

Understanding Gender Differentiated Impacts of Climate Change in Social Media Discourse

Background

Gender is one of many vulnerable components to climate change which is garnering interest at a policy level. IPCC report affirms that women compared to men are more likely to bear the burden of climate change. But to a layperson this may sound odd as how climate change and gender are interrelated.

- Studies have shown that gender differentiated impacts are felt strongly in societies where women do not enjoy economic and social rights equal to men. For instance high mortality rates of women than men during climatic stress are reported in countries where gender inequality is perceived higher.
- Women in rural areas are even more exposed to climatic adversities because of their high dependence on natural resources. Climate change has reduced their ability to secure these indispensable resources due to declining biodiversity.
- Women and girls have to walk long distances to collect wood and water which results in less time to fulfil their domestic chores, engage in recreational activity and education

Problem

Though the seriousness of gender inequality issue has prompted climate change policy to become gender sensitive, it is doubtful as to whether at large the society is aware of how climate change is becoming a burden to women more than men. This is because gender issues are obscured by the complexity of climate change.

- The widespread promotion of climate change as enabler of increasing natural disasters have implanted superficial views about this global crisis to a layperson.
- Moreover much of the documented reports of hardships faced by women due to changing climate are made on a subjective basis as case stories. There is dearth of factual and data-based evidences on association between gender issues and climate change.

Research Question

This research investigates how online communities in Twitter associate gender and climate change. With a focus on topics of climate change, gender and violence both separately and jointly we are motivated to seek answer to following research questions.

- RQ1:** What is the demographics of user participation? Age, gender distribution.
- RQ2:** How characteristics of user engagement vary with topic of interest? Influential, popular user and hashtags.
- RQ3:** How views expressed by user vary with the topic of interest?
- RQ4:** How geographic coverage of user participation vary with the topic of interest?

Methodology

We use keyword based query method to extract data sets made available to us by the Crimson Hexagon under the data philanthropy initiative.

Data Collection. We extract Twitter posts for a period of five years from August 1, 2011 to August 1, 2017. Table 1 gives the quantity of posts extracted for each discussion topics returned with the query.

Query Formulation. Table lists the discussion topics and the keywords used to query Crimson API for accessing posts related to each topics.

- Topic 'climate change, gender and violence' is supposed to give even more details of climate change and its impact on various forms of gender violence mostly trafficking.

Discussion Topic	Keywords Based Query	Total Posts
Climate Change	(climate OR climatechange)	97460602
Gender	(women OR woman OR girl OR gender)	4622325160
Violence	(violence OR trafficking)	114584907
Climate Change and Gender	(climate OR climatechange) AND (women OR woman OR girl OR gender)	924972
Gender and Violence	(women OR woman OR girl OR gender) AND (violence OR trafficking)	9719361
Climate Change and Violence	(climate OR climatechange)AND (violence OR trafficking)	149990
Climate Change, Gender and Violence	(climate OR climatechange) AND (women OR woman OR girl OR gender) AND (violence OR trafficking)	11542

