

# TypeScript's Evolution: An Analysis of Feature Adoption Over Time

**Joshua D. Scarsbrook**, *Mark Utting*, *Ryan K. L. Ko*

**Mining Software Repositories 2023** May 15th, 2023

# Motivation

What features should we be studying...

- for Code Analysis?
- for Type Inference?
- for Developer Tooling?

How quickly do developers adopt new language versions?

# Research Questions

1. What are **the most popular features** recently introduced in *TypeScript*?
2. How **quickly are new *TypeScript* features adopted** by projects that use *TypeScript*?
3. How **quickly are new *TypeScript* language versions adopted** by projects that use *TypeScript*?

# Dataset / Methodology

1. Collect top starred repos from *GitHub*.
  - **500** repos filtered to **454** containing *TypeScript* code.
2. Download all repos and all commits.
  - **1,325,810** total commits.
3. Filter for commits in the time period of interest.
  - Between **January 1st 2020** and **December 31st 2022** inclusive.
4. Analyze each *TypeScript* file in each commit and look for usage of features.
  - Done by looking at *Abstract Syntax Tree*.

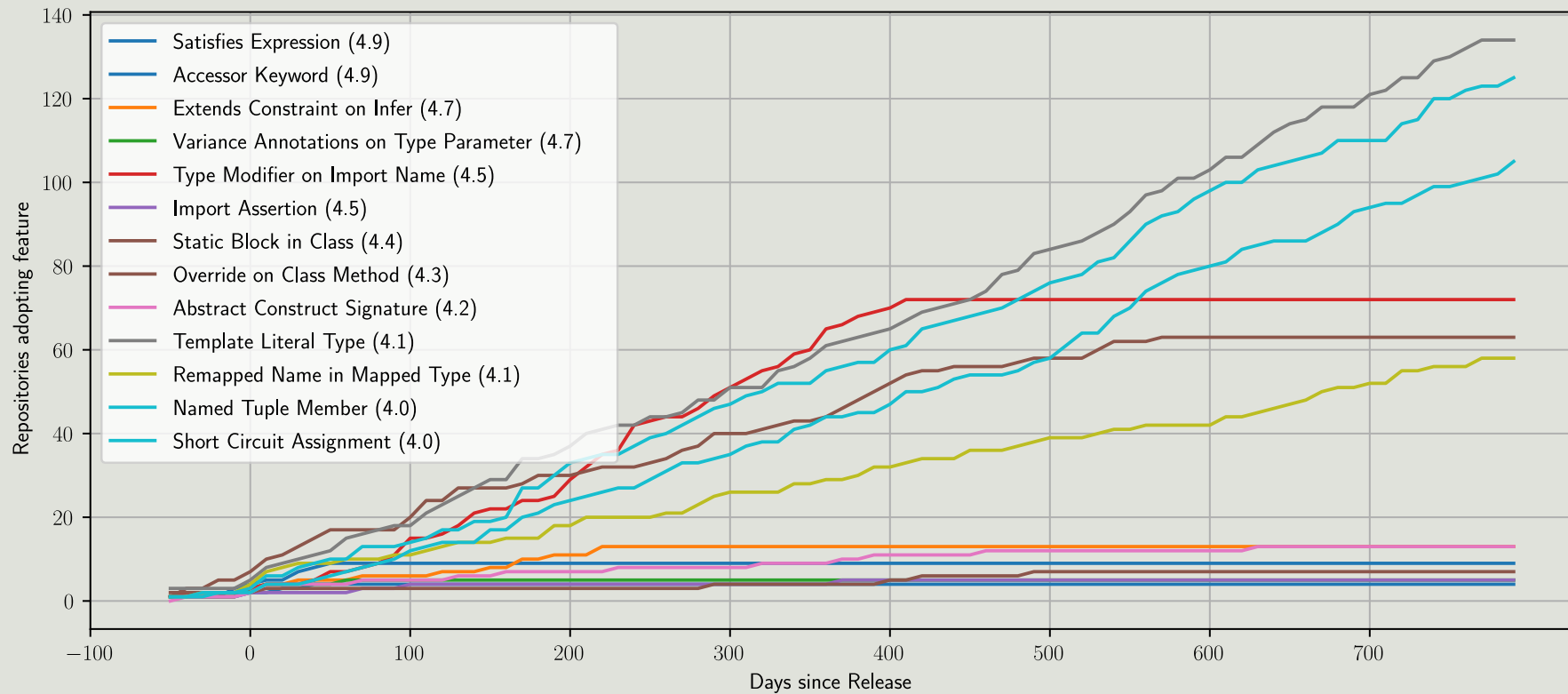
# Research Question 1

**What are the most popular features recently introduced in TypeScript?**

1. **Type Modifier on Import Name** (*70 Projects after 400 days of release*)
2. Template Literal Type (*67 Projects after 400 days of release*)
3. Named Tuple Member (*61 Projects after 400 days of release*)
4. Override on Class Method (*52 Projects after 400 days of release*)

