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# Demonstrating the Value of Libraries in Academic Research During a Pandemic: An Application of Web-Scraping Based Metrics

Laura Baird

*Pacific University*, [laura.eiford@pacificu.edu](mailto:laura.eiford@pacificu.edu)

Lynda Irons

*Pacific University*, [lironson@pacificu.edu](mailto:lironson@pacificu.edu)

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# Demonstrating the Value of Libraries

in academic research during a pandemic

Laura Baird  
Systems and Applications Librarian

Lynda Irons  
Research and Instructional Services Librarian



March 2021



# Pacific University

Undergraduate & Graduate Programs  
Four campus locations

±4,000 Students  
±300 FT Faculty

Eugene, Forest Grove, Hillsboro,  
Woodburn

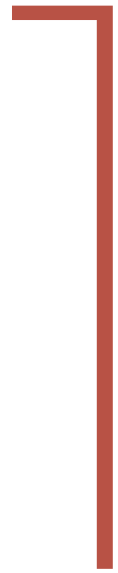
We analyzed the references that Pacific authors used in their research and whether they are available through the Libraries.

2019 & 2020

# LIBRARY MISSION

To advance critical inquiry,  
collaborative learning, and  
**KNOWLEDGE CREATION**  
through dynamic services,  
spaces, & **COLLECTIONS**

Do the Libraries advance  
knowledge creation?



What  
knowledge  
does  
Pacific  
create ?

What is **used** for  
creation ?

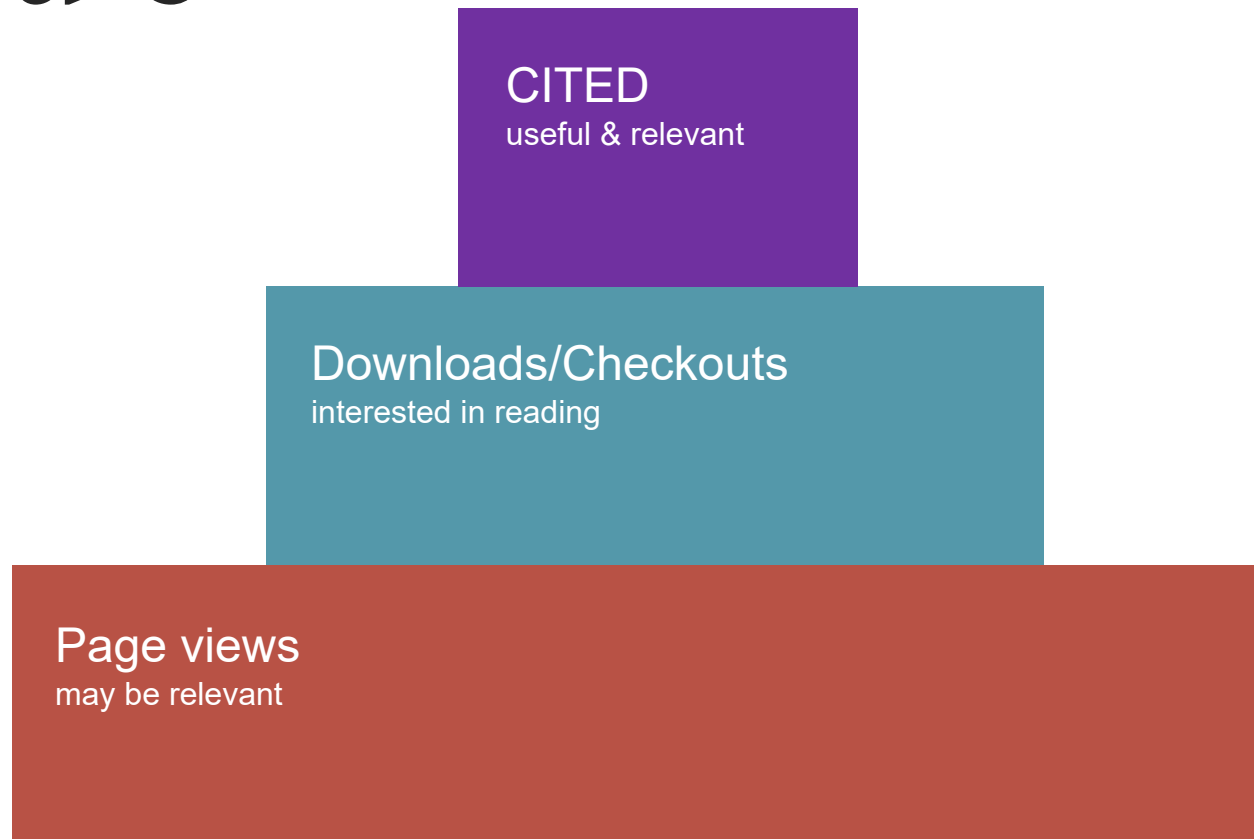
2



3

Do we  
make it  
available ?

