SCHOOL OF TRANSNATIONAL GOVERNANCE

Shelter from the Storm?: A Quantitative Analysis of the Effect of Humanitarian Aid on the Prevalence of Conflict-Related Sexual Violence

Evelien de Vor

Thesis submitted for assessment with a view to obtaining the degree of Master of Arts in Transnational Governance of the European University Institute

Florence, 15 May 2024

European University Institute
Florence School of Transnational Governance

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Student declaration to accompany the submission of written work

Florence School of Transnational Governance – Master's Programme

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ABSTRACT

Conflict-related sexual violence (CRSV) is no longer understood as simply a by-product of war, yet the role of humanitarian aid within conflict zones and its potential to exacerbate such violence remains understudied. This study aims to fill this gap by investigating humanitarian aid's impact on CRSV prevalence. It theorizes that humanitarian aid increases CRSV through several pathways: intensifying armed group competition, incentivizing civilian punishment/control, and injecting resources into conflict zones, ultimately prolonging conflicts. Utilizing Sexual Violence in Armed Conflict (SVAC) and Financial Tracking Service (FTS) data, this hypothesis is empirically tested through logistic regression analysis, showing moderate but robust support for the hypothesis, indicating that higher levels of humanitarian aid are associated with a small increase in the likelihood of CRSV. These findings underscore the importance of integrating CRSV into policy frameworks and further investigating humanitarian aid's effects, particularly on women and girls, who bear the brunt of CRSV.

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LIST OF ABBREVIATIONS

CRSV	Conflict-Related Sexual Violence
FTS	Financial Tracking Service
PRIO	Peace Research Institute Oslo
SVAC	Sexual Violence in Armed Conflict
UCDP	Uppsala Conflict Data Program
UN	United Nations

Introduction

As conflicts persist globally, exemplified by the prolonged conflicts in Sudan, Gaza, and Ukraine, among others, it becomes ever more essential to explore their profound and diverse impacts on civilian populations (Council on Foreign Relations. (2024 a, b, c). Of particular importance is understanding the effects on women and girls, who often bear a disproportionate burden of the consequences of conflict. Among these consequences is the prevalence of conflict-related sexual violence (CRSV), an issue that has gained more international attention and scholarly recognition over the past two decades, rejecting the prior belief that CRSV is merely a by-product of war. Instead, CRSV is increasingly understood as a multi-faceted phenomenon impacted by a variety of causes, such as the patriarchal societal structures and the organizational dynamics within armed groups, indicating a paradigm shift in how it is perceived. CRSV has been defined in different ways by international organizations, extending far beyond a simplistic interpretation of CRSV limited to 'rape in war'.

For instance, the United Nations (UN) defines CRSV as *"rape, sexual slavery, forced prostitution, forced pregnancy, forced abortion, enforced sterilization, forced marriage and any other form of sexual violence of comparable gravity perpetrated against women, men, girls or boys that is directly or indirectly linked to a conflict"* (United Nations Secretary-General, 2019, p.3). Other definitions of CRSV also include sexual torture and sexual mutilation (Wood, 2009).

Sexual violence related to conflict, particularly rape which has been most thoroughly researched, has been internationally recognized as a tactic of war and a tool for terror (United Nations Secretary-General, 2019). Hence, CRSV is employed by armed groups as a way to control, intimidate, scare, punish, and humiliate civilian populations (United Nations Secretary-General, 2019). Furthermore, it serves as a communication strategy between armed groups (Buss, 2009). The brutality of CRSV inflicts both physical and psychological harm on victims/survivors while also posing a threat to international peace and security (United Nations Development Fund for Women, n.d.). Given these severe ramifications, CRSV emerges as a pressing concern requiring immediate (scholarly) attention.

In response to the escalating conflicts worldwide, the amount of humanitarian aid[1] has leveled up to help the growing number of people in need. By 2022, the demand for humanitarian aid had reached unprecedented levels, driven partly by new and ongoing conflicts, among other natural and manmade disasters (Development Initiatives, 2023). With its primary goal to save lives and alleviate human suffering, humanitarian aid has therefore become increasingly crucial.

Despite the escalating demand and provision of humanitarian aid in conflict zones, there remains a notable gap in understanding the (unintended) consequences of such assistance. Notably, the effects of humanitarian aid in conflict zones on the prevalence of CRSV have yet to be thoroughly researched. Whereas previously, CRSV has been regarded as a by-product of war, it may also, to some degree, be reinforced by humanitarian aid. This thesis aims to address the above-mentioned research gap by exploring the effects of humanitarian aid on the prevalence of CRSV, exploring the question: "What is the impact of humanitarian aid on the prevalence of conflict-related sexual violence (CRSV)?" To answer this research question, the thesis will first analyze the existing literature pertaining to both CRSV and humanitarian aid. Then, it will formulate a theoretical framework arguing that humanitarian aid, through several mechanisms, including (1) increasing armed group competition, (2) incentivizing civilian punishment and control, and (3) supplying resources, ultimately prolonging conflicts, increases the prevalence of CRSV.

To empirically test this argument, a logistic regression analysis will be performed using data from the Sexual Violence in Armed Conflict (SVAC) dataset and datasets sourced from the Financial Tracking Service (FTS). This project thus analyzes the holistic effects of humanitarian aid on the prevalence of CRSV rather than individual assessments of particular forms of humanitarian aid (such as shelter or food) on CRSV prevalence. Such analysis lies beyond the scope of this research project and presents opportunities for future studies.

[1] This thesis uses the words 'humanitarian aid' and 'humanitarian assistance' interchangeably.

Literature Review

The section below delves into relevant prior literature concerning CRSV and its intersection with humanitarian aid. The initial part explains the multifaceted nature of CRSV, exploring its variations and underlying causes. Subsequently, the discussion goes to humanitarian efforts targeting CRSV, alongside a broader examination of general humanitarian assistance provided in conflict zones. Ultimately, this section identifies a gap within the existing literature to motivate this research project.

Conflict-Related Sexual Violence (CRSV)

Over the past two decades, CRSV has gained increasing attention from researchers, encompassing both qualitative and quantitative studies. In the past, CRSV was regarded as an inevitable by-product and consequence of war, deeply entrenched within the basis of conflict (United Nations, n.d., -a). However, recent scholarship has challenged this assumption (Wood, 2006, 2009; 2012; 2014; Cohen, 2013; Cohen & Nordås, 2014), revealing that not all actors engage in CRSV, and the type and frequency of sexual violence vary significantly depending on the conflict. The recognition of this variability underscores the importance of understanding the factors that mitigate the prevalence of CRSV to ultimately prevent its future occurrence.

Various scholars have put forth diverse perspectives on factors underlying CRSV. The following section explores the interplay of several of these factors and CRSV in order to better comprehend why and how CRSV occurs. The discussion will begin with the impact of societal gender norms on CRSV; then, it will move toward the 'continuum of violence' argument and, finally, to the impact of armed groups' organizational structures on CRSV.

Patriarchal Societal Structures and Gender Norms

The predominant perpetration of CRSV by men against women has led feminist literature to explore the roots of CRSV within societal gender norms. Scholars such as Davies and True (2015) argue that CRSV is best understood through the lens of constructed gender roles, with higher levels of gender inequality correlating with increased CRSV prevalence. They argue that current research focusing on CRSV often neglects the systemic gender discrimination that fuels CRSV by instead concentrating too much on the dynamics of armed groups.

While acknowledging that CRSV predominantly affects women and girls, it is essential to recognize that men, boys, and individuals within the LGBTQ+ community also fall victim to CRSV (Kiss et al., 2020). Davies and True (2015), however, argue that even in cases where men and boys are victims of CRSV, this violence remains rooted in the same patriarchal norms that perpetuate violence against women and girls: to humiliate and undermine their agency. Furthermore, instances of violence against men and boys are often underreported due to societal expectations of masculinity and masculine dominance, which can contribute to a reluctance to acknowledge such incidents. Therefore, Davies and True (2015) argue that despite differences in reporting and acknowledgment, the fundamental roots of CRSV – the patriarchal norms – are consistent across all cases. The substantial impact of gender norms on the prevalence of CRSV has also been acknowledged by others who have performed research on CRSV (Andersin, 2020). This thesis will, therefore, also control for gender inequality by means of a control variable.

On the other hand, scholars (Cohen, 2013; Cohen & Nordås, 2014; Wood, 2014) have argued that the patriarchal perspective alone fails to account for variations in CRSV prevalence among different armed groups or within the same conflict. From this viewpoint, the patriarchal perspective fails to address the disparities observed in societies where armed groups either refrain from or exhibit minimal perpetration of sexual violence, as well as situations within the same conflict where certain actors engage in CRSV while others do not (Cohen & Nordås, 2014).

Continuum of Violence

Another perspective advanced by Cockburn (2004) posits that CRSV represents an amplification of preexisting societal sexual violence. This viewpoint regards CRSV as an extension and perpetuation of existing patterns of violence. Within society, sexual violence often stems from entrenched gender norms that condone violence against women, as explained by the earlier perspective on societal gender norms. In times of conflict, these preexisting tendencies towards violence are exacerbated rather than fundamentally altered. Hence, the argument is that the distinction between peace and war periods lies not in the nature of violence but rather in its intensity.

While a number of scholars are convinced by this idea of a continuum of violence (Krause, 2015; Manjoo, 2012; Manz, 2008; True, 2020), Wood (2012; 2014) argues that in relation to

CRSV, it is overly simplistic. She argues that this framework fails to fully explain the diverse manifestations of sexual violence in different conflict contexts. For instance, empirical evidence challenges the notion that sexual violence consistently follows a linear progression during conflicts. Wood suggests that the continuum argument may hold more weight when considering CRSV perpetrated by intimate partners as opposed to by strangers. As this thesis project will analyze CRSV perpetrated by government forces, pro-government militias, and rebel groups, as opposed to intimate partners, it is argued that the continuum of violence argument carries less weight, aligned with Wood's argument.

Organizational Structure

Another important aspect that arguably influences the prevalence of CRSV is the organizational set-up of armed groups as well as their recruiting techniques. Wartime rape, often cited as a quintessential example of sexual violence in conflict, has been analyzed by scholars for decades (Gottschall, 2004). It is scholarly established that rape can serve as a tactic of war, categorizing rape as either 'opportunistic'—motivated by personal desires – or 'strategic'—aligned with organizational objectives. Wood (2014; 2018) adds to this discourse by introducing a nuanced categorization: the concept of 'practice'. This concept encompasses instances of rape that are neither systematically ordered nor socially sanctioned but are instead tolerated within the context of social dynamics and interactions.

