

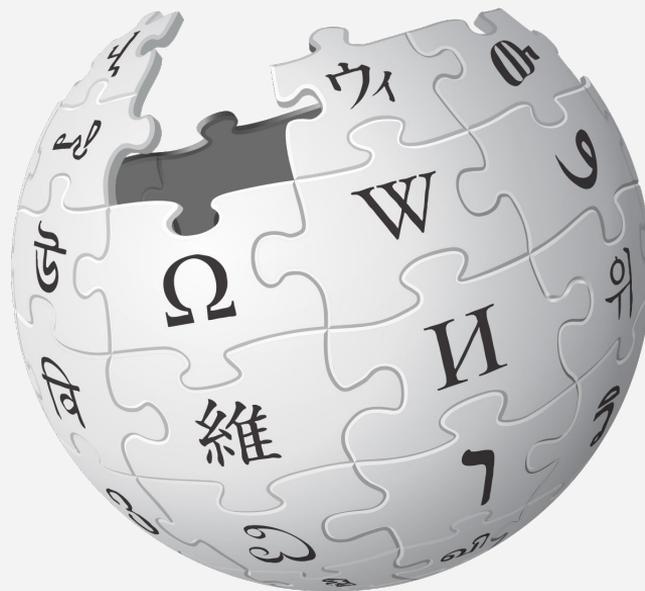


Wiki Addition Viewer: An extension to add insights to your Wikipedia experience

Shirin, PJ, Luisa, Etienne, Duc

2022-2023 Comps

Advisor: Sneha Narayan





01 Project Overview and Motivation

Introduction to our comps project, use cases, and motivation

02 Use Cases

Going through how our extension can be useful

03 Background

Looking into past examples

04 Architecture

Diagram of our extension's design, Wikipedia APIs

05 Features

Graph, highlighting, text matching



06 User Study

We conducted 2 user studies

07 Live Demo

It works!

08 Future Improvement

Data interpretation, authorship, talk page

09 Conclusion

Performance, acknowledgements, and references



01

Project Overview and Motivation



Carleton College

12 languages ▼

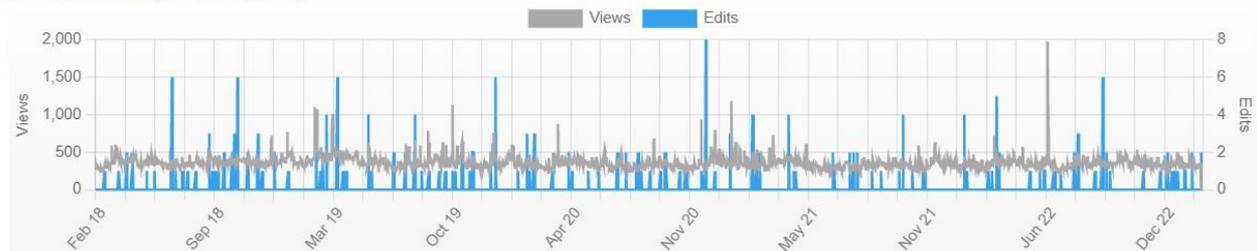
Article [Talk](#)

[Read](#) [Edit](#) [View history](#)

From Wikipedia, the free encyclopedia

[ALL](#) [5Y](#) [3Y](#) [1Y](#) [6M](#) [3M](#)

Coordinates: 44°27′43″N 93°9′13″W﻿ / ﻿



4/27/2018

[Highlight Changes](#)

We highlighted **111** changes which represent additions to the page between [4/27/2018](#) (the closest revision to your chosen time) and the present day. Some of the changes were purely formatting or deletions and, therefore, are not highlighted.

This article is about the college in Minnesota, United States. For the university in Ontario, Canada, see [Carleton University](#).

Carleton College (/ˈkɑːrltɪn/ *KARL-tin*) is a [private liberal arts college](#) in [Northfield, Minnesota](#).^[7] [Founded in 1866](#), it had 2,105 undergraduate students and 269 faculty members in fall 2016. The 200-acre main campus is between Northfield and the 800-acre [Cowling Arboretum](#), which became part of the campus in the 1920s.^[8]

Admissions is highly selective with an acceptance rate of 16.5% in 2022,^[9] and Carleton is annually ranked near the top in most rankings of liberal arts schools. Carleton is particularly renowned for its undergraduate teaching, having been ranked #1 in Undergraduate Teaching by [U.S. News & World Report](#) for over a decade.^[10]

[Students can choose courses from 33 major programs and 31 minor programs and have the option to design their own major.](#) Carleton's varsity sports compete at the [NCAA Division III](#) level in the [Minnesota](#)

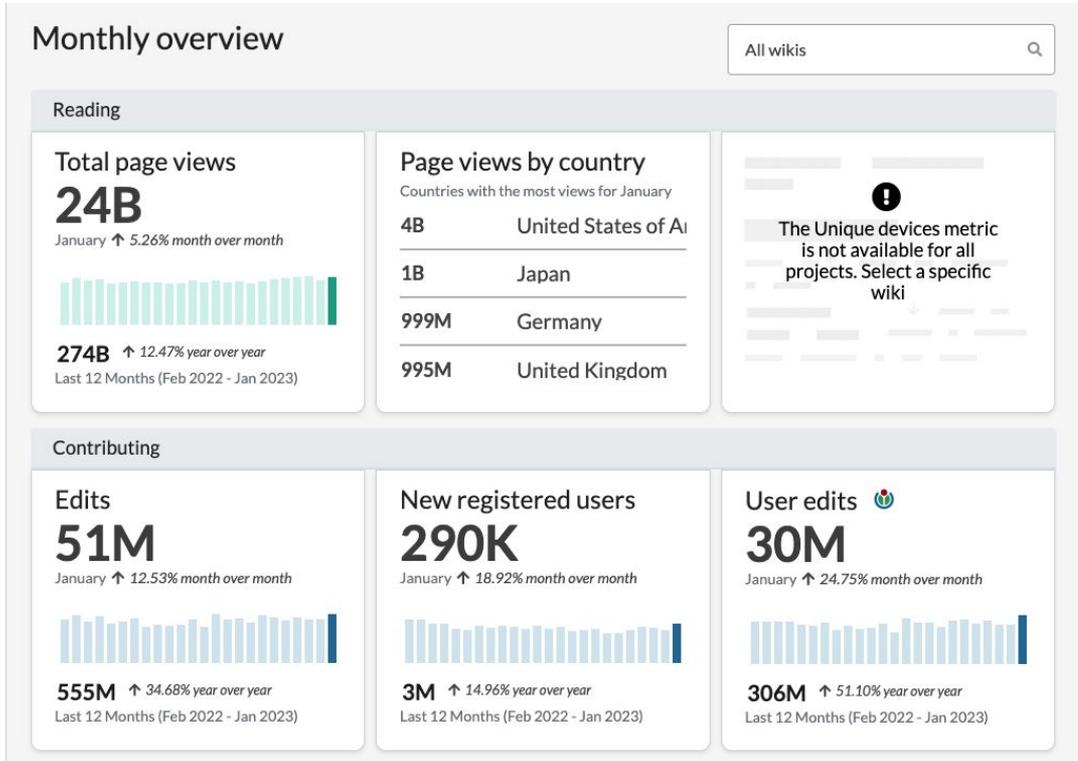
Carleton College



Latin: *Collegium Carleton*

Former names Northfield College (1866–1871)

Why Choose Wikipedia?



From Wikimedia Statistics



History Page

Problem:

- Not visible to readers
- Not intuitive (very hard to make sense of the revisions)

Carleton College: Revision history



Article Talk

Read Edit

View history

View logs for this page (view filter log)

Filter revisions

External tools:

Find addition/removal · Find edits by user · Page statistics · Pageviews · Fix dead links

For any version listed below, click on its date to view it. For more help, see Help:Page history and Help:Edit summary. (cur) = difference from current version, (prev) = difference from preceding version, m = minor edit, → = section edit, ← = automatic edit summary

(newest | oldest) View (newer 50 | older 50) (20 | 50 | 100 | 250 | 500)

Compare selected revisions

- (cur | prev) 17:14, 8 February 2023 137.22.90.29 (talk) .. (63,881 bytes) (-6) .. (→Athletics) (undo) (Tag: Manual revert)
- (cur | prev) 17:14, 8 February 2023 137.22.90.29 (talk) .. (63,887 bytes) (+6) .. (→Athletics) (undo) (Tag: Reverted)
- (cur | prev) 15:03, 28 January 2023 Wmtribe2015 (talk | contribs) .. (63,881 bytes) (+48) .. (added years to former name) (undo)
- (cur | prev) 04:20, 28 January 2023 WikiCleanerBot (talk | contribs) m .. (63,833 bytes) (0) .. (v2.05b - Bot T20 CW#61 - Fix errors for CW project (Reference before punctuation)) (undo) (Tag: WPCleaner)
- (cur | prev) 18:04, 26 January 2023 Banks Irk (talk | contribs) .. (63,833 bytes) (+337) .. (→Academics: most popular majors, more recent source) (undo)
- (cur | prev) 19:59, 16 January 2023 Wozal (talk | contribs) .. (63,496 bytes) (+84) .. (added Category:Universities and colleges accredited by the Higher Learning Commission using HotCat) (undo)
- (cur | prev) 08:05, 10 January 2023 Blaylockjam10 (talk | contribs) .. (63,412 bytes) (-8) .. (undo)
- (cur | prev) 23:27, 6 January 2023 Jweiss11 (talk | contribs) .. (63,420 bytes) (-12) .. (ce in lead: ultimate is not an NCAA sport) (undo)
- (cur | prev) 04:04, 31 December 2022 TortillaDePapas (talk | contribs) .. (63,432 bytes) (-4) .. (specified [of what] tag) (undo) (Tag: Visual edit)
- (cur | prev) 03:49, 31 December 2022 TortillaDePapas (talk | contribs) m .. (63,436 bytes) (-3) .. (removed space between some citations) (undo) (Tag: Visual edit)
- (cur | prev) 08:12, 27 December 2022 Liruqi (talk | contribs) m .. (63,439 bytes) (0) .. (Fix en wikitable style syntax, src: https://github.com/liruqi/wikipedia/blob/master/wikitable.py) (undo)
- (cur | prev) 02:56, 19 December 2022 Rublamb (talk | contribs) .. (63,439 bytes) (+12) .. (updated short description) (undo)
- (cur | prev) 04:29, 21 November 2022 Nick Number (talk | contribs) .. (63,427 bytes) (+35) .. (repaired link(s) to disambiguation pages (you can help); mdy dates) (undo)



History Page (Compare Revision)

