Measuring Community Health

Vital Signs for Wikimedia Projects

Dario Taraborelli • Aaron Halfaker • Dan Andreescu

Wikimania 2014, London

020

770

1030

5

Fair

780

1040

metrics != science

metrics as filters

Wikimetrics

Welcome to the Wikimedia Foundation's Wikimetrics homepage. This API allows you to

select a set of users, also known as a "cohort" (for example, **all users who signed up via the Thank You campaign**)

select a metric to be computed for each of these users (for example, how many bytes they've added) with

optional parameters (for example, a **time range**)
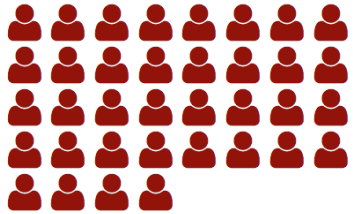
and retrieve the response in JSON or CSV format.

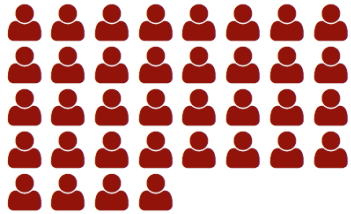You can also compute a single, aggregate value for the cohort (like the **mean** revert rate) .

Learn More   Analyze

Login to see your cohorts, metrics, and reports

summer 2013

cohort-level metrics

cohort-level metrics   **project-level metrics**

project-level metrics

project-level metrics

Existing data sources

wikistats

report card

Wikipedia Statistics Arabic

Monthly counts & Quarterly rankings / Editor activity levels / Distributio
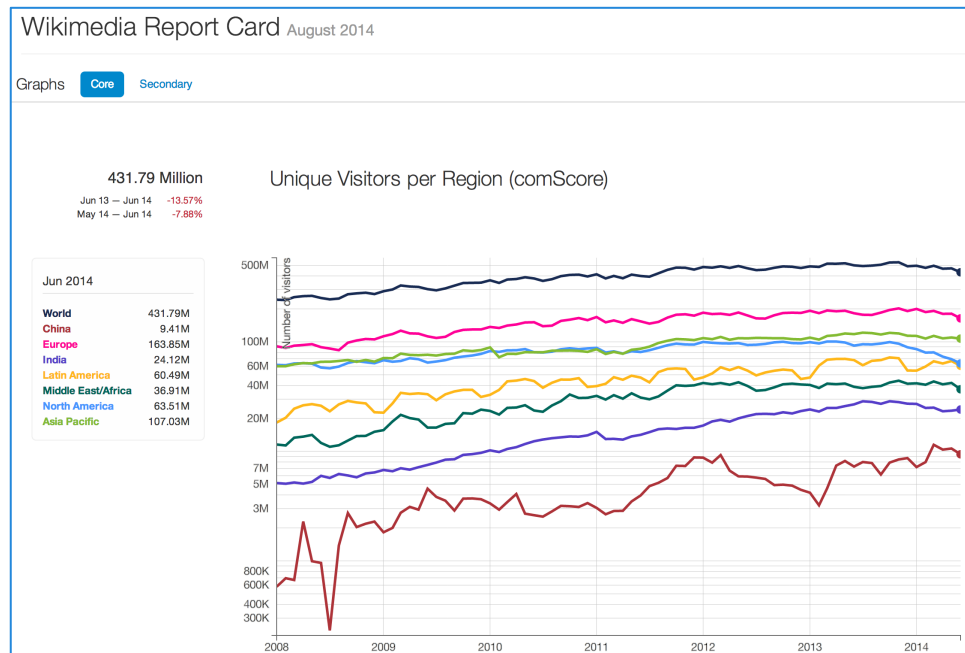namespace / Most edited articles / Zeitgeist

Metrics have been collected from a **full archive dump**, which contains
See also metrics definitions

