



POST-DISASTER NEEDS ASSESSMENT: GITA CYCLONE REPORT



TONGA 2018



Report funded by the United Nations Development Programme (UNDP)

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October 28, 2018

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Preface

This report is the first of its kind to be prepared using data collected by the Statistics Department (SD) on the impact of a cyclone in Tonga. Tropical Cyclone Gita hit the main island of Tongatapu and the island of 'Eua on the night of Monday, 12th February 2018 as a destructive category 4 storm, causing severe damages to these two islands which consists of about 80% of the Total population of Tonga. The Statistics Department were tasked to undertake a consolidated household survey to all the households in Tongatapu and 'Eua for a *post-disaster needs assessment*. Such information were used by different clusters to assist with their assistance to the people affected within areas of health, education, shelter, social protection and others.

There have been challenges faced by the Statistic Department during the process of this *post-disaster needs assessment* which identifies the following areas: Data needs must be clearly identified so that SD can objectively design the questions to capture the required information. Also, some of the respondents were not providing the correct information and therefore led to grievances when households receive aid or beneficiaries from government.

However, using this data, Dr. Héctor E. Nájera Catalán prepared this report funded by the United Nations Development Program (UNDP). The aim is to outline the results of the work that the Statistics Department had done on the *post-disaster needs assessment* based on the information required by the clusters responsible for responding to the cyclone within different thematic areas.

The Statistics Department would welcome any suggestions for future improvement of the work related to this *post-disaster needs assessment*. Please contact the office of the Government Statistician, Statistics Department at this address: P.O. Box 149, Nuku'alofa, Tonga or Telephone (676) 23-300, Fax (676) 24-303 or email dept@stats.gov.to or vfifita@stats.gov.to for any queries.



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Executive summary

Typhoon GITA, with peak wind speeds of 233 km/h, hit the south coast of Tongatapu - the main island of the Kingdom of Tonga - at 8pm on 12th February 2018 and its intensity peaked between 11pm and 2am. This was the strongest storm to pass so close to the main island in the last 60 years.

The government of Tonga declared a state of emergency and policy makers urgently needed high quality and up-to-date information about the extent and distribution of the damage and the location of the most vulnerable people in order to prioritise the recovery and reconstruction efforts. The Statistical Department of Tonga reacted quickly to the emergency by undertaking a rapid post-disaster needs assessment (PDNA) survey to assess the nature, extent and distribution of damage in the main islands. The PDNA consisted in a census in Tongatapu and Eua (N=76,286), where around 75% of the Tongan population live, to assess the extent, characteristics and distribution of the damage caused by GITA.

This document uses the post-disaster data collected by the Statistical Department to describe the characteristics of the affected population, nature and spatial concentration of the damage, and the aid required and received at the time of the interview by the Tongan population.

The post-disaster assessment suggests that around 55% of the population was affected by GITA in some way and 10% of the population experienced a form of devastation, i.e. major damage or destruction of their dwelling. The exteriors of the dwellings such as roofs, walls and windows were the parts of the houses that were more likely to be affected by the cyclone. When looking at the damage caused to

utilities and assets, the electrics and water connection were the two most frequent affectations. However, in rare cases these two were destroyed by GITA. The damage of the sanitation services, although less frequent, tended to be more acute. Destruction of toilets, bathrooms and sewage systems was more prevalent than in, for example, electrics or water connection.

In the aftermath, around 31% of households had not repaired their damage. Most of the repairs (60%) were conducted by members of the households and relied on their own resources -mainly by reusing existing materials- to do so. In terms of the demands of the population at the time of the data collection, most households declared that they needed repair their items rather than a complete replacement. However, because destruction of sanitation facilities was more prevalent, the population declared that these items needed to be rebuilt.

There is a clear relationship between the severity of the damage and material deprivation- the more acute the damage the more deprived the household was. This association followed a spatial pattern. The geography of the devastation has a very clear pattern. The most affected areas were the villages in the north west and north east in Tongatapu and in the west in Eua. Based on these data the policy response should prioritize sanitation and the areas in the north of the main island and the most populated area in Eua.

1 Introduction

The tropical cyclone GITA, with winds of 230 km/h, produced the strongest storm and devastation in Tonga in the last 60 years (when official records started). The damage was severe and widespread across several islands of Tonga (176 in total), including the capital Nuku'alofa where around 70% of households are located. GITA caused significant damage and injuries across the Kingdom of Tonga and its force was such that electricity lines, fruit trees and crops -vital to Tonga's livelihood- were affected; even some of the strongest buildings in the capital were partially flattened, like the Parliament House.

The government of Tonga, in particular, the Statistical Department undertook an immediate assessment of the extent and distribution damage caused to dwellings as well as of the collateral effects upon food security and livestock of a natural disaster of this kind. The Tonga Statistical Department collected data of 76,286 people living in the two main islands (EUA and Tongatapu, where the capital Nuku'alofa is located) to assess the damage caused to the population and their dwellings, have its specific location of the areas with the most acute needs and set up a swift policy response to help the most affected by GITA.

The chief objective of this report is to quantitatively describe the aftermath of the GITA cyclone, provide details of the needs of the population after the cyclone and provide an overview about how these data helped and could help in the future to inform policy responses. The report relies on data collected by the Tonga Statistical Department between x and x 2018 about the characteristics of the dwellings, socio-demographic variables as well as data on different measures related to household's

livings standard.

The report is organized as follows. The section 2 describes the data-collection process and its main features. The socio-economic profile, the extent and nature of the damage as well as its distribution across different population groups is presented in section 3. The geographical distribution of the damage is analysed in section 4. A summary with the main findings and lessons is reported in section 5.

2 Data and sample characteristics

The post-disaster needs assessment (PDNA) was carried out in Tonga using the Gita Impact Assessment (GIA) questionnaire. The questions are organised into the following nine main sections:

- (a) GEOGRAPHICAL ID: 6 Questions
- (b) HOUSEHOLD ROSTER: ALL INDIVIDUALS: 24 Questions
- (c) PREPAREDNESS AND EVACUATE: 20 Questions
- (d) DAMAGE TO DWELLING AND REPAIRS: 20 Questions
- (e) BASIC UTILITIES: 38 Questions
- (f) AID: 6 Questions
- (g) CROPS AND LIVESTOCK: 34 Questions
- (h) HOUSING: 37 Questions
- (i) GPS + PHOTO: 3 Questions

The GIA took the form of a population census in that it collected data of all households in Tongatapu and Eua. Therefore, the other main island groups were not included and it is thus a pseudo and not a full Census. The post-GITA pseudo-census collected data of 76,286 people and 13,480 households, corresponding to around 75% of the population in Tonga.

3 Descriptive analyses

This section is divided into three main subsections. The first one shows the socio-demographic characteristics of the people and households in the sample. The second looks at the information on the measures taken by each household to evacuate and preparedness to face a natural disaster. Section 3.3 describes the information about the extent of the damage, the types of external damages as well as the kinds of affectations to household goods. This section also (3.3.1) also analyses data on repairs to provide an idea of how many people had resolved their situation and how many still needed assistance. Section 3.4 presents data on aid received or needed. Section 3.5 produces some cross-tabulations about the profile of the population that was most affected by GITA.

