

# Debug Info for Optimized Code

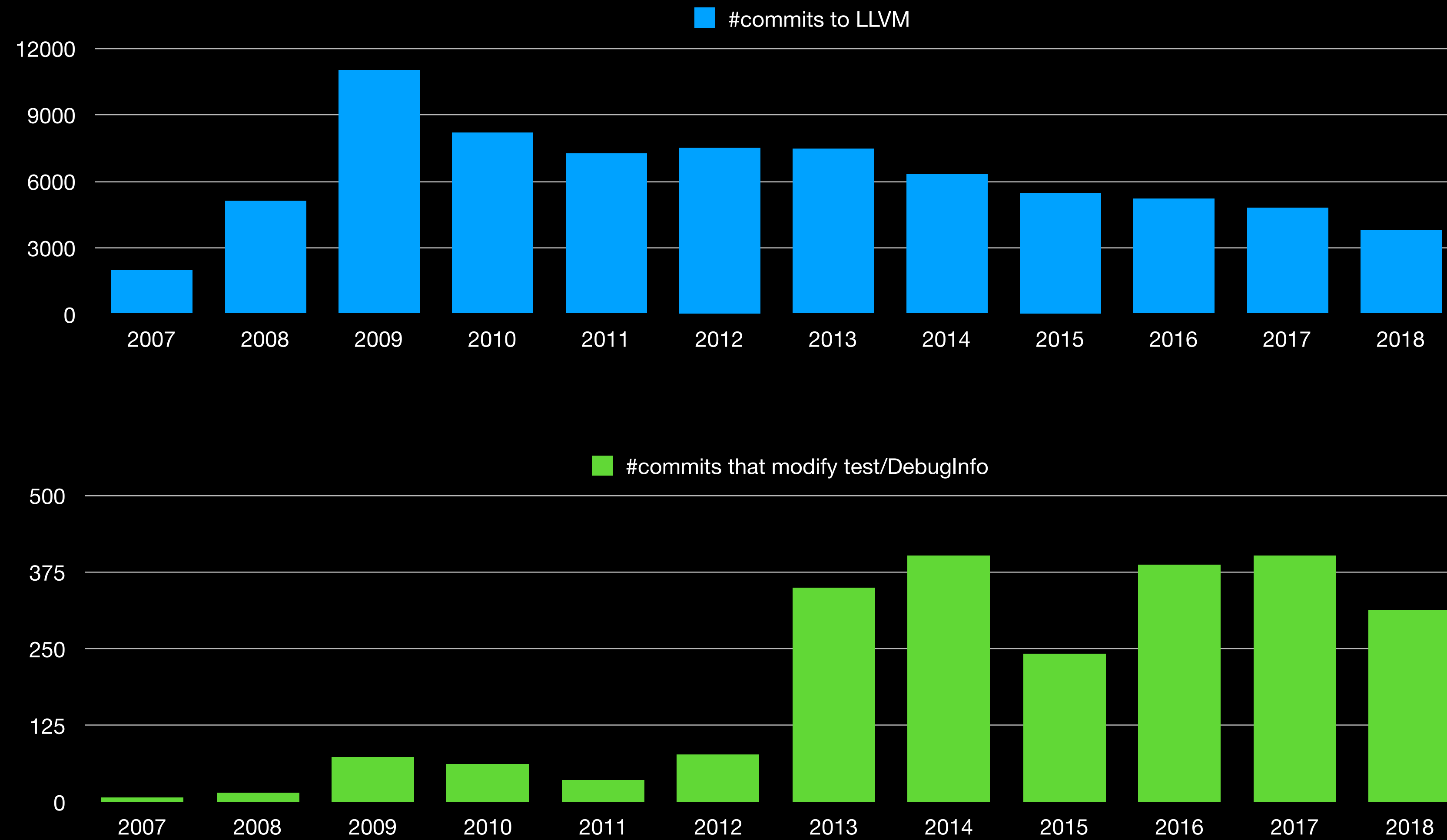
## LLVM BoF Session

