



ANALYSIS OF EQUITABILITY IN HUMANITARIAN AID DISTRIBUTION: A CASE STUDY OF NORTH-EAST NIGERIA

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ABSTRACT

This study examines equitability in humanitarian aid distribution in the context of the North-Eastern region of Nigeria, focusing on food security among host communities and internally displaced persons (IDPs). The North-East has been plagued by a decade-long insurgency, resulting in significant displacement of people and dependence on humanitarian assistance. While numerous aid organizations operate in the region, food insecurity and poverty persist at alarming rates, with over 71.5% of the population living below the international poverty line. Using a cross-sectional dataset from the International Organisation for Migration (IOM), this study employs ordinal probability regression and ordinary least squares regression models to analyse the impact of various factors on food security. The result reveals that a higher proportion of IDPs experience high food insecurity compared to host communities, and asset ownership significantly influences food security, with host community households possessing higher asset values. Interestingly, employed households are more likely to be food insecure, suggesting the need for labour market improvements for both groups. These findings underscore the importance of equitable aid distribution, especially in conflict-affected regions, and calls for targeted interventions to address the varying needs of host communities and IDPs. Further research and policy measures are essential to alleviate food insecurity and poverty in the North-Eastern region.

Keywords: Equitability, Humanitarian aid, Host communities, Food security, North-east region.

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INTRODUCTION

Nigeria, a nation with over 200 million people and ranking as the world's seventh most populous, is located in Western Africa (World Population Review, 2020). Despite being the continent's largest economy and top oil exporter, (Group, 2019) it faces development challenges such as corruption, poor infrastructure, high unemployment, and an increasing wealth gap. Security challenges, particularly in the North-Eastern region, also impact the country. The North-Eastern region, consisting of six states, is known for its agriculture but has faced persistent insurgent attacks for over a decade, causing socio-economic damage and forcing people to flee their homes. Counterinsurgency efforts by the Nigerian security forces led to more people leaving their homes for safe areas where humanitarian assistance could be given.

An estimated number of 2,191,193 (445,852 households) were recorded as internally displaced persons (IDPs) within the region, where majority (93%) stated the ongoing conflict as the main reason for their displacement. Followed by 6% from communal clashes, and 1% as a result of natural disasters, 59% of the displaced population live within the host communities (IOM, 2021). Host community members can be defined as the group of people whom due to the presence of displaced persons namely, refugees, IDPs and returnees, tend to have their welfare affected (World Bank, 2017). The host community households are themselves poor, vulnerable and in need of assistance. Culture, family ties and religious relationships are some of the main reasons IDPs choose to stay within the host communities (Pape, 2019). The status of these IDPs and refugees is surrounded with several uncertainties which may include but not limited to: food security, shelter, health/disease outbreak due to unhygienic and poor living conditions, security and financial instability (Adebayo *et al.*, 2014). Food was found to be the major unmet need among the IDPs in a survey conducted in the region, with consistent increase recorded over time (IOM, 2019).

These uncertainties led to the emergence of several humanitarian aid organizations both local and international. An estimated total of over 80 local and international non-governmental aid organizations currently operate within the region (Stoddard, Harvey, Czwarno, & Breckenridge, 2020). While large number of victims of the insurgency have been reached, and still depending on these organizations for their basic needs, food insecurity and poverty maintain an alarming rate. Additionally, about 71.5% of the northerners are living below the international poverty line (Gwadabe, Salleh, Ahmad, & Jamil, 2018). This could be an indication that something is wrong and begs the question why?

Foreign aids especially in the developing countries is an important mechanism for economic growth (Burnside & Dollar, 2000; Dollar & Levin, 2006; Yasin, 2005). This could be a reason why most government welcome such aids especially during natural disasters and insurgency situations. While humanitarian aid is intended to promote overall well-being, research suggests that aid is rarely distributed based on actual needs (Alesina & Dollar, 2000; Alesina & Weder, 2002). Studies have examined the effects of insurgency and armed conflict in the region. Both at the individual and household levels focussing mostly on the socio-economic impacts, the drivers of the situation and possible solutions (Umar, 2013; Hamid & Baba, 2014; Omole *et al.*, 2015; Amusan & Ejoke, 2017; Gwadabe *et al.*, 2018; Adelaja & George, 2019; Bertoni *et al.*, 2019; Iacoella & Tirivayi, 2020). Additionally reviewed literature addressing the equity and poverty situation between the two households, mainly analysed the statistical differences in their socio-economic characteristics while stating policy implications (Pape *et al.*, 2019). This study builds on that. However, it aims to investigate the situation from an angle which thus far, too little attention has been given to, that is, to analyze the equitability in the humanitarian aids distribution, analysing the correlation between the food security situation of households and its determinants.