3.1 Socio-demographic and economic characteristics

Table 1 presents household-level data of the post-disaster census in Tongatapu and Eua. Most of the households are headed by men (around 80%). Tongatapu comprises almost 80% of the total population included in GTA data. Disability rates are high

as one out every 4 households have at least one member with disabilities. In Tonga, basic education is mandatory and understandably very few household-heads have low education attainment. The majority of household heads have received either lower or secondary education. Yet, the proportion of household heads with tertiary education is just above 10%.

Table 1: Household-level characteristics

	%	N
Gender Household Head		
Female(Fefine)	22	2,996
Male(Tangata)	77	10,484
Island		
'Eua	7	923
Tongatapu	93	12,557
People with disability		
Disabled	23	3,117
Not disabled	77	10,363
Education Household Head		
No education	2	237
Primary	4	602
Lower secondary (Form 1 - Form 4)	27	3,619
Upper secondary (Form 5 - Form 7)	44	5,922
Technical and Vocational (TVET)	11	1,474
University	12	1,626
Children not in education	1	177
	Mean	Min-Max
Age Household Head	51.7	16-99
Household size	6.2	1-48
Number of children	2.6	0-23

On average household heads are aged 52, which seems slightly high considering that Tonga has a relatively young population profile. One feature of Tongan households is that they are large and western standard definitions (sharing a meal), are

not very useful to distinguish between families living in the same land but in different buildings. The household sizes vary a lot and this is an important characteristic to take into account when analysing these data given that using households as unit of analysis could provide a biased picture of the extent of the damage when talking in absolute population term. The average household size is six and the number of children is three, which reflects the fact of the young nature of the Tongan population. Given this characteristics, in particular, the large variation in the number of people within households, the unit of analysis for this report will be individuals as this will provide a better idea of the unsatisfied needs in the aftermath of the cyclone GITA. Finally, a form of disability affects around 23% of the people included in the post-assessment exercise.

Table 2 shows household's access to basic utilities. At the time of the interview, the post-disaster assessment questionnaire collected data on access to specific services regardless whether the services was damaged or not. This in order to have an estimate of the living conditions of the interviewed households. The vast majority of the population had running water tap, electricity, gas and mobile phones. Garbage collection, television and internet were not generally accessible to the population in both the main island and EUA.

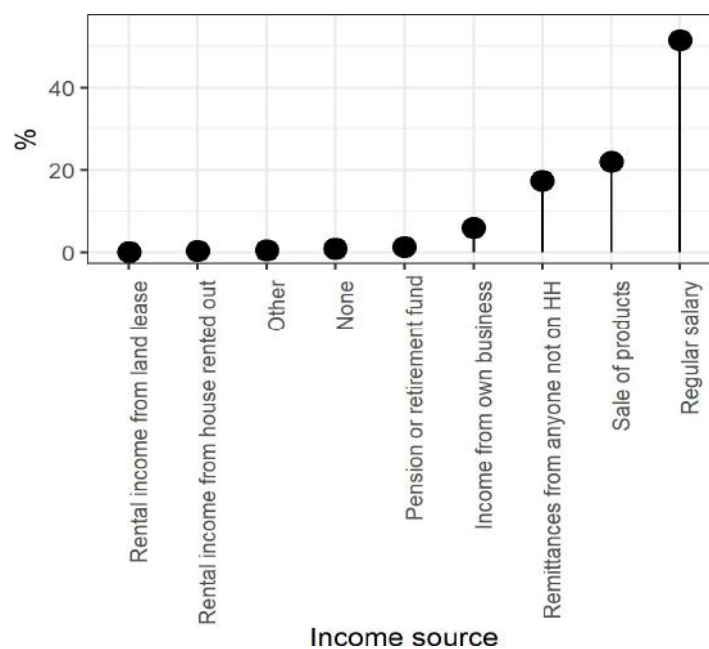
An important aspect in the description of the population in Tonga in the context of the cyclone is the source of the household's resources. The distribution of the different sources of income in the interviewed households is shown in Figure 1. Unlike, highly industrialised and developed economies, in Tonga (main island and EUA) around 50% of the income comes from regular salary. Approximately, 40% of the

resources of the households come from remittances and sale of products (mainly primary sector).

Table 2: Household basic utilities. Row percentages

	No (%)	Yes (%)
Running Water tap	5	95
Electricity	7	93
Propane Gas (LPG)	7	93
Solar	96	4
Garbage pickup	12	88
Telephone(landline)	77	24
Mobile phone	3	97
Internet	88	12
Television	28	72

Figure 1: Distribution of the sources of income



3.2 Evacuation and preparedness before the cyclone

A key aspect to consider when analysing natural disasters is the preparedness of the country and population. This section concerns with the preparations people undertook before GITA hit Tonga. Table 3 displays the main source through which the population was warned of GITA. The figures suggest that the population was fully aware in advance of the cyclone- 99% received warnings before the cyclone GITA. From those who received warning messages the primary source of warning was the radio- 9 out of 10 people got information on the radio.

Table 3: Primary source of warning

	%	N
TV	0	189
Radio	90	67,479
Text message	1	837
Internet	4	3,174
Word of mouth from friends/families	5	3,579
Others	0	97

The post-GITA assessment asked the population whether they understood the message from the meteorological office and 95% said that the communicate was clear. Table 4 shows that the majority of the population knew how to prepare for the cyclone. Most of the people (61%) replied that a measure was to secure their belongings and family. Another 21% mentioned that they needed to secure the house and 18% attend to an evacuation centre. When asked about which objects prepared before the cyclone, the vast majority of the population (90%) prepared a torch (Table 4).

Table 4: Preparedness for the cyclone

	%	N
Knowledge about what to do to prepare for the cyclone		
Secure house	21	15,163
Secure belongings and family	61	44,139
Seek shelter in an evacuation centre	18	12,769
Did not know what to do	1	496
Objects prepared before GITA		
Battery radios	3	2,661
Battery torch	91	69,228
None	6	4,397

Table 5 shows the percentage and number of people that evacuated before or during the cyclone or did not evacuate their dwelling. 32% reported to have evacuated their properties but 8% did so during the cyclone- meaning that 6,307 people had to evacuate during the cyclone. The vast majority of people remained in their households (68%).

