# A journey into the unknown

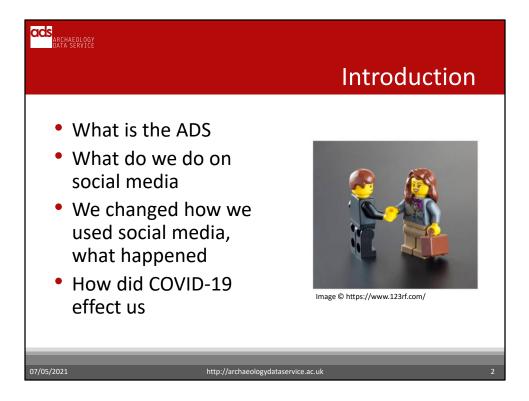
The ADS's voyage into expanding its dissemination of digital archives

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http://archaeologydataservice.ac.uk

ads

ARCHAEOLOGY DATA SERVICE



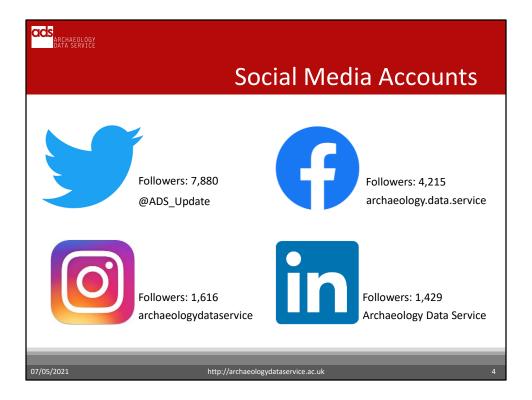
Today I'll be discussing what the ADS is, how we use social media, how this use has changed and the impact change had, and finally how COVID-19 effected us.



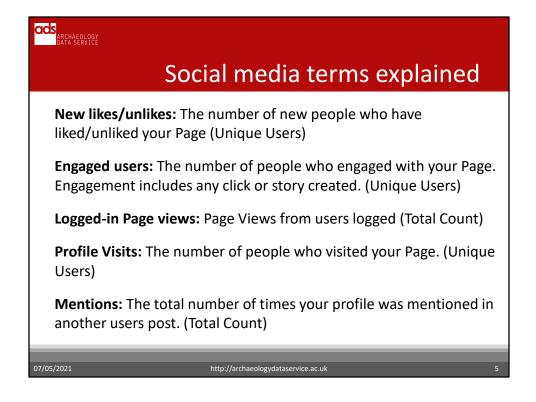
The archaeology data service is based at the university of **York** and was **established in 1996**, 6 years **years after Tim Berners-Lee** developed the **world wide web** and two years **before** Google.

ADS is the only certified digital repository in the UK for heritage data, with over 20 years of experience supporting research, learning and teaching with free, high quality and dependable digital resources.

Over those years we have gained the trust of the archaeology community through our policies and guides.



We use social media social media a lot. We use it to highlight new and old archives, join in community discussion as well as make general announcements and more. We are most active on Twitter followed by Facebook, Instagram, and finally LinkedIn. This is reflected by our follower size for each of the accounts.



Before I go any farther there are some terms that I need everyone to be familiar with. These terms are largely how Facebook defines each of these terms and having use all understand these terminologies is vital to understand the changes we experienced though I'll try and not be too term heavy.

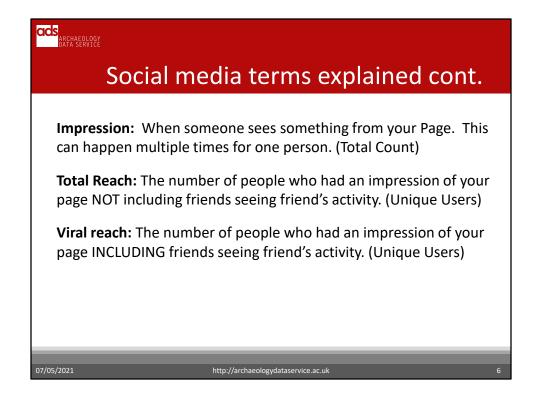
## As explained by Facebook

**New likes/unlikes:** The number of new people who have liked/unliked your Page (Unique Users)

**Engaged users:** The number of people who engaged with your Page. Engagement includes any click or story created. (Unique Users)

