Audiences: Core Metrics & Insights

Through Q1 of FY 2018/19

December 10, 2018 / January 11, 2019
Presented by Kate Zimmerman, Tilman Bayer, and Neil Patel Quinn

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Goals

- Status of core metrics

- Identify trends & discuss implications

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Agenda

- Overview of core metrics

- Readers

- Contributors

- Key Takeaways

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Overview of Core Metrics

Pageviews: ⬆ YoY

Since May, pageviews have risen YoY

- Reverses previous trend of YoY declines

- Pageviews have risen to 2015 & 2016 levels

(Why? Stay tuned...)

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Mobile dominates traffic

Mobile web and apps make up over 50% of pageviews…

… as of this year, even on weekdays (the last holdout of desktop domination)

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Monthly active editors remain stable...

- Overall, global monthly active editors numbers have remained flat over the past 3 years

- Small but consistent long-term trend **2% YoY growth in active existing editors** balances out long-term trends of **declines in active first- and second-month editors**

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… with spikes in new editors due to Wiki Education

YoY new active editors spiked in September as a result of participation in Wiki Education

WIKIMEDIA
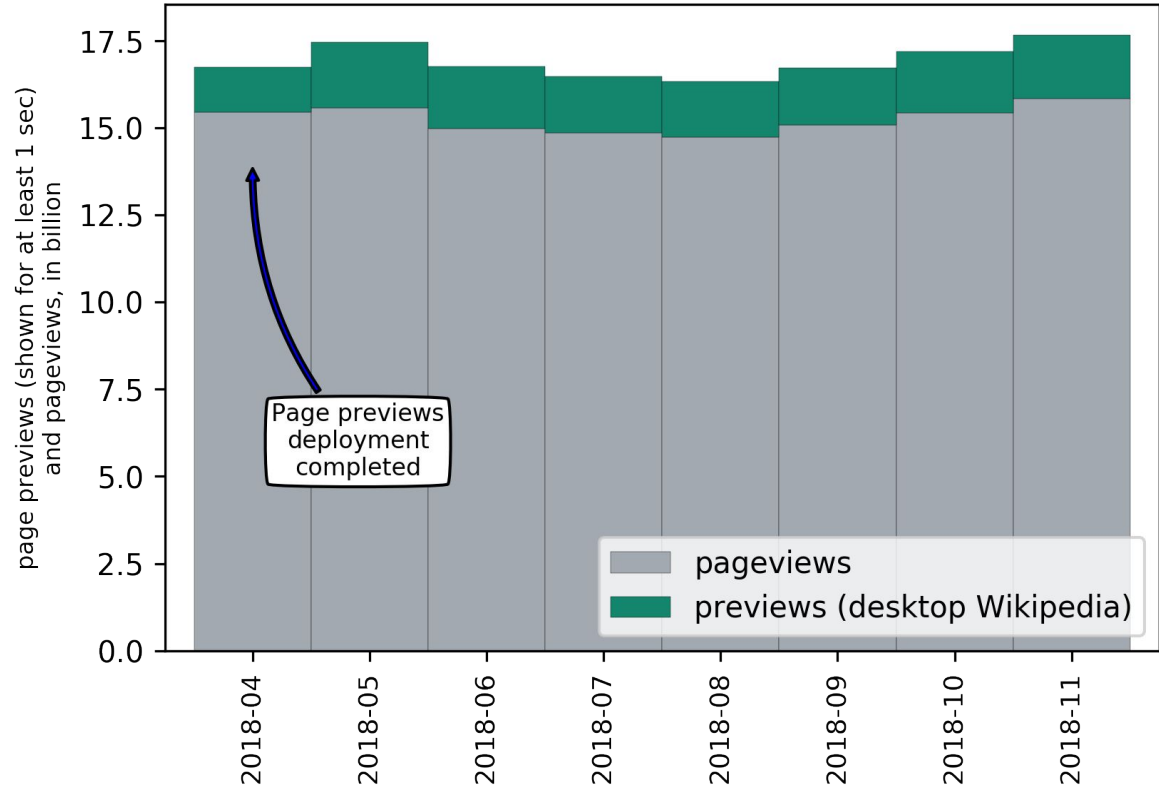FOUNDATION

Readers: Metrics & Insights

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Pageviews

Interactions: Pageviews+Previews

- In 2017/18, we added a new way to read Wikipedia: Page previews*

- 16.8 billion interactions/month**
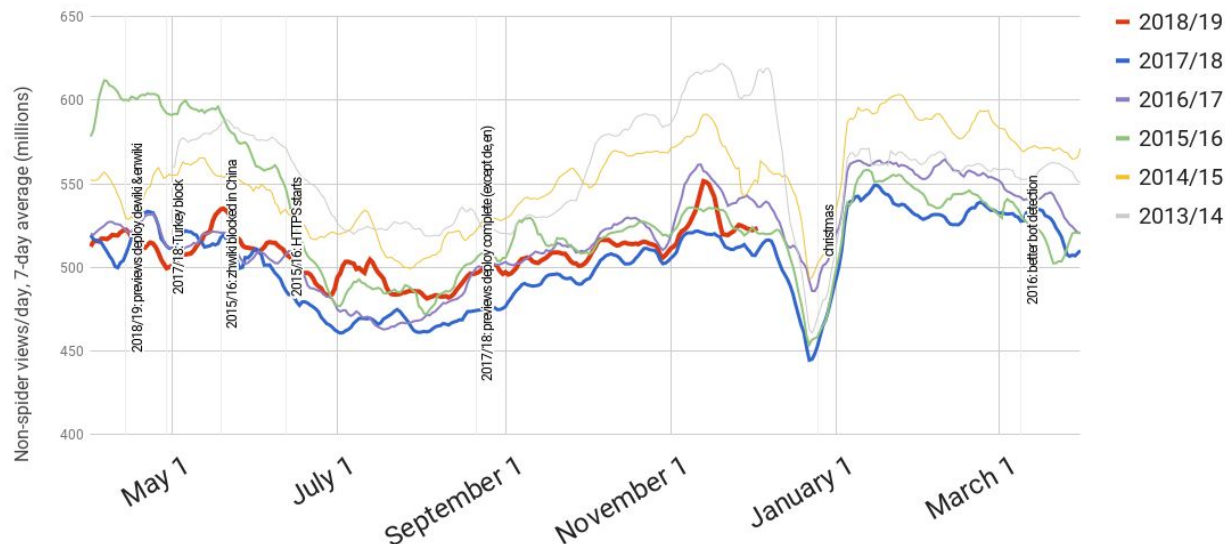 - 15.1B pageviews
  - 1.7B previews

*See appendix for additional details
**Average, May-September 2018, normalized to 30 days/month

Pageviews + seen previews per month

page previews (shown for at least 1 sec) and pageviews, in billion

Page previews deployment completed

Legend:
- pageviews
- previews (desktop Wikipedia)

X-axis: 2018-04, 2018-05, 2018-06, 2018-07, 2018-08, 2018-09, 2018-10, 2018-11

Total pageviews: ⬆ YoY

Wikimedia pageviews year-over-year comparison, May 2013-November 2018

Legend:
- 2018/19
- 2017/18
- 2016/17
- 2015/16
- 2014/15
- 2013/14

Pageviews/month (avg, **April-September 2018**)	
Total	**15.1 billion** +3% YoY
Desktop	6.6 billion -7% YoY
Mobile web	8.3 billion +12% YoY
Apps	238 million +6% YoY

Corrected for artificial IE7 traffic from Pakistan & other Asian countries

Total pageviews: ⬆ YoY

Since May, pageviews have risen YoY*

- Reverses previous trend of YoY declines

- Pageviews have risen to 2015 & 2016 levels

… Why?
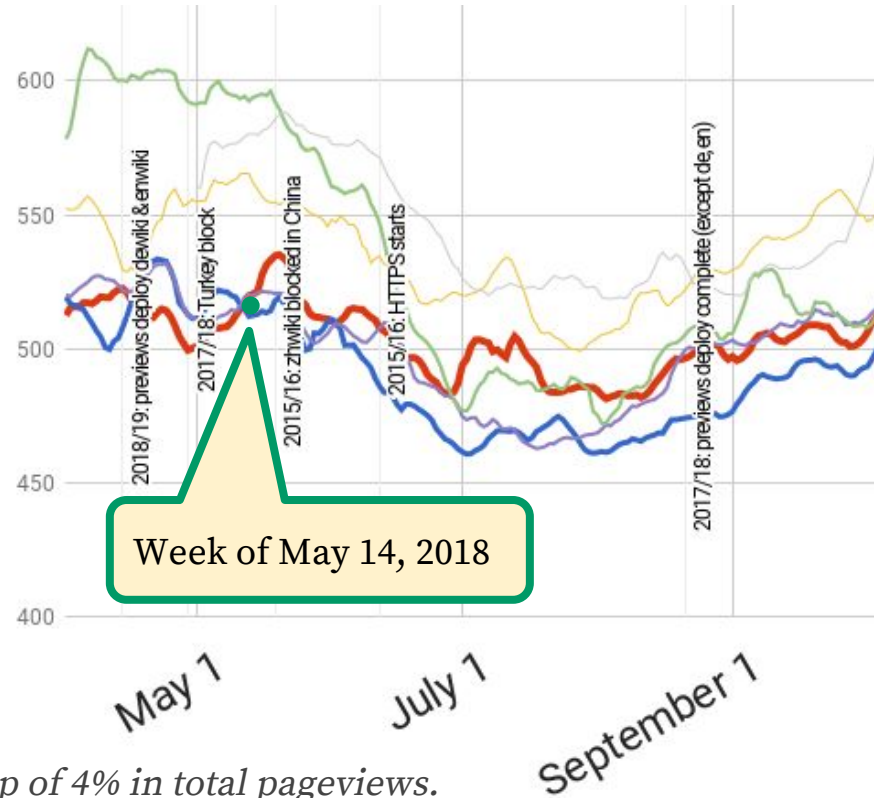
*For Q3 2017/18 (January-March), we reported a YoY drop of 4% in total pageviews.
In Q4 2017/18 (April-June) and Q1 2018/19, we saw a YoY increase of 3%.

Why are pageviews increasing?

We identified several factors that correlate with the increasing pageviews:

- Increased traffic from search

- Accelerated growth on mobile

- Decelerated declines on desktop

- Global trends

Why are pageviews increasing?
Key Factors

- Increased traffic from search engine referrals

Search engine referrals: some background

- **Impression**: User sees a search engine results page that contains link(s) to a Wikipedia site
- **Click:** User clicks on link(s) within search engine results that sends the user to a Wikipedia site
- **Referrals (referred pageviews)**: User clicks on a Wikipedia link in search engine results and arrives at a page on our site
- **Click-through rate (CTR):** ratio of clicks to impressions

Google provides us with these metrics for a limited timespan. In 2017/18, we began to systematically store them on our side, to enable long-term analysis.

(See appendix for an explanatory example of how impressions, clicks, referrals, and CTR are calculated)

Search engine referrals
Referred Pageviews

- Referrals from search engines increased

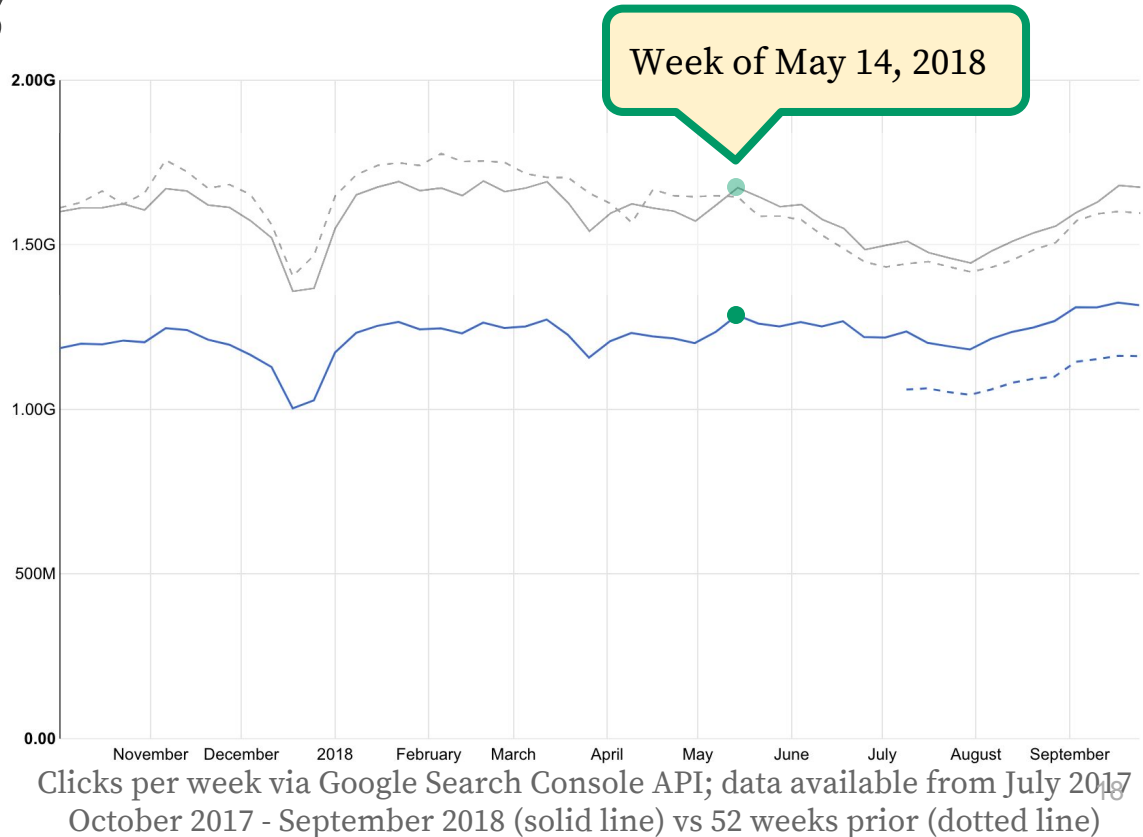- Starting in May, we see a negative YoY trend turn into a YoY increase

Week of May 14, 2018

2.00G

1.50G

1.00G

500M

0.00

November December 2018 February March April May June July August September

Pageviews per week from search engine referrals
October 2017 - September 2018 (solid line) vs 52 weeks prior (dotted line)
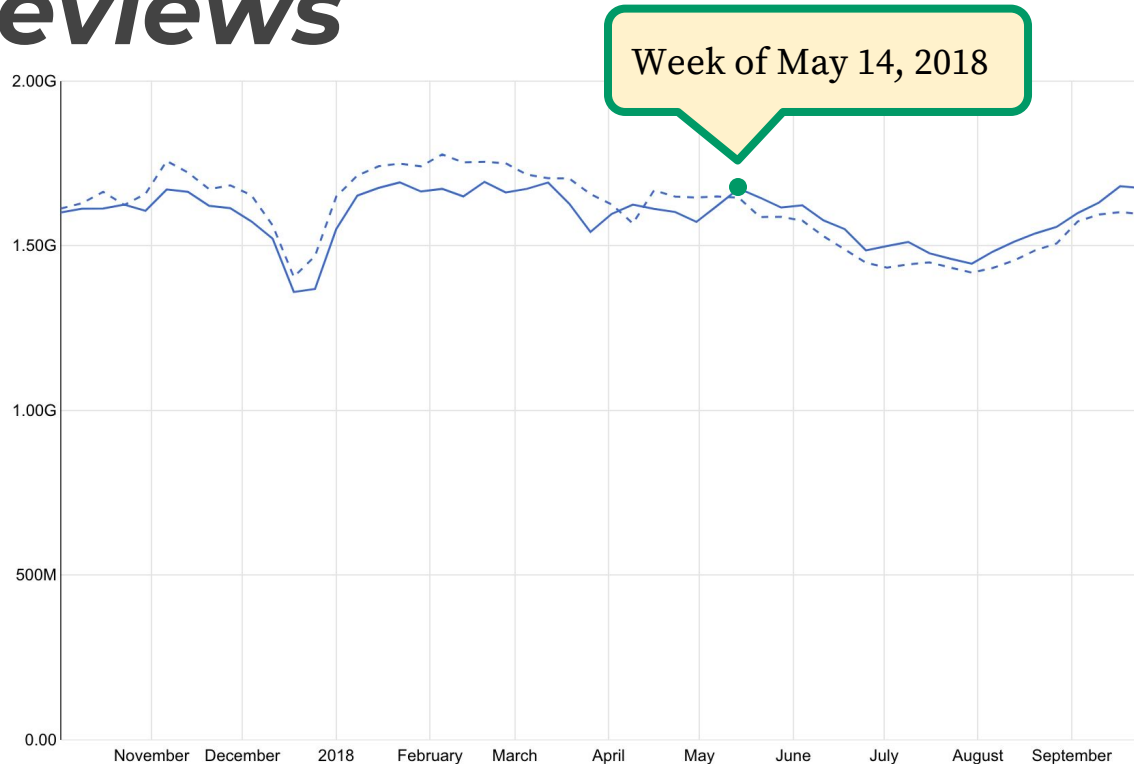
(See appendix for additional notes)

Search engine referrals
Google Clicks

Clicks recorded in Google Search Console (blue), compared to sitewide pageviews from all search engines (grey)

- Trends for clicks reflect pageview trends*

Clicks/impressions/CTR are grouped at the site level (multiple pages on one site count as one click/impression). Pageviews are grouped at the page level. See appendix for an example.

