Racial Hate Crime and COVID-19:
A Multinomial-choice Study in the US

Yiang Li[1,✉], Xingzuo Zhou[1,✉],
Tianning Zhu[1], Xiaoyu Guo[1],
Xingyou Zhou[2], and Wanyi Wang[2]

[1]University College London
[2]University of Toronto

Abstract—**During the COVID-19, a dual shock to the economy and health system, the sentiments of uncertainty and insecurity have exacerbated the racial inequalities in the United States, contributing to the rise of antagonistic racial tension. Using hate crime data published by Federal Bureau of Investigation (FBI), this study implemented a Multinomial Logistic Regression to analyse the marginal probability of different races to commit hate crimes. It is found that all races except for black race tend to target black race as victims of a racial hate crime. This study reveals the racial inequality and discrimination existed in the United States, providing policymakers and public activists with evidences and direction to make efforts.**

Keywords COVID-19, Multinomial choice, racial hate crime, Stigmatisation, Inequalities

I. INTRODUCTION

In December 2019, a novel coronavirus disease COVID-19 was first found in Wuhan, China and swiftly swept over the rest of the world in weeks. As people adapt to this unprecedented "twin pandemic" of both economic and public health shock, there are worldwide rising fears regarding the uncertainty of COVID-19 (Anand, 2020, p. 5). Studies on similar sentiments of uncertainty in historical shocks such as national wars and terrorism are shown to be reflected in the individual and government responses, which exacerbate the horizontal and vertical power imbalances within the society (Adefuye et al., 2020; Bar-Tal & Labin, 2001). In COVID-19, the suspected geographic origins of the virus were conflated with Asian ethnicity so that all people sharing the race of the people at the geographic origin of the virus were at risk of social exclusion. Beyond Asians, multiple studies have also indicated the social exclusion of COVID-19

has punitively obstructed health-seeking behaviour for all ethnic minorities including African Americans and led to wider social othering between races (e.g., Tai et al., 2020; Romano et al., 2021; Goldberg, 2020).

In this paper, we examine how COVID-19 affect hate crime rates against different ethnic groups in the United States. Using data from FBI Hate Crime Statistics, we apply a multinomial logistic regression aiming to understand the bias motivation behind hate crimes.

II. LITERATURE REVIEW

Hate crime is the physical or verbal aggression directed at a group with particular physical or social attributes aiming to dethrone their individual identity and social acceptance (Goffman, 2018). Past studies on hate crime targeting the national, sexual, racial, religious or other social attributes have found significant stigmatising perceptions and physical aggression (e.g., Laverick and Joyce, 2019; Walfield et al., 2017; Jones, 2020). These sentiments of stigmatisation stem from some form of injustice that is not natural but the upstream combination of toxic social, political and community arrangements (Marmot et al., 2008, Marmot, 2017).

The present literature has discussed COVID-19 hate crimes widely against infected patients (E.g., Sun et al., 2021) and healthcare workers (E.g., Abdelhafiz & Alorabi, 2020; Villa et al., 2020). Due to racial sensitivity, quantitative studies of racial aggression commonly used indirect evidence without public access to administrative datasets (Goldberg, 2020). In COVID-19, internet search queries, for instance, are an indirect proxy to measure the intensity of Sino-phobia, which has increased dramatically over the periods (E.g., Budhwani & Sun, 2020; Li et al., 2020). Using social

---

CONTACT   Yiang Li   ✉ yiang.li.19@ucl.ac.uk   ⌧ Social Research Institute, UCL, London, UK WC1H 0AA
    Xingzuo Zhou   ✉ xingzuo.zhou.19@ucl.ac.uk   ⌧ Department of Economics, UCL, London, UK WC1H 0AX

media data, Williams (2021) studied the Twitter racial sentiments following Donald Trump's tweet that labelled COVID-19 as the "Chinese Virus". He has not only found a significant increase in the online hate against Asian Americans but also a parallel trend in the physical world, where they experienced significantly more physical harassment since Trump posted the tweet. These practices are significantly associated with victims' perceived stigmatisation and a higher incidence of mental distress (Xin et al., 2020). Using a large-scale mental health survey data, Zhou et al. (2021) have found East Asians and Pacific islanders have faced heavy mental burdens from such heightened racial stigma from the discriminatory public discourses toward Asians. In the UK, Gray and Hansen (2020) used London Metropolitan Police data to carry out a probit regression that has found that COVID-19 is statistically significantly related to a higher probability of Chinese being hate crime victims.

