Covr: Bringing Test Coverage to R

September 2016

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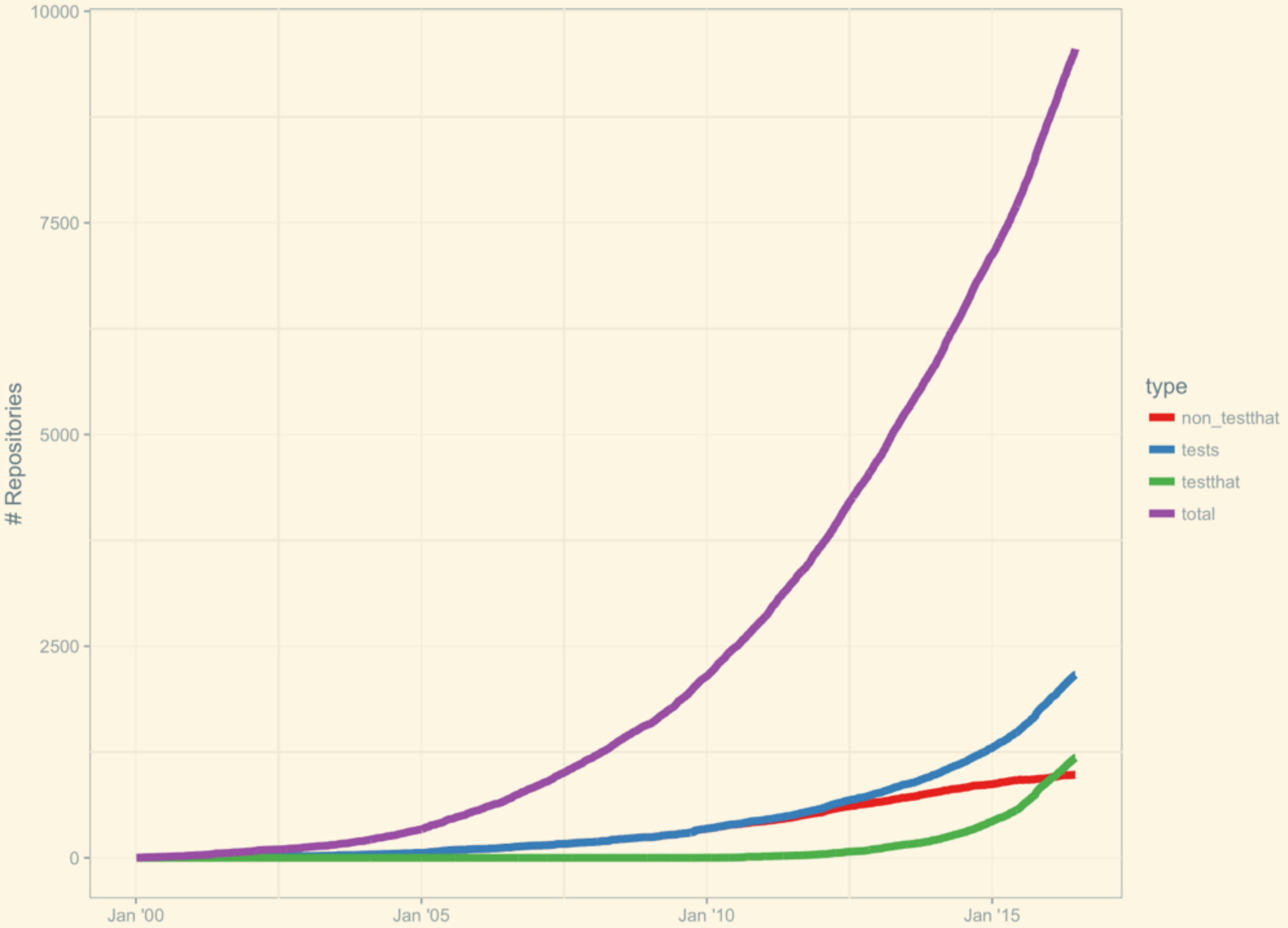
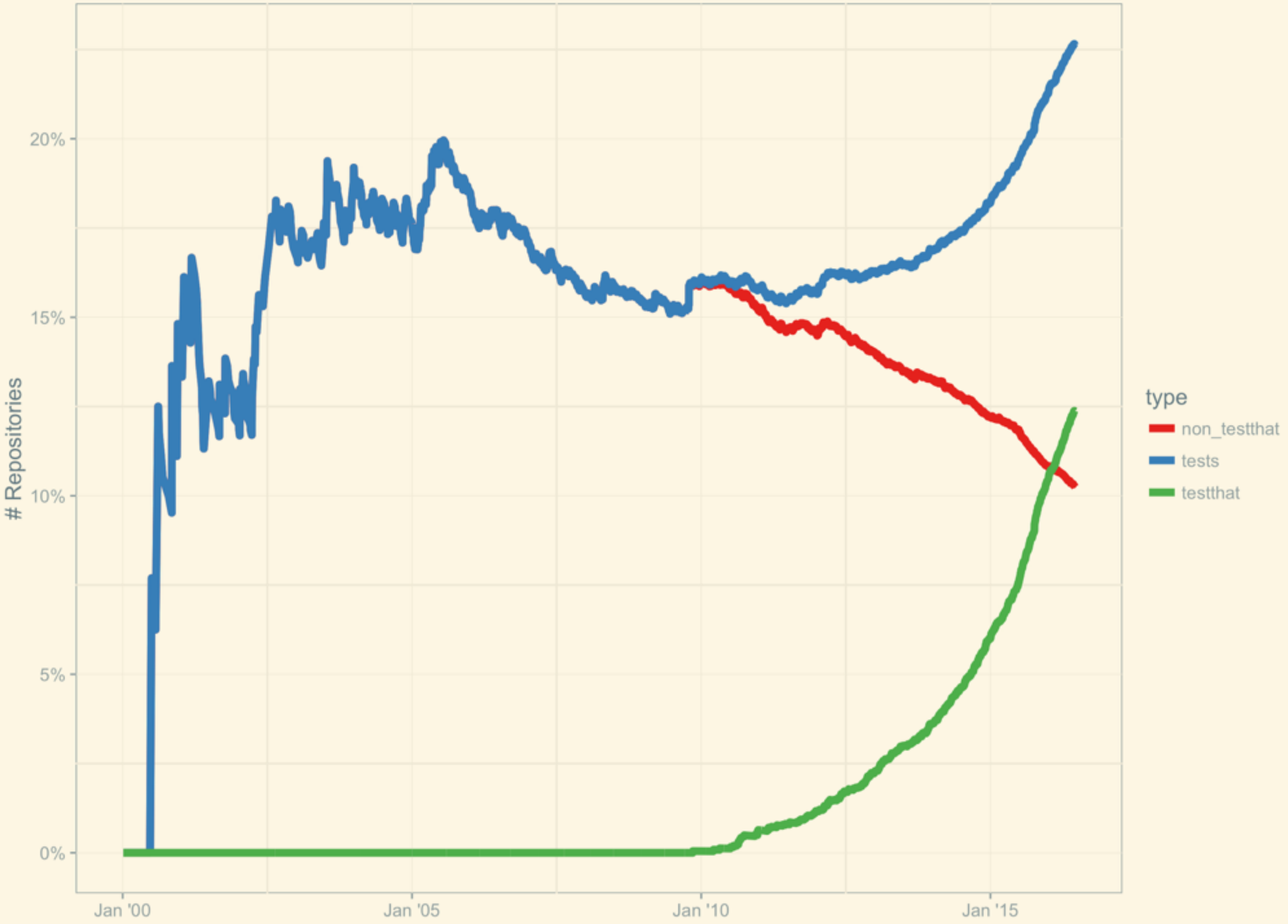
RStudio

