

“Did You Miss My Comment or What?” Understanding Toxicity in Open Source Discussions

Courtney Miller, Sophie Cohen, Daniel Klug,
Bogdan Vasilescu, Christian Kästner

**“We define toxicity as a rude,
disrespectful, or unreasonable
comment that is likely to make
someone leave a discussion.”**

- Google’s Perspective API

online toxicity is pervasive



online toxicity can be harmful



online toxicity exists in open source



open source practitioners have reported toxicity

open source
practitioners





Nicholas C. Zakas ✅



UberSpooky!
@uberbrady

My entire career is based on open-source. I think our software is as popular as it is because of the open-source angle. But the tone some people use is just absolutely astonishing. The people who *pay* us are far nicer. It's...deflating. And it creates a nasty, vicious cycle.

11:55 AM · Aug 26, 2021 · Tweetbot for Mac

9 Retweets 41 Likes

...

...



Kat Scott
@kscottz

I am shocked at how demanding people are of open source developers. In particular, people act as if they are owed an immediate response.

...



Francesco Lodolo 🐸
@flood

If I ever leave my job at Mozilla (and possibly my role as a community member), one of the reasons will be the toxicity of the "community" (lowercase, stress on the quotes) that often surrounds open source projects.

8:48 PM · Aug 19, 2021

91 Retweets 19 Quo...

6:14 AM · Sep 9, 2021 · Twitter Web App

4 Retweets 41 Likes

online toxicity has been studied on...



online toxicity manifests differently on different platforms

The screenshot shows a Facebook page titled "RIP Georgia Varley". The page has a profile picture of a woman with blue hair and a white patterned sweater. The sidebar menu includes Home, About, Photos, Posts, Community, and a green "Create a Page" button.

Comment 1: October 29, 2011 · just curious, why are people saying im a troll. if i was a troll, i would be off trolling somewhere.
8 likes, 80 comments. A reply from Sandra Shelley says: "Sandra Shelley sick bastards, get a life" with 3 likes.

Comment 2: October 28, 2011 · im so sorry guys. i havent had access to a computer for a while. these sick bastards have posted a lot an i haent been able to delete it. ill do it now. RIP georgia. we love you
73 likes, 180 comments, 1 share. A reply from Samantha Bernie H says: "Samantha Bernie H You people make me sick!!!!" with 9 likes.

Comment 3: October 26, 2011 · Im going to sleep now. I can't control trolls while I sleep. Ill take care of what ever they post as soon as I get a chance. Sorry for their disrespect georgia.

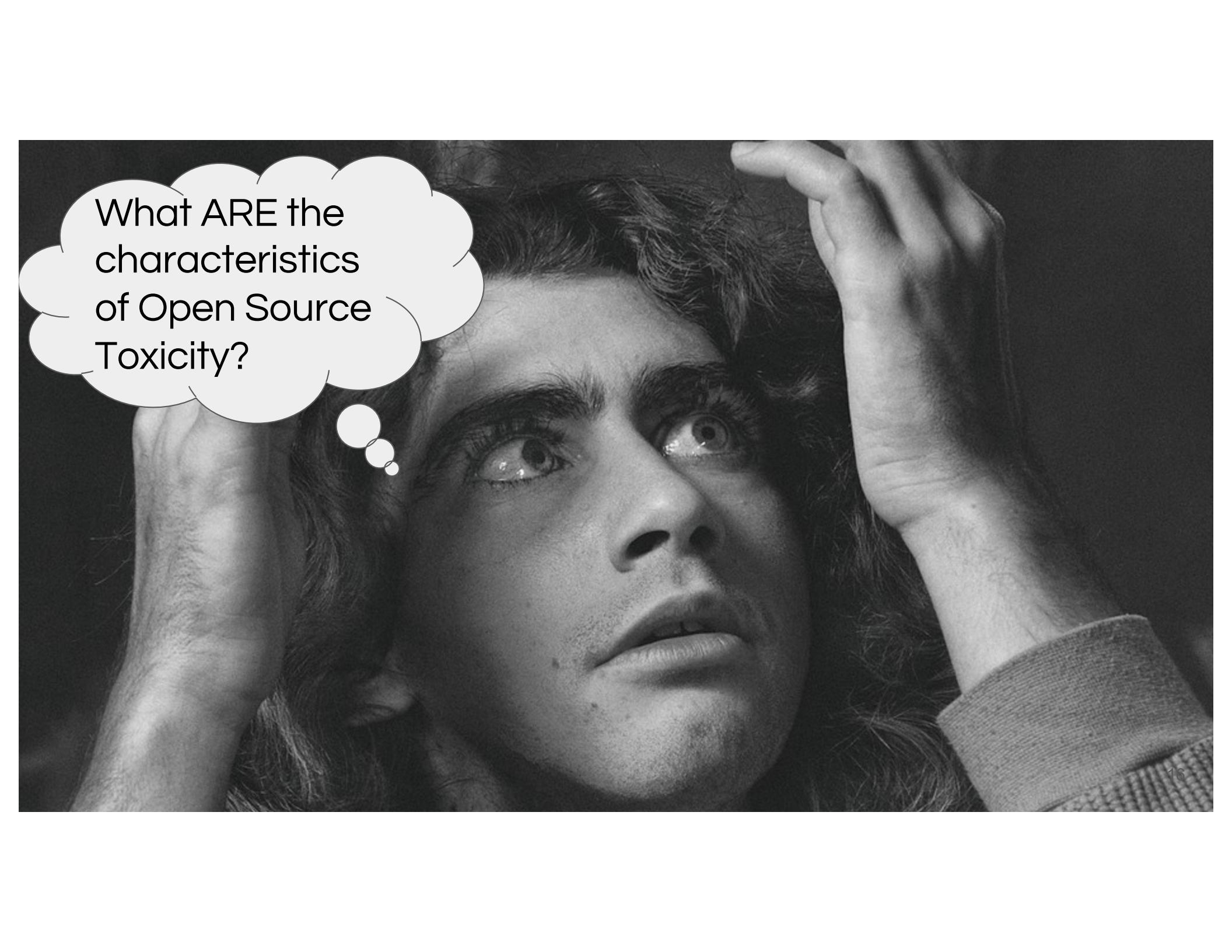
different strategies are effective
on different types of toxicity