Monthly counts & Quarterly rankings: **June 2014**

Date	Wikipedians						Ar
	total	new	edits		count		new
			> 5	> 100	official	> 200 ch	per day
Jun 2014	+1%		-5%	-4%	+2%	+2%	+7%
May 2014	+1%		+11%	+17%	+2%	+2%	-32%
Apr 2014	+1%		-6%	-17%	+2%	+3%	-19%
Mar 2014	+1%		-2%	-13%	+3%	+3%	+39%
Feb 2014	+1%		-5%	+3%	+2%	+2%	+35%
Jan 2014	+1%		+10%	+21%	+2%	+2%	+19%
	A	B	C	D	E	F	G

http://stats.wikimedia.org

Wikimedia Report Card August 2014

Graphs Core Secondary

431.79 Million
Jun 13 — Jun 14 -13.57%
May 14 — Jun 14 -7.88%

Unique Visitors per Region (comScore)

Jun 2014
World   431.79M
China   9.41M
Europe   163.85M
India   24.12M
Latin America   60.49M
Middle East/Africa 36.91M
North America   63.51M
Asia Pacific   107.03M

http://reportcard.wmflabs.org/

Vital Signs

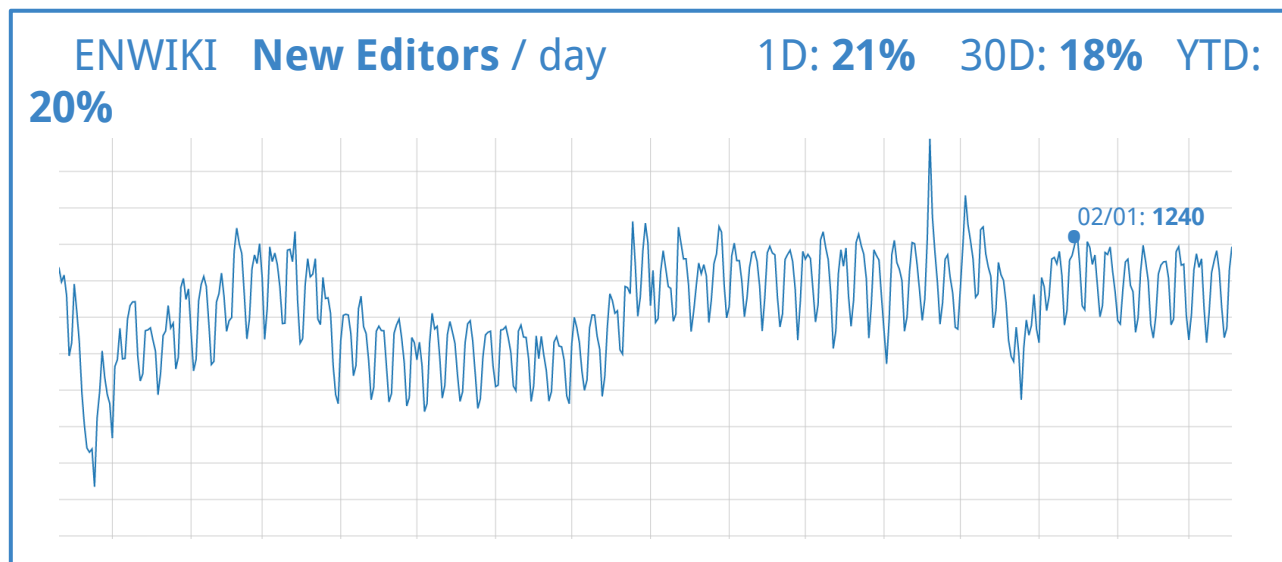ENWIKI **New Editors** / day   1D: **21%**   30D: **18%**   YTD: **20%**

02/01: **1240**

- granular measurements of new user engagement, community size, and content growth
- aggregated daily / weekly / monthly
- for every single Wikimedia project
- visualizations + raw data

https://www.mediawiki.org/wiki/Analytics/Epics/Editor_Engagement_Vital_Signs

summer 2014

4 categories of metrics

New users

Newly registered users

New editors

New active editors

Productive new editors

Surviving new editors

Surviving new active editors

Community

Active editors

Recurring old active editors

Re-activated editors

Unique editors

Unique anonymous editors

Unique editing bots

Unique page creators

Unique media creators

Content

Edits

Anonymous edits

Bot edits

Pages created

Media uploaded

Curation

Pages deleted

Pages protected

Pages moved

Reverts

https://meta.wikimedia.org/wiki/Research:Metrics_standardization

metric definitions

Principles

Relevant
Measure quantities that describe important phenomena

Replicable
Make research easily replicable and verifiable

Transparent
Provide formal specifications, remove ambiguity

Consistent
Replace proprietary, ad-hoc metric definitions; compare apples to apples