# Metrics & Value



# 2019/2020

2020 was an  
unprecedented year.  
What can comparing  
it to 2019 tell us?

# The Differences of 2020 at Pacific

## Libraries

Online only  
March 17 – August 17

Contactless pickup  
Autumn 2020 -

## Campus

Online only  
Mid-March - August

Hybrid instruction  
Autumn 2020 -

\*Except some health professional programs

Pandemic, Physical Availability, Budget

How does online only  
access impact  
academic research?

Continuous funds  
reduced by 8%  
from 19 to 20

Budget

How does budget impact  
academic research?

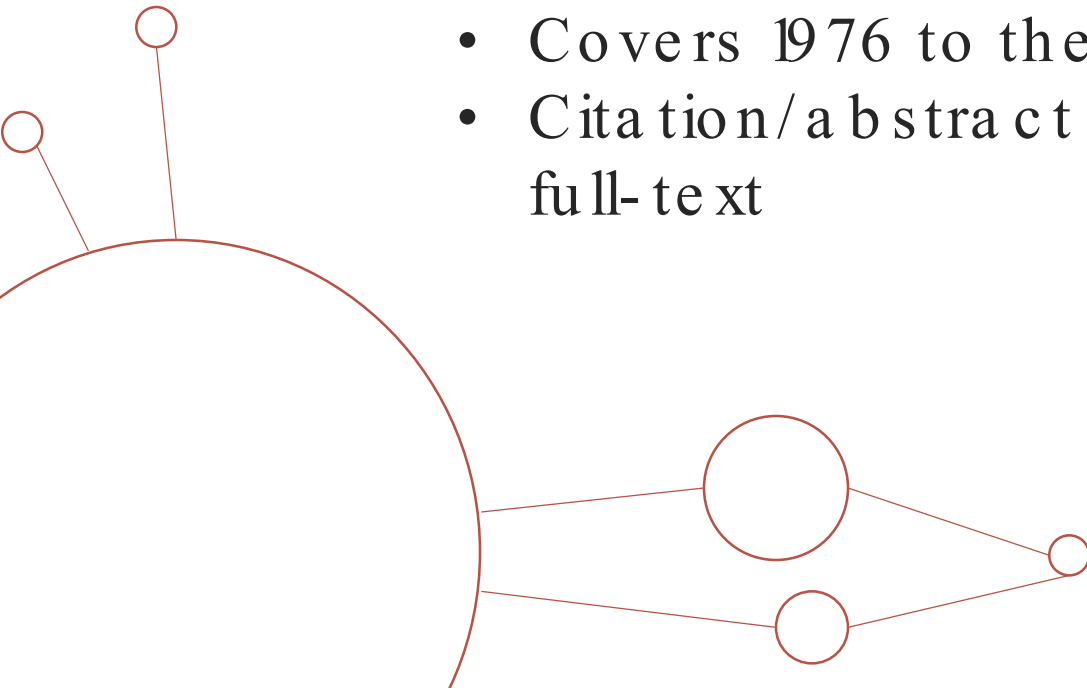
We don't yet have  
enough data for  
**conclusive answers** ,  
but we can start to ask  
**questions** .



METHODOLOGY

# Web of Science

- Tracks citation relationships among publications
- Social Sciences Citation and Science Citation indices subscribed
- Covers 1976 to the present
- Citation/abstract database only, not full-text



DATA

\*other sources may be available in the future

1 What knowledge  
does Pacific  
create?

2 What is used for  
creation?

3 Do we make it  
available?

Do the  
Libraries  
advance  
knowledge  
creation?

# Web Scraping

Collecting  
information  
from the  
Internet  
using software  
that simulates  
web surfing.

# Ruby

Programming language  
Set of commands,  
instructions, etc. used to  
create a software  
program.

