Does code ownership have an effect on code quality?

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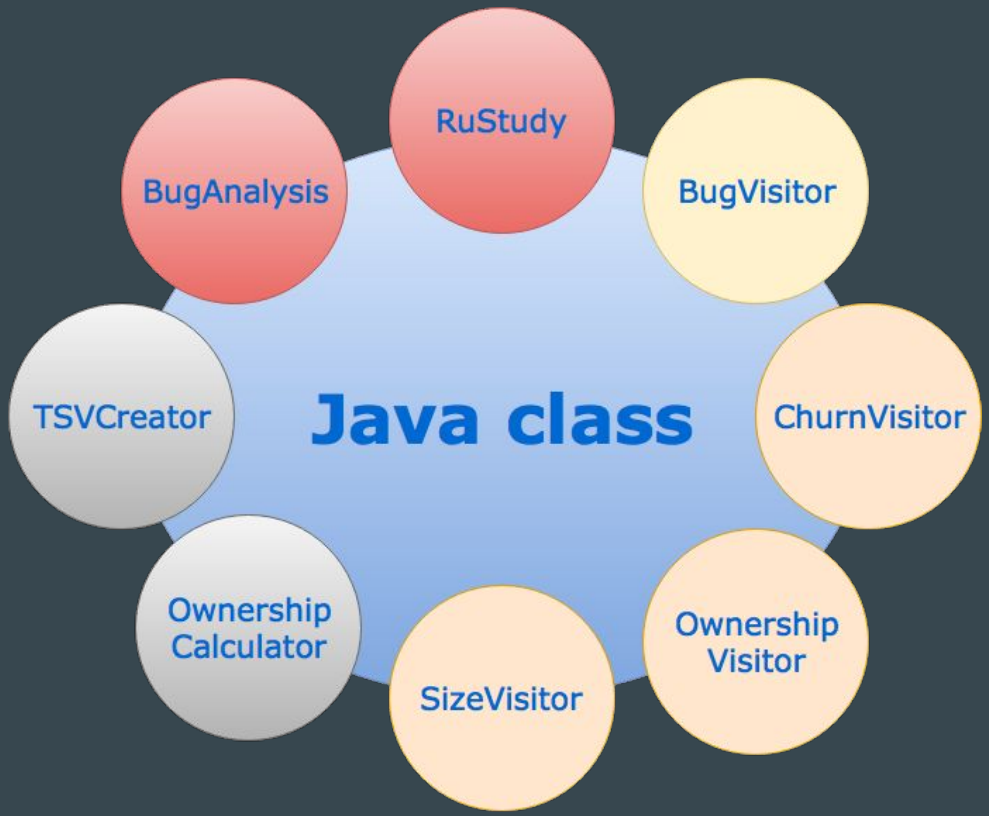
From GitPython to Java RepoDriller



