45	0.6507
factor(taxonomy_year)2012:filer_catSRC	-0.2366	0.3265	-0.72	0.4686
factor(taxonomy_year)2013:filer_catSRC	-0.4169	0.3368	-1.24	0.2158
factor(taxonomy_year)2014:filer_catSRC	-1.1066	1.1183	-0.99	0.3224

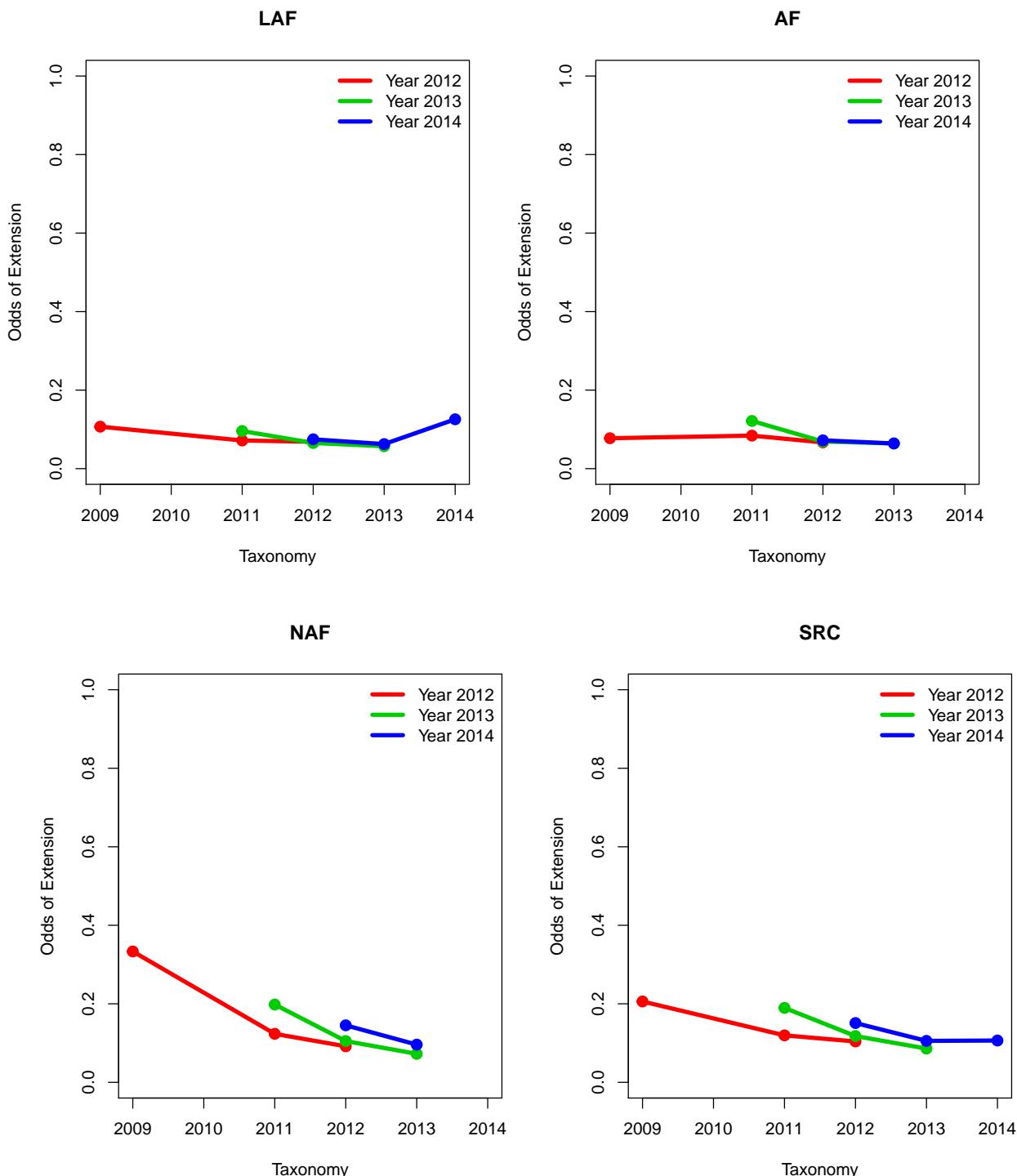
Table 7: Binomial Fit for 10K Response Extension Rate with Face Statements

12.4.3 Exponentiated Coefficients

year12_tax9_LAF	0.11
year13	1.00
year14	1.09
taxyear11	0.67
taxyear12	0.64
taxyear13	0.54
taxyear14	1.08
AF	0.72
NAF	3.12
SRC	1.93
year2013_taxyear11	1.34
year2013_taxyear12	0.96
year2013_AF	1.08
year2014_AF	0.99
year2013_NAF	1.20
year2014_NAF	1.45
year2013_SRC	1.19
year2014_SRC	1.33
taxyear11AF	1.62
taxyear12AF	1.35
taxyear13AF	1.43
taxyear11NAF	0.55
taxyear12NAF	0.43
taxyear13NAF	0.34
taxyear11SRC	0.87
taxyear12SRC	0.79
taxyear13SRC	0.66
taxyear14SRC	0.33

Table 8: Binomial Fit for 10K Response Extension Rate with Face Statements Odds

12.4.4 Interpretation

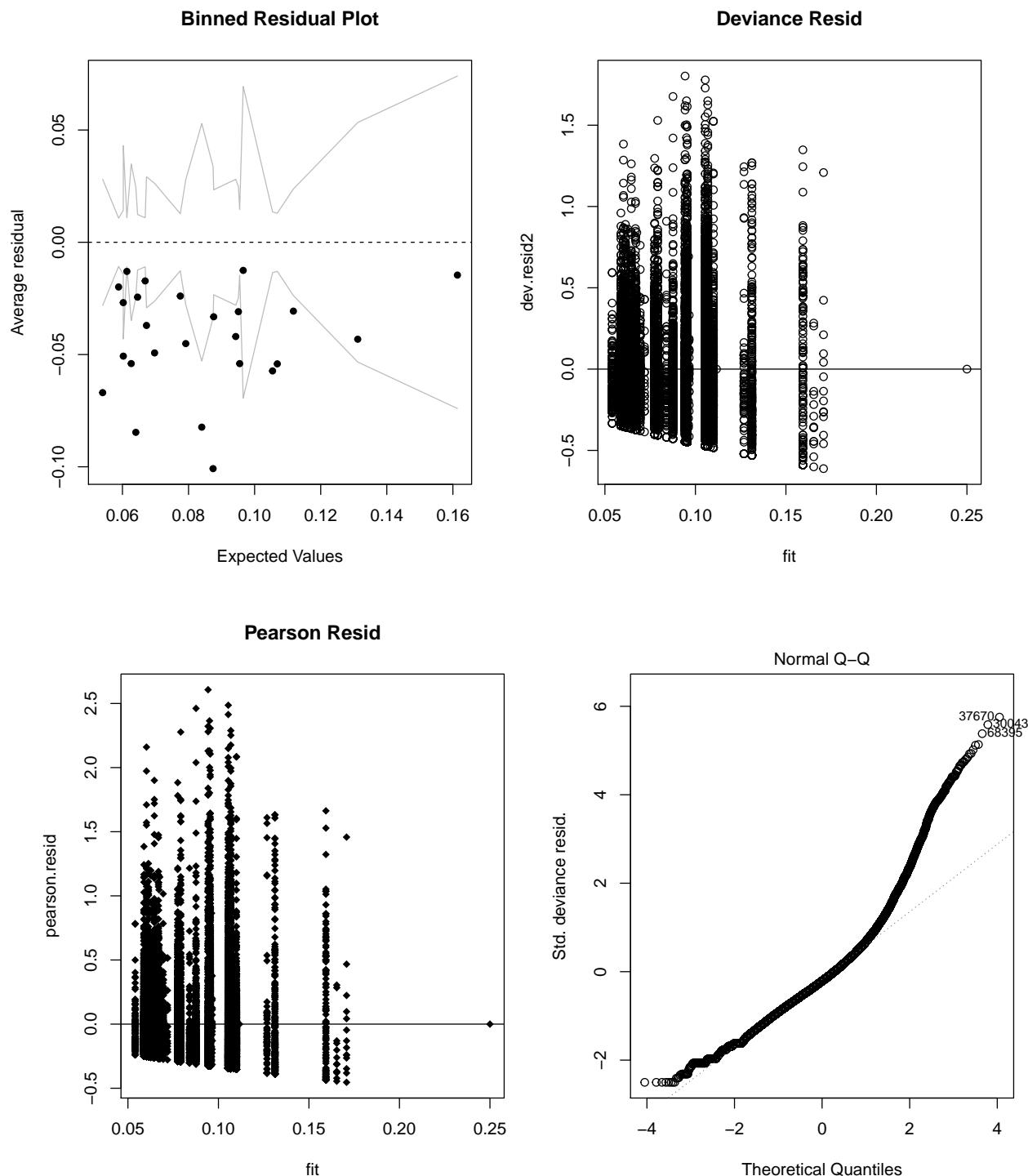


X	LAF	AF	NAF	SRC	taxonomy
year12_tax9	0.11	0.08	0.33	0.21	2009.00
year12_tax11	0.07	0.08	0.12	0.12	2011.00
year12_tax12	0.07	0.07	0.09	0.10	2012.00
year13_tax11	0.10	0.12	0.20	0.19	2011.00
year13_tax12	0.07	0.07	0.11	0.12	2012.00
year13_tax13	0.06	0.06	0.07	0.09	2013.00
year14_tax12	0.07	0.07	0.15	0.15	2012.00
year14_tax13	0.06	0.06	0.10	0.11	2013.00
year14_tax14	0.13			0.11	2014.00