- High-level
- Concise
- Readable

# Watir

## Web Application Testing In Ruby

Watir lets you use selectors to:

- Click buttons
- Enter forms (search)
- Copy content

```
browser.textarea(id: "input1").set("UT=" + no)  
browser.button(id: "search-button").click
```

UT=35434687643657



Textarea  
with id input1

SEARCH



Button  
with id search -button

# 1 What knowledge does Pacific create?

# RESULT

List of Pacific publications

Search  
Web of Science

The screenshot shows the Web of Science search interface. At the top, the title "Web of Science" is displayed on the left, and the "Clarivate Analytics" logo is on the right. Below the title, there is a navigation bar with "Tools", "Searches and alerts", "Search History", and "Marked List". A dropdown menu for "Select a database" is set to "Web of Science Core Collection". A button labeled "Learn about alerting enhancements!" is visible. The search interface includes several tabs: "Basic Search" (selected), "Author Search BETA", "Cited Reference Search", "Advanced Search", and "Structure Search". The search criteria are as follows: 1. "Pacific Univ\*" with a dropdown menu set to "Organization-Enhanced". Below this, a note states: "Select available organizations from the Index. Finds papers from organizations with identified name variants." 2. "And" followed by "Hillsboro OR Forest Grove OR Woodburn OR Eugene" with a dropdown menu set to "Address". Below this, a link for "View Abbreviations List" is present. 3. "And" followed by "Example: oil spill\* mediterranean" with a dropdown menu set to "Topic". A "Search" button and a "Search tips" link are located to the right of the search criteria. At the bottom, there is a "Timespan" section with a "Custom year range" dropdown, "2009" and "2019" year selectors, and "Add row" and "Reset" buttons.

Web of Science

Clarivate Analytics

Tools ▾ Searches and alerts ▾ Search History Marked List

Select a database Web of Science Core Collection ▾

Learn about alerting enhancements!

Basic Search Author Search <sup>BETA</sup> Cited Reference Search Advanced Search Structure Search

Pacific Univ\* Organization-Enhanced ▾

Select available organizations from the Index  
Finds papers from organizations with identified name variants.

