DISASTERS, CRISES AND VIOLENCE AGAINST WOMEN: EVIDENCE FROM BIG DATA ANALYSIS

Lessons from Kiribati, Samoa, Solomon Islands and Tonga

BACKGROUND

Crisis-induced stressors are known to increase the risk of violence against women (VAW).[1, 2] For instance, increased rates of VAW, including rape, were reported after the tsunami in 2007 in Gizo, Solomon Islands, a disaster that resulted in the displacement of approximately 10,000 people. Women and girls in temporary campsites also reported that the distance to water was too great, that men had begun to wait around water sites and that they did not feel safe when bathing.[3] The Office of the United Nations High Commissioner for Refugees (UNHCR) reports that due to lack of familial and community support structures, women are disproportionately exposed to violence in displacement settings. In Samoa, a heightened risk of gender-based violence was noted among young girls and adolescents living in temporary urban shelters after the tsunami in 2009 and Cyclone Evan in 2012.[4] Economic stressors associated with environmental and other crises may also contribute to higher incidence of violence against women. For instance, the coronavirus disease (COVID-19) pandemic has asserted that crises affect women and men differently, with women at a heightened risk of intimate partner violence when confined at home with their abusers[5, 6]. Although COVID-19 infection rates have remained relatively low in the Pacific, lockdown measures, border closures and economic impacts triggered by the pandemic have had gendered consequences. The effects of the pandemic have overlapped with multiple natural hazards, such as cyclones, typhoons and droughts, and this may have contributed to further increases in the incidence of VAW.

Crises often disrupt conventional data collection mechanisms as affected areas may become inaccessible, and face-to-face data collection may carry health and safety risks for enumerators and respondents. Collecting VAW data, in particular, poses significant challenges during crises, as it is more difficult to secure the confidentiality of survivors' responses in situations of displacement or during lockdowns. Given these challenges to conventional data collection, this study makes use of big data from online searches, social media posts and service provider websites to gather insights on the impact of recent environmental, political and health crises on VAW in the Pacific. It examines trends from June 2020 to June 2022 in Kiribati, Samoa, Solomon Islands and Tonga. To contextualize the findings, UN Women consulted with the Governments of those countries and jointly examined how responses to crises could strengthen support services for victims of violence, including by using online spaces. The findings from this study shed light on barriers and opportunities to better reach survivors of VAW during crises, and the findings are expected to provide evidence that can inform future crisis response policies.

METHODOLOGY

The approach taken for this study was designed in response to the data collection challenges mentioned above, and thus it uses non-conventional data sources (big data from Google searches, social media posts, websites) to respond to the research questions below.

RESEARCH QUESTIONS

To assess the impact of crises over the past two years on VAW in Kiribati, Samoa, Solomon Islands and Tonga, this analysis attempts to answer the following research questions:

1   WHO (2021). Violence against women. Available at www.who.int/news-room/fact-sheets/detail/violence-against-women

2   D. Parkinson (2022). Gender-Based Violence and Disaster. Available at https://oxfordre.com/naturalhazardscience/view/10.1093/acrefore/9780199389407.001.0001/acrefore-9780199389407-e-390

3   UN Women (2014). Climate change disasters and gender based violence in the Pacific. Available at www.uncclearn.org/wp-content/uploads/library/unwomen701.pdf

4   IFRC (2015). Unseen, unheard: Gender-based violence in disasters. Available at www.preventionweb.net/files/51016_1297700gbvindisastersenlr2.pdf

5   UN Women (2022). Measuring the shadow pandemic: Collecting violence against women data through telephone interviews. An evidence-based technical guidance. Available at https://data.unwomen.org/sites/default/files/documents/Publications/Guidance_VAW_RGA-EN.pdf

6   UN Women (2021). COVID-19 and Violence Against Women: The evidence behind the talk. Available at https://data.unwomen.org/sites/default/files/documents/Publications/COVID-19%20and%20VAW_Insights%20from%20big%20data%20analysis_final.pdf

1. Are people using online spaces to search for (or post about) VAW information more often when crises arise?
2. Are online searches and posts focused on a particular type of violence (physical, sexual, psychological/emotional, economic)?
3. Are online spaces being used for help-seeking?
4. Are crises prompting victims to look for help more often, or are crises obstacles that deter people from help-seeking?
5. Are victims finding the information they need to access services?
6. Are service providers, such a shelters, helplines, police and other support organizations, promoting content about VAW and related response services more proactively during or shortly after crises?

ANALYTICAL APPROACH

Big data from online search engines and social media posts in Kiribati, Samoa, Solomon Islands and Tonga was analysed for a reference period ranging from June 2020 to June 2022. The analysis does not assess the magnitude of changes in the incidence of VAW as a result of crises, but rather identifies whether or not a general upward and downward trend can be observed in VAW-related searches and posts during and after crises, as proxy measures for increases in the incidence of VAW. As not all VAW cases result in online interactions, these proxy measures are known to underestimate actual prevalence.

The study was conducted in two stages. First, search data were used to identify trends and ascertain whether peak periods of VAW-related searches overlapped with crisis events. Afterwards, a qualitative read of social media posts was conducted to understand in more detail the way in which women and men engaged on the topic of VAW during periods of crisis.

In this report, VAW searches refer to searches for keywords related to physical, psychological and sexual violence. To the extent possible, definitions used to identify each of these types of violence aligned with those from the Inter-Agency Standing Committee Guidelines on Gender-Based Violence Prevention and Response.[7]

To assess whether environmental or other crises influenced the patterns of VAW-related searches and posts, desk research identified events related to environmental hazards, COVID-19 lockdowns and other crises that took place between June 2020 and June 2022 (figure 1). These events were mapped against Google search engine data for the same period to assess whether peak periods of VAW search volume took place during crisis events.

Box 1. Limitations of analysis in Solomon Islands

Although the results presented in this brief are not expected to produce representative estimates of the incidence of VAW in any of the countries, limitations associated with internet penetration are particularly challenging in Solomon Islands. According to the International Telecommunications Union, only an estimated 12 per cent of people in Solomon Islands use the internet [8], and they largely inhabit urban centers across the islands. Therefore, the actual volume of VAW-related help-seeking needs in the country is expected to be particularly underestimated throughout this analysis. Addressing issues around internet infrastructure is a challenging endeavor given the geographical location and characteristics of the archipelago.

It is also important to note that, as the attention paid to the issue of VAW by educational institutions continues to increase in the country, some spikes on general VAW-related on-line searches noted in Solomon Islands may respond to student search behavior. In other words, although help-seeking and victim searches included in this publication are expected to be performed by victims of VAW (e.g. examples of such searches include "how to cover bruises on my face" or "my husband beats me"), increases on general VAW-related searches (e.g. "what is VAW" or "victim of domestic violence") may indeed respond to assignments given by educational institutions.

Additionally, per information provided by government officers and in light of the limited Internet penetration in the country, the majority of VAW related services in Solomon Islands are not yet available on line. As a result, awareness campaigns regarding service delivery have mostly taken place off line. Going forward, as internet usage rates increase, VAW service providers may find it useful to strengthen their online presence and outreach.

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7   See https://interagencystandingcommittee.org/system/files/2015-iasc-gender-based-violence-guidelines_lo-res.pdf.

8   Estimate as of 2017, latest available data point. This rate stands at 38 per cent in Kiribati (2020), 34 per cent in Samoa (2017) and 41 per cent in Tonga (2017). Source: https://data.worldbank.org/

Crisis-related events (lockdowns, mobility restrictions, disasters, hazards), June 2020 and June 2022, in Kiribati, Samoa, Solomon Islands and Tonga

Note: Darker shades of maroon refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

Note: Darker shades of brown refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.
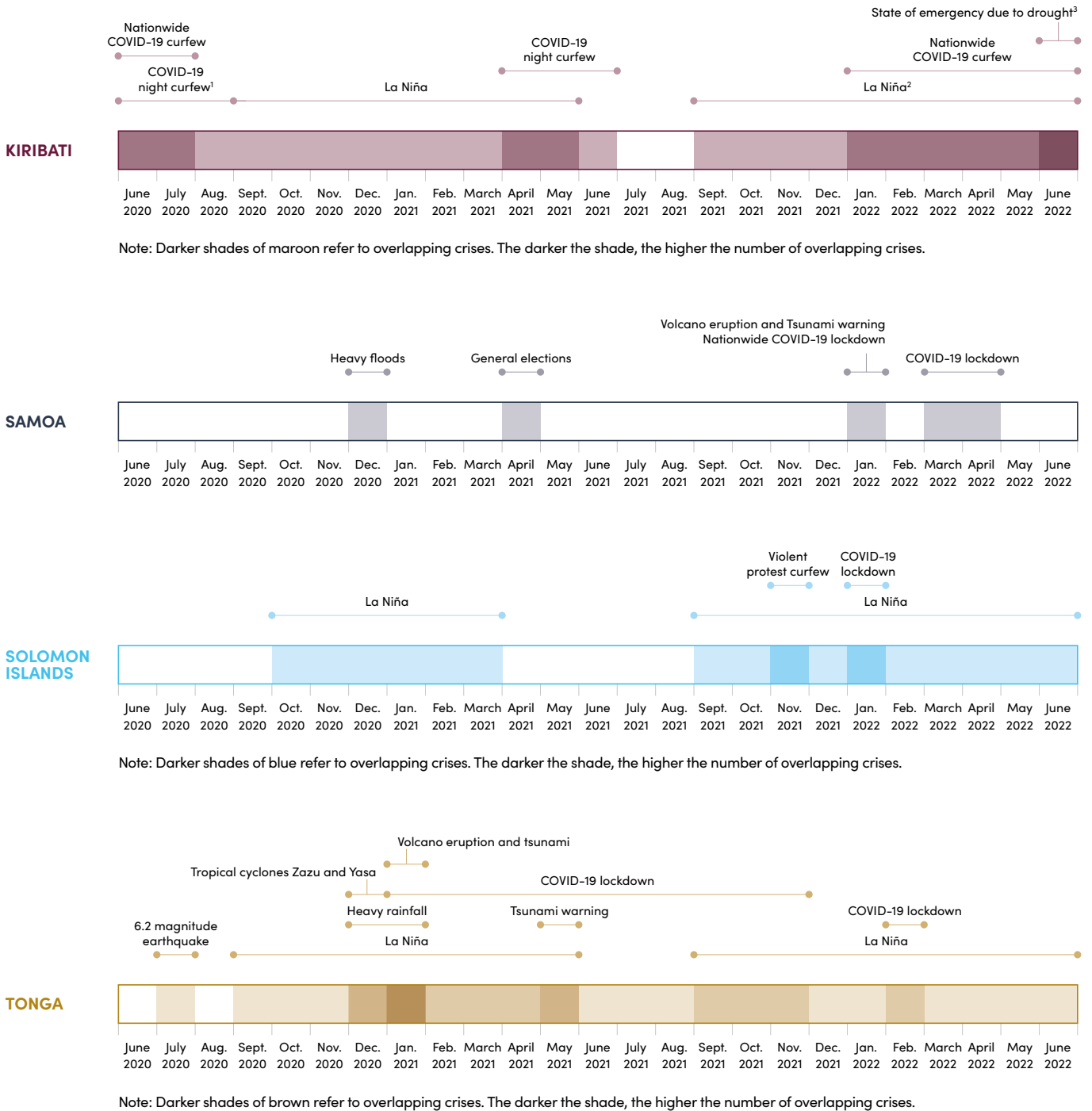
Notes:
1   Curfew started in May but not shown here as out of reference period.
2   Went on until August but reference period of the study is until June 2022
3   https://www.australianhumanitarianpartnership.org/preparedness-1/kiribati-drought#:~:text=The%20Government%20of%20Kiribati%20declared,is%20impacting%20the%20entire%20country.

SEARCH ANALYSIS

To conduct the search analysis, a total of 1,276 keywords on the topic of VAW were determined. The words were selected by consulting the language used in questionnaires from demographic and health surveys and specialized violence surveys. The words were translated into local languages. Additional terms were found through a brief literature review to account for discriminatory social norms and practices in each country. This resulted in an initial list that was circulated to relevant UN Women country offices for review. The aim was to ensure the list of keywords was aligned with local search terms and the cultural context. The final keyword list reflects how individuals search for these terms, including local terms, in Kiribati, Samoa, Solomon Islands and Tonga. Two types of analysis were conducted by clustering keywords by type of violence (e.g. physical, sexual, psychological/emotional) and type of intent or behaviour (e.g. informational searches vs. help-seeking searches), as summarized in figure 2.