**Logged-in Page views:** Page Views from users logged into Facebook/Twitter (Total Count)

Profile Visits: The number of people who visited your Page. (Unique Users)

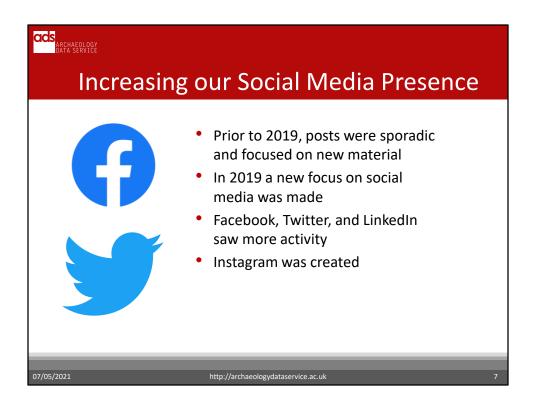


## As explained by Facebook

**Impressions:** The number of times any content from your Page entered a person's screen. This includes posts, stories, check-ins, ads, social information from people who interact with your Page and more. (Total Count)

**Total Reach:** The number of people who had any content from your Page enter their screen. This includes posts, check-ins, ads, social information from people who interact with your Page and more. (Unique Users)

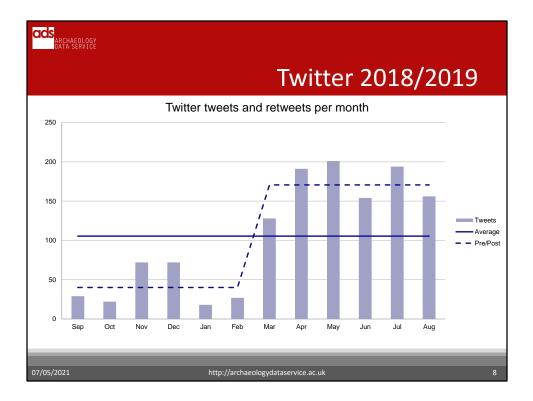
**Viral reach:** The number of people who had any content from your Page enter their screen through with social information attached. As a form of organic distribution, social information displays when a person's friend interacted with your Page, post or story. This includes when someone's friend likes or follows your Page, engages with a post, shares a photo of your Page and checks into your Page. (Unique Users)



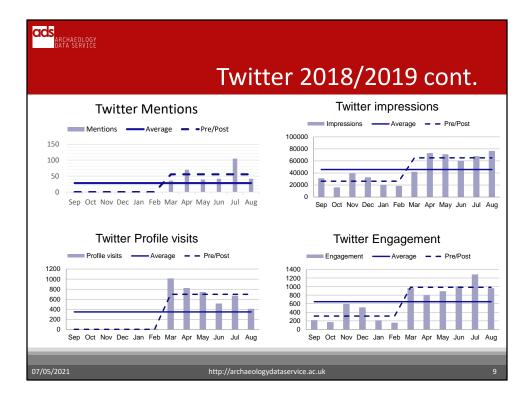
Prior to 2019, post across all of our social media platforms were sporadic and tended to focus primarily on new material. We knew this irregular posting wasn't good and when combined with lack of confidence from some staff members and a lack of any clear policy on the subject, something needed to be done.

So in 2019, a new focus on social media was made. New staff were hired to help with this initiative. We increased the activity on Facebook, Twitter, and LinkedIn and created an Instagram account.

And we saw some pretty interesting changes.



Here you can see the number of tweets and retweets we were doing each month increased significantly.



This increase had an impact. We more then doubled our mentions, impressions, profile visits, and engagement on twitter.

archaeology Data service	
Fa	acebook 2018/2019
Mentions unknown	Facebook Impressions Impressions Average - Pre/Post 20000 10000 5000 0 Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug
Facebook Profile visits	Facebook Engagement
Profile visits — Average – – Pre/Post	Engagement — Average – – Pre/Post
400 300 200 100 0 Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug	800 600 400 0 Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug
07/05/2021 http://archaeolog	ydataservice.ac.uk 10

We saw similar increases on Facebook.

By increasing our posting frequency and interactions we saw an increase in: New followers Profile visits Total impression Mentions by others Engagement Etc

But how did this impact us?