Robust
Make metrics replicable via multiple data sources at any point in time

Granular
Computable at different time scales

Anatomy of a metric   1. specification

Research:Productive new editor

Productive new editor is a standardized user class used to measure the number of first-time editors in a wiki project over time who make productive contributions. It's used as a proxy for editor productivity, and to a lesser extent, editor activation. A "productive new editor" is a new editor who saves revisions to content namespace pages that are not reverted.

Contents [hide]

Discussion   [edit]

Excluding edits to deleted content   [edit]

Spammers and other non-productive new editors tend to create articles that are non-

---

Metrics standardization

Productive new editor
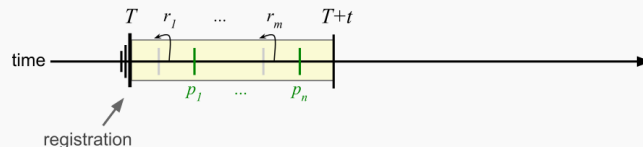
registration

Specification

A $\text{productive new editor}(n, t)$ is a new editor who completes at least n productive edit(s) within t time since registration (T).

WMF Standard

- n = 1 productive edit
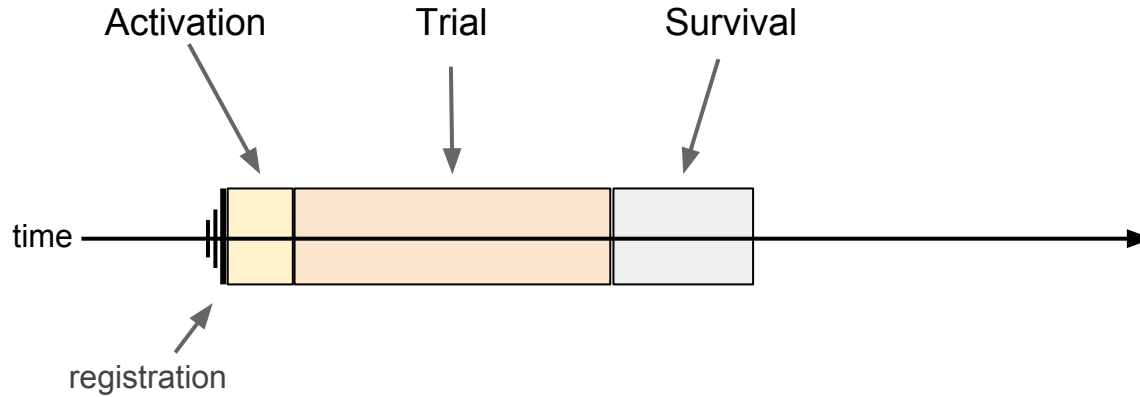- t = 1 day

Measures

Editor productivity

Aliases

Productive newcomer

Related metrics

Newly registered user · New editor · Productive edit
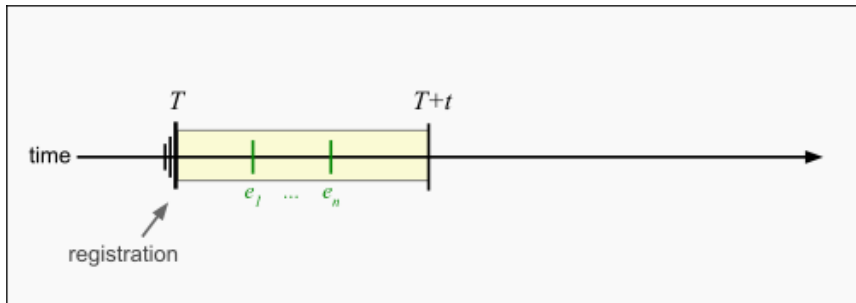
Anatomy of a metric 2. visualizations