Methodology

The north east Nigeria is one with incredible diversity, rich history, and unique cultural heritage, it comprises of 6 states- Adamawa, Bauch, Borno, Gombe, Taraba, and Yobe states. This Nigerian sub-region is home to diverse ethnic groups, each with its own language, traditions, and customs. Prominent among these groups are the Kanuri, Hausa, Fulani and Tiv people. Religion plays a significant role in the lives of the people of this region, with Islam being the predominant faith. The region covers a substantial total land area of approximately 277,314 sq kilometres and a population of 18,984,299 peoples (Alkali, Monguno, & Mustafa, 2012). The region shares its borders with countries like, Niger, Chad and Cameroon making it

a strategically important location in terms of international relations. It consists of humid, semi-arid and arid climates, while having various agricultural activities (Shugaba, 2012). Some of the major crops cultivated includes cassava, sorghum, rice, soya and yam (Adelaja & George, 2019)

Data Collection and Sampling Technique

A cross-sectional data, multi-stage and stratified random sampling technique with a sample size of 2,622 were used for the purpose of this study. A secondary dataset produced by the International Organisation for Migration (IOM), one of the leading inter-governmental organisations working on issues of migration for over six decades. The survey was carried out in six of the North-eastern states. The sampling frame consist of a list of wards with IDP household counts in the six states provided by the Organization's Tracking Matrix (DTM) 2017. The sample had 6 strata with each state as a stratum. Each stratum was divided into grids of 150 by 150 meters using a geographic information system (GIS) technology defining the enumeration areas (EAs). The number of EAs to be selected from each stratum was obtained proportional to the IDP population sizes in each State. For the IDP sample, the EAs consisted of two types of IDP settlements, which were host community settings and camp settings. A total of 111 EAs across the 6 states were randomly selected proportional to size. Out of these, 77EAs were host community type, and 48 were camp like EAs. For the host community sample of 1,500 households, EAs were restricted to the 77 host community type EAs that were selected based on IDPs population numbers, in the absence of residential population estimates at this level. The survey is representative for IDPs and host communities, defining host communities as the non-displaced population living in the EAs with displaced populations. All the households in the selected EAs were first listed, and 12 IDP households (or multiple of it) host community households were randomly selected and surveyed per EA, to reach the obtained sample size. Additionally, households with duplicate names and contact numbers, as well as those outside the cluster boundaries, were dropped. Few EAs were also dropped due to insecurity or unreachability due to extreme weather. Micro-data on living conditions, health, displacement related issues, education and consumption are included in the survey. For this study, 20 variables were used.

The Variables

The household coping strategy index (CSI) was used as the independent variable. The index is created by identifying relevant coping strategies adopted locally, and each strategy is "weighted" according to its perceived severity. A multiplication of the frequency of adoption with its corresponding weight gives the index (Maxwell & Caldwell, 2008). The CSI will be used in the form of an ordinal categorical variable. Where *low food insecurity* is assigned a 1, *medium food insecurity* is assigned a 2 and *high food insecurity* is assigned a 3.

The Model

To analyse the effects of the above-mentioned variables on households CSI, the ordinal probability regression and the ordinary least squares regression models were used. This allows a comparison between the results, serves as a robustness check, and provides additional information to the research. Also, they are both standard models that could be applied to cross-sectional dataset and have been used in some literatures for food security measures (Iacoella & Tirivayi, 2020; Kim, 2014). It is necessary to point out potential problem from using these models. The issue of heteroskedasticity is almost inevitable. This could cause an incorrect rejection of the null hypothesis due to deflated standard errors, incorrect interpretation and reduced explanatory power. Hence both models were analysed using a robust standard error.