Table 9: Binomial Fit for 10K Response Extension Rate with Face Statements Odds

For LAF there is a decreasing trend in odds of extension as taxonomy increases for years 2012 and 2013. For AF, there is a slight decreasing trend in the odds of an extension as taxonomy increases. For NAF, there is a decreasing trend in the odds of extension as taxonomy increases. For NAF we see a decreasing trend in the odds of an extension as taxonomy increases. Similarly, for SRC we see a decreasing trend in the odds of an extension as taxonomy increases.

12.4.5 Model Diagnostics



12.5 Subsetting all data, face statements 10K adding SIC and creation software

12.5.1 Fit in R

```

filer_cat<-relevel(factor(all_data_2012_10Kfs$filer_category), "LAF")
creat_soft<-relevel(factor(all_data_2012_10Kfs$creation_software), "WebFilings")

bin_fit_10Kfs2<-glm(extension_rate~(factor(year_only) + factor(taxonomy_year)+filer_cat)^2 + SIT + creat_soft
,family=quasibinomial, data=all_data_2012_10Kfs)

```

12.5.2 Model Coefficients

Call:

```
glm(formula = extension_rate ~ (factor(year_only) + factor(taxonomy_year) +
filer_cat)^2 + SIT + creat_soft, family = quasibinomial,
data = all_data_2012_10Kfs)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-0.8450	-0.2089	-0.0709	0.0890	1.8684

Coefficients: (8 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-2.37377	0.22676	-10.47	< 2e-16 ***
factor(year_only)2013	0.08922	0.10127	0.88	0.3783
factor(year_only)2014	0.19632	0.10886	1.80	0.0713 .
factor(taxonomy_year)2011	-0.29650	0.21340	-1.39	0.1647
factor(taxonomy_year)2012	-0.48275	0.22694	-2.13	0.0334 *
factor(taxonomy_year)2013	-0.61034	0.23884	-2.56	0.0106 *
factor(taxonomy_year)2014	-0.09487	0.95621	-0.10	0.9210
filer_catAF	-0.24090	0.32934	-0.73	0.4645
filer_catNAF	1.07684	0.70639	1.52	0.1274
filer_catSRC	0.46491	0.29693	1.57	0.1174
SITFIR	0.11207	0.08029	1.40	0.1628
SITmanu	-0.11967	0.08024	-1.49	0.1358
SITmin	0.13985	0.08251	1.69	0.0901 .
SITOther	0.15382	0.11606	1.33	0.1851
SITPA	-0.26646	0.14725	-1.81	0.0704 .
SITRT	-0.24052	0.08765	-2.74	0.0061 **
SITserv	0.02156	0.08095	0.27	0.7900
SITTPB	0.00296	0.08405	0.04	0.9720
SITWT	-0.24334	0.09426	-2.58	0.0098 **
creat_soft Sectio Updated	-0.04713	1.12374	-0.04	0.9665
creat_softACI	0.25299	0.04366	5.79	7.0e-09 ***
creat_softCompliance Xpressware	0.91986	0.05836	15.76	< 2e-16 ***
creat_softCompSci	-0.42310	0.04753	-8.90	< 2e-16 ***
creat_softDataTracks	0.52125	0.04201	12.41	< 2e-16 ***
creat_softDG3	-0.33298	0.39836	-0.84	0.4032
creat_softDoremus	0.50606	0.21809	2.32	0.0203 *
creat_softEdgar Filing	0.79550	0.15208	5.23	1.7e-07 ***
creat_softEdgar Tech & Bus.	0.39519	0.32030	1.23	0.2173
creat_softEDGARBiz	-0.38628	0.26569	-1.45	0.1460
creat_softEDGARSuite	1.90678	0.60645	3.14	0.0017 **
creat_softEz-XBRL	0.53421	0.04068	13.13	< 2e-16 ***
creat_softFilePoint	0.32552	0.51510	0.63	0.5274

creat_softIBM	0.24613	0.05338	4.61	4.0e-06	***
creat_softMerrill	0.02876	0.03553	0.81	0.4184	
creat_softNeoClarus	1.57655	0.05133	30.71	< 2e-16	***
creat_softNovaworks	0.60238	0.03493	17.25	< 2e-16	***