Expanding on this perspective, Wood (2018) underscores the significance of group cohesion of armed groups in shaping the prevalence of CRSV, emphasizing the influence of organizational policies. Additionally, research by Cohen and Nordås (2014) shows that forced recruitment into armed groups plays a significant role as well in explaining the prevalence of CRSV. In situations where individuals are coerced into joining armed groups, CRSV serves as a mechanism of socialization, fostering group cohesion and solidarity, often manifesting in practices such as gang rape.

In summary, the previous section has outlined the various theoretical frameworks examining the intricacies of CRSV, highlighting key factors such as gender norms, the continuum of violence, and the organizational structure and recruitment tactics of armed groups. These insights are foundational insights for this thesis and will be accounted for in the methodological approach, wherever possible, given data constraints. While this study refrains from placing humanitarian aid as the sole determinant of CRSV, it does scrutinize its potential role alongside other factors, assessing its impact on understanding the prevalence of CRSV within a nuanced framework.

Humanitarian Assistance Targeting CRSV

The section that follows will summarize the current scholarly findings regarding the effectiveness of humanitarian assistance targeted at combating CRSV. Only in recent years has the issue of CRSV gained noteworthy attention. In this time, both on the global stage and within academic circles, several humanitarian initiatives have emerged to tackle this issue. These initiatives encompass a range of strategies, including establishing community-based protection mechanisms, providing medical and psychosocial support for victims/survivors, and advocating for policy reforms to enhance accountability for perpetrators (Spangaro et al., 2013). However, given the only recent recognition of the issue, research examining the efficacy of humanitarian assistance in combating CRSV is still in its nascent stages.

A recent systematic review conducted by Spangaro et al. (2013) highlighted a lack of robust evidence regarding the effectiveness of humanitarian initiatives in reducing the risk, incidence, and harm of sexual violence in (post) conflict settings. Nevertheless, among the types of aid evaluated, those focused on sensitive community engagement and the so-called 'multi-component' ones showed some promise. These initiatives facilitate trust-building between civil society organizations, involve local stakeholders in collaborative problem-solving, and have proven effective in addressing the main barriers—such as stigma, shame, and limited access to support—that often deter survivors from seeking assistance (García-Moreno, 2014).

In particular, projects focused on firewood distribution and efforts to address violence perpetrated by peacekeeping forces have indicated reductions in CRSV. However, other initiatives have underscored the persistence or rise of CRSV due to ongoing stigma and inadequate support and protection for individuals who choose to come forward and testify.

Consequently, the existing literature on the impact of targeted humanitarian assistance on reducing CRSV remains inconclusive and context-dependent, emphasizing the need for further investigation. This thus necessitates a deeper analysis, particularly of the unexplored potential relationship between *general* humanitarian aid and CRSV, exploring how humanitarian aid influences conflicts and violence and its subsequent indirect impact on the prevalence of

CRSV. This gap in research forms the focal point of this thesis, delving into this complex interplay between levels of humanitarian aid and the prevalence of sexual violence in conflict zones to offer a more nuanced understanding of the specific nature of the relationship between the two variables.

General Humanitarian Aid Related to Conflict

Unlike the 'targeted to CRSV' humanitarian assistance outlined previously, general humanitarian aid encompasses all emergency aid provided to individuals affected by disasters, including both natural and manmade disasters. The primary goal of humanitarian assistance is to save lives and alleviate human suffering. Various humanitarian organizations offer this aid, typically including provisions such as shelter, food, healthcare, and other essential services (United Nations, n.d., -b)

Although the purpose of this thesis is to explore the (indirect) impact of humanitarian aid on CRSV, it's essential to acknowledge the wider objectives of humanitarian aid. With humanitarian aid's primary aim to save lives and mitigate suffering, protection from violence is not part of its main goals. Yet, recognizing the multifaceted nature of humanitarian assistance underscores the importance of evaluating its impacts within the specific context of conflict and violence.

The Dual Nature of Humanitarian Assistance in Conflict – its Impact on Violence.

The section below analyzes the existing research on the impacts of humanitarian aid on violence and conflict dynamics. This literature reveals two contrasting perspectives: On one hand, humanitarian aid is perceived by experts as a means of protecting civilians from further violence through the provision of, for example, shelter. On the other hand, it is argued that humanitarian aid can fuel and prolong conflicts and violence by, for instance, injecting financial resources and food into conflict zones.

Wood & Sullivan (2015) argue that humanitarian aid in conflict zones creates strong negative externalities by encouraging both rebel forces and government forces to engage in violence against civilians. They argue that inflows of humanitarian aid negatively alter violence patterns in conflicts by encouraging looting and predation. In this context, aid becomes a means to abuse local civilian populations. Essential aid resources, such as food, medical supplies, vehicles, and communication equipment, become targets for rebel groups to replenish their depleted resources. Additionally, these resources can be perceived as challenges to the authority of armed groups in occupied regions, leading to violent responses aimed at deterring civilian defections.

Other scholars agree that humanitarian aid can fuel further violence. Narang (2015) suggests that humanitarian aid may worsen or prolong conflicts by heightening uncertainty about each group's relative strength. As aid flows into the conflict zone, it may mitigate the costs of engagement and fighting for one or both groups, consequently prolonging the conflict. Despite this, even in scenarios where humanitarian aid contributes to the prolongation of conflict, it may simultaneously shield civilians from violence. This dual nature underscores the complexity of its impact on conflict and violence dynamics.

Terry (2011) adds to this discourse, highlighting instances where humanitarian aid can inadvertently subject civilians to violence when provided as part of a political or military strategy. For instance, villages receiving aid may face repercussions for receiving it, or aid agencies themselves may become targets of violence. This underscores the challenge of maintaining neutrality in delivering humanitarian aid, particularly in politically charged conflict environments.

Conversely, researchers have also noted how humanitarian aid can reduce violence in conflict. Baines & Paddon (2012), for instance, explain how humanitarian assistance can provide immediate needs for protection and has the potential to add to and empower civil agency in conflict zones. Moreover, Berman et al. (2011) found that aid projects, particularly those focused on providing local public goods through economic transactions – can reduce violence and improve local support for government forces. This reduction in violence can be attributed to a project's efforts to address underlying grievances, such as poverty or unemployment, thereby mitigating the root causes of insurgency while at the same time building trust and cooperation between local populations and government forces. Aid, as such, is used to win 'hearts and minds', ultimately reducing support for rebel groups.

Moreover, aid influxes bring international attention to conflicts; they bring many foreign aid workers who, in turn, raise the international community's monitoring capacity (Wood & Sullivan, 2013). This can discourage violence as armed forces may fear a backlash from the international community. Furthermore, donor countries, leveraging their aid contributions, hold power over government actions, with the potential to withdraw aid if their behavior is not in line with the aid donor's demand. For instance, Adelaiye et al. (2023) found that in many cases, donor countries withheld aid in response to state-sponsored sexual violence during conflicts, resulting in a decline in foreign direct investment (FDI) due to reputational and economic repercussions.

Conclusion

In summary, this literature review has analyzed the intricate dynamics surrounding CRSV and the pivotal role of humanitarian assistance in addressing this complex issue. It has provided a comprehensive overview of CRSV, highlighting its multifaceted nature and the diverse factors contributing to its prevalence. Through examining various scholarly perspectives, including patriarchal societal structures, the continuum of violence argument, and the organizational dynamics within armed groups, this review has shed light on the multidimensional nature of CRSV perpetration.

Furthermore, the discussion has underscored the inconclusive results of humanitarian initiatives targeting CRSV, revealing instances where such efforts have not yielded the desired outcomes and may have even exacerbated sexual violence related to conflict. Consequently, this thesis undertakes a broader examination of the impacts of general humanitarian aid in conflict settings, revealing the complex interplay between aid influxes and conflict and violence dynamics. While humanitarian aid's aim is to save lives and alleviate suffering, it might inadvertently fuel (sexual) violence and prolong conflicts. Nevertheless, other scholars have acknowledged how humanitarian assistance can reduce (sexual) violence in conflict, including its ability to provide immediate protection, address underlying grievances, and draw international attention to conflict-related atrocities, potentially deterring further (sexual) violence.

Against this backdrop, this thesis will critically analyze the implications of humanitarian aid influxes on the prevalence of CRSV through quantitative analysis. By examining this nuanced relationship empirically, the study aims to contribute to the development of more effective policies aimed at mitigating the prevalence of CRSV and reducing human suffering, ultimately fostering peace and stability in conflict zones.

Conceptual/ Theoretical Framework

As indicated previously in the literature review, this thesis aims to research the impact of humanitarian aid on the prevalence of CRSV. Different arguments have been put forward that presume the relationship between humanitarian aid and violence and conflict dynamics, as has been outlined within the literature review. This thesis will expand upon these arguments, expecting that increased humanitarian aid influx correlates with a higher prevalence of CRSV.

Theorizing about the impact of humanitarian aid on CRSV poses several challenges. Firstly, humanitarian aid is a broad concept encompassing various types of aid, each potentially having diverse impacts on the dynamics of the conflict, the violence, and the sexual violence. Secondly, CRSV itself is also a wide-ranging concept, including many types of sexual violence related to conflict. Difficulties arise in presuming the relationship when a particular type of aid may have different effects on diverse types of CRSV, for instance, by reducing the amount of rape in war but increasing the amount of sexual slavery. Consequently, each specific type of aid can simultaneously yield both positive effects and negative effects on the prevalence of CRSV, which complicates estimating the relationship between the two variables.

Despite these difficulties, this theoretical framework will present an argument advocating for an overall positive effect of humanitarian aid on the prevalence of CRSV, drawing upon compelling arguments concerning the ramifications of humanitarian aid influxes on violence and the overall conflict dynamics.

Intensified Competition between Armed Groups

When humanitarian aid enters conflict zones, for example, in the form of medical supplies or food, it is not guaranteed that it will solely go to the civilian population. Sometimes, these resources fall into the possession of armed groups who seek to replenish their depleted resources. According to Wood & Sullivan (2015), sending humanitarian aid in conflict environments creates opportunities for looting and predation by armed groups. This thesis assumes that the limited resources in the form of humanitarian aid fuel competition between armed groups as armed groups vie for these resources. Narang (2015) further argues that the influx of humanitarian aid introduces uncertainty for armed groups regarding their relative strength. Both these dynamics heighten the violence within conflicts, and this thesis expects that civilians increasingly become targets of this violence, including in the form of sexual violence.