Beyond Asians, previously vulnerable populations also faced social exclusions and racial inequalities during the COVID-19 pandemic in the United States. African Americans have a long history of marginalisation, discrimination, and racial trauma resulting from a "hierarchy of citizenship" (Wakeel & Njoku, 2021). The historical and institutional discrimination generally breeds medical mistrust and scepticism of diagnostic and treatment messages among black communities, which has caused a surge in COVID-19 infection, hospitalisation, and death rates among African Americans (Romano, 2021). Additionally, the poverty concentration among African American communities makes them less likely than other racial groups to access health insurance (Bogart and Thorburn, 2005; Bailey et al., 2020). The shortage of medical resources and lack of testing further increases the chance of disease transmission within the community, reinforcing the pre-existing stigma of viewing these minority groups as risky and virus-laden (Nydegger and Hill, 2020).

Despite the significant contributions to this field of pandemic stigmatisation, a significant lacuna remains in the evidence base. First, the present research has merely focused on the hate crimes and stigmatisation against Asians but not other ethnic minorities. Second, there lacks quantitative studies on the US hate crimes during COVID-19, which, as a dual economic and health shock, significantly differ from pandemics or global events (Anand, 2020). Previous literature has treated COVID-19 as a homogeneous period throughout, without considering the dynamics as the US adapts to it. Third, there is insufficient evidence disentangling the offenders' ethnic background behind the racial crime they commit. In this paper, we attempt to fill these gaps.

III. Materials & Methods

We collect our data from the Federal Bureau of Investigation Hate Crime Statistics. Before our analysis, we combine all non-racial crimes together as our baseline (i.e. random-race crimes). Table 1 illustrates the summary statistics of the cleaned data. The outcome measure in this analysis is **bias_motivation**. It is the motivation of the hate crimes and includes the following categories: baseline (1), White (11), Black (12), Asian (13), Indian(14) and Other (15). The main explanatory variable is **o_race** (Offender's race). The control variables are **SI** (COVID-19 stringency index, a proxy of the pandemic), **quarter** (seasonal factors) and **states** (demographic factors).

As the dependent categorical variable is polychotomous, Multinomial Logistic Regression (Multi-Logit) was adopted and these coefficients provide the effect sizes on the probabilities of category membership. As an extension of binary logistic regression, Multi-Logit uses maximum likelihood estimate probabilities of each category relative to the reference category of the outcome variable. Hence, when the dependent variable has k=6 categories, the model fits k-1=5 logit equations simultaneously and our interested marginal effects (probability) estimated by β_j differ according to the category relative to the reference category.

In theory our framework is:

$$U(BM_{ij}) = \alpha_j + \beta_j OR_i + \gamma' C_i + \epsilon_{ij}$$

where

- $U(BM_{ij})$ denotes utility of individual i committing crime to race j
- α_j denotes the constants
- C_i denotes the control vector, including **SI**, **quarter** and **states**

We then parameterise it:

$$ln(\frac{P(BM_{ij} = j)}{P(BM_{ij} = 1)}) = \hat{\alpha}_j + \hat{\beta}_j OR_i + \hat{\gamma}' C_i$$

Herein, the predicted probability that Black is a victim will be discovered through marginal effect of OR_i when j=12. In our study, we calculate this marginal probability at means (APE).

IV. Results

As Table 2 and Figure 1 illustrate, except for our baseline (non-racial crimes, or equivalently, random-race crimes), the African Americans suffers from the hate crimes the most.

Specifically, all races except for African Americans most likely to target African Americans to commit hate crimes; and African Americans is mostly likely to target white Americans to commit hate crimes. Asian, Indian and other minority races are rarely the target in racial hate crimes (statistical insignificance).