## Archives impact

Treatment	2018	2018	2019	2019	2018-2019	2018-2019
	Views	Treatment	Views	Treatment	Views	Treatment
	(st.dev.)*	(st.dev.)**	(st.dev.)*	(st.dev.)**	(st.dev.)*	(st.dev.)**
IPP	11.2	20.4	10.7	72.2	11	46.7
	(± 0.6)	(± 4.5)	(± 0.9)	(± 7.1)	(± 0.5)	(± 4.3)
IPP fixed	9.7	24.9	9.9	55.1	9.9	39.8
	(NA)	(± 0.9)	(NA)	(± 5.7)	(NA)	(± 2.9)
IPP random	9.7	24.9	10.2	55.3	10.0	39.8
	(± 1.8)	(± 0.9)	(± 2.1)	(± 5.5)	(± 1.9)	(± 2.8)

\*Estimated number of views before treatment (standard deviation) \*\* Estimated number of views due to treatment (standard deviation)

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We saw obvious gains in social media but we wanted to know how this effected our archives. We limited our scope to just Facebook and Twitter as Instagram was new and LinkedIn was in the process of being revitalized.

The posts/tweets from Facebook and Twitter were downloaded to find out which collections were publicised. I then downloaded the page visits for all of our collections.

From there, the collection summaries were separated into two groups: publicised and non published. Then, the month(s) that each collection was publicised on was assigned a treatment value (1) to create a matrix. All treatment values were 1 regardless of the number of times a collection may have been published on social media during a month (archives are often published on Facebook and Twitter simultaneously).

Three models were then fitted using this information via R: independently pooled panels (IPP), independently pooled panel with fixed effect model (IPP fixed), and independently pooled panel with random effects model (IPP random). These models show if there was an effect from publicising the data, and if so, how much (R also showed additional analysis of the effectiveness of the models).

By using 2018 and 2019 as separate, we control for the changes that were caused by hiring new staff. By testing 2018-2019, we established a baseline through the models tested.

When investigating these models, IPP shows a baseline for comparison with the other models. The 'views' as listed in the table show the estimated number of views without promotion while the 'treatment' in the table shows the additional views to the archive within the month of publishing them on social media.

The bottom two models show a more consistent effect for publishing archives on social media and the base number of views is more in line with what we would expect given the difference between different archives.

### Full explanation

To measure the impact these sites had on redirecting traffic to our archives, we used the page visits for all collections. This was chosen for simplicity. If we had used page views or downloads, we would have had to consider both of these counts in conjunction. This would have then accounted for search interfaces (which have no downloads). However, we would then have had to investigate if high-slide bypasses the download count. The main downside with page visits is that the total is collected over a one month period so some results may be misleading for archives that were published at the end of the month. From there, the collection summaries were separated into two groups: publicised and non published. Then, the month(s) that each collection was publicised on was contended to the month.

assigned a treatment value (1) to create a matrix. All treatment values were 1 regardless of the number of times a collection may have been published on social media during a month (archives are often published on Facebook and Twitter simultaneously).

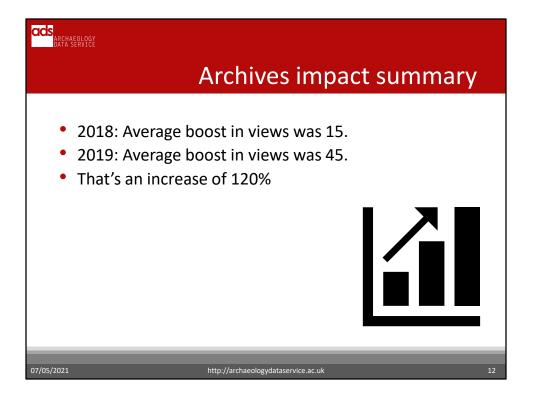
Three models were then fitted using this information via R: independently pooled panels (IPP), independently pooled panel with fixed effect model (IPP fixed), and independently pooled panel with random effects model (IPP random). These models show if there was an effect from publicising the data, and if so, how much (R also showed additional analysis of the effectiveness of the models). The results of these models are listed in the table and explained below. Three time periods were tested using this information: 2018, 2019, and 2018-2019. By using 2018 and 2019 as separate, we control for the changes that were caused by hiring new staff. By testing 2018-2019, we established a baseline through the models tested.

