FOCUS GROUP

Testing Android Mobile Apps

Goal of the Focus Group

Hearing your opinion and feedback about our research on

TESTING OF ANDROID MOBILE APPS

Goal of the Study

Studying the **prominence, quality, and effectiveness**
of the Java tests manually written by mobile developers

:

We analyzed and performed some statistical analysis on
XXXX open-source Android applications

Aspects Analyzed

- Frequency of test suites developed
- Quality of test cases developed
- Effectiveness of test cases developed
- Factors that influence post-release defect

- Frequency of test suites developed

ONLY **41%** ARE TESTED

Granularity		
Name	Abs.	Rel.
Unit	3,872	73%
Integration	1,273	24%
System	147	3%
Type		
Name	Abs.	Rel.
Functional	4,619	87%
Performance	190	4%
Energy	145	3%
Portability	133	3%
Security	104	2%
Usability	101	1%

Quality of test cases developed

Metric	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
LOC	2.00	14.00	32.00	46.40	66.00	181.00
WMC	0.00	2.00	4.00	4.80	7.00	17.00
RFC	0.00	6.00	17.00	26.30	39.00	112.00
IFC	0.00	0.19	0.36	0.37	0.53	1.00
LCOM	0.00	0.27	0.50	0.50	0.75	1.00
TCC	0.00	0.00	0.00	0.26	0.50	1.00
LCC	0.00	0.00	0.50	0.50	1.00	1.00
Readability	0.00	0.00	0.00	0.13	0.01	1.00
Comment ratio	0.00	0.00	0.00	0.04	0.03	0.40

LOC: Number of lines of code of the Test Class

WMC: Weighted Method Count of the Test Class

RFC: Response for a Class

IFC: Information Flow Coupling

LCOM: Lack of Cohesion of a Test Method

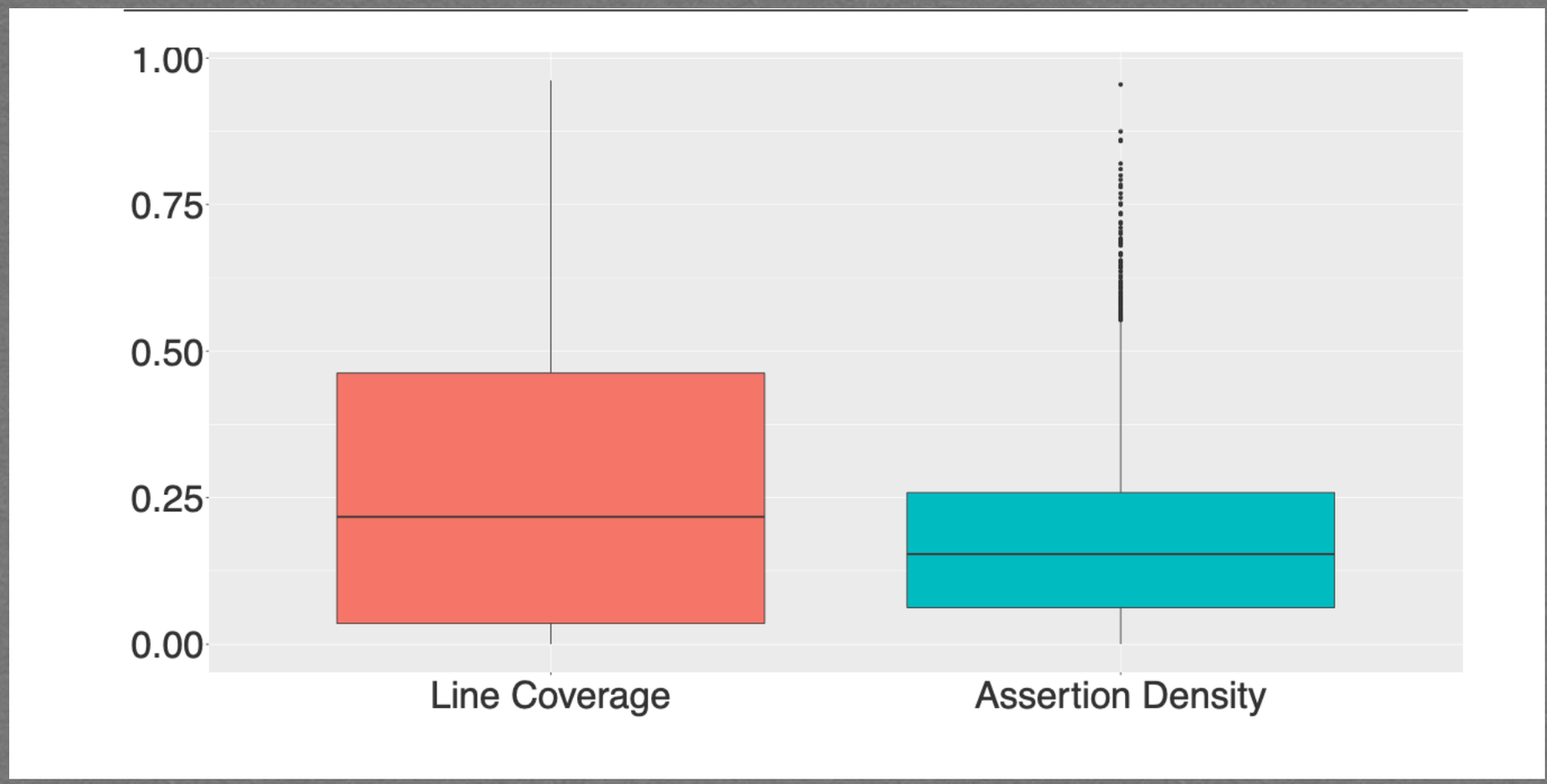
TCC: Tight Class Cohesion

LCC: Loose Class cohesion

Readability: The readability level of the test

Comment Ratio: Ratio between lines of comments and lines of source code

Effectiveness of test cases developed



Statement in Java that enables you to test your assumptions about your program

$$\text{AD} = \frac{\#\ \text{assertions}}{\text{KLOC (test class)}}$$

- Factors that influence post-release defect

+ Tight Class Cohesion

+ Lack of Cohesion of Test Methods

+ Information Flow Coupling

- Prod. Lines of Code

+isCOMPLEX CLASS

+ Change

Summary

- Mobile apps are poorly tested and seem tested using unit test for the majority
- Quality and effectiveness of tests seem low
- Changes strongly affect the increase of post release defects
- Cohesion's metrics' need to be carefully monitored to prevent post release defects