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...

Respondents to the Slashdot survey had the opportunity to explore the Hammer data visualizations before answering the survey. This may have biased them.

Because the survey questions are not closely related to the visualized data, we expect that the priming effect and consequent bias will not be large.

1: 1 Flagged (R2)

<priming> Grammar: It should be primary

<consequent> Grammar : It should be Subsequent

...

change category, languages, and authors over time.

2: 1 Flagged (R1)

<category> uncertain, should it be plural to agree with languages and authors? depends on larger context

...

Our work is largely cross-sectional, looking at one moment in time. **We do examine some longitudinal topics (how populations evolve) using the 10 years of SourceForge data and careful phrasing of some of our survey questions, and suspect programming languages are reaching the point where we can and should examine questions that span decades.**

3: 1 Flagged (R2)

<,> is not required after questions

Furthermore, we examine correlations. Empirical analysis of causality is an important growing area~ and would help elucidate the adoption process.

...

Section \ref{sec:macro} uses data from the SourceForge repository, which hosts open-source software. It is possible that proprietary code bases are statistically different: for instance, obscure languages might hang on longer inside corporate IT departments. **However, open source development is a major part of all development activity and its effects will constrain corporate development.**

4: 1 Flagged (R2)

<activity> grammar: should be activities

As we showed, open source libraries have a major influence on language selection even within corporate development.

...

While many of our results are cross-validated with several data sets, some are not: different surveys asked different questions

5: 1 Flagged (R1)

<questions
"> questions."

...

Going forwards, we believe it would be valuable to study professionals for whom programming is a significant but not primary job responsibility.

6: 1 Flagged (R1)

<a> not to be use

For example, engineers and scientists often do not come from computing fields but are still important classes of programmers.

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sec-relwork.tex

...

Most similar to our work is that of Chen et al.~ . They gathered or estimated data about 17 different languages in 1993, 1998, and 2003 and then performed regression. **In contrast, we examine developer actions and decision making, in much greater scale and fidelity, and with the intent of identifying and quantifying influential factors.**

7: 1 Flagged (R1)

<fidelity> "in fidelity" doesn't work, insert "with" before fidelity?
<and> (the first occurrence) unnecessary

...

Others also mine repositories to understand feature and the API adoption within an individual language or project.

8: 1 Flagged (R1)

<.

"> the " symbol should be next to the period without any space.

...

Small-scale surveys have been used to answer some language use questions.

9: 1 Flagged (R1)

<use> usage

Datero and Galup ran a web survey to examine differences in language knowledge by gender~ .

...

They found modest differences. For example, within a pool of professionals, male developers were more likely to know most languages,

10: 1 Flagged (R2)

<,> The sentence should end in a period [.] rather than with a comma.

...

Whereas that work aims to understand the factors behind technology adoption, we seek those that are .

11: 1 Flagged (R1)

<are .

"> are."

...

Diffusion of Innovation process is perhaps the most extensively studied model of adoption~ .

12: 1 Flagged (R1)

<adoption~ .

"> adoption."

...

In both cases, the researchers ignored the intrinsic technical attributes of the language or methodology in question, and exclusively considered social factors: we examine both.

13: 2 Flagged (R1 R2)

<exclusively> move to after "social factors"

<examine> should be examined

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oops13.tex

...

In Section \ref{sec:macro}, we asked what statistical patterns language adoption obeyed. We demonstrated three claims: First, popularity falls off steeply and then plateaus according to a power law.

14: 1 Flagged (R1)

<a> grammar mistake

Second, the less popular a language, the more its popularity varies from niche to niche -- popular languages are consistently popular across domains of use, less-popular languages tend to have specific domains. Last, developers switch between languages based primarily on the domain and use of a language, not based on its linguistic features (syntax or semantics).

15: 2 Flagged (R1 R2)

<(> either delete this punctuation mark or close the parentheses

<Last> Should be Lastly

)

...