Motivation	Offender Race							Total
	Asian	Black	Indian	Others	Pacific Islander	Unknown	White	
Baseline	38	738	17	87	5	2313	1673	4871
Anti-White	6	448	15	24	12	430	253	1188
Anti-Black	33	120	23	60	8	1647	1639	3530
Anti-Asian	1	14	6	2	0	51	57	131
Anti-Indian	7	45	0	5	1	144	123	325
Anti-Others	2	11	1	3	1	145	91	254
Total	87	1376	62	181	27	4730	3836	10299

Table I
SUMMARY STATISTICS

Motivation	Offender Race						
	Asian	Black	Indian	Others	Pacific Islander	Unknown	White
Baseline	0.48 ***	0.63 ***	0.34 ***	0.52 ***	0.33 ***	0.53 ***	0.48 ***
	(8.08)	(26.10)	(4.95)	(12.84)	(2.70)	(31.97)	(33.29)
Anti-White	0.07 ***	0.25 ***	0.19 ***	0.09 ***	0.23 ***	0.07 ***	0.04 ***
	(2.40)	(11.82)	(3.55)	(4.39)	(2.44)	(9.95)	(8.98)
Anti-Black	0.42 ***	0.10 ***	0.45 ***	0.38 ***	0.42 ***	0.37 ***	0.46 ***
	(7.25)	(10.66)	(6.26)	(9.68)	(3.41)	(29.16)	(32.82)
Anti-Asian	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.14)	(0.14)	(0.14)	(0.14)	(0.03)	(0.14)	(0.14)
Anti-Indian	0.02	0.01	0.00	0.01	0.01	0.01	0.01
	(0.72)	(0.73)	(0.03)	(0.69)	(0.56)	(0.74)	(0.74)
Anti-Others	0.01	0.00	0.01	0.01	0.15	0.12	0.01
	(0.52)	(0.55)	(0.48)	(0.53)	(0.48)	(0.56)	(0.56)

* $p<0.1$ ** $p<0.05$ *** $p<0.01$; t statistics in parentheses

Table II
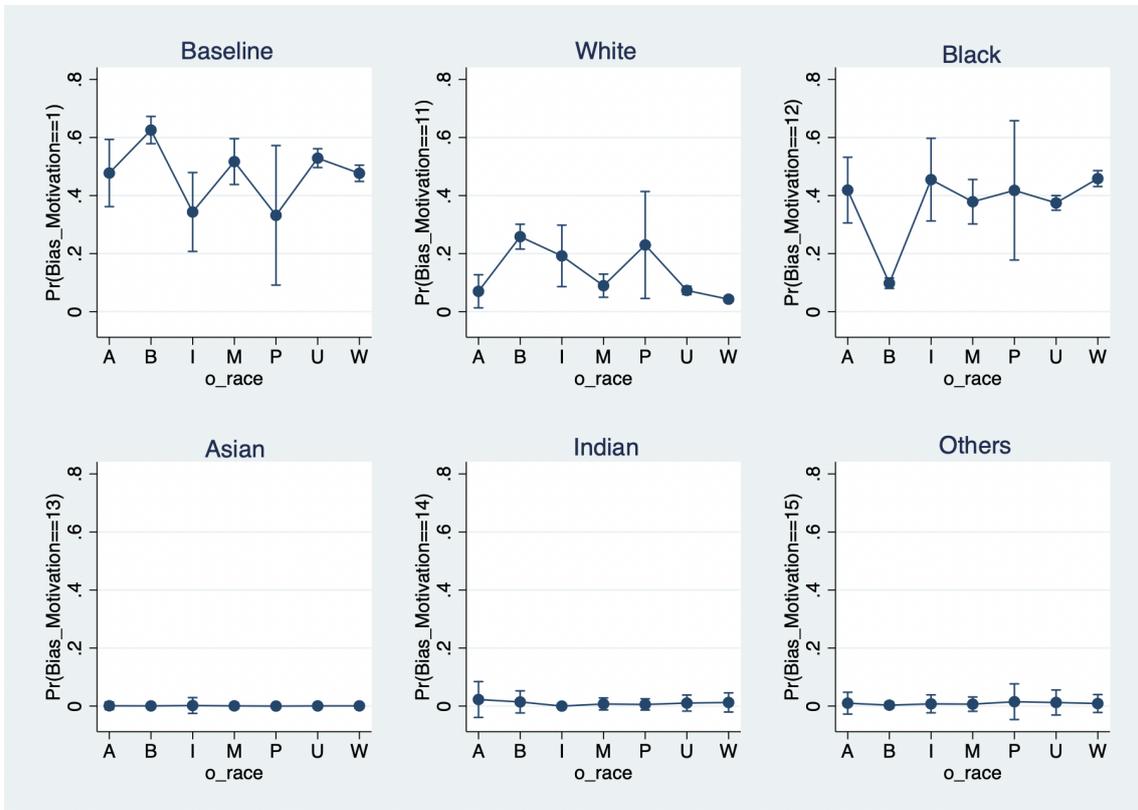MARGINAL PROBABILITY OF OFFENDER RACE TO
MOTIVATION