creat_softOracle Hyperion	-0.06318	0.39134	-0.16	0.8717	
creat_softOther	0.08484	0.10450	0.81	0.4168	
creat_softP3XBRL	0.52783	0.10166	5.19	2.1e-07	***
creat_softQXInteractive	0.93062	0.04492	20.72	< 2e-16	***
creat_softRivet	0.09496	0.03494	2.72	0.0066	**
creat_softRR Donnelley	0.05695	0.02844	2.00	0.0453	*
creat_softSECUREX	0.77204	0.09931	7.77	8.0e-15	***
creat_softSmartXBRL	0.05176	0.16412	0.32	0.7525	
creat_softThomson Reuters	0.08625	0.04319	2.00	0.0458	*
creat_softTrintech	-0.82279	1.14883	-0.72	0.4739	
creat_softUBmatrixtm) Report Builder httOther	0.24007	1.06274	0.23	0.8213	
creat_softversion 4.1.0 \nOther	1.40317	0.70187	2.00	0.0456	*
creat_softVintage Filings	-0.13380	0.12498	-1.07	0.2844	
creat_softXBRL Converter	-0.88048	0.30157	-2.92	0.0035	**
creat_softXBROther	0.10903	0.18057	0.60	0.5460	
creat_softXWand	0.48301	0.09641	5.01	5.5e-07	***
creat_softZ-K Global	0.48534	0.24856	1.95	0.0509	.
factor(year_only)2013:factor(taxonomy_year)2011	-0.03792	0.08788	-0.43	0.6661	
factor(year_only)2014:factor(taxonomy_year)2011	NA	NA	NA	NA	
factor(year_only)2013:factor(taxonomy_year)2012	0.03935	0.06046	0.65	0.5152	
factor(year_only)2014:factor(taxonomy_year)2012	NA	NA	NA	NA	
factor(year_only)2013:factor(taxonomy_year)2013	NA	NA	NA	NA	
factor(year_only)2014:factor(taxonomy_year)2013	NA	NA	NA	NA	
factor(year_only)2013:factor(taxonomy_year)2014	NA	NA	NA	NA	
factor(year_only)2014:factor(taxonomy_year)2014	NA	NA	NA	NA	
factor(year_only)2013:filer_catAF	-0.08803	0.11990	-0.73	0.4629	
factor(year_only)2014:filer_catAF	-0.14526	0.15348	-0.95	0.3440	
factor(year_only)2013:filer_catNAF	0.15170	0.13214	1.15	0.2509	
factor(year_only)2014:filer_catNAF	0.39401	0.17088	2.31	0.0211	*
factor(year_only)2013:filer_catSRC	-0.06049	0.08695	-0.70	0.4866	
factor(year_only)2014:filer_catSRC	0.07625	0.11586	0.66	0.5104	
factor(taxonomy_year)2011:filer_catAF	0.37225	0.33207	1.12	0.2623	
factor(taxonomy_year)2012:filer_catAF	0.32356	0.34925	0.93	0.3542	
factor(taxonomy_year)2013:filer_catAF	0.36300	0.36436	1.00	0.3191	
factor(taxonomy_year)2014:filer_catAF	NA	NA	NA	NA	
factor(taxonomy_year)2011:filer_catNAF	-0.61106	0.70796	-0.86	0.3881	
factor(taxonomy_year)2012:filer_catNAF	-0.86887	0.71784	-1.21	0.2261	
factor(taxonomy_year)2013:filer_catNAF	-1.15000	0.72766	-1.58	0.1140	
factor(taxonomy_year)2014:filer_catNAF	NA	NA	NA	NA	
factor(taxonomy_year)2011:filer_catSRC	-0.32933	0.29878	-1.10	0.2704	
factor(taxonomy_year)2012:filer_catSRC	-0.21887	0.30883	-0.71	0.4785	
factor(taxonomy_year)2013:filer_catSRC	-0.42791	0.31905	-1.34	0.1799	
factor(taxonomy_year)2014:filer_catSRC	-0.98227	1.04958	-0.94	0.3494	

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

(Dispersion parameter for quasibinomial family taken to be 0.0850105)

Null deviance: 1734.9 on 19558 degrees of freedom
 Residual deviance: 1430.6 on 19488 degrees of freedom
 AIC: NA

Number of Fisher Scoring iterations: 6

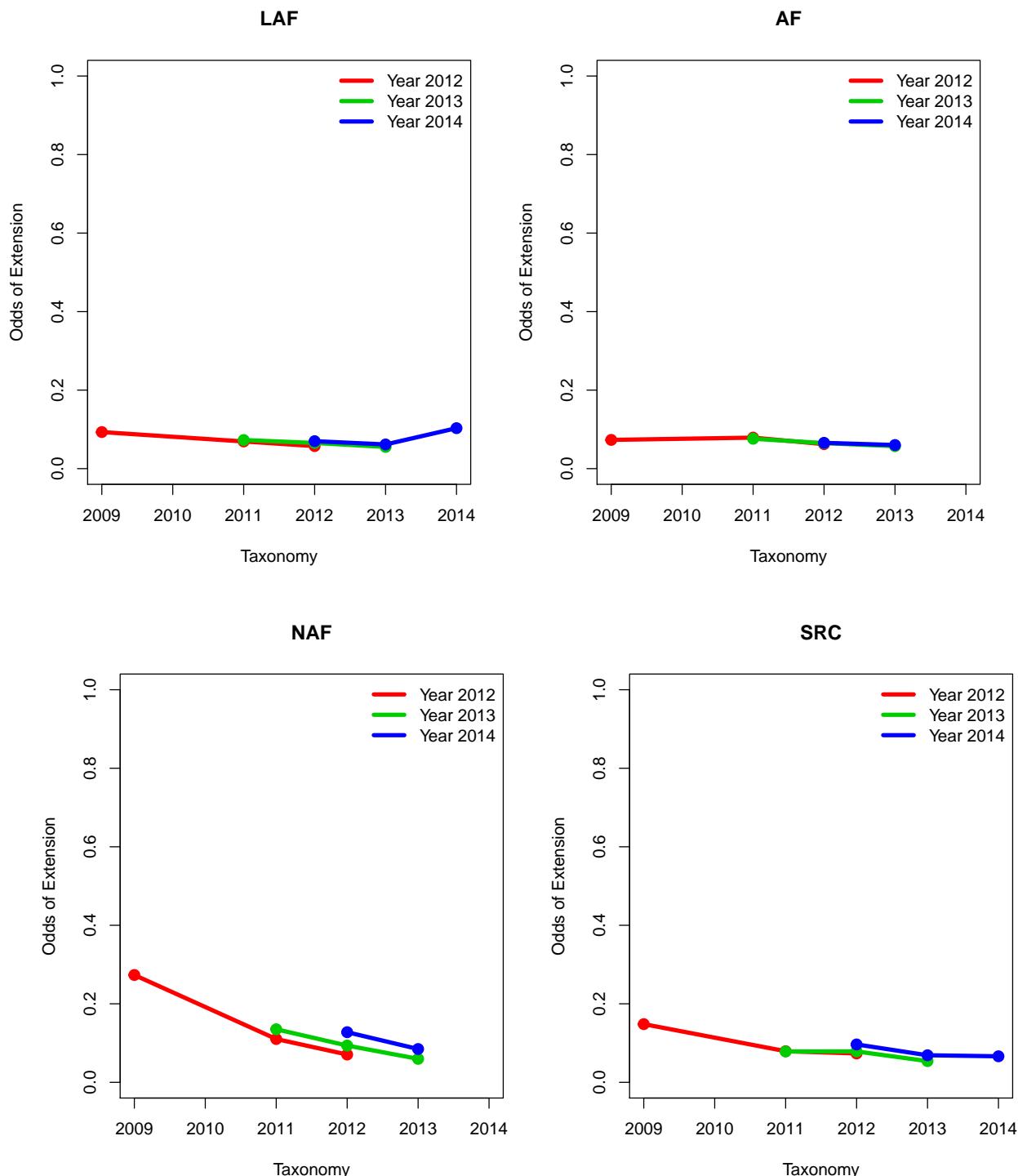
12.5.3 Exponentiated Coefficients

The following odds are based off of using Workiva as the creation software.