Heightened Violence against Civilians

A different yet related aspect to the introduction of humanitarian aid in conflict zones is the direct harm inflicted upon the civilian population. The perceived challenge of authority of armed groups posed by humanitarian aid incentivizes armed groups to seek control over the civilian population, reducing the risk of defection. This pursuit of control over the population often involves the use of violence, including sexual violence. Terry (2011) further contends that civilians may face punishment for receiving aid, becoming targets of (sexual) violence as a result. This thesis thus argues that humanitarian aid incentivizes civilian punishment and search for control over civilians, consequently increasing sexual violence.

Prolongation of Conflict

Building upon the dynamics outlined above, another important consequence of the introduction of humanitarian aid in conflict zones is its potential to prolong conflicts. Humanitarian aid influxes can serve a dual function: items such as food and shelter may be acquired and used by armed groups for their own needs while, on the other hand, being accessed by the civilian population. When aid is received by the civilian population, it can alleviate the need for armed groups to allocate resources towards civilian wellbeing, thereby freeing up all resources to be dedicated solely to warfare. Narang (2015), therefore, concludes that humanitarian aid directly and indirectly mitigates the costs of fighting for armed groups. With lower costs of fighting, conflicts can more easily be sustained and prolonged. This thesis anticipates that prolonged conflicts extend the environment conducive to (sexual) violence against civilians, therefore increasing sexual violence.

Causal Chain

As outlined above, humanitarian aid is expected to have several simultaneous positive effects on the prevalence of CRSV. The theoretical argument, as discussed above, is outlined in the causal chain in Figure 1 below.

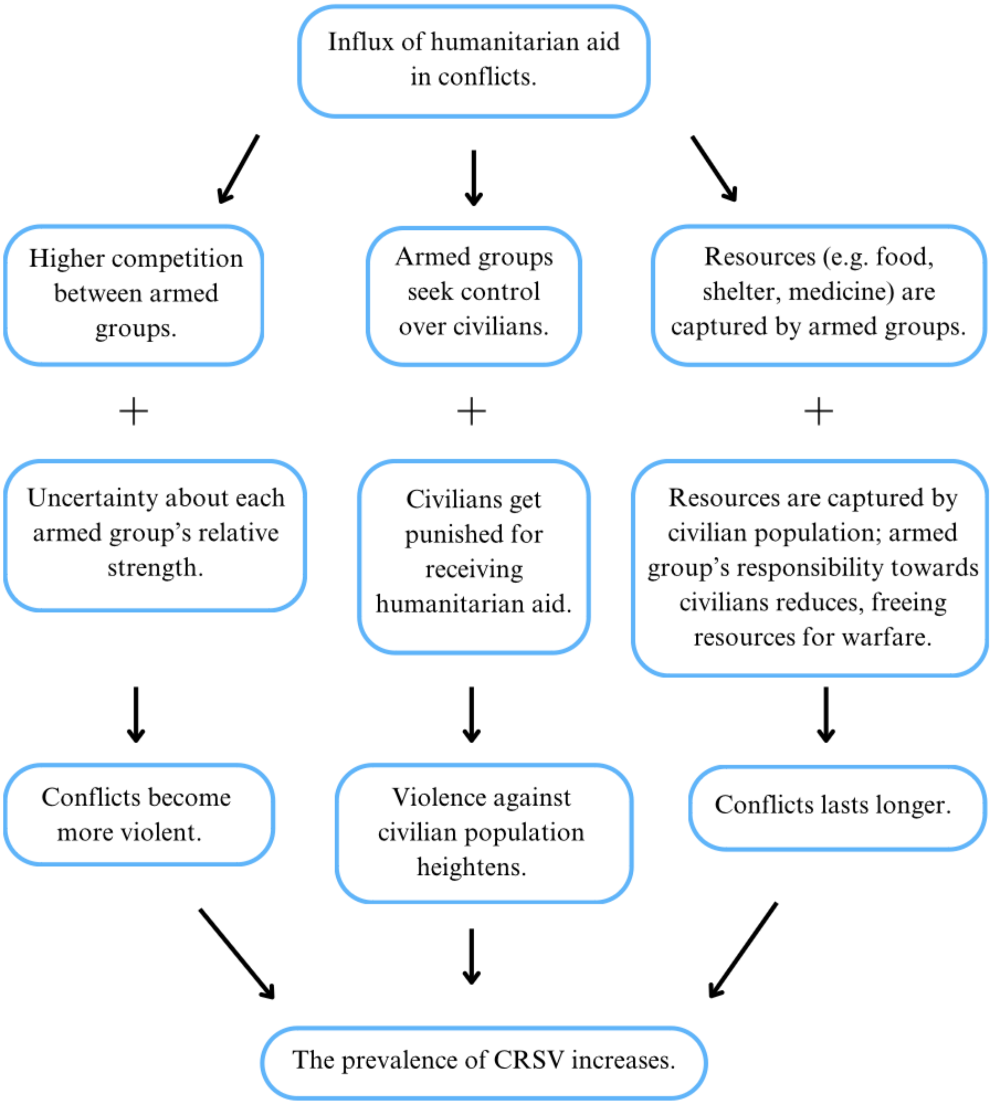

Figure 1: Causal Chain of the Theoretical Framework

Hypothesis

The theoretical argument for this thesis is captured in the following hypothesis.

H: Higher levels of humanitarian aid will increase the likelihood of conflict-related sexual violence (CRSV).

Methodology / Research Design

Data

This study aims to answer the research question: “What is the impact of humanitarian aid on the prevalence of conflict-related sexual violence (CRSV)?” It tests the hypothesis that ‘Higher levels of humanitarian aid will increase the likelihood of conflict-related sexual violence (CRSV) occurring’ utilizing quantitative methods, specifically through the use of logistic (Logit) regression models. While no previous studies have focused on analyzing the effects of humanitarian aid on CRSV with quantitative methods, other aspects impacting CRSV have been thoroughly researched quantitatively, especially in the past few years, also using logistic regression models. This thesis relies on two main datasets that cover the independent and dependent variables: the amount of humanitarian aid received and the prevalence of CRSV. Aside from this, six control variables will be included using five additional datasets. The variables controlled for in this thesis are *(1) year, (2) Gross Domestic Product (GDP) per Capita, (3) population, (4) gender, (5) conflict intensity level, and (6) political regime*.

Time Frame

The selected time frame for this research is between the years of 2000 and 2021. This decision is made by evaluating the available data, capturing the humanitarian aid received and the prevalence of CRSV for a set of countries (Financial Tracking Service, 2024; Cohen and Nordås, 2014). The first dataset only contains substantial amounts of data from 2000 onwards, whereas the second contains data from 1989 until 2021. Hence, the choice is for a time frame of 2000 - 2021.

Choice of Statistical Model

As will be elaborated more extensively within the operationalization of the variables, the dependent variable in this research, the prevalence of CRSV, is an ordinal variable scaled from 0 to 3. Given the complexity of this scale variable and its interpretation, this thesis will simplify it by recoding the scale into a binary variable, following a methodology employed in previous research on CRSV (Johansson & Hultman, 2019; Tottie, 2023). In contrast, the independent variable, humanitarian aid, is a continuous variable. A logistic regression model is therefore deemed suitable and appropriate, with the dependent variable being binary, as this model estimates the probability of an event occurring or not. This model enables the exploration of the relationship between the probability of CRSV occurrence (the dependent variable) and the predictors (the independent variables), such as humanitarian aid and the control variables. The output of logistic regression quantifies the likelihood of the CRSV occurring given a unit change in humanitarian aid while controlling for other variables. To add robustness to the model, it will be compared to a probabilistic (Probit) model, analyzing whether both models yield similar results. If so, the logistic model provides a good fit of the data.

Operationalization of Variables

The Independent Variable

The independent variable that will be studied in this thesis is the amount of humanitarian aid received. This amount, measured in US dollars and structured on a country-by-year basis, is captured by the datasets from the Financial Tracking Service from the UN Office for the Coordination of Humanitarian Affairs (2024). The UN service tracks the overall humanitarian aid contributions to countries by compiling data sourced from numerous organizations and donors. Given the diversity of information sources and variations in data quality, discrepancies such as omissions or inaccuracies within the database may occur. However, as these datasets offer the most comprehensive, timeless, and updated data on humanitarian aid received per country per year, it is the preferred option. In the following analysis, the amount of humanitarian aid received will be modified to *millions* of US dollars from US dollars.

The Dependent Variable

The dependent variable of this thesis is the prevalence of CRSV. This data is sourced from the well-established SVAC dataset by Cohen and Nordås (2014). As mentioned before, definitions regarding CRSV differ, but for the purpose of this thesis, the SVAC dataset's definition for CRSV is adopted. According to the SVAC dataset, CRSV includes (1) rape, (2) sexual slavery, (3) forced prostitution, (4) forced pregnancy, (5) forced sterilization/abortion, (6) sexual mutilation, and (7) sexual torture (Cohen, 2021). This definition is gender-neutral and does not exclude male victims.

This dataset codes data from Amnesty International, Human Rights Watch, and the US State Department annual reports, therefore decreasing missing data and potential bias from underreporting. This dataset has been utilized for several other research papers pertaining to

CRSV (Anderson, 2020; Dumas, 2023; Fransson, 2021; Johansson & Hultman, 2019; Johansson & Sarwari, 2019; Tottie, 2021, 2023; Willis, 2021). For the purpose of this research project, the most recent updated version (2021) of this database will be used, reporting on SVAC in all *active state-based armed conflicts*.

An armed conflict is defined in this dataset as: "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths" (Gleditsch et al., 2002, p. 619)

Sexual violence prevalence is quantified on an ordinal scale of (0, 1, 2, and 3), indicating the relative magnitude of sexual violence perpetrated by a conflict actor within a specific year. Prevalence coded as 3 is called 'massive' or 'systematic', with an indication of 1000 or more instances of sexual violence. Prevalence coded as 2 is 'common' or 'widespread' with an indication between 25-999 incidents of sexual violence. Prevalence of 1 represents 'some' sexual violence, with up to 25 incidents. Moreover, prevalence coded as 0 signifies sexual violence not mentioned within conflict reports. Lastly, prevalence coded as -99 represents missing values and no reports. The dataset, thus, does not provide specific numerical values for instances of sexual violence.

An important limitation of researching CRSV is its high level of underreporting. Survivors of sexual violence may refrain from reporting or seeking help after an attack because of the low available medical and/ or judicial services and the scarce prosecution of cases in their country. In addition, social pressure, feelings of fear of stigma, exclusion from the community, reprisal, as well as feelings of shame represent extra barriers to seeking help and reporting CRSV (United Nations, 2020). It is crucial to keep this data limitation in mind when performing research on CRSV.