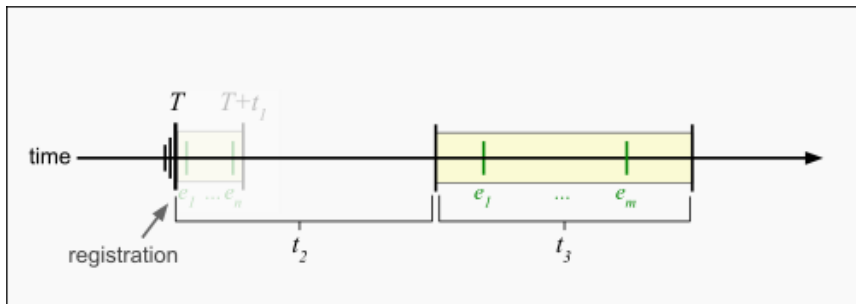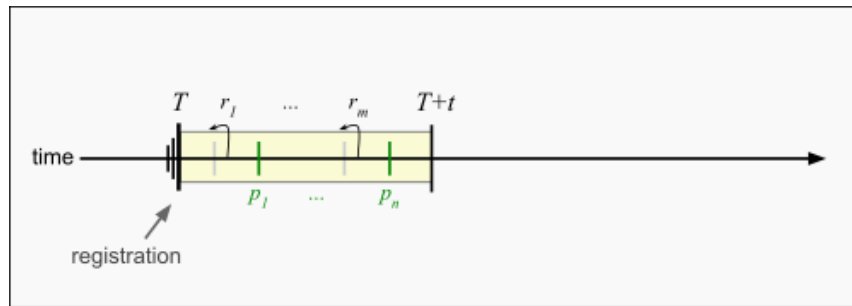# Anatomy of a metric
2. visualizations

New editor

Surviving new editor

Productive new editor

Anatomy of a metric

Discussion

Excluding edits to deleted content

Spammers and other non-productive new editors tend to create articles that are non-productive and those articles tend to be deleted rather than the edits to the articles being reverted (and therefore excluding them from the productive edit criteria). Edits to articles that are deleted by the end of a new editor's first week since registration are *not* included in counts of productive edits.

The *n* productive edits threshold

Like choosing an n for any metric based on counts (e.g. new editor and active editor), choosing a threshold is somewhat arbitrary. Choosing a higher threshold will result in a smaller proportion of newly registered users being considered productive.

The *t* time cutoff

There are a few ways that the timespan for identifying productive edits can be drawn. The two most common ways are based on time bounds and events. A time-bounded approach is based on the use of some t cutoff to limit observations to a certain amount of time after a user registered their account. An event-based approach will use some event as the starting point to count user contributions. Another candidate time-span includes edits that a newcomer performed in their first edit session. Since *productive new editor* qualifies the activity of a new editor we set $t = 1 \text{ day}$, which effectively makes the class of productive new editors a proper subset of new editors. We analyze the effect of choosing a different value for t below.

Time to revert cutoff

It is theoretically possible that a revision could be reverted years after it was originally saved, observations taken at any time would truncate any future reverts (see en:Censoring_(statistics), specifically "right censoring"). In order to minimize this issue and compare editors' contributions fairly, a revert is only counted if it occurred within 48 hours of the original edit. Recent research suggests that, at least for the English Wikipedia, nearly all reverts take place within 48 hours[1].
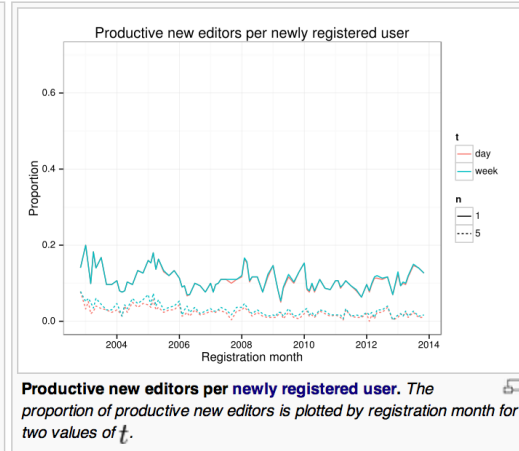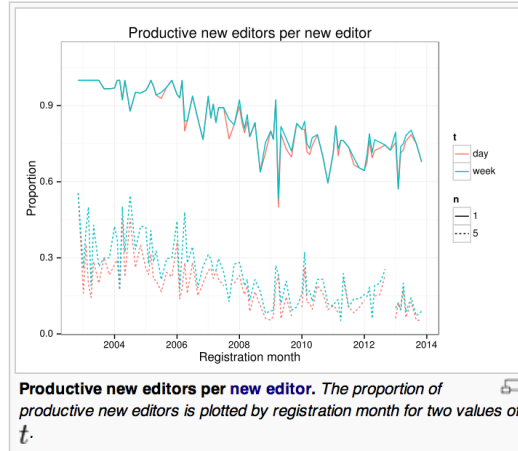
Limitations

