

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

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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 AST nodes corresponding to features.

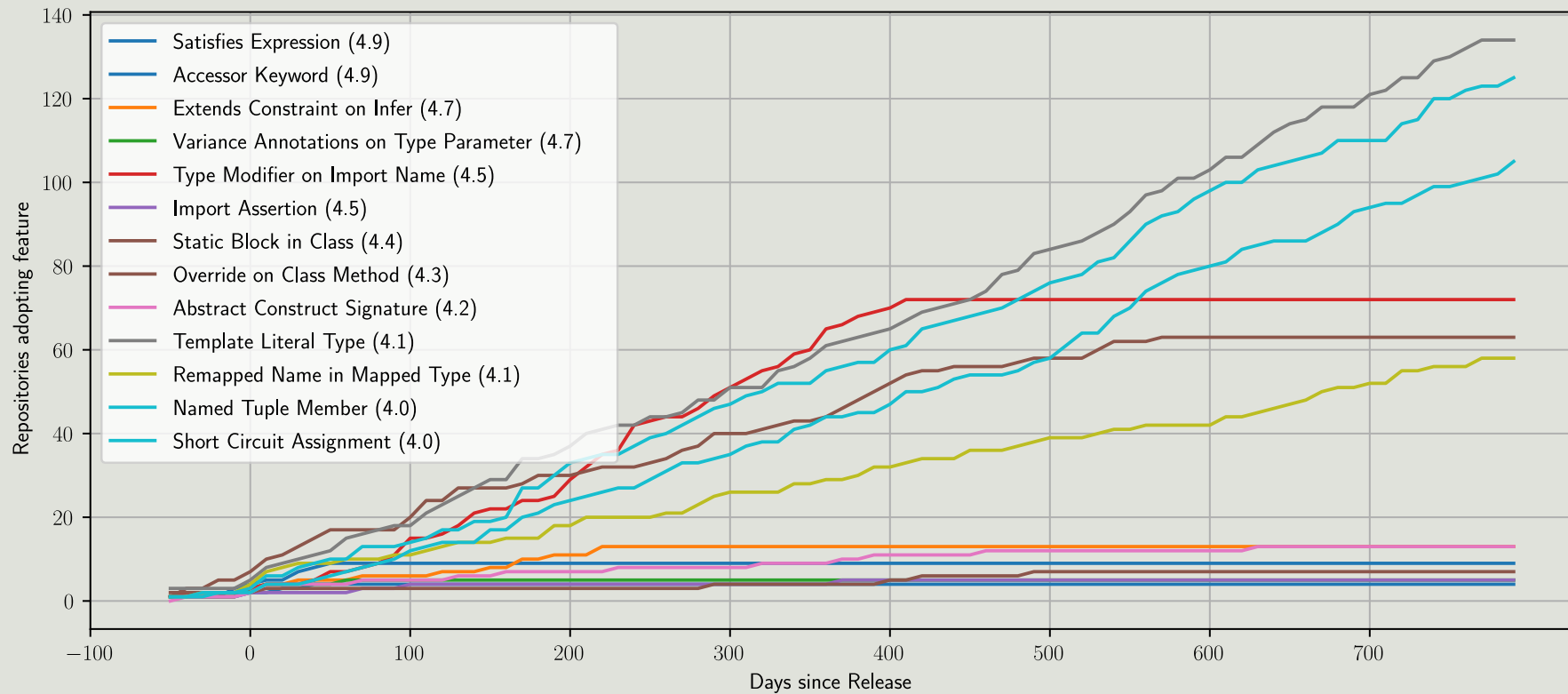
Research Question 1

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*)

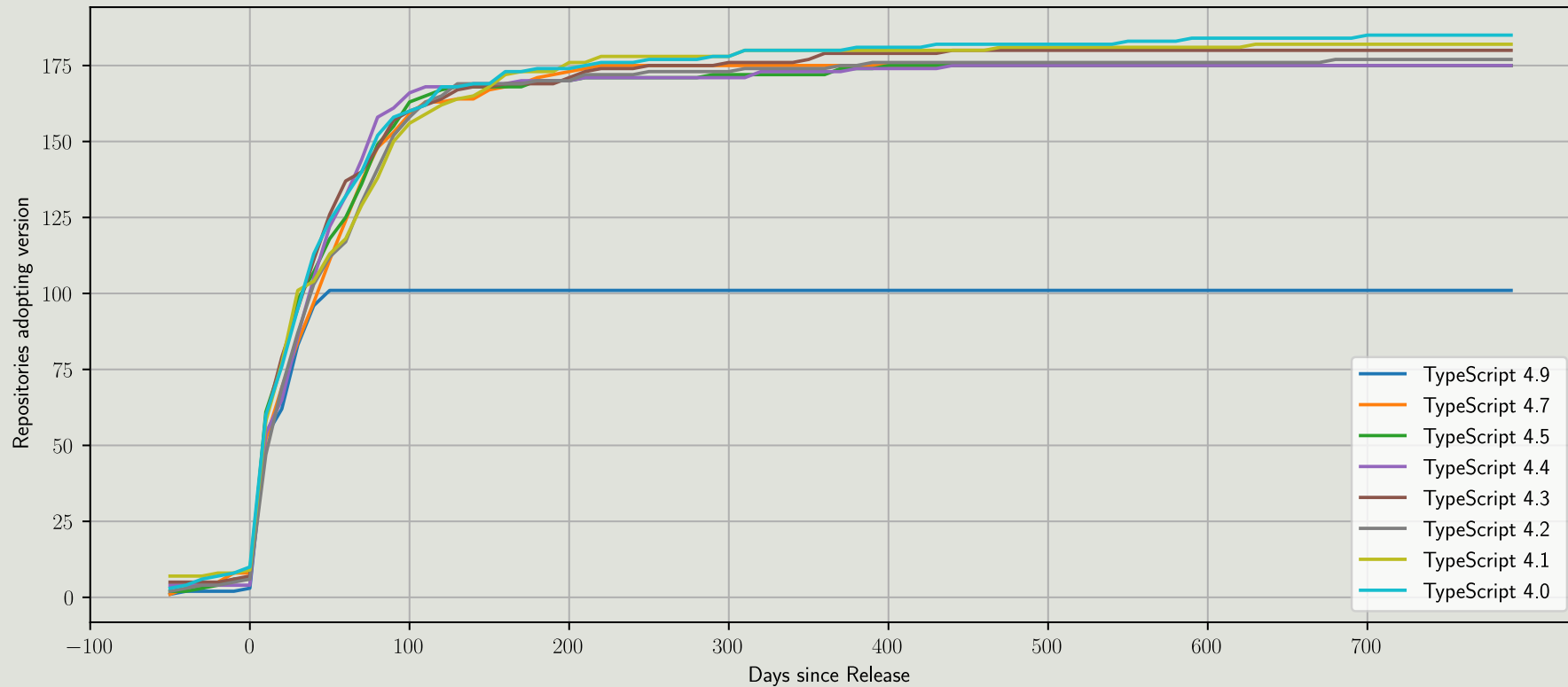
Research Question 2

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