Week of May 14, 2018

Clicks per week via Google Search Console API; data available from July 2017 October 2017 - September 2018 (solid line) vs 52 weeks prior (dotted line)

Search engine referrals
Google Impressions

Increase in Google clicks driven by an increase in impressions

Week of May 14, 2018
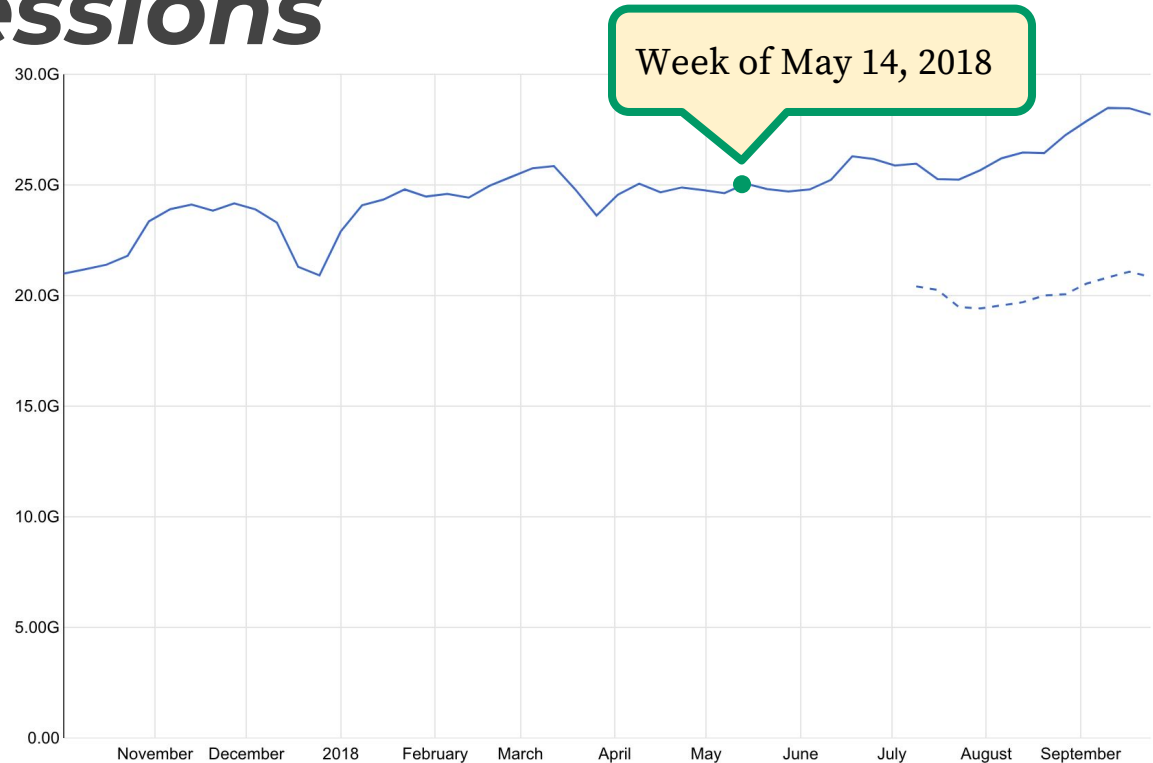
Impressions per week via Google Search Console; data available from July 2017
October 2017 - September 2018 (solid line) vs 52 weeks prior (dotted line)

Search engine referrals
Google CTR

- Impressions grew more rapidly than clicks

- As impressions grew, CTR* fell, even though the absolute number of clicks increased

click-through rate, or rate of clicks to impressions

Week of May 14, 2018
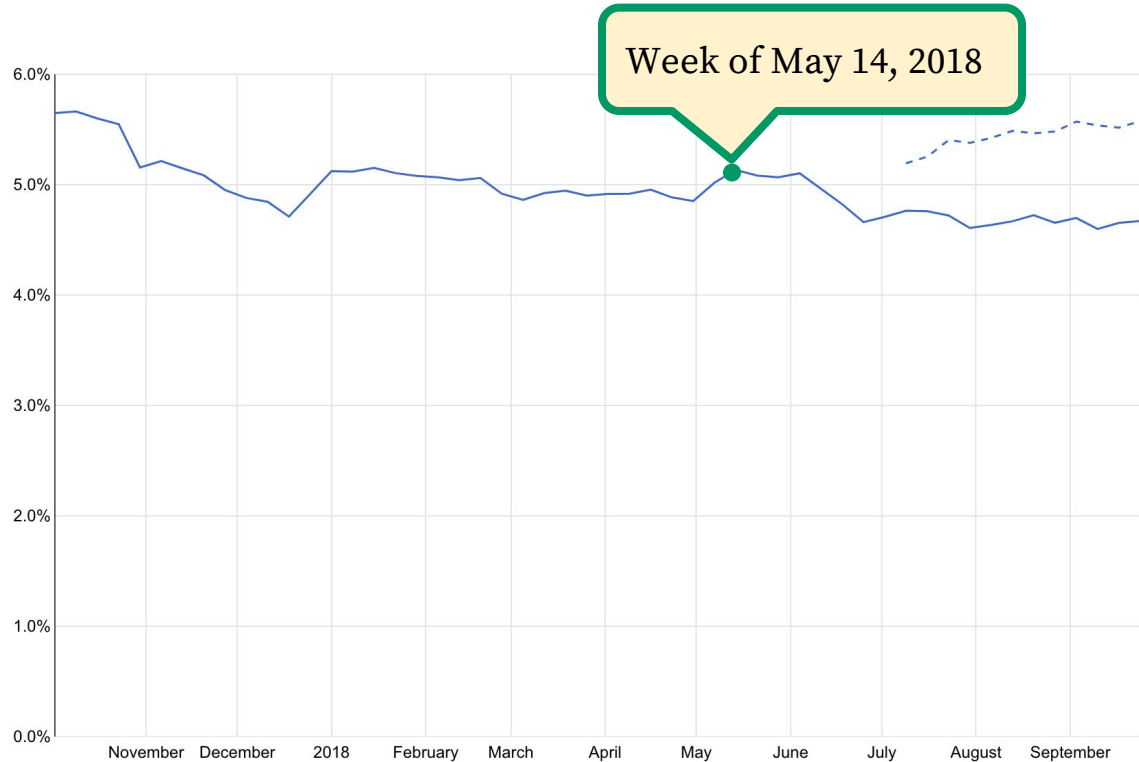
CTR per week via Google Search Console; data available from July 2017
October 2017 - September 2018 (solid line) vs 52 weeks prior (dotted line)

Why are pageviews increasing?
Key Factors

- Increased traffic from search engine referrals

- Accelerated growth in mobile device traffic

Mobile pageviews: ⬆ YoY

Wikimedia mobile pageviews year-over-year comparison, May 2013-November 2018

Legend:
- 2018/19
- 2017/18
- 2016/17
- 2015/16
- 2014/15
- 2013/14
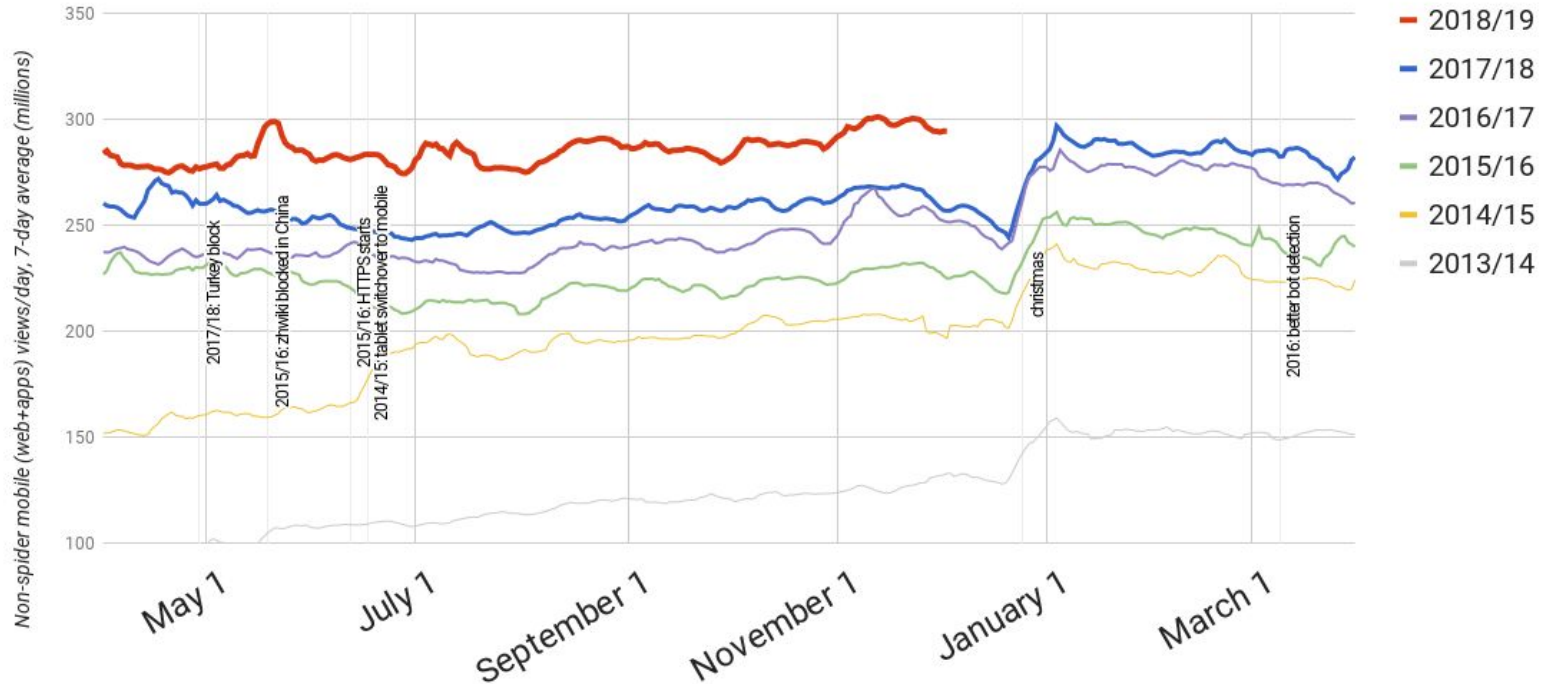
Monthly mobile pageviews have grown an average of 12% YoY for mobile web and 6% for apps

Mobile pageviews: ⬆ YoY

Week of May 14, 2018

- Mobile pageviews have consistently grown over the past several years

- Mobile growth has accelerated since May of 2018
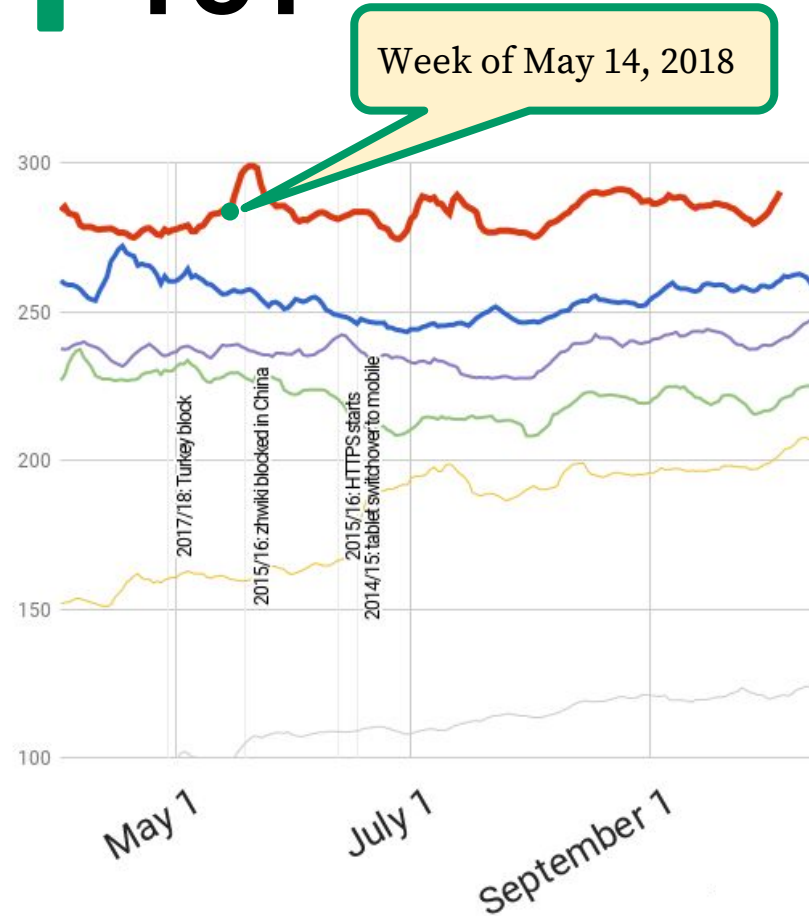
*See appendix for details about mobile apps
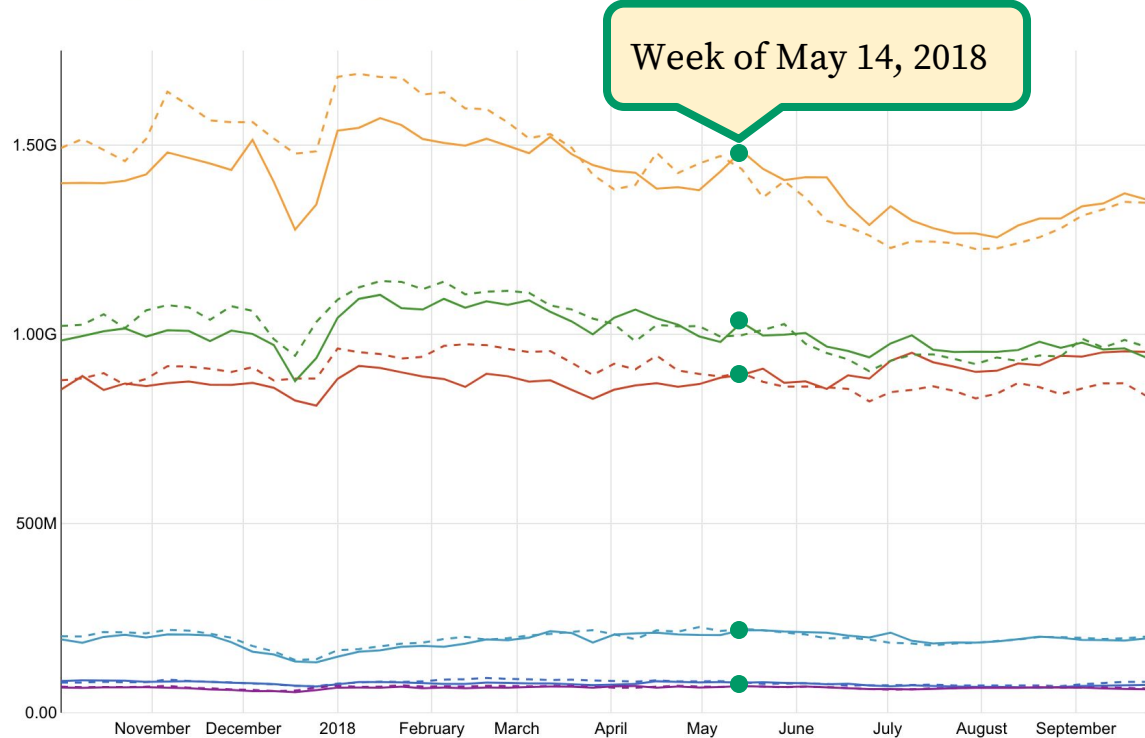
Why are pageviews increasing?
Key Factors

- Changes from search engine referrals

- Accelerated growth in mobile device traffic

- Declines in desktop traffic have decelerated

Desktop pageviews: (slowing) ⬇ YoY

Wikimedia desktop pageviews year-over-year comparison, May 2013-November 2018

Legend:
- 2018/19 (red)
- 2017/18 (blue)
- 2016/17 (purple)
- 2015/16 (green)
- 2014/15 (orange)
- 2013/14 (grey)

Y-axis: Non-spider desktop views/day, 7-day average (millions); values 150, 200, 250, 300, 350, 400, 450, 500

X-axis: May 1, July 1, September 1, November 1, January 1, March 1

Chart annotations:
- 2018/19: previews deploy dewiki & enwiki
- 2017/18: Turkey block
- 2015/16: Zhwiki blocked in China
- 2015/16: HTTPS starts
- 2014/15: tablet switchover to mobile
- 2017/18: previews deploy complete (except de, en)
- 2018/19: frwiki anomaly
- christmas
- 2016: better bot detection

Desktop pageviews: (slowing) ⬇ YoY

Desktop continues to shrink, but the YoY decrease has slowed, particularly since June/July of 2018.*

For January-March 2018 (Q3 FY 2017/18), we reported an 11% YoY decline of monthly desktop pageviews. In April-June 2018 (Q4 FY 2017/18) we saw an 8% YoY decline, and in June-September 2018 (Q1 FY 2018/19) we've seen a 5% YoY decline.
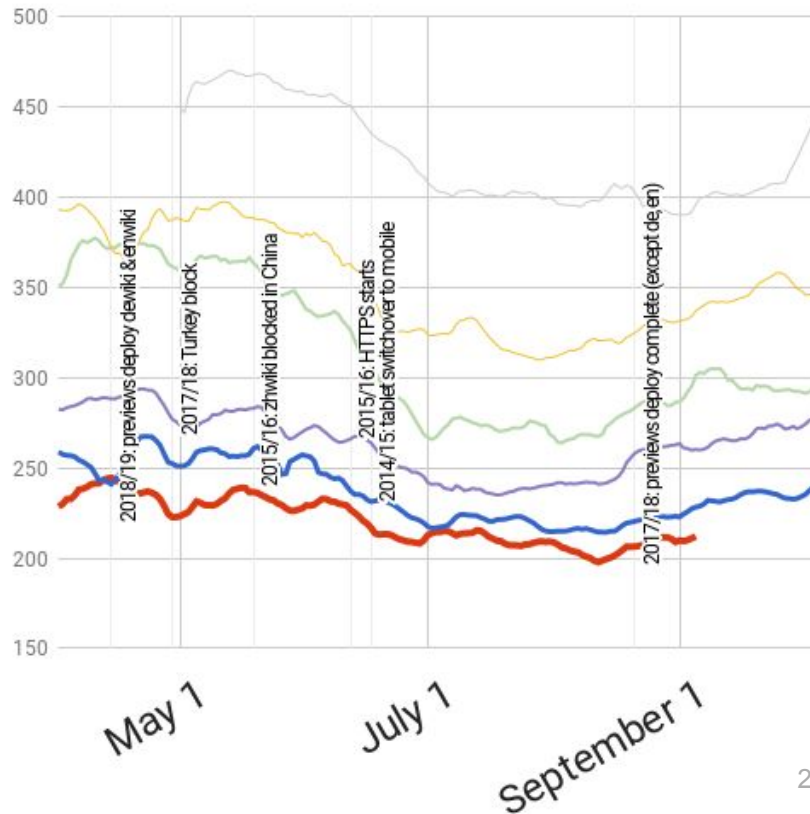
Why are pageviews increasing?
Key Factors