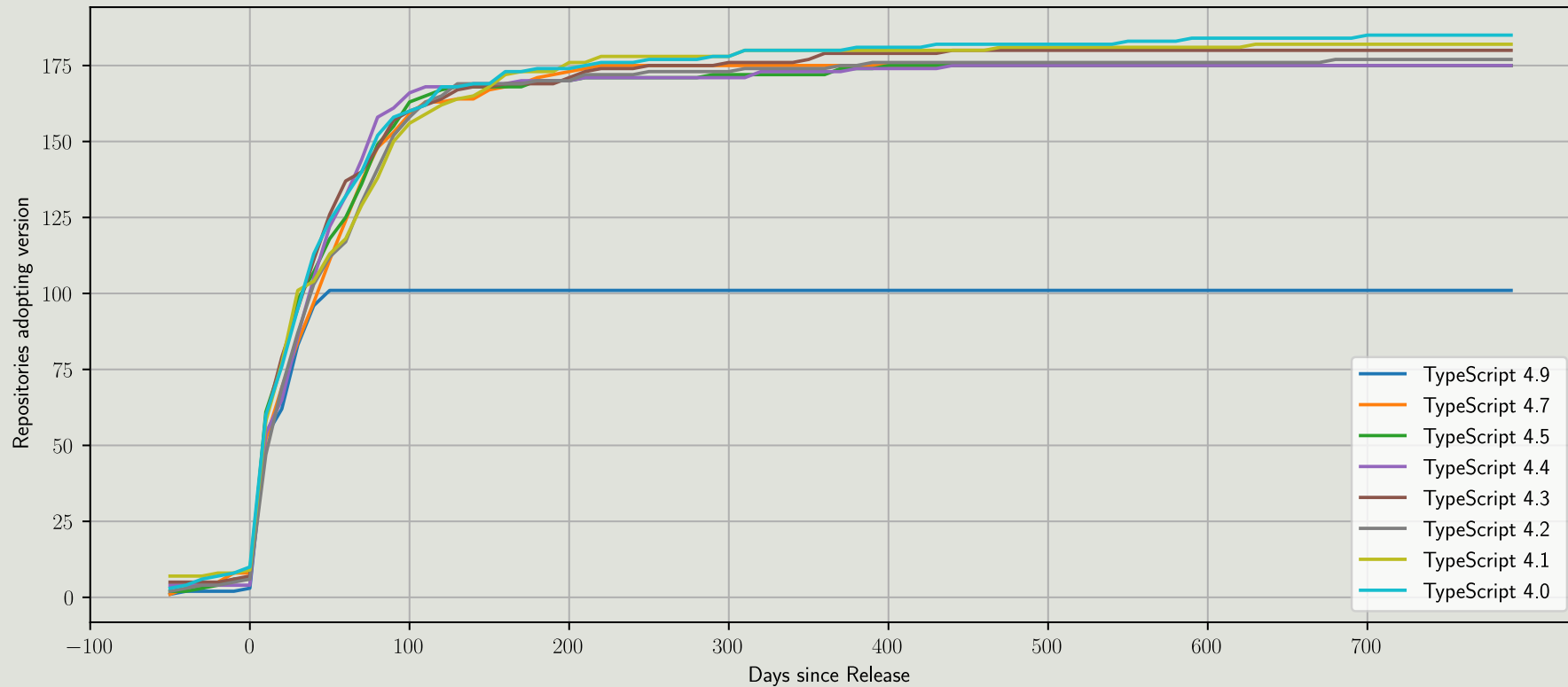
# Research Question 2

How quickly are new TypeScript features adopted by projects that use TypeScript?



# Research Question 3

**How quickly are new TypeScript language versions adopted by projects that use TypeScript?**



# Thanks for Listening

**Source Code:** [https://github.com/Vbitz/jsdata\\_msr](https://github.com/Vbitz/jsdata_msr)