And ▾ Hillsboro OR Forest Grove OR Woodburn OR Eugene Address ▾

View Abbreviations List

And ▾ Example: oil spill\* mediterranean Topic ▾ Search Search tips

+ Add row | Reset

Timespan

Custom year range ▾ 2009 ▾ to 2019 ▾





# 3

## Do we make it available?

# RESULT

## List of works used in Pacific publications available thru the library

### Web - scraping with Ruby & Watir

### Try DOI Try Source, Year

AU	BA	CA	GP	NI	OH	BE	TS	XI	NS	ZS	FT	PS	AT	ZS	SN	BN	UT	FW
Chen, Bao Z., Farnsworth, Brian H., He, M., Mitchell, Michael, Hedges, Lane, James B., DuPont, Corbin																		
Hsu, Ramona Cristina																		
Moskowitz, Nancy, Taylor, Karen M., Zaidi, Ali N., Hershenson, James A., Sarafan, David																		
Vakratsas, C., J. Karamakis, S., Riggin, L., C. Guzzi, P., Hayes, J., Lam, P., Luohoff, J.																		
Hurt, Linda A., Brown, Katrina, O'Brien, Susan P.																		
Holmes, Shirley L., Adler, Lynn S., Wink, Michel																		
Deryak, Hsin-Chieh, Adams, Robert, Sigurd, Lillian, Buddy, Herbert, Doris																		
Bird, Ian M., Yama, Phillip A., Oline, Chastity Gaur, Upshaw, Wilton, Mary E., Ulfhake, Leif																		
Elshatory, Fanying, Ling, Amy																		
John, Michael																		
Abenav, Catherine E., Khandaj, Samirah, Ahmed, Karim, Hossain, Jessica																		
Hershenson, James A., Zaidi, Ali N., Taylor, Karen M., Moskowitz, Nancy, Sarafan, David																		
Wagner, Jeffrey J., J. J. A. K. H. V. D. S. G. P.																		
Tan, Anthony T., Nugent, Vincent A., Fild, Emily M., Whitley, Sara K., Corbelli, Daniel																		
Roh, Hanjoon J., J. J. A. K. H. V. D. S. G. P.																		
Davis, Andrew M., C., Scahill, Daniel J., Schumacher, Stefan, Keung, H., Bink																		
Rubin, M. R., Bani, A. C., Du, R., Du, R., Du, R., Du, R.																		
Hudson, Marilyn, Fuller, Brent E., Okamoto, Harumi, Sasaki, Anna W., Cheng, Michael																		
Kumar, Ravi, Anand, Sushant C., Girdhar, S., Girdhar, S., Girdhar, S.																		
Saha, Siddhi, Anand, Sarwanand, S., ...																		
Moghe, S. M., Mendis, J., Srinivasan, S., Girdhar, S., Girdhar, S.																		
Elshatory, Fanying, Ling, Amy, Doe, Chastity, Gaur, Upshaw, Wilton, Mary E., Ulfhake, Leif																		
Yang, Shuang-Lan, Huang, Helen, Ford, John, Helmer, Stephen																		
Phillips, Donna, Ambath, Harris, Gennaro, Larson, Minny, Legardi, Higgins, Karen																		
Byrd, Jeff																		
Elshatory, Fanying, Ling, Amy																		
Isenhardt, Franziska M., Diani, Bremer, S., Okamoto, Harumi, Sasaki, Anna W., Cheng, Michael																		
Gebhart, Anja-Li, M., Diani, Bremer, S., Okamoto, Harumi, Sasaki, Anna W., Cheng, Michael																		
Ritzmann, Malena, Caroline, Francis, S., Gennaro, Gennaro, Larson, Minny, Legardi, Higgins, Karen																		
Morris, Martin A., Machalek, Jenna, Anderson, Tom L.																		
Palmer, Robert L., Koch, Jonathan, Ulfhake, Leif, Oline, Chastity, Gaur, Upshaw, Wilton, Mary E., Ulfhake, Leif																		
Gillett, Ross W., Davis, James E., Mitchell, Paul G.																		
Hurt, Linda A., Brown, Katrina																		

**Effect of Dietary Doses of Quercetin on Hepatic Drug Metabolizing Enzymes in Spontaneously Hypertensive Rats**  
 Elshatory, Fanying, Ling, Amy, Doe, Chastity, Gaur, Upshaw, Wilton, Mary E., Ulfhake, Leif  
 ISSN: 0278-7966, 2107-0180; DOI: 10.1007/s13318-019-00560-0  
 European Journal of Drug Metabolism and Pharmacokinetics European journal of drug metabolism and pharmacokinetics, 2019, Vol44(6), p.761-770

[Check availability >](#)

TOP  
 CITATION TOOLS  
 VIEW IT

[View It](#)

[To Request](#) [Sign in](#)

No full text available

Can't Find It?

[Request it through Interlibrary Loan](#)

If the above links do not work: [Request It through Interlibrary Loan](#)

[Need help? Please contact Library Staff](#)