Geographic Coverage

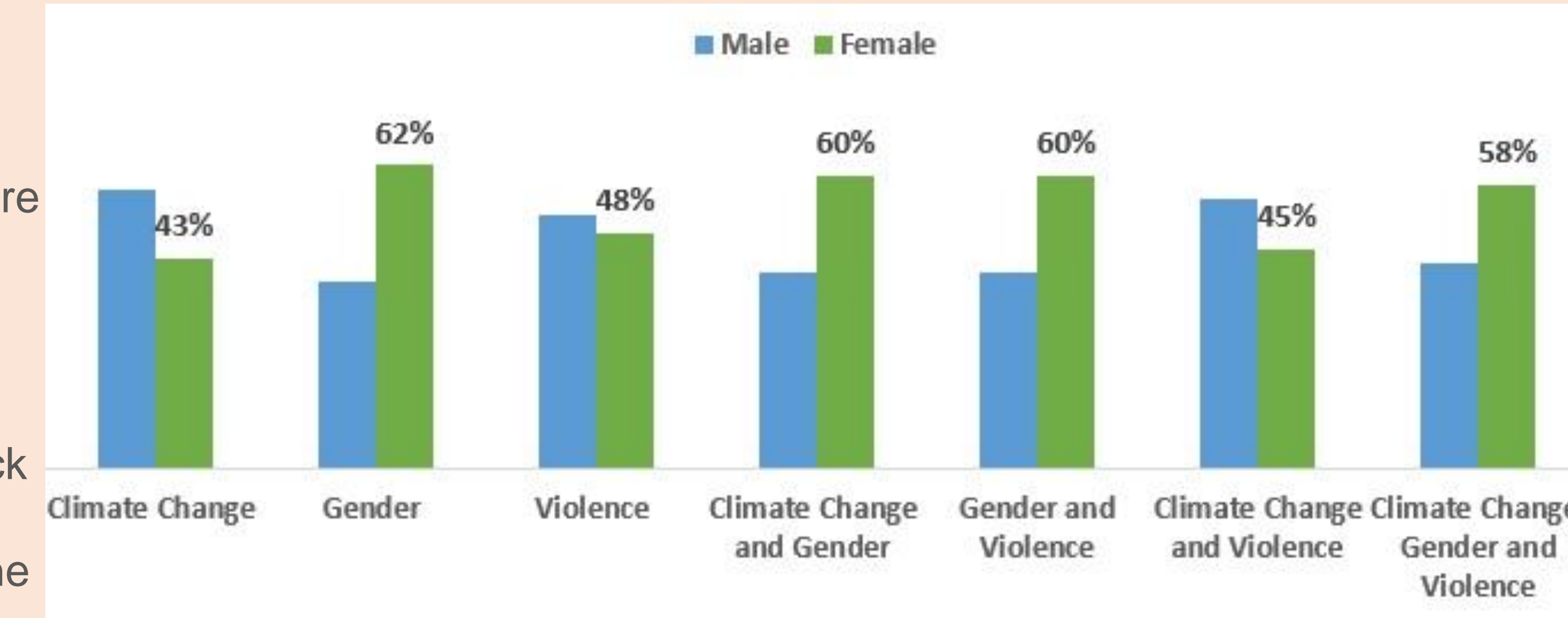
Discussion Topic	Top 10 Geographic Region
Climate Change	United States of America United Kingdom Canada Australia India Indonesia France Germany South Africa Netherlands
Gender	United States of America United Kingdom Canada India Indonesia Philippines Nigeria Brazil Australia South Africa
Violence	United States of America United Kingdom India Canada Australia Nigeria South Africa Indonesia Pakistan Brazil
Climate Change and Gender	United States of America United Kingdom Canada Australia India France Indonesia Nigeria South Africa Kenya
Gender and Violence	United States of America United Kingdom Canada Australia India South Africa Nigeria Indonesia Kenya Pakistan
Climate Change and Violence	United States of America United Kingdom Canada Australia Indonesia India Nigeria France Brazil Mexico
Climate Change, Gender and Violence	United States of America Indonesia United Kingdom Canada Australia India France Spain Kenya Nigeria

- Data reveals that Australia, Canada, India, Indonesia, United Kingdom, United States of America have population who are highly interested in discussing topics of climate change, gender and violence either jointly or separately.
- In response to RQ4 the data also reveals that countries with serious consequences of climate change on increasing violence mostly faced by women are underrepresented when it comes to user engagement in discussing topic of interest.
- Extensive user engagement is necessary from least developed counties highly vulnerable to climate change.

