Visualizing changes to US federal environmental agency websites, 2016–2020

Eric Nost , Gretchen Gehrke, Grace Poudrier, Aaron Lemelin, Marcy Beck, and Sara Wylie
on behalf of the Environmental Data & Governance Initiative

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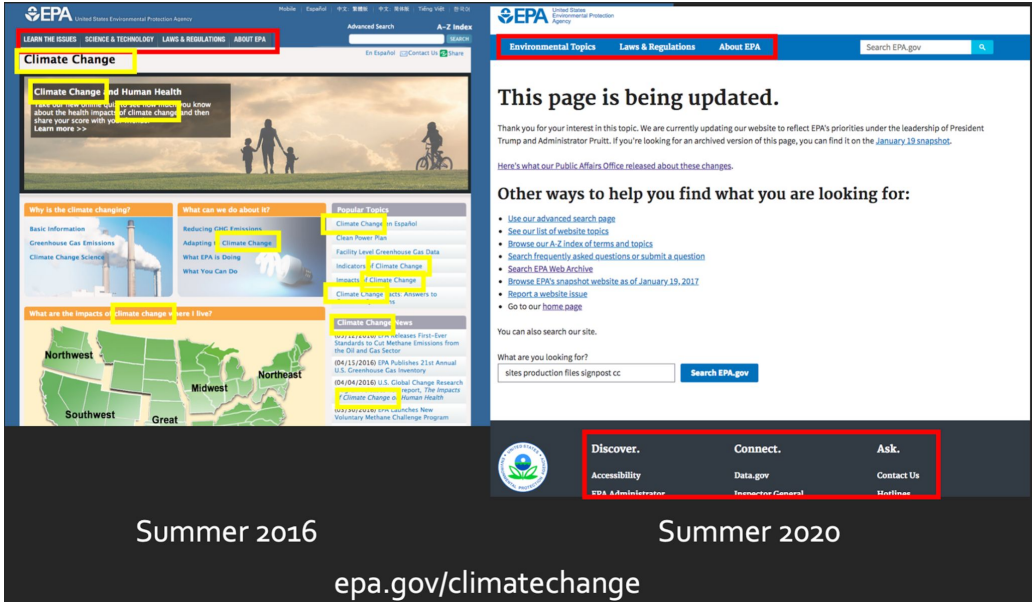
Presented by Lesley Frew
October 3, 2022

epa.gov/climatechange was removed during the Trump administration



Nost et al., Visualizing changes to US federal environmental agency websites, Figure 1

Climate change terms were disappearing across *multiple* agencies' websites

https://www.vox.com/energy-and-environment/2017/11/9/16619120/trump-administration-removing-climate-change-epa-online-website

Removing information from government sites was the next step in the climate change denial misinformation campaign

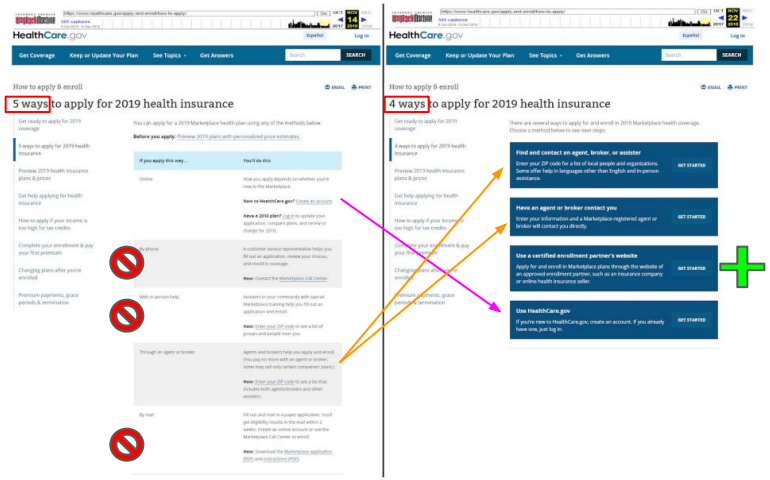
- Lobby (fossil fuel companies)
- Elevate the minority (3%) of scientists who reject climate change
- Create rebuttals to climate change models by using cherry-picked data
- Remove information from government sites