Figure 1. Marginal Probability of Offender Race to Motivation

V. Discussion and Conclusions

The goal of this paper is to further delve into the association between an offender's race and COVID-period hate crimes for various ethnic communities in the US. While a large and growing body of literature on Asian Americans has established that racial stigmatisation has a consistent and positive association with Asian targeted hate crimes, few studies have tested this association for other racial/ethnic minorities. This is especially the case for hate crimes targeted at African Americans, which increased over the last few months. Overall, we aim to expand this study by including other racial/ethnic groups neglected in previous pieces of literature to provide some account for why this association might exist.

From the regression results presented above, we draw several main conclusions. First, anti-black bias motivation was the highest cause of the racial hate crimes in the United States during COVID-19. The offender's race has a positive and statistically significant association with hate crimes against African Americans after controlling for stringency and demographic factors. Specifically, other than fellow African Americans, all other races are roughly equivalently associated with a higher probability of committing anti-black crimes during the pandemic. The high anti-black motivation is consistent with the expectations of implicit bias of viewing African Americans as a high-risk group in the US society, and this high risk often means seeing them as potential carriers and spreaders of the virus in an epidemic.

COVID-19 has also been a period of racial tension in the United States for not just the ethnic minorities, but white Americans. We find the Anti-White hate crime is the second-highest bias motivation, though the ethnicity is the 60% majority in the US population. Moreover, our finding also suggests a positive association between the offender's race and crime motivations during the pandemic for anti-white crimes. Different from the findings on the bias motivation against African Americans, the anti-white hate crimes are associated unequally by the offenders' race. The African Americans and Pacific Islanders are much more likely to commit anti-White hate crimes than other races in the United States. This is, we believe, most likely the effect of the upstream inequalities in racial power dynamics, which are exacerbated during the pandemic (Dunkan, 2019). Past studies have noted the white Americans have comparatively extensive medical resources in comparison to other ethnic groups (Elam-Evans, 2008). During COVID-19, this health inequality may, unfortunately, push other marginalised ethnic groups who lack medical resources to commit unlawful hate crimes.

We find statistically insignificant association between offenders' race and crime motivations in terms of the anti-Asian, anti-Indian, and anti-other crimes. This contradicts our theoretical predictions on significant Asian hate during COVID-19. We attribute this to one major limitation with the use of administrative FBI Hate Crime Statistics. In Table 1, summary statistics have shown a limited number of hate crimes reported by these three groups (Anti-Asian, 131; Anti-Indian, 325; Anti-Others, 254). This might reflect a severe under-reporting issue in Anti-Asian crimes. Previous research has revealed language barriers and irresponsibility of the authorities in dealing with anti-Asian crimes, which has led some Asians to avoid reporting their cases out of distrust of the authorities (Gover et al., 2020; Pezzella et al., 2019). Therefore the crime is not documented and leads to underestimation of the estimand. In other words, selection bias may exist in our studies, which is a potential limitation or contradiction.

In conclusion, this study provides empirical evidence of the hate crime levels during COVID-19 and that there is a positive association between COVID-related crime motivation and the offender's ethnicity. The anti-black and anti-white crime motivation is heavily affected by race after controlling for the governmental stringency index and seasonal and demographic controls using multinominal logistic regression. These results suggest that policymakers should consider long-standing race inequalities to reduce racially targeted crimes in the pandemic. In the future, we aim to use more accurate or representative proxies/instrumental variables for COVID-19, such as vaccination, daily infections, social media data etc. (Zhou & Li, 2022).

Conflict of interest

No conflict of interest is declared.

Data availability

Data that support the findings of this study are openly available in Crime Tracker at FBI.