Figure 2:
Clustering of keywords

Clustering of VAW keywords

Types of violence

Physical violence: Search terms specifically & directly related to, or indicating signs of, physical VAW (e.g., 'beaten by husband,' 'he hit me for the first time,' 'how to cover bruises')

Sexual violence: Search terms specifically & directly related to, or indicating signs of, sexual VAW, such as 'help for rape victim,' 'rape hotline,' 'force grope,' etc.

Psychological violence: Search terms specifically & directly related to or indicating signs of psychological VAW, such as 'husband yells at me,' 'my boyfriend makes me cry,' 'husband insults me,' etc.,

General VAW-related keyword: All other search terms that indirectly suggest some form of VAW but could not be specifically categorized into the abovementioned categories are included in this cluster. For e.g. 'ladies police helpline number,' 'report domestic abuse,' 'women harassment helpline,' etc.

Types of intent/behavior

General information: This behavior cluster includes search terms such as 'signs of abusive relationship,' 'what is an abusive relationship,' etc., that directly indicate information-seeking behavior.

Survivor/Victim search behavior: This behavior cluster includes search terms such as 'my partner hit me,' 'divorcing an abusive husband,' 'he forced me to have sex' that directly indicate behavior that was experienced by the victims/survivors of GBV.

Help-seeking seeking behavior: Help-seeking search behavior includes search terms such as 'abuse helpline,' 'domestic violence counseling,' 'marital abuse help,' etc., that directly indicate help-seeking behavior.

The Quilt.AI search analysis tool, Sphere, was used to identify keywords in Google searches. Sphere is a proprietary web scraping and analysis tool that uses the search volume data from the Google ads platform. It can also be used to analyse the search engine results page (SERP).[9] The tool provides data on the top 10 results displayed by Google when each of the keywords were searched. Since Google's result page is conditioned by the physical location, browsing history and setting preferences of the user, Sphere processed the data controlling for these factors. A total of 51,870 unique VAW searches were considered for this analysis across Kiribati, Samoa, Solomon Islands and Tonga. The VAW search volume data, presented as monthly average search volume,[10] was then traced on the timeline of identified crisis events. Subsequent analysis focused on identifying overlapping patterns between the crisis-related events and VAW related online searches to gauge associations between the two.

SOCIAL MEDIA ANALYSIS

Social media (Facebook, Twitter, YouTube and Tik Tok) discourse analysis was conducted to understand in more detail the ways in which women and men engage online with respect to VAW, as well as how VAW-related service providers were offering support to victims of violence during and after crises. The same set of keywords in English and local languages were used for the social media analysis and the search analysis. The number of posts considered was limited to 500 per country (2,000 posts for four countries), and the social media posts were analysed using Sphere for a qualitative read of the information posted. This analysis was initially conducted for a reference period between June 2020 and June 2021. The analysis showed gender differences, but little variation over time, and thus no further social media analysis was conducted in 2022. Similarly, the assessment of social media behaviour exhibited by VAW service providers was conducted between June 2020 and June 2021 only. For this analysis, posts from Facebook and Twitter using keyword combinations such as 'VAW support', 'VAW NGO', 'Women

support' and 'VAW support group', were analysed for each country. The top 50 posts from each service provider's profile were pulled and qualitatively analysed to reveal engagement statistics (discussed in detail in the findings section) and classify the engagement of social media users with service providers as high or low.

LIMITATIONS

A key limitation of this study lies in the differences in Internet availability and use across and within countries, which impact the number of searches. These differences hamper comparability in terms of total search volume and total social media post volume. Thus, the analysis is relevant to compare trends but not to study totals. In addition, it is well documented that not all victims of VAW use the Internet to seek help or find information, especially older women. As such, the number of searches underestimates the actual incidence of VAW. Moreover, population groups in areas with low Internet penetration may also lack other services and infrastructure, such as electricity and water, rendering them more vulnerable to VAW. Thus, it is expected that the overall incidence of VAW is substantially higher than the search volume for VAW keywords.

It is also important to note that increases in VAW-related searches and posts may be related to overall increases in Internet usage at times of crises, when people spend more time at home. To control for this issue, VAW search figures have been compared with peak periods of searches of common key words, such as "what", or "how". However, it is difficult to establish whether increases in VAW-related searches and posts respond to increases in the prevalence of VAW or to internet usage alone.

An additional limitation is related to small population sizes and low Internet penetration rates in some countries, resulting in small search and post volumes. As a result, findings related to overall trends must be interpreted with caution.

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9   When users submit a query to a search engine, such as Google, a search engine result page (SERP) is generated.

10   Monthly average search volume refers to the average number of searches for a keyword and its close variants based on the month range as well as the location and search network settings.

FINDINGS

VAW SEARCHES INCREASED FOLLOWING PERIODS OF CRISIS

From June 2020 to June 2022, the analysis of Google searches revealed bouts of increased VAW-related search behaviour across Kiribati, Samoa, Solomon Islands and Tonga, with peak periods varying by country. Overall, an increased volume of searches for VAW-related terms was noticed during and especially following crises across all countries. Key periods of increased VAW searches included the period between January 2021 and March 2021, and again during February 2022 to June 2022. During these periods, a range of crisis events occurred in these countries, including La Niña, tsunamis, cyclones and mobility restrictions related to the COVID-19 pandemic, to name a few. In addition, across countries and throughout the two-year reference period, whenever COVID-19 night curfews were put in place, increases in search volumes for VAW-related terms were observed.

Kiribati saw the largest relative increase during March 2021 (figure 3), when the volume of VAW-related searches rose by 164 per cent. During this time, Kiribati experienced La Niña weather patterns, which resulted in a prolonged period of dry spells. At the time, the country was at high risk of food insecurity, given its reliance on subsistence agriculture.[11] This period was followed by a period of lockdown measures (night curfews between 9 p.m. and 6 a.m.) associated with the COVID-19 crisis. With more victims confined at home with perpetrators, this may have prompted more women to look for help online.

Figure 3:
Total VAW-related search volume, Kiribati
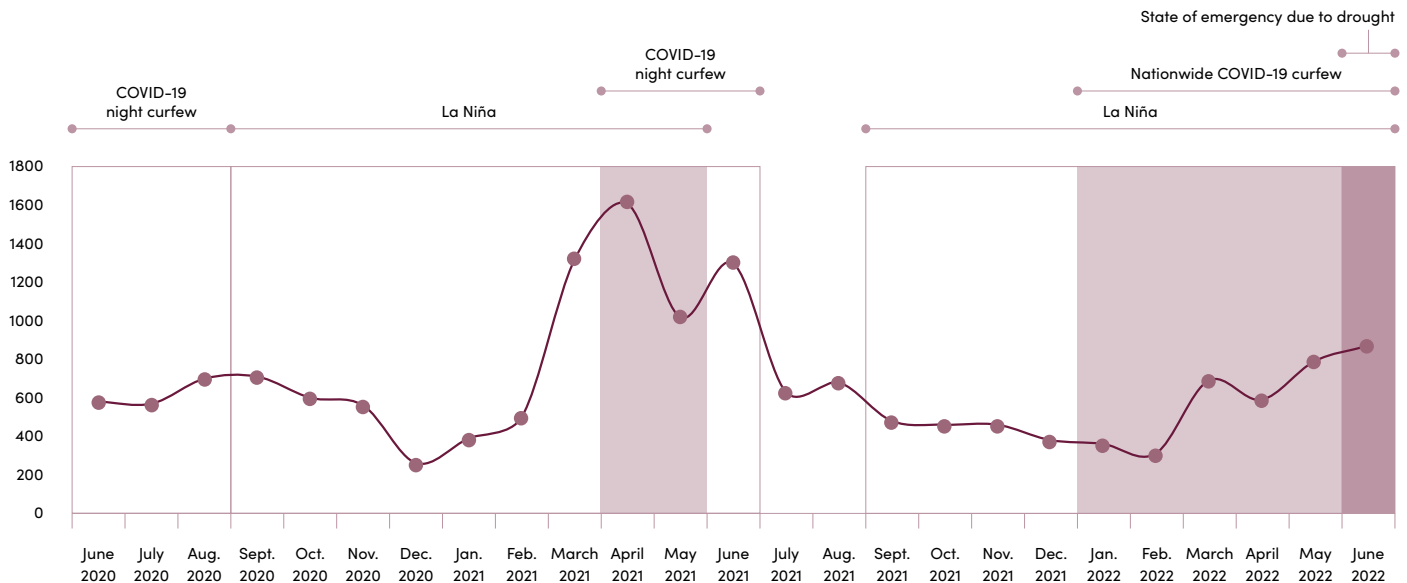
Note: Darker shades of maroon refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

11   Pacific Food Security Cluster, Secretariat of the Pacific Regional Environment Programme and World Food Programme (2021). La Niña 2021 - Anticipatory Action for Food Security and Livelihoods in the Pacific Islands. Available at https://reliefweb.int/report/kiribati/la-ni-2021-anticipatory-action-food-security-livelihoods-pacific-islands.

A 123 per cent increase in searches also took place from January to March 2022, in the middle of a nationwide 24-hour COVID-19 curfew, compounded by a double-dip[12] La Niña and drier than usual conditions, leading eventually to a drought. During this period, the relative increase of VAW-related searches was lower than the overall increase of searches (as measured by searches for the generic word "what"), indicating that the upward trend may be due to overall increased Internet usage at a time when most people were at home (figure 4). Being homebound may have increased the likelihood of victims to seek help online, rather than through other means.

Percentage change in search volume for VAW-related terms and generic search word "what", Kiribati
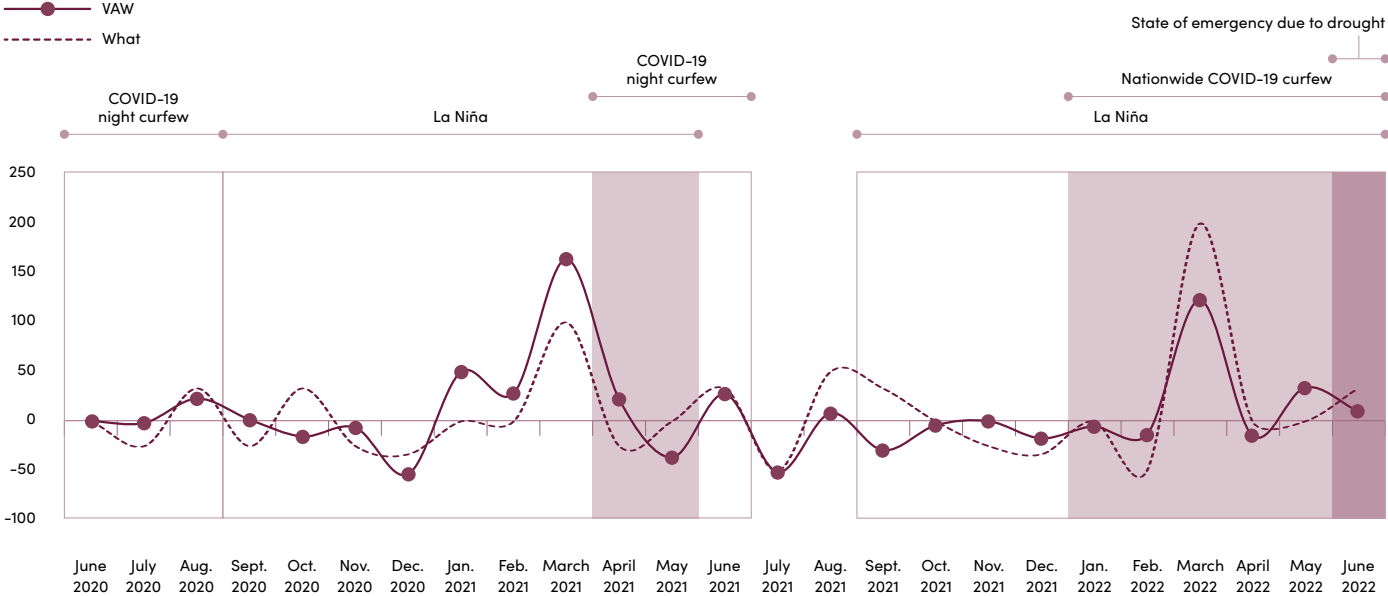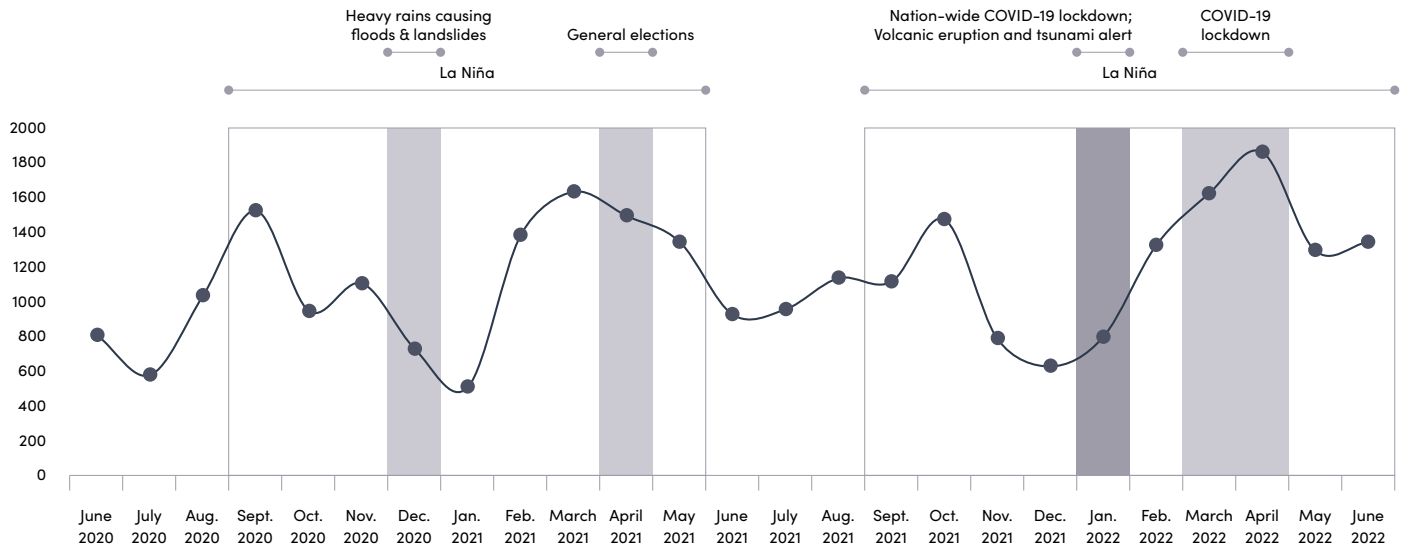