- Changes from search engine referrals

- Accelerated growth in mobile device traffic

- Declines in desktop traffic have decelerated

- Global trends

Global changes in traffic trends

- Asia & Europe show the largest trend reversals YoY, consistent with overall changes

- North & South America show a smaller shift from YoY declines to growth

Africa Asia Europe North America Oceania South America

Week of May 14, 2018

Pageviews per week by continent
October 2017 - September 2018 (solid line) vs 52 weeks prior (dotted line)

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Turkey
Over 1 year since block

- In 2017, Turkey's block of Wikipedia decreased monthly pageviews by ~200M (40-70M/week)

- May 2017 - April 2017 YoY numbers were ~1% lower due to comping traffic from Turkey that is now blocked
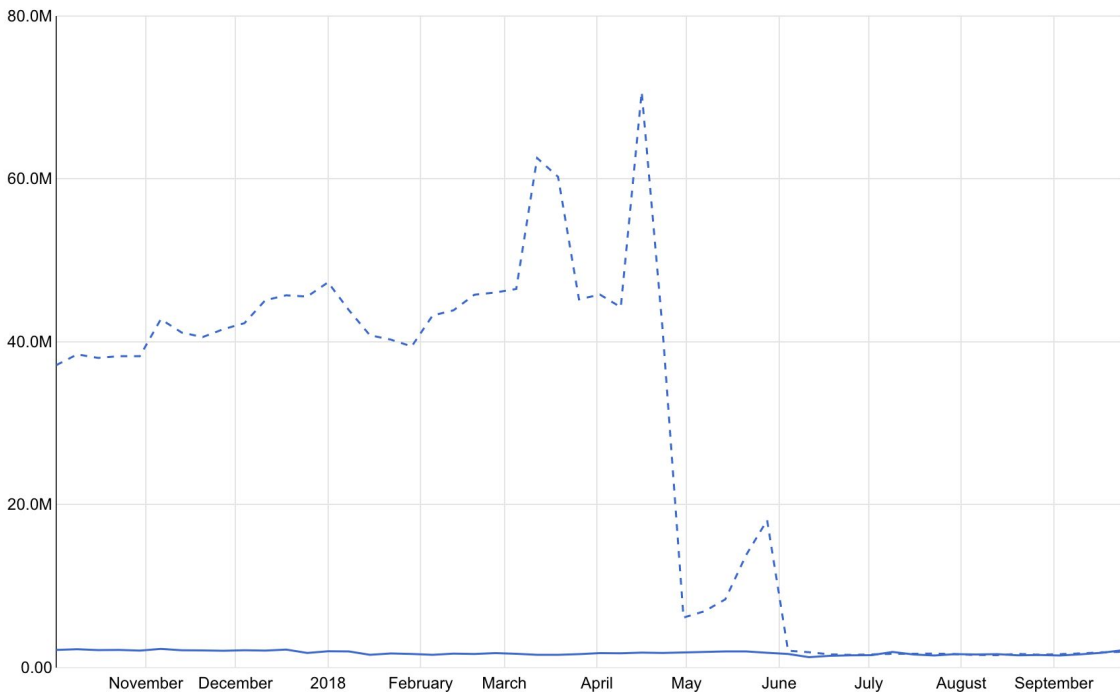
Pageviews per week in Turkey
October 2017 - September 2018 (solid line) vs 52 weeks prior (dotted line)

We miss Turkey

Why are pageviews increasing?
No significant impact

Areas we investigated that showed no **significant** impact on overall pageviews*:

- Hindi video campaign: no significant increase in pageviews from India

- YouTube linking articles about conspiracy theory topics

- Google Knowledge Panel changed for articles about universities

- Differences between browsers

- Increases driven by specific countries

- Internally referred pageviews

*see appendix for details, and also the Q3 metrics presentation for previous investigations

Pageviews: opposing trends

Wikipedia Zero pageviews per day, by country (January-December 2018)
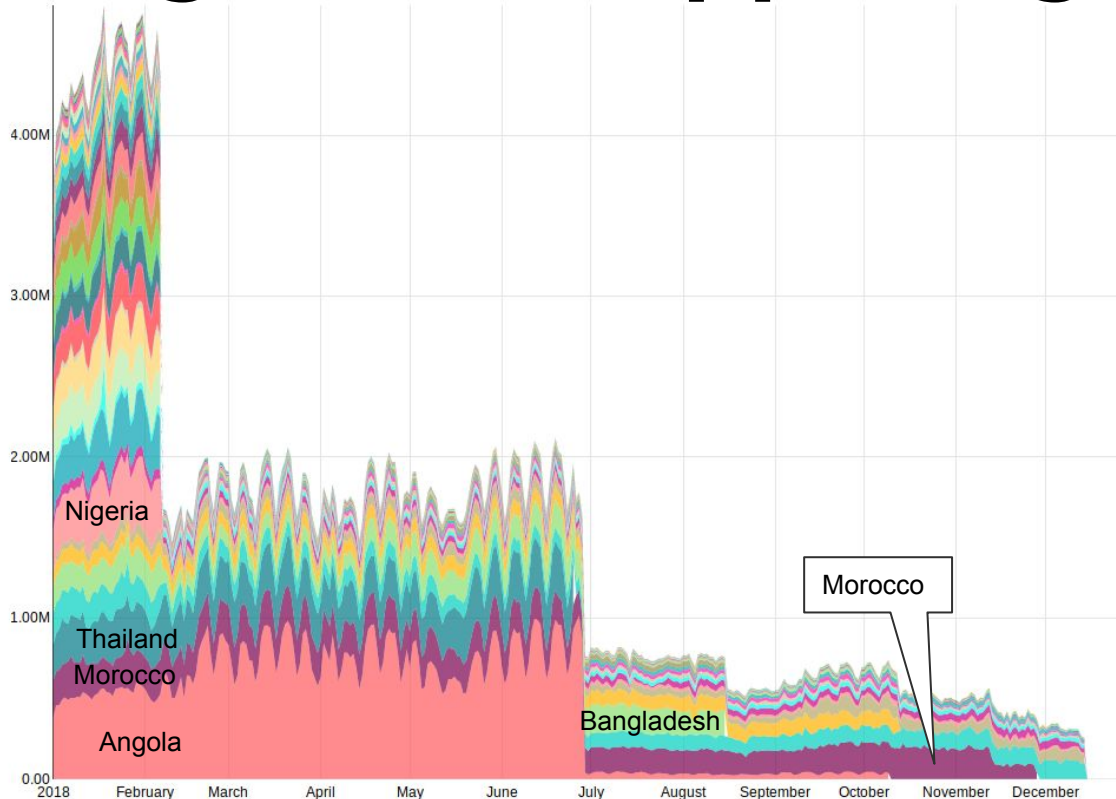
Wikipedia Zero shutdown:

Back in 2016, up to 2% of global pageviews came from WP0. In several Global South countries, it has been contributing the majority of traffic.

With the program's gradual shutdown (now almost complete), do people continue to read Wikipedia, now using paid data instead?

Wikipedia Zero shutdown: Angola

Angola pageviews, Wikipedia Zero vs. paid access
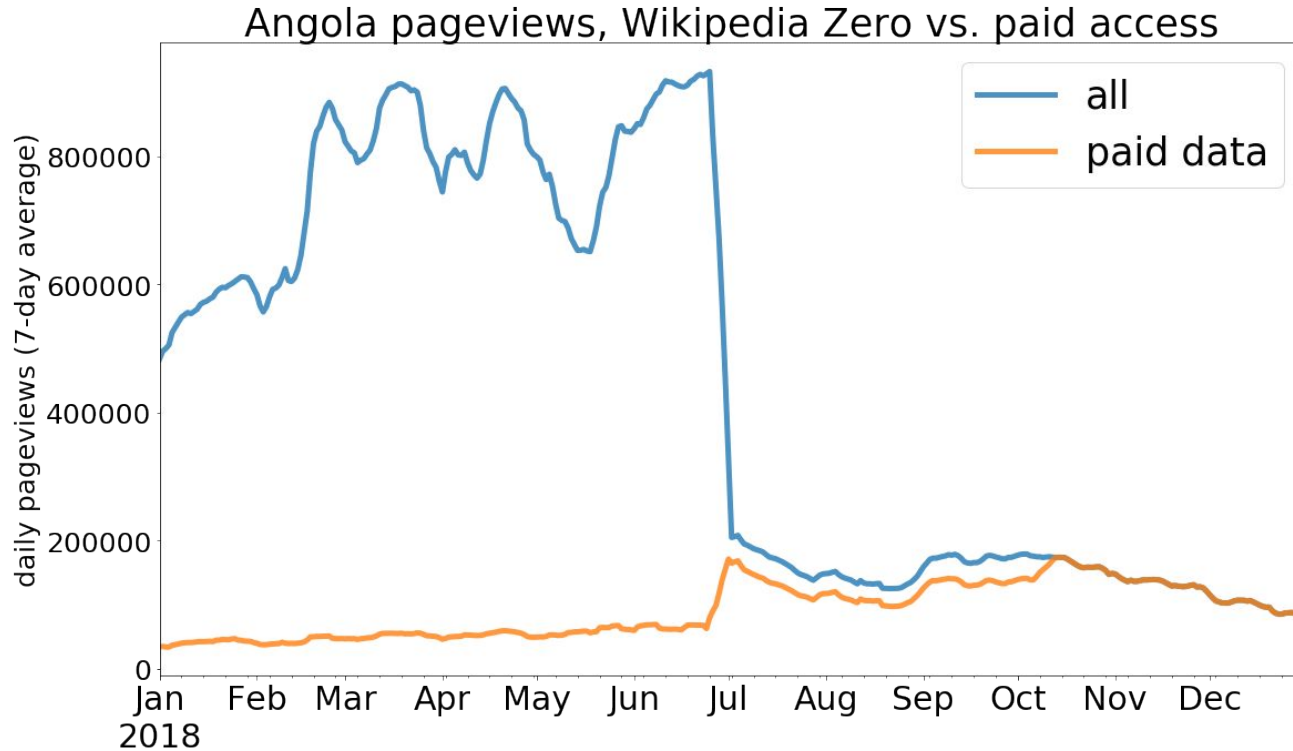
WP0 deactivated for Unitel Angola on June 29

Caused traffic for the entire country to drop **from ~20 million to ~4 million views/month**

Some other countries saw smaller or no drop

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Wikipedia Zero shutdown: Kuwait

Kuwait pageviews, Wikipedia Zero vs. paid access
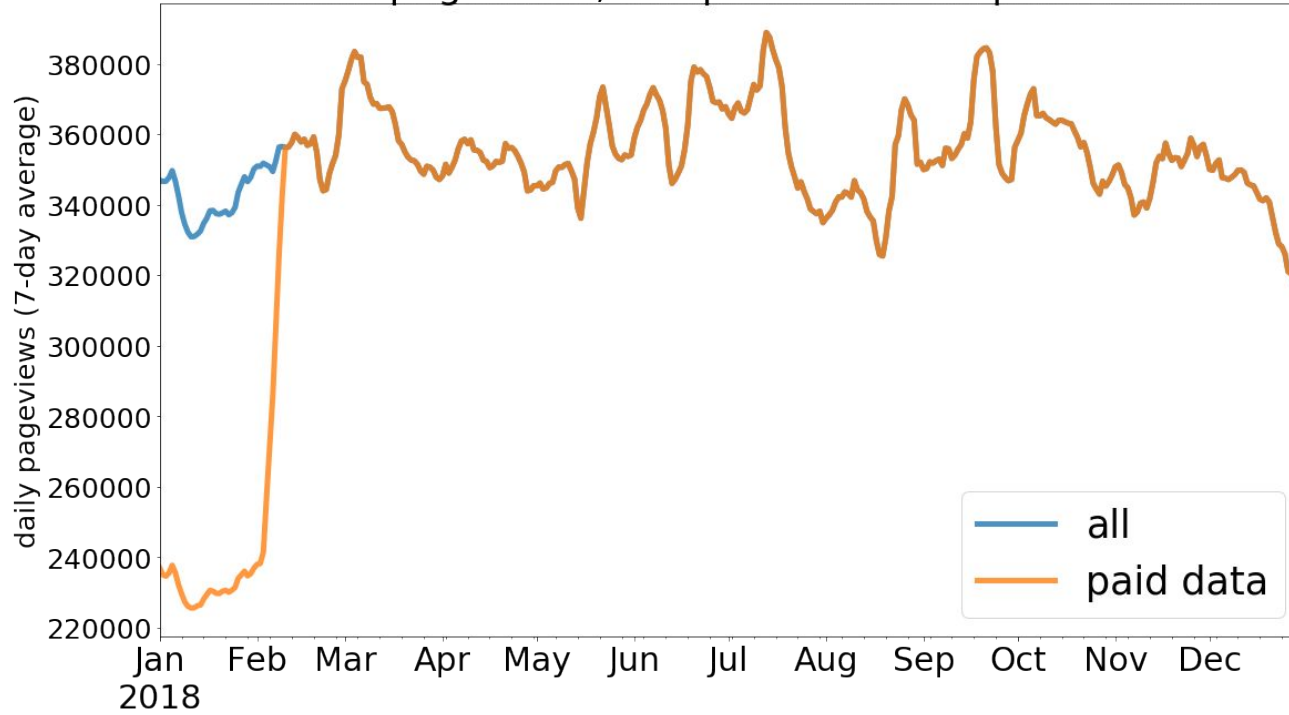
In contrast, readers in Kuwait seem to have continued to use Wikipedia at roughly the same rate after the (official) end of the program.

Longterm Trends

Pageviews: longterm trends

- Traffic has been declining since 2013 (-2% yearly)

- Mobile has been increasing (+18% yearly) as desktop has been declining (-13% yearly)

- Mobile makes up >50% of traffic on weekdays, >60% of traffic on weekends*

Wikimedia monthly pageviews (desktop+mobile), 2013-2018
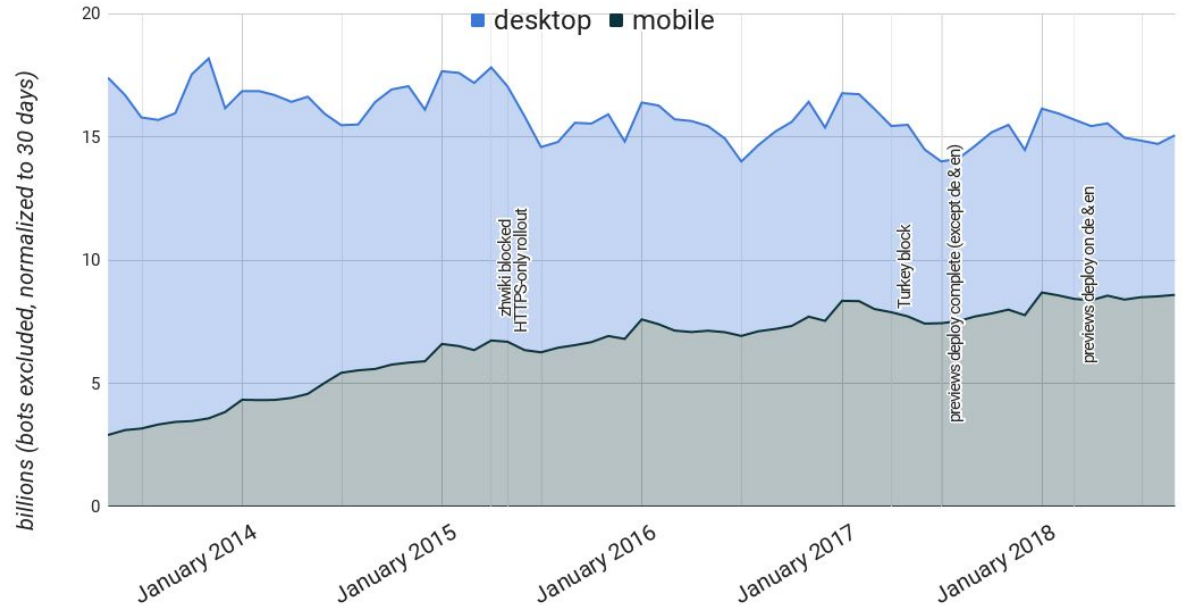
*See appendix for a closer look at traffic by weekday

Unique devices & reading time

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Unique devices

Monthly unique devices (avg, **April-September 2018**)	
Wikipedia (all languages)	**1.5 billion**