As discussed above, the SVAC dataset reports the prevalence of CRSV from three distinct sources (the US State Department, Human Rights Watch, and Amnesty International). As a result of this, there are instances where there are variations in reported prevalence for the same country and year. This could arise from diverse reporting tactics or different reporting locations within the same country. For the purpose of this research, the highest value of the reported prevalence codes will be used for each country in each year. This is deemed appropriate because the highest reported score captures the most accurate representation of CRSV prevalence. Furthermore, with CRSV often being underreported, taking the highest prevalence offers extra motivation.

The current distribution of the prevalence of CRSV is seen below in Figure 2 and Table 1. This ordinal scale will be collapsed into a dummy variable, where 0 will account for both the observations of the prevalence of 0 and of 1, and 1 will account for both the prevalence of 2 and of 3. The distribution of the prevalence of CRSV after collapsing the scale into a dummy variable can be found in Figure 3 and Table 2. This scale is chosen to partially account for the phenomenon of underreporting, following previous research on the effects of UN peacekeeping missions on the prevalence of CRSV (Johansson & Hultman, 2019; Tottie, 2023).

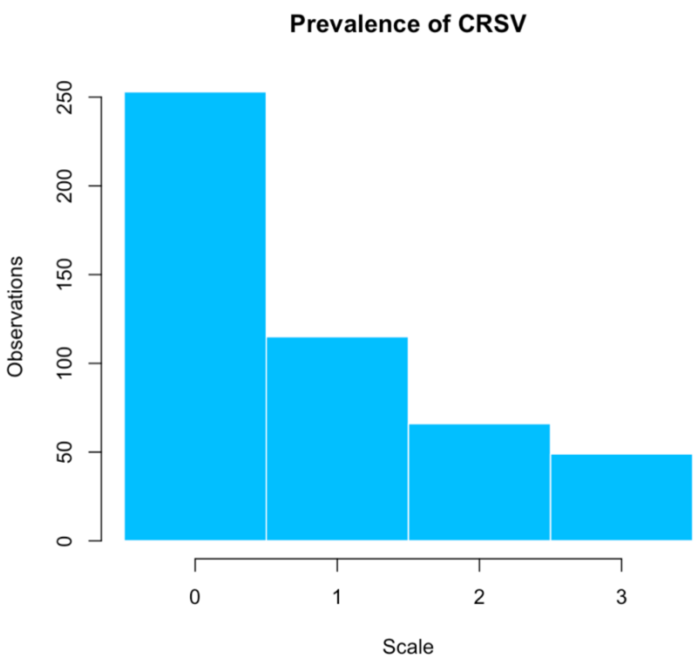

Figure 2: Distribution of CRSV Prevalence

Table 1: Distribution of CRSV Prevalence

Scale of Prevalence of CRSV	**0**	**1**	**2**	**3**
Number of Observations	253	115	66	49

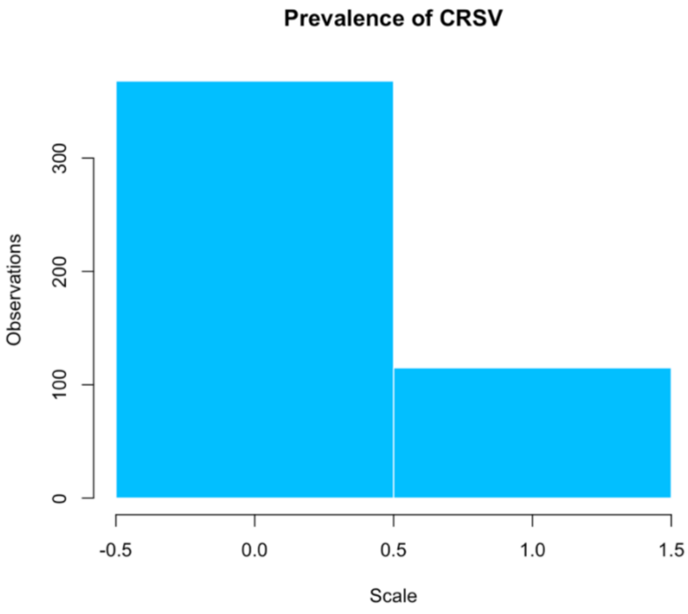

Figure 3: Distribution of CRSV Prevalence after Collapsing Ordinal Scale into a Dummy Variable

Table 2: Distribution of CRSV Prevalence after Collapsing Ordinal Scale into a Dummy Variable

Dummy Variable for Prevalence of CRSV	**0**	**1**
Number of Observations	368	115

Control Variables

As indicated previously, this thesis will control for (1) year, (2) GDP per Capita, (3) population, (4) gender, (5) conflict intensity level, and (6) political regime.

Year

The first control variable that will be included in this research is the year variable. Incorporating this variable makes it possible to address temporal fluctuations between CRSV and humanitarian aid and serves to account for potential time-related effects that may influence the relationship between the two variables.

GDP per Capita and Population

Following related research to CRSV, this thesis project will also control for GDP per Capita and population (Tottie, 2023). These two variables are derived from the World Bank Open

Data on World Development Indicators (2024). GDP per Capita is measured in current US dollars for each country and year. Population is based on all residents of a country regardless of their legal status or citizenship.

Gender

As discussed extensively within the literature review, gender norms within society may affect the level of CRSV against women and girls. To effectively control for this, data from the World Bank on the 'female labor force participation rate' (fem_labor) will be employed, similar to previous research methods on CRSV (Andersin, 2020). This measurement shows the percentage of women (>15 years) economically active within the labor force. This is an indicator used to measure gender equality and discrimination within society (World Bank, 2024). The expectation is that when the female labor force participation rate increases, society will be more gender equal, and there will be less discrimination and tolerated violence against women.

Conflict Intensity

In accordance with earlier studies on the prevalence of CRSV, conflict intensity will also be included as a control variable (Tottie, 2021; 2023). The intensity of conflict may impact both the amount of humanitarian aid received (the more intense a conflict, the more aid it is expected to receive) and the level of sexual violence (the more intense a conflict, the more CRSV is expected to occur). This is assumed, as once conflicts escalate, the overall violence tends to increase. This variable is sourced from the Uppsala Conflict Data Program/ Peace Research Institute Oslo (UCDP/PRIO) Armed Conflict Database version 23.1, which measures conflict intensity level (intensity_level). This is a dichotomous variable measured by conflict and year, taking the values of 1 (between 25 and 999 battle-related deaths per year) and 2 (at least 1000 battle-related deaths per year) (Davies et al., 2023; UCDP/PRIO, 2018).

Political Regime

The last control variable to be included in this thesis is one representing a country's political regime, in line with earlier research focusing on the impacts of CRSV on FDI flows (Adelaide et al., 2023). The type and scale of the political regime (autocracy – democracy) are expected to impact both the level of sexual violence tolerated in society and the level of humanitarian aid received. The first can be explained by the fact that democracies, in general, face higher accountability concerns and electoral constraints than autocracies. Therefore, one expects a lower level of CRSV in democracies than in autocratic governments, as citizens in democracies are less likely to tolerate governments perpetrating CRSV. Furthermore, regime type could influence the level of humanitarian aid received, for instance, when autocratic governments tightly regulate the amount and/or type of aid entering their countries. The so-called Polity variable captures general regime political effects (Marshall & Gurr, 2020). This variable is sourced from the latest Polity database from the World Bank, which includes an indicator for 'Revised Combined Polity Score (p5)' (World Bank, 2024). This variable is useful for this thesis specifically, as it is revised to enable time-series analyses (Marshall & Gurr, 2020).

Validity and Reliability of Measurements

Before discussing the data used for this thesis in depth within the descriptive statistics, it is relevant to address the replicability of this study. The data used for this study, along with the codebooks, are all publicly accessible. Although the conceptualizations of CRSV differ, as previously discussed, this thesis adopts a comprehensive definition of CRSV, as reflected in the SVAC dataset utilized here. By broadening the scope of CRSV far beyond wartime rape, which is just a fraction of all the sexual violence perpetrated related to conflict, this approach ensures a high level of content validity. Nonetheless, incorporating multiple databases measuring CRSV could potentially enhance the robustness of this study, but this falls beyond the scope of this thesis.

Descriptive Statistics

Before moving to the analysis of the logistic regression models, it is important to describe and understand the main datasets used to test the hypothesis. For the purpose of this research, one big panel dataset will be created, including the data on humanitarian aid and CRSV, as well as all the control variables. Firstly, 21 datasets from the FTS are merged to collect the humanitarian aid data from 2000 to 2021. The locations 'Not Specified' and 'Global' will be deleted from the dataset, as they do not indicate to which country specifically the humanitarian is allocated and are therefore of no use for the purpose of this thesis. The number of observations will, therefore, decrease from 3873 to 3847. Following this, the SVAC data spanning from the years 2000 to 2021 is utilized, capturing the country and year-specific prevalence of CRSV. Subsequently, the ordinal prevalence scale of CRSV (0, 1, 2, 3) is collapsed into a dummy variable of 0 and 1.

Furthermore, the control variables polity 5, female labor, population, GDP, and intensity level are included in the panel data. The polity 5 score measures political regime rating from -10 to +10, subtracting the autocracy score from the democracy score. In this score, +10 relates to strongly democratic countries, whereas -10 relates to strongly autocratic countries. Furthermore, the variable may be assigned the value of -66 in cases of foreign interruption to the political regime, -77 in cases of 'interregnum' or anarchy, and -88 in instances of regime transition (Marshall & Gurr, 2020). Nevertheless, this variable will be treated as a continuous variable.

Female labor reflects 'female labor force participation' measured in the percentage of women above 15 years participating within the workforce. Globally, the participation rate of women in the labor force is just over 50%, compared to 80% for men (The World Bank, 2024). The population variable measures all residents within a specific country per year. Furthermore, the GDP per Capita variable measures the gross domestic product divided by the midyear population. All datasets described above are then merged into a panel dataset.

As can be seen in Table 3, the number of observations in the panel dataset is the same for all variables (483). This is the case as all rows with omitted variables (NA) were omitted from the panel data. As both CRSV and conflict intensity level are ordinal variables, only the number of observations is included within the graph, and further graphs will be provided to enable a better understanding of those variables.

The descriptive statistics below in Table 3 contain the observations (obs), minimum (min.), maximum (max.), mean, median, and standard deviation (St. Dev.).