Table 5: Household evacuation

	%	N
Yes - before	24	17,962
Yes - during	8	6,307
Yes - after	0	245
No	68	51,772

Given that a large proportion of the population in Tongatapu and EUA did not evacuate their dwellings, the post-assessment questionnaire asked why they decided not to do so. The main reason given by the population is that they did not need to evacuate their homes. This does not mean that all the people that did not evacuate were safe- around 1,500 people could not seek protection in another place because

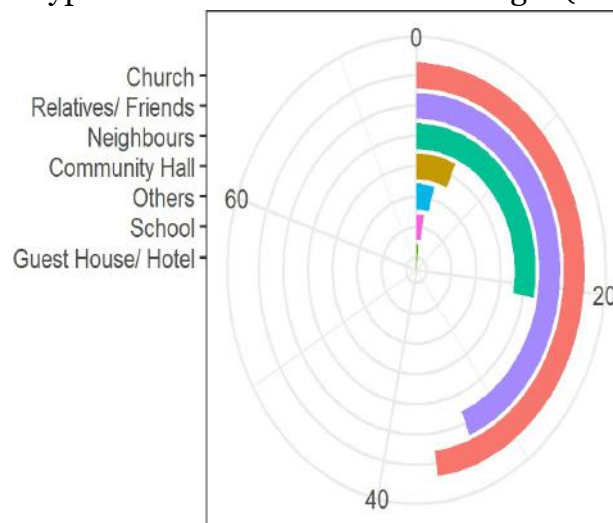
they did not have a place to go, they could transport themselves or other reasons (Table 6).

Table 6: Reasons why did not evacuated

	%	N
No need	97	50,249
No place to go	1	618
Lack of transport	1	346
Others (specify)	1	559

Approximately 24,500 people declared to attend an evacuation centre. Figure 2 shows the type of shelter they used. A large majority of people (35%), went to a church, other important proportion (30%) were received by family and friends and around 20% took shelter with their neighbours. Very few people attended to community halls, schools or hotels (Table 16 in the appendix shows the exact figures from which this plot was produced).

Figure 2: Type of shelter attended. Percentages (n=24,514)



Around 10,000 people look for protection at the evacuation centres and Table 7 shows the characteristics and profile of these facilities. 50% of people declared that the centre did not have a managing committee, 73% mentioned that the evacuation centre was planned and a similar proportion stated that there was a leading role in the centre. Nine out of every ten people say that the organization heading the evacuation centre was a religious one. In other cases, it was a individual initiative (6%).

Table 7: Characteristics of evacuation centres

	%	N
Evacuation Centre Management Committee		
Yes	38	3,906
No	50	5,179
Unknown, Don't Know	12	1,230
Type		
Planned	73	7,553
Spontaneous	27	2,762
Leader		
Yes	70	7,257
No	22	2,222
Unknown/ Don't Know	8	836
Organization leading the evacuation centres		
Government	2	158
Local NGO	2	165
Individual/Private	6	449
Religious Entity	88	6,399
Unknown/Don't Know/Not Listed	1	86

Table 8 displays information about the way in which people attending churches, community halls or schools organized their centre. In these kind of centres, the community has to create a management committee when they arrived to the centre.

There was a high proportion of people mentioning that women had not involved in the ECMC (32%).

Table 8: Characteristics of the Evacuation Centre Management Committee (ECMC)

	%	N
ECMC made up from the community at site		
Yes	93	3,626
No	5	212
Unknown/ Don't Know	2	68
Women involved in ECMC		
Yes	61	2,373
No	32	1,269
Unknown/ Don't Know	7	264

From the total number of evacuations (n=24,514), the 95% reported to have returned to their houses after the cyclone. The 1,274 people that had not returned to their homes at the time of the interview suggested that the main cause was that their dwellings were not safe, destroyed or could not be reconstructed.

Table 9: Returned home after evacuation

	%	N
Return home after evacuation		
Yes	95	23,240
No	5	1,274
Reason why not returned home		
Don't feel safe	20	260
House Destroyed	58	744
No means to reconstruct	13	163
Other	8	107

Table 10 shows the percentage of people that currently lives in the same location (relative to where they lived before GITA), currently hosting displaced and that had

insurance coverage. Approximately, 4,000 people were not living in the same place and a similar figure is for people hosting displaced families, neighbours, etc. Only 11% of the people were insured for cyclone damages.

Table 10: Current housing situation

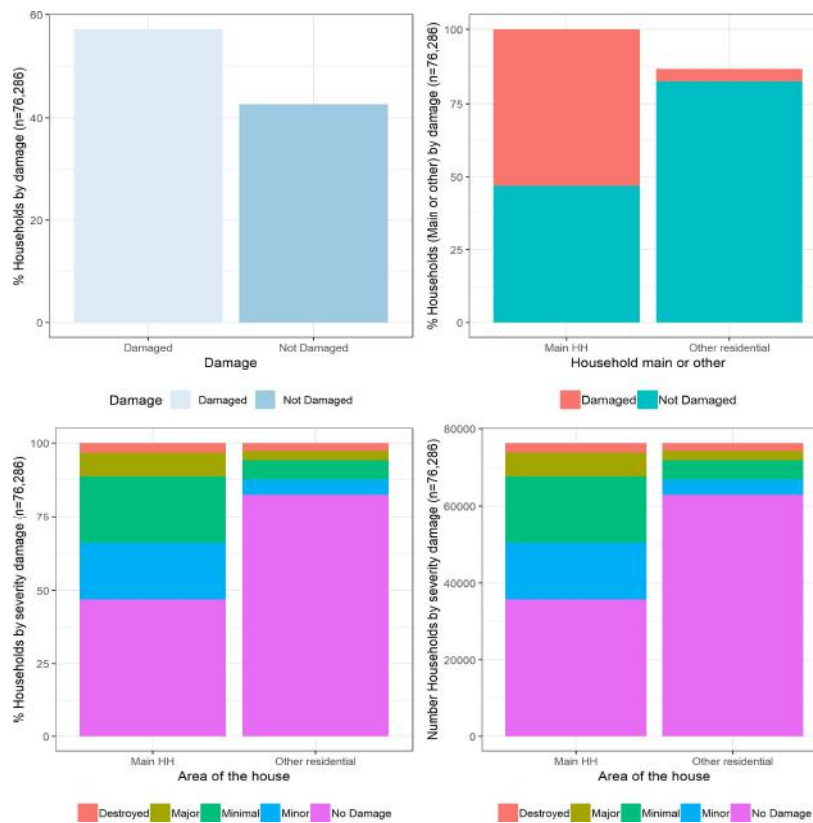
	%	N
Currently living in the same location prior GITA		
Yes	95	72,315
No	5	3,971
Currently hosting displaced families, neighbours, etc		
Yes	5	3,990
No	95	72,296
Home insurance for cyclone damages		
Yes	11	8,651
No	89	67,635

3.3 Analysis of damaged caused by GITA

This section shows the extent of the damage cause by GITA at individual-level. Figure 3 shows the distribution of the type of damage by place of occurrence: household (main building) and other dwelling. The panel on the top-left side shows that almost six-out-of-every-ten people in Tongatapu and Eua had their dwellings affected by GITA. The panel on the top right shows the distribution of damage by the place of occurrence: main dwelling or other residential. Around 50% of people experienced damage in their main buildings by the cyclone. The other residential areas did not seem to suffer damaged (the fact the figure does not add up to 100% is due to the fact that not all households have another residential area).