More details about unique devices and how this metric is calculated in the appendix
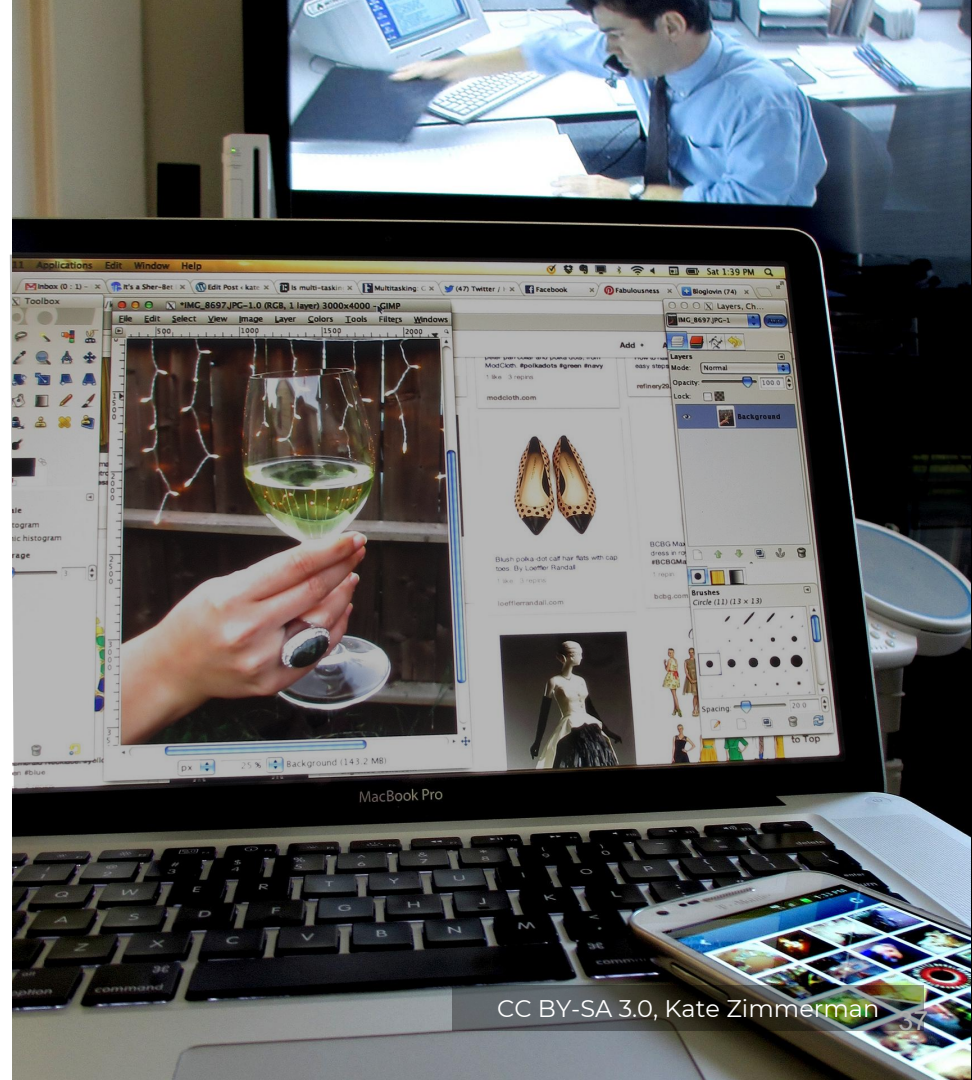
Reading Time

- New metric under development
- Based on page dwell time*

*seconds between page load & user closing browser/
tab, minus time during which the tab was hidden*

Every month, people spend

~60,000 years

reading Wikipedia articles.

Contributors: Metrics & Insights

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Counting contributors

Activity groups

	editors	active editors	very active editors
monthly edits	1+	5+	100+
type of edits	any	content	content

We define three main levels of contributors, based on their monthly edit counts, so that we can measure both the core and the long-tail of the contributor community.

In an average month, we have:

13,000

very active editors

82,000 active editors

290,000 editors

The trends are similar…
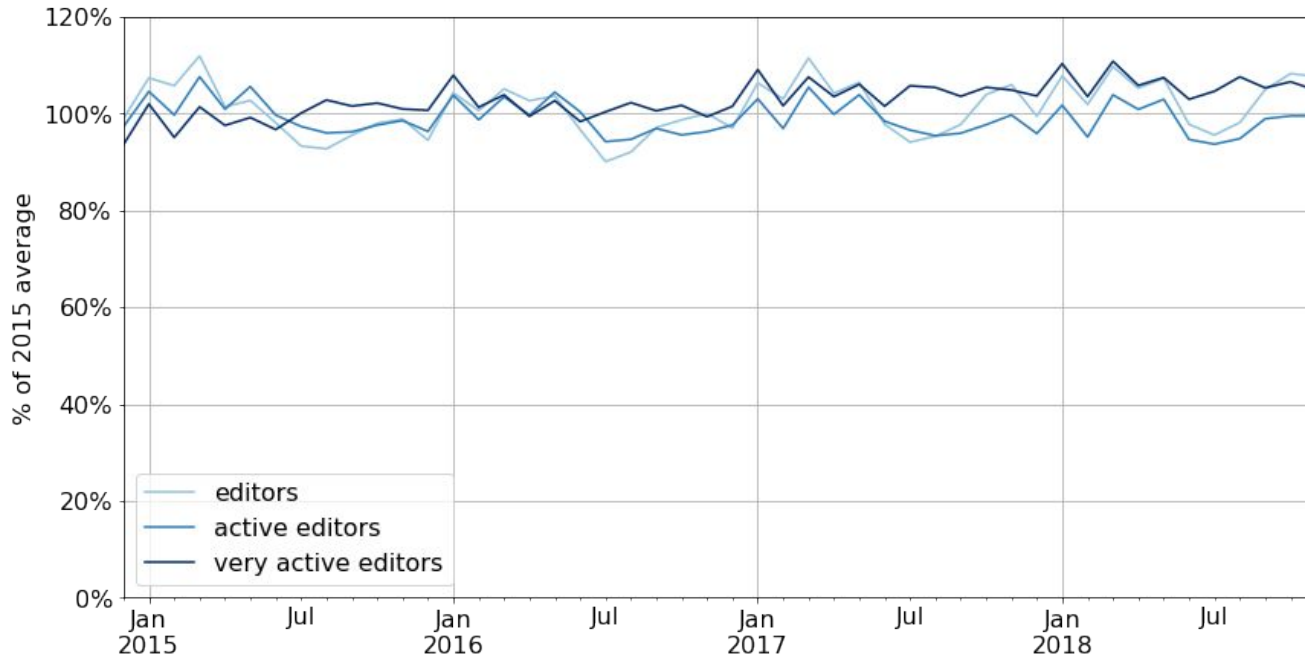
Overall, global editors numbers have remained flat over the past 4 years.

While we discuss sub-trends, keep in mind the high-level picture: things are not changing very much. This is both good news (Wikimedia is not dying!) and bad news (Wikimedia is not growing!).

...but not identical
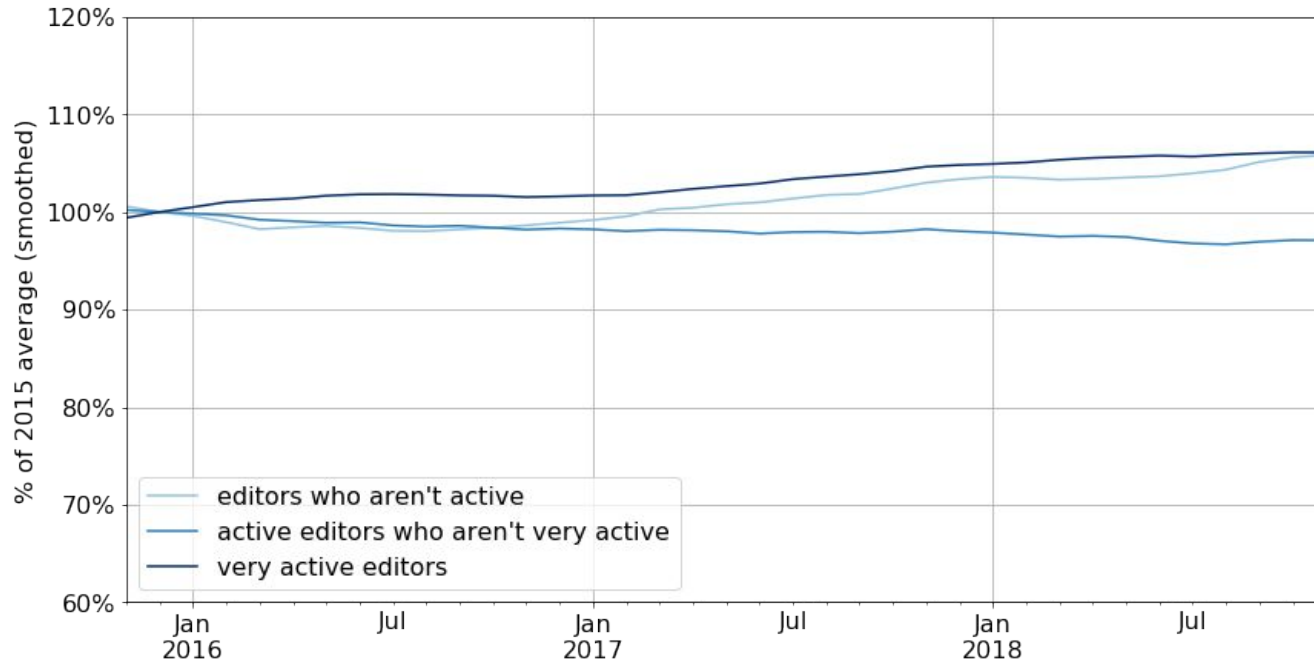
When we zoom in on the top half of the previous graph, remove the nested groups (e.g. very active editors from active editors), and look at the yearly average, we can see some slight but meaningful trends: editors and very active editors are increasing, active editors are decreasing.

Tenure groups

	new	second-month	existing
registration date	this month	last month	before last month

We also define three main levels of contributor tenure, based on their month of registration, so that we can focus on new editors as a metrics for our recruitment indicators and hopefully a leading indicator of future trends in existing editors.

Editor tenure in an average month
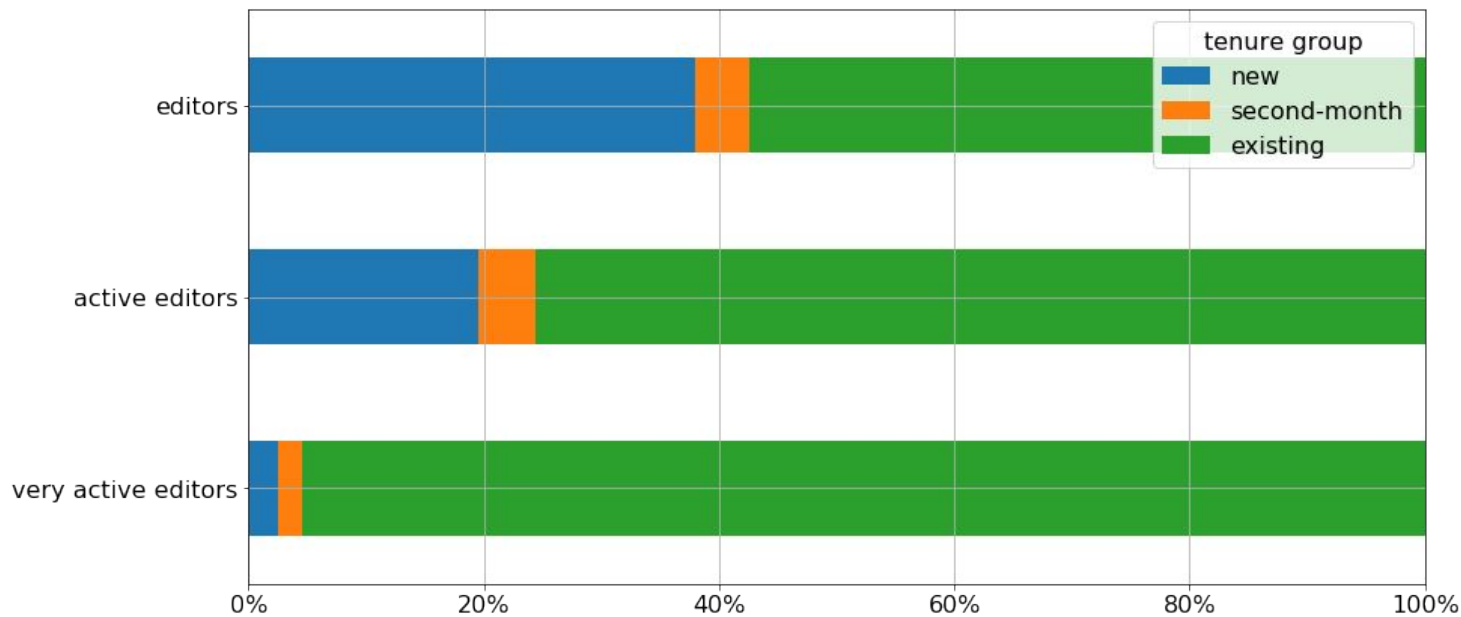
The higher the activity level, the lower the proportion of new editors.

Tenure *and* activity groups

	new	second-month	existing
editors	new editors	second-month editors	existing editors
active editors	new active editors	second-month active editors	existing active editors
very active editors	new very active editors	second-month very active editors	existing very active editors

If we combine our tenure and activity groups, we get a complex array of composite groups. These can be confusing, but are important tools for analyzing our contributor community.

Group size in an average month

	new	second-month	existing
editors	109,000	13,000	165,000
active editors	16,000	4,000	62,000
very active editors	300	300	13,000

One thing worth noting: while there's a big drop-off between new and second-month among editors and active editors, there's not one among very active editors. This is good to see: anyone who makes at least 100 edits during their first month is very likely to stick around.

Existing editors

Existing active editors
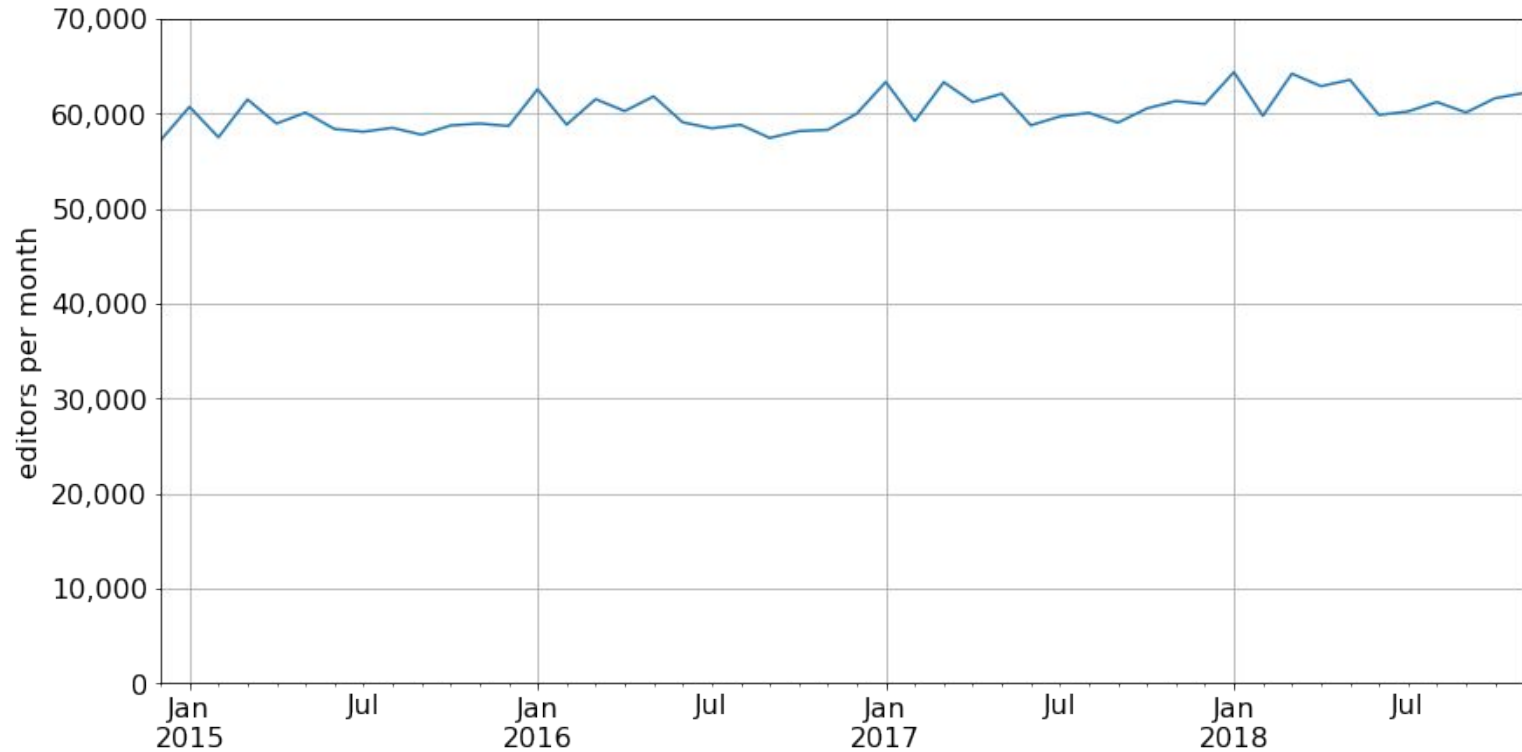
Small but consistent long-term trend of 2% year-over-year growth in existing active editors.