Table 3: Descriptive Statistics

Variables	Obs	Min.	Max.	Mean	Median	St. Dev.
Humanitarian Aid (in millions USD)	483	0.00	3218.89	221.65	42.95	439.22
CRSV	483	-	-	-	-	-
GDP per Capita	483	110.46	42406.85	3525.34	1249.40	6180.24
Population	483	1993030	1363240000	105983485	27893911	261637145
Gender	483	9.74	83.36	48.18	54.30	20.33
Conflict Intensity Level	483	-	-	-	-	-
Political Regime	483	-88.00	10.00	-4.88	3.00	22.74

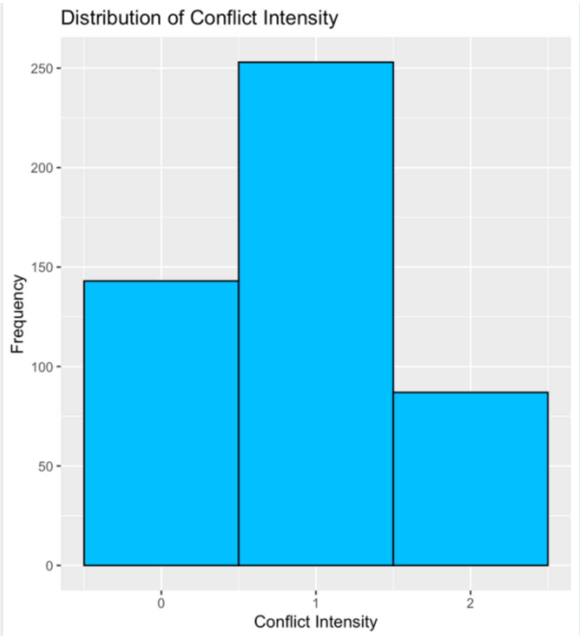

Figure 4: Distribution of the Conflict Intensity Level Variable

The histogram in Figure 4 above displays the distribution of frequency of the different conflict intensity levels in the panel data set. The intensity level of 0 was assigned to the years in the panel data where no conflict intensity level was reported. As revealed in the figure above, the conflict intensity level of 1 is the most common in the dataset, which represents between 25 and 999 battle-related deaths per year.

Furthermore, the graph below in Figure 5 shows the ‘Top 10 Highest Recipients of Humanitarian Aid’. As can be seen, several war-torn countries are among the highest recipients of humanitarian aid, with the Syrian Arab Republic standing out as the largest recipient of humanitarian aid. This country is followed by Lebanon, South Sudan, and Sudan. Interestingly, three out of four of the ‘Top 10 Largest Recipients of Humanitarian Aid’ also rank among the ‘Top 10 Highest Prevalence of CRSV’, as is evident in Figure 6. This correlation could be attributed to the fact that most of the countries receiving humanitarian aid have experienced conflict(s) during this time period, some of which are still ongoing, therefore creating an environment conducive to CRSV (Council on Foreign Relations, n.d.). Figure 6 further shows the ‘Top 10 Highest Prevalence of CRSV’, with the Syrian Arab Republic again ranking in first place, followed by Sudan, Nigeria, and India.

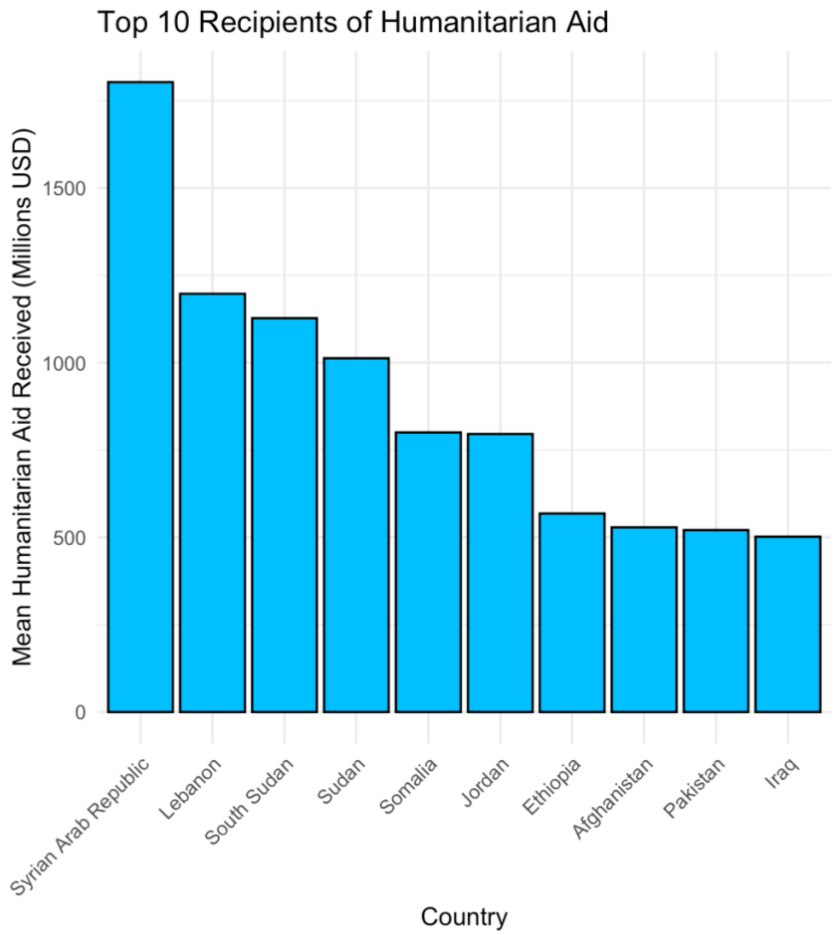

Figure 5: Top 10 Largest Recipients of Humanitarian Aid

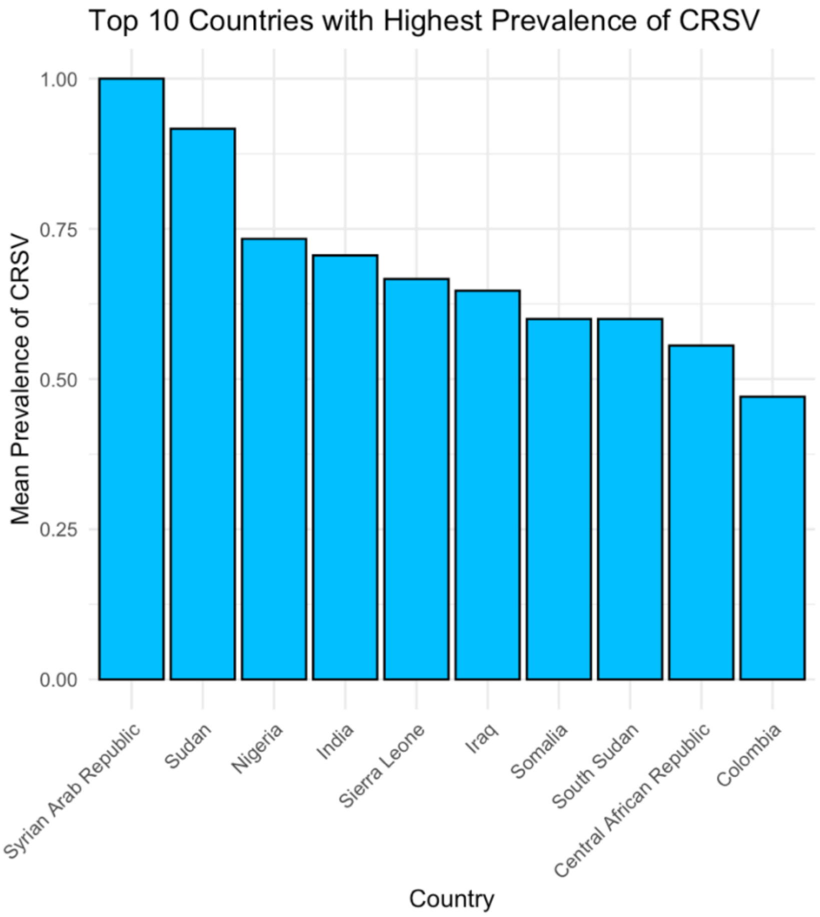

Figure 6: Top 10 Countries with Highest CRSV Prevalence

Figure 11 in the Appendix enables a more detailed examination of the distribution of the mean prevalence of CRSV across the countries present in the panel dataset. It highlights the Syrian Arab Republic again as having the highest mean prevalence of CRSV, positioned furthest to the right part of the x-axis.

Subsequently, two plots (Figures 7 and 8) are created to explore the relationship between humanitarian aid and CRSV. These plots illustrate the distribution and density of the continuous variable of humanitarian aid by different levels of the prevalence of CRSV (0 and 1). For CRSV level 0, the median line is positioned close to the lower quartile, delineating a skewed distribution towards lower levels of humanitarian aid provision. Furthermore, the singular outlier suggests sporadic instances of high levels of humanitarian aid within this category, see Figure 7. In contrast, CRSV level 1 manifests a broader and more evenly distributed spectrum of aid provision, as is visible in the violin plot in Figure 8. Furthermore, it is characterized by a median line slightly higher but still predominantly skewed to the bottom of the box, see Figure 7. Considering both plots, the distribution of humanitarian aid is more uniform and generally higher for a CRSV level of 1 compared to a CRSV level of 0.

These findings underscore the differences in levels and distribution of humanitarian aid allocation across varying levels of CRSV, with higher levels of CRSV also displaying relatively higher levels of humanitarian aid. However, the underlying reasons for this correlation remain ambiguous, and further research on the relationship between humanitarian aid and CRSV prevalence is needed. The following regression analysis will provide such an investigation, extensively examining the correlation between the two variables.