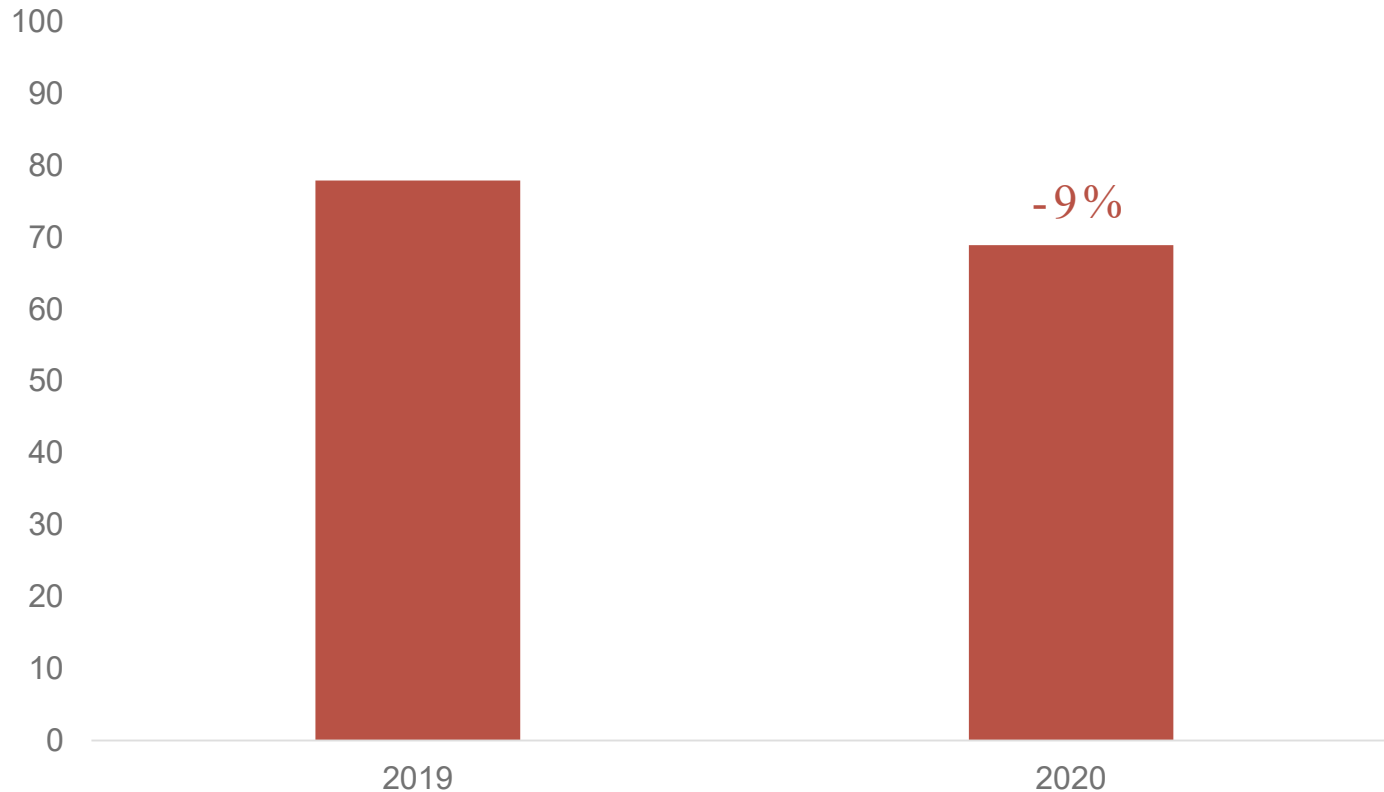
# CAVEATS

- Dependent on source data accuracy
  - Web of Science
  - Boxer Search
- Citations may be incomplete *(proceedings, books)*
- Focus towards the social sciences/sciences and articles

RESULT

# Availability 2009 - 2019

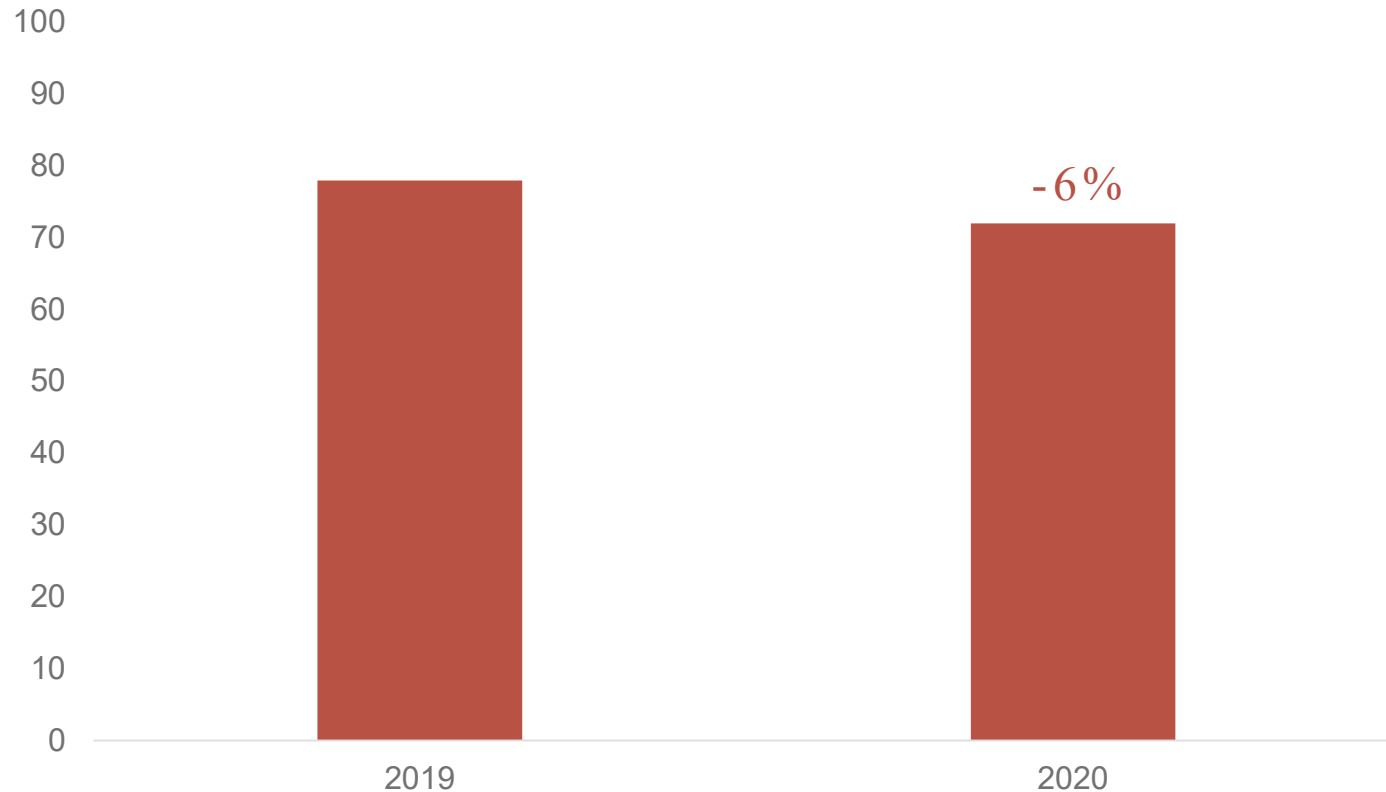
Comparing availability for citations from 2009-2019 in 2019 v. 2020