John Cook et al, Quantifying the consensus on anthropogenic global warming in the scientific literature, 2013, https://iopscience.iop.org/article/10.1088/1748-9326/8/2/024024
Ellen Knickmeyer, Emails show collaboration among EPA and climate-change deniers, 2018, https://www.pbs.org/newshour/nation/emails-show-collaboration-among-epa-and-climate-change-deniers

This is not the first time the government has conducted mass removals of content

https://www.healthcare.gov/apply-and-enroll/how-to-apply/

2018-11-14



2018-11-22

Lemelin et al., Overhaul of HealthCare.gov's "Apply for Health Insurance" Webpage, 2018, https://sunlightfoundation.com/wp-content/uploads/sites/2/2018/12/CCR-16-HealthCare.gov-Ways-to-Apply-Page-181210.pdf

The US government is not required to keep archived copies of its web pages or track content change

3 Purposes of Act

The purposes of this Act are—

(a) to provide for the continuation of the repository of public archives called the National Archives with the name Archives New Zealand (Te Rua Mahara o te Kāwanatanga); and

(b) to provide for the role of the Chief Archivist in developing and supporting government recordkeeping, including making independent determinations on the disposal of public records and certain local authority archives; and

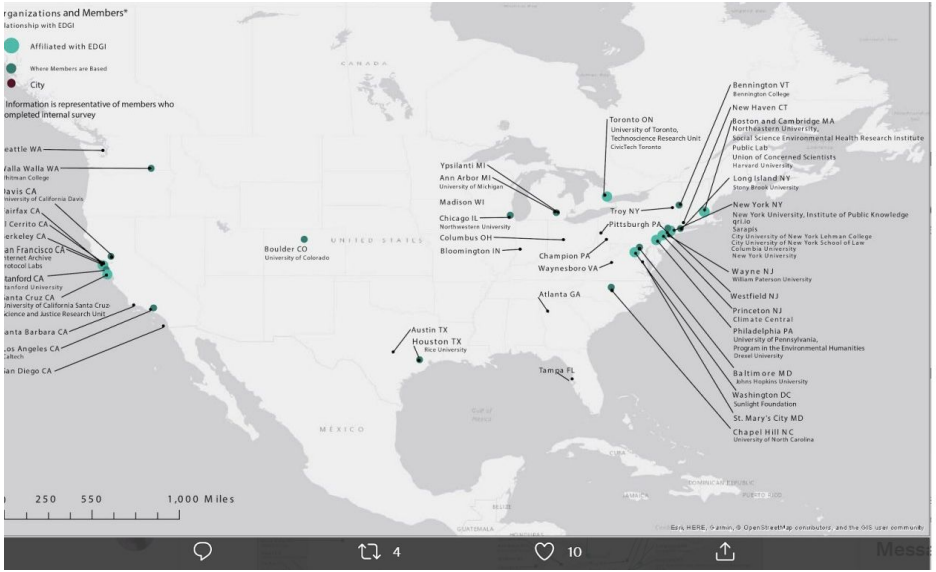
(c) to enable the Government to be held accountable by—

(i) ensuring that full and accurate records of the affairs of central and local government are created and maintained; and

(ii) providing for the preservation of, and public access to, records of long-term value; and

New Zealand Public Records Act of 2005, https://www.legislation.govt.nz/act/public/2005/0040/latest/whole.html

The Environmental Data & Governance Initiative (EDGI) was formed to track changes to government websites