year12_tax9_LAF	0.09
year13	1.09
year14	1.22
taxyear11	0.74
taxyear12	0.62
taxyear13	0.54
taxyear14	0.91
AF	0.79
NAF	2.94
SRC	1.59
year2013_taxyear11	0.96
year2013_taxyear12	1.04
year2013_AF	0.92
year2014_AF	0.86
year2013_NAF	1.16
year2014_NAF	1.48
year2013_SRC	0.94
year2014_SRC	1.08
taxyear11AF	1.45
taxyear12AF	1.38
taxyear13AF	1.44
taxyear11NAF	0.54
taxyear12NAF	0.42
taxyear13NAF	0.32
taxyear11SRC	0.72
taxyear12SRC	0.80
taxyear13SRC	0.65
taxyear14SRC	0.37

Table 10: Binomial Fit for 10K Response Extension Rate Odds Big Model FS

12.5.4 Model Interpretation



X	LAF	AF	NAF	SRC	taxonomy
year12_tax9	0.09	0.07	0.27	0.15	2009.00
year12_tax11	0.07	0.08	0.11	0.08	2011.00
year12_tax12	0.06	0.06	0.07	0.07	2012.00
year13_tax11	0.07	0.08	0.14	0.08	2011.00
year13_tax12	0.07	0.07	0.09	0.08	2012.00
year13_tax13	0.06	0.06	0.06	0.05	2013.00
year14_tax12	0.07	0.07	0.13	0.10	2012.00
year14_tax13	0.06	0.06	0.08	0.07	2013.00
year14_tax14	0.10		0.07		2014.00

Table 11: Binomial Fit for 10K Response Extension Rate Odds Big Model FS

We accounted for standard industry code and creation software by including these variables in the model. The following analyses are based off of using Workiva as the creation software. For LAF there is a decreasing trend in odds of extension as taxonomy increases. For AF, there is a slight decreasing trend the odds of an extension as taxonomy increases. For NAF, there is a decreasing trend in the odds of extension as taxonomy increases. Similarly for SRC, we see a decreasing trend in the odds of an extension as taxonomy increases. From the diagnostic plots in section 4.5.5, we see model assumptions are adequately met.

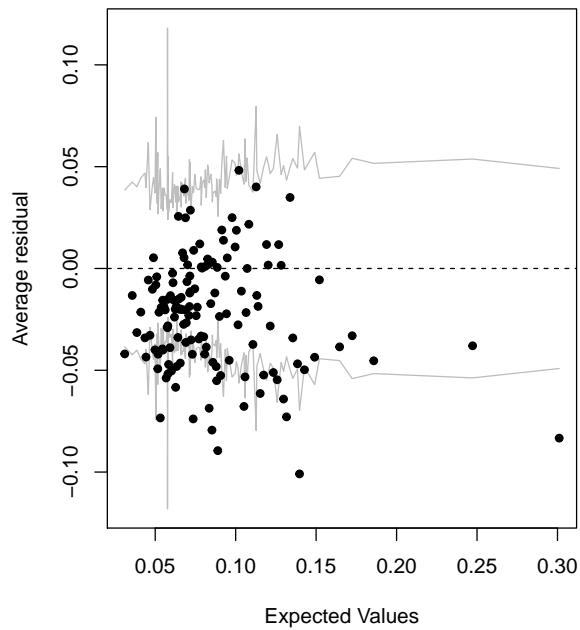
For 7 out of 33 creation software the odds of an extension are decreased relative to using Workiva as the creation software. However, for the other 27 the odds of an extension increase relative to using Workiva as the creation software. This is illustrated in the table below, anything over 1 is an increase in odds, anything less than 1 is a decrease in odds since this is a multiplicative model.

Sectio	Updated	0.95
ACI	1.29	
Compliance_Xpressware	2.51	
Compsci	0.66	
DataTracks	1.68	
DG3	0.72	
Doremus	1.66	
Edgar_Filing	2.22	
Edgar_TechBus	1.48	
EDGARBiz	0.68	
EDGARsuite	6.73	
Ez_XBRL	1.71	
FilePoint	1.38	
IBM	1.28	
Merrill	1.03	
NeoClarus	4.84	
Novaworks	1.83	
Oracle_Hyperion	0.94	
Other	1.09	
P3XBRL	1.70	
QXInteractive	2.54	
Rivet	1.10	
RR_Donnelley	1.06	
SECUREX	2.16	
SmartXBRL	1.05	
ThomsonReuters	1.09	
Trintech	0.44	
UBmatrixtm	1.27	
version_4.1.0_other	4.07	
Vintage_Filings	0.87	
XBRL_Converter	0.41	
XBROther	1.12	
XWand	1.62	
ZK_global	1.62	

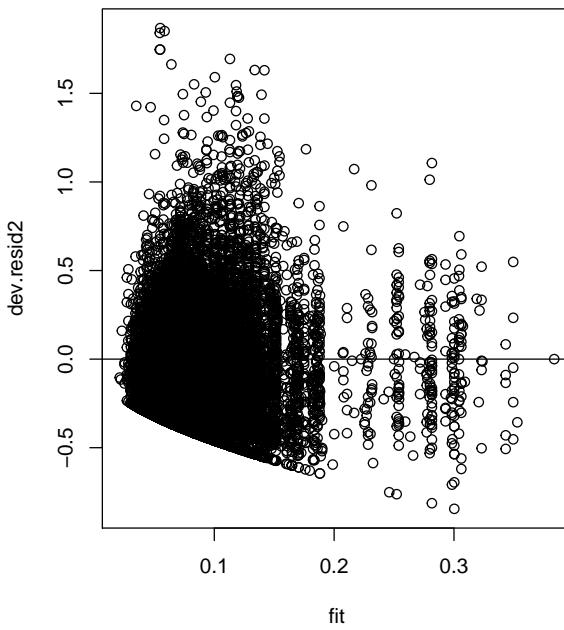
Table 12: Adjustments for Creation Software Baseline Workiva FS

12.5.5 Model Diagnostics

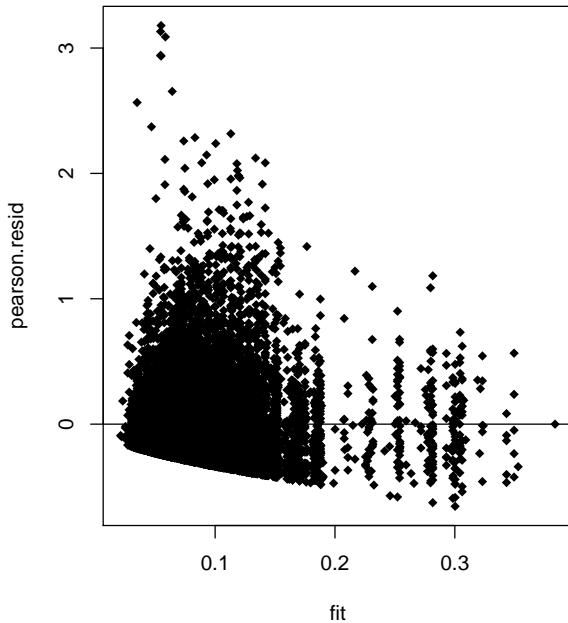
Binned Residual Plot Big Model



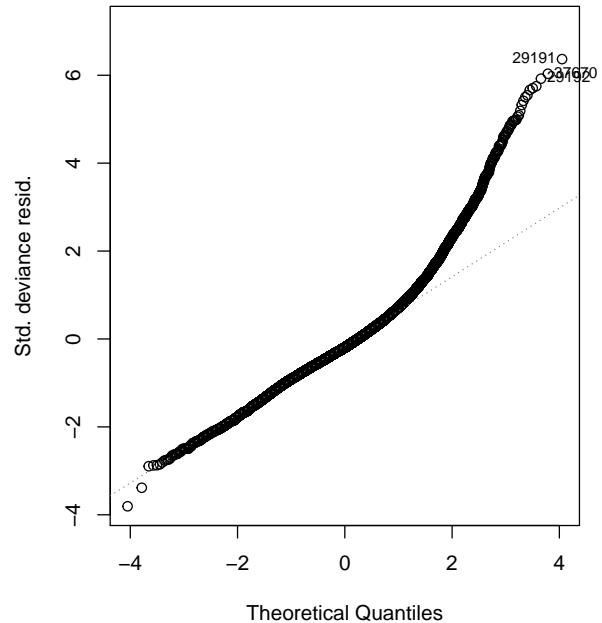
Deviance Resid Big Model



Pearson Resid Big Model



Normal Q–Q



12.6 Face statements for years 2013-2014

12.6.1 Fit in R