The panels at the bottom in Figure 3 shows the distribution of damage by severity (in percentage and absolute numbers respectively): Destroyed, major, minimal, minor and not damaged. The panel on the top left shows the distribution of damage by severity and area of the property affected. The data suggest that 11% suffered from major damage or destruction; minimal or minor damages were experienced by around 40% of the population. Just less than 20% of "other dwellings" were affected by the cyclone, where 6% were destroyed or had from major damage. The panel on the right shows the same but considering absolute numbers for reference.

Figure 3: Distribution of damage by household dwelling type and severity of the damage

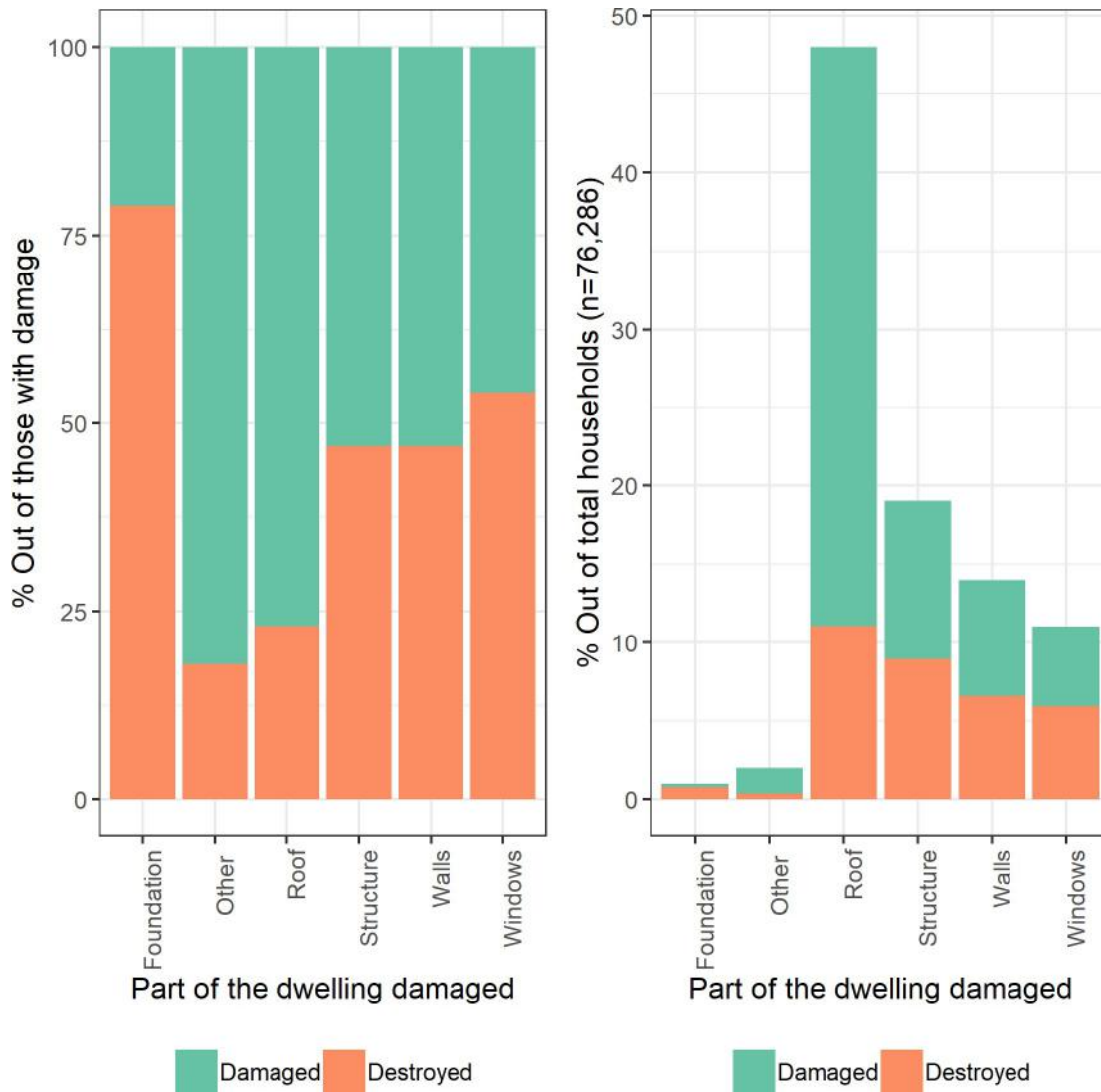


The GITA questionnaire collected data on the severity of the damage, resulting into two categories: damaged and destroyed. Figure 4 shows the part of the dwelling that was affected by the cyclone (right-hand side plot). The plot on the right plots the same variables but considers the total population to provide an idea of the extent of the damage relative to the whole sample. The plot on the left suggests that out of the 100% of people with damaged roofs, 23% of people had their roofs destroyed. In other cases, nonetheless, the distribution between destruction and damage was more even. For example, structure, wall and windows were equally likely to be damaged or destroyed. The foundation of the house were much more likely to be destroyed—around 80% of people reported deconstruction to their foundations. The plot on the right shows the part, area or material affected by the cyclone. The roof (48%) was the part of the house most likely to be affected by the cyclone followed by the overall structure (19%) of the house, walls (14%) and windows (11%) (Tables 20 and 21 in the appendix shows the distribution of these kind of damages at village level).

The questionnaire also collected data on the damaged suffered by key household services, goods and assets. Figure 5 has two panels: the one on the left shows the distribution of damage by its severity (destruction or damaged) and the one on the right plots the same variables but relative to the full population.