When investigating these models, IPP shows a baseline for comparison with the other models. The 'views' as listed in the table show the estimated number of views without promotion while the 'treatment' in the table shows the additional views to the archive within the month of publishing them on social media. With IPP, we see that every archive receives the same number of views every month, but then when it's published on social media, the number of views then increases but in a highly variable manner. This, however, does not make sense with what we would expect (i.e., it wouldn't make sense for use to get less views on an archive after publishing it on social media).

Thus, IPP fixed and IPP random were used. With these two models, we see a decrease in the standard deviation with treatment and a lower base number of views. These models show a more consistent effect for publishing archives on social media and the base number of views is more in line with what we would expect given the difference between different archives.

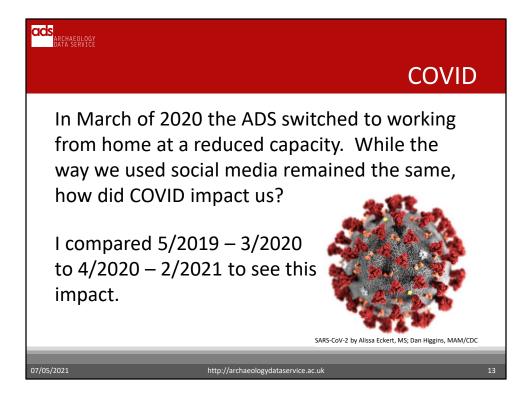
When you look at the models per year, the number of baseline views remains roughly the same. What significantly changes, however, is the number of additional views due to publication on social media. In 2018, there were an estimated 15 additional views while in 2019 there were 43. In 2018, social media, a mainly limited to Friday photo and announcing new releases of archives. In 2019, however, there were additional themes that were posted per month which greatly increased the engagement on these profiles that was then reflected in increased views to archives. This increase in engagement was investigated elsewhere but was summarised in the 2019 Annual Report.

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The baseline views remained roughly the same for the different tests. We were pulling in 15 new views to an archive whenever it was published on social media. Once we became more active on social media in 2019, this was raised to 45 additional views.

In 2018, social media publication was mainly limited announcing new releases of archives with the occasional to Friday photo or retweet . In 2019, however, there were additional themes that were posted per month which greatly increased the engagement on these profiles that was then reflected in increased views to archives. We felt that the amount of additional time we put into social media to get these gains was worth it and will help increase yearly gains in the future.

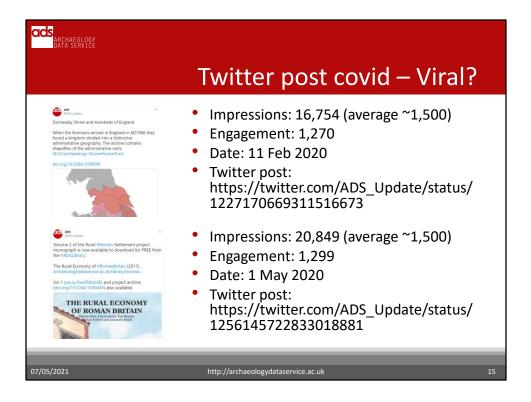


But changing our use of social media isn't the only impact we've seen. COVID-19 had an impact as you may expect. To investigate this impact, I compared the 9 months prior to lockdown 1 and the nine months after it. Again I'm going to be comparing Twitter and Facebook but this time for consistency's sake.

https://commons.wikimedia.org/wiki/File:SARS-CoV-2\_without\_background.png

ARCHAEOLOGY DATA SERVICE				Twitter post covid
Time Period	May 19 - Mar 20	Apr 20 - Feb 21	Change	<ul> <li>The number of Tweet</li> </ul>
Tweet impressions Profile visits	77k	85k 666		impressions increased
Mentions New followers		67 84		by 11%
Average engagements Average	25	38		<ul> <li>Profile visits and post engagement increased</li> </ul>
engagement rate url clicks		1.98% 6	30% 29%	by ~50%
/05/2021				http://archaeologydataservice.ac.uk

Twitter saw some modest increases in impressions and mentions and a marked increase in profile visits and average engagement.



This is likely du entirely to covid and not special instances like a post going viral as Twitter sees a post do significantly better then the rest every month or two.