Demographic

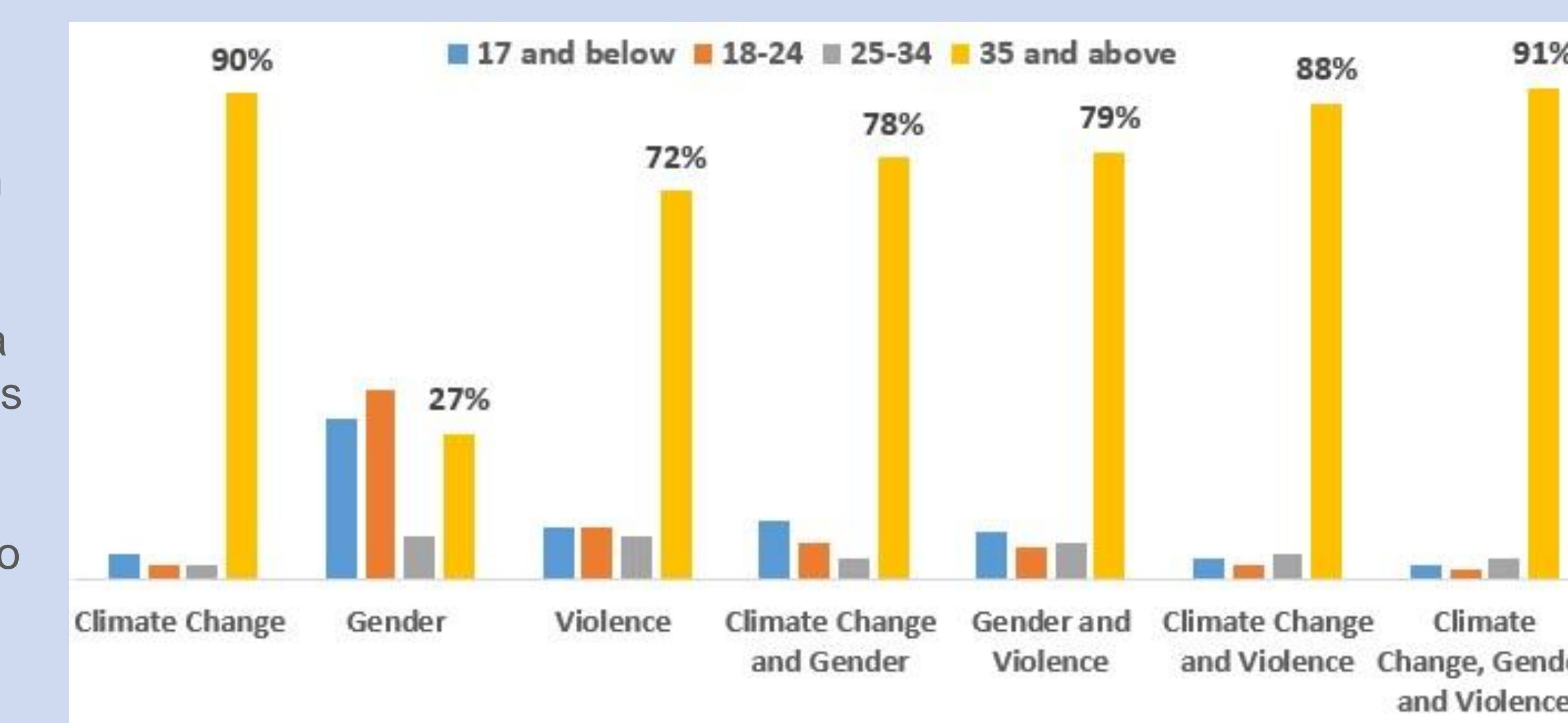
Gender Distribution

- The female participation is comparatively higher than men (above 50%) for all topics that include gender.
- In response to RQ1 this suggests that female population is more sensitive about the issues they are facing such as increasing violence, hardship due to climate change, and climate induced violence such as trafficking.
- The male participation is higher (above 50%) for topics that lack gender sensitivity such as climate change and violence. This suggests that male population is unable to fully comprehend the gender differentiated impacts caused by climate change.