wikipedia's
anti-toxicity strategies

reddit's
anti-toxicity
strategies

twitter's
anti-toxicity strategies

facebook's
anti-toxicity strategies



What ARE the
characteristics
of Open Source
Toxicity?

research methods

ethical considerations

toxicity can be sensitive topic

&&

additional stress == bad

goal: understand the nature and characteristics of OSS toxicity

collecting
sample

qualitative
analysis

goal: understand the nature and characteristics of OSS toxicity

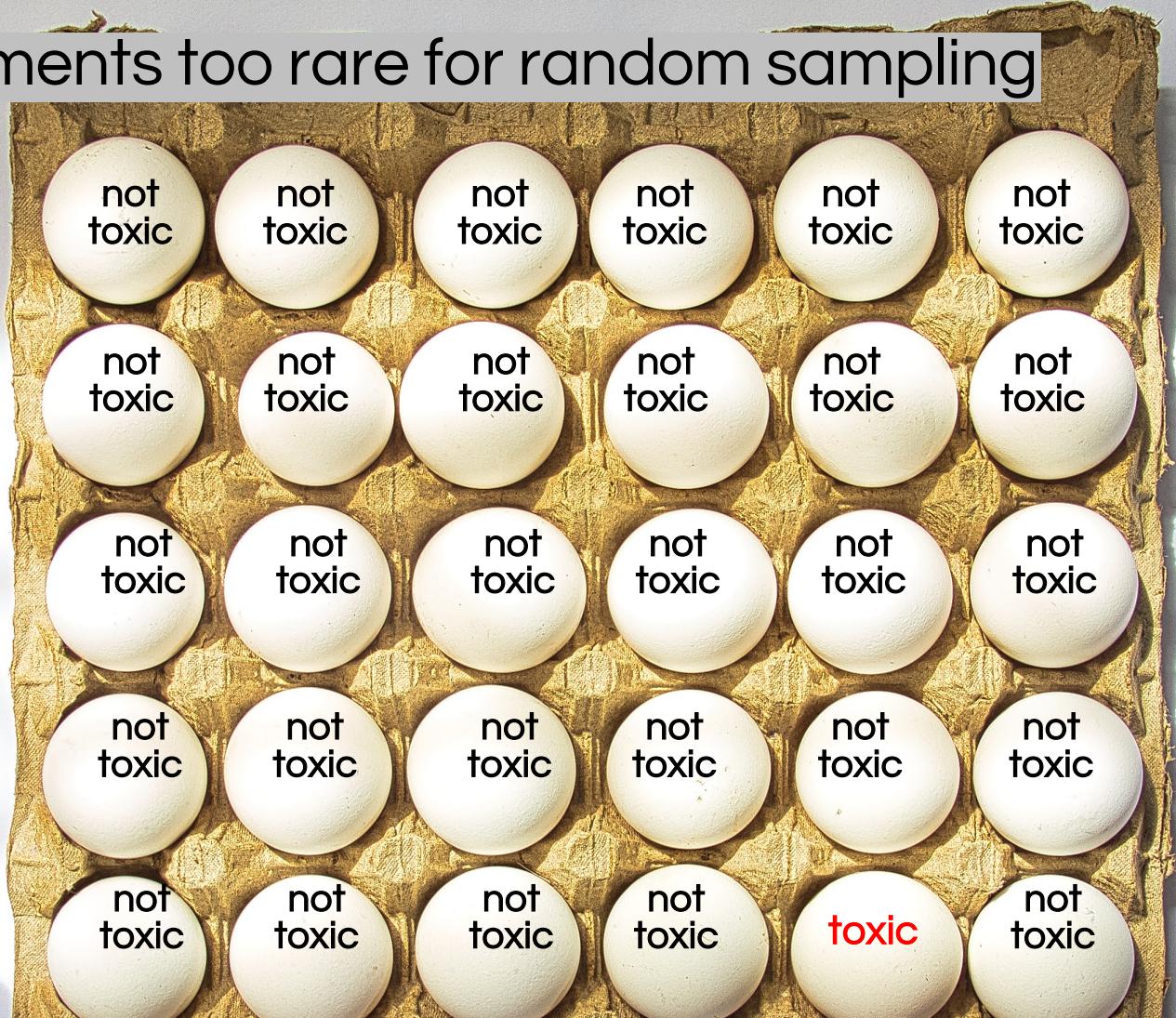
collecting
sample

qualitative
analysis

A black silhouette of a unicorn stands in a field at sunset. The background features a vibrant orange and yellow sky over rolling hills. A white rectangular box is positioned in front of the unicorn's body, containing the text "highly accurate & unbiased toxicity detector".

**highly accurate &
unbiased toxicity
detector**

toxic comments too rare for random sampling



we used five strategies
to identify toxic issues

Strategy

Toxicity model (issue)

Toxicity model (comment)

Code of conduct

Locked issue (too heated)

Deleted issue

toxicity detector (issues and comments)

shitty package #31

 Open

[REDACTED] opened this issue on May 31, 2020 · 1 comment



[REDACTED] commented on May 31, 2020

 ...

No description provided.



 2



[REDACTED] commented on Jul 8, 2020

 ...

What's up with the hate? Why even bother posting this?

code of conduct



[REDACTED] commented on Mar 6, 2020

Member



...

Hi [REDACTED], as a member of [REDACTED]'s Community Governance Committee, I need to inform you that we have found your language and tone to be in violation of our stated [Code of Conduct](#). Specifically, the above comment (among other interactions you have thus far made) is unwelcoming, insulting, and overall inappropriate for this community. This is an official warning to adhere to our Code of Conduct, and any further violations will result in escalated action, including but not limited to being banned from this project.