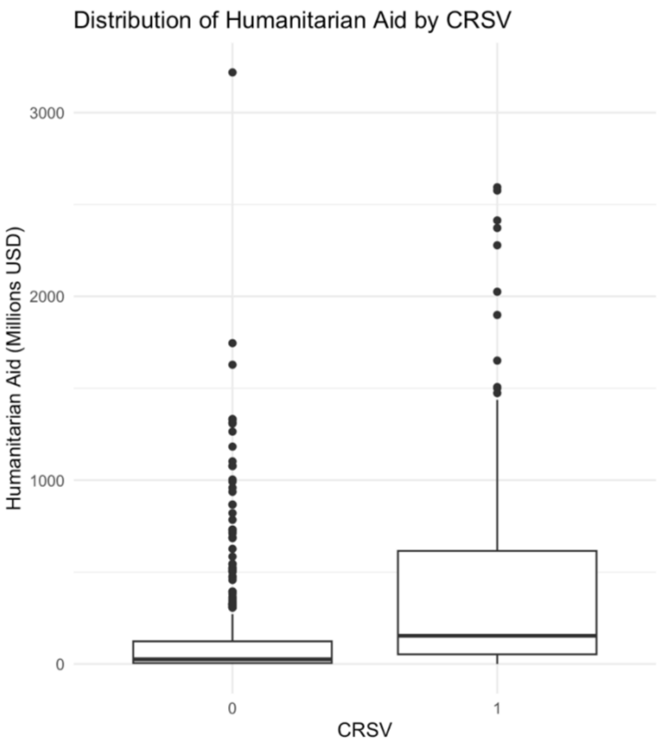

Figure 7: Boxplot of the Distribution of Humanitarian Aid by CRSV

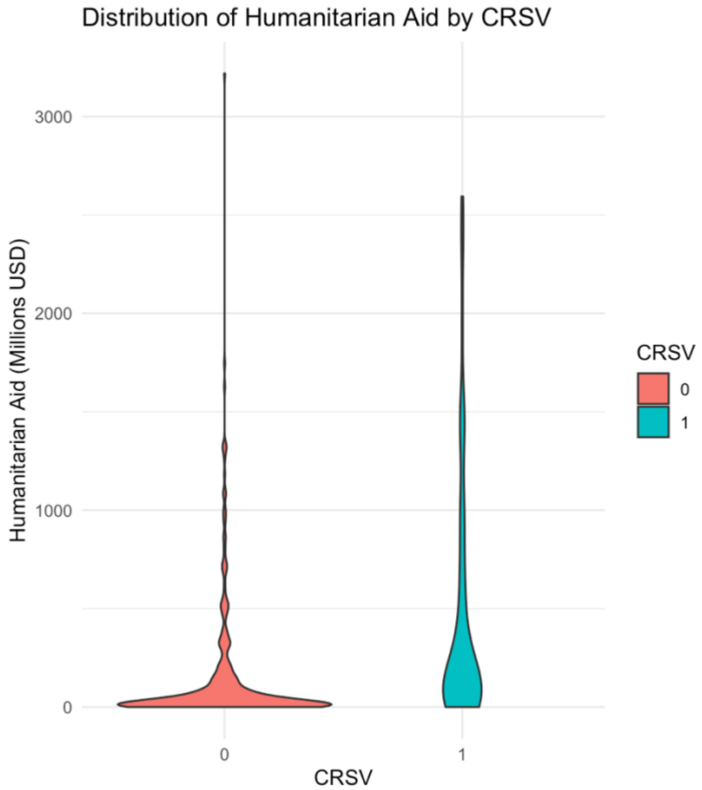

Figure 8: Violin Plot of the Distribution of Humanitarian Aid by CRSV

Results and Analysis

As previously stated, this thesis will utilize a quantitative methodology, using a logistic regression model, including the aforementioned variables. To reiterate, a logistic regression model is a model that is used to predict the value of a binary variable based on other independent variables. This type of regression is useful when one of the variables is ordinally scaled, which is the case in this research endeavor, in which CRSV prevalence has a binary value of 0 and 1. The logistic model, see below, is used to test the hypothesis that *Higher levels of humanitarian aid increase the likelihood of CRSV*. In this way, the exploration will determine whether humanitarian aid has a significant effect on the log-odds of CRSV occurring.

$$crsv_i = intercept + \beta_1 aid_i + \beta_2 year_i + \beta_3 GDP_i + \beta_4 population_i + \beta_5 fem\_labor_i \\ + \beta_6 intensity\_level_i + \beta_7 polity\_score_i + \epsilon_i$$

This model analyzes whether an increase in the level of humanitarian aid in country *i* raises or decreases the probability of CRSV prevalence in country *i*. The model further includes the control variables, comprising (1) year, (2) GDP per Capita, (3) population, (4) gender, (5) conflict intensity level, and (6) political regime.

Logit Model

Figure 9 below shows the relationship between humanitarian aid and the probability of CRSV, as estimated by the logistic regression model. The Y-axes indicate the level of CRSV, with 0 indicating no reported level of CRSV and 1 an indicated level of CRSV. The X-axis represents the level of humanitarian aid (in millions of USD). As the blue line illustrates within the model, the higher the levels of humanitarian aid, the higher the probability of CRSV, therefore supporting the hypothesis. Table 4 further shows the output of seven logistic regression models, where control variables are added one by one.

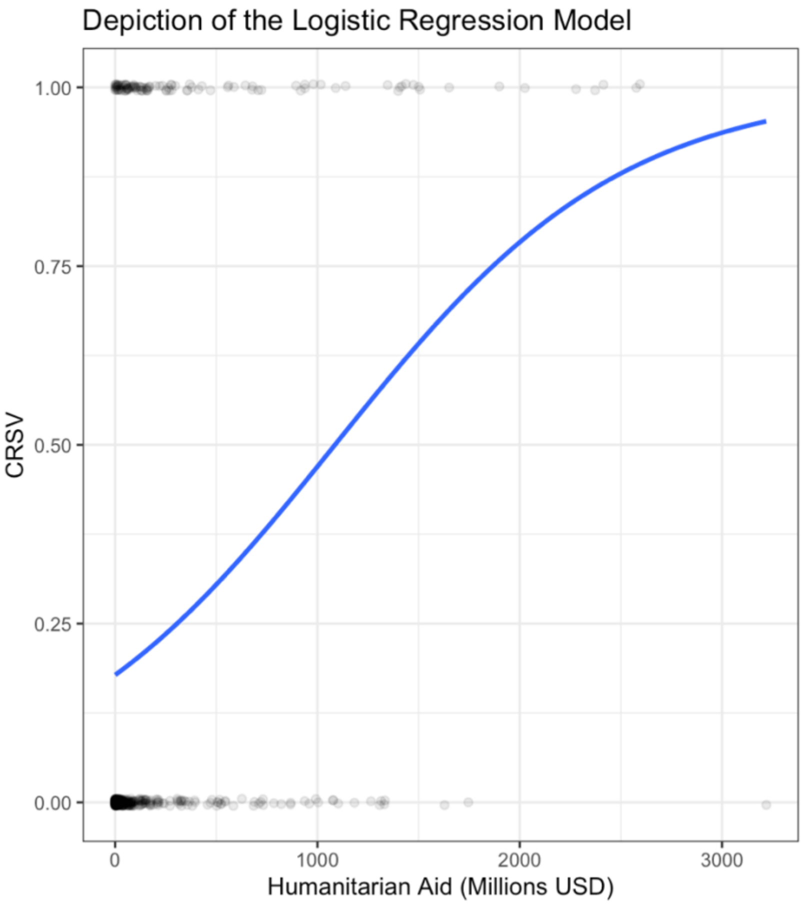

Figure 9: Depiction of the Logistic Regression Model

Table 4: Logistic Regression of CRSV Likelihood

	Dependent variable:						
	crsv						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
aid	0.001***	0.002***	0.001***	0.002***	0.002***	0.001***	0.001***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
year		-0.028	-0.014	-0.020	-0.020	-0.012	-0.006
		(0.022)	(0.023)	(0.024)	(0.024)	(0.025)	(0.025)
GDP			-0.0001*	-0.0001*	-0.0001*	-0.00005	-0.00004
			(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)
population				0.000***	0.000***	0.000***	0.000***
				(0.000)	(0.000)	(0.000)	(0.000)
fem_labor					0.001	0.019***	0.020***
					(0.006)	(0.007)	(0.007)
intensity_level						1.473***	1.437***
						(0.227)	(0.230)
polity_score							-0.013***
							(0.005)
Constant	-1.529***	54.765	27.596	38.717	38.894	19.938	8.209
	(0.130)	(45.044)	(46.994)	(48.006)	(48.003)	(49.829)	(50.533)
Observations	483	483	483	483	483	483	483
Log Likelihood	-246.656	-245.869	-243.154	-237.880	-237.865	-211.691	-207.690
Akaike Inf. Crit.	497.312	497.738	494.309	485.760	487.730	437.382	431.379
Note:					*p<0.1; **p<0.05; ***p<0.01		

AIC and BIC Tests

The Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) tests can be used to compare models to find a balance between the explanatory power and complexity of a model by penalizing models with more parameters. For both tests, lower values indicate a better fit of the model. Table 5 below shows the AIC and BIC levels for all model configurations. This analysis points out that model 7 offers the best fit among all models estimated. This is evidenced by the fact that the levels of AIC and BIC of model 7 are the lowest compared to those levels of the other models.

Table 5: Output of AIC and BIC Tests

Model	AIC	BIC
Model 1	497.3116	505.6716
Model 2	497.7376	510.2777
Model 3	494.3087	511.0287
Model 4	485.7605	506.6606
Model 5	487.7299	512.8100
Model 6	437.3819	466.6420
Model 7	431.3790	464.8192

Hosmer-Lemeshow Test

The Hosmer-Lemeshow is used to test the goodness of fit for logistic regression models, where a good fitting model has a p-value > 0.05, as it then fails to reject the null hypothesis. The p-value, as estimated by the Hosmer-Lemeshow test performed on model 7 of the logistic regression models, is 0.059 and, therefore, greater than 0.05. This implies that this logistic regression model has a good fit and that the estimates fit the data at a satisfactory threshold.

Table 6: Best Fit Logistic Regression Model of CRSV Likelihood

	Dependent variable:
	crsv
aid	0.001***
	(0.0003)
year	-0.006
	(0.025)
GDP	-0.00004
	(0.00003)
population	0.000***
	(0.000)
fem_labor	0.020***
	(0.007)
intensity_level	1.437***
	(0.230)
polity_score	-0.013***
	(0.005)
Constant	8.209
	(50.533)
Observations	483
Log Likelihood	-207.690
Akaike Inf. Crit.	431.379
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 6 above shows the output of logistic regression model 7, which includes all control variables and will serve as the focus point for this thesis. This model measures the effect of humanitarian aid on the likelihood of CRSV occurring. As can be noted, the variable of aid is positive, indicating a positive effect on the log odds of CRSV occurring, which is in line with the hypothesis. Furthermore, the independent variable demonstrates a high significance level with a p-value below 0.01, indicating that there is less than a 1% probability that the observed results are due to chance. This suggests that CRSV and humanitarian aid are related to each other. The proposed hypothesis can, therefore, be accepted at $\alpha = 0.05$.

Furthermore, female labor, intensity level, and the polity score all also exhibit high statistical significance with a p-value below 0.01. To further analyze the results of the logistic regression model, the marginal effects of the variables can be insightful. The marginal effects describe the change in the probability of the dependent variable due to a one-unit change in the independent variables. Here, the marginal effects thus indicate the probability of CRSV occurrence for a unit change in a predictor variable, holding all other variables constant. Table 7 below shows the marginal effects obtained from the logistic regression model, demonstrating that for every additional unit of humanitarian aid (in millions of USD), the probability of CRSV occurring increases by 0.00018 on a scale from 0 to 1.