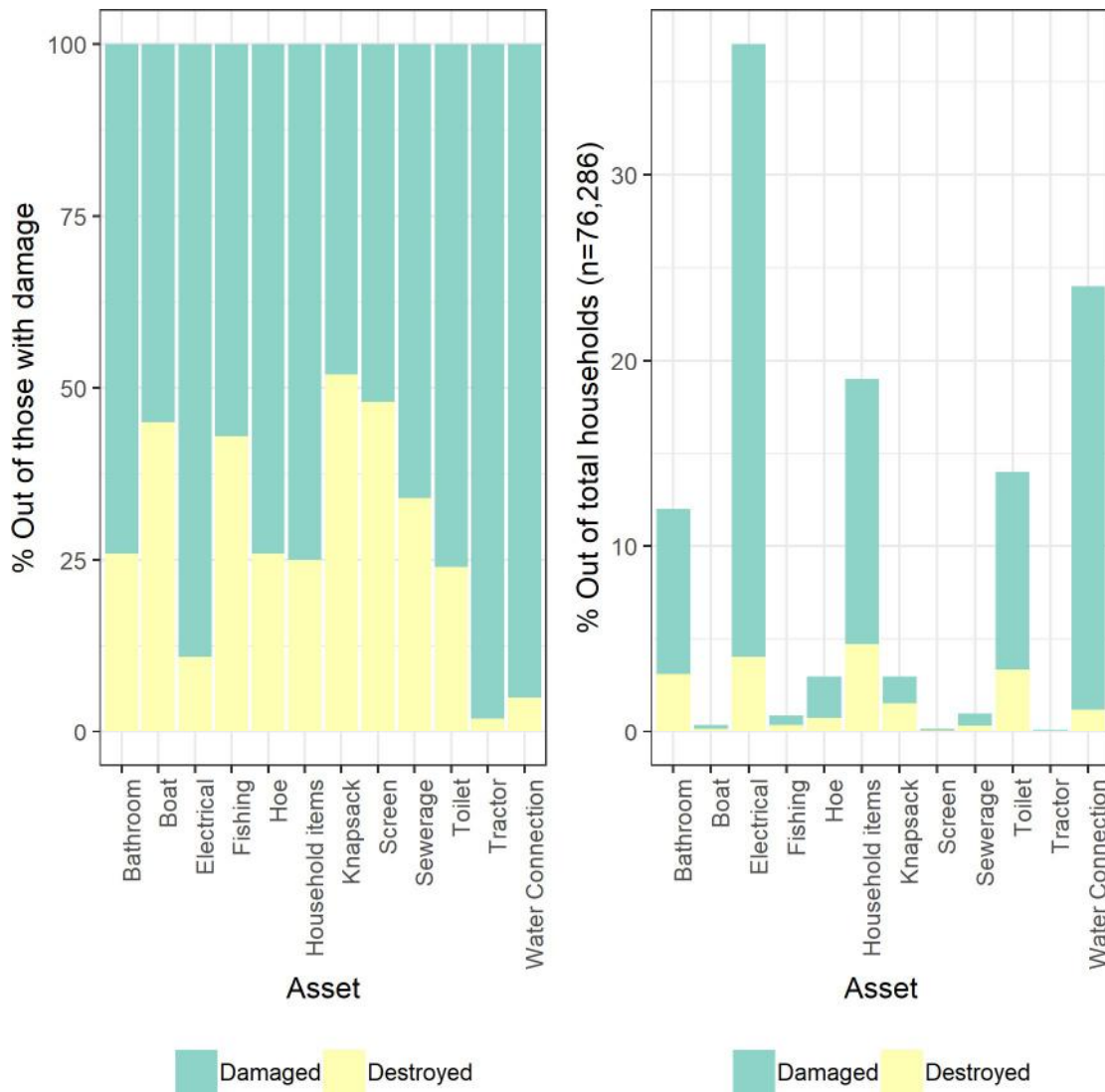
The panel on the left in Figure 5 shows that among the key services such as toilet, bathroom and sewage were the items with more destruction rates: 24, 26 and 24%, respectively. Electrical goods shows the highest prevalence rate (right-hand plot) among the damage items, however, only 11% were destroyed. Water connection damage affected 24% of the population but only 5% suffered from destruction. Most

Figure 4: Distribution of damage by type and severity of the damage



of the acute damage concentrated on boats and fishing equipment, where almost half of these two items were destroyed. Other assets or goods like boats fishing equipment and screen show very high destruction rates (Tables 22 and 23 in the appendix shows the distribution of these kind of damages at village level).

Figure 5: Distribution of damage by type of asset and severity of the damage



Repair of damages caused by GITA

At the time of the pseudo-census, some households had already conducted a repair or had received aid to do so. Table 11 shows the source of the funding or resources

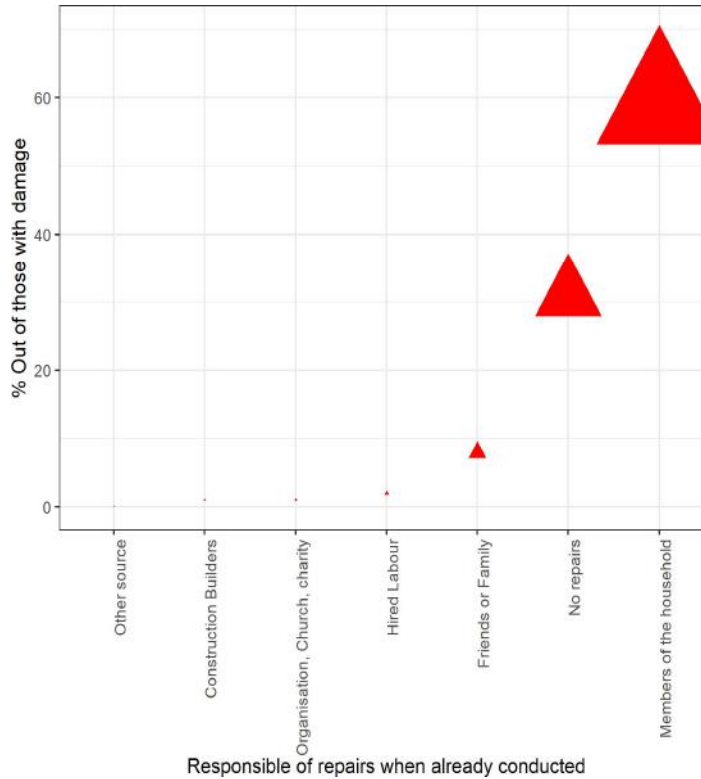
used by the households to make the repairs. In almost all cases, the population has relied on their own money or existent materials- 78% of the population is in this situation. Other people relied on remittances, savings or other sources of funding to fix the damage. Just a tiny proportion of people .4% had insurance to cover the damage.

Table 11: Funding for repair of the external damages

	%	N
Reused existing material	67	20,252
Wages/Salary	11	3,364
Remittances (abroad or within Tonga)	10	3,131
Savings	4	1,210
Other funding	2	746
Own business income	3	761
Loan from bank, relatives and friends	1	247
Selling goods	1	273
Insurance	0	117
Pension allowances	0	89
Total	100	30,190

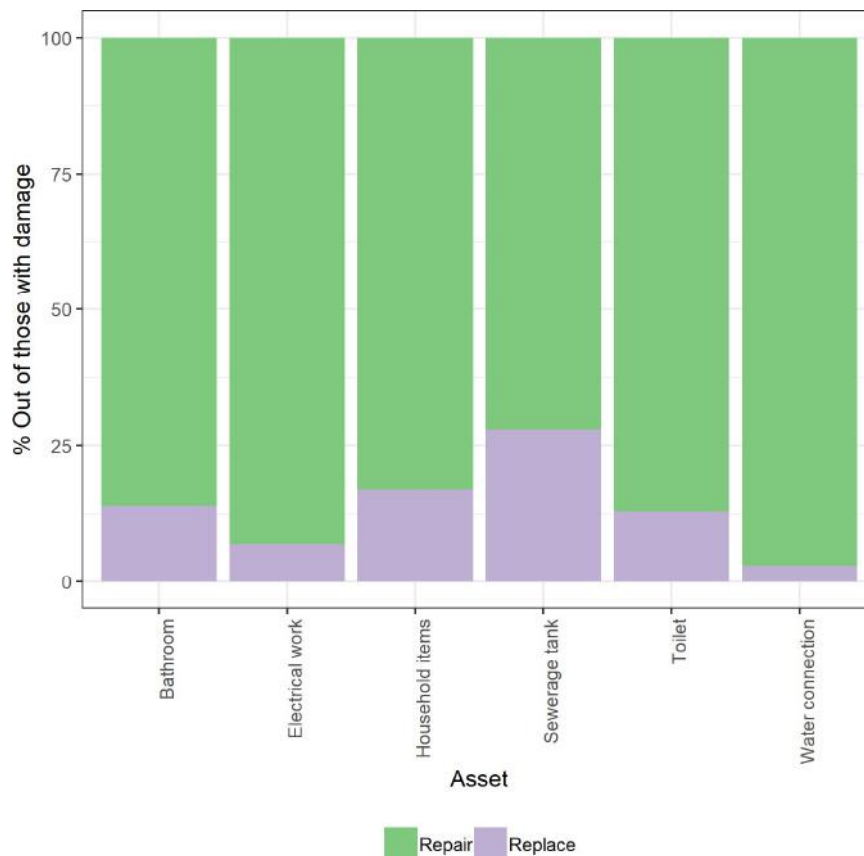
Figure 6 plots the status of the repairs according to different circumstances. The size of the triangles is given by the number of people that is in an specific category, therefore the bigger the shape, the more people is in such a condition. The plot suggests that 31% of people had not fixed the damages, as can be appreciated in absolute numbers, such a percentage is very high relative to the other categories. The majority of repairs had been conducted by members of the household (59%). In very few cases, the repairs were conducted by charities or organizations (see also Table 35 in the appendix).