							F	acebook post covid
Facebook totals per month		New Likes	Unlikes	Page Engaged Users	Total Reach	Viral Reach	Logged-in Page Views	Table summary showing monthly totals.
May-19	2532	21	6	240	6582	1177	213	montiny totals.
Jun-19	2539	13	6	193	6194	1556	118	
Jul-19	2553	24	9	443	10385	3429	252	
Aug-19	2575	30	6	503	11171	1443	205	
Sep-19	2625	55	8	892	12685	6734	310	Facebook explains these
Oct-19	2658	41	10	548	11262	2850	294	racebook explains these
Nov-19	2698	47	2		11516	3771	266	terms as explained on the
Dec-19 Jan-20	2702	16 170	10	401 2268	10264 32668	3157 26036	210	•
Jan-20 Feb-20	2865	1/0	3	2268	32668	26036	379 345	following slides.
Mar-20	2955	24	5	642	9700	2943	545 158	ionowing sinces.
Apr-20	2949	52	6	976	15127	424842	284	
May-20	3037	59	12	1040	19009	12374	269	
Jun-20	3279	256	12	3429	50334	43222	462	
Jul-20	3298	25	4	510	10053	4166	356	
Aug-20	3322	33	7	217	4581	830	185	
Sep-20	3396	79	4	786	16300	13168	179	
Oct-20	3454	65	4	448	9360	9360	233	
Nov-20	3493	49	7	316	6127	1163	328	
Dec-20	3518	32	8	721	17852	11195	290	
Jan-21	3537	35	3	382	8028	3311	127	
Feb-21	3616	63	9	1400	18545	12556	236	
Mar-21	3650	34	9	476	12315	3587	181	

Facebook on the other hand had much more interesting changes happen during covid in my opinion.

**Daily Total Reach** The number of people who had any content from your Page or about your Page enter their screen. This includes posts, check-ins, ads, social information from people who interact with your Page and more. (Unique Users) **Daily Viral Reach** The number of people who had any content from your Page or about your Page enter their screen through with social information attached. As a form of organic distribution, social information displays when a person's friend interacted with your Page, post or story. This includes when someone's friend likes or follows your Page, engages with a post, shares a photo of your Page and checks into your Page. (Unique Users)

Monthly average for the viral reach for all posts:

2019: 10,007 2020: 17,205 (with) 2020: 14,193 (w/o)

Facebook post covid – Page views								
acebook otals per month	Lifetime Total Likes	New Likes		Page Engaged Users	Total Reach	_	Logged-in Page Views	Average page views per
May-19	2532		6		6582	1177	213	month:
Jun-19	2539		6		6194	1556	118	
Jul-19	2553		9		10385	3429 1443	252	<b>.</b>
Aug-19 Sep-19	2575		6		111/1 12685	1443 6734	310	• Pre-March: 250
Oct-19	2658		10		112665	2850	294	
Nov-19	2698		2		11202	3771	254	
Dec-19	2702		10		10264	3157	210	• Post-April: 268
Jan-20	2865	170	7	2268	32668	26036	379	· · · · · · · · · · · · · · · · · · ·
Feb-20	2933	73	3	1036	15346	8080	345	<b>7</b> 0/ in areas
Mar-20	2949	24	7	642	9700	2943	158	<ul> <li>7% increase</li> </ul>
Apr-20	2992	52	6	976	15127	424842	284	
May-20	3037	59	12	1040	19009	12374	269	
Jun-20	3279		12	3429	50334	43222	462	
Jul-20	3298		4		10053	4166	356	
Aug-20	3322		7		4581	830	185	
Sep-20	3396		4		16300	13168	179	
Oct-20	3454		4		9360	9360	233	
Nov-20	3493		7		6127	1163	328	
Dec-20	3518		8		17852	11195	290	
Jan-21	3537		3		8028	3311	127	
Feb-21	3616		9		18545	12556	236	
Mar-21	3650	34	9	476	12315	3587	181	
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Small increase in average page views per month.