Note: Darker shades of maroon refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

In Samoa, searches related to VAW peaked in February 2021, after flash floods and landslides caused by heavy rainfall in December 2020 (figure 5). A steady increase in searches took place from January 2022 to April 2022, a period when the country received warnings of a volcanic eruption and tsunami, there was a surge in COVID-19 cases and a strict lockdown was enacted. As in other countries, periods of uncertainty and economic stresses in Samoa may worsen violent behaviours, both within and outside the home. Overall, there were lower relative increases in VAW searches compared to searches for the generic term "what", except from December 2020 to February 2021, which points towards the possibility of a higher prevalence of violence after high impact crisis events such as floods (figure 6).

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12 Consecutive La Niña events following a period of ENSO neutrality are referred to as a "Double-Dip. Usually when a La Niña occurs, it takes 3–7 years before another one starts to develop. Often La Niña is followed by a neutral phase or an El Niño. However, the Pacific experienced two consecutive La Niña events. As a result of this, Pacific island countries in the Central Pacific region such as Kiribati, Nauru and Tuvalu experienced below normal rainfall during this period, while islands in the South-West Pacific such as Fiji, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu experienced higher than normal rainfall. For more details see https://www.sprep.org/news/pacific-likely-to-experience-double-dip-la-nina-episode.

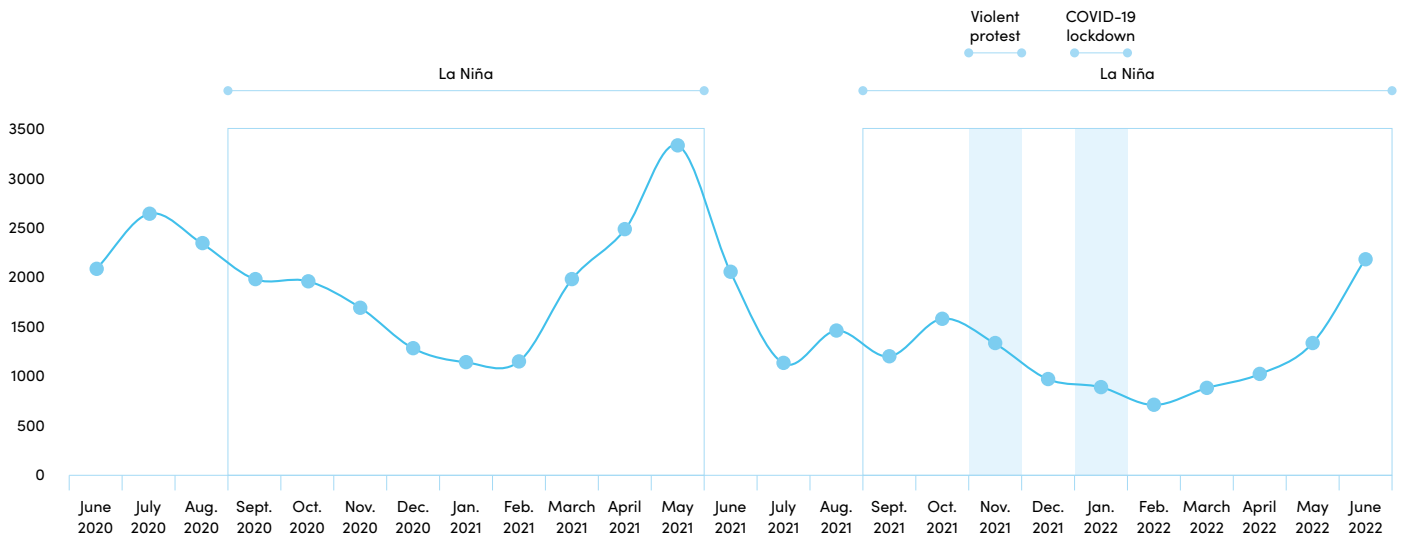## Figure 5:
Total VAW-related search volume, Samoa

Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

Figure 6:
Percentage change in search volume for VAW-related terms and generic search word "what", Samoa
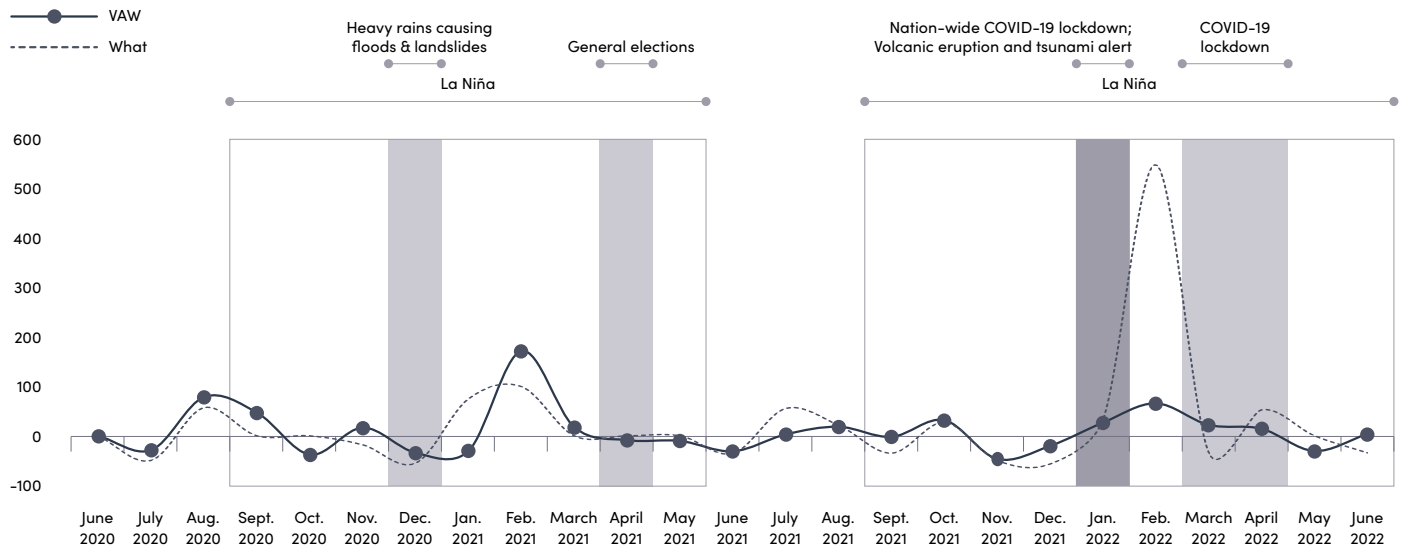
Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.
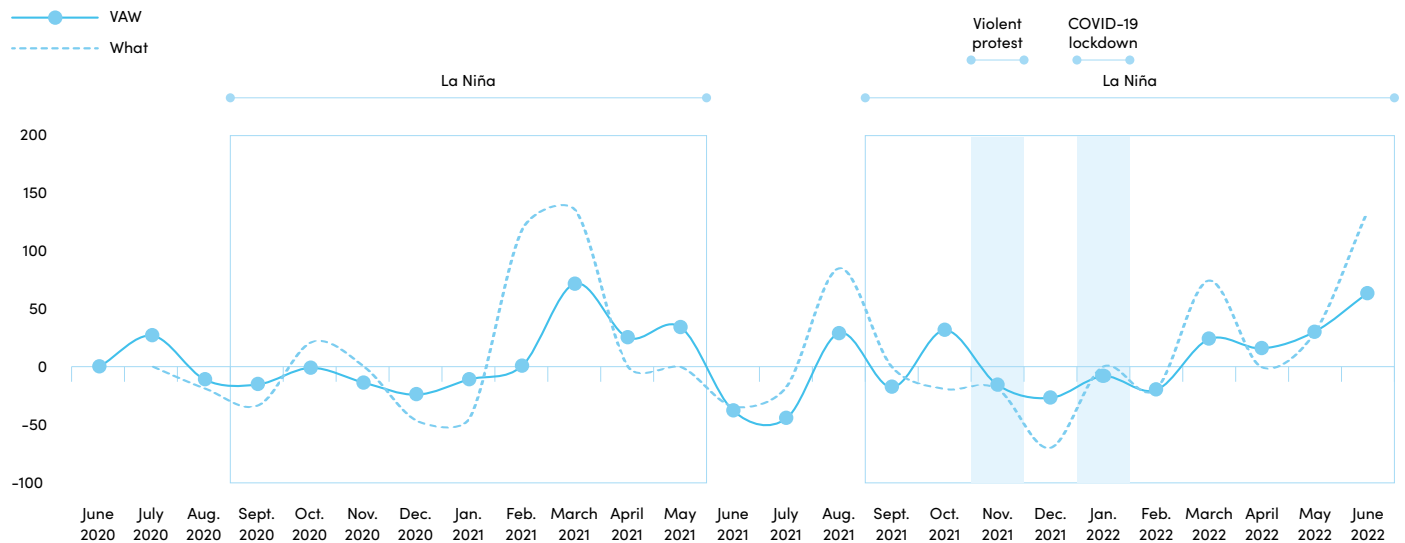
Total VAW-related search volume, Solomon Islands

Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

Figure 8:
Percentage change in search volume for VAW-related terms and generic search word "what", Solomon Islands

Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

In Solomon Islands, a hike in VAW-related Google searches occurred in early 2020, when the country was in state of emergency to battle the COVID-19 pandemic (figure 7). The largest peak in VAW-related searches, however, was registered in May 2021, after a prolonged period of higher than usual rainfall from November 2020 to April 2021[13] and unusual weather patterns attributed to La Niña. Similar wetter than usual conditions in the past have caused economic stress as crops are damaged and food shortages occur.[14] Literature is plentiful on the links between economic stresses and increased VAW.[15]

Another upward trend on VAW-related searches in Solomon Islands occurred from March 2022 onwards. At that time, a prolonged double-dip La Niña caused coastal inundation.[16] This surge came shortly after a COVID-19 lockdown. The increase of VAW-related searches aligns with an overall increase in online searches (as measured by searches for "what") (figure 8), making it difficult to assess whether the uptick resulted from an increase in incidence of VAW or from increased Internet usage after the lockdown, especially if VAW victims felt unsafe in seeking help while at home.