Environmental Data & Gov...
@EnviroDGI

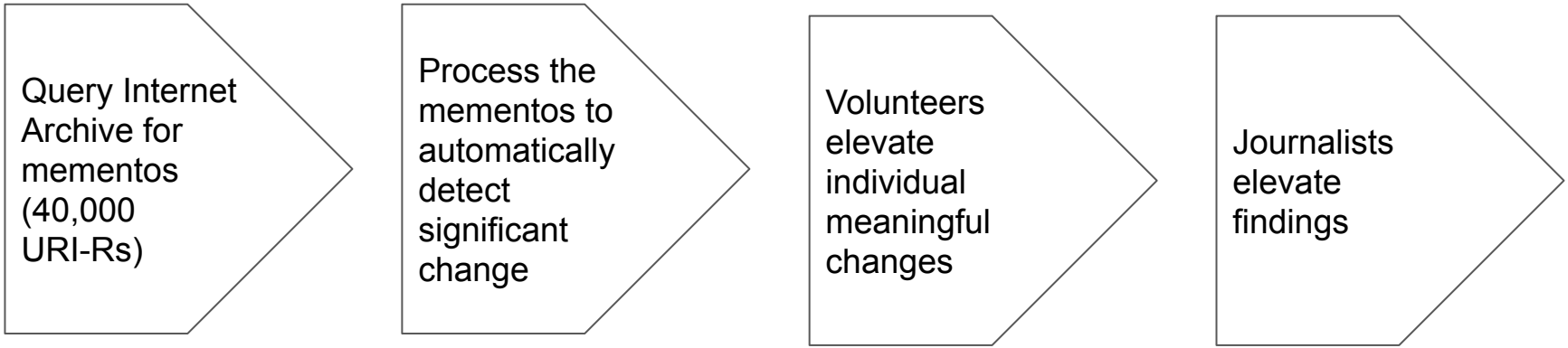
In the last year, we have formed a thriving organization, supported almost entirely by volunteer labor, driven by a shared concern about the dismantling of federal environmental protections. #ScienceMatters #EnvironmentalJustice #MondayMotivaton #opendata buff.ly/2Fficze

12:33 PM · Mar 5, 2018 · Buffer

4 Retweets **10** Likes

https://twitter.com/EnviroDGI/status/970713879738241024

EDGI tracked removals related to climate change during the Trump administration



https://github.com/edgi-govdata-archiving/web-monitoring#project-overview

Goal: detect mass changes as they start occurring

- EDGI developed computational tools to quickly analyze large numbers of mementos for content changes
- Used to swiftly determine if changes noticed on individual pages are part of a larger trend

Goal: reduce future removals

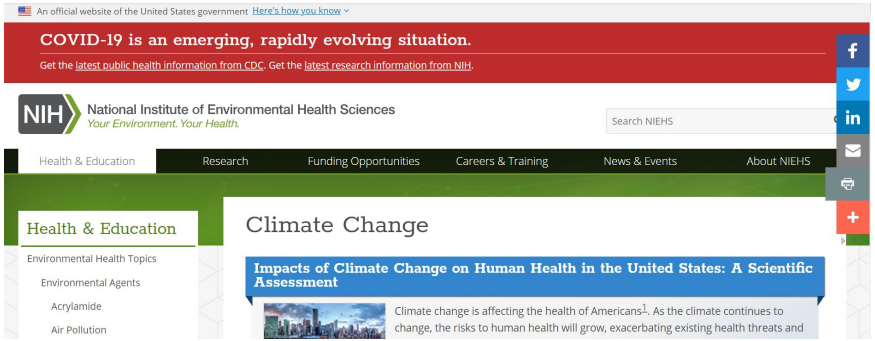
- EDGI designed strong visualizations to show overall trends as well as internal term change patterns
- Strong visualizations lead to policy recommendations and government accountability

9,144 URI-Rs in EDGI's web monitoring database have paired mementos from the first half of 2016 and 2020

https://www.niehs.nih.gov/health/topics/agents/climate-change/index.cfm

2016-04-12

2020-04-30



Anjur-Dietrich et al, Removals of Climate Change Mentions and Links from the National Institute of Environmental Health Sciences Website, Screenshot 4.1, https://envirodatagov.org/wp-content/uploads/2017/08/WM-CCR-17-NIH-Climate-Change-170820.pdf

Content change was calculated by counting terms on each URI-R's paired mementos

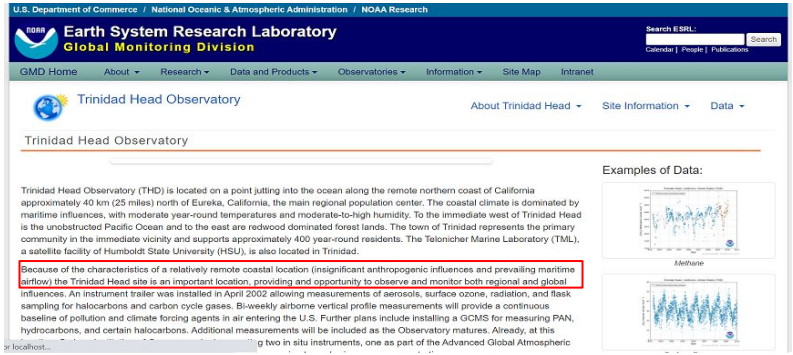
56 terms/phrases related to climate change, scaled by 2016 use