Compare selected revisions

- [\(cur | prev\)](#) 17:14, 8 February 2023 13'
- [\(cur | prev\)](#) 17:14, 8 February 2023 13'
- [\(cur | prev\)](#) 15:03, 28 January 2023 Wi
- [\(cur | prev\)](#) 04:20, 28 January 2023 Wi
- [\(cur | prev\)](#) 18:04, 26 January 2023 Ba
- [\(cur | prev\)](#) 19:59, 16 January 2023 Wc
- [\(cur | prev\)](#) 08:05, 10 January 2023 Blk
- [\(cur | prev\)](#) 23:27, 6 January 2023 Jwe
- [\(cur | prev\)](#) 04:04, 31 December 2022
- [\(cur | prev\)](#) 03:49, 31 December 2022
- [\(cur | prev\)](#) 08:12, 27 December 2022
- [\(cur | prev\)](#) 02:56, 19 December 2022
- [\(cur | prev\)](#) 04:29, 21 November 2022
- [\(cur | prev\)](#) 15:43, 26 September 2022
- [\(cur | prev\)](#) 19:42, 20 September 2022
- [\(cur | prev\)](#) 19:42, 20 September 2022
- [\(cur | prev\)](#) 23:06, 14 September 2022

From Wikipedia, the free encyclopedia

Coordinates: 44°27′43″N 93°9′13″W﻿ / ﻿﻿ / ﻿ [Help](#)

Browse history interactively

Revision as of 23:06, 14 September 2022 (edit)

Latest revision as of 17:14, 8 February 2023 (edit) (undo)

[Qzd](#) (talk | contribs)

[137.22.90.29](#) (talk)

[m](#) (Reverted edits by [DarwyAvery](#) (talk) to last version by [Wikipelli](#))

[\(→Athletics\)](#)

(Tags: Rollback, SWViewer [1.4])

(Tag: Manual revert)

[← Previous edit](#)

(15 intermediate revisions by 14 users not shown)

Line 1:

- {{Short description|Private liberal arts college in Minnesota, U.S.}}

{{About|the college in Minnesota, United States|the university in Ontario, Canada|Carleton University}}

{{Infobox university

|name = Carleton College

Line 6:

|image_upright = 1.1

|latin_name = Collegium Carleton

- |former_names = Northfield College

|motto = ''Declaratio Sermonum Tuorum Illuminat'' ([[Latin]])

|mottoeng = The Revelation / Announcement of

Line 1:

+ {{Short description|Private liberal arts college in Northfield, Minnesota, U.S.}}

{{About|the college in Minnesota, United States|the university in Ontario, Canada|Carleton University}}

+ {{Use mdy dates|date=November 2022}}

{{Infobox university

|name = Carleton College

Line 7:

|image_upright = 1.1

|latin_name = Collegium Carleton

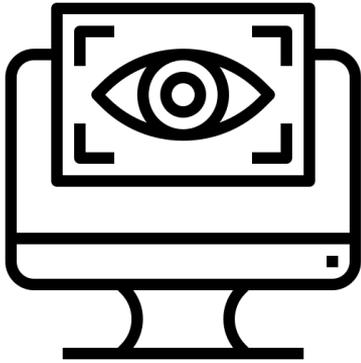
+ |former_names = Northfield College (1866–1871)

|motto = ''Declaratio Sermonum Tuorum Illuminat'' ([[Latin]])

|mottoeng = The Revelation / Announcement of



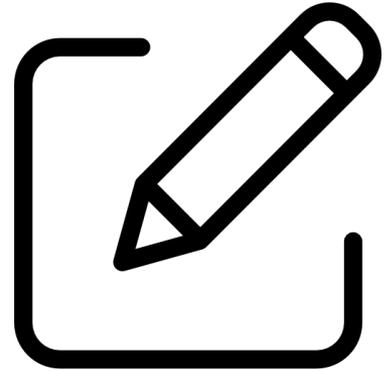
Goals of Our Extension



Visualize



Explore



Interact



02

Use Cases



New Changes

Directs attention to new changes on the page from highlights:
Users can identify any new changes made on the page.

Personal life [\[edit \]](#)

She has close friendships with [Jordyn Woods](#), [Normani](#), [Winnie Harlow](#), and [Ryan Destiny](#), according to *Essence*.^[27]

Relationships [\[edit \]](#)

In January 2016, she began dating [Dutch yute Memphis Depay](#). They were engaged in June 2017^[28] and separated by 2018.^[29]

Following the end of her engagement to Depay, Harvey was [briefly](#) linked to British racing driver [Lewis Hamilton](#) and R&B singer [Trey Songz](#). She was later linked with the rapper [Future](#); the pair confirmed their relationship in January 2020, and broke up in August of that year.^[30] Future later took aim at Harvey on his featured verse on the song "[Maybach](#)" by [42 Dugg](#), with the lyrics "Magic City, I'm the owner. Tell Steve Harvey, I don't want her".^[31]

In November 2020, Harvey began dating actor [Michael B. Jordan](#).^[32] In December 2021, Jordan declared in an interview with *The Hollywood Reporter*, that he "finally found what love was" with Harvey.^[33] In June 2022, it was reported that the couple had ended their relationship.^[34]

[Harvey confirmed that she is dating actor Damson Idris](#), in January 2023.^[35]

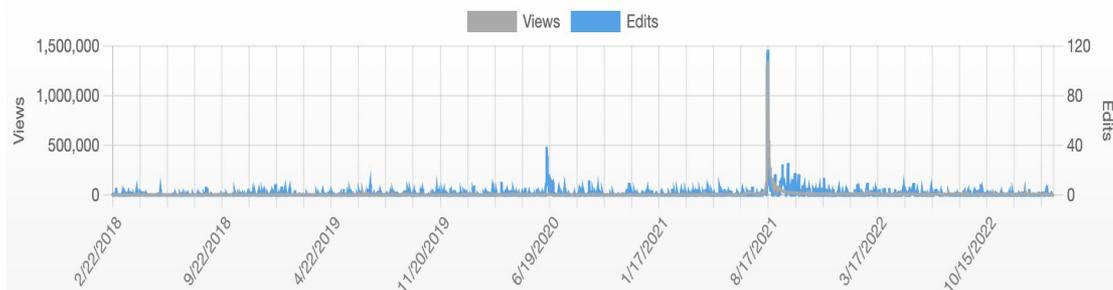


Make Connections between Peaks on Graph and Current Affairs

From Wikipedia, the free encyclopedia

[ALL](#) [5Y](#) [3Y](#) [1Y](#) [6M](#) [3M](#)

Coordinates: [34°31'N 69°11'E](#)



8/23/2020

[Highlight Changes](#)

Comparing the current Wikipedia page to the [8/23/2020 version](#) (the closest revision to your chosen time)

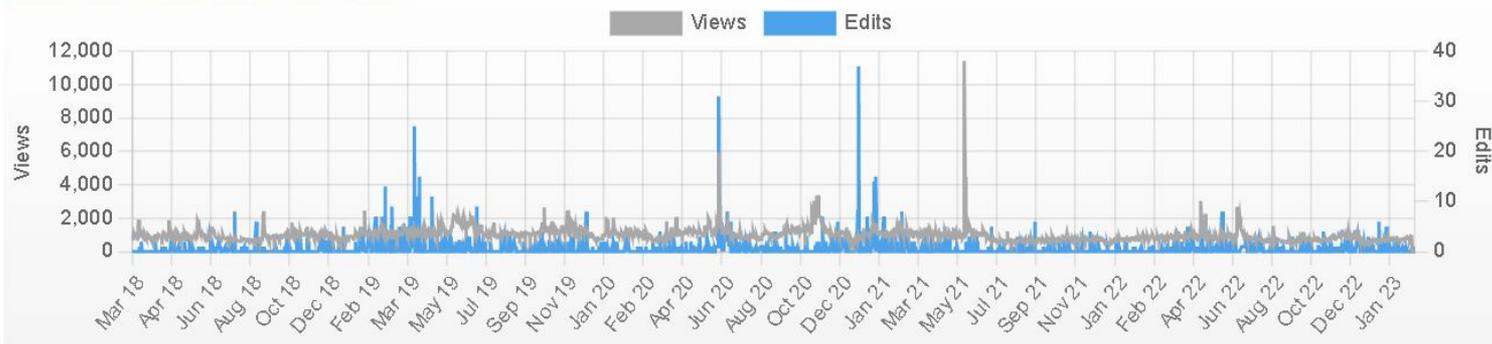
Newly added texts are highlighted in green, but the deletions are not included

This is the Wikipedia page for Afghanistan. Here, we can see that on 17th August, 2021, the page received an unprecedented amount of views and edits.



Updating on current affairs

LGBT rights in the United States

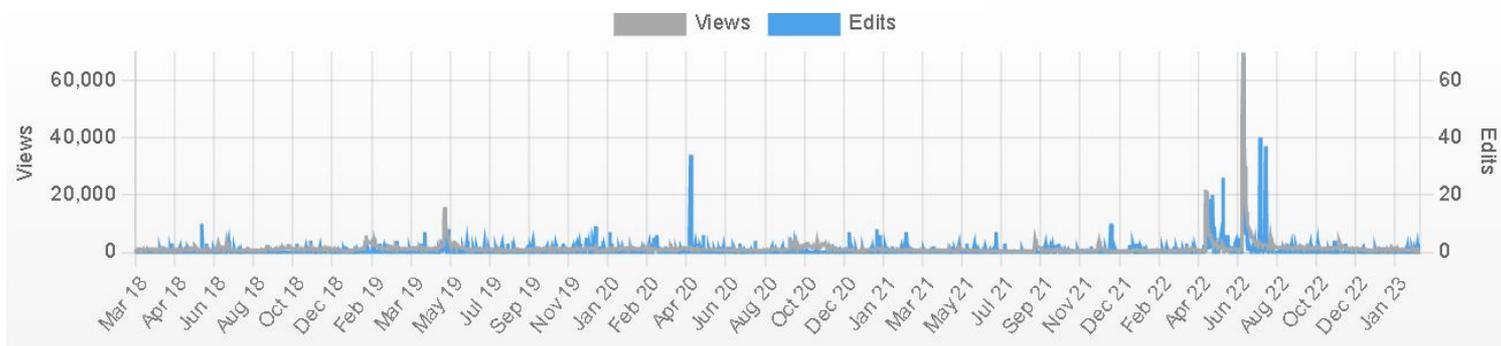


On January 25, 2021, the new [Biden Administration](#) revoked Trump's ban through an executive order, reverting the policy regarding [Transgender people and military service](#) to what it was in 2016 under the [Obama Administration](#). Transgender personnel are now allowed to serve in the military under varying conditions and requirements. On April 30, 2021, the United States Department of Defense enacted a new policy calling for better medical access and gender marker assistance to transgender people serving in the United States Military.^{[88][89]}



Updating on current affairs

Abortion in the United States



On January 28th, 2023, the Minnesota state Senate passed a bill guaranteeing women's rights to abortion and other reproductive medicine which was signed into law on January 31st. The bill prohibits state and local governments from attempting to restrict access to sterilization or prenatal care, while also requiring contraceptive cost compensation.^{[202][203]}

View and Edit History

Shows insight on
edit and view
history on the
graph

Black Lives Matter

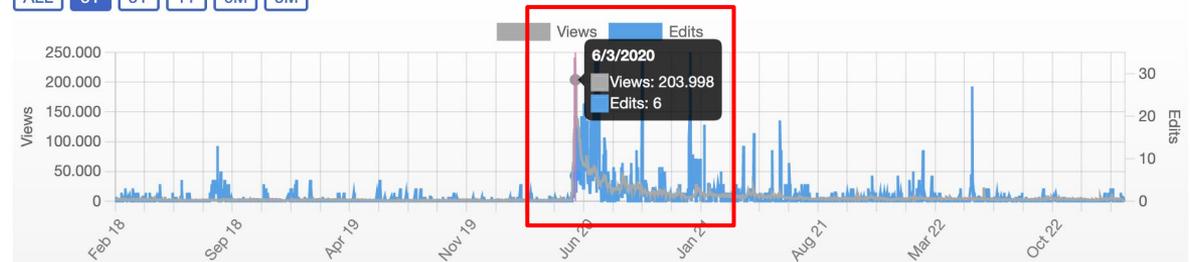
 70 languages ▾

Article [Talk](#)

[Read](#) [View source](#) [View history](#)

From Wikipedia, the free encyclopedia

[ALL](#) [5Y](#) [3Y](#) [1Y](#) [6M](#) [3M](#)



8/22/2020

[Highlight Changes](#)

We highlighted **490** changes which represent additions to the page between [8/23/2020](#) (the closest revision to your chosen time) and the present day. Some of the changes were purely formatting or deletions and, therefore, are not highlighted.