Tonga saw a steady increase in VAW-related Google searches from December 2020 to July 2021 (figure 9), when the country experienced a series of overlapping crises, including cyclones Zazu and Yasa, heavy rainfalls and higher than usual wet periods attributed to the prolonged La Niña. The following year, a short dip in search volume occurred from December to February 2022, in line with an overall decrease in Internet usage due to power shortages following the volcanic eruption, tsunami, ash storms and related events, which disrupted communications for several days. Shortly after, an upward trend in overall searches as well as VAW searches took place between February and April 2022, after Internet connections were restored. It is possible that VAW victims abused during the eruption only got a chance to look for help or raise VAW-related search queries then.
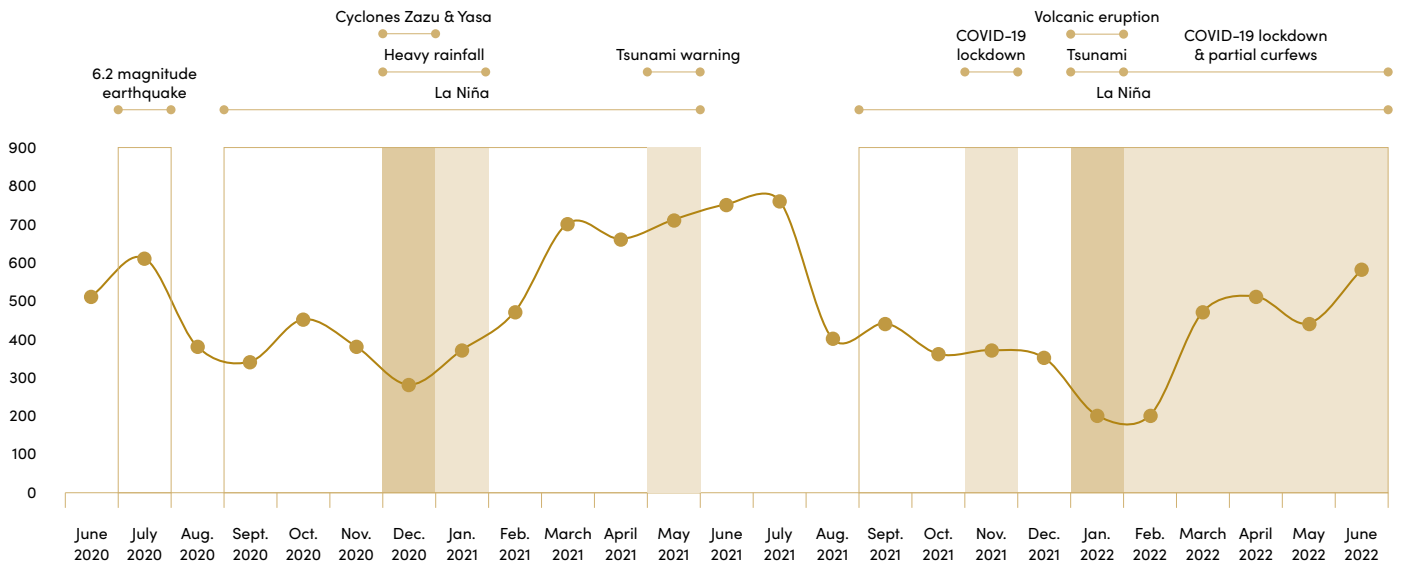
13   Environment Media (2020). Wetter than Normal Weather Announces Arrival of La Nina. Available at https://environment.islesmedia.net/wetter-than-normal-weather-announces-arrival-of-la-nina/.

14   Solomon Times (2008). Bad Weather, Low Daily Income for Market. Available at www.solomontimes.com/news/bad-weather-low-daily-income-for-market/1170.

15   See C. M. Renzetti, (2009). Economic stress and domestic violence. Available from: https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1000&context=crvaw_reports; and A. Peterman, A. Potts, M. O'Donnell, K. Thompson, N. Shah, S. Oertelt-Prigione and N. Van Gelder (2020). Pandemics and violence against women and children (vol. 528, pp. 1–45). Washington, D.C.: Center for Global Development. Available at https://cgdev.org/sites/default/files/pandemics-and-vawg-april2.pdf.
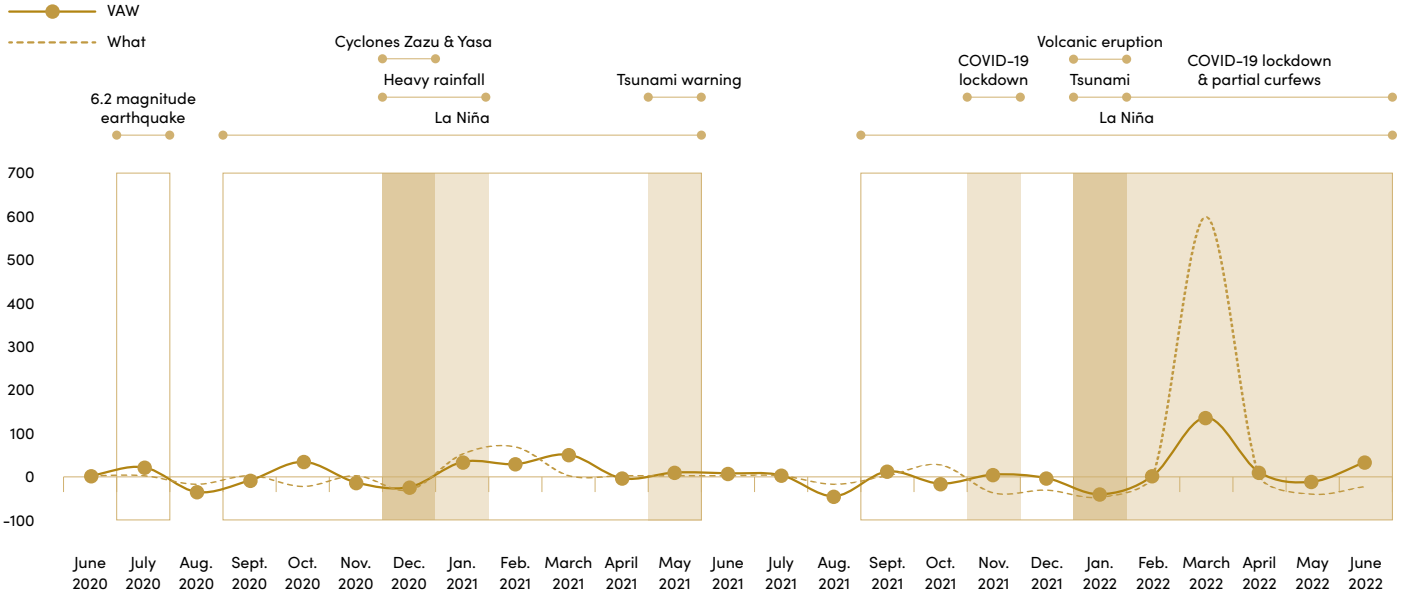
16   Solomon Times (2021). La Nina Raised Sea Levels in the Western Pacific by up to 20 cm. Available at www.solomontimes.com/feature/la-nina-raised-sea-levels-in-the-western-pacific-by-up-to-20cm/663.

Figure 9:
Total VAW-related search volume, Tonga

Cyclones Zazu & Yasa

Heavy rainfall

6.2 magnitude earthquake

La Niña

Tsunami warning

Volcanic eruption

COVID-19 lockdown

Tsunami

COVID-19 lockdown & partial curfews

La Niña

Note: Darker shades of brown refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

Figure 10:
Percentage change in search volume for VAW-related terms and generic search word "what", Tonga

VAW

What

Cyclones Zazu & Yasa

Heavy rainfall

6.2 magnitude earthquake

La Niña

Tsunami warning

Volcanic eruption

COVID-19 lockdown

Tsunami

COVID-19 lockdown & partial curfews

La Niña

Note: Darker shades of brown refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.
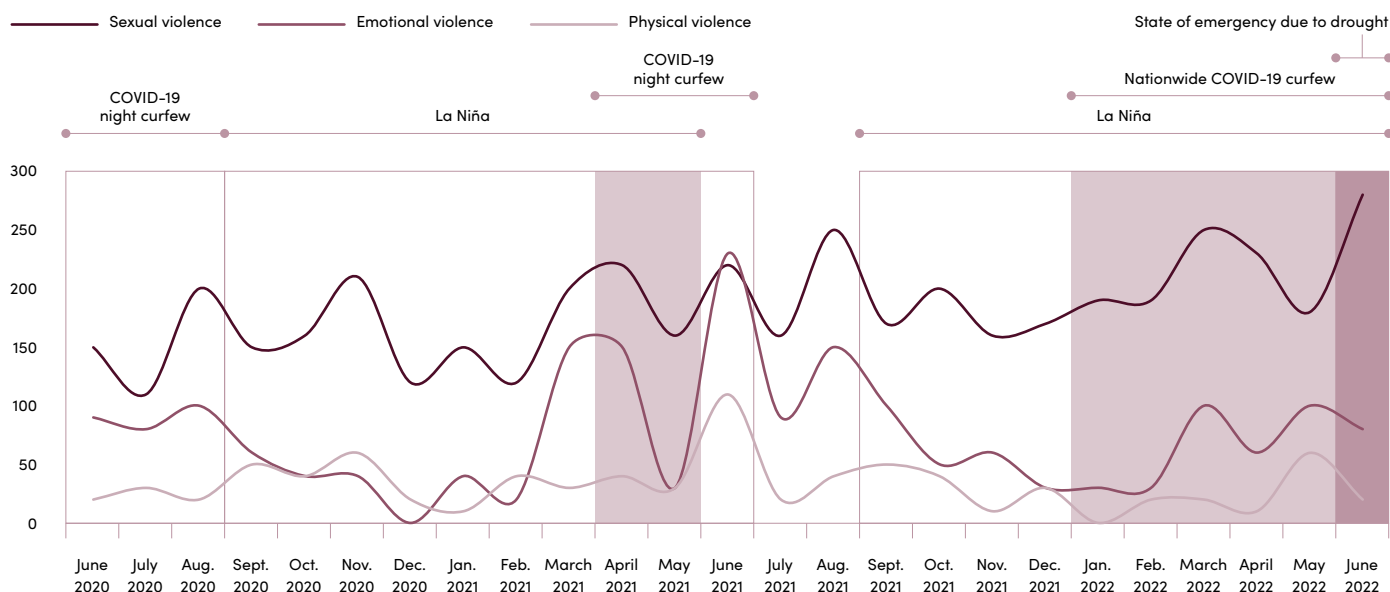
SEXUAL VIOLENCE SEARCHES WERE THE MOST COMMON ACROSS ALL COUNTRIES

Analysis of the data by physical, sexual and emotional violence indicates that different types of violence increased in different countries, although in all cases the number of searches associated with sexual violence was higher than that of physical or emotional violence across most time periods. In other words, more searches occurred for keywords associated with sexual violence, such as "abuse sexually", "sexual assault", "forced sex", and "rape" to name a few. This may reflect a higher incidence of sexual violence over other types of violence, or a lower acceptance of sexual violence over other types. It may also be associated with the more private nature of sexual violence, leading victims to seek information on-line rather than in person.

In Kiribati, the largest increase in searches related to sexual violence was noted in June 2022, when nationwide COVID-19 curfew measures overlapped with a state of emergency due to droughts (figure 11). During this time, the monthly volume of searches for "abuse sexually" increased from 30 in May 2022, to 70 in June 2022. A peak in searches related to emotional violence was also observed shortly after a prolonged night curfew due to COVID-19 in May 2021. Common search terms noted in this regard were "emotional abuse", "emotionally abusive", and "verbal abuse" to name a few. Searches related to physical violence were the least common, with "physical abuse", "beating wife", and "examples of physical abuse" among the commonly searched terms.