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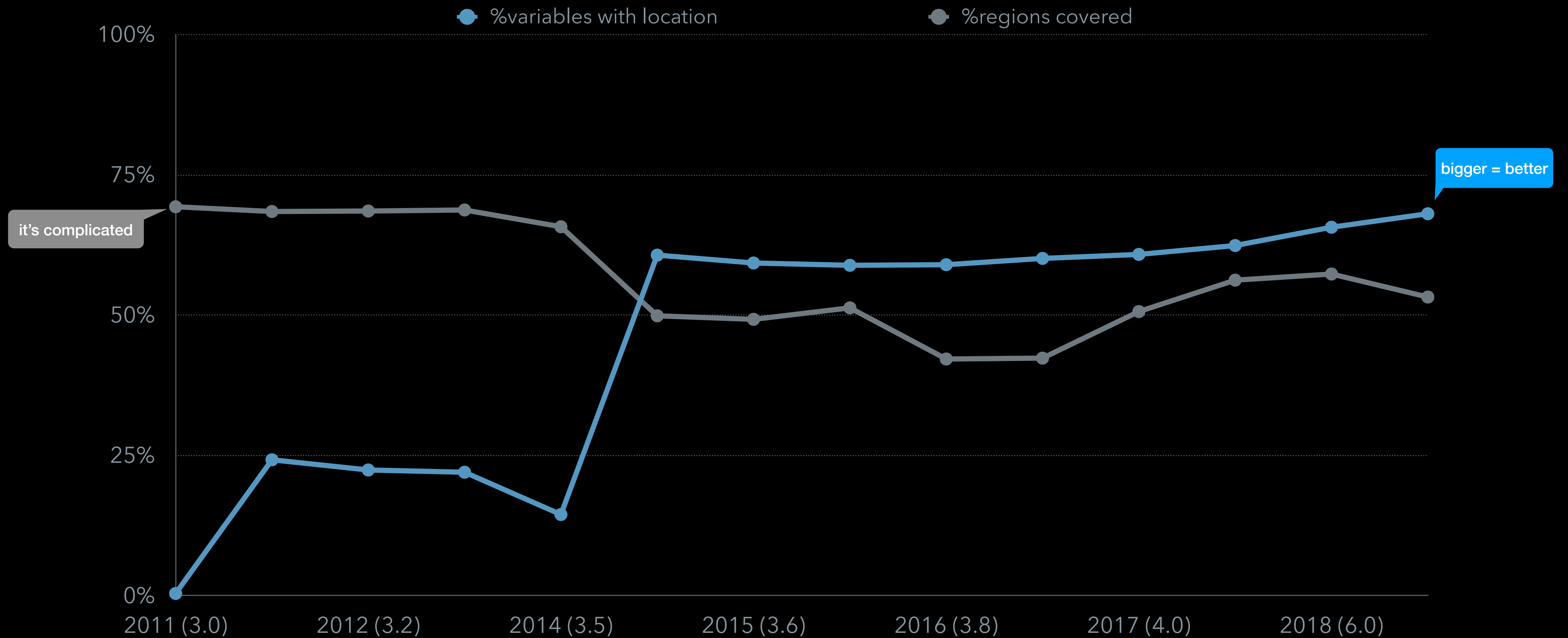
October 2018