Compare Differences Between Revisions

We highlighted **144** changes which represent additions to the page between [12/28/2022](#) (the closest revision to your chosen time) and the present day. Some of the changes were purely formatting or deletions and, therefore, are not highlighted.

Provides a more interactive way to get to compare differences between revision page

2022–2023 Brazilian election protests: Difference between revisions

4 languages

[Article](#) [Talk](#)

[Read](#) [Edit](#) [View history](#)

From Wikipedia, the free encyclopedia

[Help](#)

Browse history interactively

[Revision as of 16:36, 28 December 2022 \(edit\)](#)

[Latest revision as of 21:18, 11 February 2023 \(edit\) \(undo\)](#)

[Roman Reigns Fanboy \(talk | contribs\)](#)

[SnoopyBird \(talk | contribs\)](#)

[\(→ Timeline\)](#)

(Tags: Mobile edit, Mobile web edit, Advanced mobile edit)

(protests started in the night of october 30, not october 31 (and carried into 2023, by the way). also adding that the protests (as far as we know) ended.)

[← Previous edit](#)

(173 intermediate revisions by 59 users not shown)

Line 2:

Line 2:

```
{{use dmy dates|date=November 2022}}
```

```
{{use dmy dates|date=November 2022}}
```

```
{{Infobox civil conflict
```

```
{{Infobox civil conflict
```

```
- | title = 2022 Brazilian election protests
```

```
+ | title = 2022–2023 Brazilian election protests
```

```
+ | partof =
```



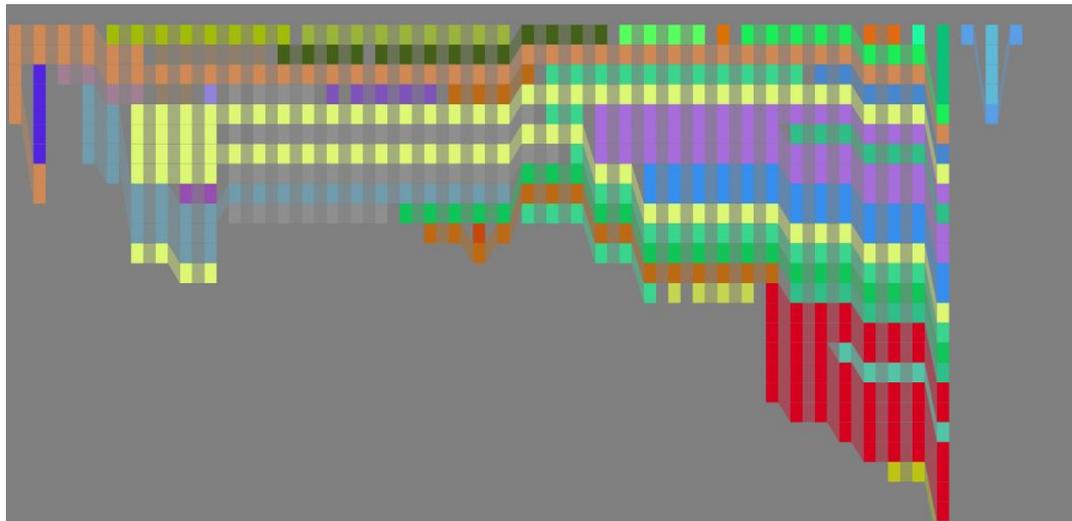
03

Background



Wiki History Flow

- Visualizes edit history from a given wikipedia article
- No strong connection to the text on the page

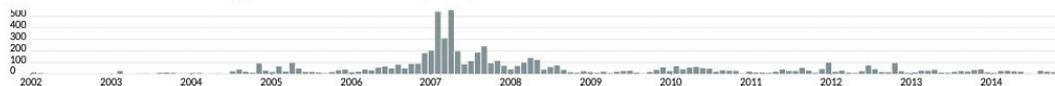




Contropedia

- Highlights links based on controversy metrics
- Has non-interactive time histories of edit history
- Only highlight links
- In a sandbox with example articles

Global warming controversy :: layer view

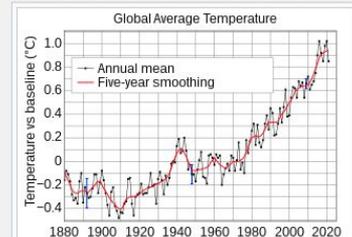


① Currently viewing revision 639708480 from 2014-12-26 18:28:11, with controversy scores calculated since 2002-01-14 18:24:14

Global warming controversy

The **global warming controversy** concerns the public debate over whether **global warming** is occurring, how much has occurred in modern times, what has caused it, what its **effects** will be, whether any action should be taken to curb it, and if so what that action should be. In the **scientific literature**, there is a **strong consensus that global surface temperatures have increased** in recent decades and that the trend is caused primarily by human-induced emissions of greenhouse gases.^{[2][3][4][5][6]} No scientific body of national or international standing **disagrees with this view**,^[7] though a few organizations with members in **extractive industries** hold **non-committal positions**.^[8] Disputes over the key scientific facts of global warming are now more prevalent in the **popular media** than in the scientific literature, where such issues are treated as resolved, and more in the **United States** than **globally**.^{[9][10]}

Primary issues concerning the existence and cause of climate change include the reasons for the increase seen in the **instrumental temperature record**, whether the warming trend exceeds normal climatic variations, and whether **human activities have contributed significantly to it**. Scientists have



Global mean land-ocean temperature change from 1880–2012, relative to the 1951–1980 mean. The black line is the



Our Extension

- Shows an interactive time series for views and edits
- Highlights text that has been added between current and a given time
- Links people to the revision comparison page
- Works on any English Wikipedia page in real time

Carleton College

12 languages

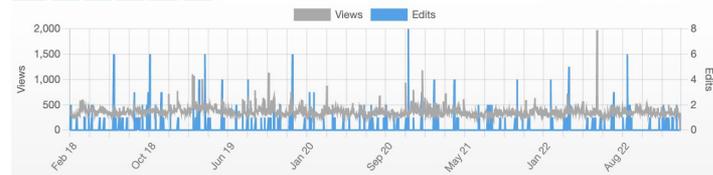
Article Talk

Read Edit View history

From Wikipedia, the free encyclopedia

ALL 5Y 3Y 1Y 6M 3M

Coordinates: 44°27′43″N 83°9′13″W



8/21/2020 Highlight Changes

We highlighted 40 changes which represent additions to the page between 8/28/2020 (the closest revision to your chosen time) and the present day. Some of the changes were purely formatting or deletions and, therefore, are not highlighted.

This article is about the college in Minnesota, United States. For the university in Ontario, Canada, see Carleton University.

Carleton College (/ˈkɑːrlɪtɪn/ *KARL-tin*) is a *private liberal arts college* in Northfield, Minnesota.^[1] Founded in 1866, it had 2,105 undergraduate students and 269 faculty members in fall 2016. The 200-acre main campus is between Northfield and the 800-acre *Cowling Arboretum*, which became part of the campus in the 1920s.^[8]

Admissions is highly selective with an acceptance rate of 16.5% in 2022,^[9] and Carleton is annually ranked near the top in most rankings of liberal arts schools. Carleton is particularly renowned for its undergraduate teaching, having been ranked #1 in Undergraduate Teaching by *U.S. News & World Report* for over a decade.^[10]

Students can choose courses from 33 major programs and 31 minor programs and have the option to design their own major. Carleton's varsity sports compete at the **NCAA Division III level** in the **Minnesota Intercollegiate Athletic Conference**.

Carleton is also known for its ultimate Frisbee team, which has won multiple

Carleton College



Latin: *Collegium Carleton*

Former names Northfield College (1866–1871)

Motto *Declaratio Sermonum Tuorum Illuminat* (Latin)

Motto in English The Revelation / Announcement of Your



04

Architecture

Browser Extension

General idea

- Background scripts - persisting scripts (server)
- Content scripts - javascript inserted into the current webpage
- Popup - Toolbar button page
- Options page
- Web accessible resources - files your extension can access like images and videos