- This metric represents productivity as a binary attribute of a user, it does not measure *how productive* a new editor is. New editors who make many productive edits and contribute substantial amounts of content will look identical (under this metric) to new editors who fix a few typos.
- The most clever vandalism/vandals may go unnoticed for more than 48 hours.
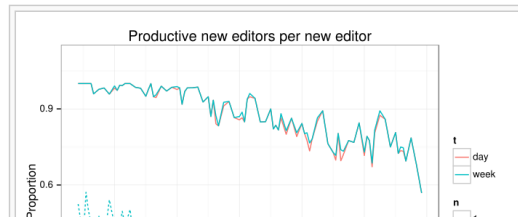
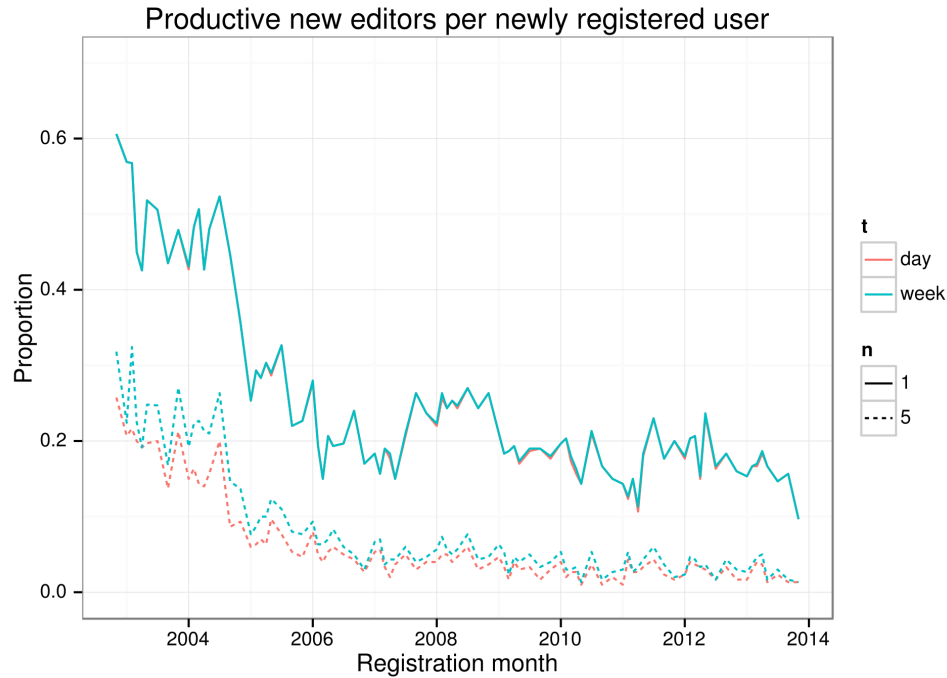# Anatomy of a metric   4. sensitivity analysis

Spanish Wikipedia [edit]

Productive new editors per new editor. The proportion of productive new editors is plotted by registration month for two values of t.

Productive new editors per newly registered user. The proportion of productive new editors is plotted by registration month for two values of t.