ORCID Details

Yiang Li: 0000-0001-7811-4321
Xingzuo Zhou: 0000-0002-9829-1664
Tianning Zhu: 0000-0001-7976-6778

Xiaoyu Guo: 0000-0002-7661-0011
Xingyou Zhou: 0000-0001-5918-4076
Wanyi Wang: N/A

PRESENTATION LINK

Video: Google Drive Youtube

Slide: Google Drive

REFERENCES

[1] Abdelhafiz, A. S., & Alorabi, M. (2020). Social Stigma: The Hidden Threat of COVID-19. *Frontiers in public health, 8*, 429-429. https://doi.org/10.3389/fpubh.2020.00429

[2] Adefuye, A., Butler, M., & Adeola, H. (2020). The need to combat stigmatizing dogmas in the midst of the novel coronavirus disease (COVID-19) pandemic. *Journal of Public Health in Africa.* https://doi.org/10.4081/jphia.2021.1419

[3] Anand, P. (2020). Economic policies for COVID-19. https://www.econstor.eu/bitstream/10419/243442/1/pp156.pdf

[4] BarTal, D., & Labin, D. (2001). The effect of a major event on stereotyping: Terrorist attacks in Israel and Israeli adolescents' perceptions of Palestinians, Jordanians and Arabs. *European Journal of Social Psychology, 31*(3), 265-280. https://doi.org/10.1002/ejsp.43

[5] Bogart, L. M., & Thorburn, S. (2005). Are HIV/AIDS Conspiracy Beliefs a Barrier to HIV Prevention Among African Americans? *JAIDS Journal of Acquired Immune Deficiency Syndromes, 38*(2), 213-218. https://journals.lww.com/jaids/Fulltext/2005/02010/Are_HIV_AIDS_Conspiracy_Beliefs_a_Barrier_to_HIV.14.aspx

[6] Budhwani, H., & Sun, R. (2020). Creating COVID-19 Stigma by Referencing the Novel Coronavirus as the "Chinese virus" on Twitter: Quantitative Analysis of Social Media Data. *J Med Internet Res, 22*(5), e19301. https://doi.org/10.2196/19301

[7] Duncan, K. E. (2019). "They Hate on Me!" Black TeachersInterrupting Their White Colleagues' Racism. *Educational Studies, 55*(2), 197-213. https://doi.org/10.1080/00131946.2018.1500463

[8] Elam-Evans, L., Jones, C. Y., Jiles, R. B., & Perry, G. S. (2008). Using "socially assigned race" to probe white advantages in health status. *Ethnicity & Disease, 18*, 496-504. https://chq.org/wp-content/uploads/2020/07/14_Jones_SociallyAssignedRace_EthDis2008.pdf

[9] Goffman, E. (2018). Stigma and social identity. In *Deviance & Liberty* (pp. 24-31). Routledge.

[10] Goldberg, D. S. (2020). Structural stigma, legal epidemiology, and COVID-19: the ethical imperative to act upstream. *Kennedy Institute of Ethics Journal, 30*(3), 339-359. https://doi.org/10.1353/ken.2020.0018

[11] Gover, A. R., Harper, S. B., & Langton, L. (2020). Anti-Asian Hate Crime During the COVID-19 Pandemic: Exploring the Reproduction of Inequality. *American journal of criminal justice : AJCJ, 45*(4), 647-667. https://doi.org/10.1007/s12103-020-09545-1

[12] Gravlee, C. C. (2020). Systemic racism, chronic health inequities, and COVID-19: A syndemic in the making? *American journal of human biology : the official Journal of the Human Biology Council, 32*(5), e23482-e23482. https://doi.org/10.1002/ajhb.23482

[13] Gray, C., & Hansen, K. (2020). Did Covid-19 Lead to an Increase in Hate Crimes Toward Chinese People in London? *Journal of Contemporary Criminal Justice, 0*(0), 10439862211027994. https://doi.org/10.1177/10439862211027994

[14] Jones, D. S. (2020). History in a Crisis — Lessons for Covid-19. *New England Journal of Medicine, 382*(18), 1681-1683. https://doi.org/10.1056/NEJMp2004361

[15] Laverick, W., & Joyce, P. (2019). Racial and Religious Hate Crime. Springer.