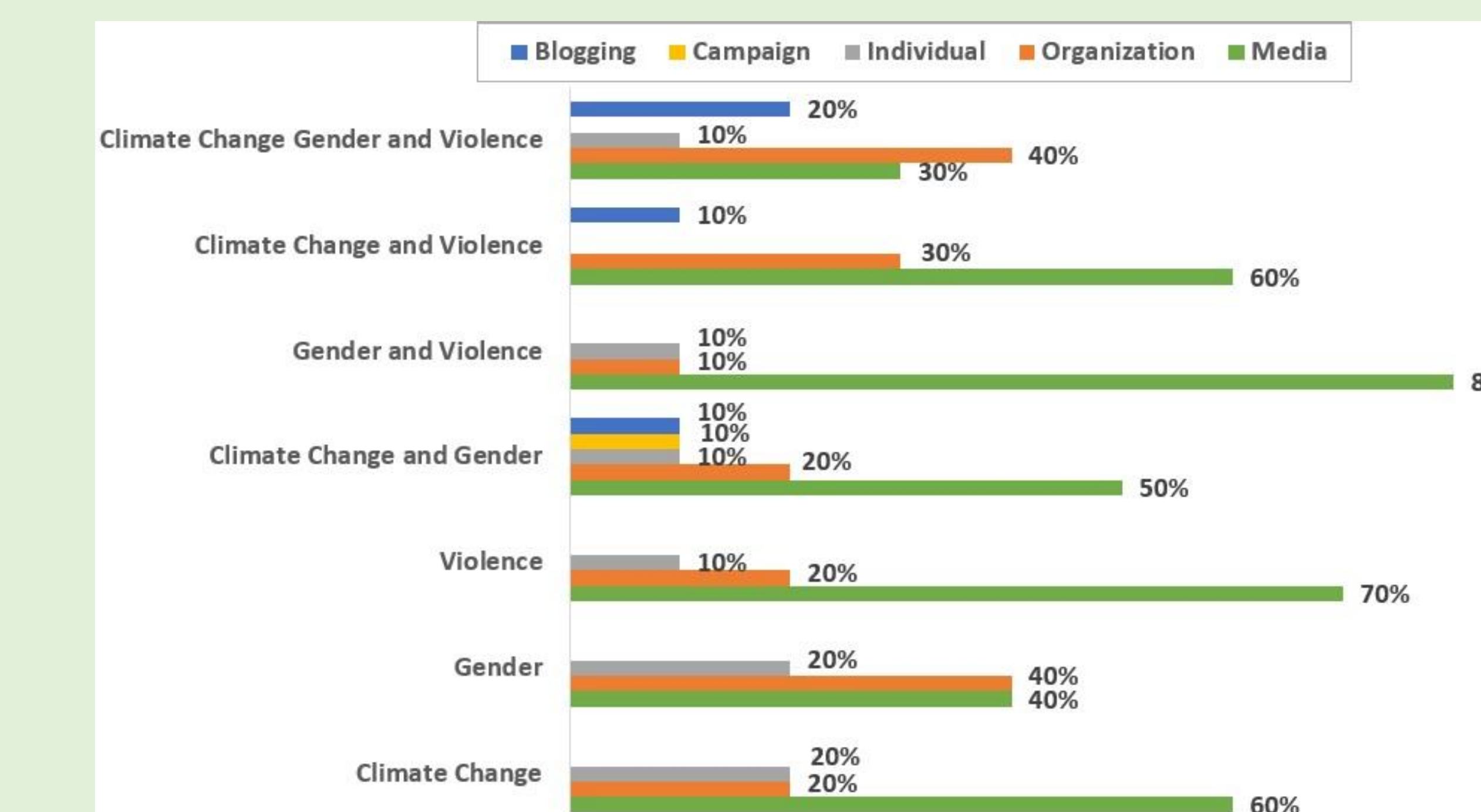
Age Distribution

- The age distribution of user also shows higher participation (above 50%) of matured age groups above 35 years for each topics except 'gender'.
- The low participation of youth age groups on each topics is a serious concern as they represent the future caretakers of this global crisis of climate change.
- In response to RQ1, this means that youth participation has to be encouraged and made aware that women are more vulnerable to men due to negative consequences of climate change.