Figure 6: Responsible of conducting the repairs. Percentages (n=43,631)



The Gita Impact Assessment (GIA) questionnaire survey assessed the need of assistance by asking whether a given utility or good required being replaced or only repaired. Figure 7 displays these two options (fix or replace) for several items. In most cases, the population manifested that fixing their goods or services would be enough. However, sanitation facilities such as toilet, bathroom and sewage shown higher demand for replacement. In absolute numbers, nonetheless, it is important to bear in mind that GITA largely affected electrical supply and therefore is vital to take into account those households that need to rebuild their electricity system (Table 36 shows the exact figures from which the plot was produce).

Figure 7: Expected repair or replacement of damaged household utilities. n=65,26



One of the key factors to take into account to analyse the effects of the cyclone and to understand the context in which this natural disaster took place, are the different priorities of the population. The questionnaire included a general question about the most pressing demands of the population. The population had the opportunity to list their top-three priorities. In Figure 8, the size of each square is given by the number of people that mentioned that item as a priority. Within each item, the size of the squares denote the order of importance the population attached to the item in question. Figure 8 shows that drinking water was the number one priority for the population, followed by food, shelter, hygiene items and health. Other priorities such as roads, education, electricity and security were also mentioned by the population.

It is clear that not all the priorities had a clear connection with GITA and the population took the opportunity to express their concerns during the interview.

Figure 8: Priorities of the household in the context of the cyclone

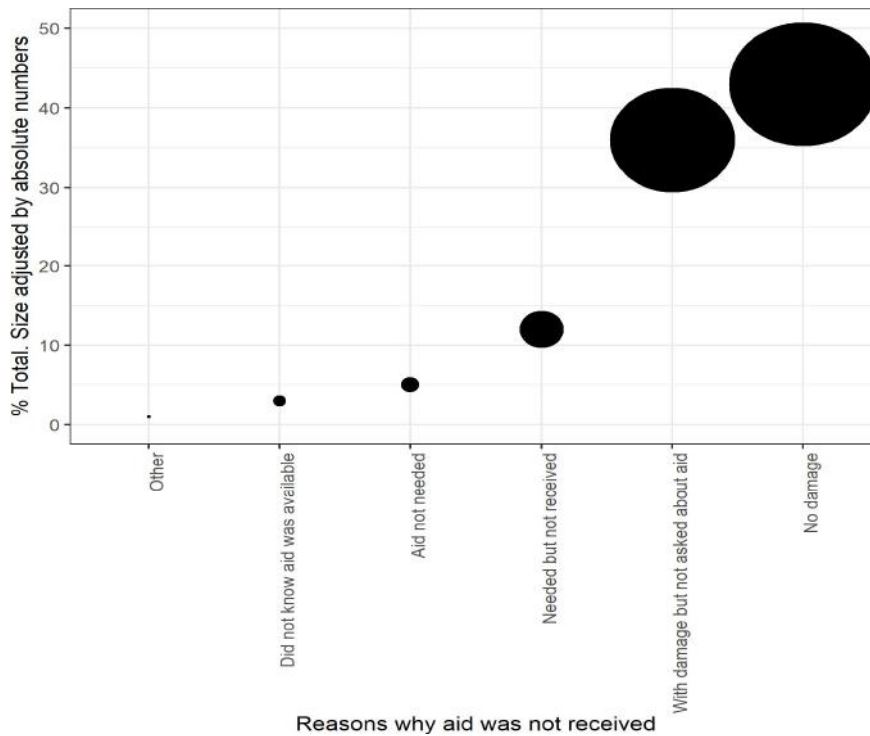


3.4 Aid received and needed after GITA

Three key questions were raised with regards aid and need in the GIA instrument: What kind of aid (if applicable) the population had received, reasons why they did not get any aid and whom they asked for help.

Figure 9 displays the proportion of people by need of aid and also adjusted the size of each circle by population to give an idea of the size of the groups. Considering the total population, 36% of the population had damage but had not asked for aid at the time of the interview. Only 5% declared that they did not need aid. Others say they needed aid but had not received aid - it is unclear whether they requested aid.

Figure 9: Reasons why aid was not received



At the time of the interview, around 38,000 households had received some form of aid (which does not mean that it was enough to repair the damage). Table 12 shows that around a fourth of these households received aid in form of money, a similar fraction got tents and 17% was supported with tools, machinery or equipment. In other cases the aid consisted in water or food (around 10% each).

Table 12: Type of aid received by household or by member of the household

	%	N
Money	20	7,921
Tent	18	6,934
Tools/machinery/equipment	17	6,404
Other	14	5,414
Water	12	4,760
Food	10	3,705
Medical supplies/medicine	5	1,856
Clothing	2	931
Building materials/tarpaulin	1	443
Planting materials/seeds	1	293
Transportation	0	37
Livestock (chickens, cattle, etc)	0	37

Table 13 shows the number and proportion of people that has requested aid. Very few people requested for aid- Around 11% and they mainly asked the Town officer.

Table 13: Aid requested

	%	N
Yes-Town Officer	8	5,977
Yes- Someone else	3	2,511
No	89	67,798
Total	100	76,286

3.5 Population profile and damage

Tables 14 cross-tabulates different socio-demographic and economic variables by damage (household + other dwelling). The table suggests that the worse-off were more affected by GITA. For example, there is a clear relationship between damage and education and material deprivation (quintiles) (see Figure 10). Households with disabled population also register higher damage rates, which might be also a reflection of the connection between material deprivation and disability.

The profile of damage is similar across almost all items (see tables 24 to 34 in the Appendix), where is clear that the better-off population were slightly less likely of suffering the effects of GITA. However, as it is shown in section 4, the chances of being affected were also determined by location and not exclusively by socio-economic characteristics.