French Wikipedia [edit]

Sensitivity analysis

*Does **new editor productivity** vary when we measure it over the first day or the first week?*

Productive new editors per newly registered user

https://meta.wikimedia.org/wiki/Research:Productive_new_editor
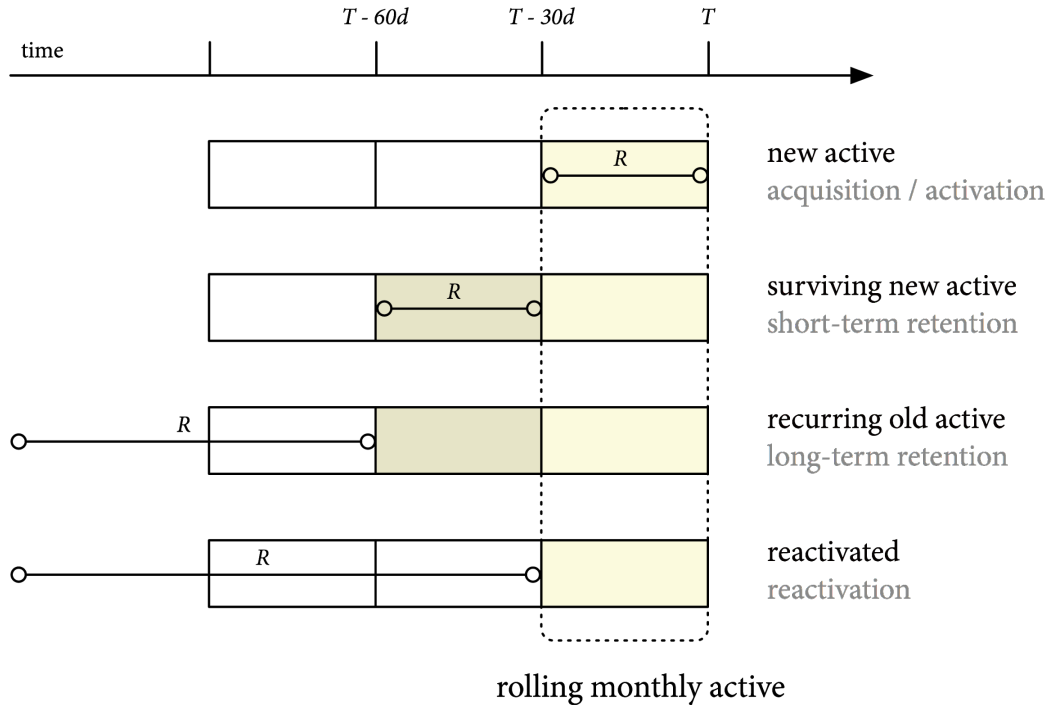
Sensitivity analysis

*Should we define **new editors** based on activity in the article namespace only?*
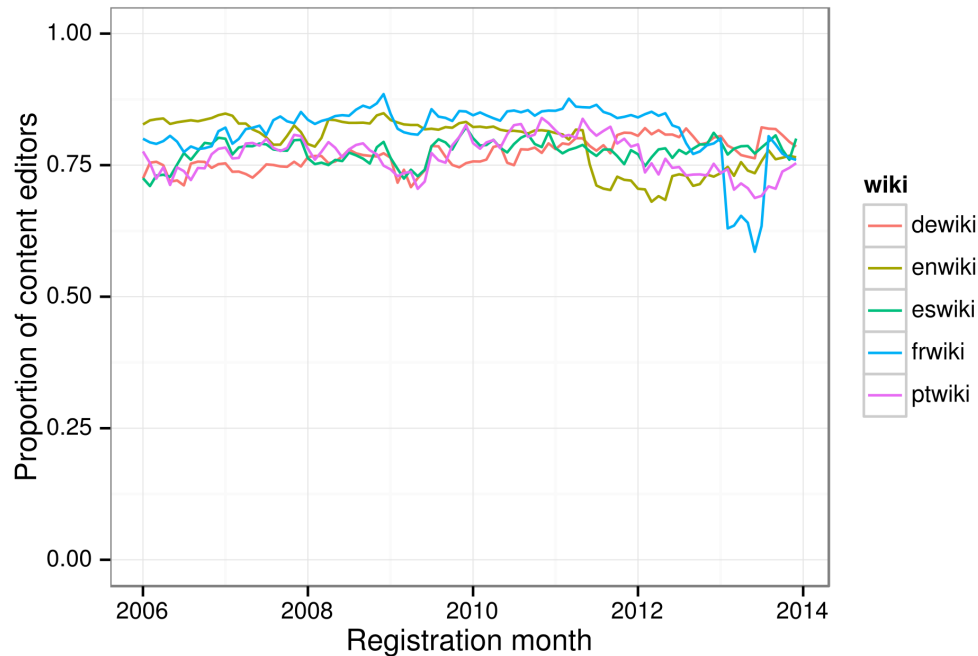
Anatomy of a metric   5. segmentation