Existing active editors by project
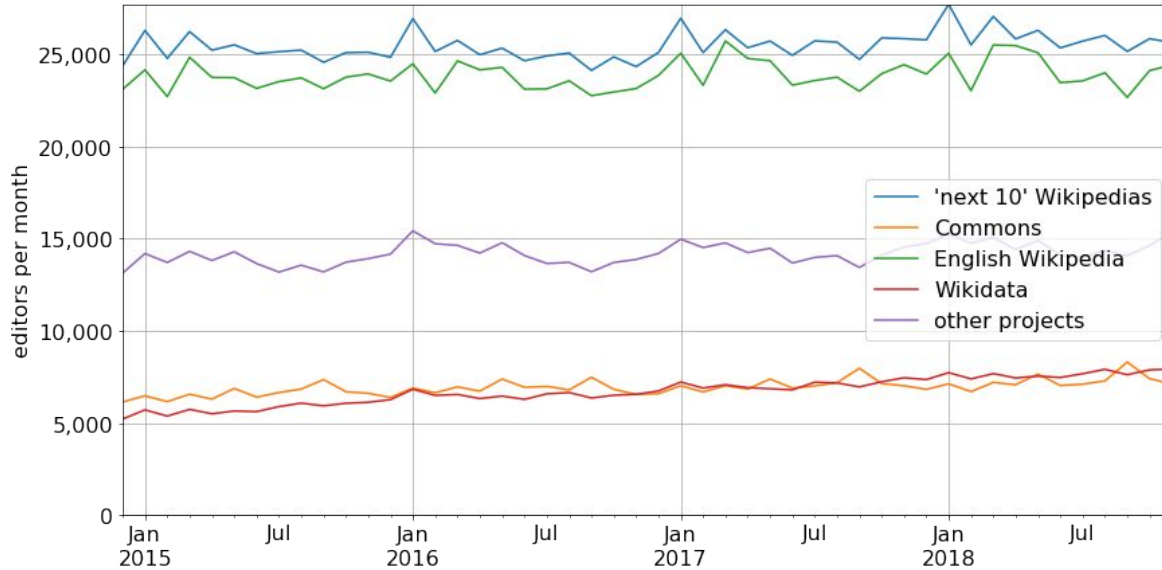
The clearest growth is happening at Commons and Wikidata, but there are subtle trends in other projects too.

The "next 10" Wikipedias are defined using a ranking that combines editing community size and readership. They are:

2. Spanish
3. German
4. Japanese
5. French
6. Russian
7. Italian
8. Mandarin Chinese
9. Portuguese
10. Polish
11. Dutch

Very active editors
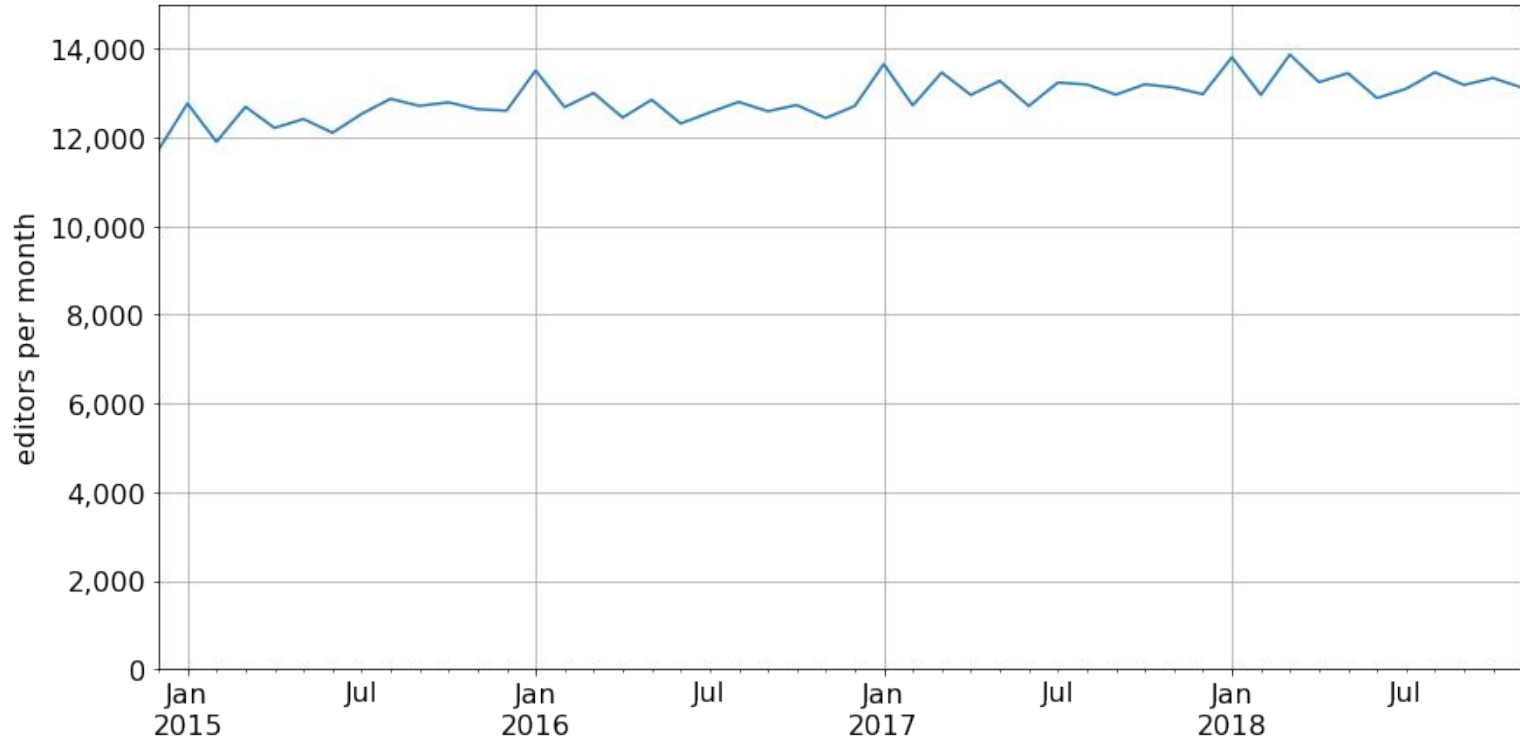
Small but consistent long-term trend of 3% YoY growth in very active editors.

Very active editors by project
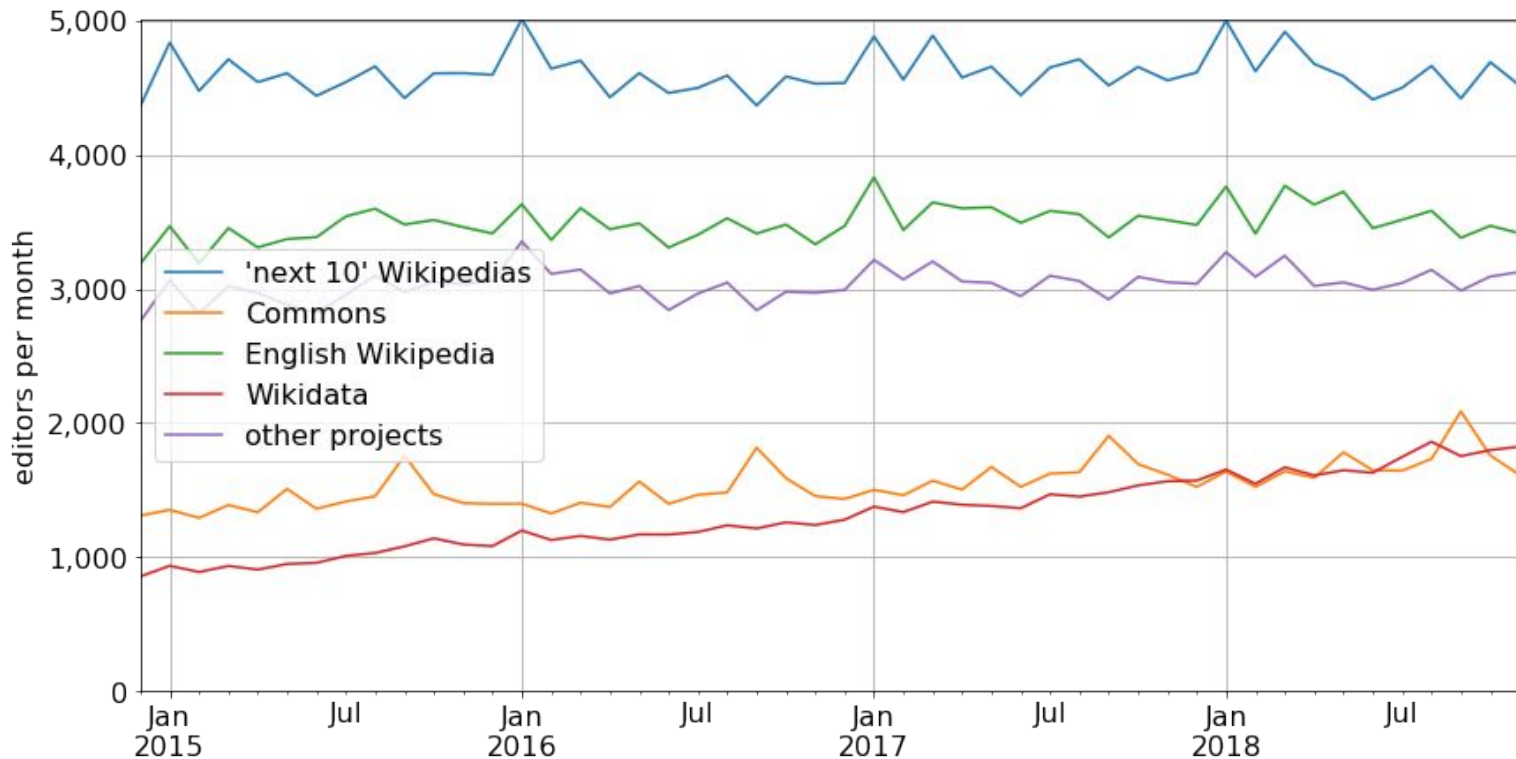
Most of the growth seems to be taking place at Commons and Wikidata.

New editors

New active editors
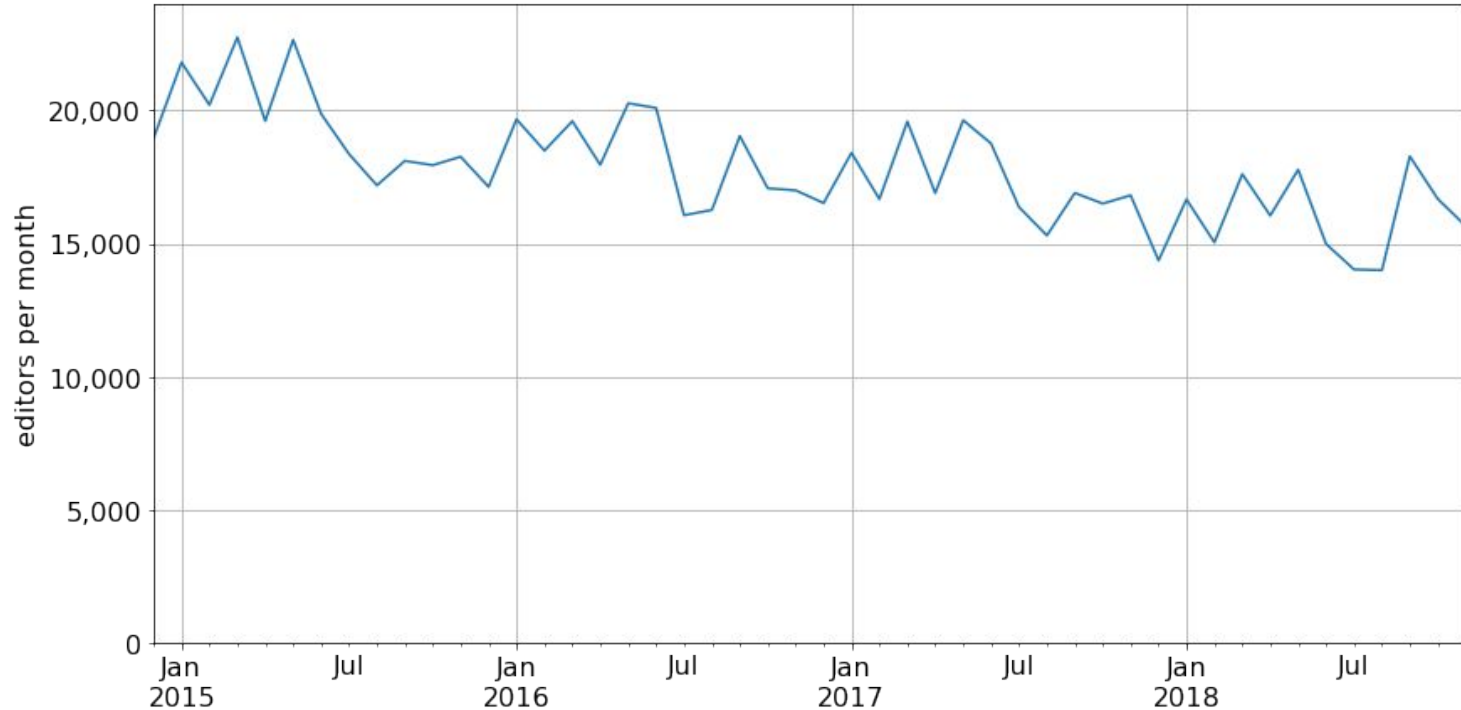
New active editors continue to decline, at about 7% per year. An unexpectedly large jump in September 2018 bucked that trend, which we will discuss later.

New editors

New editors have been declining more gradually at about 3% each year.

New editor retention
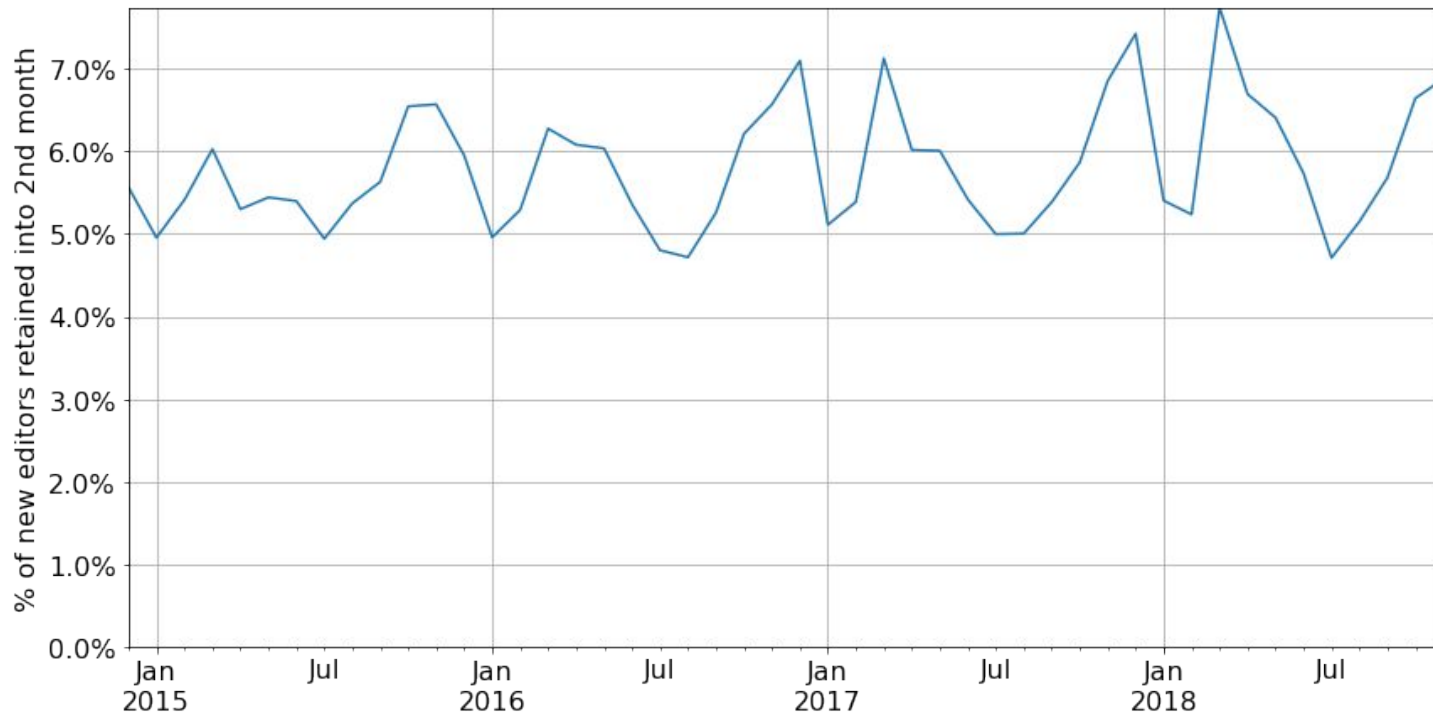
At a high level, we're seeing more volatility in new editor retention although the overall trend is slightly positive.