Table 15 shows the distribution of insurance coverage by the level of material deprivation. There is a clear relationship between deprivation and protection- the better-off population is more likely to be insured against damage than the worse-off. However, only a quarter of the population in the first quintile had an insurance.

Table 14: Overall dwelling and other buildings damage by different household-level characteristics

	Damage dwelling or other		
	Not damaged	Damaged	Total
	%	%	%
Education attainment head household			
None	30	70	100
Primary	43	57	100
Lower secondary (Form 1-Form 4)	37	63	100
Upper secondary (Forms 5-Form 7)	42	58	100
Technical and Vocational (TVET)	48	52	100
University	54	46	100
Total	43	57	100
Disability HH			
not disable	44	56	100
disable	38	62	100
Total	43	57	100
Sex HH			
Male (Tangata)	43	57	100
Female (Fefine)	41	59	100
Total	43	57	100
MD index from IRT in quintiles			
Very low deprivation	55	45	100
Low deprivation	49	51	100
Moderate deprivation	46	54	100
High Deprivation	37	63	100
Very high deprivation	27	73	100
Total	43	57	100
Island			
Tongatapu	43	57	100
'Eua	35	65	100
Total	43	57	100

Table 15: Insurance coverage by different household-level characteristics

MD index from IRT in quintiles	Insurance		
	Yes %	No %	Total %
Very low deprivation	23	77	100
Low deprivation	13	87	100
Moderate deprivation	9	91	100
High deprivation	7	93	100
Very high deprivation	4	96	100
Total	11	89	100

4 Spatial analysis

This section presents the geographical distribution of the damage using the household-level data.

Map 1 displays the distribution of damage to the main dwelling in Tongatapu y Eua. The blue dots represent the undamaged households and the red dots the households with reported damage. Because it is difficult to visualise a pattern with this kind of point data, spatial interpolation was used to produce a smoothed surface using damage as an indicator. The resulting surface denotes areas with high concentration of households with damage with darker red areas (hot spots) and areas with low concentration with light red colouring.

Map 1 suggest that the damage concentrated on the north west and north east of the main island (Tongatapu) and on the west side of Eua. This is consistent with the trajectory (North-east to south west) of GITA.

Most of the damage caused by GITA affected the roofing of the houses in Tonga. Map 2 displays the spatial distribution and concentration of this kind of damage in

both islands. The central area of Tongatapu (light coloured areas) was not severely affected by the cyclone. In contrast, the villages in the north west, north east and south west were strongly hit by GITA (dark areas). In EUA, the west shows the highest concentration of roof damage, which is where most of the population lives. Damage to the electricals of the houses in Tonga was widespread. According to Map 3, most of the electrical damage occurred in the central area of Tongatapu, which is where the urban localities are located. However, the north east was also severely affected by GITA. In EUA, nonetheless, the damage did not seem to be as widespread as in the main island.

Figure 10: Map 1. Main dwelling damage after the cyclone. Tongatapu and Eua. Values after interpolation using damage.

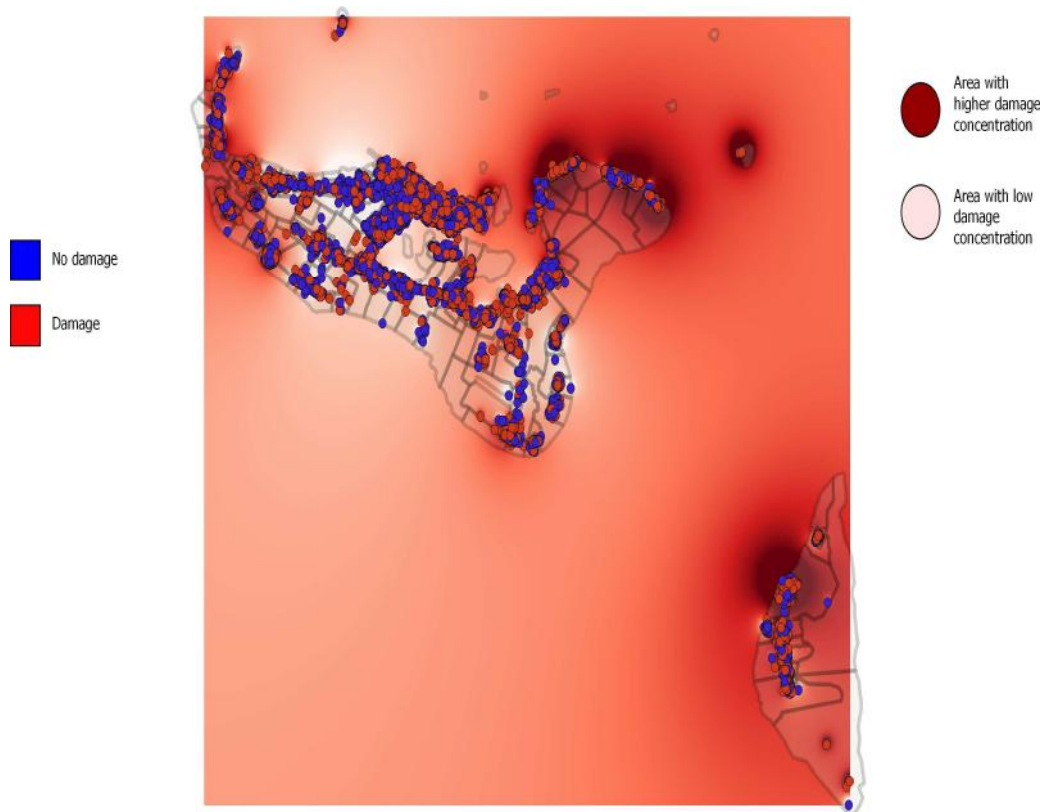


Figure 11: Map 2. Rood damage after the cyclone. Tongatapu and Eua. Values after interpolation using damage.