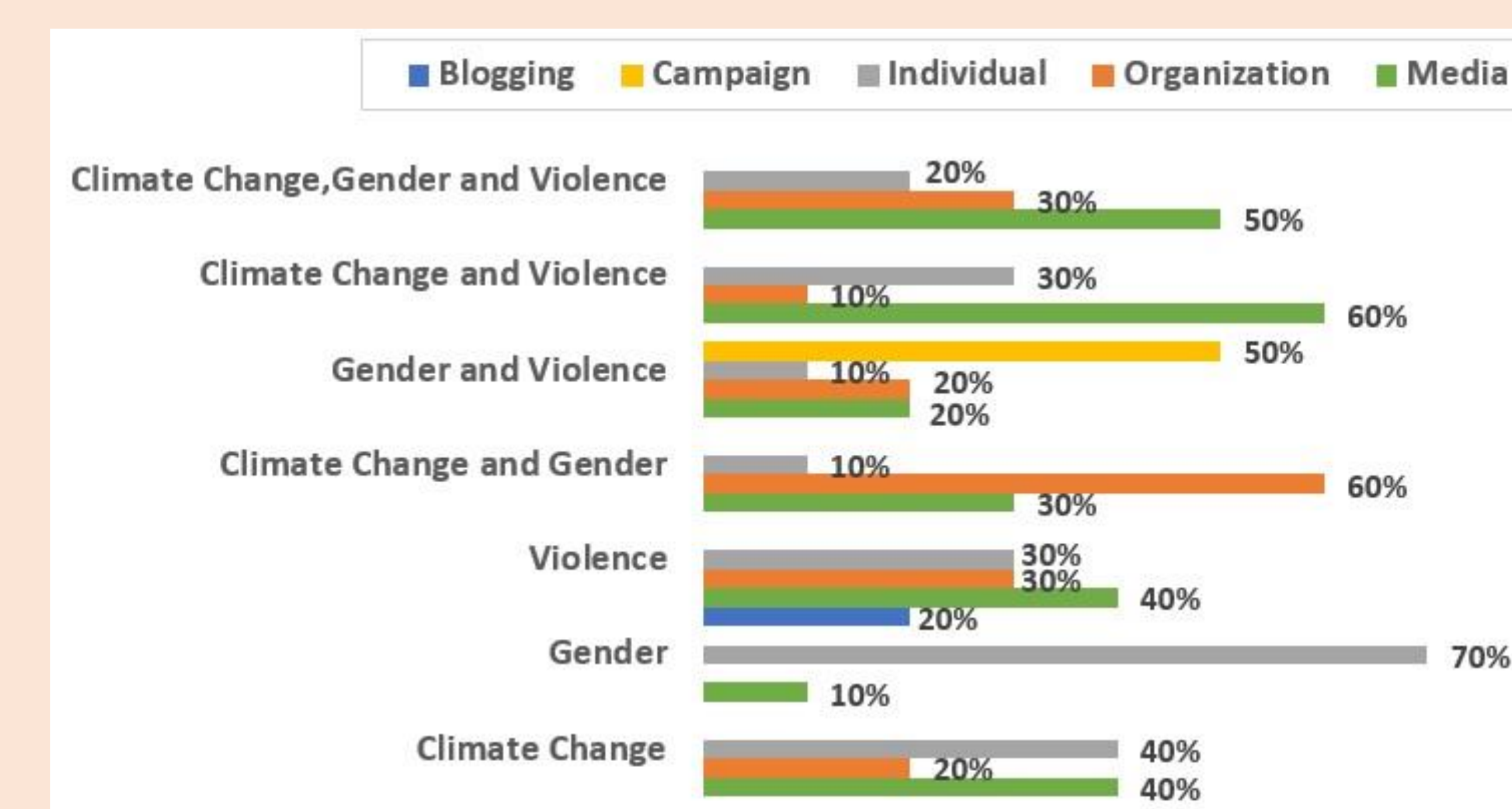
User Engagement

Popular Mention



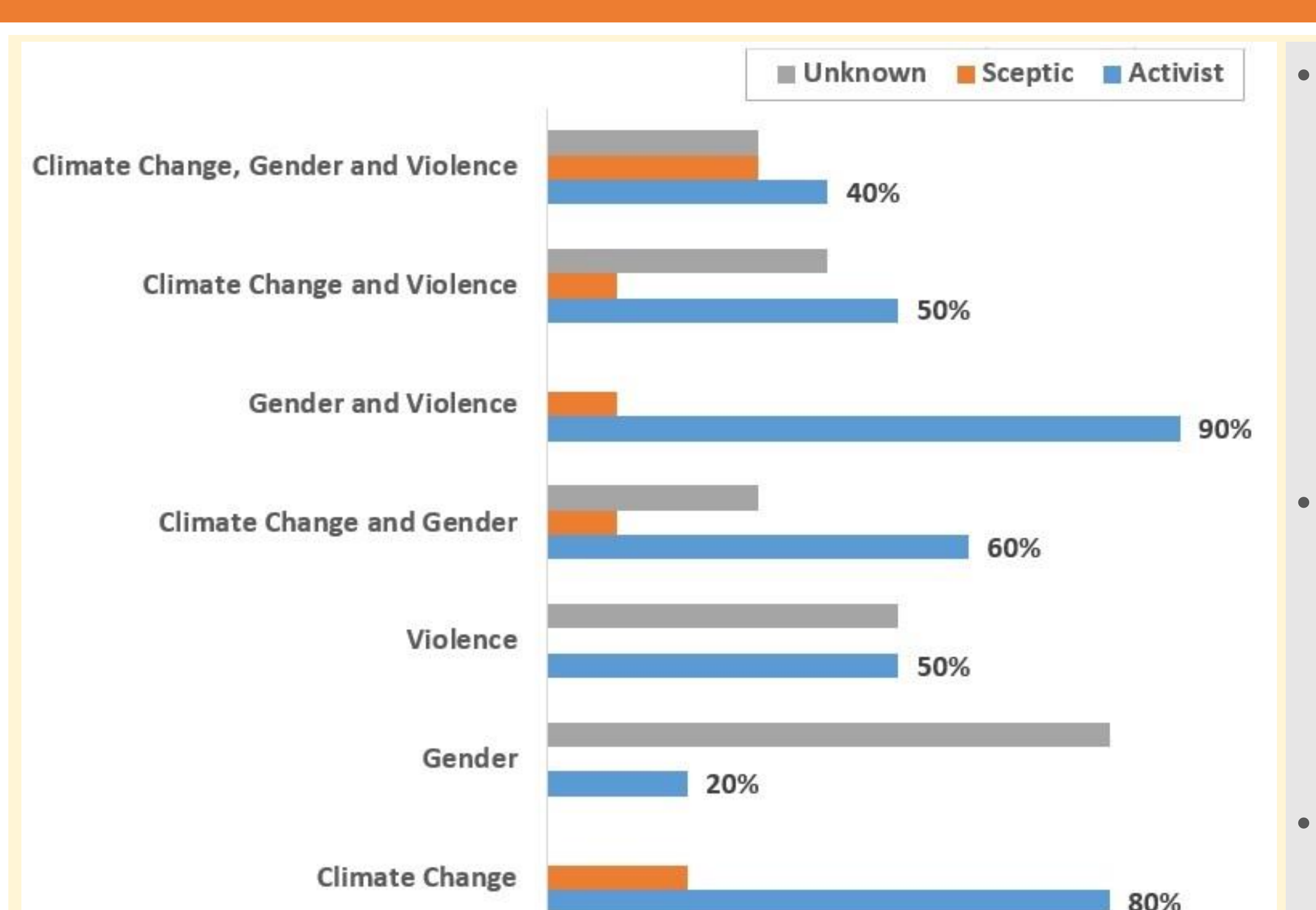
- Categories of twitter handles mentioned vary significantly for each discussion topics. 70% of twitter handles mentioned in discussing topics on gender are Individual mostly celebrity.
- While the aggregated topic on climate change and gender is discussed by majority of twitter handles (60%) belonging to organization. In contrast Media twitter handles are frequently mentioned (60%) to discuss aggregated topic on climate change and violence.
- In response to RQ2 this suggests that organization have additional impact to sensitize climate change and gender issues while media can play a part in publicizing increasing violence such as trafficking from climate change.
- For the aggregated topic of climate change, gender and violence there is no definite choice but Media twitter handles are frequently used.

Influential Author



- Categories of influential twitter handles differ significantly across the discussion topics. The majority of twitter handles belonging to Media are found to be influential to sensitize topic of climate change (60%), violence (70%) separately and jointly (60%) as well as gender based violence (80%).
- While twitter handles for Organization (40%) and Media (30%) are both comparatively influential to spread aggregated topic of climate change, gender and violence.
- Since influential twitter handles has an important role to play in igniting social reformation, the role of Media and Organization is suggested to be most impactful. The role of individual influential twitter handles (10 to 20%) is uniform across all discussion topics.