We would like to encourage all individuals to be able to participate in our community. To that end, our top priority is to create a positive environment. We encourage everyone to be respectful and use welcoming and inclusive language. We hope that you will realize the necessity of this, and would be happy to continue working with you if you can adjust your interactions appropriately.

Thank you,

[REDACTED] on behalf of the [REDACTED] Community Governance Committee

locked as too heated

The screenshot shows a GitHub issue thread with the following content:

- User 1 (commented on Apr 29, 2020)**: Fuck off Joker Boss, don't act like you know shit. You running a furry server. Can you sink much lower in life. Colt Crohnies is a fucking [REDACTED]. You and your shitty server can rot in hell.
- User 2 (commented on Apr 29, 2020)**: If you have a problem with it meet me in real life, and we'll fight face to face.
- User 3 (commented on Apr 29, 2020)**: Ah yes the rage induced piss diaper baby did want to say something else! Well, hope you have fun outside of our "furry server"! Enjoy quarantine and enjoy your very lovely thoughts of how you want to "Fuck Colt Crohnies"
- Closure (closed this on Apr 29, 2020)**: A user with a red circular icon and a yellow profile picture closed the issue.

At the bottom, a note states: Repository owner locked as **too heated** and limited conversation to collaborators on Apr 29, 2020.

deleted

 Issue : [REDACTED] #2306
([https://github.com/\[REDACTED\]/\[REDACTED\]/issues/2306](https://github.com/[REDACTED]/[REDACTED]/issues/2306))

Such a shit ui element

The user expects the back button to navigate to the previous location in the app's navigation history...

Except they dont. In fact they probably won't even see it when their focus is on toolbar in opposite corner....

each strategy picks up on different signals

Strategy

Toxicity model (issue)

Toxicity model (comment)

Code of conduct

Locked issue (too heated)