Ten years of LLVM Debug Info 🎂

# Ten years of debug info in LLVM

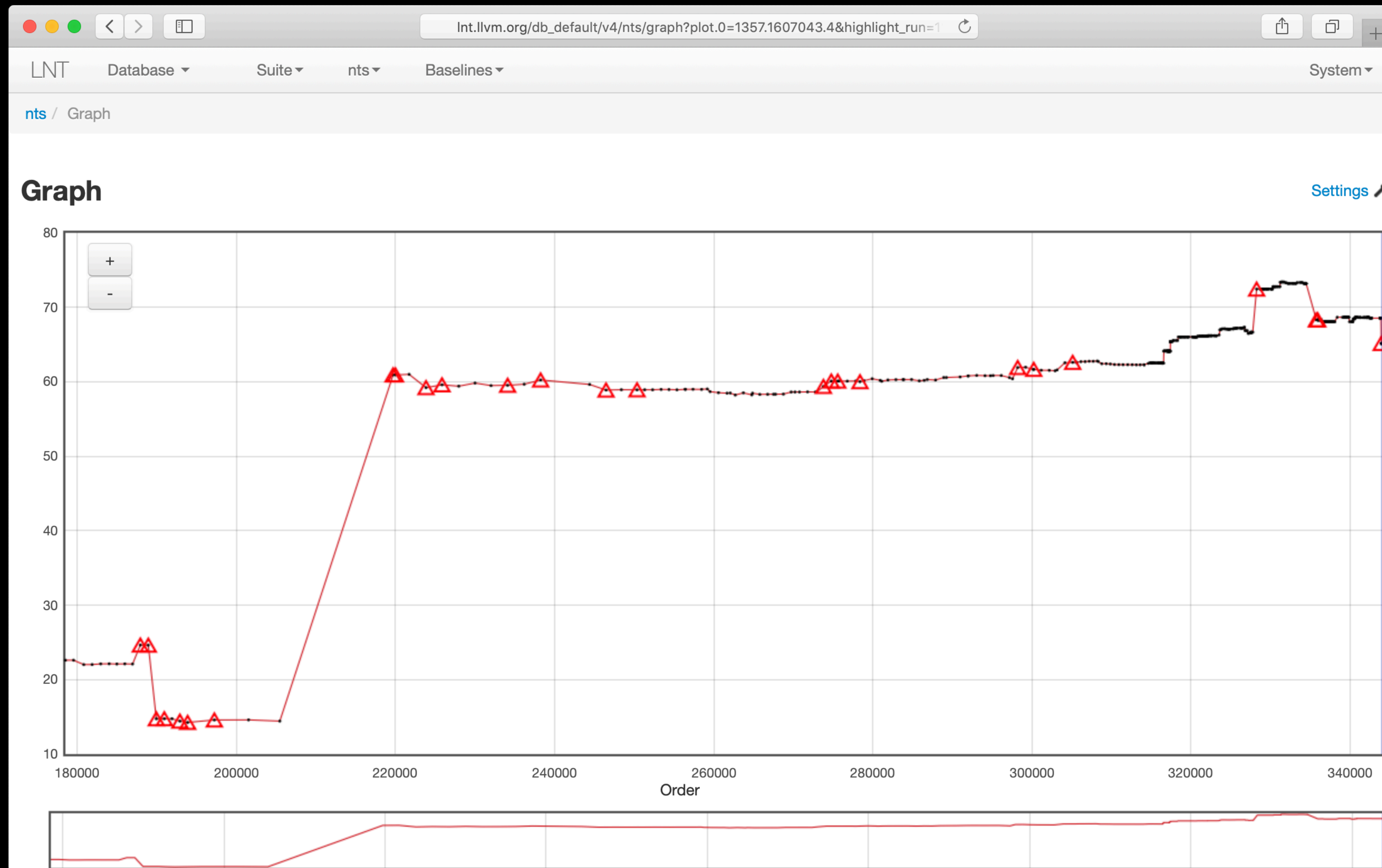


# llvm-dwarfdump --statistics (2011-now)

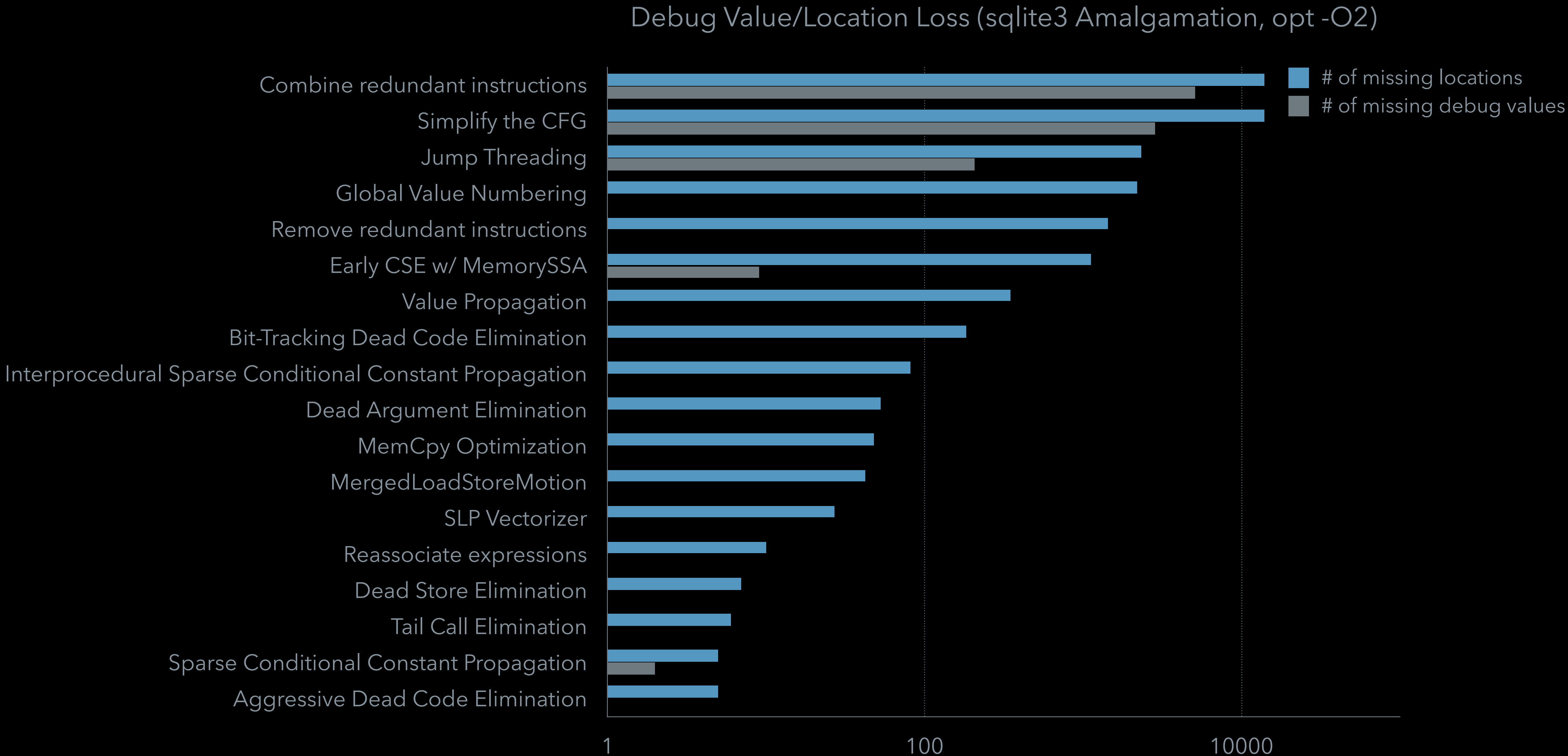


Input program: **Clang 3.4**  
Configuration: **(X86;Arm;AArch64), RelWithDebInfo (-O2)**

# Debug Info metrics collected in LNT <http://lnt.llvm.org/> ~ clang-3.4-debuginfo-statistics



# Which IR passes drop the most information?



# Discussion flash cards

## Backtrace quality

- Tail calls
- Merged functions

## GlobalSel

- Automatically preserving debug info during combines

## CodeGenPrepare

- Moving `llvm.dbg.value`

## Eliminating CodeGen differences

- Additional community bots
- Finding new bugs

## Improving line table fidelity

- IRBuilder API
- Should Constructors take a DebugLoc?
- Testing (dexter?)

## SelectionDAG

- Audit all \*Combiner rules for debug info handling

## Debug Intrinsics

- Extending `llvm.dbg.value`
- Adopting `llvm.dbg.addr`



# Resources

LNT clang-3.4-debuginfo-statistics

[http://lnt.llvm.org/db\\_default/v4/nts/machine/1357](http://lnt.llvm.org/db_default/v4/nts/machine/1357)

LLVM PR38768 [meta] Umbrella bug for poor debug experiences

[https://bugs.llvm.org/show\\_bug.cgi?id=38768](https://bugs.llvm.org/show_bug.cgi?id=38768)

LLVM PR37953 [meta] fix -check-debugify failures

[https://bugs.llvm.org/show\\_bug.cgi?id=37953](https://bugs.llvm.org/show_bug.cgi?id=37953)