New editor retention on English Wikipedia
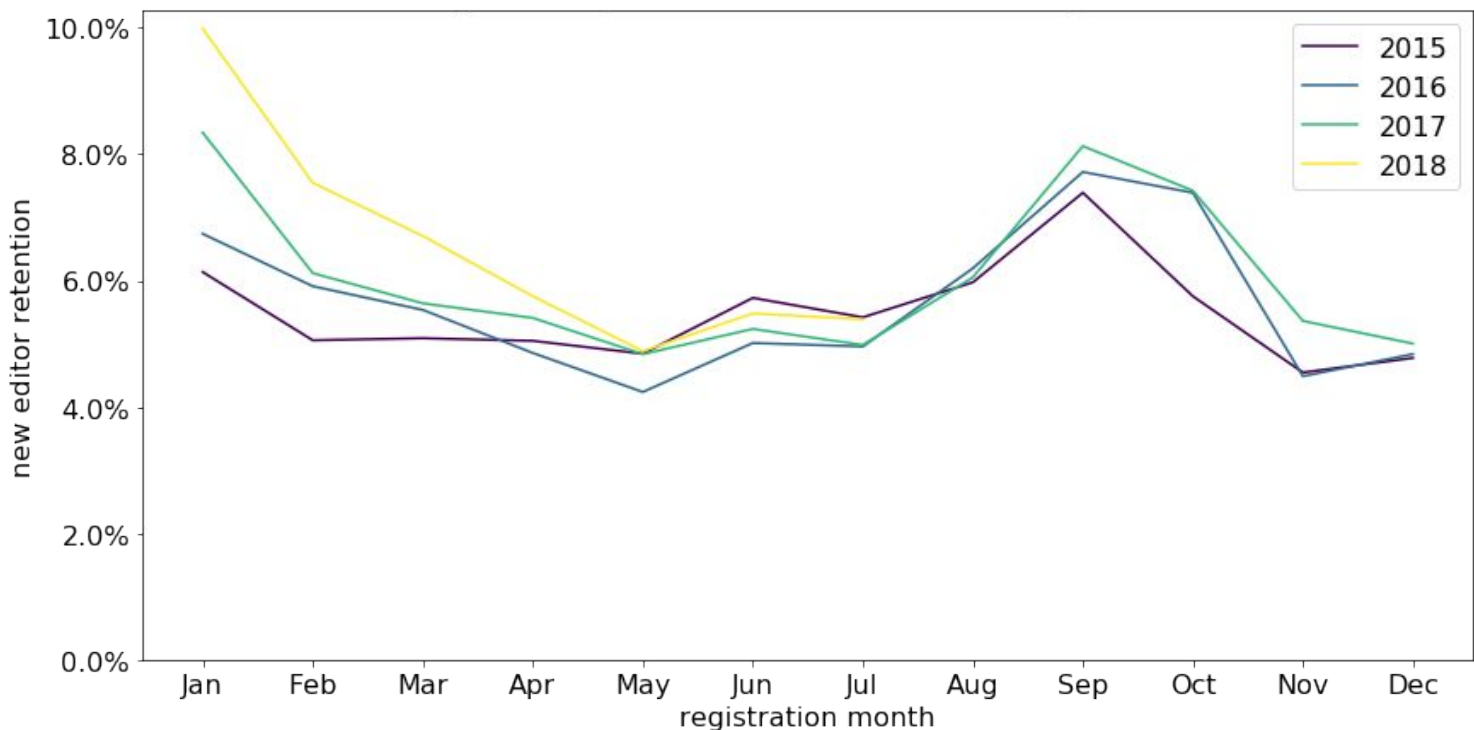
The volatility in new editor retention is coming mainly from increasingly strong seasonal spikes on the English Wikipedia, centered in January and September.

The reason: Wiki Education
(one specific organization that does wiki education!)

New editor sources on English Wikipedia
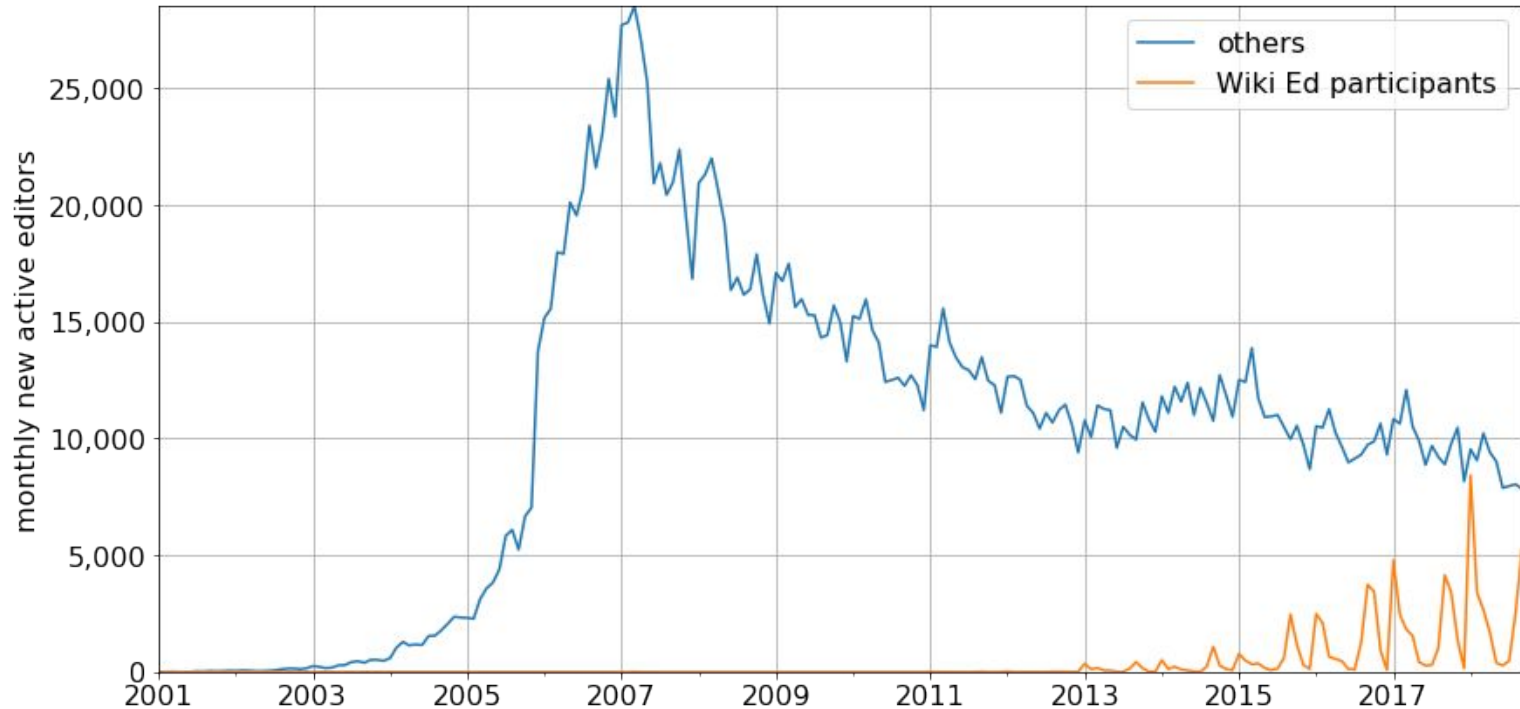
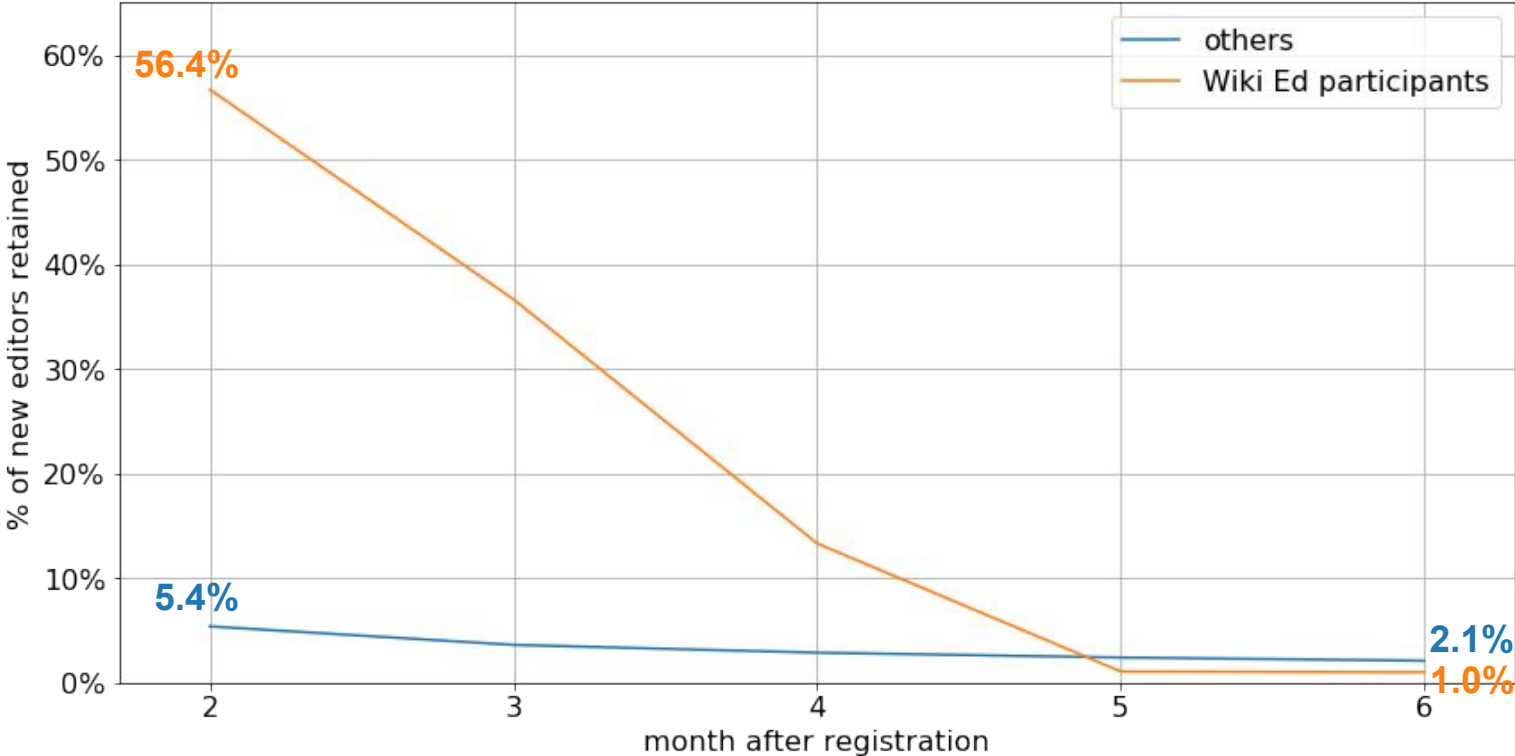Wiki Education works with professors in the US and Canada to incorporate contributing to Wikipedia in their classes.

English Wikipedia new active editors in an average month

1,750 Wiki Edu participants (19%)

9,250 total
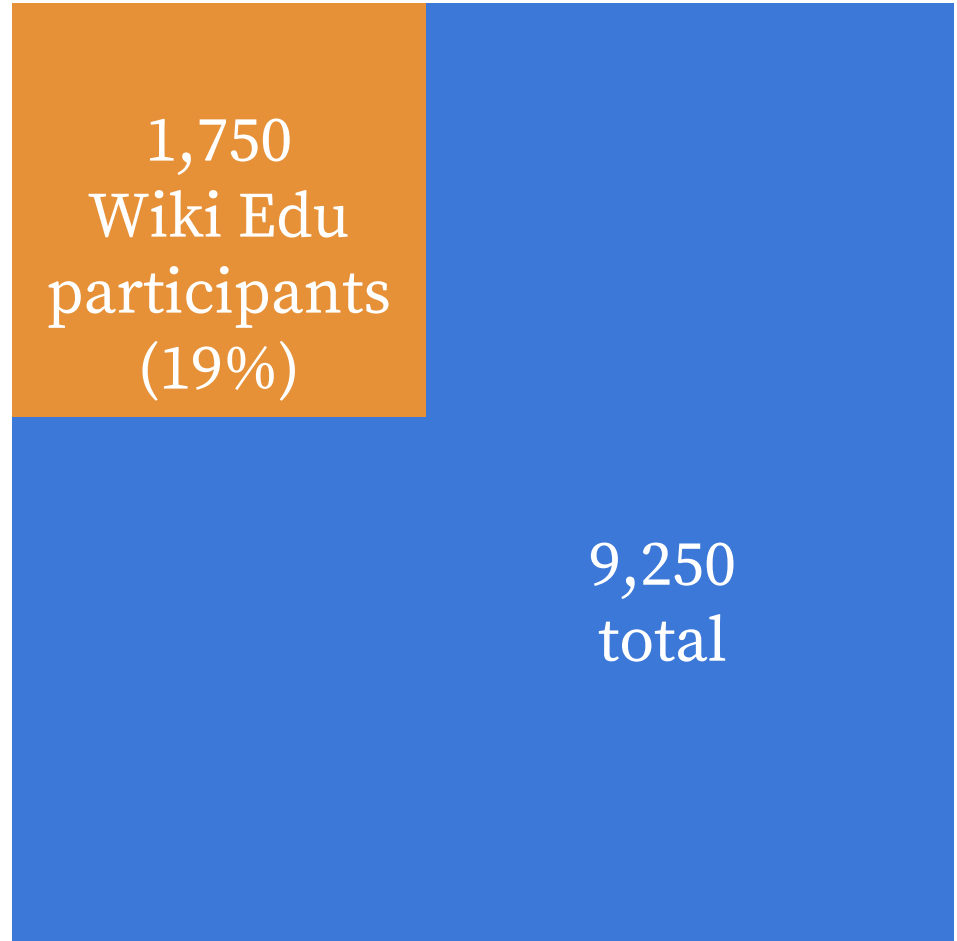
New editor retention on English Wikipedia
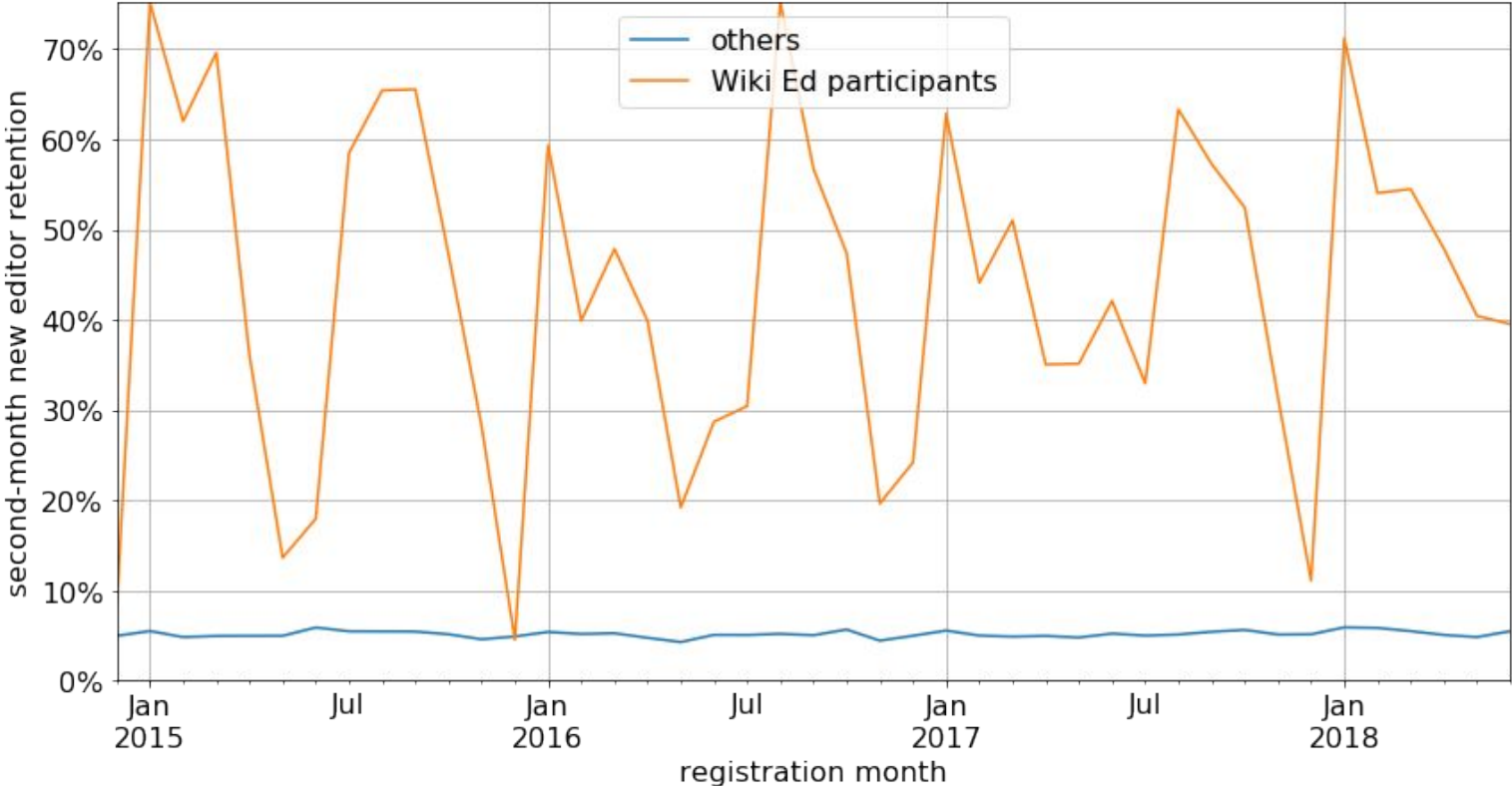
New editor retention on English Wikipedia

Edits

Total edits
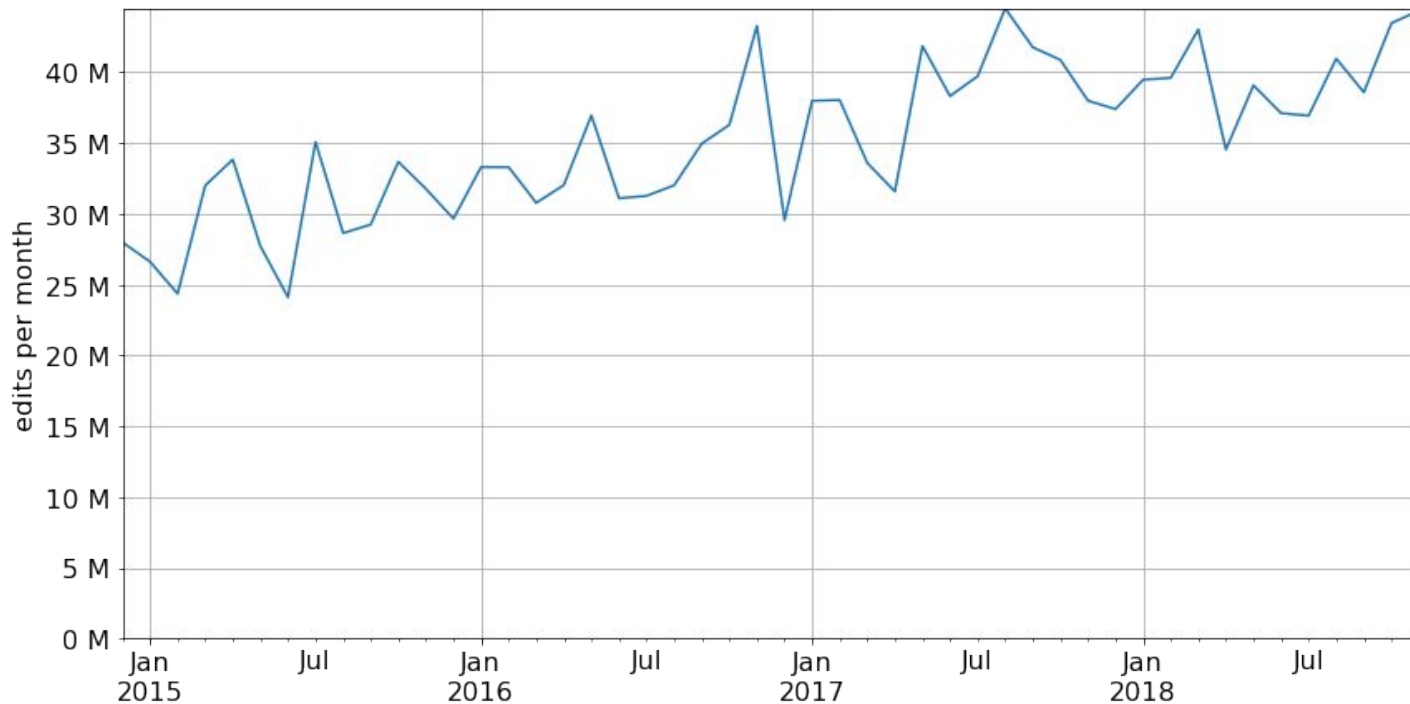
This includes bot edits and Wikidata edits (which include a lot of mass edits not tagged as bots), so the main driver is increased mass edits on Wikidata.