Deleted issue

we performed manual labeling



the strategies all left room for improvement

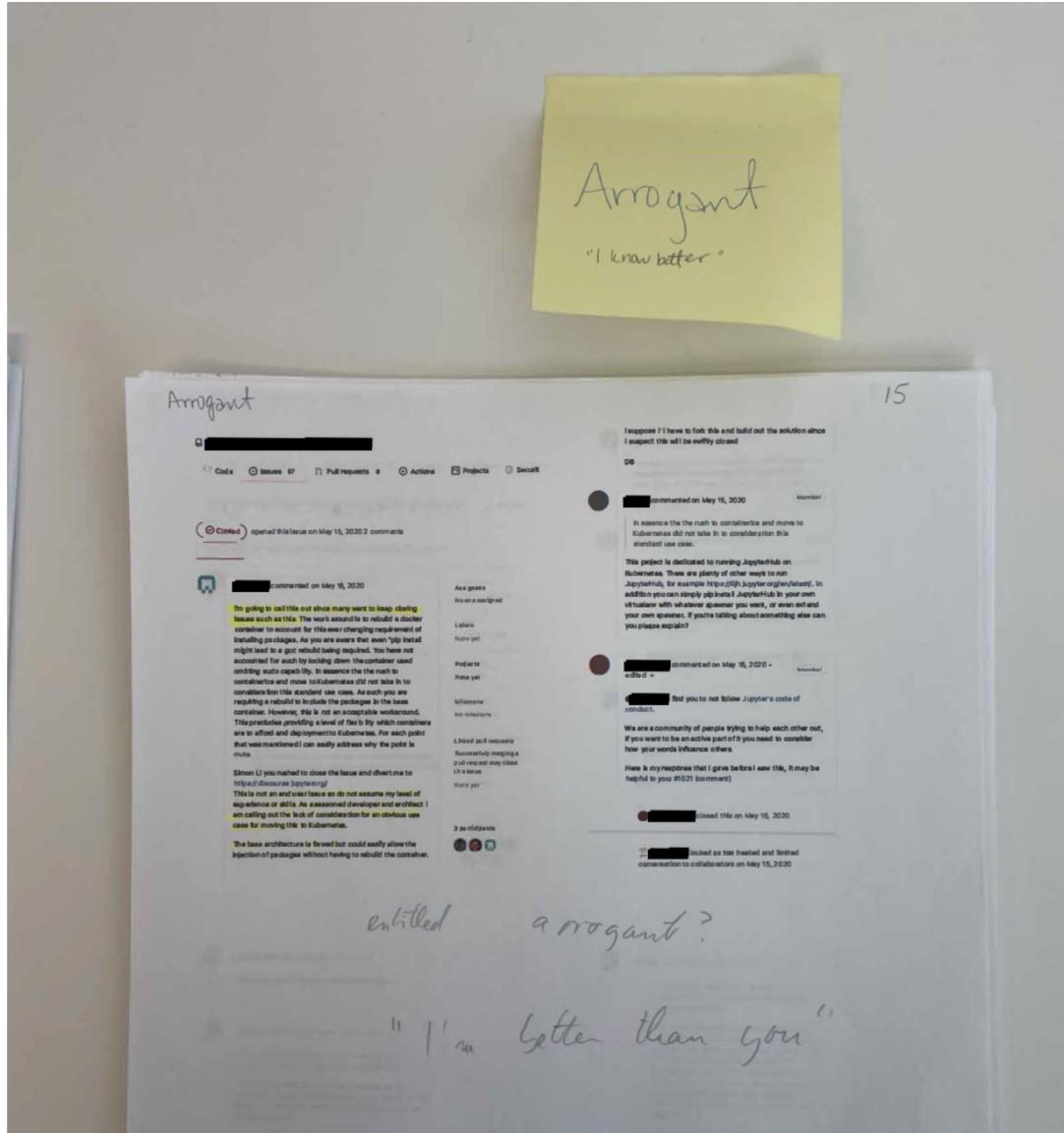
Strategy	# detected	# labeled	# toxic	FPR
Toxicity model (issue)	168,293	494	82	.83
Toxicity model (comment)	42,911	255	69	.69
Code of conduct	688	179	33	.82
Locked issue (too heated)	2,530	165	40	.76
Deleted issue	60,959	1,644	29	.98