Figure 11:
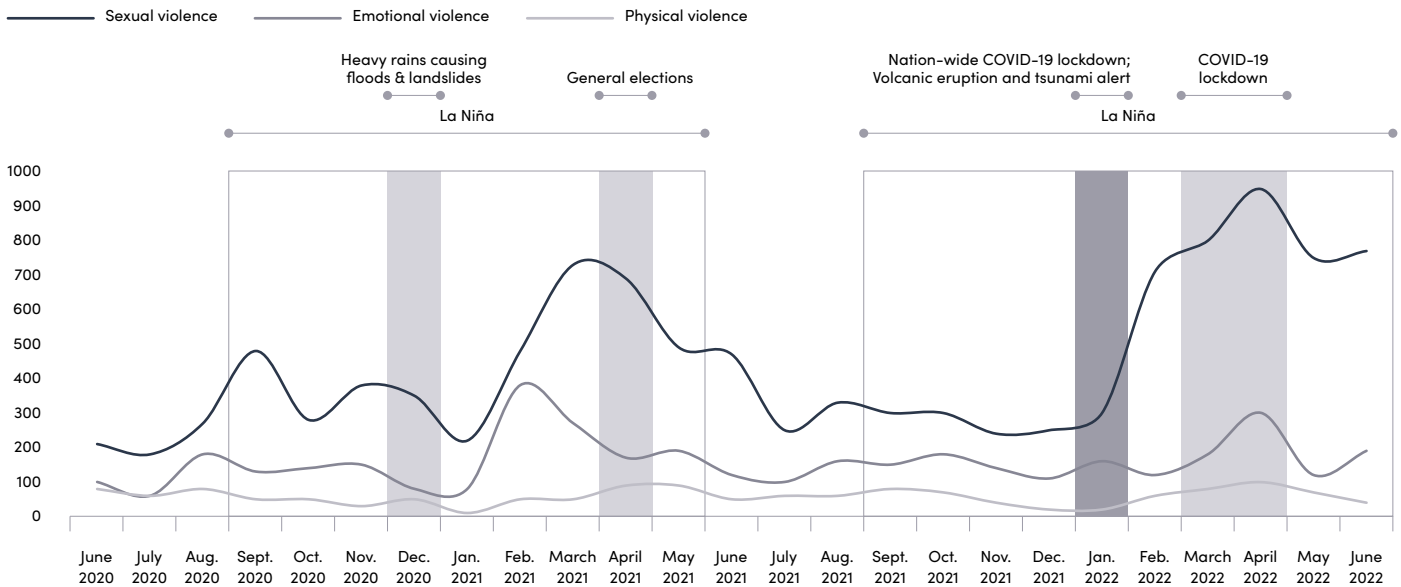## Total VAW-related search volume, by type of violence, Kiribati

Note: Darker shades of maroon refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

In Samoa, sexual violence searches remained the most common across all time periods, followed by emotional violence and physical violence. A peak in searches for sexual violence-related terms, such as "abuse sexually", "what is sexual assault" and "rape" occurred in the first half of 2022, when lockdown measures were put in place to cope with COVID-19 (figure 12). Peaks in emotional violence also took place during the same time period, though remained less commonly searched.

Search terms such as "verbal abuse", "verbally abusive" and "mental abuse" saw a significant increase in February 2021, soon after flash floods and landslides due to heavy rains caused severe disruptions to traffic, infrastructure, heavily swamped roads, and a 36-hour lockdown. Though physical violence remained the least common type of violence searched for, some commonly searched terms include "examples of physical abuse" and "husband beating wife".

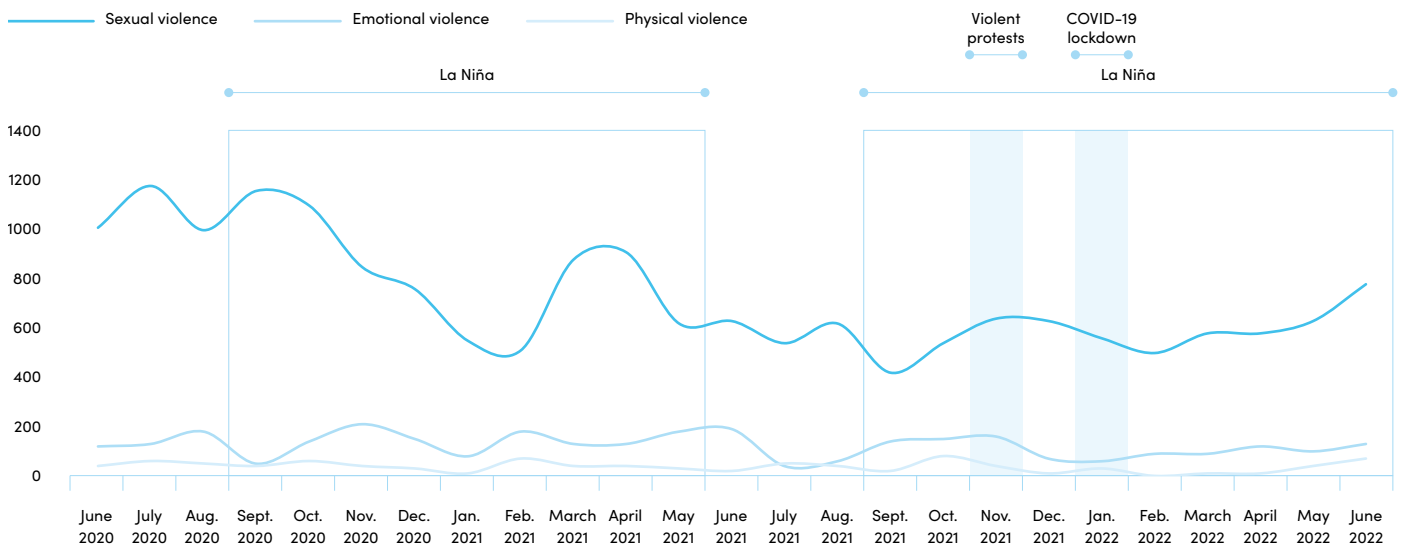## Total VAW-related search volume, by type of violence, Samoa

Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

In Solomon Islands, as in other countries, sexual violence was the most commonly searched form of violence. However, searches more specifically associated with sexual violence were targeted at sexually abusive relationships, particularly marriage. Search terms such as "sexual abuse in marriage" alone saw a 90 per cent increase in March 2021, after a six-month La Niña period (figure 13). A gradual increase in search volume across all types of violence can be observed after a COVID-19 lockdown took place in January 2022.

Figure 13:
Total VAW-related search volume, by type of violence, Solomon Islands
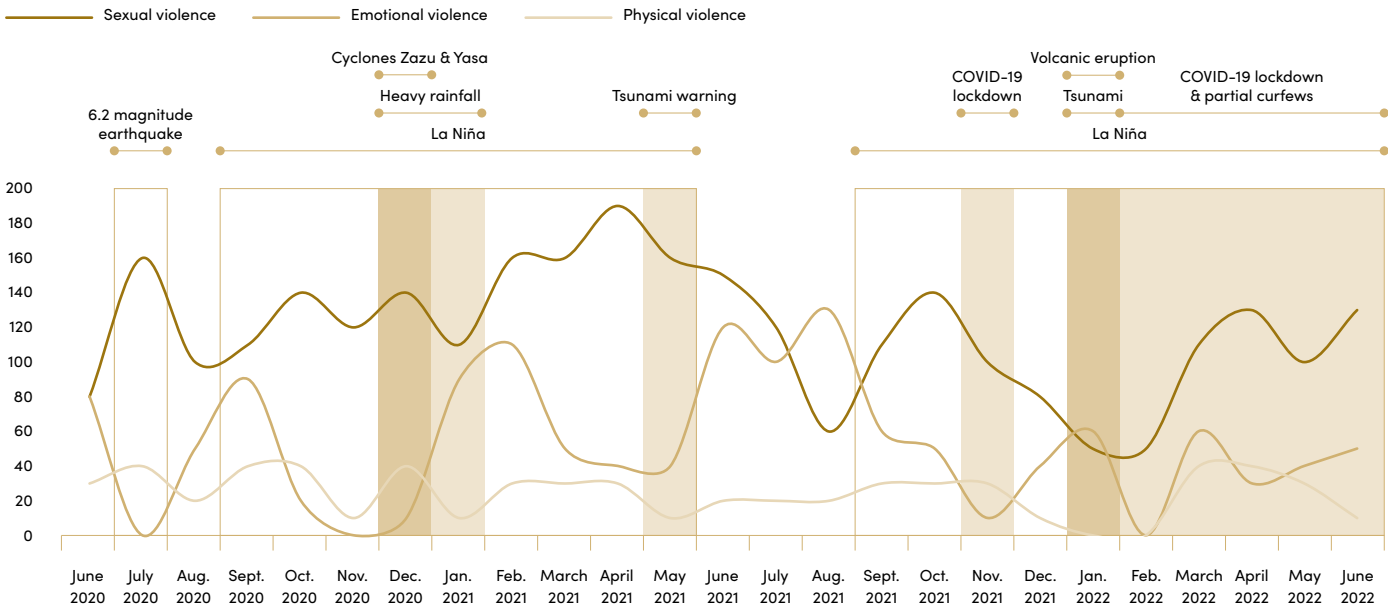

Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

In Tonga, search trends for VAW-related terms fluctuated, with periods of very high volume (such as April 2021) and periods of moderate to low activity (January 2022) (figure 14). These fluctuations may be attributed to the impact of disasters, affecting Internet usage and search behaviour. Sexual violence is the most commonly searched type of violence, with the search term "rape" seeing the highest increase in search volume during December 2020, a period when the country experienced three overlapping and high impact crises, including cyclones Zazu and Yasa, and heavy rainfalls, potentially attributed to the prolonged La Niña period. Tonga was the only country where emotional violence related search terms were also highly searched, though this fluctuated between no searches during some periods (July 2020, January 2022) to high search volume (post heavy rainfalls and cyclones) past December 2020.

Total VAW-related search volume, by type of violence, Tonga

Note: Darker shades of brown refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

HELP-SEEKING SEARCHES ARE MORE LIKELY TO INCREASE DURING AND AFTER CRISES, BUT SOME EXCEPTIONS REMAIN

Although searching for general VAW-related information was the most common search behaviour, help-seeking search volume increased during and after crises.

In Kiribati, "domestic violence", "abuse sexually" and "rape" were among the commonly used search terms. Although those are considered information searches, Google search analysis shows people were also seeking help online. While the search volume of help-seeking searches remained relatively steady over the two-year study period (figure 15), clear peaks emerged in August 2020 and March 2022 (figure 16). These peaks appear during and right after the country was under pandemic-related lockdowns and night curfews were imposed by the Government.

Figure 15:
Proportion of VAW-related search volume, by intent of search behaviour, Kiribati (percentage)
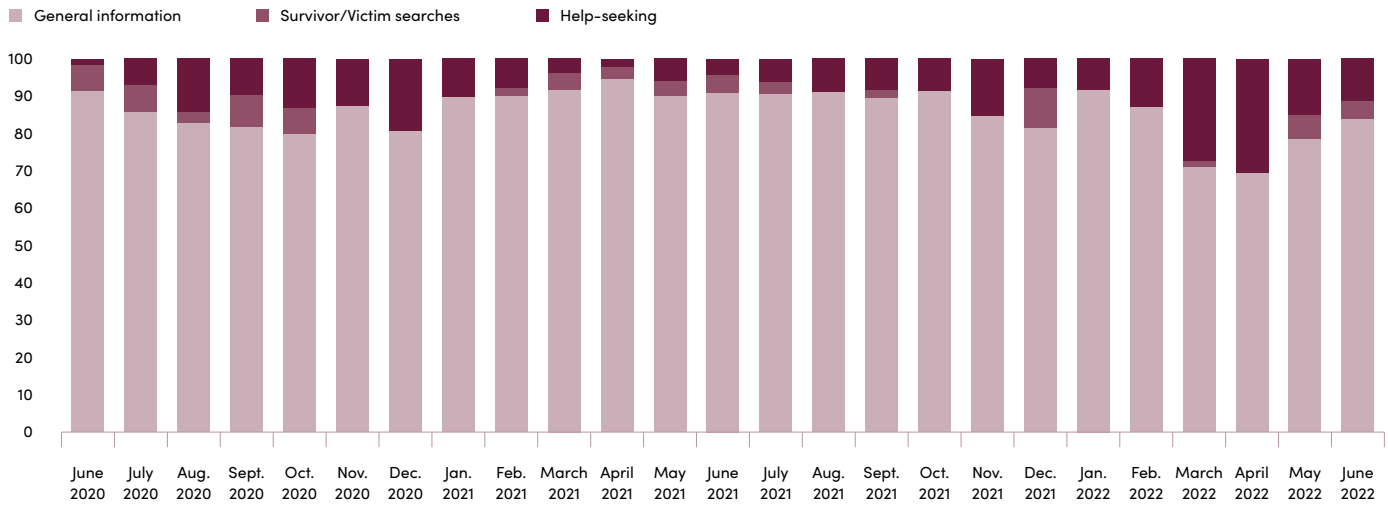
■ General information   ■ Survivor/Victim searches   ■ Help-seeking

Note: The graph shows that while general information seeking makes up the bulk of VAW-related searches, peaks in help-seeking searches are observed during certain time periods.