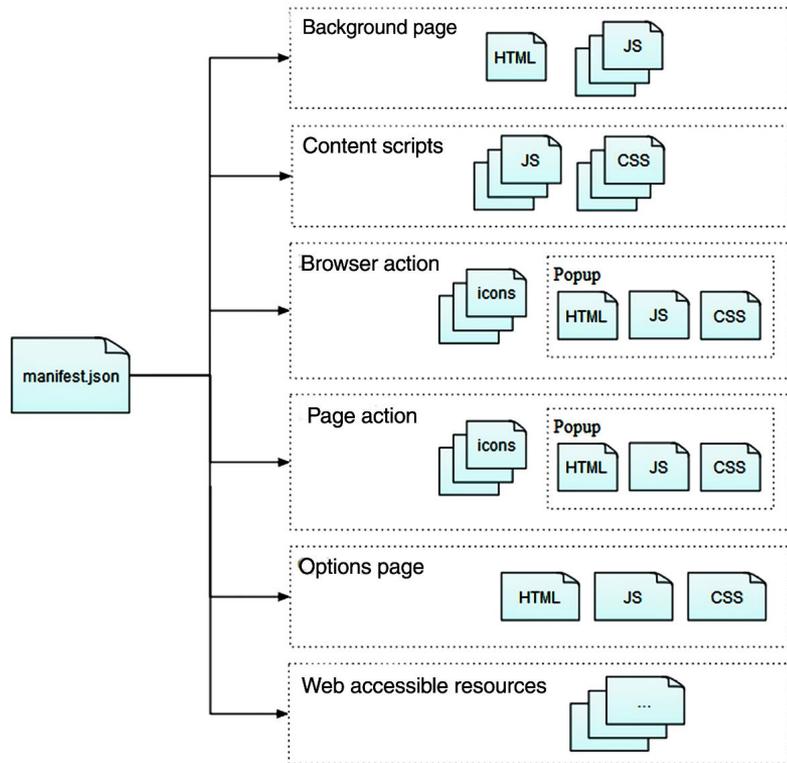


Diagram - On Page Load

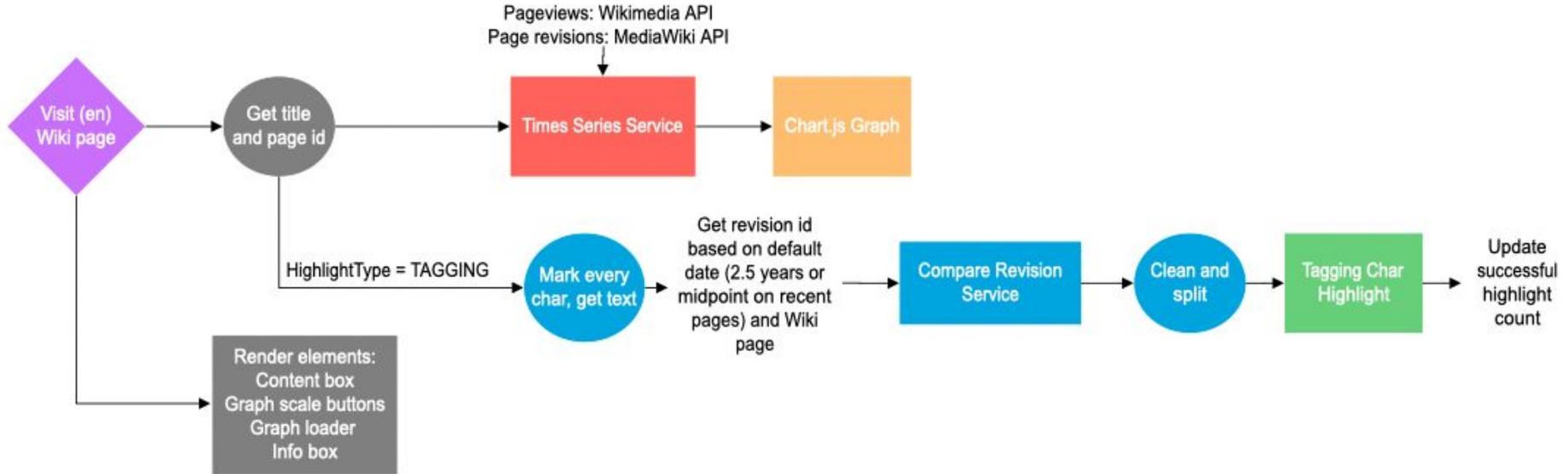
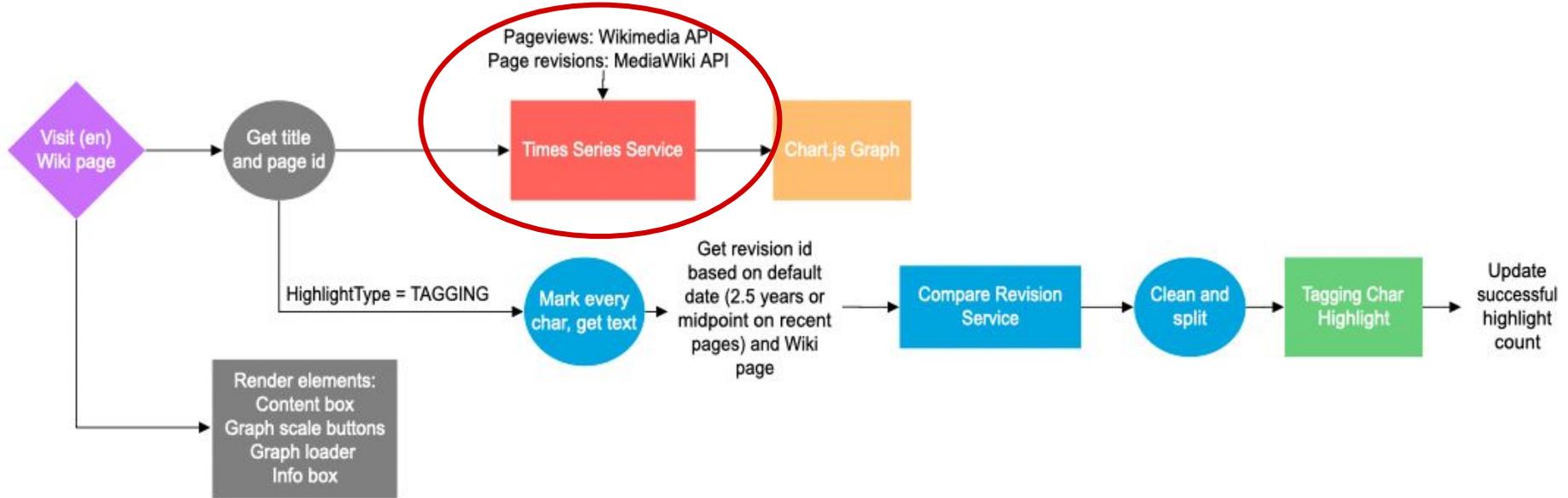
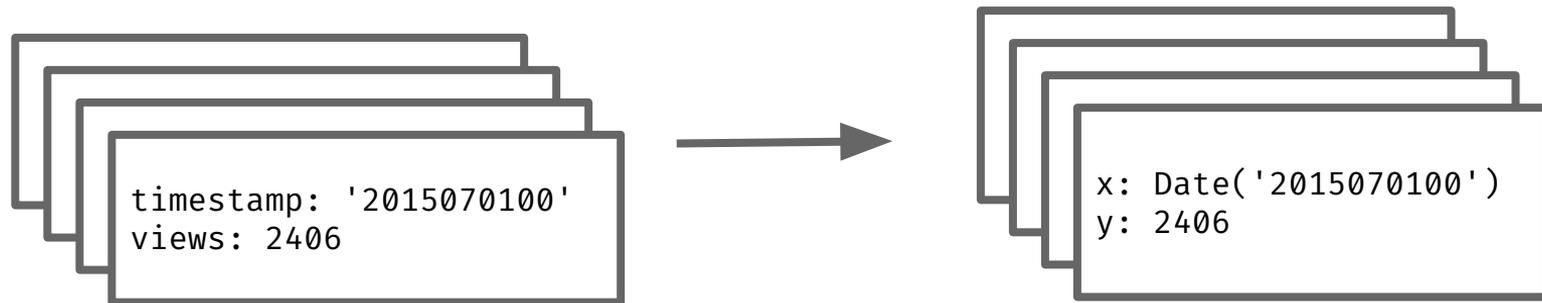


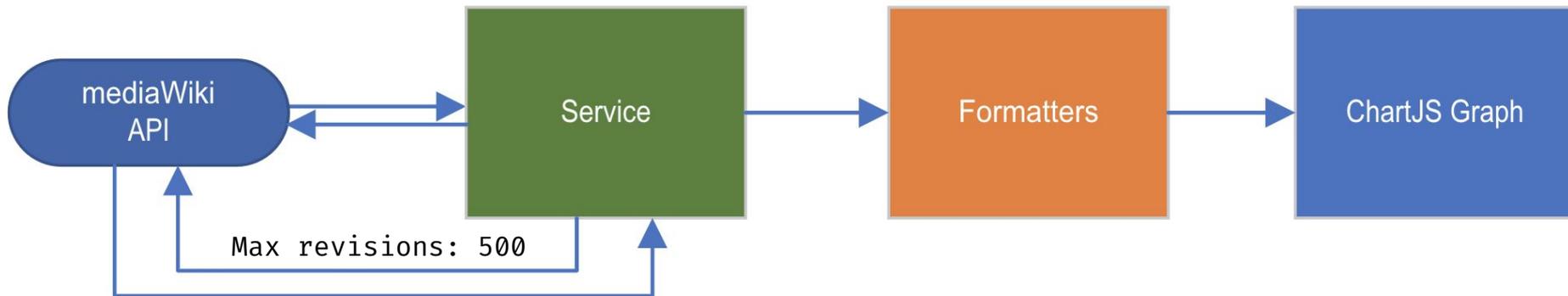
Diagram - On Page Load



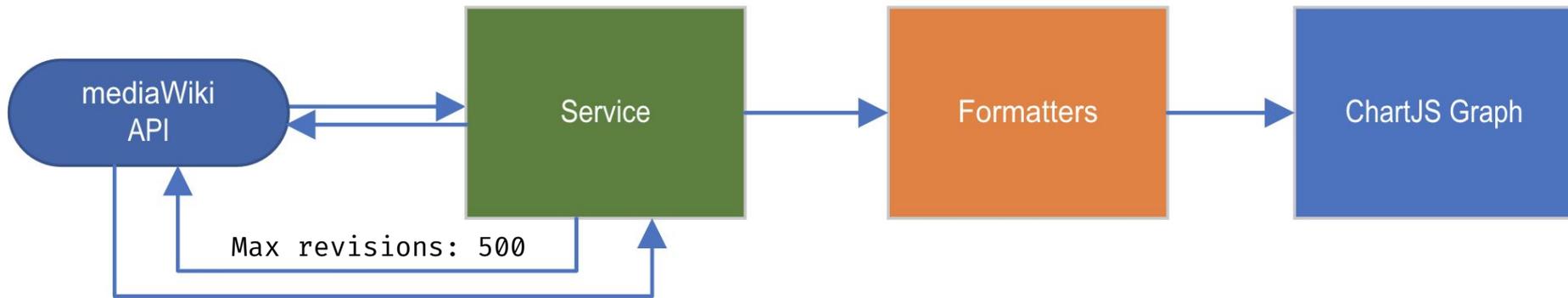
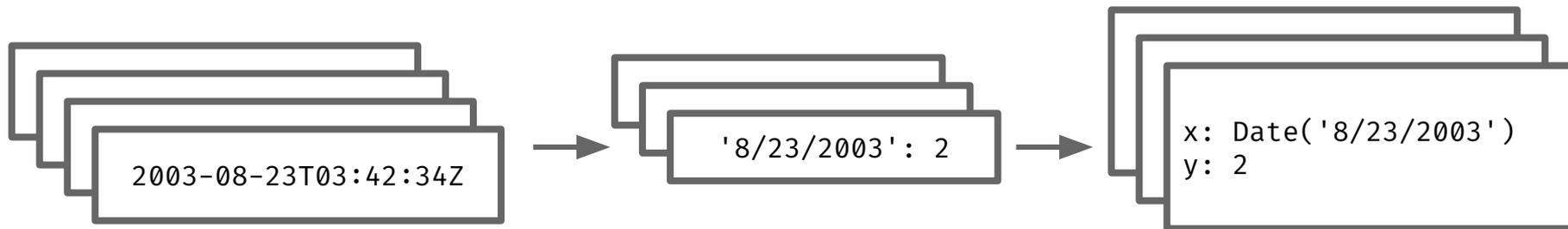
Time Series Service (PageViews)



Time Series Service (Revisions)



Time Series Service (Revisions)





Is the 500-Revision Limit a Big Deal?