What segments of the population of a project drive total active editor numbers

rolling monthly active

https://meta.wikimedia.org/wiki/Research:Rolling_monthly_active_editor

Use cases

Use cases

1. Data exploration

"Newly registered users on German and Dutch Wikipedia have a higher activation rate than newbies who join the English Wikipedia"

"Spanish Wikipedia adds every day twice as many new editors than German Wikipedia, despite having only half its new user activation rate"
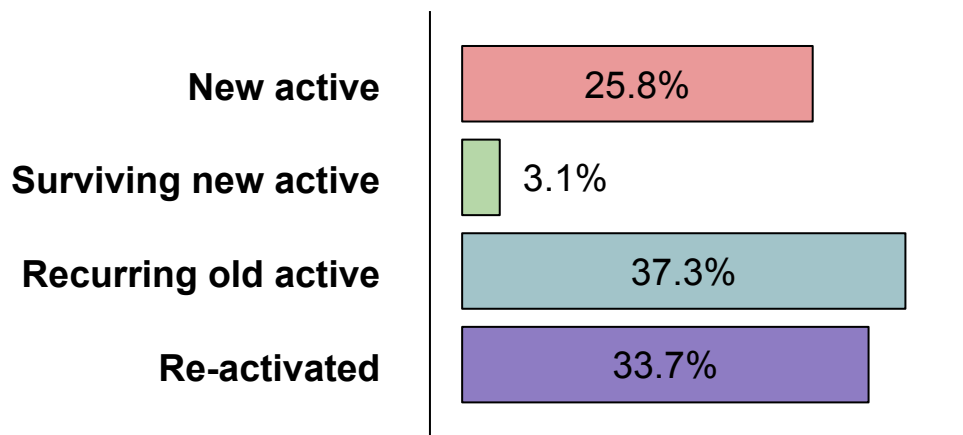
2. Natural experiments

"A change in abuse filter rules on the Italian Wikipedia significantly increased new editor survival"