Figure 16:
Total VAW-related search volume on help-seeking searches, Kiribati

Note: Darker shades of maroon refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

Similarly, in Samoa, while the predominant VAW-related search behaviour was information-seeking (figure 17), help-seeking searches saw a surge in the aftermath of crises. Between February and March 2021, following floods and landslides caused by heavy rains and prolonged La Niña, help-seeking search volume increased by 600 per cent (10 average monthly searches in February, compared to 70 in March) (figure 18). A surge was also noted in February 2022, after the volcanic eruption and tsunami warnings, overlapping with COVID-19 lockdowns.
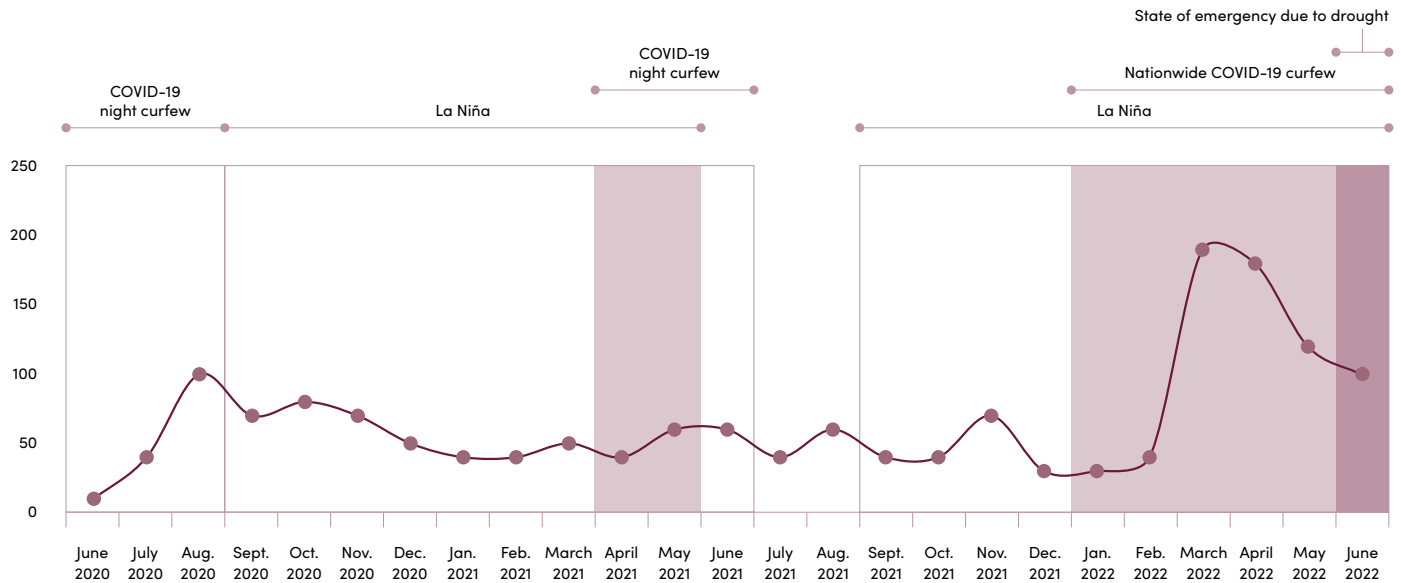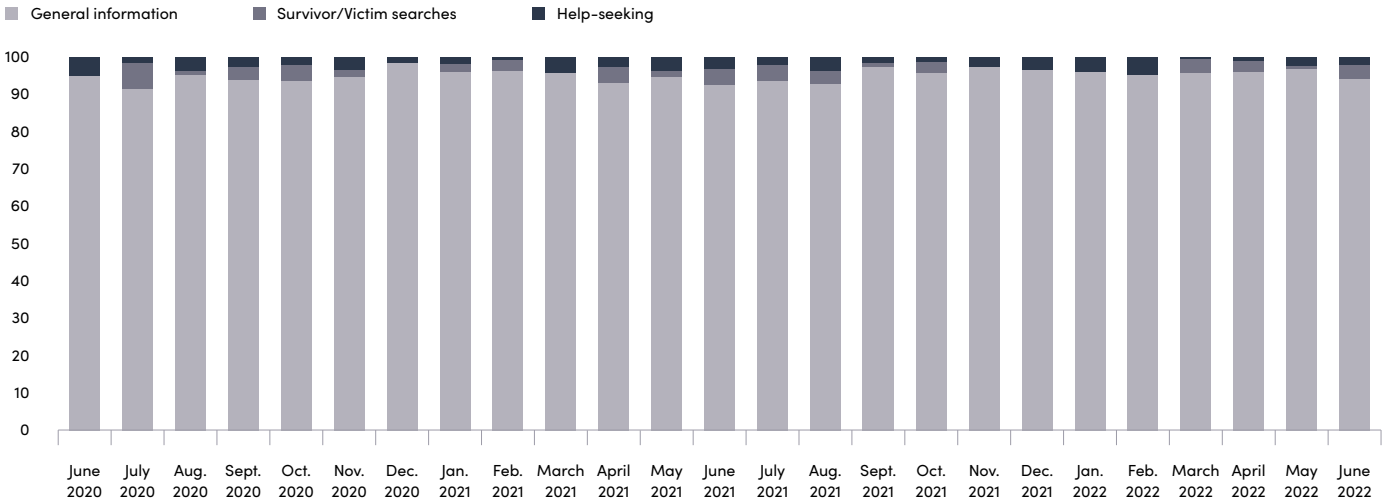
Figure 17:

Proportion of VAW-related search volume, by intent of search behaviour, Samoa (percentage)

Note: The graph shows that while general information seeking makes up the bulk of VAW-related searches, peaks in help-seeking searches are observed during certain time periods.

Figure 18:

Total VAW-related search volume on help-seeking searches, Samoa
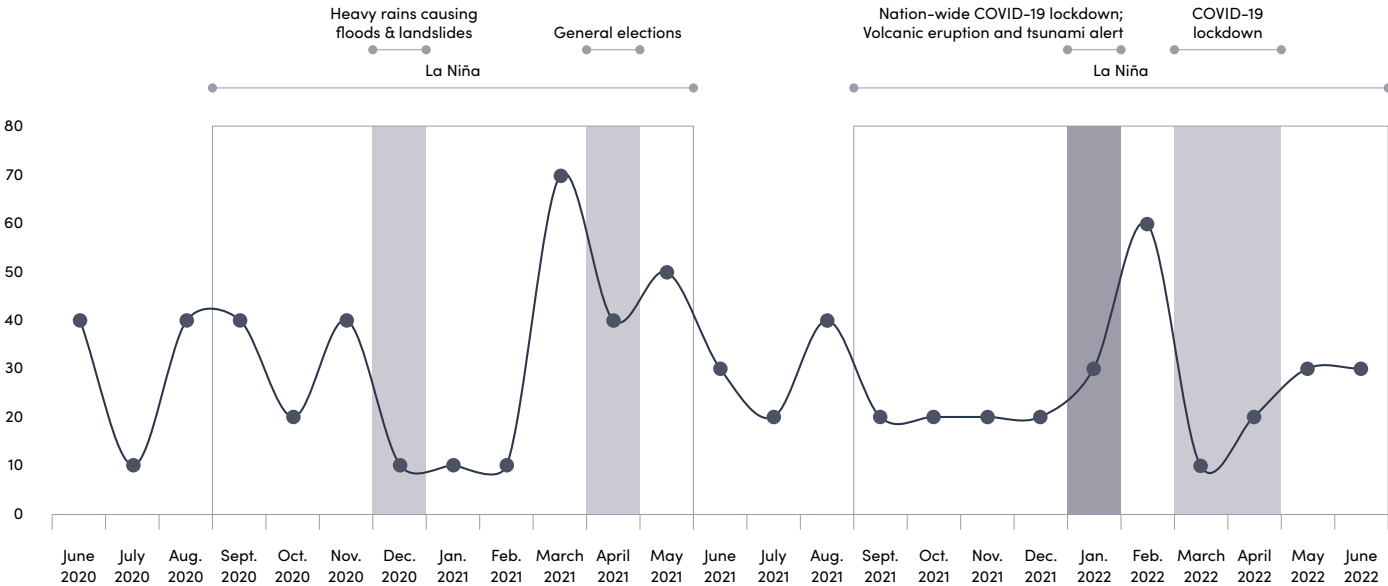
Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

Similarly, in Solomon Islands, general information-seeking was the predominant search theme (figure 19). Help-seeking searches, however, do seem to be affected immediately after high impact crises, including violent protests in November 2021 that resulted in a three-day lockdown, and mobility restrictions related to COVID-19 (figure 20). Though these events led to increased stress and uncertainty, as food, cash, and fuel shortages were noted in the capital city,[17] the dip in help-seeking searches is in line with an overall decrease in online searches, indicating a possible disruption in Internet services during these times.

Figure 19:
Proportion of search volume, by intent of search behaviour, Solomon Islands (percentage)
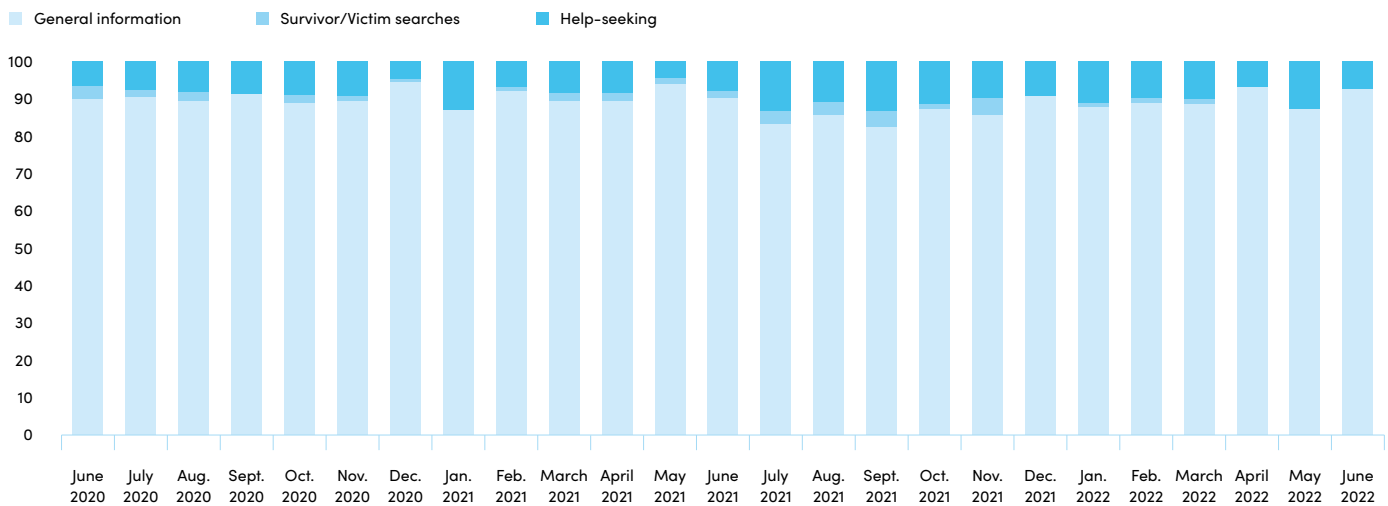
Note: The graph shows that while general information seeking makes up the bulk of VAW-related searches, peaks in help-seeking searches are observed during certain time periods.