```
all_data_2013_10Kfs<-subset(all_data_10Kfs,year_only >= 2013)

filer_cat<-relevel(factor(all_data_2013_10Kfs$filer_category), "LAF")

bin_fit_10Kfs2<-glm(extension_rate~(factor(year_only) + factor(taxonomy_year)+filer_cat)^2
,family=quasibinomial, data=all_data_2013_10Kfs)
```

12.6.2 Coefficients

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-2.6601	0.1165	-22.82	0.0000
factor(year_only)2014	0.0697	0.0832	0.84	0.4024
factor(taxonomy_year)2012	-0.0384	0.1212	-0.32	0.7512
factor(taxonomy_year)2013	-0.1837	0.1431	-1.28	0.1991
factor(taxonomy_year)2014	0.5164	0.9914	0.52	0.6024
filer_catAF	0.1223	0.2686	0.46	0.6488
filer_catNAF	0.2658	0.3203	0.83	0.4066
filer_catSRC	1.2240	0.1343	9.11	0.0000
factor(year_only)2014:factor(taxonomy_year)2012	0.0462	0.0625	0.74	0.4603
factor(year_only)2014:filer_catAF	-0.0789	0.1088	-0.73	0.4680
factor(year_only)2014:filer_catNAF	0.1928	0.1246	1.55	0.1218
factor(year_only)2014:filer_catSRC	0.1427	0.0847	1.69	0.0919
factor(taxonomy_year)2012:filer_catAF	-0.0868	0.2728	-0.32	0.7504
factor(taxonomy_year)2013:filer_catAF	-0.0172	0.2908	-0.06	0.9527
factor(taxonomy_year)2012:filer_catNAF	0.2011	0.3247	0.62	0.5356
factor(taxonomy_year)2013:filer_catNAF	-0.0287	0.3452	-0.08	0.9337
factor(taxonomy_year)2012:filer_catSRC	-0.6824	0.1398	-4.88	0.0000
factor(taxonomy_year)2013:filer_catSRC	-0.8396	0.1592	-5.27	0.0000
factor(taxonomy_year)2014:filer_catSRC	-1.5326	1.0697	-1.43	0.1520

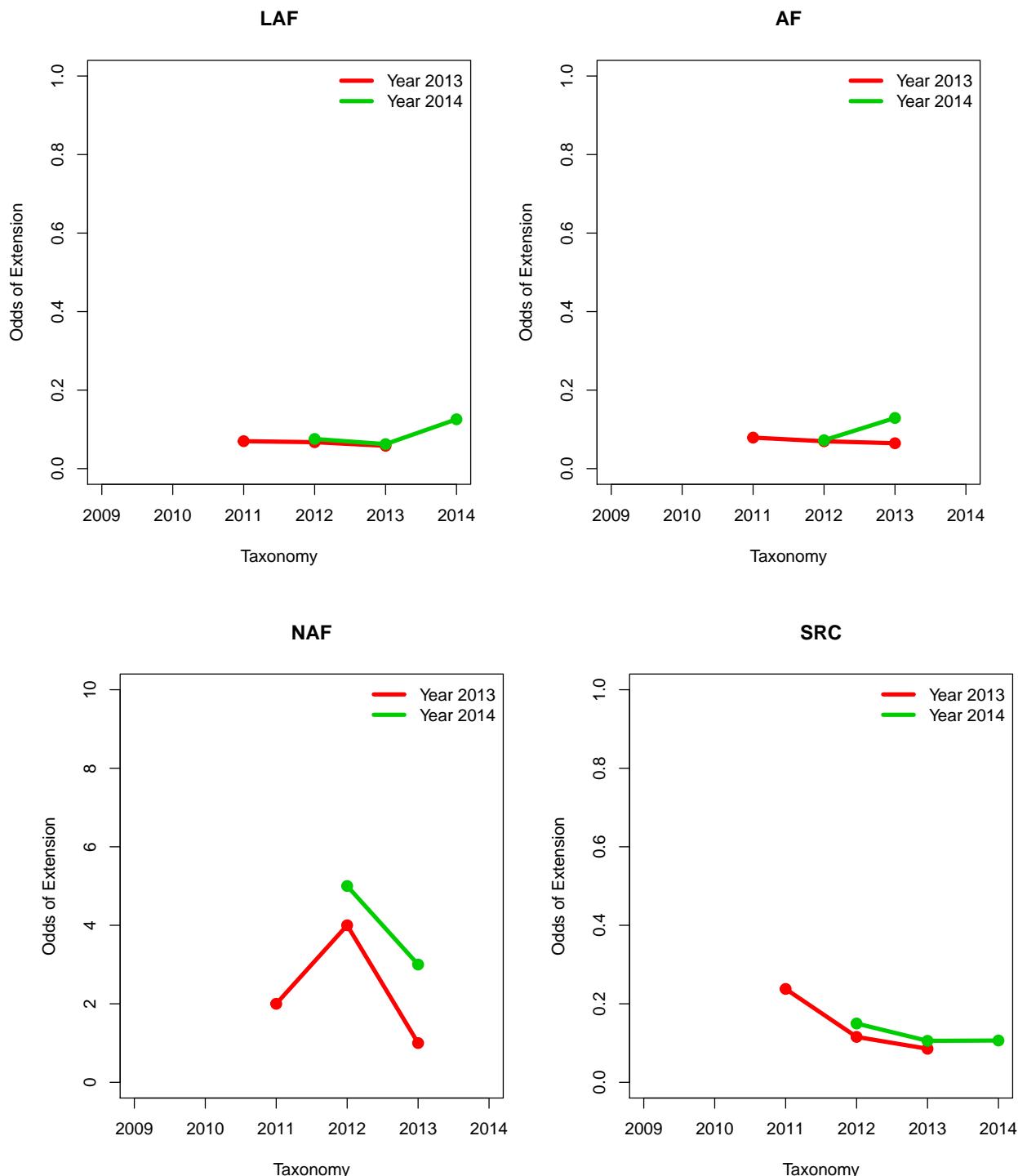
Table 13: Binomial Fit for 10K Response Extension Rate with Face Statements Years 2013-2014

12.6.3 Exponentiated Coefficients

year13_tax11_LAF	0.07
year14	1.07
taxyear12	0.96
taxyear13	0.83
taxyear14	1.68
AF	1.13
NAF	1.30
SRC	3.40
year2014_taxyear12	1.05
year2014_AF	0.92
year2014_NAF	1.21
year2014_SRC	1.15
taxyear12AF	0.92
taxyear13AF	0.98
taxyear12NAF	1.22
taxyear13NAF	0.97
taxyear12SRC	0.51
taxyear13SRC	0.43
taxyear14SRC	0.22

Table 14: Binomial Fit for 10K Response Extension Rate with Face Statements 2013-2014

12.6.4 Interpretation

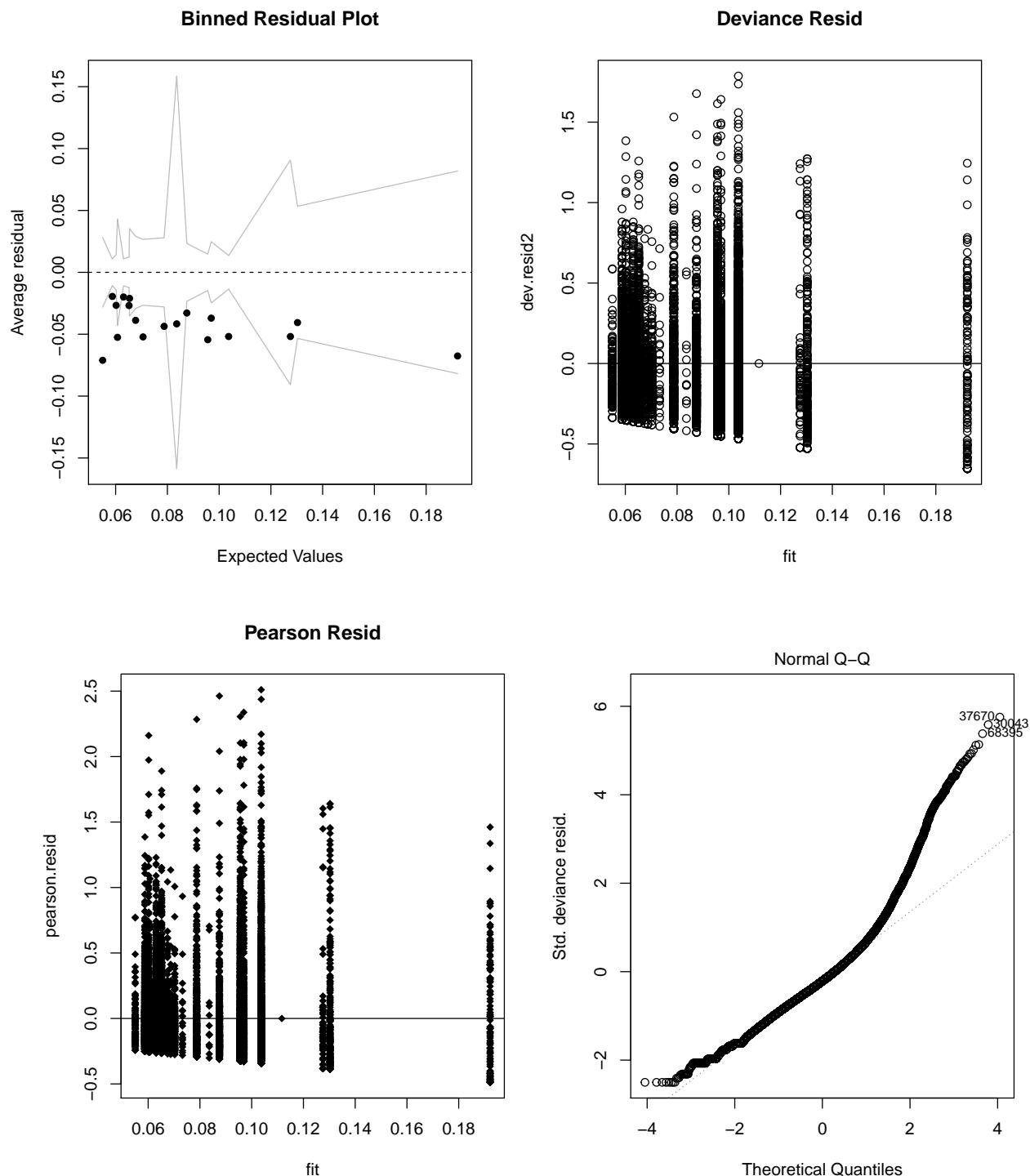


X	LAF	AF	NAF	SRC taxonomy		
year13_tax11	0.07	0.08	0.0912370399	0.24	2011.00	
year13_tax12	0.07	0.07	0.1073588657	0.12	2012.00	
year13_tax13	0.06	0.06	0.0737736983	0.09	2013.00	
year14_tax12	0.08	0.07	0.1461839636	0.15	2012.00	
year14_tax13	0.06	0.13	0.0959199384	0.11	2013.00	
year14_tax14	0.13	NA		0.11	2014.00	

Table 15: Binomial Fit for 10K Response Extension Rate with Face Statements Odds 2013-2014

For all four filer types, we can see in the year 2013 as taxonomy increases, the odds of an extension decreases. For NAF and SRC, in the year 2014, as taxonomy increases the odds of an extension decreases. We do not see the same general pattern for LAF and AF.

12.6.5 Model Diagnostics



12.7 All data, 10Q

12.7.1 Fit in R

```

filer_cat<-relevel(factor(all_data_2012_10Q$filer_category), "LAF")