A multicollinearity check was also carried out. This was also confirmed in the p-value and F-test. The ordered probit model was considered as the main model while the OLS will serve as robustness check for the analysis. The results of the full sample will be presented in the next section. The explicit ordered probit model is presented as follows:

$$\text{CSI categories} = \beta_0 + \beta_1 \text{age} + \beta_2 \text{marital status} + \beta_3 \text{education level} + \beta_4 \text{gender} + \beta_5 \text{dependent share} + \beta_6 \text{employment} + \beta_7 \text{asset} + \beta_8 \text{community participation} + \beta_9 \text{selling asset} + \beta_{10} \text{land access} + \beta_{11} \text{regions} + \beta_{12} \text{ethnicity} + \beta_{13} \text{Market distance} + \beta_{14} \text{road access} + \beta_{15} \text{migration status} + \beta_{16} \text{disease incident} + \beta_{17} \text{main source of income} + \beta_{18} \text{selling female animal} + \beta_{19} \text{religion} + \varepsilon$$

S/no	Variable names	Variable Description
1	Coping strategy index (categories)	Dependent variable (CSI of 0-2) =low CSI (CSI of 3-9) =medium CSI (CSI of >10) = High CSI
2	Record of disease/accident	Dummy representing if a household member experienced disease or illness, giving a 6months reference period
3	Literacy	Dummy for whether household head is educated or not
4	Selling of asset	Dummy for record of productive asset sell to purchase food withing a 30days reference period
5	Asset value (in naira)	Physical asset/assets own valued in monetary term. with a scale of 100naira
6	Selling of female animals	Dummy for record of selling female animals within last 30days to purchase food
7	Access to land	Dummy for access to agricultural land (either owned or rented)
8	Household dependent share	Share of dependents in a household
9	Gender	Dummy for household head's gender where 1=male 2=female
10	Household's community participation	Household member participation in community, social or political organisations/gatherings
11	Age (groups)	Present age of the household head.
12	Marital status	Factor variable indicating the present marital status of the household head
13	Religion (grouped)	Households main Religious belief
14	Household migration status	Dummy for if the household is a host community household or an IDP Household
15	Regions	Factor variable for the six north-eastern states in the region
16	Household ethnicity (groups)	Categorical variable grouped into 6main ethnic groups
17	Market distance (in minutes)	Physical distance to and from a market
18	Access to a market road network	Dummy showing household's ability to access a good market road network
19	Employment status	Household head's employment status with a 7days reference period

20 Main source of The household's current main source of income
livelihood(categories)

RESULTS AND DISCUSSION

Table1 shows that more than half (57%) of the IDP households are of the highly food insecure category, about 72% of the household heads across the sample are employed. The statistics also reveals that, host community households own asset values higher than that of IDP households on average. It is not surprising though to see that more IDP households are into farming compared to the host community households, on average. Finally, the higher percentage of the households practicing the Islamic faith is expected since more than 80% of the sample are originated from Borno state which are predominantly Muslims.

Table 1: Summary Statistics

<i>Dietary diversity characteristics/coping strategy</i>	Full sample		Host		IDP		t-test
	Mean / frequencies	SD / percentages	Mean / frequencies	SD / percentages	Mean / frequencies	SD / percentages	
CSI (categories)							
Low food insecurity	951	33%	571	39%	380	27%	
Medium food insecurity	460	16%	232	16%	228	16%	
High food insecurity	1466	51%	668	45%	798	57%	
<i>Household Characteristics</i>							
Record of disease/accident(dummy)	0.298	(0.458)	0.298	(0.457)	0.298	(0.458)	-0.30
Literacy of household head(dummy)	0.619	(0.486)	0.675	(0.469)	0.560	(0.497)	6.56***
Selling of asset (dummy)	0.105	(0.307)	0.110	(0.313)	0.100	(0.300)	0.58
Asset value in Naira (per 100naira)	324.4	(1692.6)	482.5	(2206.2)	158.0	(839.7)	5.19***
Selling of female animals (dummy)	0.0474	(0.212)	0.0487	(0.215)	0.060	(0.209)	0.32
Access to land (dummy)	0.315	(0.465)	0.297	(0.457)	0.335	(0.472)	-2.27*
Household dependent share	1.464	(1.131)	1.372	(1.096)	1.561	(1.160)	-4.34***
Gender of household head	1.334	(0.472)	1.324	(0.468)	1.346	(0.476)	-1.12
Household's community participation (dummy)	0.163	(0.369)	0.175	(0.380)	0.150	(0.357)	1.83
Age of household's head(groups)							
15 - 30 Years	710	24%	360	24%	350	24%	
31 - 65 Years	2028	69%	1036	69%	992	69%	
Above 65 Years	209	7%	114	7%	95	7%	
Marital status of household head							
Monogamous	2077	71%	1071	71%	1006	70%	
Polygamous	403	14%	214	14%	189	13%	