goal: understand the nature and characteristics of OSS toxicity

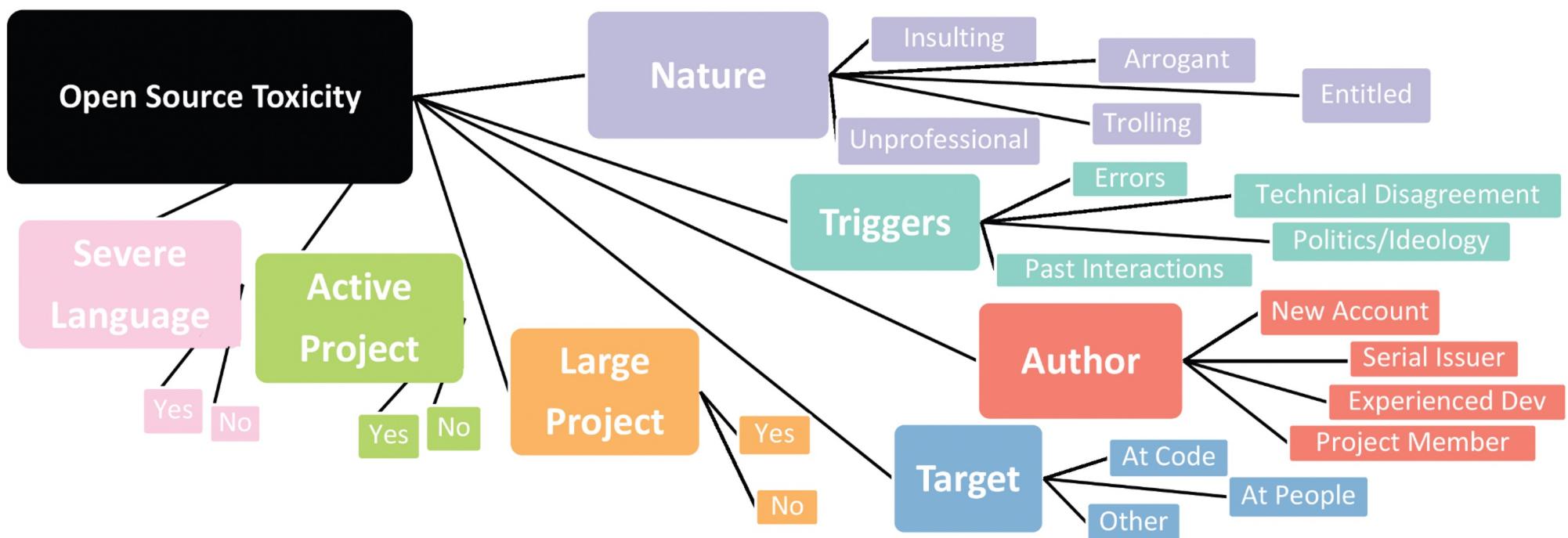
collecting
sample

qualitative
analysis

we performed
thematic analysis
&
card sorting

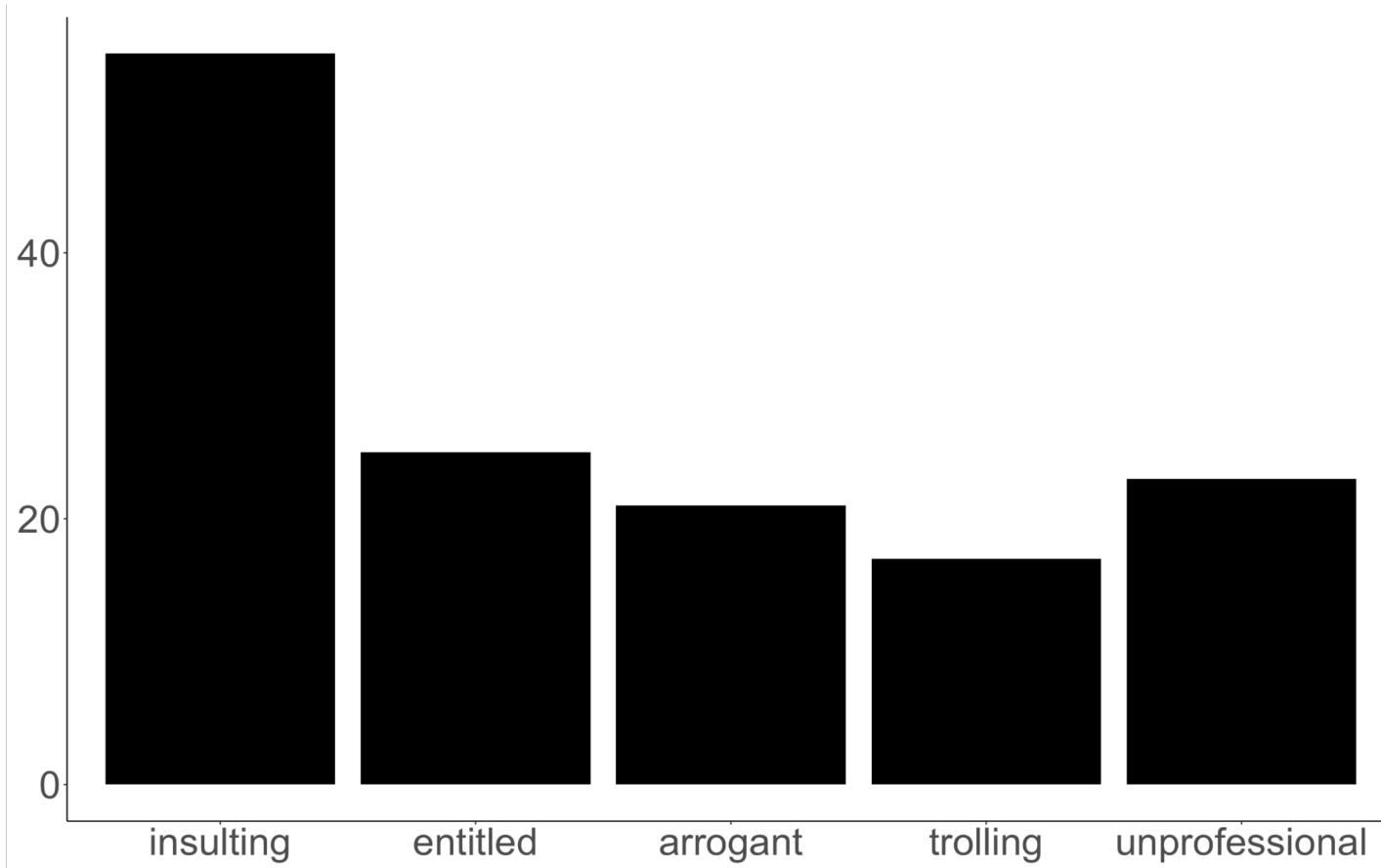


we identified dimensions of toxicity



some findings

#1. open source toxicity is built different



#1. open source toxicity is built different

Daniel said ask for it: Most of us WANT Minimize button! #348

Closed 1 task done [REDACTED] opened this issue on May 7, 2020 · 11 comments

The problem is your team forcing us to use the OS the way you want us to use it although it makes it 1000000 times harder to use it your way, than what would be convenient for us.