Table 7: Marginal Effects of Logistic Regression of CRSV Likelihood

Marginal Effects:

	dF/dx	Std. Err.	z	P>|z|	
aid	1.8626e-04	4.8392e-05	3.8489	0.0001187	***
year	-8.9783e-04	3.6856e-03	-0.2436	0.8075371	
GDP	-6.2684e-06	4.5859e-06	-1.3669	0.1716640	
population	2.3575e-10	5.9082e-11	3.9903	6.599e-05	***
fem_labor	2.8958e-03	1.0022e-03	2.8896	0.0038574	**
intensity_level	2.1024e-01	3.0622e-02	6.8659	6.609e-12	***
polity_score	-1.9702e-03	6.9117e-04	-2.8505	0.0043651	**

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

This marginal effect translates to an increase of approximately 0.019% of the probability of CRSV occurring for each unit increment of humanitarian aid. Although strongly statistically significant, the relationship between humanitarian aid and CRSV appears to be relatively weak, as captured by this model. Nevertheless, the standard error is much lower than the estimated effect (0.000048< 0.00018), suggesting that the estimated coefficient is reliable. Furthermore, the z-value is significant at the 99.9% confidence level (3.8>3.291). This thus suggests a stronger confidence in the significance of the estimated effect of humanitarian aid on the probability of CRSV occurrence. Therefore, although the estimated effect is small, the observed marginal effects align with the theoretical expectations and show that the logistic regression model captures the relationship between the variables adequately.

Other variables with statistically significant effects on the probability of CRSV occurring are the female labor, intensity level, and the polity score, leaving the population out because the effect is negligible. For every additional unit of female labor, the likelihood of CRSV occurrence rises by 0.29%. The standard error is less than half of the coefficient, and the statistically significant z-value (2.89 > 2.576) at the 99% confidence level suggests a reliable estimated coefficient. The interpretation suggests that higher female labor force participation within a country correlates with a higher probability of CRSV occurrence. Although this contradicts the hypothesized effect of the control variable, its small magnitude reduces its significance.

Furthermore, the strongest significant effect on CRSV can be found at the variable for conflict intensity level, where for every additional unit of intensity level, the probability of CRSV occurring rises by 0.210 on a scale from 0 to 1. This translates into an increase of 21% in the probability of CRSV occurring for every unit increase in conflict intensity level, indicating a substantial effect. The standard error of conflict intensity is much smaller than the estimated coefficient (0.036< 0.21), indicating a strong significant estimated coefficient. Furthermore, the z-value is large and statistically significant at the 99.9% confidence level (6.87 > 3.291). Conflict intensity, which captures the number of battle deaths, is thus a strong predictor of the probability of CRSV occurring.

Additionally, the marginal effect of the polity score on the occurrence of CRSV is negative, indicating that for every unit of increase in polity score, the probability of CRSV occurring decreases by 0.0020. This corresponds to a 0.20% decrease in the likelihood of CRSV occurrence for each unit of increase in the polity score. Furthermore, the standard error is much lower than the estimated coefficient (0.00069 < 0.0020), suggesting a statistically significant estimated coefficient. Moreover, the z-value is statistically significant at the 99% confidence level (-2.85 > -2.576), indicating a high degree of confidence in the significance of the observed coefficient. To reiterate, the combined polity score is computed by subtracting the autocracy score from the democracy score (The World Bank, 2024). Interpreting the negative statistically significant variable of the combined polity score in the model thus indicates that, as expected, more democratically scaled countries correlate with a lower probability of CRSV occurring.

Probit Model

As a robustness check, the Logit model is compared to a Probit model. Similarly to Logit regression models, a Probit model estimates the probability of a value occurring based on a set of predictor variables. Consistency in the outcomes of the Logit model and the Probit model strengthens the confidence and robustness in estimating the relationship between humanitarian aid and CRSV. Before comparing the Probit model to the Logit model, it is important to assess which Probit model fits the data optimally. Table 11 in the Appendix shows the seven Probit models, each adding new control variables.

Figure 10 below depicts the relationship between humanitarian aid and the probability of CRSV, as estimated by the probabilistic regression model. The Y-axes show the Predicted Probabilities of CRSV, indicating the likelihood of CRSV occurring based on the various levels of humanitarian aid. A value of 0 indicates no reported level of CRSV, and a value of 1 indicates a reported level of CRSV. The X-axis represents the level of humanitarian aid (in millions of USD). The blue line visualizes the general trend in the data, demonstrating that higher levels of humanitarian aid are associated with higher predicted probabilities of CRSV, therefore aligning with the hypothesis.

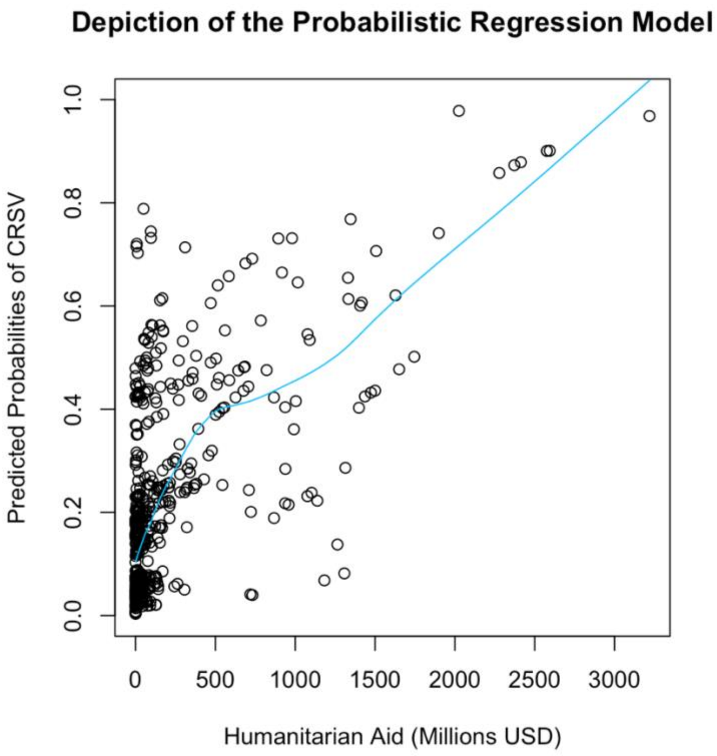

Figure 10: Depiction of the Probabilistic Regression Model

AIC and BIC Tests

To assess the goodness of fit of the seven Probit models in Table 11 in the Appendix, the AIC and BIC tests are utilized. A lower level for both tests indicate a better fit of the model. In Table 8 below, model 7 has both the lowest AIC and BIC values and, therefore, demonstrating a better model fit than the other six models.

Table 8: Output of AIC and BIC Tests

Model	AIC	BIC
Model 1	497.4005	505.7606
Model 2	497.9847	510.5247
Model 3	494.8245	511.5446
Model 4	486.5971	507.4972
Model 5	488.5570	513.6371
Model 6	437.2548	466.5149
Model 7	431.7631	465.2032

As model 7 has the best fit, this model will be used to compare to the best Logit model.

Comparison of Logit and Probit Models

Table 9 below enables the comparison of the Logit and Probit models. The Probit model measures the likelihood of CRSV occurring, given certain levels of humanitarian aid and other control variables. As depicted by the table, the coefficients for aid, female labor, intensity level, and polity score are statistically significant at the p-value<0.01 level. This is all similar to the Logit model.

To examine in greater detail, the effect of aid on CRSV is positive and identical to the Logit model. This suggests a positive correlation between humanitarian aid and the probability of CRSV occurring. As the p-value of $P<0.01$ meets the p-value threshold of $p<0.05$, the hypothesis can also be accepted at $\alpha = 0.05$ by the Probit model, suggesting that *Higher levels of humanitarian aid increase the likelihood of CRSV*.

The control variables that were statistically significant in the Logit model demonstrate statistical significance in the Probit model, and their directional effects (positive or negative) remain the same. However, there are some variations in the magnitude of these effects, especially for the conflict intensity level. To explore this further, the marginal effects between the Logit and Probit models will be compared.

Table 9: Comparison of Logit and Probit Models

	Logit Model	Probit Model
	Dependent variable:	Dependent variable:
	crsv	crsv
aid	0.001***	0.001***
	(0.0003)	(0.0002)
year	-0.006	-0.001
	(0.025)	(0.014)
GDP	-0.00004	-0.00002
	(0.00003)	(0.00002)
population	0.000***	0.000***
	(0.000)	(0.000)
fem_labor	0.020***	0.011***
	(0.007)	(0.004)
intensity_level	1.437***	0.822***
	(0.230)	(0.126)
polity_score	-0.013***	-0.008***
	(0.005)	(0.003)
Constant	8.209	0.206
	(50.533)	(28.828)
Observations	483	483
Log Likelihood	-207.690	-207.882
Akaike Inf. Crit.	431.379	431.763
Note:	*p<0.1; **p<0.05; ***p<0.01	*p<0.1; **p<0.05; ***p<0.01

Table 10: Comparison of Marginal Effects of Logit and Probit Models

Marginal Effects Logit Model

```
Marginal Effects:
                     dF/dx   Std. Err.       z     P>|z|
aid             1.8626e-04  4.8392e-05  3.8489 0.0001187 ***
year           -8.9783e-04  3.6856e-03 -0.2436 0.8075371
GDP            -6.2684e-06  4.5859e-06 -1.3669 0.1716640
population      2.3575e-10  5.9082e-11  3.9903 6.599e-05 ***
fem_labor       2.8958e-03  1.0022e-03  2.8896 0.0038574 **
intensity_level 2.1024e-01  3.0622e-02  6.8659 6.609e-12 ***
polity_score   -1.9702e-03  6.9117e-04 -2.8505 0.0043651 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Marginal Effects Probit Model

```
Marginal Effects:
                     dF/dx   Std. Err.       z     P>|z|
aid             1.8395e-04  4.9520e-05  3.7147 0.0002034 ***
year           -3.3929e-04  3.8527e-03 -0.0881 0.9298238
GDP            -6.3160e-06  4.3041e-06 -1.4674 0.1422572
population      2.4197e-10  6.4742e-11  3.7375 0.0001858 ***
fem_labor       2.8629e-03  1.0442e-03  2.7418 0.0061099 **
intensity_level 2.2067e-01  3.2027e-02  6.8900 5.579e-12 ***
polity_score   -2.0885e-03  7.5460e-04 -2.7677 0.0056453 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Table 10 above facilitates the comparison of the marginal effects of the Logit and Probit models. The coefficient representing the marginal effect of humanitarian aid on the probability of CRSV occurrence is essentially identical in the Probit model. Moreover, the standard error and z-value are similar to the Logit model, indicating that the relationship between humanitarian aid and CRSV is robust.