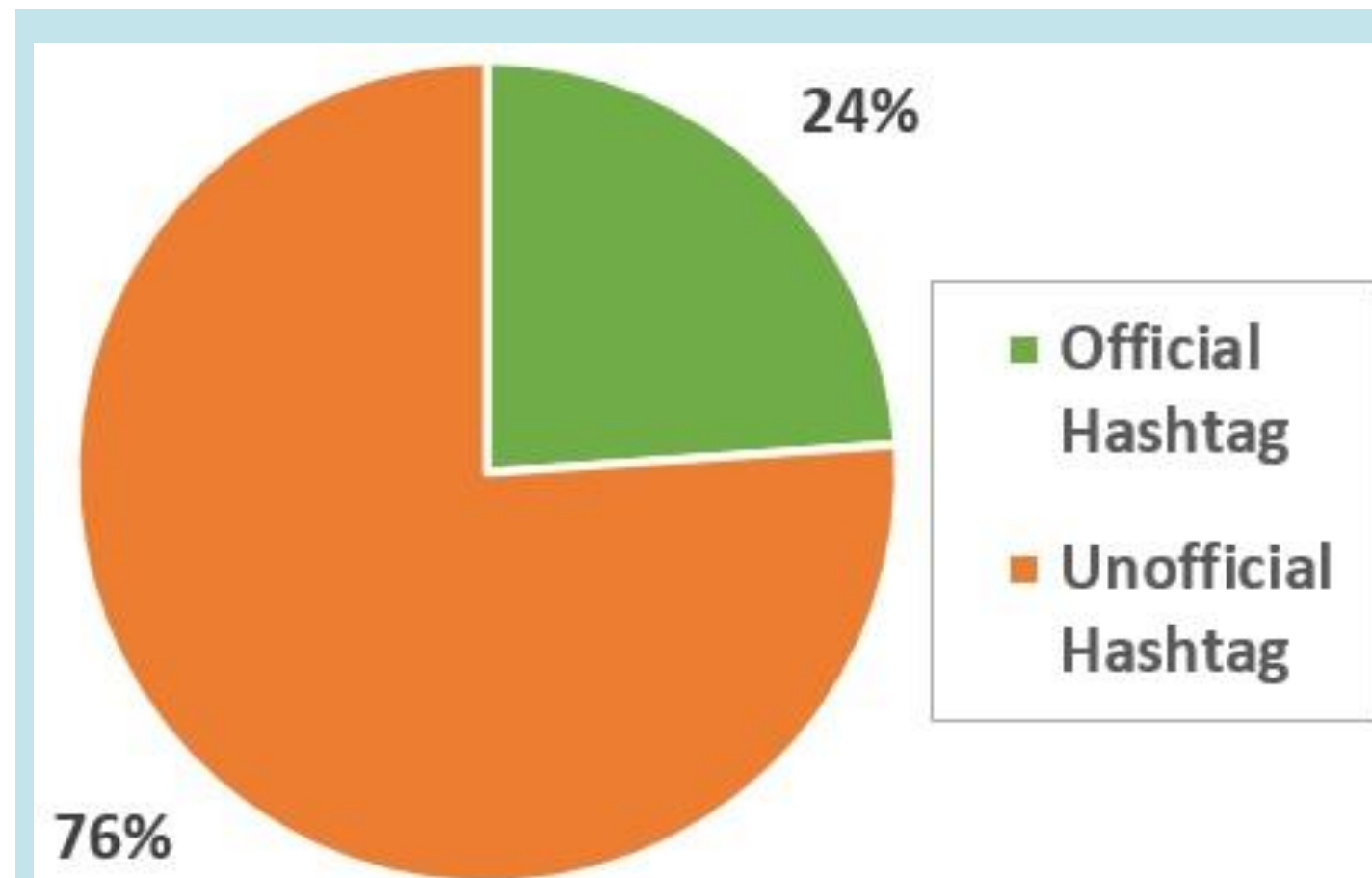
Views Expressed



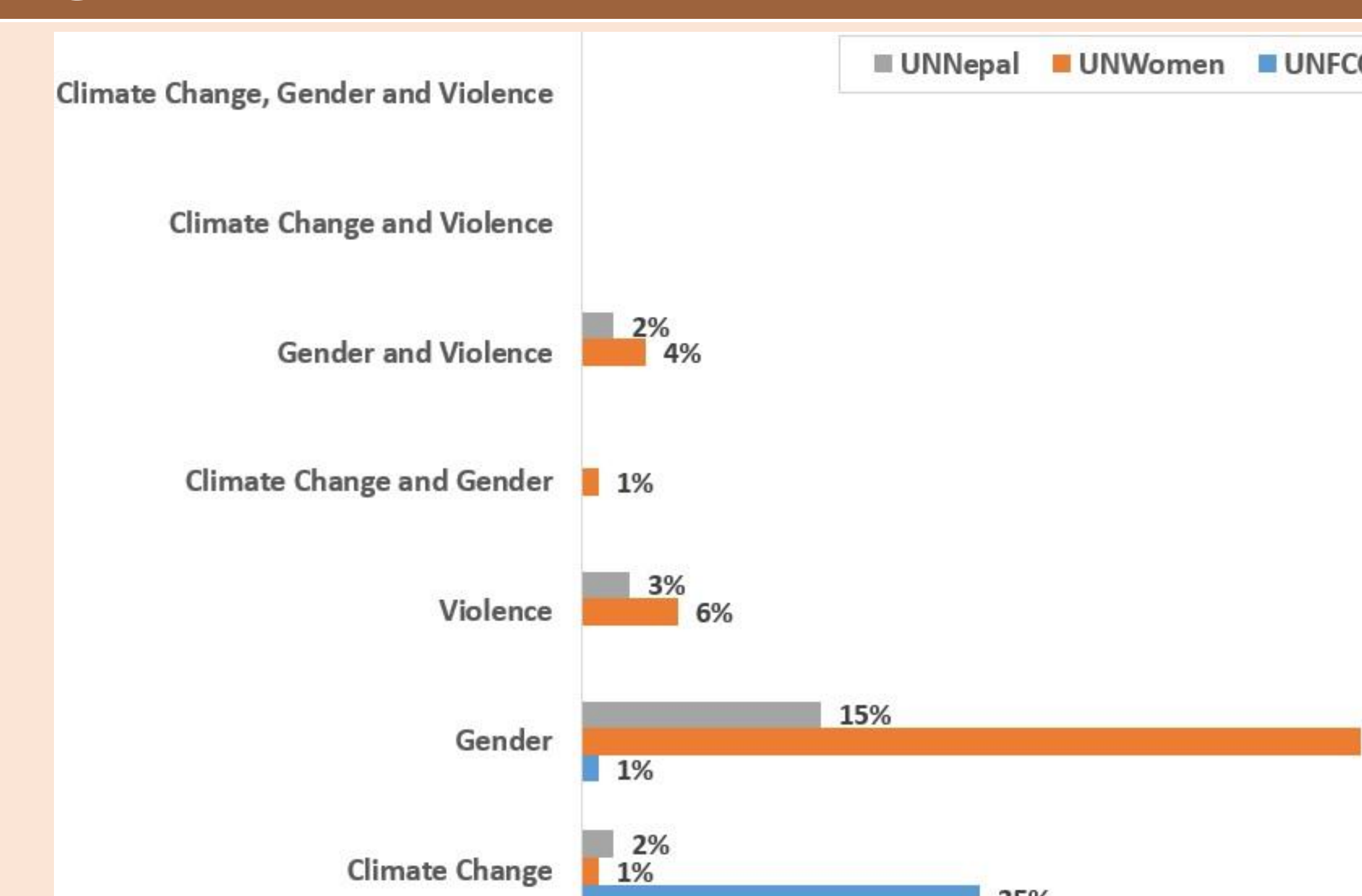
The views that are consistent with the scientific consensus and/or promoting action to prevent climate change, gender or violence were classified as Activist. The views in opposition to the scientific consensus and/or opposing action to prevent climate change, gender or violence are classified as Sceptic.

Popular HashTags

- In response to RQ3 the data reveals that climate change and gender violence have higher activist views about 80% and 90% respectively.
- The reason could be plentiful coverage and importance given to climate change and gender violence.
- While views over how climate change is resulting in gender differentiated impacts is low (40%) which means more awareness programs are needed.
- Out of top 46 hashtags extracted, the data reveals that 35 hashtags (76% of hashtags) are unofficial while only 11 (24% of hashtags) are official.
- In response to RQ2 this raises a concern that we need more official hashtags in order to sensitize the topic of global concerns.



Organization Views



- UN organizations make posts that are relevant to their theme of action. Of the seven discussion topics UNFCCC has majority of posts (25%) on climate change and UNWomen has majority of posts (49%) on gender.
- This indicates that isolated views are still prevalent among organization and a need for a consolidated view to educate general public of the gender differentiated impacts of changing climate.

Conclusion

This research contributed by giving future directions of online user engagement policies in creating awareness on climate change and its gender differentiated impacts.

- Extensive gender based awareness campaigns is required to involve male participation alongside female, and target youth participation.
- Twitter handles of organizations are influential in sensitizing climate change and gender issues while Media are influential in publicizing increasing violence such as trafficking from climate change.
- Within organization the focus is on specific theme of action, for instance UNFCCC focus on climate change an UNWomen on gender. This calls for organization to have aggregated view to spread information about climate change and its various vulnerability contexts, e.g. gender.
- Organizations need to launch official hashtags for a wide reach.
- Region specific campaigns needed to target online user communities from the least developed countries vulnerable to climate change.