Separated	86	3%	35	2%	51	4%	
Widow or widower	269	9%	117	8%	152	10%	
Never married (single)	106	4%	68	5%	38	3%	
Household's religion							
Christianity	265	9%	181	12%	84	6%	
Islam	2681	91%	1328	88%	1353	94%	
Household migration status (dummy)	0.487	(0.500)	0	0	1	0	
<i>Demographic characteristics</i>							
Regions							
Adamawa	226	8%	114	8%	112	8%	
Bauchi	55	2%	35	2%	20	1%	
Borno	2427	82%	1240	82%	1187	82%	
Gombe	37	2%	25	2%	12	1%	
Taraba	43	1%	17	1%	26	2%	
Yobe	159	5%	79	5%	80	6%	
Household ethnicity(groups)							
Hausa	487	17%	295	20%	192	13%	
Yoruba	18	1%	12	1%	6	0.6%	
Igbo	35	1%	31	2%	4	0.4%	
Kanuri	1455	49%	665	44%	790	55%	
Fulani	232	8%	142	9%	90	6%	
Tiv	3	0.1%	3	0.2%	0	0%	
Other	712	24%	361	24%	351	25%	
<i>Infrastructural characteristics</i>							
Market distance (mins)	28.32	(45.65)	27.17	(35.39)	29.54	(54.39)	-1.52
Access to a market road network (dummy)	0.703	(0.457)	0.704	(0.457)	0.702	(0.457)	0.30
<i>Livelihood Characteristics</i>							
Employment status							
Inactive	458	16%	227	15%	231	16%	
Employed	2115	72%	1077	71%	1038	72%	
Unemployed	113	4%	62	4%	51	4%	
Outside Working Age	261	9%	144	10%	117	8%	
Main source of livelihood(categories)							
Farming	719	25%	323	22%	396	28%	
salary/profit	1750	60%	961	64%	789	56%	
Aid/gifts	216	7%	99	7%	117	8%	
Other	221	8%	110	7%	111	8%	
Sample size		2947		1510		1437	

Note: *source*: IDP Nigeria household survey 2018. Weighted summary statistics. For dummy variables, *gender*, 1=male 2=female and *household migration status* 0=host community households (not migrants) 1=IDP (migrated from original place of residence). For all other dummy variables used, no=0 and yes =1. The variable *household dependent share* is captured by dividing the number of household members within the working age group(15-65years) by

number of household members outside the working age group (0-14 and above 65years). “Naira” is the Nigerian currency. Standard deviations in parenthesis. *, **, *** shows levels of statistical significance at 0.05, 0.01 and 0.001, respectively. “Farming” for the variable *means of livelihood* includes crop production, livestock rearing and fish farming.

Table2: The probit regression analysis presents the estimated results, with an OLS model showing consistent results. The household's main source of income, gender, literacy, and age of the household head does not affect food security. Asset value shows to be positively and significantly related to food security. Households that sell assets to purchase food are more likely to be food insecure. Surprisingly, employed household heads are more likely to be highly food insecure compared to inactive household heads