Umbrella

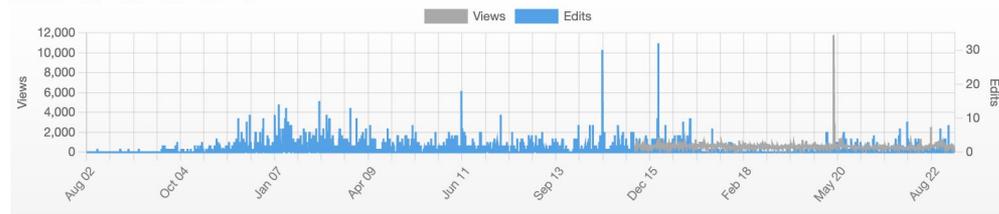
107 languages

Article [Talk](#)

[Read](#) [Edit](#) [View history](#)

From Wikipedia, the free encyclopedia

[ALL](#) [5Y](#) [3Y](#) [1Y](#) [6M](#) [3M](#)



2,914 Revisions
(6 API calls)

United States

308 languages

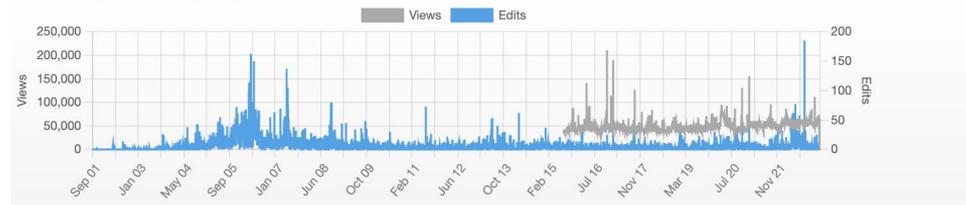
Article [Talk](#)

[Read](#) [View source](#) [View history](#)

From Wikipedia, the free encyclopedia

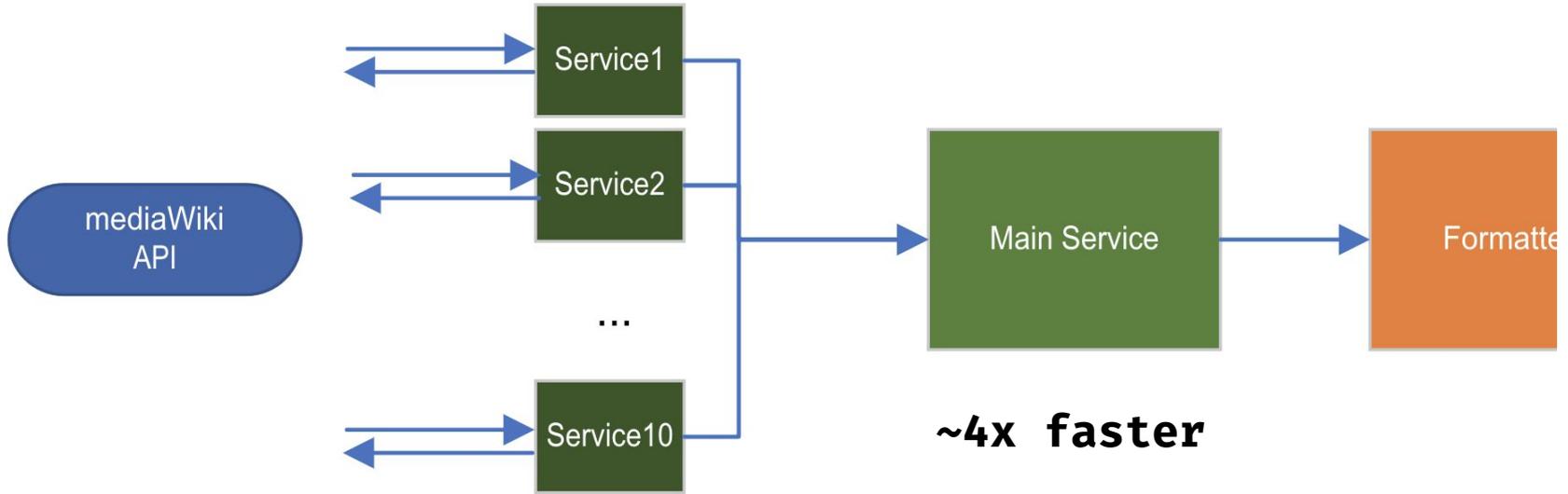
[ALL](#) [5Y](#) [3Y](#) [1Y](#) [6M](#) [3M](#)

Coordinates: 40°N 100°W



46,533 Revisions
(94 API calls)

Is the 500-Revision Limit a Big Deal?



Time Series Service (Revisions)

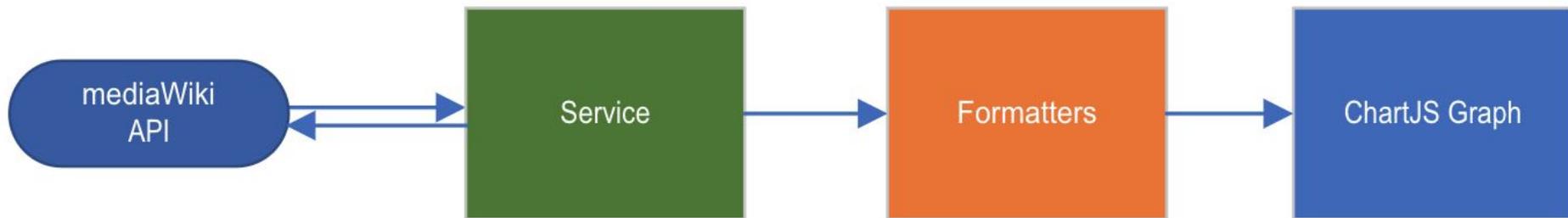
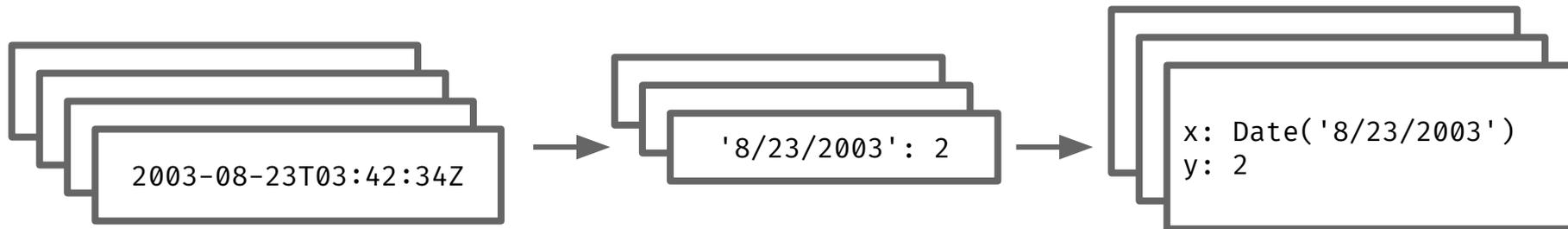
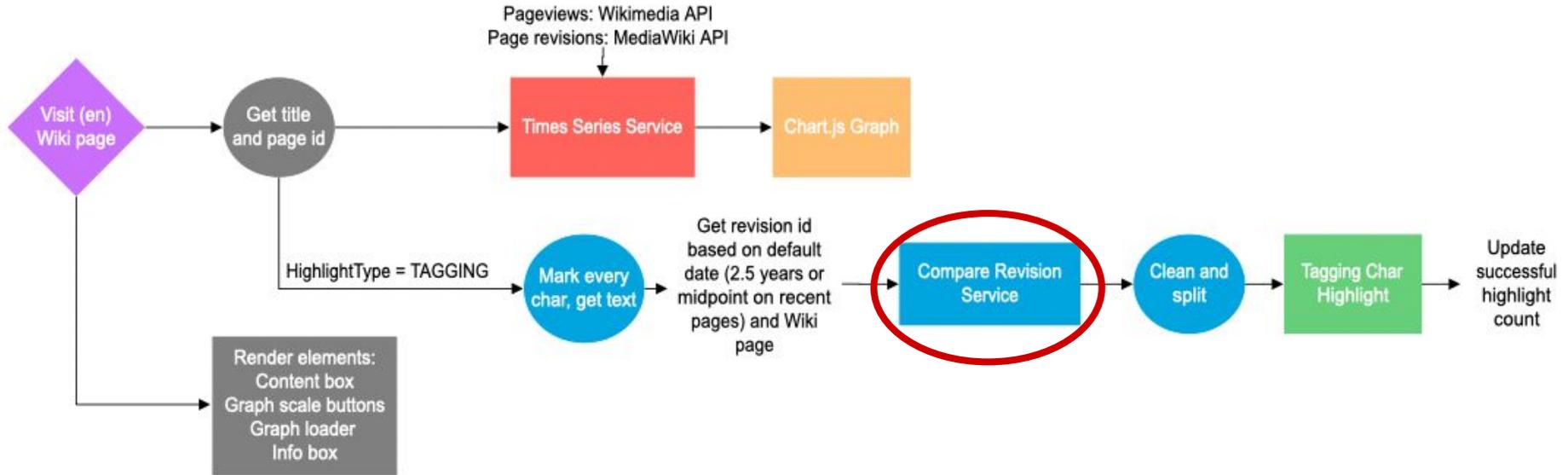
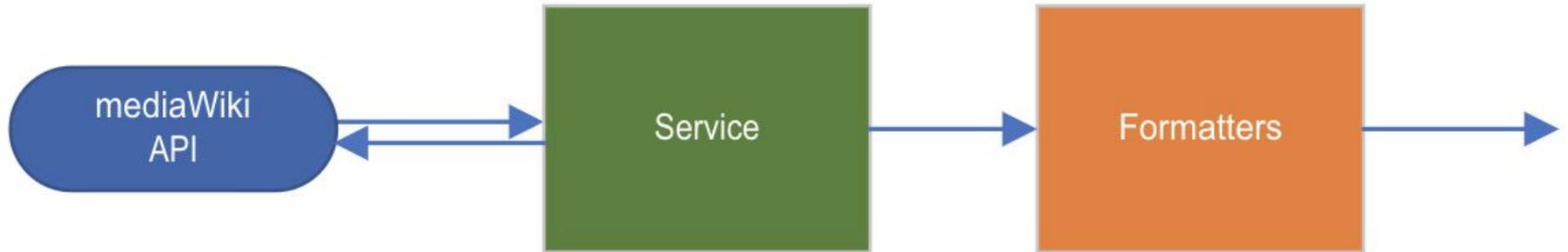


Diagram - On page load



Compare Revision Service





A Brief Background

Wikitext

```
'''Carleton College''' ({{IPAc-en|'k|ɑːr|l|t|ɪ|n}}
{{Respell|KARL|tin}}) is a [[Private college|private]]
[[Liberal arts colleges in the United States|liberal arts
college]] in [[Northfield, Minnesota]].<ref name=about>
{{cite web|title = About Carleton |url =
https://apps.carleton.edu/about/ |publisher=Carleton College
|access-date = October 31, 2017}}</ref> Founded in 1866, it
had 2,105 undergraduate students and 269 faculty members in
fall 2016. The 200-acre main campus is between Northfield
```

(What API Returns)

HTML

```
<p>
<b>Carleton College</b>
" ("
<span class="rt-commentedText nowrap">
  <span class="IPA nopopups noexcerpt" lang="en-phon
a">
    <a href="/wiki/Help:IPA/English" title="Help:IPA/E
nglish">
      "/"
    <span style="border-bottom:1px dotted">
      <span title="//: primary stress follows">'
    </span>
    <span title="'k' in 'kind'">k</span>
    <span title="/ɑːr/: 'ɑːr' in 'far'">ɑːr</span>
    <span title="'l' in 'lie'">l</span>
    <span title="'t' in 'tie'">t</span>
    <span title="/ɪ/: 'i' in 'kit'">ɪ</span>
    <span title="'n' in 'nigh'">n</span>
  </span>
"/"
</a>
</span>
</span>
```