	Tests	Total	%
CRAN	2,091	9,772	21.40
Bioconductor	449	1,258	35.69
rOpenSci	84	146	57.53
Total	2,624	11,176	23.50


10000
7500
5000
2500
0
Repositories
Jan '00
Jan '05
Jan '10
Jan '15
type
non_testthat
tests
testthat
total


20%
15%
10%
5%
0%
Repositories
Jan '00
Jan '05
Jan '10
Jan '15
type
non_testthat
tests
testthat

Why Test?

- Correctness
- Contributions
- Confidence

Test Coverage

- Tracks of code tested by tests
- **Tracks code not tested by tests**

Covr

- R package (Dec 2014)
- Local Reports
- Continuous Integration (Travis)
- R (S3, S4, RC, R6), C, C++, Fortran
- Tests, Examples, Vignettes

R

```
> f <- function(x) {y = x + 1; y - 2}
> covr::trace_calls(f)
function (x)
{
    {
        covr::count(":1:19:1:27:19:27:1:1")
        y = x + 1
    }
    {
        covr::count(":1:30:1:34:30:34:1:1")
        y - 2
    }
}
```

```
> f <- function(x) { switch(x, a = 1, b = 2, c = d <- 1) }
> covr::trace_calls(f)
function (x)
{
    switch({
        covr::count("test-braceless.R:40:12:40:12:12:12:40:40")
        x
    }, a = {
        covr::count("test-braceless.R:41:11:41:11:11:11:41:41")
        1
    }, b = {
        covr::count("test-braceless.R:42:11:42:11:11:11:42:42")
        2
    }, c = {
        covr::count("test-braceless.R:43:11:43:16:11:16:43:43")
        d <- 1
    })
}
```