[16] Li, Y., Twersky, S., Ignace, K., Zhao, M., Purandare, R., Bennett-Jones, B., & Weaver, S. R. (2020). Constructing and Communicating COVID-19 Stigma on Twitter: A Content Analysis of Tweets during the Early Stage of the COVID-19 Outbreak. International *Journal of Environmental Research and Public Health, 17*(18). https://doi.org/10.3390/ijerph17186847

[17] Marmot, M. (2017). Social justice, epidemiology and health inequalities. *European Journal of Epidemiology, 32*(7), 537-546. https://doi.org/10.1007/s10654-017-0286-3 Marmot, M., Friel, S., Bell, R., Houweling, T. A. J., & Taylor, S. (2008). Closing the gap in a generation: health equity through action on the social determinants of health. *The Lancet, 372*(9650), 1661-1669. https://doi.org/10.1016/S0140-6736(08)61690-6

[18] Nydegger, L. A., & Hill, M. J. (2020). Examining COVID-19 and HIV: The impact of intersectional stigma on short- and long-term health outcomes among African Americans. *International Social Work, 63*(5), 655-659. https://doi.org/10.1177/0020872820940017

[19] Pezzella, F. S., Fetzer, M. D., & Keller, T. (2019). The Dark Figure of Hate Crime Underreporting. *American Behavioral Scientist, 00(0)*, 1-24. https://doi.org/10.1177/0002764218823844

[20] Romano, S. D., Blackstock, A. J., Taylor, E. V., El Burai Felix, S., Adjei, S., Singleton, C-M., Fuld, J., Bruce, B. B., & Boehmer, T. K. (2021). Trends in Racial and Ethnic Disparities in COVID-19 Hospitalizations, by Region - United States, March-December 2020. MMWR. *Morbidity and mortality weekly report, 70*(15), 560-565. https://doi.org/10.15585/mmwr.mm7015e2

[21] Sun, N., Wei, L., Wang, H., Wang, X., Gao, M., Hu, X., & Shi, S. (2021). Qualitative study of the psychological experience of COVID-19 patients during hospitalization. *Journal of Affective Disorders, 278*, 15-22. https://doi.org/https://doi.org/10.1016/j.jad.2020.08.040

[22] Tai, D. B. G., Shah, A., Doubeni, C. A., Sia, I. G., & Wieland, M. L. (2020). The Disproportionate Impact of COVID-19 on Racial and Ethnic Minorities in the United States. *Clinical Infectious Diseases, 72*(4), 703-706. https://doi.org/10.1093/cid/ciaa815

[23] Villa, S., Jaramillo, E., Mangioni, D., Bandera, A., Gori, A., & Raviglione, M. C. (2020). Stigma at the time of the COVID-19 pandemic. *Clinical Microbiology and Infection, 26*(11), 1450-1452. https://doi.org/10.1016/j.cmi.2020.08.001

[24] Wakeel, F., & Njoku, A. (2021). Application of the Weathering Framework: Intersection of Racism, Stigma, and COVID-19 as a Stressful Life Event among African Americans. *Healthcare (Basel), 9*(2). https://doi.org/10.3390/healthcare9020145

[25] Walfield, S. M., Socia, K. M., & Powers, R. A. (2017). Religious motivated hate crimes: Reporting to law enforcement and case outcomes. *American journal of criminal justice, 42*(1), 148-169. https://doi.org/10.1007/s12103-016-9349-3

[26] Williams, M. (2021). The Science of Hate: How prejudice becomes hate and what we can do to stop it. *Faber & Faber.*

[27] Xin, M., Luo, S., She, R., Yu, Y., Li, L., Wang, S., Ma, L., Tao, F., Zhang, J., Zhao, J., Li, L., Hu, D., Zhang, G., Gu, J., Lin, D., Wang, H., Cai, Y., Wang, Z., You, H., & J. T-f. (2020). Negative cognitive and psychological correlates of mandatory quarantine during the initial COVID-19 outbreak in China. *American Psychologist, 75*(5), 607-617. https://doi.org/10.1037/amp0000692

[28] Zhou, S., Banawa, R., & Oh, H. (2021). Stop Asian Hate: The Mental Health Impact of Racial Discrimination Among Asian Pacific Islander Young and Emerging Adults during COVID-19. *Health Services Research, 56*, 8-9. https://doi.org/10.1111/1475-6773.13723

[29] Zhou, X., & Li, Y. (2022). Forecasting the COVID-19 vaccine uptake rate: an infodemiological study in the *US. Human Vaccines & Immunotherapeutics*, 1-8. https://doi.org/10.1080/21645515.2021.2017216