Figure 20:
Total VAW-related search volume on help-seeking searches, Solomon Islands
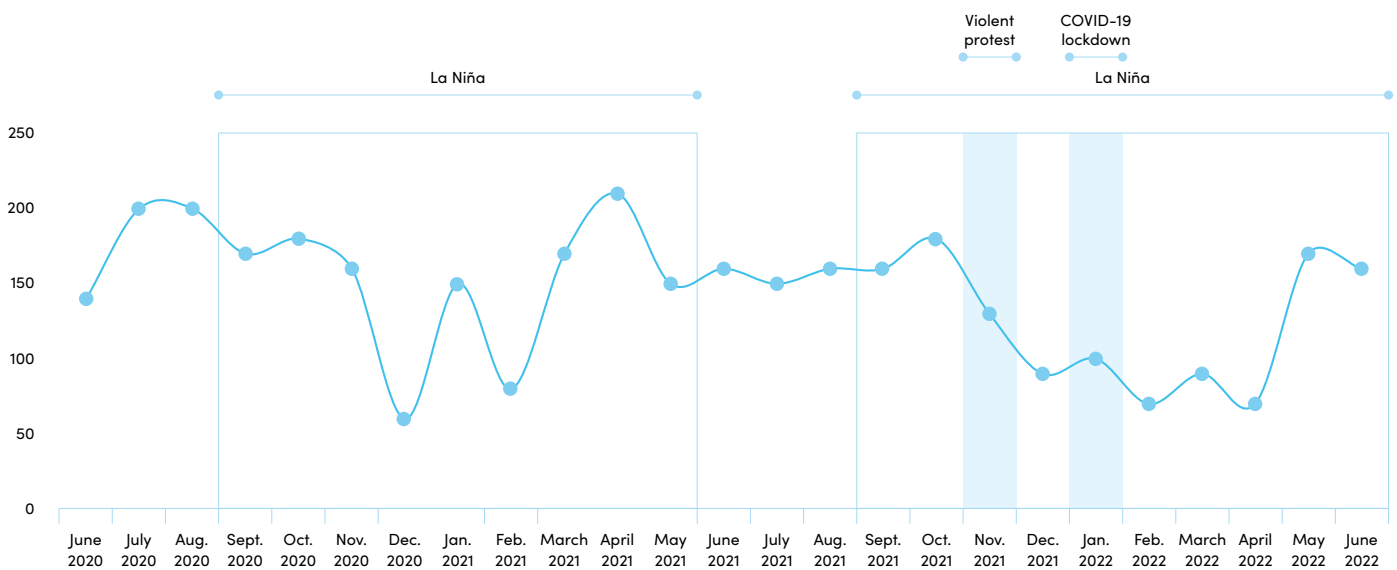
Note: Darker shades of blue refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

17   See www.rnz.co.nz/international/pacific-news/456946/solomons-faces-a-rapidly-worsening-humanitarian-crisis.

In Tonga, help-seeking search volume remained steady, but the relative volume compared to other searches consistently surged in the aftermath of crisis events (figures 21 and 22). After the 6.2 magnitude earthquake in July 2020 or the tsunami alert in May 2021, the share of help-seeking searches in total VAW-related searches increased. During high impact crises such as cyclones Zazu and Yasa in December 2020 and the volcanic eruption and tsunami in January 2022, there was a dip in search volume of help-seeking searches, likely as a result of people coping with the destruction and overall interruptions in service provision.

Proportion of search volume, by intent of search behaviour, Tonga (percentage)
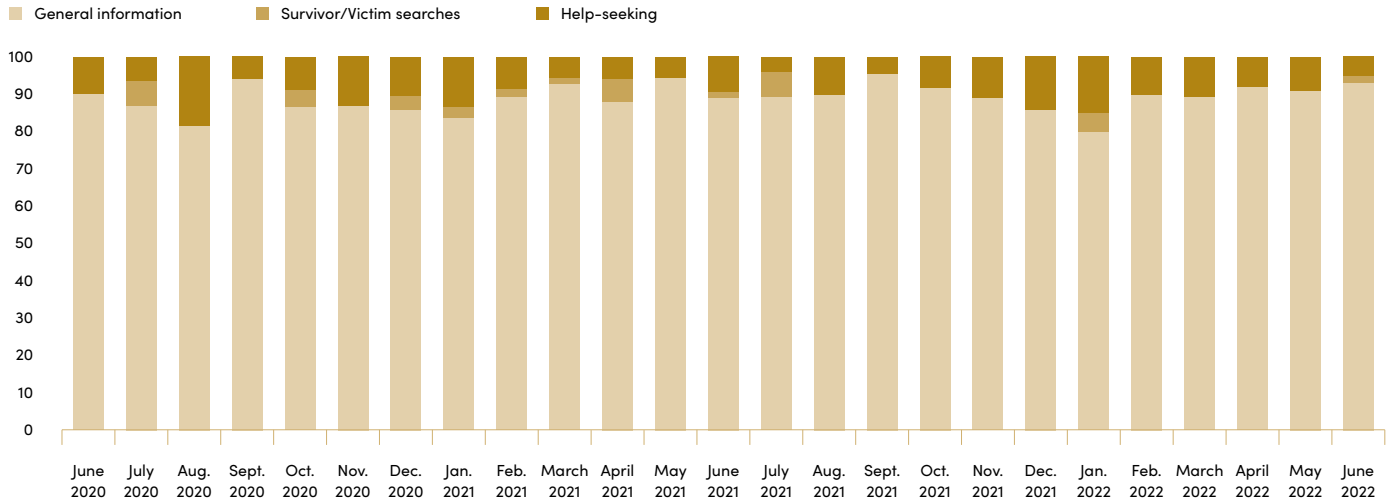
Note: The graph shows that while general information seeking makes up the bulk of VAW-related searches, peaks in help-seeking searches are observed during certain time periods.

Figure 22:
Total VAW-related search volume on help-seeking searches, Tonga
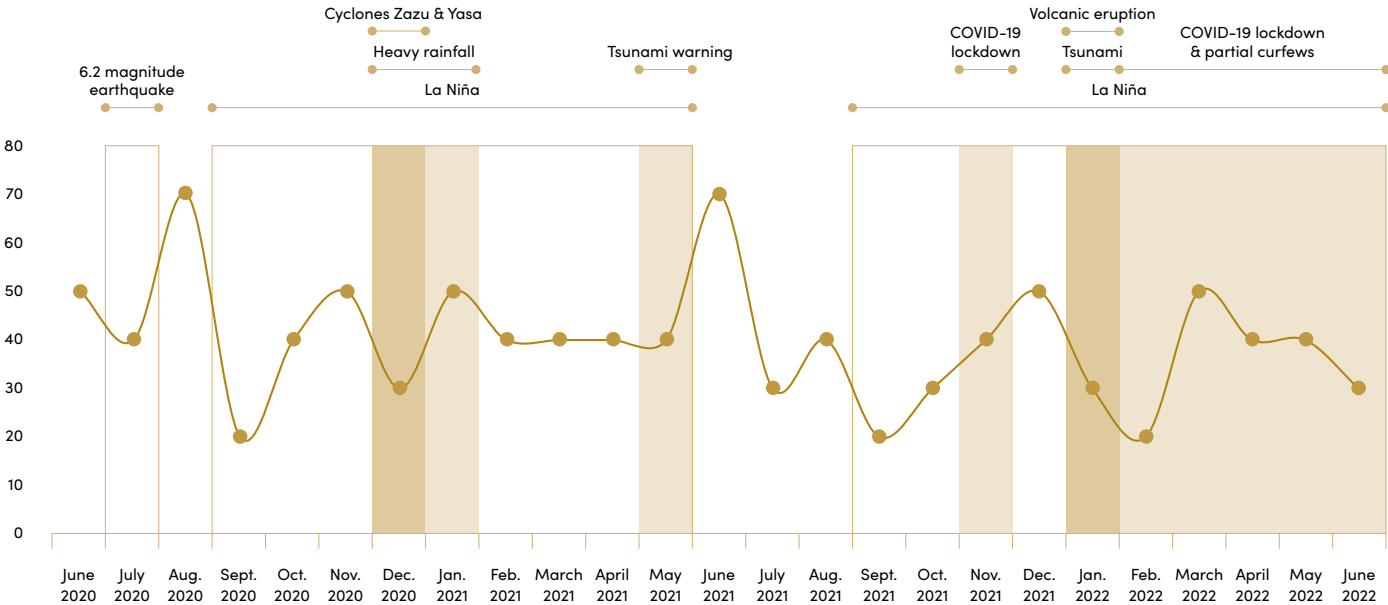
Note: Darker shades of brown refer to overlapping crises. The darker the shade, the higher the number of overlapping crises.

Worryingly, many of these help-seeking searches did not successfully return the information needed. Across all four countries, analysis of the search engine results page (SERP) showed webpages of service providers in other countries (e.g. Australia, United Kingdom and United States) as top search results. Optimizing search engines is thus of key relevance to bridge the gap between online help seekers and local support providers.

SOCIAL MEDIA DISCOURSE LARGELY SUPPORTED VICTIMS, DESPITE MISOGYNISTIC AND VICTIM BLAMING POSTS ACROSS COUNTRIES

Social media analysis provides opportunities for more qualitative understanding of people's online presence. Victim support, dissatisfaction with laws, misogyny and provision of services to vulnerable groups are topics found across all four countries, but related posts reflected localized online behaviours.

In all four countries, many social media posts **offered support to victims of VAW** (including by posting service provider information). While in Kiribati, Samoa and Solomon Islands these came from civil society organizations (CSOs), local government and the media; in Tonga, average citizens also posted substantially about support. For example, on Facebook, 'OMG Tongan Confessions' allows both survivors and perpetrators of violence to disclose experiences with abuse or assault.

Online posts showing **dissatisfaction with existing policies, laws and the justice system** are also prevalent across countries, although with nuances in the type of discourse. In Samoa, Solomon Islands and Tonga, people called for harsher punishments and advocated for their Government to "do more". In Samoa and Solomon Islands, 25 and 30 per cent of total VAW-related posts, respectively, noted that current laws are too lenient and do not deter people from committing VAW. In Tonga, about 25 per cent posts referred to a call for change, including on alignment with international agreements.

Social media posts on **misogyny, victim blaming and misconceptions of VAW** were a connecting thread among all countries. These types of posts made up approximately 5 per cent of all VAW posts in Solomon Islands, while in Kiribati they amounted to 30 per cent.

Across the four countries, online posts referred to the **importance of social norms, beliefs and local behaviours** in explaining current VAW trends, but different issues were referenced in each country. For example, in Kiribati and Solomon Islands, posts blamed substance abuse for violent behaviours (in Kiribati, 30 per cent of posts linked marijuana use or alcohol to VAW, in Solomon Islands, 13 per cent of posts blamed the perpetrators' substance abuse and use of pornography). In Samoa, Tonga and to a lesser extent Solomon Islands, posts on social media highlighted religion and tradition as key drivers of VAW (about 14 per cent of posts in Samoa mentioned religion as a justification for the dominance of men over women and VAW; in Tonga, about 10 per cent of posts linked traditional gender roles in the country to domestic violence; while in Solomon Islands, about 5 per cent of posts referenced gender roles as drivers). No significant volume of posts discussed linkages between VAW and crises, disasters or economic strains,[18] indicating that this link is not necessarily understood among service providers and the general population. This is especially noteworthy in the light of the evidence from the analysis of online searches presented above.

Content on **vulnerable groups** made up 25 per cent of the posts analysed in Samoa and 15 per cent in Tonga. In Samoa, where many people posted about this during the period of political unrest around parliamentary elections (February to June 2021), which resulted in the election of Samoa's first female Prime Minister, the posts focused heavily on violence against minors and against lesbian, gay, bisexual, transgender, queer, intersex and other (LGBTQI+) people, while in Tonga it focused mostly on LGBTQI+ people. In Solomon Islands, the bulk of the posts concentrated around the lack of support services in rural areas (particularly between December 2020 and April 2021, during La Niña), along with occasional posts about supporting women with disabilities,[19] but the conversation was limited when it came to other marginalized groups. In Kiribati, there was no discussion related to vulnerable communities in the analysed social media posts.

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18   Observation based on qualitative analysis of social media posts studied.