Compiled

- Gcov
- gcc and clang
- -O0 -coverage
- Run gcov binary *.gcov

Travis / CI

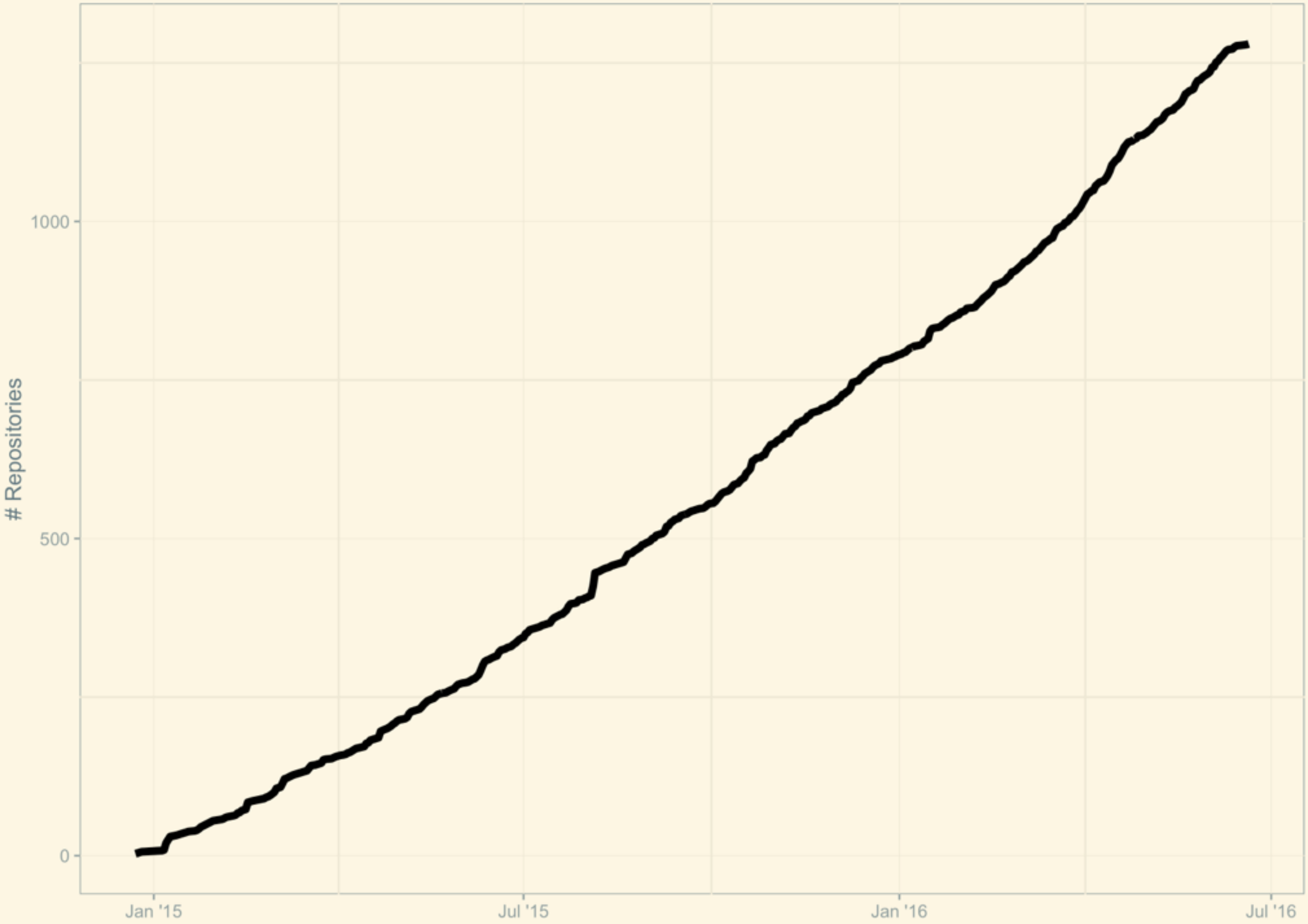
Suggests: covr

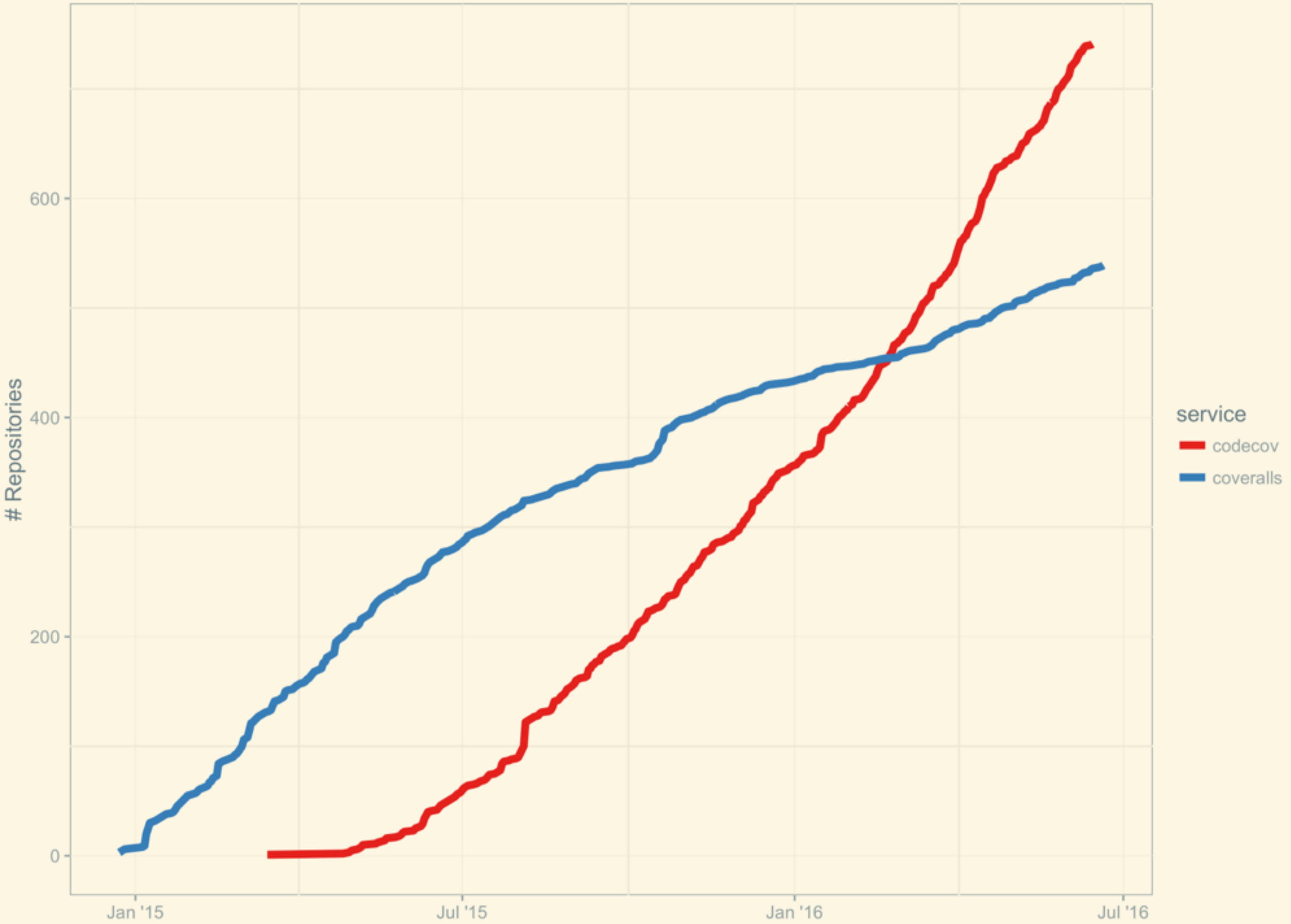
after_success:

- R -e ‘covr::codecov()’

- R -e ‘covr::coveralls()’

Demo


Repositories
1000
500
0
Jan '15
Jul '15
Jan '16
Jul '16


600
400
200
0
Repositories
Jan '15
Jul '15
Jan '16
Jul '16
service
codecov
coveralls

Code Coverage Working group

- Chris Campbell, Mango Solutions
- Shivank Agrawal, Oracle
- Santosh Chaudhari, Oracle
- Karl Forner, Quartz Bio
- Jim Hester, RStudio
- Mark Hornick, Oracle – Group Leader
- Chen Liang, Oracle
- Willem Ligtenberg, Open Analytics
- Tobias Verbeke, Open Analytics
- Qin Wang, Oracle

CCWG - Future Work

- Branch coverage
- Intel compiler compatibility
- Solaris SPARC, AIX support
- https://wiki.r-consortium.org/view/Code_Coverage_Tool_for_R

Covr

devtools::use_test()

devtools::use_travis()

devtools::use_coverage()

package_coverage()

file_coverage()

as.data.frame()

print(group = “function”)

print(by = “expression”)

report()