A screenshot of a GitHub issue page. The title is "Daniel said ask for it: Most of us WANT Minimize button! #348". Below the title, there are status indicators: "Closed" (red), "1 task done" (blue), and "[REDACTED] opened this issue on May 7, 2020 · 11 comments". The main text of the issue reads: "Is your feature request related to a problem? Please describe. The problem is your team forcing us to use the OS the way you want us to use it although it makes it 1000000 times harder to use it your way, than what would be convenient for us. Kuchnard chontrite are not faster and will never be faster than miscela memory and mouseal". To the right, there are sections for "Projects" (None yet) and "Milestone" (No milestone).

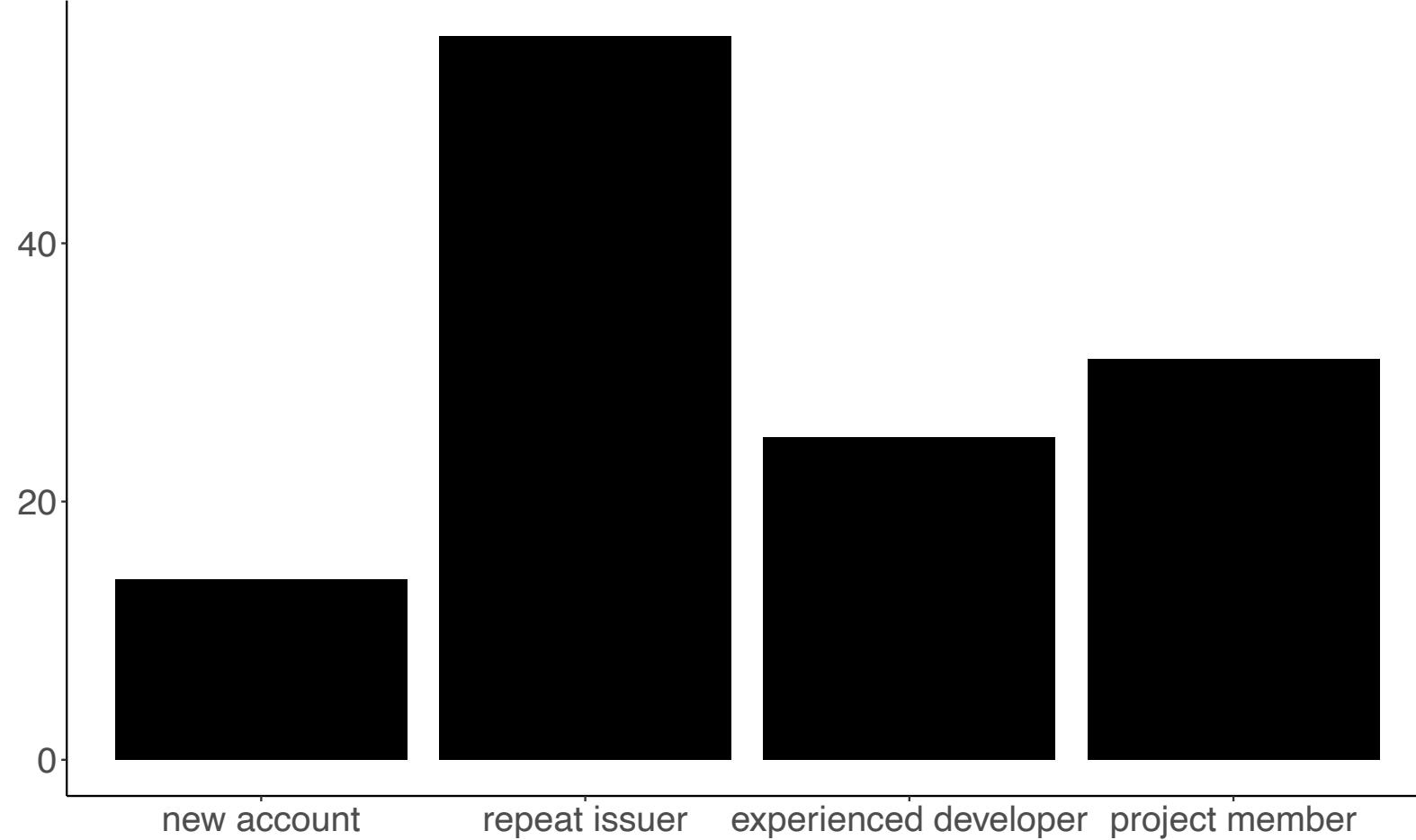
Don't you really see how ridiculous is what's written in the Blog post "Why there is no minimize button".