bin_fit_10Q<-glm(extension_rate~factor(year_only) + factor(taxonomy_year)+filer_cat^2
                    ,family=quasibinomial, data=all_data_2012_10Q)

```

12.7.2 Coefficients

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-1.1789	0.1422	-8.29	0.0000
factor(year_only)2013	0.1020	0.0415	2.46	0.0140
factor(year_only)2014	0.0334	0.0469	0.71	0.4763
factor(taxonomy_year)2011	-0.6880	0.1431	-4.81	0.0000
factor(taxonomy_year)2012	-0.6540	0.1435	-4.56	0.0000
factor(taxonomy_year)2013	-0.8582	0.1490	-5.76	0.0000
factor(taxonomy_year)2014	0.0208	0.3511	0.06	0.9527
filer_catAF	-1.3758	0.2731	-5.04	0.0000
filer_catNAF	-1.1881	0.5571	-2.13	0.0329
filer_catSRC	-1.2223	0.2478	-4.93	0.0000
factor(year_only)2013:factor(taxonomy_year)2011	0.4076	0.0562	7.25	0.0000
factor(year_only)2013:factor(taxonomy_year)2012	-0.1702	0.0350	-4.87	0.0000
factor(year_only)2013:filer_catAF	0.0988	0.0349	2.83	0.0046
factor(year_only)2014:filer_catAF	0.1189	0.0533	2.23	0.0256
factor(year_only)2013:filer_catNAF	0.0995	0.0389	2.56	0.0106
factor(year_only)2014:filer_catNAF	0.1163	0.0600	1.94	0.0525
factor(year_only)2013:filer_catSRC	0.2530	0.0288	8.77	0.0000
factor(year_only)2014:filer_catSRC	0.3122	0.0437	7.15	0.0000
factor(taxonomy_year)2011:filer_catAF	0.6197	0.2751	2.25	0.0243
factor(taxonomy_year)2012:filer_catAF	1.2250	0.2744	4.46	0.0000
factor(taxonomy_year)2013:filer_catAF	1.2577	0.2769	4.54	0.0000
factor(taxonomy_year)2014:filer_catAF	-0.5123	1.0455	-0.49	0.6242
factor(taxonomy_year)2011:filer_catNAF	0.8788	0.5583	1.57	0.1155
factor(taxonomy_year)2012:filer_catNAF	1.3879	0.5579	2.49	0.0129
factor(taxonomy_year)2013:filer_catNAF	1.2939	0.5594	2.31	0.0207
factor(taxonomy_year)2011:filer_catSRC	0.7995	0.2488	3.21	0.0013
factor(taxonomy_year)2012:filer_catSRC	1.1284	0.2488	4.54	0.0000
factor(taxonomy_year)2013:filer_catSRC	0.9754	0.2506	3.89	0.0001

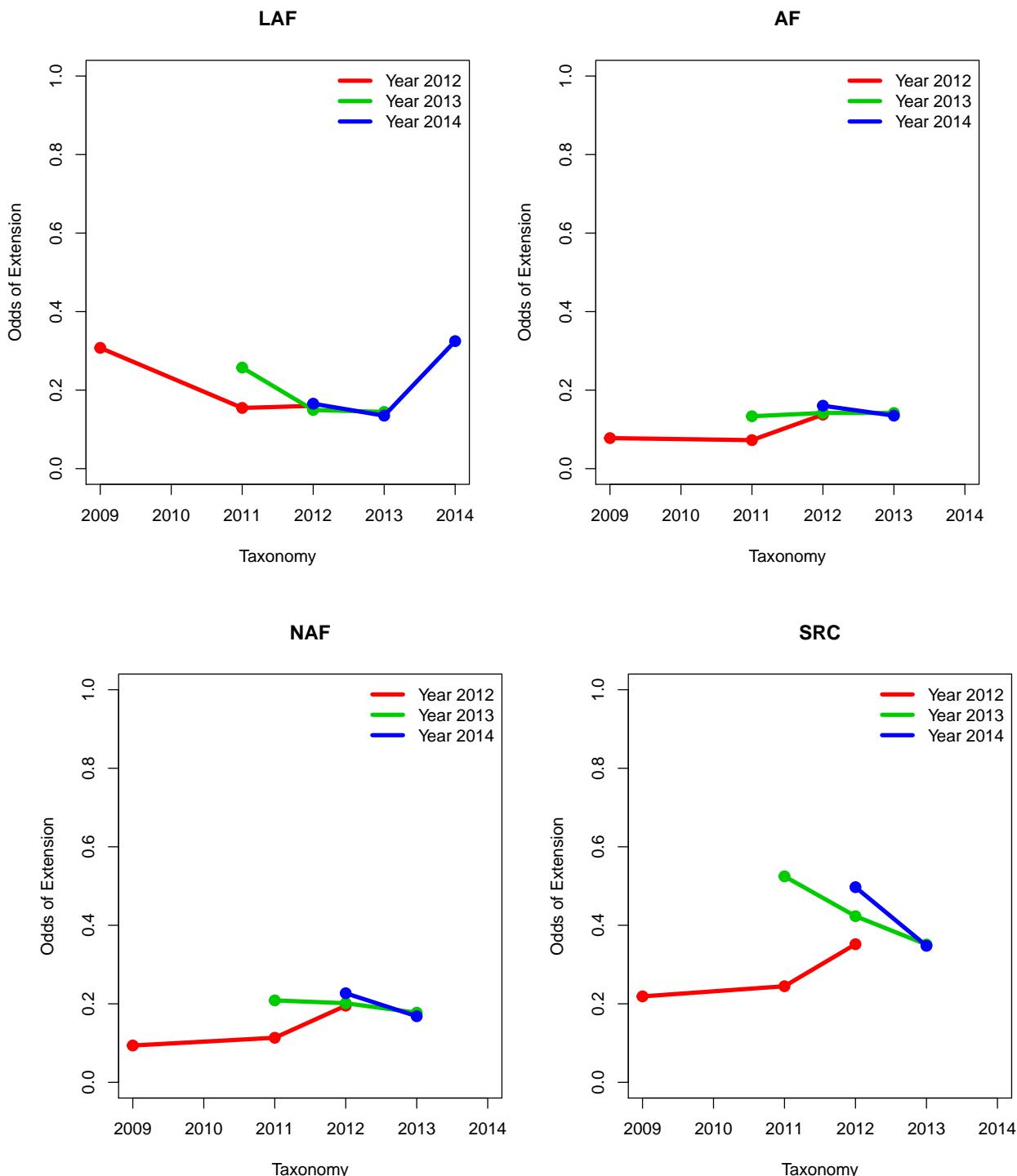
Table 16: Binomial Fit for 10Q Response Extension Rate

12.7.3 Exponentiated Coefficients

year12_tax9_LAF	0.31
year13	1.11
year14	1.03
taxyear11	0.50
taxyear12	0.52
taxyear13	0.42
taxyear14	1.02
AF	0.25
NAF	0.30
SRC	0.71
year2013_taxyear11	1.50
year2013_taxyear12	0.84
year2013_AF	1.10
year2014_AF	1.13
year2013_NAF	1.10
year2014_NAF	1.12
year2013_SRC	1.29
year2014_SRC	1.37
taxyear11AF	1.86
taxyear12AF	3.40
taxyear13AF	3.52
taxyear11NAF	2.41
taxyear12NAF	4.01
taxyear13NAF	3.65
taxyear11SRC	2.22
taxyear12SRC	3.09
taxyear13SRC	2.65

Table 17: Binomial Fit for 10Q Response Extension Rate

12.7.4 Interpretation



X	LAF	AF	NAF	SRC	taxonomy
year12_tax9	0.31	0.08	0.09	0.22	2009.00
year12_tax11	0.15	0.07	0.11	0.24	2011.00
year12_tax12	0.16	0.14	0.20	0.35	2012.00
year13_tax11	0.26	0.13	0.21	0.52	2011.00
year13_tax12	0.15	0.14	0.20	0.42	2012.00
year13_tax13	0.14	0.14	0.18	0.35	2013.00
year14_tax12	0.17	0.16	0.23	0.50	2012.00
year14_tax13	0.13	0.13	0.17	0.35	2013.00
year14_tax14	0.32				2014.00

Table 18: Binomial Fit for 10Q Response Extension Rate

For AF, NAF, and SRC in years 2013 and 2014, as taxonomy increases the odds of extension decreases. For year 2012, as taxonomy increases the odds of an extension increases, for AF, NAF, and SRC. LAF does not have an overall trend.

12.8 Face statements 10Q

12.8.1 Fit in R

```

filer_cat<-relevel(factor(all_data_2012_10Qfs$filer_category), "LAF")