Furthermore, the control variable for gender, female labor, demonstrates a similar marginal effect, standard error and z-value in the Probit model compared to that of the Logit model at the same significance level. Other variables of interest are conflict intensity level, for which the coefficient, the standard error, the z-value, and the statistical significance of the variable are similar in the Logit and Probit models, indicating a similar and consistent effect, with a high degree of confidence in the significance of the observed coefficient. Also, for the polity score, the estimated coefficient is similar, with a negative effect on the likelihood of CRSV occurrence, at the same significance level as the Logit model.

The comparison of the marginal effects of the Logit and Probit models have thus illustrated high degrees of similarity, contributing to the robustness of the estimated relationship between humanitarian aid and CRSV. Both models exhibit very similar patterns in the significance and direction of coefficients for the key variables, affirming the positive correlation between humanitarian aid and the likelihood of CRSV occurrence. While minor differences in coefficient magnitudes exist, they do not undermine the overall consistency of results. The comparison of marginal effects further confirms the similarity between the two models. Overall, the convergence of findings enhances the overall confidence in the estimated positive relationship between humanitarian aid and CRSV, highlighting the usefulness of these models in understanding CRSV.

Discussion and Limitations

The previous section has presented and analyzed the regression models used to estimate the relationship between humanitarian aid and CRSV. This section will address the limitations related to the data, model, and analysis utilized in this thesis. An important constraint of the SVAC dataset is that it only captures sexual violence that can be clearly attributed to a *specific conflict actor*. Another limitation of the dataset is that post-mortem sexual violence is not coded. As a result of these two specific coding rules, some of the CRSV data is not included within the dataset, and the dataset thus does not represent the entirety of sexual violence that could have happened related to a conflict (Cohen & Nordås, 2014).

Furthermore, as explained in the research design, CRSV is a phenomenon that is heavily underreported. This thesis has tried to partially account for this in two ways. The first is by taking the highest values of prevalence codes as measured by the three distinct sources in the SVAC. The second approach has been through collapsing the two upper levels of sexual violence into one. Although by designing the research in this specific manner, this thesis has partially addressed the issue of underreporting, this limitation cannot be dismissed completely.

Another complicating factor of CRSV data from the SVAC dataset is the method in which it is reported, which is in scale levels rather than in exact numerical instances of sexual violence per conflict per year. Consequently, the CRSV variable inherently becomes ordinal in nature and excludes the possibility of a linear regression analysis. Instead, predictive models are used to estimate the probability of CRSV occurring rather than quantifying the precise impact of each unit increase of humanitarian aid on the exact prevalence of CRSV. Despite this limitation of the dataset used, conducting quantitative research on CRSV remains key to providing insights to policymakers and ultimately reducing human suffering.

Moreover, as this thesis relied solely on open-access databases, it included those control variables of which access was freely available. Variables for which data could not be accessed were omitted from the research design, which could have led to omitted variable bias. Omitted variable bias occurs when variables that affect both the dependent as well as the independent variable are not accounted for in the regression analysis.

Building on the previous point, the sample size of the research performed is relatively small (comprising 483 entries) as a result of missing data points from the datasets used to capture the dependent and independent variables. This small sample size decreases the statistical power of the study. Future research, with better access to more comprehensive datasets, can address this limitation and enhance the robustness of the models.

Conclusion

In conclusion, this thesis has aimed to investigate the impact of humanitarian aid influxes on the prevalence of sexual violence related to conflict. By examining the impact of humanitarian assistance in conflict zones, this study sought to explore the potential unintended consequences of humanitarian aid on the civilian population, specifically through altering conflict dynamics and exacerbating violence.

Previous research has presented divergent theories regarding the relationship between humanitarian aid influxes and (sexual) violence, advancing arguments for both positive and negative correlations. This thesis has built upon compelling theories, asserting that humanitarian aid inflows increase the prevalence of CRSV through several pathways. These include heightened competition between armed groups, the incentivization of civilian punishment and control, and the unintentional financing and elongation of conflicts. The central hypothesis of this thesis, *'Higher levels of humanitarian aid will increase the likelihood of conflict-related sexual violence (CRSV) occurring'*, has been tested through logistic regression models, with additional validation through probabilistic regression models.

While this research acknowledges the major challenge of underreporting in studies on sexual violence, it tried to account for this limitation by utilizing the highest prevalence code reported and collapsing the ordinal variables accordingly. The findings of this research show support for the hypothesis, suggesting a modest yet robust positive effect of humanitarian aid on the likelihood of CRSV occurrence. Other notable significant results emerged from the control variables, particularly conflict intensity level, that correlated strongly and positively with the likelihood of CRSV occurrence.

Moving forward, future research could expand on this research by expanding the model, incorporating larger sample sizes, and exploring additional variables not addressed in this research. Additionally, it could be interesting to investigate the effects of distinct types of humanitarian aid on CRSV, contingent upon the availability of usable data. Furthermore, specific case studies focusing on particular conflicts and the type of humanitarian aid provided could offer valuable insights into further contextualizing the relationship between the two variables.

The implications of this thesis extend far beyond academia, underscoring the importance of investigating the externalities and potential unintended harmful consequences of humanitarian aid on civilian populations. By investigating the complex relationship of humanitarian aid and CRSV, this thesis contributes to the evidence base informing responsible policymaking. It further necessitates the importance of integrating CRSV into policy frameworks to prevent further victimization of particularly women and girls. While CRSV is becoming recognized as a multifaceted phenomenon and no longer merely a by-product of war, it remains crucial that it does not persist as a by-product of misguided policies, whether national or transnational. By emphasizing the importance of incorporating CRSV in policymaking, this thesis hopes to spark efforts aimed at reducing and preventing future occurrences of CRSV, striving for more security for women and girls in conflict zones globally.

APPENDIX

The R code used in this thesis is available upon request.

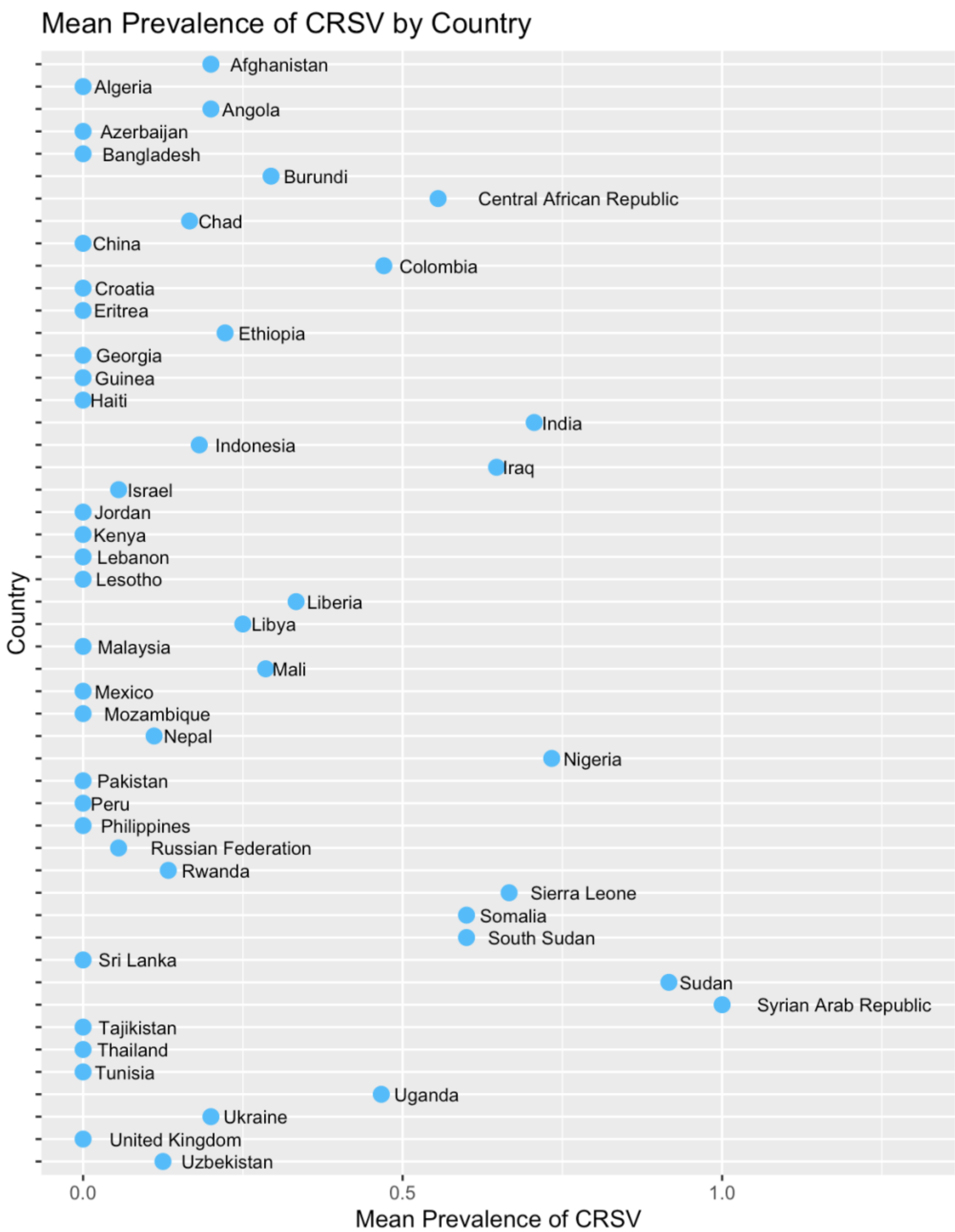

Figure 11: Mean CRSV Prevalence by Country

Table 11: Probabilistic Regression of CRSV Likelihood

	Dependent variable:						
	crsv						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
aid	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
year		-0.015	-0.008	-0.011	-0.011	-0.005	-0.001
		(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.014)
GDP			-0.00003**	-0.00003*	-0.00003*	-0.00003*	-0.00002
			(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.00002)
population				0.000***	0.000***	0.000***	0.000***
				(0.000)	(0.000)	(0.000)	(0.000)
fem_labor					0.001	0.010***	0.011***
					(0.003)	(0.004)	(0.004)
intensity_level						0.855***	0.822***
						(0.124)	(0.126)
polity_score							-0.008***
							(0.003)
Constant	-0.925***	29.347	14.703	20.237	20.176	6.783	0.206
	(0.074)	(25.801)	(26.811)	(27.190)	(27.189)	(28.556)	(28.828)
Observations	483	483	483	483	483	483	483
Log Likelihood	-246.700	-245.992	-243.412	-238.299	-238.279	-211.627	-207.882
Akaike Inf. Crit.	497.401	497.985	494.825	486.597	488.557	437.255	431.763
Note:					*p<0.1;	**p<0.05;	***p<0.01

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