A screenshot of a blog post titled "Why there is no minimize button". The text of the post reads: "Don't you really see how ridiculous is what's written in the Blog post "Why there is no minimize button". Because ONE person thinks it's better doesn't give the right to make a thousand or more people using it that way, when there is a simple solution. Especially on Linux where customization is so easy to be added. Elementary tweak solves the problem but it's unsecure to add PPA that is not checked by Elementary team. The same reason you are showing the Warning window for Non-curated apps/program in the App Center! So if you care about our security so much why 99% of your users have to add a PPA that one day can put them at security risk? Ship your OS the way you want by default but give us the option to make it more friendly for our use." To the right, there is a sidebar with "Notifications" (None), "Customize", and a "Subscribe" button.

So maybe it's time to stop trying to be Apple or Windows and forcing people to use something the way YOU want it and give a simple option to make it the way people want it. It's not a major change or something. Just a simple solution.

A screenshot of a comment section under the blog post. The first comment reads: "For reference: [https://www.reddit.com/r/\[REDACTED\]](https://www.reddit.com/r/[REDACTED]) Most of the people who use your OS are installing tweaks to solve this problem. And most of them want it out of the box as an option. So maybe it's time to stop trying to be Apple or Windows and forcing people to use something the way YOU want it and give a simple option to make it the way people want it. It's not a major change or something. Just a simple solution." Below the comment, there are upvote and downvote buttons with counts of 1 and 2 respectively.

#2. experienced != non-toxic





opened this issue on Mar 28, 2020 · 1 comment



commented on Mar 28, 2020

You can see them if you look at the database using Notepad++ on Windows, but not in SQLiteStudio (for example).

[REDACTED] was picking up those URLs for some reason, and failed to download box art.

Fix is to run vacuum on the database (to clean it up). I ran it using SQLiteStudio, then deleted cached stuff on my iPAD for

[REDACTED], and the issue was resolved.



mentioned this issue on Apr 23, 2020

Assignees

No one assigned

Labels

invalid

Projects

None yet



commented on Apr 23, 2020

Contributor

...

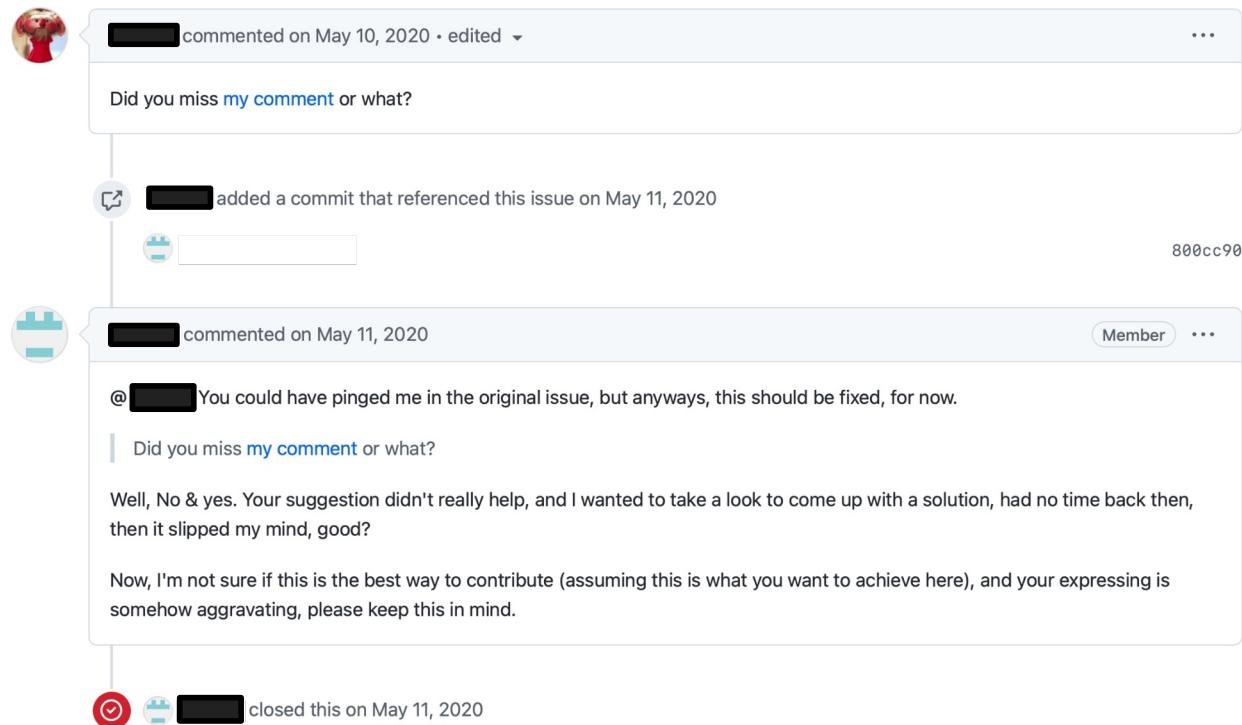
1. You all are probably not using the latest version of the database -- this is not my problem.
2. The database *does* get VACUUM after a large operation before I upload it.
3. Whether the database has been recently VACUUM 'd does *not* affect the integrity of the data or SQL queries -- what you are suggesting is complete nonsense.
4. Expect a ban if you absolute idiots continue to spam me with "me too's" from issue Art cover for games missing Provenance-Emu/Provenance#1314