Revert rate

revert rate
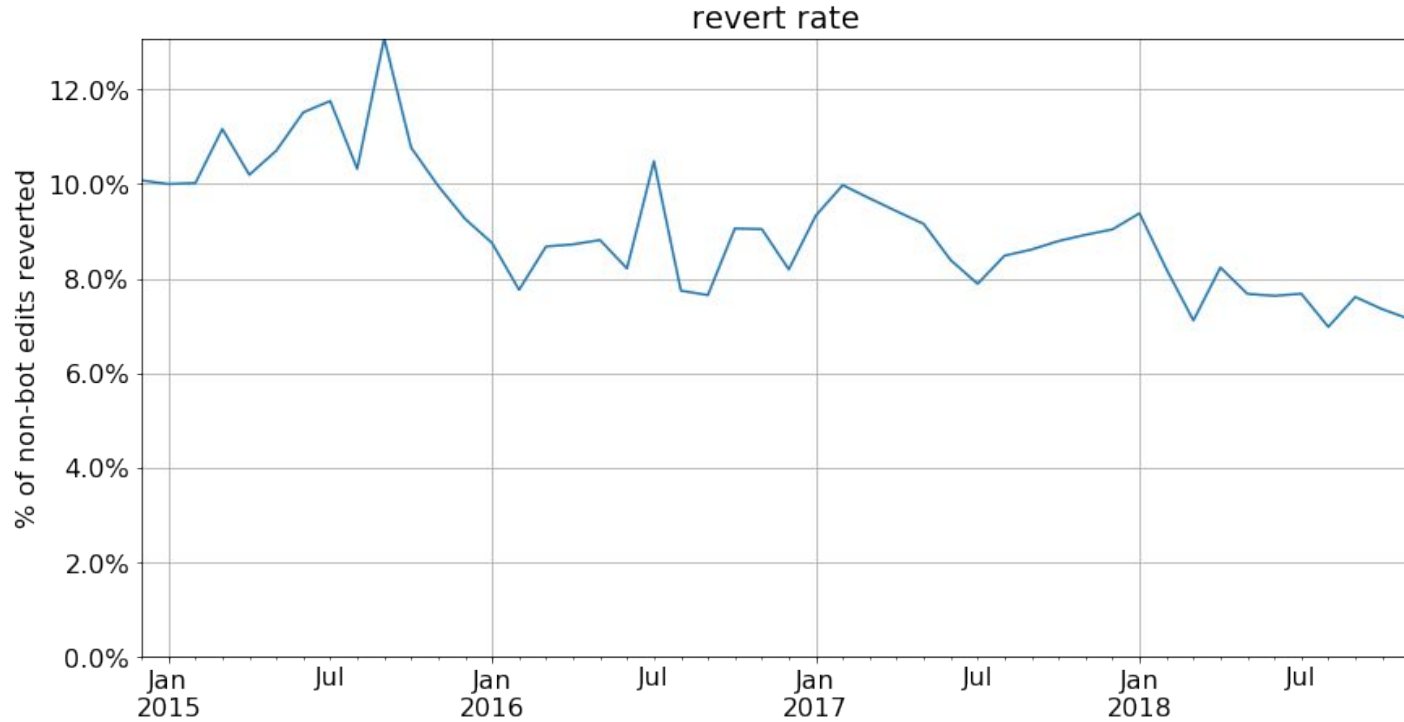
This appears to be due to the increase of mass editing.

Key Takeaways

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Key takeaways

- A longterm trend of declines in pageviews reversed in May, correlated with an **increase in Google impressions**

- We continue to see **growth in mobile readership**, which accelerated in May of 2018 compared to previous years' growth

- As **Wikipedia Zero partnerships are shut down**, we see some reductions in traffic

- Monthly active editors remain flat: a small but consistent long-term trend **2% YoY growth in active existing editors** balances out long-term trends of **declines in active first- and second-month editors**

- **Education programs** bring in new editors with high second-month retention but low sixth-month retention

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Questions?

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Appendix

Page Previews

- Page previews: mouseover popups with an excerpt of the linked article
  - The page previews feature rolled out gradually starting summer 2017, fully live & tracked April 2018
  - Although the feature had been live on most Wikipedias before, we only started to measure its usage consistently around April 2018.
- Previews are designed to save the cost of exploring a link by surfacing key information in a hover card. A/B tests indicate that previews reduced pageviews by 3-5% per session. However:
  - The feature was designed to save readers some clicks, so a decrease in pageviews was intentional
  - Previews are an important way readers can interact with content (hence our move to reporting on "interactions")
  - Previews are used 50-60 million times/day
- More on previews A/B test: https://www.mediawiki.org/wiki/Page_Previews/2017-18_A/B_Tests

(Linked from Slide 11: Interactions: Pageviews+Previews)

Example: search engine referral data

A user searches on Google for "es.wikipedia"
- Impressions:
  - 1 for es.wikipedia.org
  - 1 for en.wikipedia.org

The user clicks on the first link (https://es.wikipedia.org/wiki/Wikipedia:Portada) and arrives on Wikipedia. Then the user returns to search results and clicks on the third link (https://es.wikipedia.org/wiki/Wikipedia_en_español)
- Clicks:
  - 1 for es.wikipedia.org
  - 0 for en.wikipedia.org
- Click-through rate (CTR):
  - 100% for es.wikipedia.org
  - 0% for en.wikipedia.org
- Referrals (pageviews referred via Google):
  - 2

Google: What are impressions, position, and clicks?. Our search console data is grouping at the site level. (Linked from Search engine referrals: some background & Search engine referrals: Google Clicks)

Search engine referrals
Referred Pageviews: Notes

- We checked this change is not confined to a particular country or browser (or to only mobile/desktop). This makes it likelier that it was a change on Google's side.
- On the other hand, there is no clear match to the timing of publicly known Google algorithm updates.
- Search engine referrals account for ~7 billion pageviews/month, which is:
  - ~45% of our total pageviews (~16 billion/month) (those total pageviews include entrances/referrals, in addition to internal navigation)
  - Nearly 70% of entrances (traffic referred from external websites, search engines, or direct entrances; this excludes pageviews from internal navigation)

(Linked from Slide 17: Search engine referrals: Referred Pageviews)

Google dominates search engine referrals

- Google's share among all our search engine referrals: 91-93%

- Google's share among all our external referrals: 85-90%

(Additional discussion relating to Search engine referrals section)

Readers: Pageview Investigations

Global traffic trends (monthly, YoY)

Legend: ● Africa ● Asia ● Europe ● North America ● Oceania ● South America

- Asia & Europe show the largest trend reversals YoY, consistent with overall changes

- North & South America show a smaller shift from YoY declines to growth
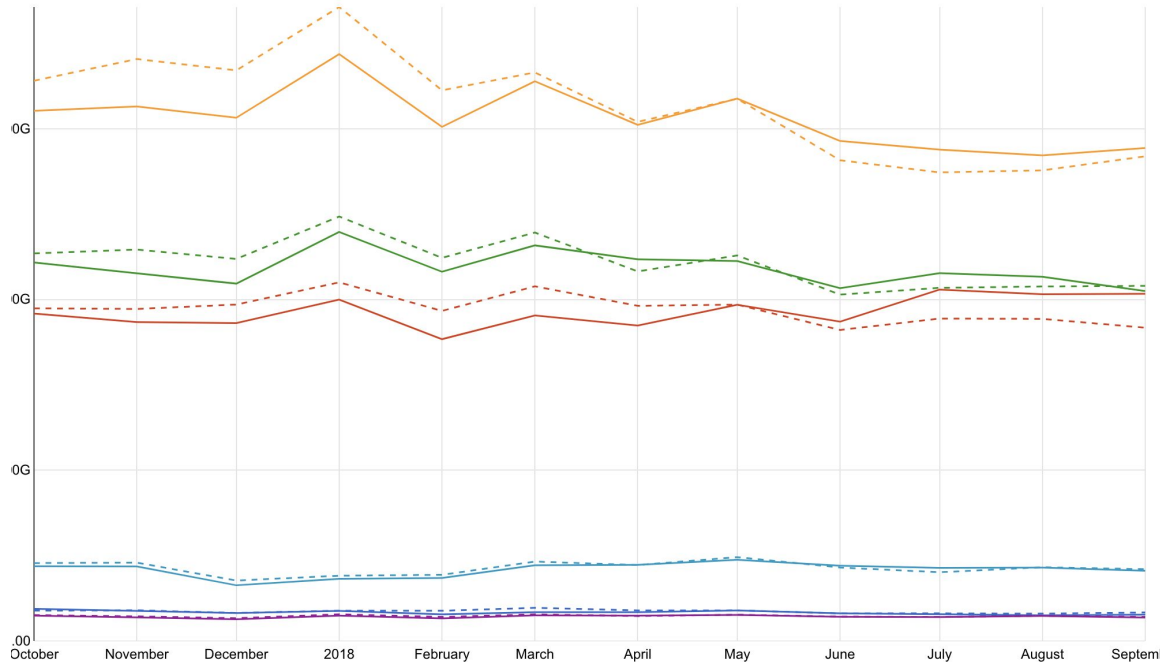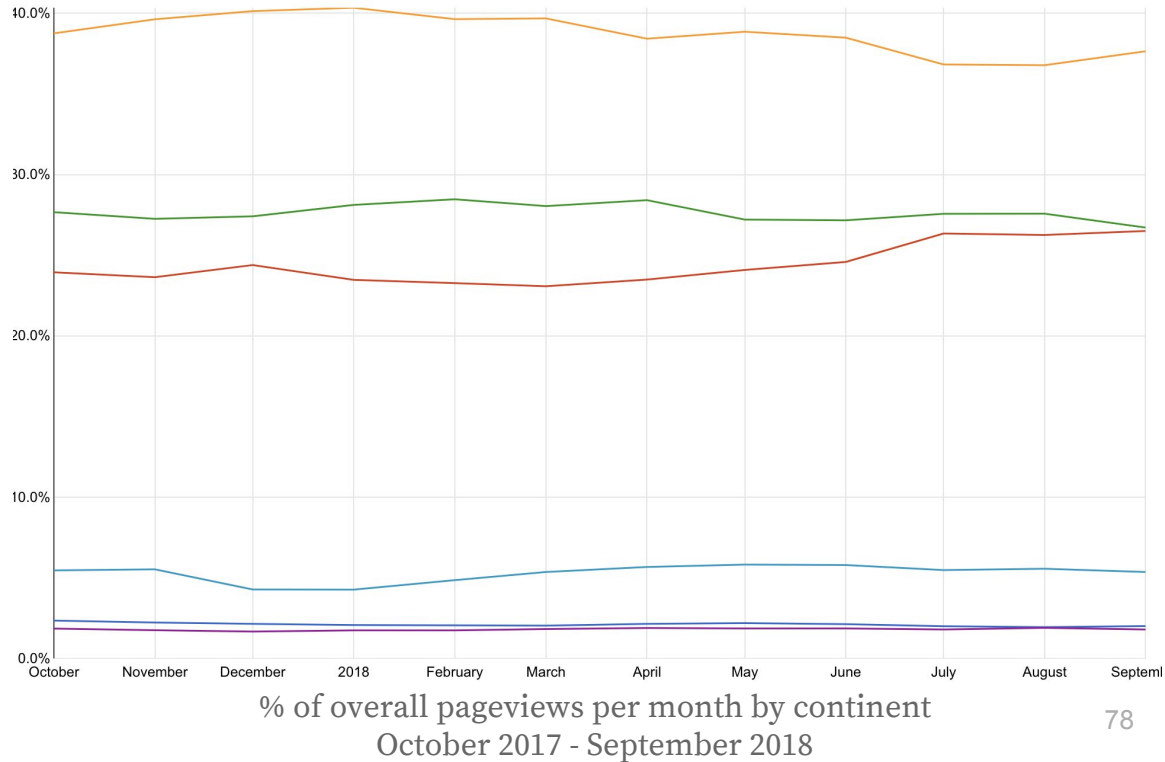
(This is a monthly version of weekly global data in pageviews discussion)

Pageviews per month by continent
October 2017 - September 2018 (solid line) vs 52 weeks prior (dotted line)

Global traffic trends (monthly %s)

- Shows shifting % of overall traffic, with Asia increasing

(Supplementary monthly contribution trends, related to [global data in pageviews discussion](#))

% of overall pageviews per month by continent
October 2017 - September 2018

Pageviews: Impact from desktop page previews feature

- A/B tests indicate that previews reduced pageviews by 3-5% per session. However:

  - The feature was designed to save readers some clicks, so a decrease in pageviews was intentional

  - Previews are an important way readers can interact with content (hence our move to reporting on "interactions")

  - Previews are used 50-60 million times/day

(Additional discussion relating to
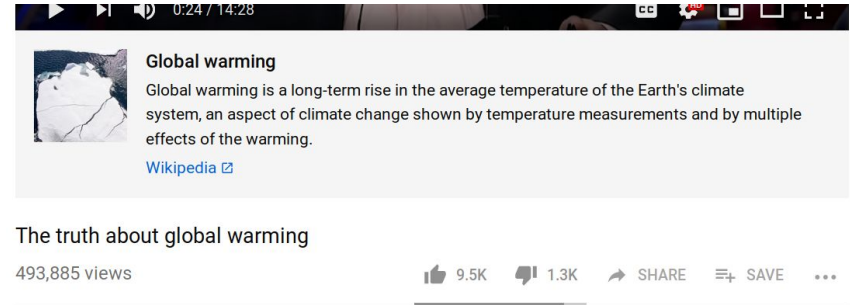*Interactions: Pageviews+Previews)*

YouTube Conspiracy Links
No significant impact on total pageviews

Small number of articles overall;
not a significant impact on traffic

Top referred articles in October (all enwiki):
- [Global warming](#)   39512
- [Federal Emergency Management Agency](#)
- [MMR vaccine](#)   314
- [Dulce Base](#)   295
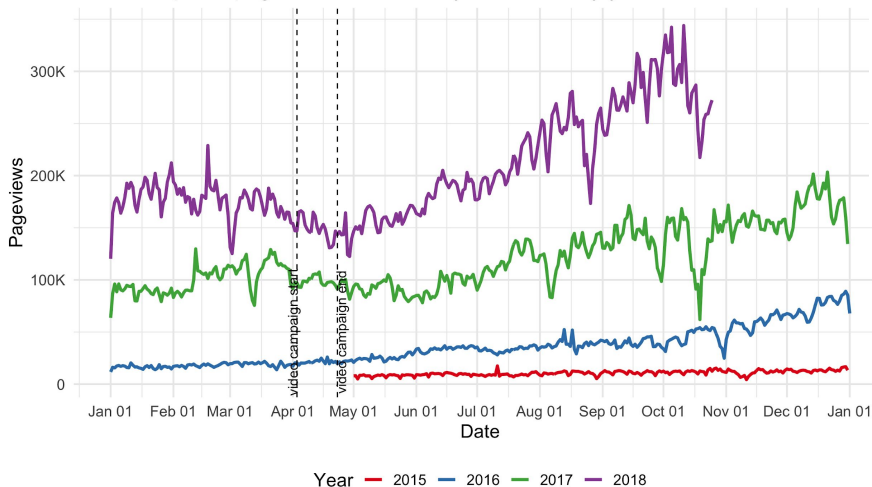- [Kecksburg UFO incident](#)   24

Global warming
Global warming is a long-term rise in the average temperature of the Earth's climate system, an aspect of climate change shown by temperature measurements and by multiple effects of the warming.
[Wikipedia](#)

The truth about global warming
493,885 views

9.5K   1.3K   SHARE   SAVE   ...