Displayed

Carleton College (/ˈkɑːrltɪn/ *KARL-tin*) is a private liberal arts college in Northfield, Minnesota.^[7] Founded in 1866, it had 2,105 undergraduate students and 269 faculty



Compare Revision Service (Wikitext)

```
:'"Enriched macaroni products"' - largely the same as "macaroni products" except that each such food must contain thiamin, riboflavin, niacin or niacinamide, folic acid and iron, with specified limits. Additional optional ingredients that may be added include vitamin D, calcium, and defatted wheat germ. The optional ingredients specified may be supplied through the use of dried yeast, dried torula yeast, partly defatted wheat germ, enriched farina, or enriched flour.
```

```
:'"Enriched macaroni products with fortified protein"' - similar to "enriched macaroni products" with the addition of other ingredients to meet specific protein requirements. Edible protein sources that may be used include food grade flours or meals from nonwheat cereals or oilseeds. Products in this category must include specified amounts of thiamin, riboflavin, niacin or niacinamide and iron, but not folic acid. The products in this category may also optionally contain up to 625 milligrams of calcium.
```

```
:'"Milk macaroni products"' - the same as "macaroni products" except that milk or a specified milk product is used as the sole
```

```
** "'Enriched macaroni products with fortified protein"' - similar to "enriched macaroni products" with the addition of other ingredients to meet specific protein requirements. Edible protein sources that may be used include food grade flours or meals from nonwheat cereals or oilseeds. Products in this category must include specified amounts of thiamin, riboflavin, niacin or niacinamide and iron, but not folic acid. The products in this category may also optionally contain up to {{convert|625|mg}} of calcium.
```

```
** "'Milk macaroni products"' - the same as "macaroni products" except that milk or a specified milk product is used as the sole moistening ingredient in preparing the dough. Other than milk, allowed milk products include concentrated milk, evaporated milk, dried milk, and a mixture of butter with skim, concentrated skim, evaporated skim, or nonfat dry milk, in any combination, with the limitation on the amount of milk solids relative to amount of milk fat.
```

```
** "'Nonfat milk macaroni products"' - the same as "macaroni products" except that nonfat dry milk or concentrated skim milk is used in preparing the dough. The finished macaroni product must contain between 12% and 25% milk solids-not-fat. Carageenan or carageenan salts may be added in specified amounts. The use of egg whites, disodium phosphate and gum gluten optionally allowed for "macaroni products" is not permitted for this category.
```

```
*** "'Enriched nonfat milk macaroni products"' - similar to "nonfat milk macaroni products" with added requirements that products in this category contain thiamin, riboflavin, niacin or niacinamide, folic acid and iron, all within specified ranges.
```

```
** "'Vegetable macaroni products"' - "macaroni products" except that...
```

What we are trying to fetch

Compare Revision Service

Line 1:

```
- {{short description|Cured dried beef seasoned with a spice paste}}  
[[File:Basturma or Pastroma from Armenia 2.JPG|thumb|right|Pastirma]]
```

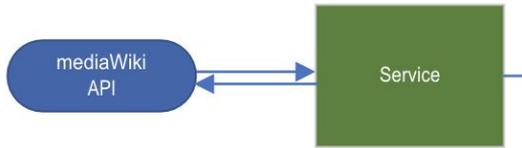
```
'''Pastırma''' or '''basturma''', <ref name="RayDidier2014">{{cite  
book|author1=Ramesh C. Ray|author2=Montet Didier|title=Microorganisms  
and Fermentation of Traditional  
Foods|url=https://books.google.com/books?  
id=...}}
```

Line 1:

```
+ {{Short description|Spiced dried beef from the Middle East}}  
[[File:Basturma or Pastroma from Armenia 2.JPG|thumb|right|Pastirma]]  
+
```

context-before: “{{”
highlight: “**Short**”
context-after: “description|”

context-before: “description|”
highlight: “**Spiced**”
context-after: “dried beef”



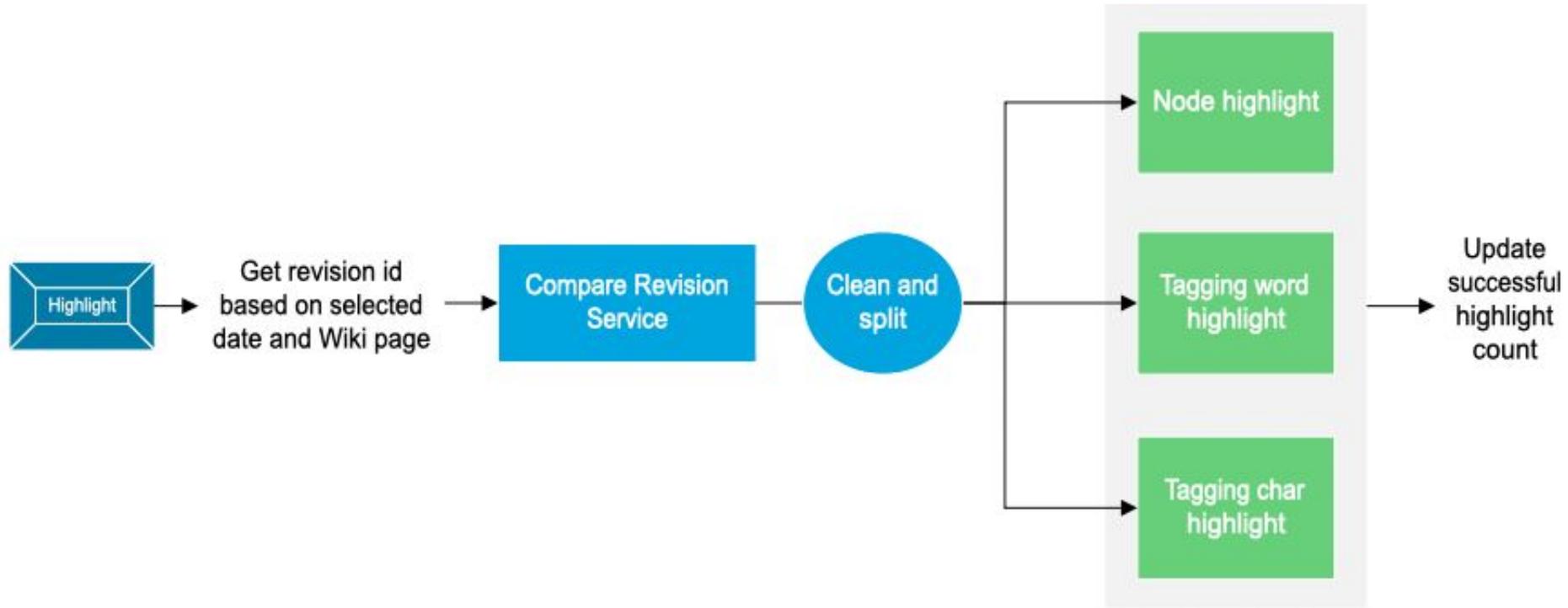
context-before: “dried beef”
highlight: “**from the Middle East**”
context-after: “}}”

Compare Revision Service

```
<td class=\"diff-addedline
diff-side-added\"><div>{{<ins class=\"diffchange
diffchange-inline\">Short</ins> description|<ins
class=\"diffchange
diffchange-inline\">Spiced</ins> dried beef <ins
class=\"diffchange
diffchange-inline\">from</ins> <ins
class=\"diffchange diffchange-inline\">the</ins>
<ins class=\"diffchange
diffchange-inline\">Middle</ins> <ins
class=\"diffchange
diffchange-inline\">East</ins>}}</div></td>
```

```
Changes:{
  {
    context-before: “{{”
    highlight: “Short”
    context-after: “description|”
  },
  {
    context-before: “description|”
    highlight: “Spiced”
    context-after: “dried beef”
  },
  {
    context-before: “dried beef”
    highlight: “from the Middle East”
    context-after: “}}”
  },
  ...
}
```

Diagram - Highlight





05

Features

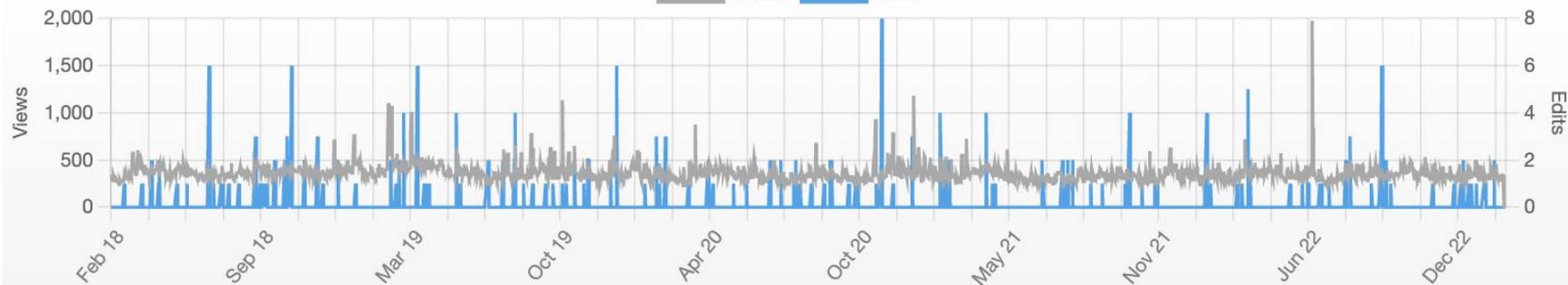


Graph

ALL 5Y 3Y 1Y 6M 3M

Coordinates: 44°27'43"N 93°9'13"W

Views Edits



8/24/2020 Highlight Changes

We highlighted **40** changes which represent additions to the page between **8/28/2020** (the closest revision to your chosen time) and the present day. Some of the changes were purely formatting or deletions and, therefore, are not highlighted.

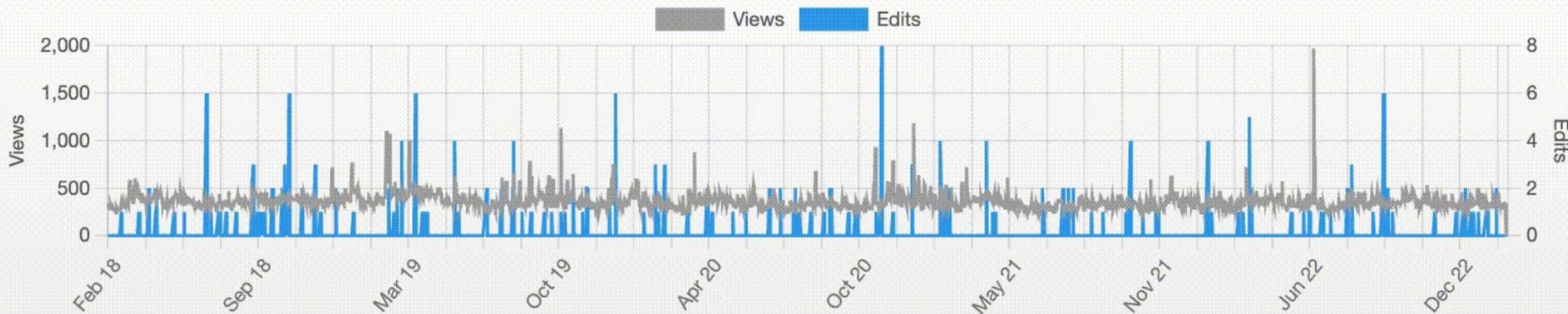


Graph (Scale)

From Wikipedia, the free encyclopedia

[ALL](#) [5Y](#) [3Y](#) [1Y](#) [6M](#) [3M](#)

Coordinates: 44°27′43″N 93°9′13″W



12/28/2021

[Highlight Changes](#)

We highlighted **40** changes which represent additions to the page between [8/28/2020](#) (the closest revision to your chosen time) and the present day. Some of the changes were purely formatting or deletions and, therefore, are not highlighted.