\*Due to database cancellations

# Availability Last 10 Years

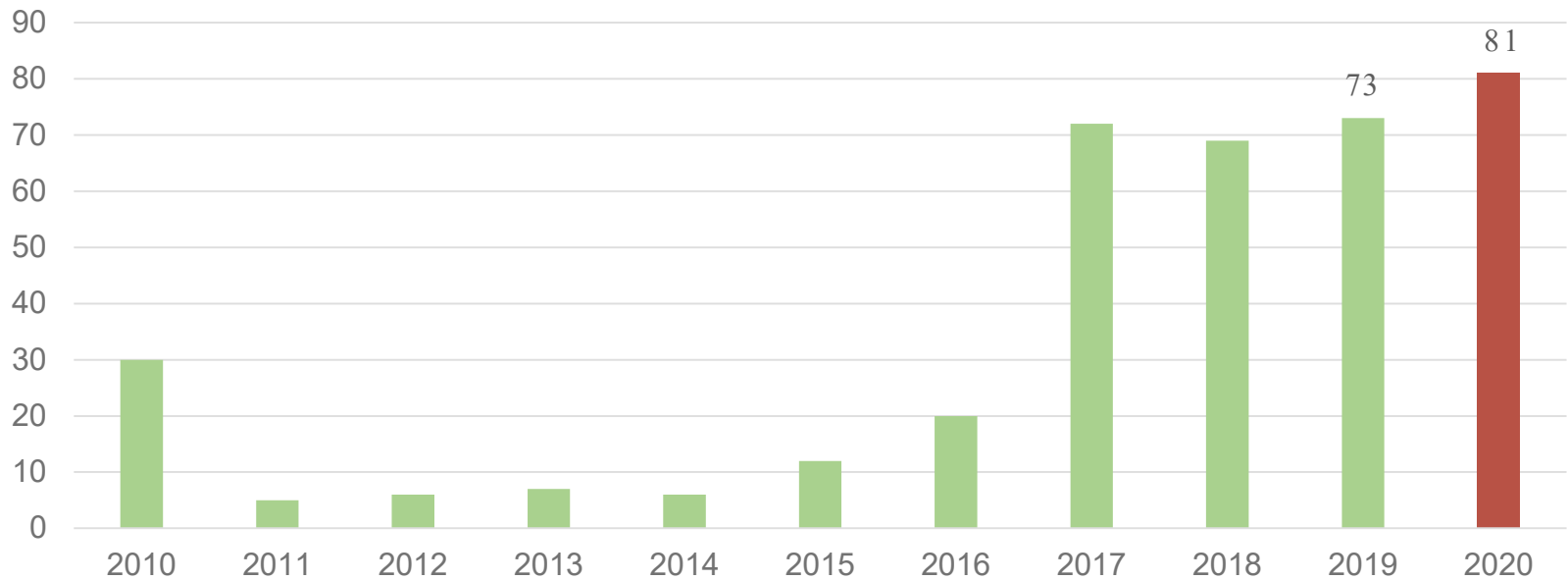
Comparing availability for citations from 2009-2019 in 2019 v. 2010-2020 in 2020



A little more availability for recent years ...