https://www.wordclouds.com/

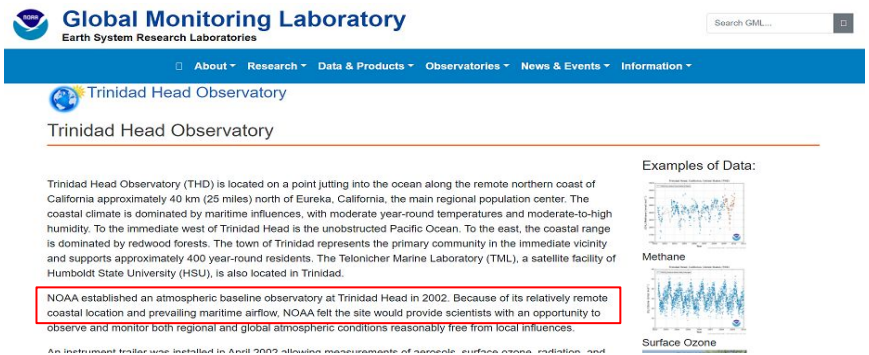
Climate change terms were deleted from pages that persisted

http://www.esrl.noaa.gov/gmd/obop/thd/

2016



By 2020

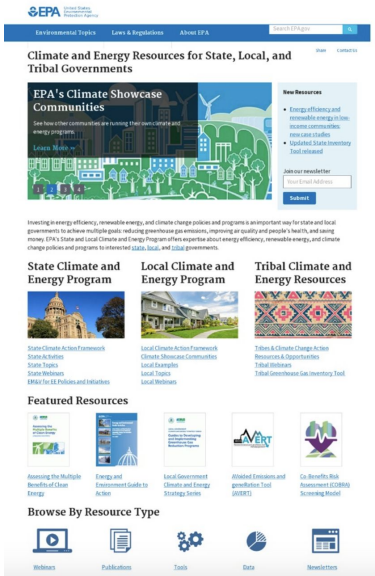


Memgator memento request at 20160430000000 and 20200430000000 for http://www.esrl.noaa.gov/gmd/obop/thd/:
https://web.archive.org/web/20160423153343/http://www.esrl.noaa.gov/gmd/obop/thd/
https://web.archive.org/web/20200430005031/https://www.esrl.noaa.gov/gmd/obop/thd/

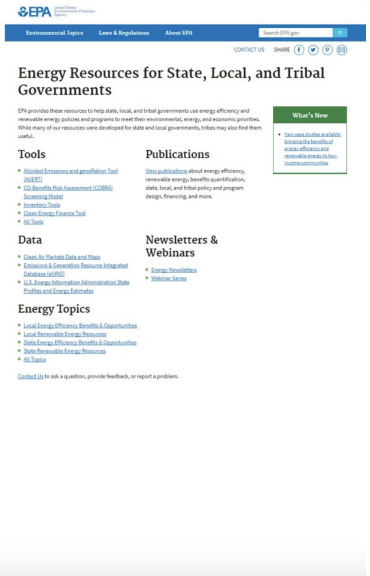
Climate change terms were replaced with pro-energy terms: significant content removal from subdirectories

2016
Over 380 pages in this subdirectory

Before: epa.gov/statelocalclimate



After: epa.gov/statelocalenergy



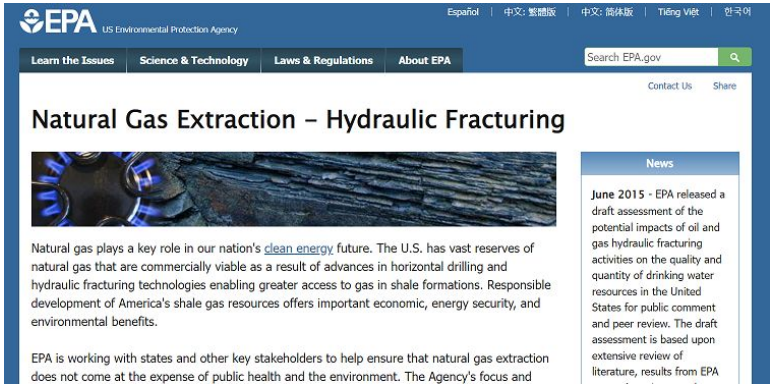
By 2020
Over 200 pages removed

"5 Photos That Show Just How Much The EPA Website Has Censored Climate Change", https://www.sciencealert.com/epa-climate-change-science-censored-website