bin_fit_Qfs<-glm(extension_rate~factor(year_only) + factor(taxonomy_year)+filer_cat^2
                  ,family=quasibinomial, data=all_data_2012_10Qfs)

```

12.8.2 Coefficients

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-2.3374	0.2104	-11.11	0.0000
factor(year_only)2013	0.1619	0.0557	2.91	0.0037
factor(year_only)2014	0.0517	0.0645	0.80	0.4226
factor(taxonomy_year)2011	-0.3927	0.2117	-1.86	0.0636
factor(taxonomy_year)2012	-0.3518	0.2121	-1.66	0.0972
factor(taxonomy_year)2013	-0.6604	0.2190	-3.02	0.0026
factor(taxonomy_year)2014	-0.9253	0.4534	-2.04	0.0413
filer_catAF	-0.1721	0.3089	-0.56	0.5775
filer_catNAF	0.0568	0.5554	0.10	0.9186
filer_catSRC	-0.0098	0.2877	-0.03	0.9728
factor(year_only)2013:factor(taxonomy_year)2011	-0.1171	0.0735	-1.59	0.1113
factor(year_only)2013:factor(taxonomy_year)2012	-0.2551	0.0457	-5.58	0.0000
factor(year_only)2013:filer_catAF	0.0343	0.0493	0.70	0.4870
factor(year_only)2014:filer_catAF	-0.0027	0.0766	-0.03	0.9722
factor(year_only)2013:filer_catNAF	0.1089	0.0525	2.07	0.0382
factor(year_only)2014:filer_catNAF	0.2176	0.0814	2.67	0.0075
factor(year_only)2013:filer_catSRC	0.1976	0.0398	4.96	0.0000
factor(year_only)2014:filer_catSRC	0.3099	0.0607	5.10	0.0000
factor(taxonomy_year)2011:filer_catAF	0.1232	0.3113	0.40	0.6922
factor(taxonomy_year)2012:filer_catAF	0.0530	0.3111	0.17	0.8647
factor(taxonomy_year)2013:filer_catAF	0.1198	0.3156	0.38	0.7043
factor(taxonomy_year)2014:filer_catAF	-1.4345	2.4043	-0.60	0.5507
factor(taxonomy_year)2011:filer_catNAF	0.3160	0.5570	0.57	0.5705
factor(taxonomy_year)2012:filer_catNAF	0.2608	0.5568	0.47	0.6395
factor(taxonomy_year)2013:filer_catNAF	0.1285	0.5597	0.23	0.8183
factor(taxonomy_year)2011:filer_catSRC	0.3172	0.2891	1.10	0.2724
factor(taxonomy_year)2012:filer_catSRC	0.1440	0.2893	0.50	0.6187
factor(taxonomy_year)2013:filer_catSRC	0.0004	0.2923	0.00	0.9989

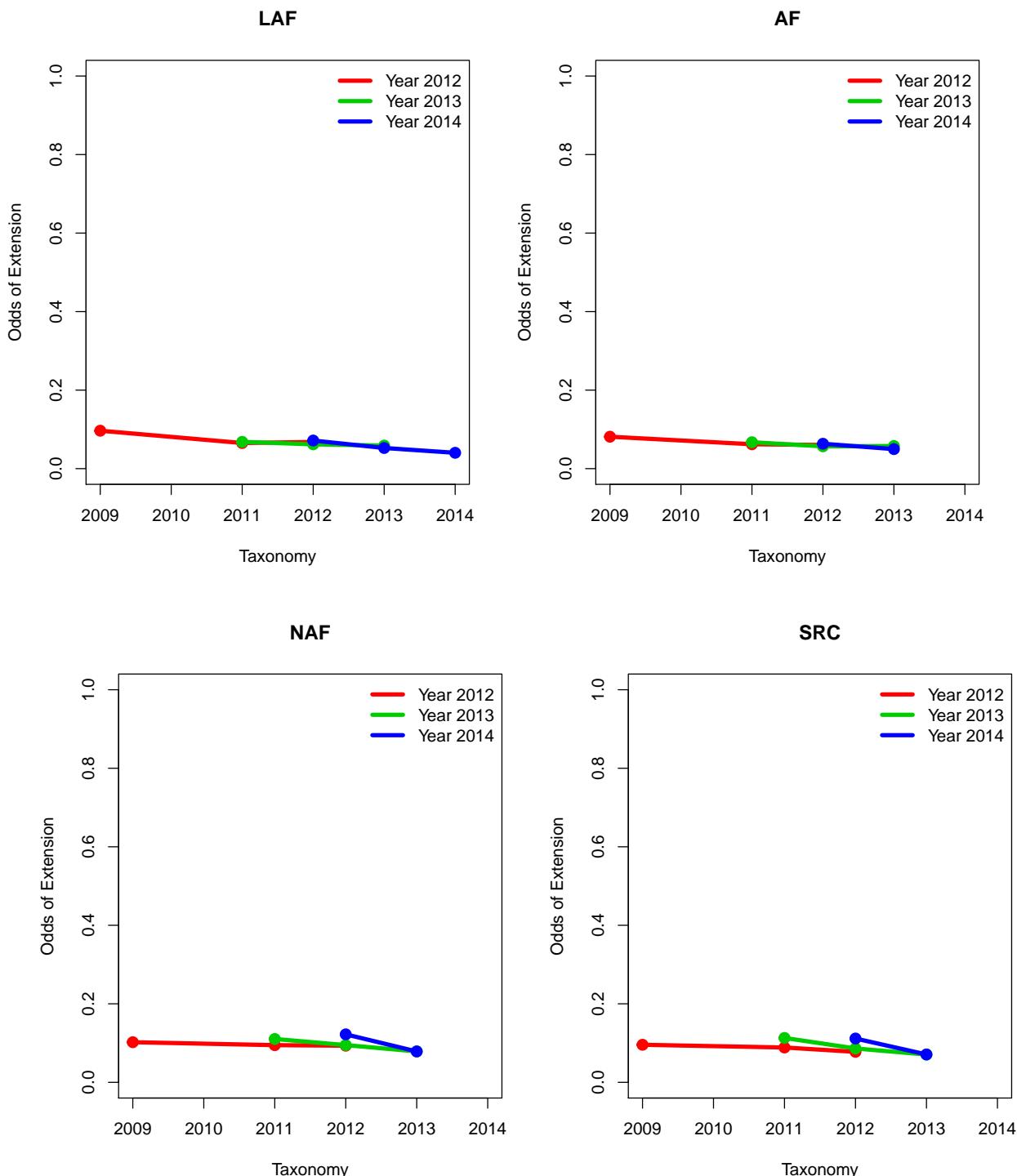
Table 19: Binomial Fit for 10Q Response Extension Rate with Face Statements

12.8.3 Exponentiated Coefficients

year12_tax9_LAF	0.10
year13	1.18
year14	1.05
taxyear11	0.68
taxyear12	0.70
taxyear13	0.52
taxyear14	0.40
AF	0.84
NAF	1.06
SRC	0.99
year2013_taxyear11	0.89
year2013_taxyear12	0.77
year2013_AF	1.03
year2014_AF	1.00
year2013_NAF	1.12
year2014_NAF	1.24
year2013_SRC	1.22
year2014_SRC	1.36
taxyear11AF	1.13
taxyear12AF	1.05
taxyear13AF	1.13
taxyear11NAF	1.37
taxyear12NAF	1.30
taxyear13NAF	1.14
taxyear11SRC	1.37
taxyear12SRC	1.15
taxyear13SRC	1.00

Table 20: Binomial Fit for 10Q Response Extension Rate with Face Statements

12.8.4 Interpretation



X	LAF	AF	NAF	SRC	taxonomy
year12_tax9	0.10	0.08	0.10	0.10	2009.00
year12_tax11	0.07	0.06	0.09	0.09	2011.00
year12_tax12	0.07	0.06	0.09	0.08	2012.00
year13_tax11	0.07	0.07	0.11	0.11	2011.00
year13_tax12	0.06	0.06	0.09	0.09	2012.00
year13_tax13	0.06	0.06	0.08	0.07	2013.00
year14_tax12	0.07	0.06	0.12	0.11	2012.00
year14_tax13	0.05	0.05	0.08	0.07	2013.00
year14_tax14	0.04				2014.00

Table 21: Binomial Fit for 10Q Response Extension Rate Face Statements

For LAF, AF, NAF, and SRC, taxonomy increases the odds of an extension decreases for years 2012 to 2014.

12.8.5 Model Diagnostics

12.9 10Q Face Statements with Creation software and SIC

12.9.1 Fit in R

```

filer_cat<-relevel(factor(all_data_2012_10Qfs$filer_category), "LAF")
creat_soft<-relevel(factor(all_data_2012_10Qfs$creation_software), "WebFilings")
levels(creat_soft)[2] <- "UBmatrix"

bin_fit_10Qfs2<-glm(extension_rate~factor(year_only) + factor(taxonomy_year)+filer_cat)^2 + SIT + creat_soft
,family=quasibinomial, data=all_data_2012_10Qfs)

```

12.9.2 Coefficients

12.9.3 Exponentiated Coefficients

12.9.4 Interpretation

12.10 Face statements 10Q years 2013 to 2014

12.10.1 Fit in R