			50		JOS	το	ονια	d – Likes/Engagem
cebook tals per nonth	Lifetime Total Likes	New Likes	Unlikes	Page Engaged Users	Total Reach	Viral Reach	Logged-in Page Views	Average total likes:
May-19	2532	21	6	240	6582	1177	213	Due Manula 47
Jun-19	2539	13	6	193	6194	1556	118	Pre-March: 47
Jul-19	2553	24	9	443	10385	3429	252	
Aug-19	2575		6	503	11171	1443	205	Doct April: 60
Sep-19	2625		8	892	12685	6734	310	• Post-April: 68
Oct-19	2658		10	548	11262	2850	294	-
Nov-19	2698		2	809	11516	3771	266	46% increase
Dec-19	2702		10	401	10264	3157	210	40% Increase
Jan-20	2865		7	2268	32668	26036	379	
Feb-20	2933		3		15346	8080	345	
Mar-20	2949 2992		7		9700 15127	2943 424842	158	
Apr-20 May-20	3037		6 12	976 1040	15127	424842	284 269	Engaged users:
lun-20	3279		12	3429	50334	43222	462	0.0
Jun-20 Jul-20	3279		12	3429 510	10053	43222	356	Due Manuel 725
Aug-20	33296		4		4581	4100	185	• <b>Pre-March</b> : 725
Sep-20	3396		4	786	16300	13168	185	
Oct-20	3454		4	448	9360	9360	233	Deat Annil 020
Nov-20	3493		7	316	6127	1163	328	• Post-April: 930
Dec-20	3518	32	8	721	17852	11195	290	•
Jan-21	3537	35	3	382	8028	3311	127	• 28% increase
Feb-21	3616	63	9	1400	18545	12556	236	<ul> <li>Zo% Increase</li> </ul>
Mar-21	3650	34	9	476	12315	3587	181	

The average amount of likes and engaged users we got on Facebook had very good increases.

Avg likes/dislikes per month: 2019: 4 2020: 10 (11 with) 2021: 6

month L May-19 Jun-19 Jul-19 Aug-19 Sep-19 Oct-19 Nov-19		New Likes 21 13 24 30 55	6 6 9		Total Reach 6582	Viral Reach	Logged-in Page Views	
Jun-19 Jul-19 Aug-19 Sep-19 Oct-19 Nov-19	2539 2553 2575 2625	13 24 30	6		6582		VIC/VS	Total viral reach for all
Jul-19 Aug-19 Sep-19 Oct-19 Nov-19	2553 2575 2625	24 30	9	193		1177	213	posts:
Aug-19 Sep-19 Oct-19 Nov-19	2575 2625	30	-		6194	1556	118	p03t3.
Sep-19 Oct-19 Nov-19	2625		6		10385 11171	3429 1443	252 205	
Oct-19 Nov-19			8		12685	6734	310	<ul> <li>March: 9,700</li> </ul>
		41	10		11262	2850	294	
	2698	47	2	809	11516	3771	266	<ul> <li>12.5k average prior</li> </ul>
Dec-19	2702	16	10	401	10264	3157	210	12.5K average prior
Jan-20	2865	170	7		32668	26036	379	
Feb-20	2933	73	3		15346	8080	345	<ul> <li>April: 15,127</li> </ul>
Mar-20	2949	24	7	•	9700	2943	158	
Apr-20	2992 3037	52 59	6 12		15127 19009	424842 12374	284 269	<ul> <li>15.9k average post</li> </ul>
May-20 Jun-20	3037	256	12		50334	43222	462	13.3K average post
Jul-20	3298	250	4		10053	43222	356	
Aug-20	3322	33	7		4581	830	185	• 27% increase
Sep-20	3396	79	4	786	16300	13168	179	
Oct-20	3454	65	4		9360	9360	233	
Nov-20	3493	49	7		6127	1163	328	
Dec-20	3518	32	8		17852	11195	290	
Jan-21	3537	35	3		8028	3311	127	
Feb-21	3616	63	9		18545	12556	236	
Mar-21	3650	34	9	476	12315	3587	181	

The total viral reach had a nice increase once lockdown was called.

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Monthly average for the viral reach for all posts:

2019: 10,007 2020: 17,205 (with) 2020: 14,193 (w/o)