Climate change terms were replaced with pro-energy terms: entire subdirectories were deleted and redirected

https://www.epa.gov/hydraulicfracturing → https://www.epa.gov/uog

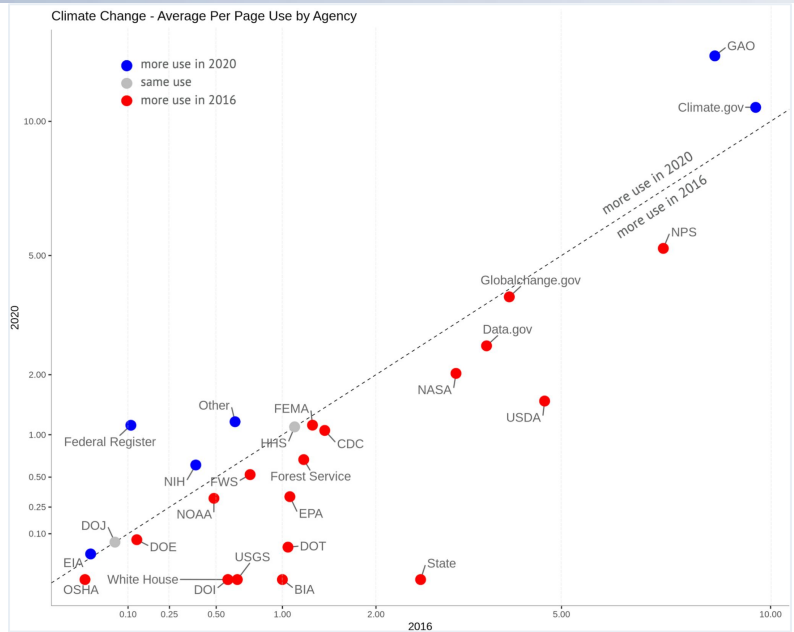
2016 By 2020



Internet Archive memento request at 20160430000000 and 20200430000000 for https://www.epa.gov/hydraulicfracturing:
https://web.archive.org/web/20160429134513/https://www.epa.gov/hydraulicfracturing
https://web.archive.org/web/20200430000725/https://www.epa.gov/uog

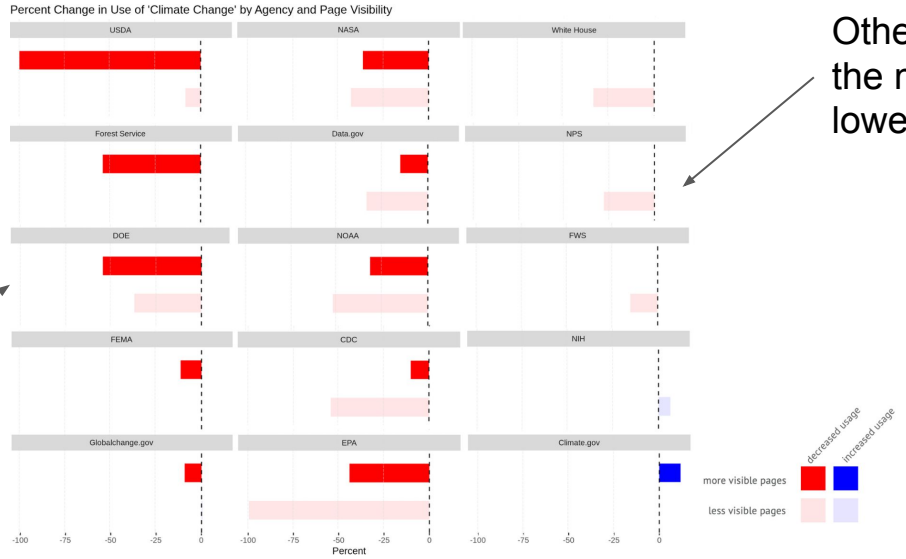
Most agencies used “climate change” on web pages more in 2016 than in 2020

Overall, 38% reduction from 2016 to 2020!