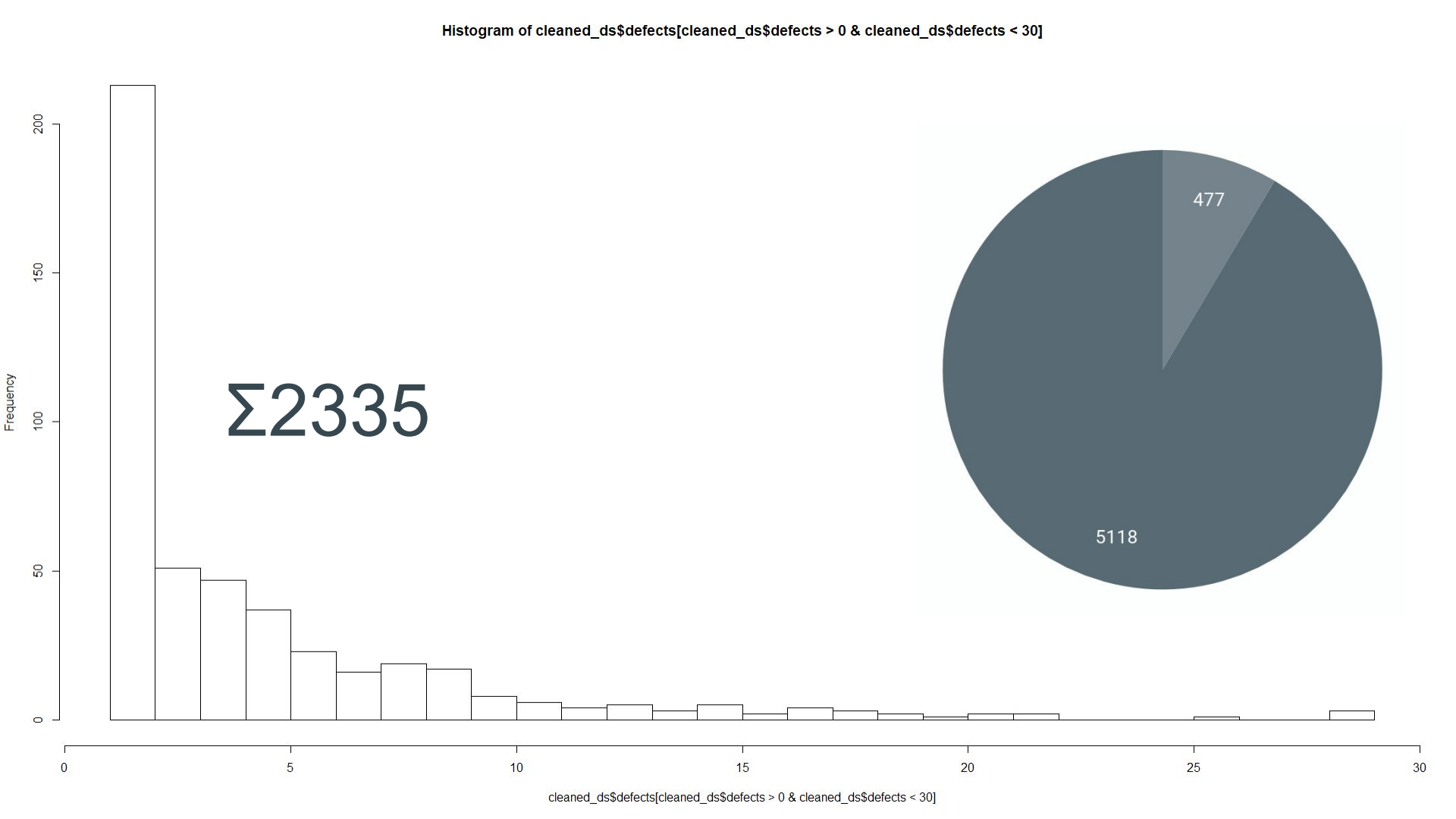

```
public void run() {

   BugVisitor bugVisitor = new BugVisitor(noBugsIntroducedBefore,
         noBugsIntroducedAfter, defectsMap);

   new RepositoryMining()
         .in(GitRepository.singleProject(repoPath))
         .through(Commits.range(commitAtRelease,
commitYearAfterRelease))
         .process(bugVisitor)
         .mine();
}
```

```
new RepositoryMining()
      .in(GitRepository.singleProject(repoPath))
      .through(Commits.range(earliestCommit, commitAtRelease))

.process(ownerVisitor).process(churnVisitor).process(sizeVisitor)
      .mine();
```


Histogram of cleaned_ds$defects[cleaned_ds$defects > 0 & cleaned_ds$defects < 30]
Frequency
0
50
100
150
200
Σ2335
477
5118
0
5
10
15
20
25
30
cleaned_ds$defects[cleaned_ds$defects > 0 & cleaned_ds$defects < 30]

Our findings: DV in terms of CVs

```
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)      -3.66e-02   2.26e-02   -1.62      0.1
cleaned_ds$churn  1.04e-03   2.72e-05   38.31   <2e-16 ***
cleaned_ds$size   1.60e-03   9.14e-05   17.52   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.58 on 5592 degrees of freedom
Multiple R-squared:  0.494, Adjusted R-squared:  0.494
F-statistic: 2.73e+03 on 2 and 5592 DF,  p-value: <2e-16
```