Table 2: Ordered probit regression

Coping strategy index	Coef.	St.Err.	p-value	Sig
Household migration status(dummy)	.539	.230	.019	**
Market distance (in minutes)	.014	.004	.002	***
<i>Household Characteristics</i>				
Record of disease/accident(dummy)	.569	.152	0	***
Literacy of household head(dummy)	-.171	.142	.228	
Selling of asset (dummy)	1.021	.229	0	***
Asset value in Naira (per 100naira)	-.002	.005		***
Access to land (dummy)	.031	.164	.851	
Household dependent share	.040	.073	.58	
Selling of female animals (dummy)	.744	.374	.047	**
Household’s community participation (dummy)	.212	.16	.186	
Gender of household head	.061	.179	.733	
Marital status of household head			.95	
Polygamous married	.011	.181		
Separated	.453	.268	.091	*
Widow or widower	.248	.238	.297	
Never married (single)	-1.093	.347	.002	***
Household religion (categories)			.001	
Islam	.943	.295		***
Age of household head(categories)			.193	
31 - 65 Years	.222	.171		
Above 65 Years	.455	.441	.302	
<i>Livelihood characteristics</i>				
Main source of livelihood(category)			.51	
Salary/profit	-.116	.177		
Aid/gifts	.062	.266	.815	
Others	.370	.263	.16	
Employment status: Employed	.410	.203	.043	**
Unemployed	1.797	.463	0	***
Outside Working Age	.274	.383	.475	
<i>Demographic characteristics</i>				

Ethnicity: Yoruba	.207	.669	.757	**
Igbo	1.742	.775	.025	
Kanuri	.157	.184	.394	
Fulani	.090	.258	.727	
Tiv	-5.716	.341	0	***
Other	.144	.209	.492	
Regions: Bauchi	.171	.405	.637	
Borno	.443	.294	.132	
Gombe	.083	.442	.851	
Taraba	.846	.450	.06	*
Yobe	.050	.335	.88	

cut1	2.549	.626
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cut2	3.371	.654
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Mean dependent var	2.211	SD dependent var	0.892
Pseudo r-squared	0.241	Number of obs	2622.000
Chi-square	713.455	Prob > chi2	0.000
Akaike crit. (AIC)	624565.894	Bayesian crit. (BIC)	624794.890

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: For dummy variables, *gender* 1=male 2=female and *household migration status* 0=host community households (not migrants) 1=IDP (migrated from original place of residence). For all other dummy variable used, no=0 and yes =1. The variable *household dependent share* is captured by dividing the number of household members within the working age group(15-65years) by number of household members outside the working age group (0-14 and above 65years). "Naira" is the Nigerian currency. *, **, *** shows levels of statistical significance at 0.1%, 0.05% and 0.01%, respectively. F-test (37, 2585) =26397.65. Weighted sample regression.

Table 3 shows the average individual marginal effect showing consistency with the regression results above in the signs and significance of the variables. Households depending on aid and gifts are 1.7% more likely to be highly food insecure. People who sold productive assets to buy food are 28% more likely to be highly food insecure, and households headed by individuals who have never been married have a 30% lower probability of being food insecure than monogamous households. These findings could imply that the former saves extra income while the latter tends to spend it on their family.

Table 3: Marginal Effects of the Outcomes on the Independent Variables

Coping Strategy Index	Low CSI	Medium CSI	High CSI	Significance
<i>Households Characteristics</i>				
Household migration status(dummy)	-0.051	-0.002	0.053	**
Record of disease/accident(dummy)	-0.137	-0.019	0.155	***
literacy (dummy)	0.041	0.006	-0.047	
Selling of asset (dummy)	-0.245	-0.033	0.279	***
Asset value in Naira (per 100naira)	0.000	0.000	-0.000	
Access to land (dummy)	-0.007	-0.001	0.008	
Household dependent share	-0.010	-0.001	0.011	
Selling of female animals (dummy)	-0.179	-0.024	0.203	**
Household's community participation(dummy)	-0.051	-0.007	0.058	
Gender of household head (dummy)	-0.015	-0.002	0.017	
Marital status of household head	-0.003	-0.000	0.003	
Polygamous				
Widow/widower	-0.101	-0.025	0.126	
Separated	-0.058	-0.011	0.069	*
Never married	0.296	-0.027	-0.270	***
Religion (groups): Islam	-0.249	0.011	0.238	***
Age of household head(categories)				
31-65years	-0.055	-0.005	0.060	
65years above	-0.107	-0.016	0.124	
<i>Infrastructural characteristics</i>				
Market distance (in minutes)	-0.002	-0.000	0.002	***
Access to a market road network(dummy)	-0.239	-0.032	0.271	***
<i>Livelihood characteristics</i>				
Main source of livelihood: Salary/profit	0.028	0.004	-0.032	
Aid/gifts	-0.015	-0.003	0.017	
Others	-0.081	-0.021	0.102	
Employment status: Employed	-0.112	-0.007	0.118	**
Unemployed	-0.338	-0.136	0.474	***
Outside working age	-0.076	-0.002	0.078	
<i>Demographic characteristics</i>				
Regions: Bauchi	-0.044	-0.001	0.045	
Borno	-0.110	-0.008	0.118	
Gombe	-0.022	0.000	0.022	
Taraba	-0.196	-0.031	0.227	*
Yobe	-0.013	0.000	0.013	
Ethnicity: Yoruba	-0.050	-0.006	0.056	
Igbo	-0.276	-0.131	0.408	**
Kanuri	-0.038	-0.004	0.042	
Fulani	-0.022	-0.002	0.024	
Tiv	0.675	-0.219	-0.456	***
Others	-0.035	-0.004	0.039	