```
all_data_2013_10Qfs<-subset(all_data_10Qfs,year_only >= 2013)
filer_cat<-relevel(factor(all_data_2013_10Qfs$filer_category), "LAF")

bin_fit_10Qfs2<-glm(extension_rate~(factor(year_only) + factor(taxonomy_year)+filer_cat)^2
,family=quasibinomial, data=all_data_2013_10Qfs)
```

12.10.2 Coefficients

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-2.8210	0.1474	-19.14	0.0000
factor(year_only)2014	-0.1108	0.0415	-2.67	0.0076
factor(taxonomy_year)2012	0.0418	0.1490	0.28	0.7789
factor(taxonomy_year)2013	-0.0145	0.1505	-0.10	0.9231
factor(taxonomy_year)2014	-0.8066	0.4088	-1.97	0.0485
filer_catAF	-0.2585	0.4008	-0.64	0.5189
filer_catNAF	0.0501	0.3238	0.15	0.8769
filer_catSRC	0.7140	0.1598	4.47	0.0000
factor(year_only)2014:factor(taxonomy_year)2012	0.2560	0.0454	5.64	0.0000
factor(year_only)2014:filer_catAF	-0.0369	0.0611	-0.60	0.5463
factor(year_only)2014:filer_catNAF	0.1078	0.0651	1.66	0.0978
factor(year_only)2014:filer_catSRC	0.1136	0.0479	2.37	0.0176
factor(taxonomy_year)2012:filer_catAF	0.1725	0.4022	0.43	0.6680
factor(taxonomy_year)2013:filer_catAF	0.2404	0.4031	0.60	0.5509
factor(taxonomy_year)2014:filer_catAF	-0.7864	2.3973	-0.33	0.7429
factor(taxonomy_year)2012:filer_catNAF	0.3799	0.3257	1.17	0.2435
factor(taxonomy_year)2013:filer_catNAF	0.2444	0.3272	0.75	0.4550
factor(taxonomy_year)2012:filer_catSRC	-0.3895	0.1620	-2.40	0.0162
factor(taxonomy_year)2013:filer_catSRC	-0.5264	0.1635	-3.22	0.0013

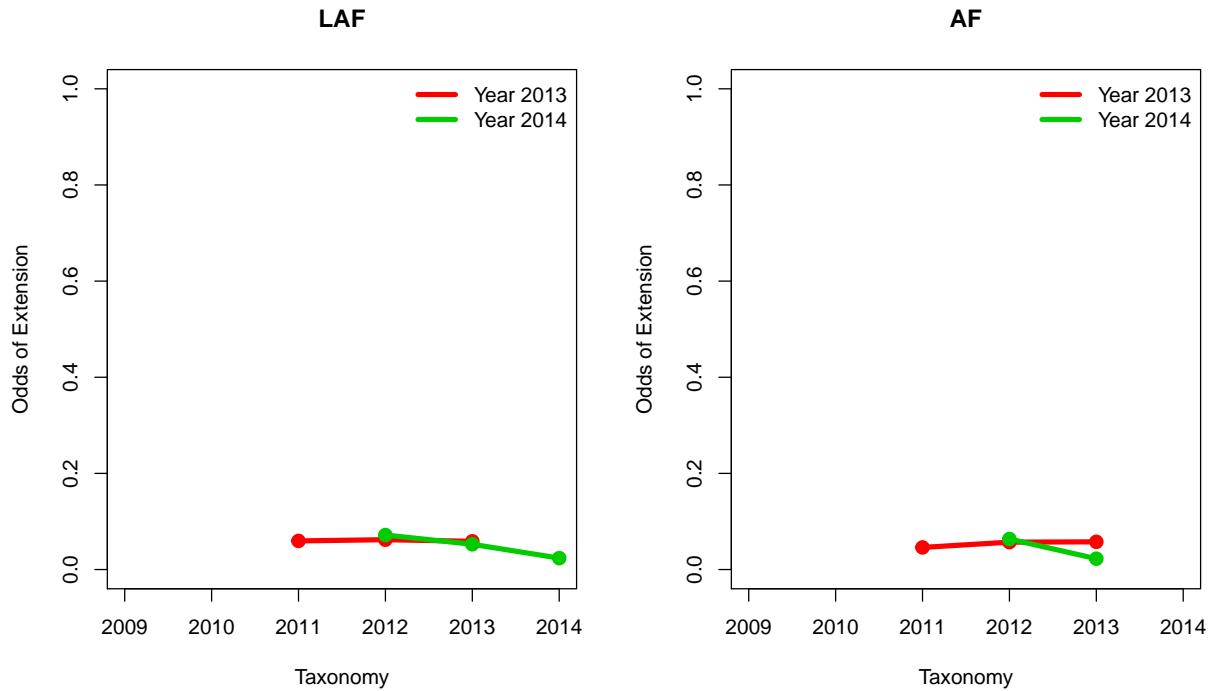
Table 22: Binomial Fit for 10Q Response Extension Rate with Face Statements Years 2013-2014

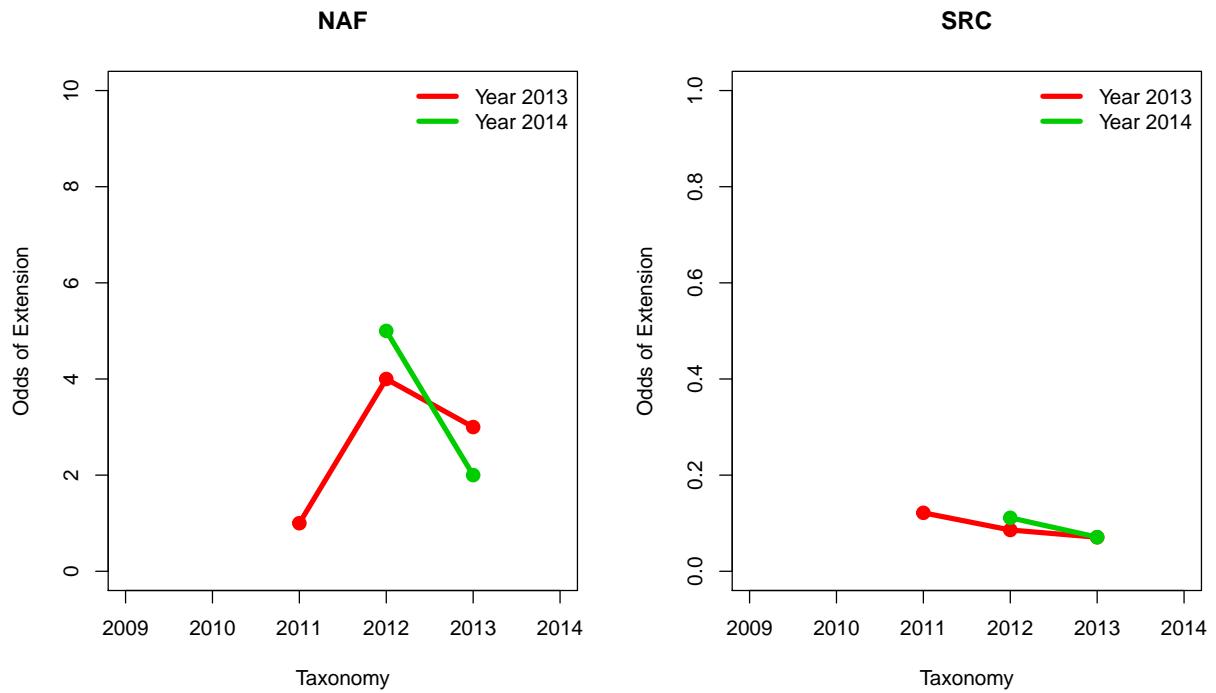
12.10.3 Exponentiated Coefficients

year13_tax11_LAF	0.06
year14	0.90
taxyear12	1.04
taxyear13	0.99
taxyear14	0.45
AF	0.77
NAF	1.05
SRC	2.04
year2014_taxyear12	1.29
year2014_AF	0.96
year2014_NAF	1.11
year2014_SRC	1.12
taxyear12AF	1.19
taxyear13AF	1.27
taxyear12NAF	1.46
taxyear13NAF	1.28
taxyear12SRC	0.68
taxyear13SRC	0.59

Table 23: Binomial Fit for 10Q Response Extension Rate with Face Statements 2013-2014

12.10.4 Interpretation





X	LAF	AF	NAF	SRC taxonomy		
year13_tax11	0.06	0.05	0.0626085808	0.12	2011.00	
year13_tax12	0.06	0.06	0.095452661	0.09	2012.00	
year13_tax13	0.06	0.06	0.0787924057	0.07	2013.00	
year14_tax12	0.07	0.06	0.1229254162	0.11	2012.00	
year14_tax13	0.05	0.02	0.0785555237	0.07	2013.00	
year14_tax14	0.02		NA		2014.00	

Table 24: Binomial Fit for 10Q Response Extension Rate with Face Statements Odds 2013-2014

In general, for all filer types, as taxonomy increases the odds of an extension decreases for years 2013 to 2014.

13 R Code

```
require(knitr)
opts_chunk$set(fig.width=5, fig.height=4, out.width='\\linewidth', dev='pdf', concordance=TRUE)
options(replace.assign=TRUE,width=112, digits = 6, max.print=1000,
        show.signif.stars = TRUE)
require(xtable)
require(foreign)
require(arm)
require(ggplot2)
require(nortest)
require(nlme)
require(lattice)
require(lme4)
require(R2jags)
require(gee)
```