Budget had an  
impact, but it was  
mitigated ...

# Publications Per Year



Increasing focus on scholarship at Pacific

<https://www.pacificu.edu/about/media/pacific>

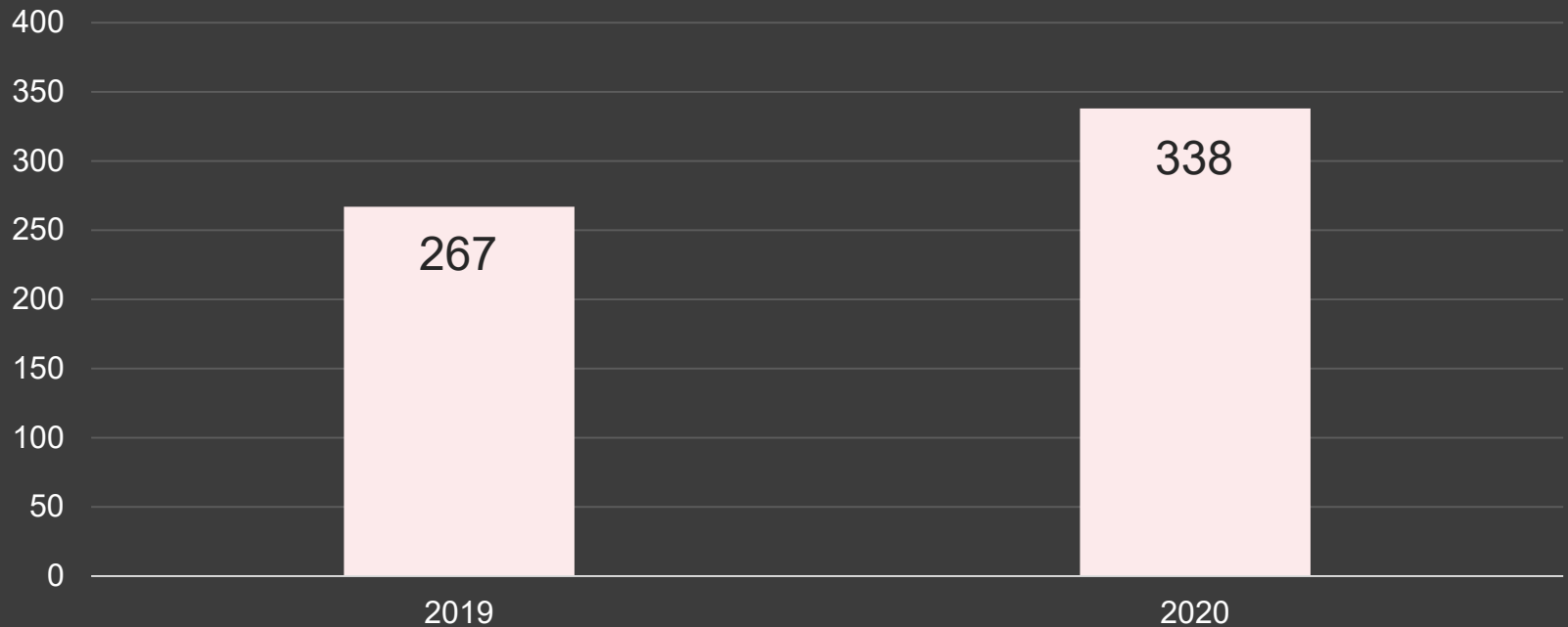
-named -top -research -university -third -year