19   Qualitative observation of social media posts by service providers.

Proportion of social media posts that referenced key VAW-related topics, June 2020–June 2021 (percentage)

KIRIBATI

40%	30%	20%	10%

■ Support for VAW victims   ■ VAW misconceptions and diversions   ■ Linking VAW with other mainstream issues   ■ Gender norms/beliefs

SAMOA

36%	25%	25%	14%

■ Political manipulation and VAW   ■ Violence against vulnerable groups   ■ Call for justice   ■ Religious misconceptions and VAW

SOLOMON ISLANDS

45%	30%	15%	5%	5%

■ Urban/rural divide: NGO support and rising awareness   ■ A call for change   ■ Failure of the justice system   ■ Victim blaming and entrenched gender norms   ■ VAW related misconceptions

TONGA

35%	25%	15%	15%	10%

■ Religion, tradition, and the CEDAW debate   ■ A call for change   ■ Violence against marginalized groups (lesbian, gay, bisexual, transgender and other (LGBTQI+) people   ■ Increased risk to VAW during natural disasters   ■ Misogyny, victim blaming and misconceptions

Note: A total of 500 most recent posts were selected in each country for this analysis.

ONE THIRD OF SERVICE PROVIDERS MUST CHANGE STRATEGIES

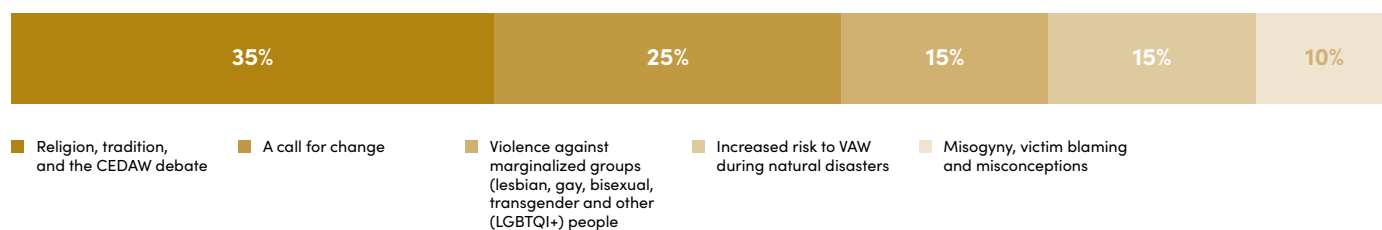Social media analysis also revealed that most service providers are likely reaching victims, but roughly 30 per cent must change their outreach strategies. Beyond assessing whether survivors found help/hotline information online,[20] the analysis of user engagement provides a measure of whether or not online audiences found the service providers' information interesting. Through machine learning techniques, service provider engagement with users has been classified from high to low.

- High-engagement service providers are organizations that posted regular content that their audience interacted with (e.g. liked, reposted, commented, etc.). As determined through object and emotion detection, their images convey a welcoming community and positive concepts. The top objects detected include
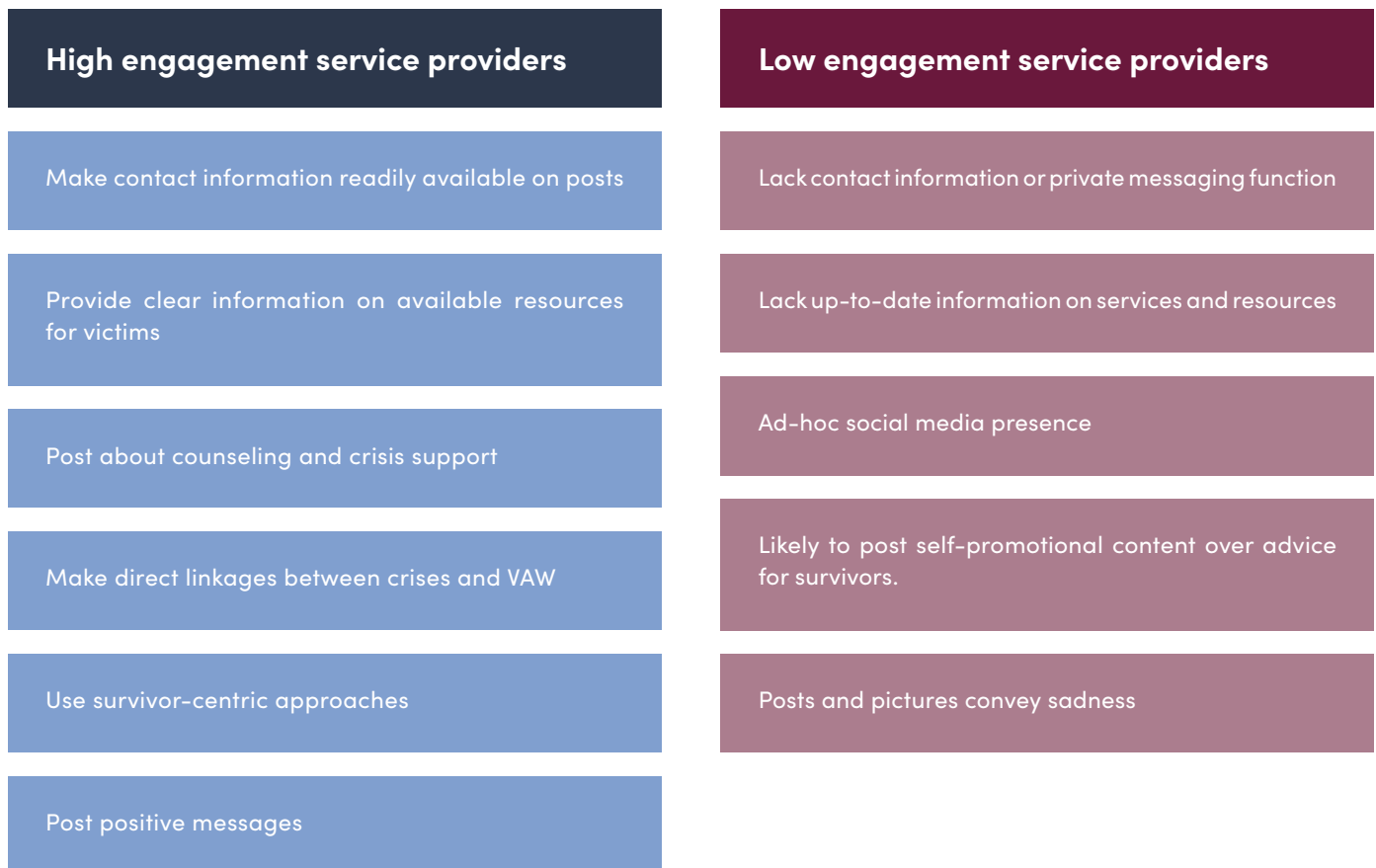
"leisure", "sharing", "smile" and "fun", while the top emotions detected include "affiliation", "happiness" and "creativity.

- Low-engagement service providers are organizations whose online presence varies in size and their audience interactions are limited. Analysis determined that they have varied frequency with posting content, a range of effectiveness in providing online service information to victims in a direct and clear way, and lower readings of positive emotions by AI object and emotions detection, as represented in their imagery.

Of all service providers considered for this analysis, an estimated 71 per cent were found to have high-engagement and 29 per cent were found to have low-engagement. This denotes that while the majority of service providers are leveraging social media, there are some that can improve their reach, especially to vulnerable communities, during crisis periods.

Figure 24:
Key characteristics of high and low engagement service providers

High engagement service providers	Low engagement service providers
Make contact information readily available on posts	Lack contact information or private messaging function
Provide clear information on available resources for victims	Lack up-to-date information on services and resources
Post about counseling and crisis support	Ad-hoc social media presence
Make direct linkages between crises and VAW	Likely to post self-promotional content over advice for survivors.
Use survivor-centric approaches	Posts and pictures convey sadness
Post positive messages	

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20   As VAW is a sensitive topic, individuals might not feel comfortable openly engaging with a post by liking, sharing, or commenting. To account for this, the engagement score was supplemented with the follower count. This was done by normalizing the follower counts of all social media accounts and adding the normalized calculation of follower count to the engagement rate for a final engagement score.

Figure 25:
Examples of online posts from high engagement service providers during crises, published between June 2020 and June 2021

Example 1)*
"Remember there is a new law IN [...] that will HELP stop the abuse of people online ESPECIALLY women and girls online: Electronic Communication Abuse Offences Act 2020. #StaySafe #Call0*****4 if you need to talk to someone!"

Example 2)
"We support. We help. We care. We are your family"

Example 3)
"Leave No One Behind in Emergency Response "

Figure 26:
Examples of online posts from low engagement service providers during crises, published between June 2020 and June 2021

Example 1)*
"The Family Protection Act 2013 is part of [...] law and it says that domestic violence is a crime. Under this law, if you or someone close to you is experiencing domestic violence, you can seek protection by: Reporting the abuse to Police (9**) or to the Domestic Violence Unit (7*-****7) and by Applying for a Protection Order against the domestic violence or economic abuse from the courts. A Protection Order is a legal document from the Court that tells the person who committed the violence that they cannot contact or harm the person or persons names in the order"

Example 2)
"Violence against women is highly prevalent during covid-19 pandemic due to risk factors like: (I) loss of jobs/employment; (II) Half pay-salary; (III) Lockdown/staying indoors; and (IV) Uneven/unequal distribution of responsibilities at home. Avoid violent behaviors in our homes and/or elsewhere. Domestic violence (DV) is a crime."

Example 3)*
"[...] was at [...] on the 6th-11th December 2020 for a workshop on GBV, Human Trafficking and Child Protection. During this workshop we also test the [...] Training Manual"

* Names of organizations, countries and phone numbers have been removed to anonymize this information.

CONCLUSION

As environmental, health and political crises limit the possibilities for collecting timely data, particularly on sensitive topics such as VAW, big data from online searches and social media posts can provide important insights on recent trends and proxy variables. In line with existing literature demonstrating that the incidence of VAW increases in times of crisis, this study built on existing data and utilized Google searches to demonstrate that VAW-related searches increased in Kiribati, Samoa, Solomon Islands and Tonga when the COVID-19 pandemic overlapped with other crises, such as cyclones, drought, floods, volcanic eruptions and political unrest. These findings demonstrate the devastating impact that overlapping crises may have on the health and safety of women. Evidence showed that searches on sexual, emotional and physical violence peaked following the onset of severe weather events, when or immediately after COVID-19 mobility restrictions were imposed, or at times of political unrest.

Among all types of violence, people were more likely to search for terms related to sexual violence, followed by emotional violence and physical violence. As sexual and emotional violence often remain taboo topics, it is possible people feel safer using online spaces to raise anonymous queries on those issues.

Although the bulk of the VAW-related searches involved people looking up general information related to VAW, help-seeking searches were present across the board and increased during or after crises. In Kiribati and Samoa, a surge in help-seeking searches took place during some crises and/or immediately after others, while in Solomon Islands and Tonga, where crises brought about disruptions to Internet connectivity, dips were noted in help-seeking searches during crises, but increased afterwards. In Solomon Islands, where Internet penetration is the lowest among all four countries and the prevalence of VAW is overall higher than in the other countries, these patterns were less noticeable after crises. This may be a result of violence being a more systemic problem in the country, compounded by limited access to the Internet, especially during crises.

Social media platforms were found to be popular online spaces for seeking help and supporting survivors of violence. However, some service providers had a better reach than others. High engagement service providers were often more likely to be affiliated with the Government or organizations directly responding to incidents of VAW; their emergency resources were easily accessible, and they had a more positive and welcoming theme on their website.

Analysis also showed that not all survivors of VAW may be finding the information they need on the Internet. Across all four countries, analysis of the search engine results page (SERP) returned mostly webpages of service providers in other countries (e.g. Australia, United Kingdom and United States), indicating a gap in accessibility between online help seekers and local support providers. Furthermore, when service providers tried to reach victims through social media, their posts did not consistently include contact information or other key insights that may allow victims to seek help in a timely manner.

This analysis indicates that the Internet can play an essential role in helping to address the high rates of VAW in Pacific island countries, particularly in times of crisis, but service providers must enhance their communication strategies and work with search engines on enhancing optimization. Local leaders can use these insights to build an online infrastructure for sharing resources and extending support to help seekers in the online ecosystem. Similarly, promoting Internet access and use, in particular among women, is an important step in providing tools to seek help for victims of VAW. These efforts can be impactful when planned before crises, so they are easily accessible when a crisis takes place and after it ends.

In the future, analysis comparing search and social media trends with official statistics on incidence rates of VAW and survivor's access to services (including referrals), could provide important insights on the ability of big data to estimate VAW trends on the ground. Taking additional factors into consideration, such as Internet use prices and the timing of power outages, would also help interpret findings from big data analysis.