Section \ref{sec:motives} used survey data to show what factors influence developers when picking projects. We found that existing code, existing expertise, and open source libraries are the dominant drivers of adoption.

16: 1 Flagged (R3)

<, > is not required after expertise

This dovetails with the previous finding: libraries and code are niche-specific, and therefore this developer motivation helps explain the statistical findings above. The fact that developers typically do not consider particular language features important in choosing languages is likewise consonant with our statistical finding that developers do not tend to switch between semantically related languages.

...

It is easy to find anecdotal examples of libraries that had major influence on language adoption within niches, such as for numerical programming in Python, and Ruby on Rails for web applications.

17: 1 Flagged (R3)

<, > is not required after niches and after python

%Do we want this parenthetical? -- ASR

...

Section \ref{sec:learning} asked what causes developers to learn languages. **We find that professional developers learn and forget languages throughout their careers, and that as a result, age has little to do with language choice.**

18: 1 Flagged (R3)

<, > is not required after careers

Some languages are easier to learn than others, and the self-reported ease with which developers learn does not seem closely related to the underlying simplicity of a language's formal semantics.

19: 2 Flagged (R1 R2)

<which> add comma after this word**<, > is not required after others**

Past education has moderate influence. **Having been exposed to a language paradigm in school makes developers more likely to learn or remember similar languages later in their career.**

20: 1 Flagged (R1)

<career.

"> career."

...

In both Sections~\ref{sec:motives} and \ref{sec:learning}, we found that developers demographics strongly differ in their language preferences. We make two observations relating to this occurrence. First, empirical analysis of programs written in the same language may need to check for sample bias due to developer demographics. Second, ecological models may apply to language adoption as we hypothesized in earlier work~ . **Ecological models would predict that languages spread along demographic boundaries because the languages compete for them.**

21: 1 Flagged (R1)

<, > boundaries,

Our data reveals that spread patterns exist, and that developers do indeed maintain a limited working set of languages.

...

We find that developers consider ease and flexibility as more important than correctness.

22: 1 Flagged (R1)

<as> delete

...

Developers show significant unease and unenthusiasm for static typing. **This suggests that today's type systems may err too much on the side of catching bad programs rather than enabling flexible development styles.**

23: 1 Flagged (R1)

<, > Difficult to follow

Developers emphasize the benefit of types in understanding programs, suggesting one benefit researchers can build on.

24: 1 Flagged (R1)

<on.

"> on."

...

Our results also help inform the broader computer science community.
25: 1 Flagged (R1)

<.

"> the " symbol should be next to the period without any space.

...

We found that survey methods to be a powerful tool for exploring hypotheses about language adoption. We suspect these methods will be an increasingly valuable technique going forwards, especially given the popularity of the Internet and online courses.

26: 2 Flagged (R1 R2)

<an> Grammar: Single article not required. We are talking about methods. Article unnecessary and incorrect.

<technique> either delete it or make it plural (so it agrees with "methods")

<forwards> Should be 'forward' with no 's'

<an> delete

<technique> Grammar: We are talking about methods. Should be techniques.

<forwards> suggest "forward"

Likewise, we hope our data, and the methodology subtleties we encountered in gathering it, will support future analysis efforts. Of particular note are our large set of responses, tracking of respondent demographics, and solicitation of data about concrete languages and projects.

27: 1 Flagged (R3)

<,> is not required after demographics

...

We thank David MacIver for providing the Hammer data, David Patterson and Armando Fox for the MOOC data, and SourceForge for theirs.

28: 2 Flagged (R2 R3)

<theirs> wrong spelling

<,> is not required after data

Matt Torok, Philip Guo, and Jean Yang helped publicize our Slashdot survey and provided valuable advice. % our viral campaign with just a few yet impressively effective tweets, wall posts, and plus ones.

...

Some of our anonymous reviews were among the most careful and constructive ones that we have ever received.

29: 1 Flagged (R1)

<received.

"> received."