Note: dy/dx for factor levels is the discrete change from the base level.

Results indicate that over 50% of IDP households are highly food insecure, compared to 45% of host community households. The model shows that IDPs are 5.3% more likely to be highly food insecure than host community households. This suggests that the two groups have differing food security situations, as hypothesized. The analysis also reveals that host community households have an average asset value three times higher than IDP households. This may indicate differing levels of cash flow, which is consistent with the finding that IDP households are more food insecure. This outcome was expected, although the ratio was substantial and not anticipated. The related variables of "selling of assets" and "selling female animals" demonstrate the fundamental effect of asset possession on food security for both households. As asset value is used as a proxy for wealth, this finding aligns with (Owoo, 2018) who also found that livestock and wealth are positively related to food security measures at the household level. The asset ownership may be influenced by several factors given the context and demography of the study. The asset ownership could be driven by several factors given the context and demography of the study.

Interestingly, about 70% of IDPs are employed, suggesting they are not restricted in accessing formal labour. However, it could imply that they are limited in the type of positions they hold, which might pay less, due to differences in food security and wealth status compared to host households. It could also be due to marginalization often faced by IDPs, limited work experience. This further indicates the need to address the labour market restrictions and marginalisation.

Evidently, most households were headed by adults. Majority of the sample tends to practice monogamous marriages, though the majority are Muslims, and men are permitted to practice polygamy. This outcome is contrary to that of (Owoo, 2018), who found that most Muslims were polygamous in a study conducted on food security and Nigerian family structures. This may indicate that polygamous marriage is a major reason for high food insecurity. The results indicate that households practicing Islamic faith are approximately 24% more likely to be highly food insecure; hence, resorted to maintaining monogamous marriages.

The study shows more IDPs are involved in farming, likely for income diversification and subsistence production. Less than 10% of the sample's main source of livelihood comes from humanitarian aid and individuals, with no statistical significance. This aligns with a previous study that shows food aid received is a non-significant part of food consumption for IDPs (Pape, 2019). The households are likely hardworking and depend on earnings, rather than aid. An equitable needs assessment is necessary as the households may not be receiving what they need. Most of the households earn their living from salary jobs and businesses, with higher rates of employment in host communities. The study found no significant evidence that the literacy and gender of household heads influences their food security status, contrasting with (Kim, 2014) which found a significant effect on food security based on literacy and gender.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this study sheds light on the critical issue of equitability in humanitarian aid distribution, focusing on food security in the North-Eastern region of Nigeria. The findings reveal significant disparities in food security between host communities and IDPs, with the latter experiencing higher levels of food insecurity. Hence, the study highlights the importance of tailored interventions that consider the specific needs of host communities and IDPs to ensure fairness in aid interventions. While also considering the heterogeneity of the IDPs, example, IDPs in camps and those within the host community might differ in their basic needs.

Furthermore, these findings may imply the need for Humanitarian aid organisations to include modalities such as cash transfer initiatives, healthcare assistance, improved labour market opportunities among others, during projects planning and implementation as have been found from the results to be fundamental determinants of food security. This may support the household's financial capacity, improved food security and decreased coping strategy.

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