Nost et al., Visualizing changes to US federal environmental agency websites,, Figure 5

Climate term usage decreased on federal pages at all depths during the Trump administration



Other agencies saw the most removals on lower-level pages

Some agencies saw the most removals on higher-level pages

Nost et al., Visualizing changes to US federal environmental agency websites,, Figure 9 rearranged

There is correlation between the amount of climate term website change and the type of agency

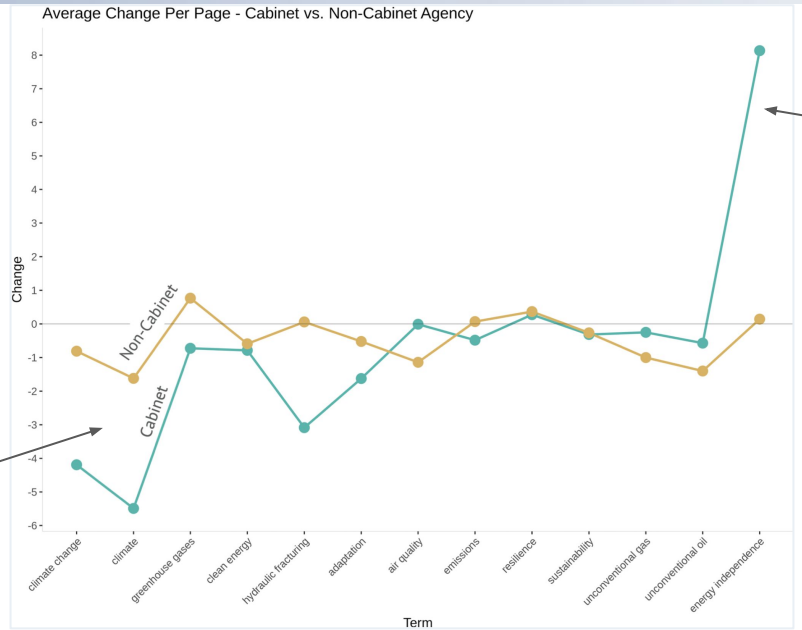
Cabinet

(departments)

Non-Cabinet

(agencies within departments)

On average, cabinet agencies experienced more extreme term change than non-cabinet agencies