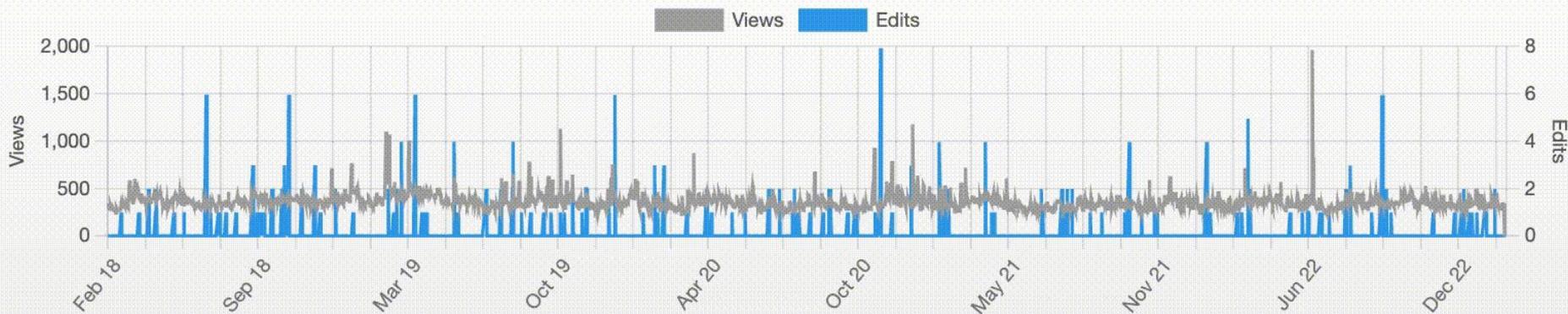


Graph (Click on Graph)

From Wikipedia, the free encyclopedia

[ALL](#) [5Y](#) [3Y](#) [1Y](#) [6M](#) [3M](#)

Coordinates: [44°27′43″N 93°9′13″W](#)



12/28/2021

[Highlight Changes](#)

We highlighted **40** changes which represent additions to the page between [8/28/2020](#) (the closest revision to your chosen time) and the present day. Some of the changes were purely formatting or deletions and, therefore, are not highlighted.



Graph (Loading)

From Wikipedia, the free encyclopedia

ALL

5Y

3Y

1Y

6M

3M



Coordinates: 46°N 94°W

5%

This article is about the U.S. state. For the river, see [Minnesota River](#). For other uses, see [Minnesota \(disambiguation\)](#).

Looks slow because
of the conversion
to gif format

state in the [Upper Midwestern](#) region of the
state in area and the [22nd most populous](#), with
home to western [prairies](#), now given over to
in the southeast, now partially cleared, farmed,
[h Woods](#), used for mining, forestry, and

Minnesota

State





Highlighting

4/10/2022

Highlight Changes

We highlighted 88 changes which represent additions to the page between 4/13/2022 (the closest revision to your chosen time) and the present day. Some of the changes were purely formatting or deletions and, therefore, are not highlighted.

For other uses, see *Computer science* (disambiguation).

Computer science is the study of *computation*, *automation*, and *information*.^{[1][2][3]} Computer science spans theoretical disciplines (such as *algorithms*, *theory of computation*, *information theory*, and *automation*) to *practical disciplines* (including the design and implementation of *hardware* and *software*).^{[4][5][6]} Computer science is generally considered an *academic discipline* and distinct from *computer programming*.^[7]

Algorithms and *data structures* are central to computer science.^[8]

The *theory of computation* concerns abstract models of computation and general classes of problems that can be solved using them. The fields of *cryptography* and *computer security* involve studying the means for secure communication and for preventing *security vulnerabilities*. *Computer graphics* and *computational geometry* address the generation of images. *Programming language theory* considers *different ways* to describe computational processes, and *database* theory concerns the management of

Fundamental areas of computer science

$\theta := \lambda f. \lambda x. x$

$1 := \lambda f. \lambda x. f x$

$2 := \lambda f. \lambda x. f (f x)$



Programming language theory

Computational complexity theory





Text matching

API output

Wikitext

```
Hi, we are the [[Wiki]]  
Chrome '''Browser'''  
extension 'team'!
```

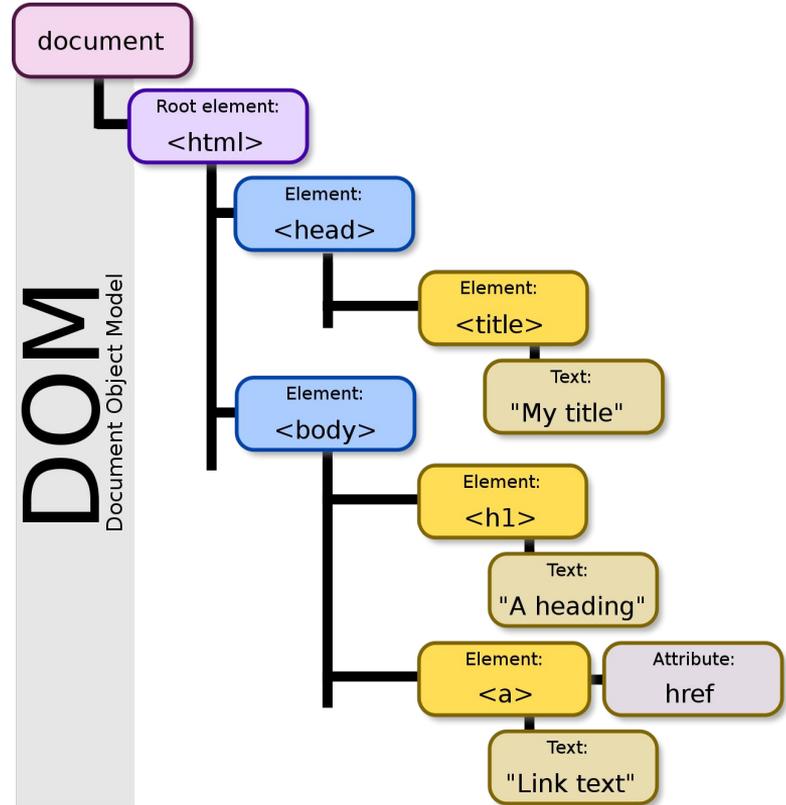
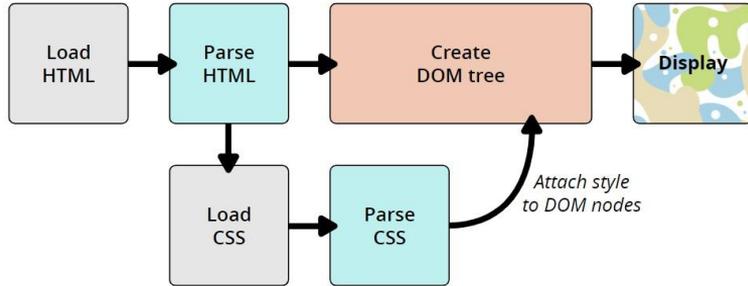
The Wikipedia page

HTML

```
<p>Hi, we are the <a>Wiki</a>  
Chrome <b>Browser</b>  
extension <i>team</i>!</p>
```

DOM Tree Basics

- The Document Object Model (DOM) is a programming interface for web documents
- Hierarchical structure
- Used to render web pages





Text Nodes

```
Carleton College
KARL
-tin
) is a
private
liberal arts college
in
Northfield, Minnesota
  Founded in 1866, it had 2,105 undergraduate students and
  269 faculty members in fall 2016. The 200-acre main campus
  Northfield and the 800-acre
  Cowling Arboretum
, which became part of the campus in the 1920s.
```

Carleton College (/ˈkɑːrltɪn/ *KARL-tin*) is a [private liberal arts college](#) in [Northfield, Minnesota](#).^[7] Founded in 1866, it had 2,105 undergraduate students and 269 faculty members in fall 2016. The 200-acre main campus is between Northfield and the 800-acre [Cowling Arboretum](#), which became part of the campus in the 1920s.^[8]



Text matching - links problem

Links were causing us a problem in Node highlighting, as they were in different levels in the tree as the context

Element to be split:

[content.js:65](#)

```
▼ {content_before: '', highlight: "The 1996 film [[D3: The Mighty Ducks]] w  
  as partially filmed on Carleton's campus.", content_after: ''} ⓘ  
  content_after: ""  
  content_before: ""  
  highlight: "The 1996 film [[D3: The Mighty Ducks]] was partially filmed ""  
  ▶ [[Prototype]]: Object
```



Text matching - links solution

Split result:

▼ (3) [{"..."}, {"..."}, {"...}] ⓘ

▼ 0:

content_after: "D3: The Mighty Ducks"

content_before: ""

highlight: "The 1996 film "

▶ [[Prototype]]: Object

▼ 1:

content_after: " was partially filmed on Carleton's campus."

content_before: "The 1996 film "

highlight: "D3: The Mighty Ducks"

▶ [[Prototype]]: Object

▼ 2:

content_after: ""

content_before: "D3: The Mighty Ducks"

highlight: " was partially filmed on Carleton's campus."