Our findings: DV in terms of IV and CVs

```
Coefficients: (1 not defined because of singularities)
                     Estimate Std. Error t value Pr(>|t|)
(Intercept)         -1.69e-01   1.16e-01   -1.47     0.14
cleaned_ds$churn     8.78e-04   3.19e-05   27.49   <2e-16 ***
cleaned_ds$size      1.23e-03   9.84e-05   12.51   <2e-16 ***
cleaned_ds$minor     6.39e-02   6.74e-03    9.47   <2e-16 ***
cleaned_ds$major     2.34e-02   1.69e-02    1.38     0.17
cleaned_ds$total           NA         NA      NA       NA
cleaned_ds$ownership 9.51e-02   1.14e-01    0.84     0.40
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.57 on 5589 degrees of freedom
Multiple R-squared:  0.503, Adjusted R-squared:  0.502
F-statistic: 1.13e+03 on 5 and 5589 DF,  p-value: <2e-16
```

Our finding

We failed to establish any meaningful relationship between ownership metrics and the number of post-release bugs for the Rust repository when we control for size and churn.

Possible reasons

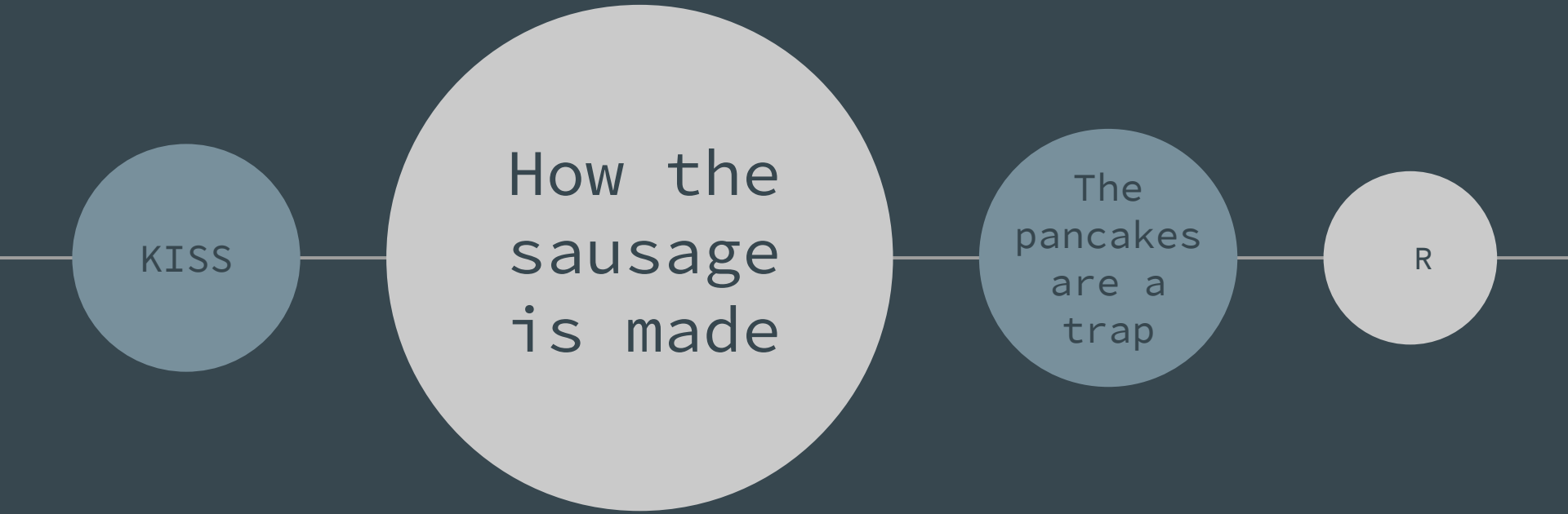
We are correct.

We f***** up the Data Science part.

There is some preprocessing step missing.

We are not properly detecting post-release bugs.

Learnings



Is there a correlation between code ownership and code quality?

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“Any headline that ends in a question mark can be answered by the word *no*.”

-- Betteridge's law of headlines

Thank you

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