			ac	.eb	00	кρ	osi	covid – Viral reach
Facebook totals per month	Lifetime Total Likes	New Likes	Unlikes	Page Engaged Users	Total Reach	Viral Reach	Logged-in Page Views	Viral reach for all posts:
May-19	2532		6	240	6582	1177	213	Acrob. 2042
Jun-19	2539		6	193	6194	1556	118	<ul> <li>March: 2,943</li> </ul>
Jul-19	2553		-	443	10385	3429	252	·
Aug-19	2575		-	503	11171	1443	205	• 5.5k average prior
Sep-19	2625		8	892	12685	6734	310	5.5K dverage prior
Oct-19	2658		10	548	11262	2850	294	
Nov-19	2698		2	809	11516	3771	266 210	<ul> <li>April: 424,842</li> </ul>
Dec-19	2702		10	401	10264		210	
Jan-20 Feb-20	2865		3	2268 1036	32668 15346	26036 8080	379	• 19 7k average post 11
Mar-20	2955		5		9700	2943	158	<ul> <li>48.7k average post, 11</li> </ul>
Apr-20	2943		,	976	15127	424842	284	oveluding this month
May-20	3037		12	1040	19009	12374	269	excluding this month
Jun-20	3279		12	3429	50334	43222	462	
Jul-20	3298		4	510	10053	4166	356	• 776% increase with
Aug-20	3322		7		4581	830	185	77070 meredse with
Sep-20	3396	79	4	786	16300	13168	179	April 1000/ without
Oct-20	3454	65	4	448	9360	9360	233	April, 100% without
Nov-20	3493	49	7	316	6127	1163	328	•
Dec-20	3518	32	8	721	17852	11195	290	<ul> <li>August: 830</li> </ul>
Jan-21	3537	35	3	382	8028	3311	127	August. 050
Feb-21	3616	63	9	1400	18545	12556	236	
Mar-21	3650	34	9	476	12315	3587	181	

The most significant numbers come from the viral reach however. We saw an absolutely massive amount of people viewing our posts. To the point where I had to exclude April to get a more realistic idea of how this effected our actual viral reach numbers. I'd also like to note, August low of 830 (Eat out to Help out). Yet despite this massive increase in viral reach, we didn't see a corresponding increase in the other values.

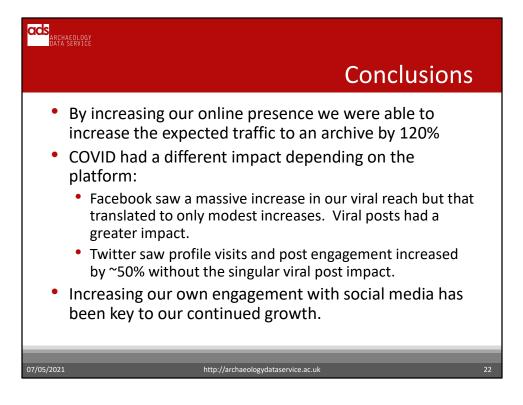
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#### CICS ARCHAEOLOGY DATA SERVICE Facebook post covid – Viral post Post Details 2020 had a few Performance for your post Archaeology Data Service 8 June 2020 · O 38,183 People Reached viral posts. Most Underwater archaeological sites, such as shipwrecks, offer extraordinary opportunities for archaeologists due to their low light, low temperature and a low oxygen environment which is favourable for archaeological 1,438 Reactions, comments & shares $\oplus$ notable is this one 1,052 79 On post 973 On shares The VENUS project team surveyed shipwrecks at various depths to d scientific methodologies for the virtual exploration of deep underwater archaeology sites. 116 O Love 12 On post 104 On shares from June 2020. This image is an orthophoto of amphora on the seabed at the Roman Port-Miou C wreck, Marseille. 0 On post 1 On shares 1 Haha We saw a greater Explore the project archive at: https://doi.org/10.5284/1000004 0 On post 73 73 On shares increase from viral 10 On Post 38 28 On Shares posts like this then 158 Con Post 158 the increased viral 2,589 Post Clicks 758 Photo views 164 Link clicks (#) 1,667 Other Clicks @ reach lockdown NEGATIVE FEEDBACK 0 Hide all posts 5 Hide post gave us. O Report as spam 0 Unlike Page http://archaeologydataservice.ac.uk

In fact, most of the increases we saw were due to this post. This post from alone gave us a much larger impact in terms of Page likes and engagement then the massive viral reach did. People were just scrolling without interacting with what they saw in April over lockdown 1.



In conclusion, by increasing our online presence, we were able to increase the expected traffic to an archive by 120%.

Covid had an effect on us but it changed via the platform. Facebook saw a massive increase in our viral reach but that translated to only modest increases. Viral posts had a greater impact.

Twitter saw profile visits and post engagement increased by ~50% without the singular viral post impact that Facebook had.

Lockdown did increase traffic to our archives but a singular viral post did just as much. As such, increasing our own engagement with social media has been what was key to our growth. Though having more people seeing our posts, especially when one went viral helped.

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Thanks you, any questions?