Use cases

3. Projections and target setting

"To stop the active editor decline in the English Wikipedia, we should increase the retention of existing users by 87% or increase the activation of new editors by 23%"
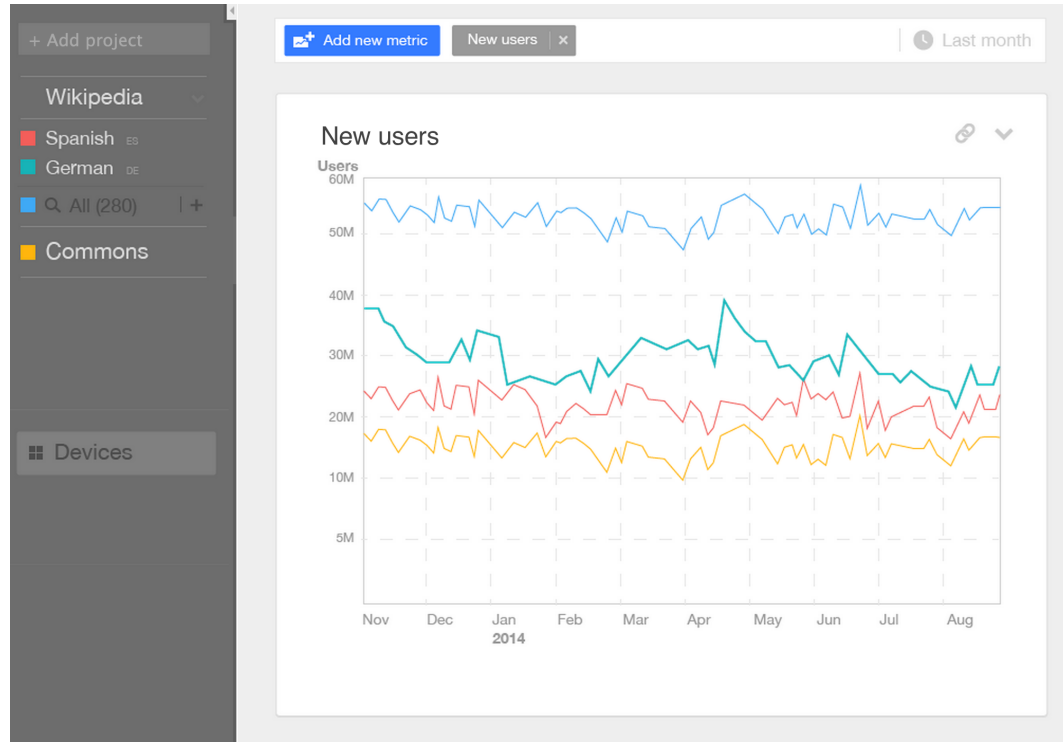
What we're building
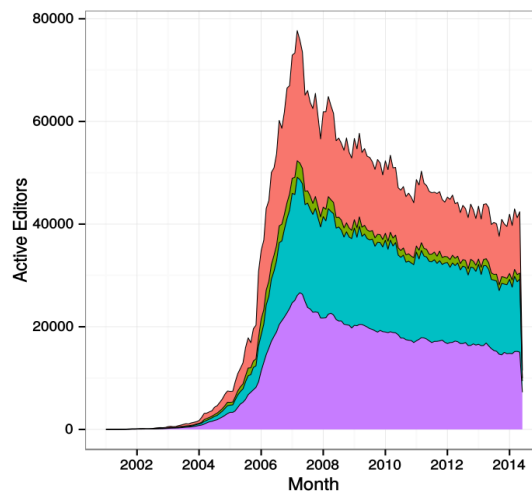
Data generation

DEMO

https://metrics-staging.wmflabs.org/static/public/dash/
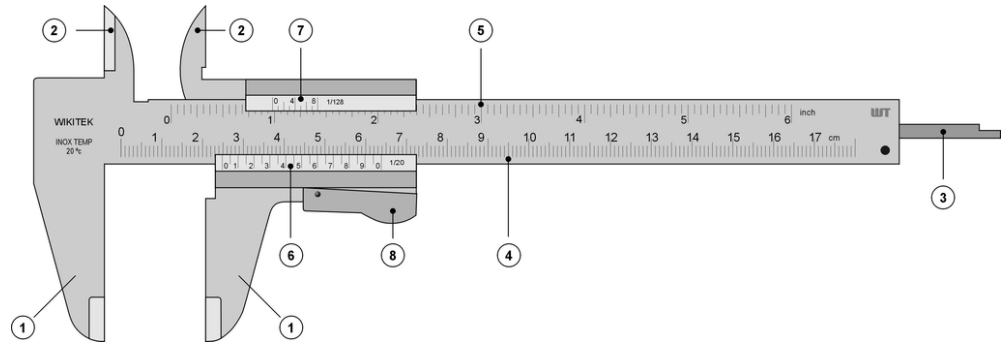
Information architecture

Beyond basic measurements

Beyond signals based on simple edit counts: *quality, value added*

Better segmenting of the editor population (*classifying edit types*)

Readership metrics (*unique visitors, pageviews*)

Feedback and evaluation

Questions?

dario@wikimedia.org   [[User:DarTar]]   @readermeter
ahalfaker@wikimedia.org   [[User:Halfak (WMF)]] @halfak
dandreescu@wikimedia.org [[User:DAndreescu]]   @DanAndreescu

Read more

https://meta.wikimedia.org/wiki/Research:Metrics_standardization

Image credits