some
implications

#1. there is space for open-source-specific detectors

elektroda.pl (2) #383

  opened this issue on May 10, 2020 · 2 comments



The screenshot shows a GitHub issue thread. The first comment from a user with a red profile picture asks if the other user missed their comment. The second user replies, adding a commit that referenced the issue. The first user then responds, mentioning they could have pinged the second user. The second user replies again, expressing they had no time back then and slipped it from their mind. They also mention being unsure if this is the best way to contribute. The thread ends with the first user closing the issue.

Did you miss [my comment](#) or what?

████████ added a commit that referenced this issue on May 11, 2020
████████
800cc90

████████ commented on May 11, 2020

@████████ You could have pinged me in the original issue, but anyways, this should be fixed, for now.
Did you miss [my comment](#) or what?
Well, No & yes. Your suggestion didn't really help, and I wanted to take a look to come up with a solution, had no time back then, then it slipped my mind, good.
Now, I'm not sure if this is the best way to contribute (assuming this is what you want to achieve here), and your expressing is somehow aggravating, please keep this in mind.

████████ closed this on May 11, 2020

#2. research into toxicity harms needed



[REDACTED] commented on May 16, 2020 · edited

...
@ [REDACTED] you should probably just close this thread to comments. Nothing good will come out of this.

Cut the free speech?
Maybe you should close your account?
Something good will come when they realize that their way is not the right way.
Nothing good comes from people like you who get what they give them and have no personal opinion or are scared to talk about things they don't like or agree with.

1



[REDACTED] commented on May 16, 2020

Member ...

Thanks for the feedback, but this is an issue tracker—not a discussion forum. It wastes everyone's time to notify developers and designers of new comments, especially when they're extremely disruptive, abusive, and in violation of the [Code of Conduct](#). Since there is no action to be taken here, I'm locking this from further discussion. Feel free to discuss this in a more appropriate location.



[REDACTED] locked as too heated and limited conversation to collaborators on May 16, 2020

#2. research into toxicity harms needed

Nicholas C. Zakas

UberSpooky! @uberbrady

My entire career is based on open-source. I think our software is as popular as it is because of the open-source angle. But the tone some people use is just absolutely astonishing. The people who *pay* us are far nicer. It's...deflating. And it creates a nasty, vicious cycle.

11:55 AM · Aug 26, 2021 · Tweetbot for Mac

9 Retweets 41 Likes

Kat Scott @kscottz

I am shocked at how demanding people are of open source developers. In particular, people act as if they are owed an immediate response.

Look, we're spread really thin, help us out by putting in

Francesco Lodolo

If I ever leave my job at Mozilla (and possibly my role as a community member), one of the reasons will be the toxicity of the "community" (lowercase, stress on the quotes) that often surrounds open source projects.

8:48 PM · Aug 19, 2021

91 Retweets 19 Quotations

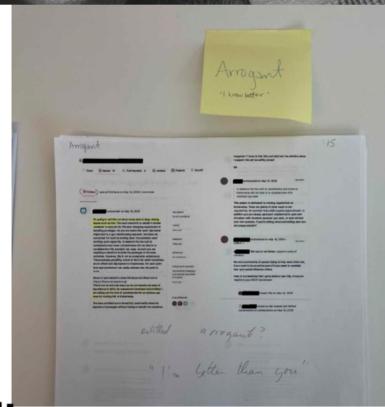
6:14 AM · Sep 9, 2021 · Twitter Web App

4 Retweets 41 Likes

some
summarization



Collecting sample



Some Key Takeaways

- #1. open source toxicity is built different
- #2. experienced != non-toxic
- #3. research into toxicity harms needed