# Publications Per Month

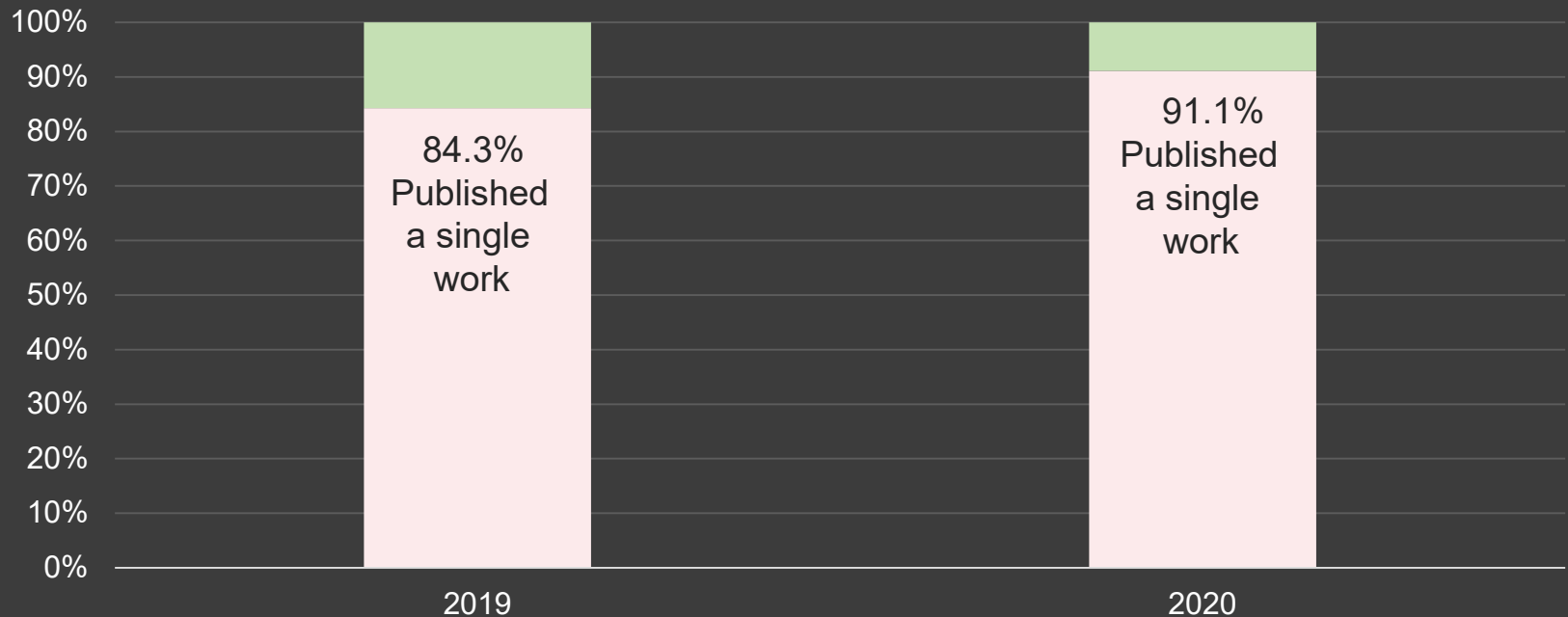




# Authors Overview



# Authors Productivity



# Authors Productivity

2020 authors  
published 1 - 6 works

2019 authors  
published 1 - 7 works

# Authors

2019

1.21

works per author  
average

2020

1.13

works per author  
average

# Citations Per Publication

2019

38.7

Average citations per  
publication

2020

47.9

Average citations per  
publication

Trend?

More publications,  
with more citations.

# Open Access Availability

2019

18%

Citations used in 2019  
available for free

2020

20%

Citations used in 2020  
available for free

# SUMMARY (preliminary)

Publications per year



Works per author



Citations per work



OA Access or Use





How does online only  
access impact  
academic research?

# To be determined ...

Could any of the changes we've seen  
be attributed to online practices?

Increased publications institutionally?

Decreased works per author?

Increased citations?

Increased role of open access?

How does budget impact  
academic research?

Despite attempts  
to mitigate, budget  
impacts  
availability.

Could this be why OA citations increased?

What will be the impacts on publications in future years?

# Availability Studies

- Began manually (infrequent/partial)
- Recently automated
  - More institutions
  - More frequent
  - More data sources
  - Longitudinal opportunities

We analyzed the references that  
**Pacific authors**  
used in their research  
and whether they are **available**  
through the Libraries.

**CONCLUSION**

**They (mostly) are!**



# THANK YOU!

QUESTIONS | COMMENTS