The educational video game series [The Oregon Trail](#) was initially created by three Carleton students.^[112]

The 1996 film [D3: The Mighty Ducks](#) was partially filmed on Carleton's campus.^[113]



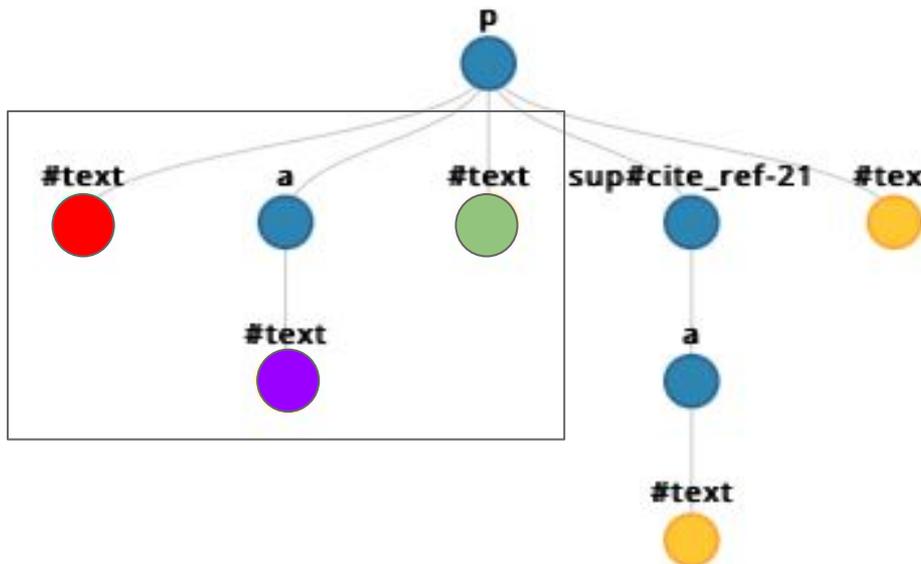
Node Highlight

General idea

For every context entry, loop over the DOM tree text nodes and replace the matched text with a mark node if:

- Content matches
- Short contents matches
- The parent's next sibling and the parent's previous node include contents

In 1927, students founded the first student-run pub in the nation, The Cave. Located in the basement of Evans Hall, it continues to host live music shows and other events several times each week.^[21]





Tagging Highlight

General idea

Once the page loads, we traverse the DOM tree text nodes:

- Append the text to a variable
- Replace each node with a tagged version

At the end:

- We have a variable with all the text of the page
- A way to add CSS styling to any character on the page

```
<a href="/wiki/Rice_flour" title="Rice flour">Rice flour</a>
```



```
▼ <a href="/wiki/Rice_flour" title="Rice flour">  
  <mark id="mark-569">R</mark>  
  <mark id="mark-570">i</mark>  
  <mark id="mark-571">c</mark>  
  <mark id="mark-572">e</mark>  
  <mark id="mark-573"> </mark>  
  <mark id="mark-574">f</mark>  
  <mark id="mark-575">l</mark>  
  <mark id="mark-576">o</mark>  
  <mark id="mark-577">u</mark>  
  <mark id="mark-578">r</mark>  
</a>
```



Highlighting

Tagging

Pros

- Can access the entire text to use context before and after
- Highlights more

Cons

- Bloats page HTML
- Affects accessibility

Node

Pros

- Simple, no change in Wikipedia's HTML (other than the highlights)

Cons

- Can't highlight when the content is in different nodes in the DOM tree
- Needs multiple DOM tree traversals

Highlight limitations

We don't highlight cases where the content includes internal attributes

competition.^[citation needed] In the
competition.{{**citation needed** | **date=October 2017**}}
Content after

Kiplinger's Personal Finance places

'**[[Kiplinger's Personal Finance]]**' places

Content
before
missing]]

Content after
missing [[

We clean and highlight only well-formed elements



Options Page

Wiki Addition Viewer

Welcome to our comps project:
An extension to add insights to
your Wikipedia experience.

[Learn more!](#)

Year: 2022-2023

[Extension Options](#)

Options

Highlight Color:



Restore Color

Save



06

User study



Why?

1. Critical to see how users were interacting with our tool
2. To determine whether our tool was intuitive or not
3. Figure out features to improve

How?

1. “Speak as you think” method
2. Carefully designed questions
3. 2 iterations
4. 8 users
5. Interviews lasted 30-45 minutes each



Before User Study 1

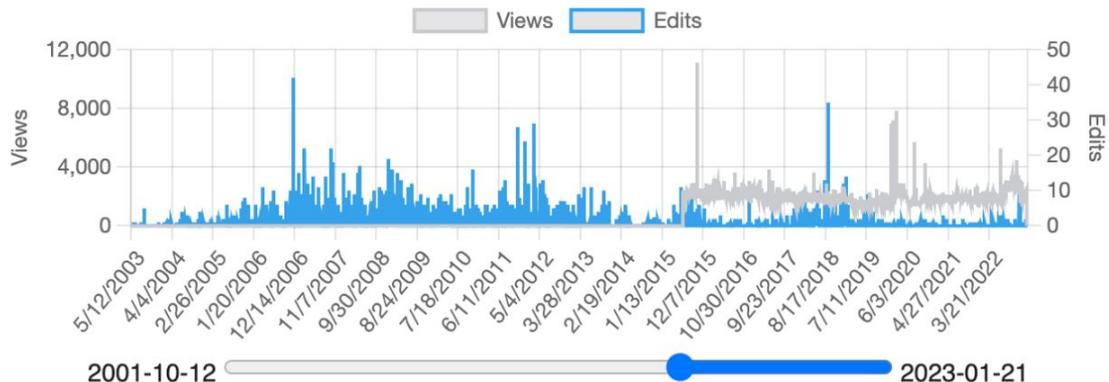
Pasta

87 languages ▼

[Article](#) [Talk](#)

[Read](#) [View source](#) [View history](#)

From Wikipedia, the free encyclopedia



Highlights

This article had 428 terms highlighted.
These are the revisions that were made on this particular date.

06/18/2016 [Highlight](#)

[Go To Revision Page](#)

Showing highlight for closest revision (**date: 2016-06-18**)

After User Study 1

Pasta

🗺️ 87 languages ▾

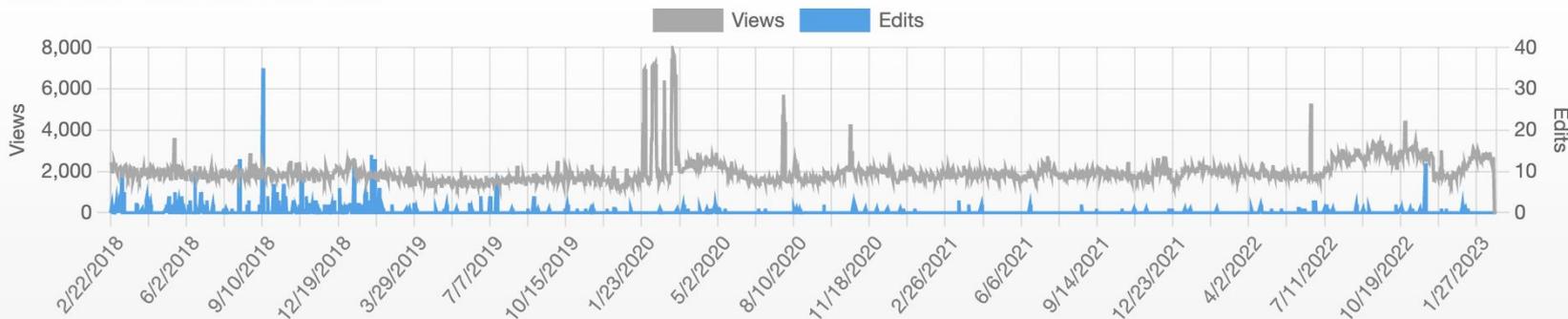
Article [Talk](#)

[Read](#) [View source](#) [View history](#)

From Wikipedia, the free encyclopedia



[ALL](#) [5Y](#) [3Y](#) [1Y](#) [6M](#) [3M](#)

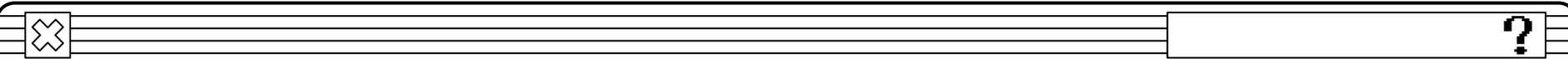


8/23/2020

[Highlight Changes](#)

Comparing the current Wikipedia page to the [9/19/2020 version](#) (the closest revision to your chosen time)

Newly added texts are highlighted in green, but the deletions are not included



Results of User Study 2

P1: “Oh that happened last week! Nice to see it highlighted”

P7: “I want to find out why the views peaked on Christmas”

P3: “I would perhaps use this for researching something currently in the news”



07

Demo



08

Future improvements



- Data Interpretation
- Authorship
- Talk Page Integration



09

Conclusion



Achievements

1. Directly convey information on the history of Wikipedia pages
2. Create connections between the revisions of the page and the current page
3. Easily accessible and convenient to use extension



We published the extension in the Chrome Web Store

chrome web store

⚙️ luisaescosteguy@gmail.com

[Home](#) > [Extensions](#) > Wiki Addition Viewer

Wiki Addition Viewer

★★★★★ 2 ⓘ | Fun | 3 users

Available on Chrome

Overview

Privacy practices

Reviews

Related

Rate us!



Carleton College

Article [Talk](#)

From Wikipedia, the free encyclopedia

ALL 5Y 3Y 1Y 6M 3M

Views Edits



Shirin Sharma 2 minutes ago ★★★★★

Excellent Extension! Very useful while reading Wikipedia articles. Everyone must try!



Fun Facts

80 PRs Merged

We merged most of our 88 branches

14 Interviews

We conducted 2 user studies, with 8 different subjects

2 Sprints

We separated our dev work in 2 sprints (Fall, Winter)

3 Languages

90% JS, 7% CSS, 3% HTML

71 Tasks

We completed 71 tasks

Over 250 PR Comments

We had 43 comments on the most commented PR



Extension Performance

Baseline

Carleton College page
with no extension

9 ms  Loading

136 ms  Scripting

54 ms  Rendering

4 ms  Painting

55 ms  System

Wiki Addition Viewer

Carleton College page
with Tagging

13 ms  Loading

1157 ms  Scripting

448 ms  Rendering

45 ms  Painting

277 ms  System

Carleton College page
with Node

9 ms  Loading

1198 ms  Scripting

81 ms  Rendering

12 ms  Painting

211 ms  System



Acknowledgements

Prof. Sneha Narayan

Prof. Eric Alexander

Prof. Austin Mason

The 8 participants from our user studies

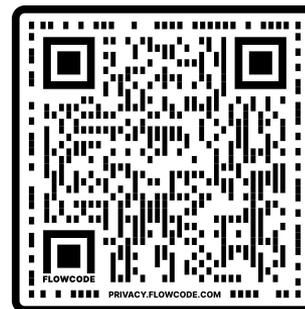


Chrome Web Store



Questions?

Team Website





References

Introduction to the DOM - web apis: MDN. Web APIs | MDN. (n.d.). Retrieved February 21, 2023, from https://developer.mozilla.org/en-US/docs/Web/API/Document_Object_Model/Introduction

Borra, E., Weltevrede, E., Ciuccarelli, P., Kaltenbrunner, A., Laniado, D., Magni, G., Mauri, M., Rogers, R., & Venturini, T. (2015). Societal controversies in Wikipedia articles. Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems. <https://doi.org/10.1145/2702123.2702436>

Gei, S., Leidecker, M., & Roessing, T. (2016). The interplay between media-for-monitoring and media-for-searching: How news media trigger searches and edits in wikipedia. *New Media & Society*, 18(11), 2740–2759. <https://doi.org/10.1177/1461444815600281>

Halfaker, A., Geiger, R. S., Morgan, J. T., & Riedl, J. (2013). The Rise and Decline of an Open Collaboration System: How Wikipedia's Reaction to Popularity Is Causing Its Decline. *American Behavioral Scientist*, 57(5), 664–688. <https://doi.org/10.1177/0002764212469365>

“Anatomy of an Extension - Mozilla: MDN.” Mozilla, https://developer.mozilla.org/en-US/docs/Mozilla/Add-ons/WebExtensions/Anatomy_of_a_WebExtension.