Hindi Video Campaign
No significant impact on total pageviews

On April 3 2018, we published and promoted the [Ektara video](#) on YouTube and Facebook targeting Hindi internet users in Madhya Pradesh, India, which was live for 3 weeks. On May 27 a second TV push happened during a major Cricket event targeting the whole country.

Hindi Wikipedia unique devices from India, by year
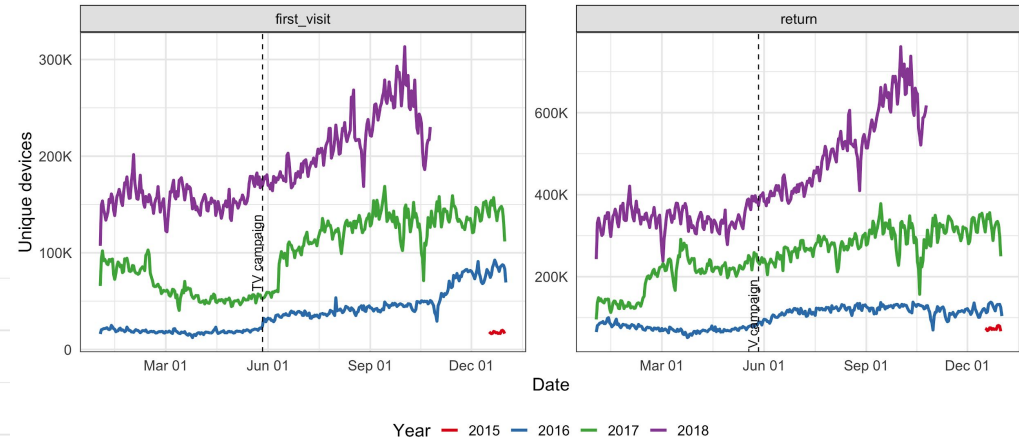
First visit represents devices coming from 1-hit session without cookies; return represents devices that have looked at wikipedia before.

Hindi Wikipedia pageviews from Madhya Pradesh, by year

The online promotion resulted in ~1.2k clickthroughs/day on average during the campaign period, but we didn't see a significant change in the overall pageviews to Hindi Wikipedia from Madhya Pradesh.
After the TV promotion, we saw no significant increase in pageviews, number of unique devices, nor first-time visit devices from India.
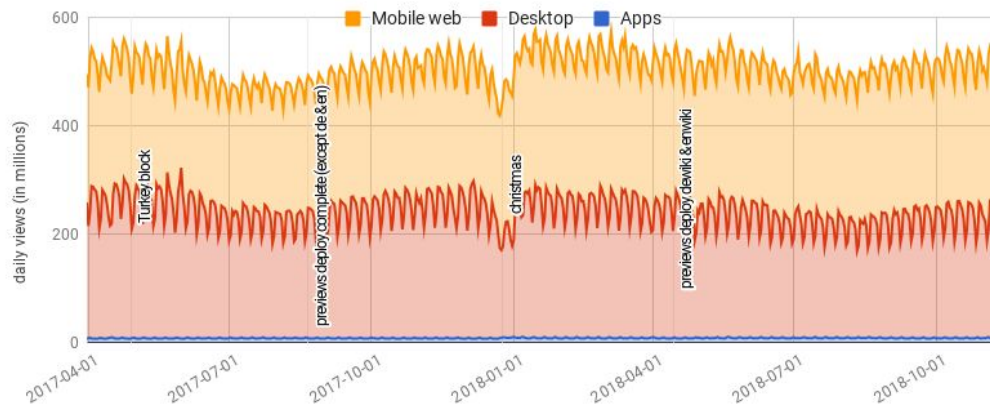
Traffic from India: ⬆ YoY

- YoY growth from India accelerated starting in May, but this is consistent with overall global patterns for 2018

- Device patterns are consistent with overall patterns (mobile is where we see growth)
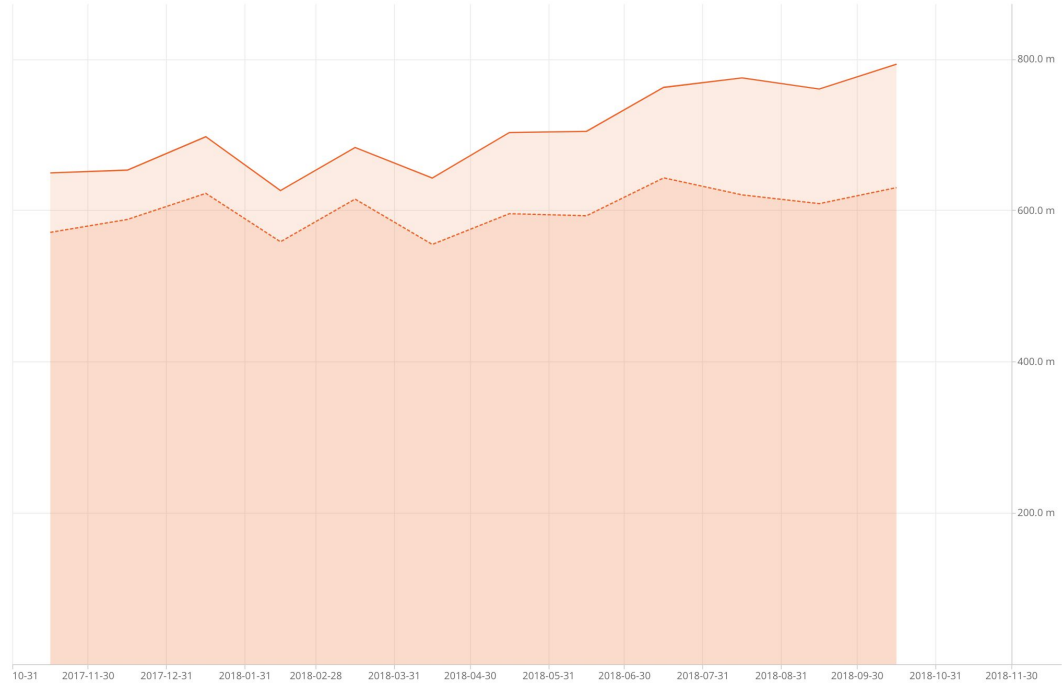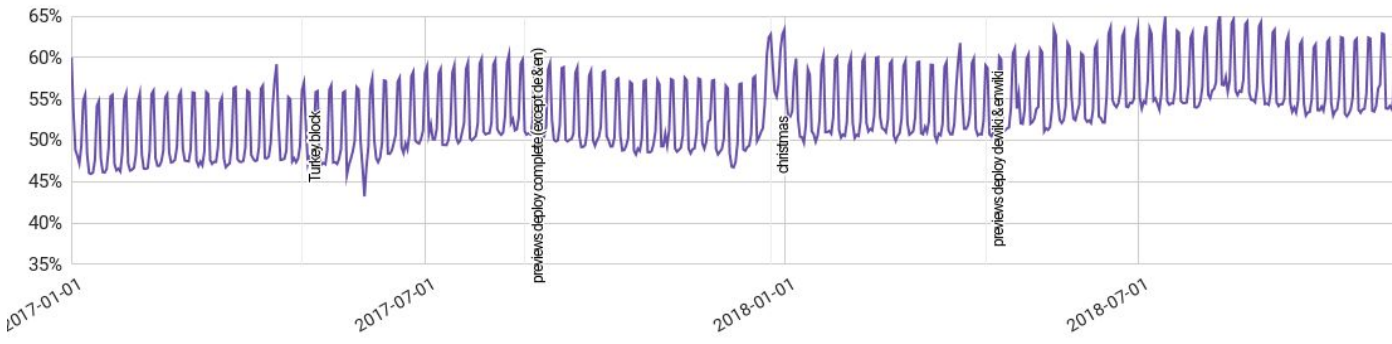
Readers: Pageviews by Device & Access Method

Pageviews by Access Method


Total Wikimedia pageviews, by access method

Percentage of mobile Wikimedia pageviews (web+apps)

Mobile vs desktop traffic by day

- Mobile device traffic spikes around weekends
    - Peaks on Sundays
    - Declines through workweek
    - Troughs on Fridays

- Desktop traffic spikes on Mondays
    - Remains high through workweek
    - Falls off on Saturday & Sunday

- September 2017: mobile traffic dominated weekends while desktop traffic dominated during the workweek

- September 2018: mobile traffic dominated desktop traffic all week
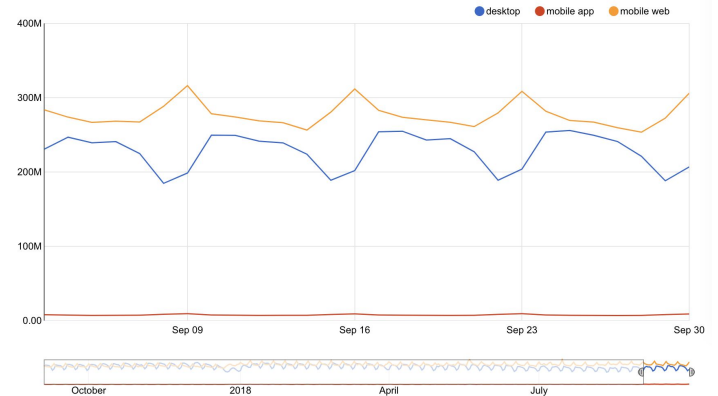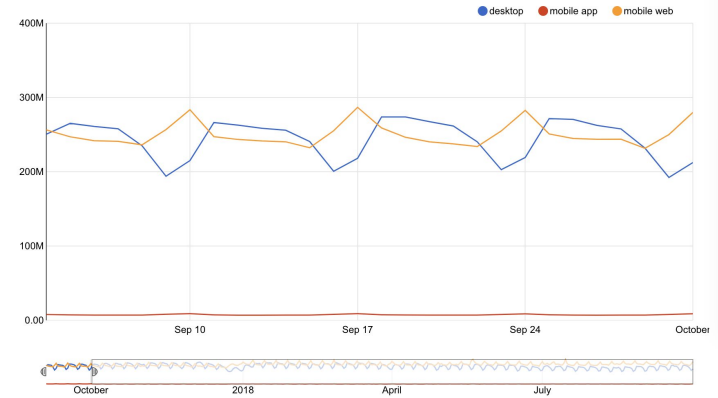
(Linked from Slide 35: Pageviews: longterm trends)

Unique devices

	Monthly unique devices Average April-September
Wikipedia (all languages)	1.5 billion +8% y-o-y

Unique devices visiting any Wikipedia project during a given month

- Useful for overall ballpark numbers
- Increases over time could be an artifact of cookies & changing technology (issues shared by other major websites)

(Linked from Slide 37: Unique devices)

Unique devices (all Wikipedias, mobile and desktop) ☆ ☑ Altered

19 rows | 00:00:01.39 | 🔗 | </> | .json | .csv | View Query

● SUM(uniques_estimate...

Readers: Mobile Apps

iOS

iOS app usage

iOS app usage	
Monthly pageviews	Q4: 79M YoY: N/A*
	Q1: 82M YoY: N/A*
Daily downloads	Q4: 3K YoY: -30.2%
	Q1: 3.7K YoY: -31.3%

Pageviews normalized to 30 days/month
*Includes a small correction for the remaining
effects of a pageview-affecting bug that arose in
December 2016, which also (together with another
bug from Q2016/17) makes year-over-year
comparisons unreliable

Wikipedia iOS app pageviews

- Pageviews on iOS app continue to increase in Q4 2017-18 & Q1 2018-19, with more pageviews in the summer attributed to school schedules.
- The downloads of the iOS app keep decreasing, with 30% fewer downloads compared to the previous year (higher levels in the previous year were likely linked to high levels advertising in the app store).

Android

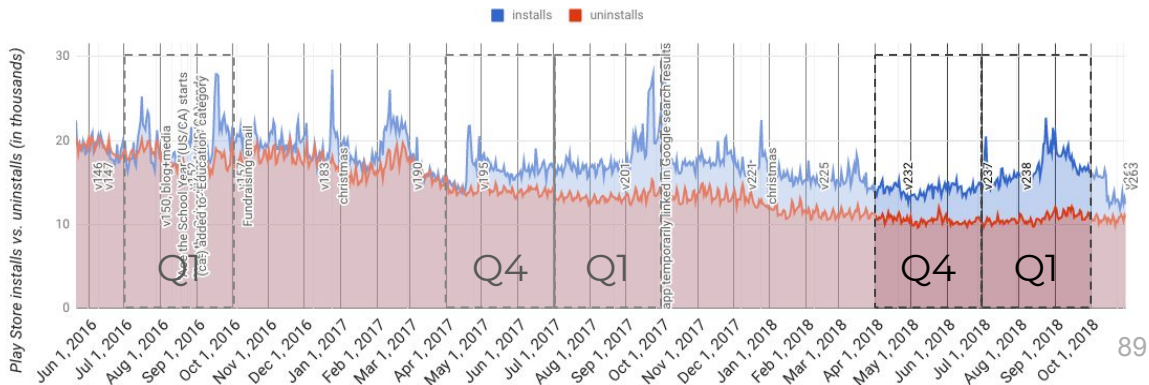| Usage & user acquisition		
	Q4	**Q1**
Monthly pageviews*	157.8M YoY: -1.8%	156.5M YoY: -0.68%
Monthly users	4.94M YoY: -14.9%	4.74M YoY: -15.3%
Average daily users	0.97M YoY: -7.5%	0.94M YoY: -6.77%
Average installs / day	16.5 K YoY: -14.3%	14.1 K YoY: -6.51%

more on next slide

* Pageviews normalized to 30 days/month

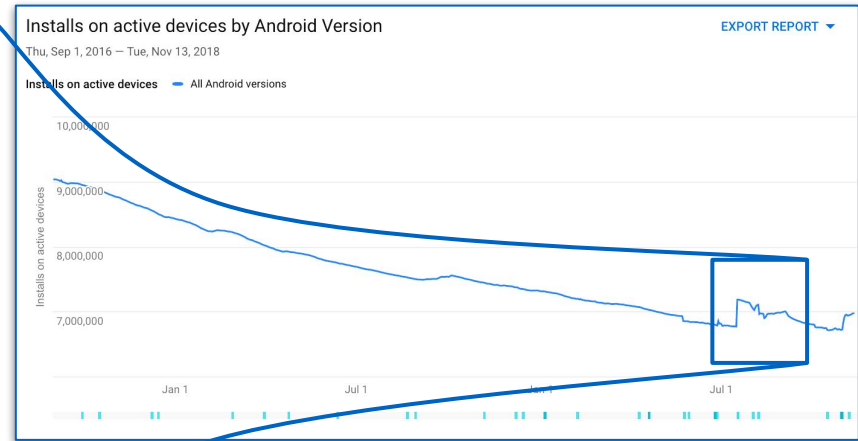**Wikipedia Android app pageviews**
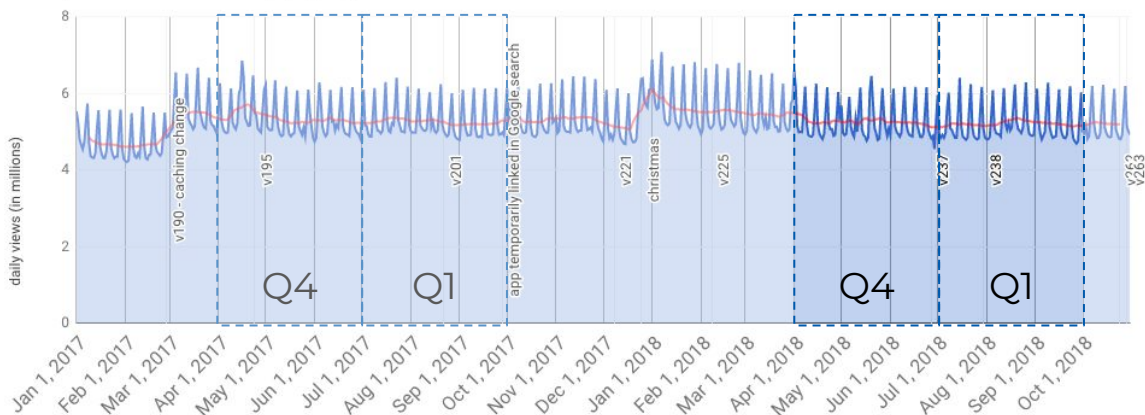
Wikipedia Android app daily installs and uninstalls (by device)

Android

Installs/day has been **decreasing over time** since Sep 2015, and so has the **number of active devices with the app installed** since Sep 2016 because our focus has *not* been on user acquisition.

Perhaps it should be after we've improved in-app editing.

Editors

New active editors: top gains & declines

Project	Four-year change in monthly new active editors	
Wikidata	↑ 434	**↑ 122%**
Persian Wikipedia	↑ 114	↑ 44%
French Wikipedia	↑ 63	↑ 8%
Japanese Wikipedia	↑ 40	↑ 6%
Hindi Wikipedia	↑ 27	**↑ 151%**
Marathi Wikipedia	↑ 24	**↑ 481%**
Estonian Wikipedia	↑ 20	**↑ 82%**
Indonesian Wikipedia	↑ 19	↑ 11%
Bangla Wikipedia	↑ 19	↑ 53%

Project	Four-year change in monthly new active editors	
English Wikipedia	↓ 2 528	↓ 32%
Spanish Wikipedia	↓ 412	↓ 28%
Turkish Wikipedia	↓ 248	**↓ 88%**
Wikimedia Commons	↓ 239	↓ 10%
German Wikipedia	↓ 191	↓ 29%
Russian Wikipedia	↓ 163	↓ 26%
Portuguese Wikipedia	↓ 144	↓ 30%
Korean Wikipedia	↓ 89	↓ 34%
Italian Wikipedia	↓ 84	↓ 20%