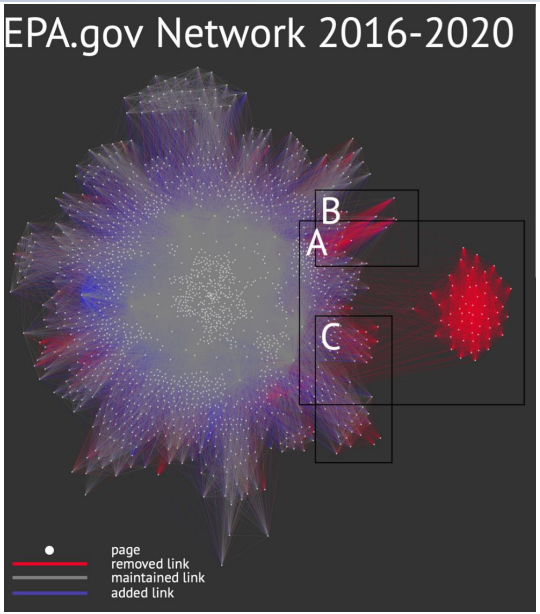


More additions of pro-energy terms

More removals of climate terms

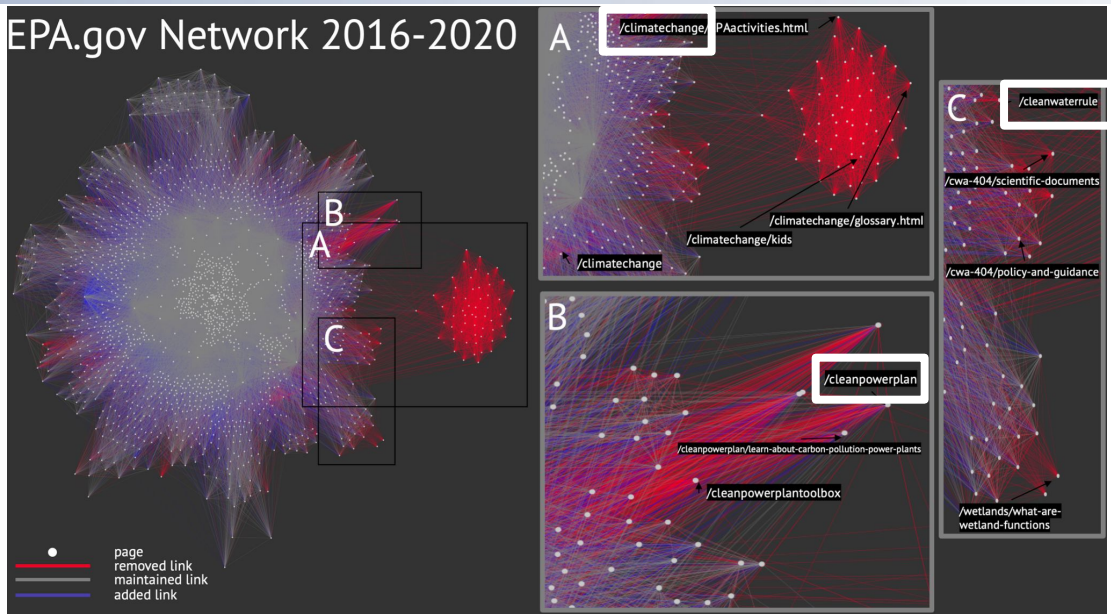
Nost et al., Visualizing changes to US federal environmental agency websites,, Figure 6

Most links on government pages stayed the same between 2016 and 2020



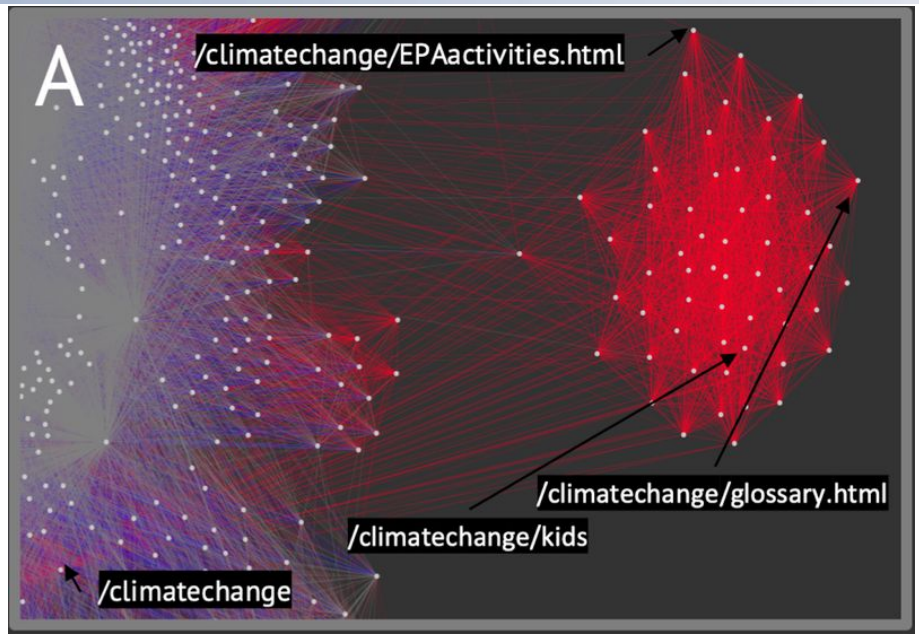
Nost et al., Visualizing changes to US federal environmental agency websites,, Figure 2

Clusters of pages with removed links are climate change subdirectories



Nost et al., Visualizing changes to US federal environmental agency websites,, Figure 2

The Trump administration removed the entire subdirectory epa.gov/climatechange in April 2017



Nost et al., Visualizing changes to US federal environmental agency websites,, Figure 2A

Conclusion: Web monitoring can be used to hold the government accountable for website changes

- Climate change content was removed from federal sites during the Trump administration
- Web monitoring using web archives can rapidly detect removals as they occur
- Visualizations such as bar charts and network graphs aid in analyzing website change trends for large data sets

https://github.com/edgi-govdata-archiving/web_monitoring_research