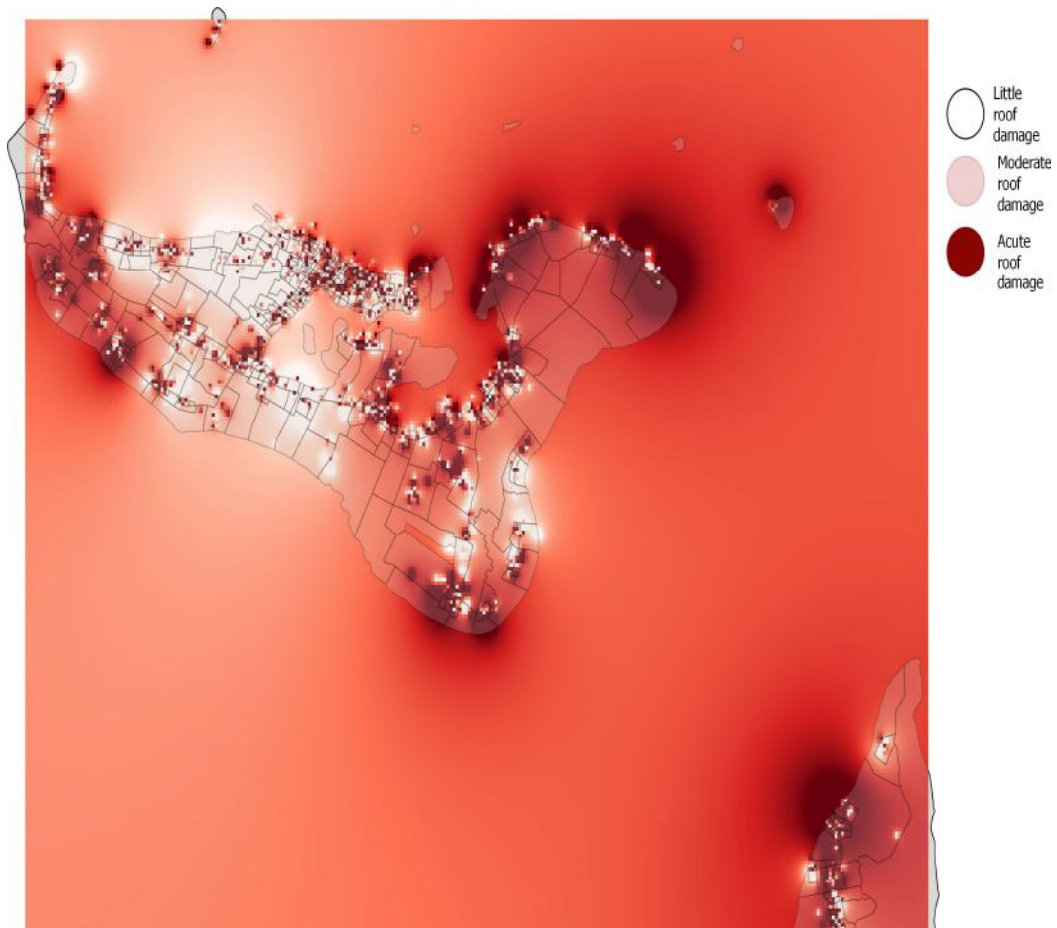
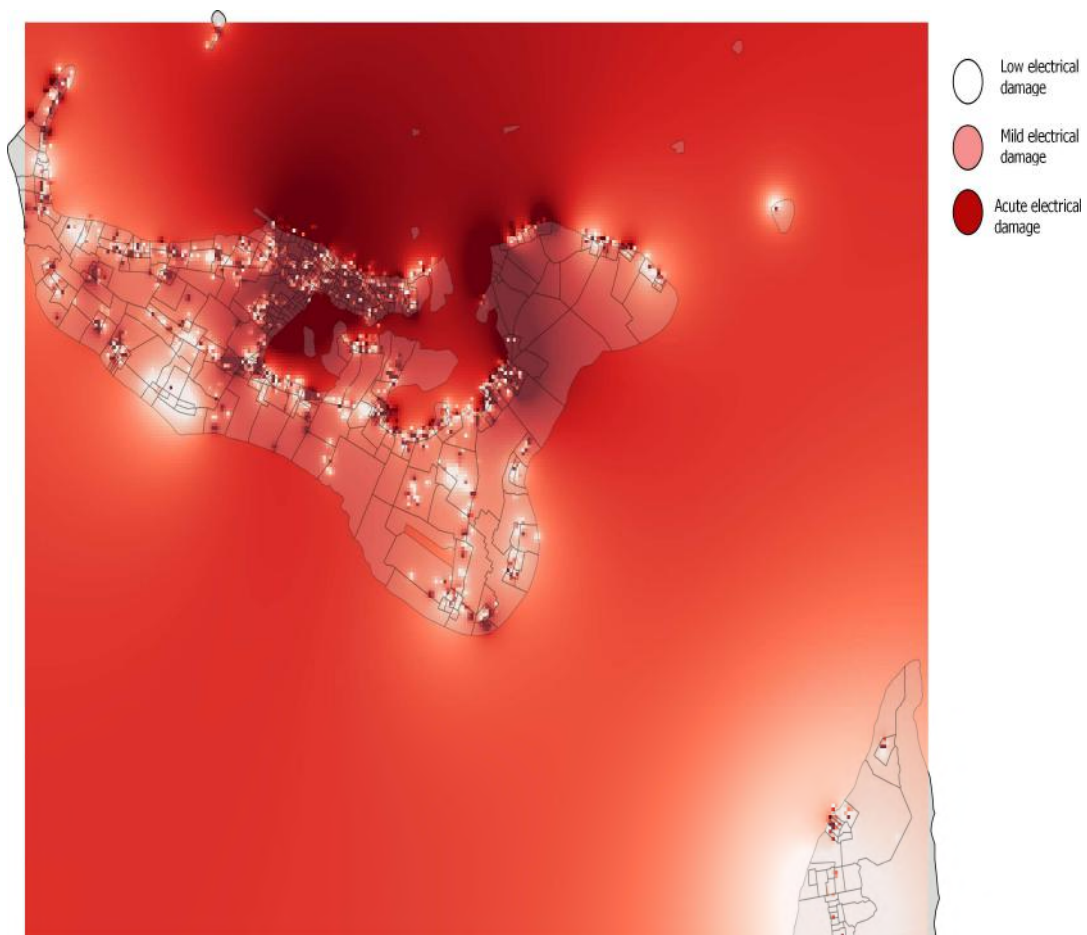


Figure 12: Map 3. Electrical damage after the cyclone. Tongatapu and Eua. Values after interpolation using damage.



5 Conclusion

The cyclone GITA that hit Tonga in early 2018 produced material devastation at several levels in the main island (Tongatapu) and EUA in the south east. These two islands account by for more than 75% of the population in the country. The aftermath of the cyclone was quickly assessed using a census focused on the extent of the damage and the immediate needs of the population.

Around 55% of the population was affected by GITA in some way and 10% of the population experienced a form of devastation, i.e. major damage or destruction of their dwelling. Understandably, given the nature of the disaster, most of the damage happened to the exteriors of the houses in Tonga. The roofs, walls and windows were the parts of the houses that were more likely to be affected by the cyclone. When looking at the damage caused to utilities and assets, the electrics and water connection were the two most likely affectations. However, in rare cases these two were destroyed by GITA. The damage to the sanitation services, although less frequent, tended to be more acute. Destruction of toilets, bathrooms and sewage systems was more prevalent than in, for example, electrics or water connection.

At the time of collection of the survey, around 31% of households had not repaired their damage. Most of fixings (60%) were conducted by members of the households and relied on their own resources -mainly by reusing existing materials- to do so. In terms of the demands of the population at the time of the data collection, most households declared that they needed repair their items rather than a complete replacement. However, because destruction of sanitation facilities was more prevalent, the population declared that these items needed to be rebuilt.

Some households declared that they had received aid. However, almost 40% of people affected by the cyclone had yet to receive aid at the time of the interviews. Another 15% did not know that aid was available. The profile of the affected population suggests that the poorest were more likely to be affected by the cyclone. The higher the education attainment of the household head and the less the deprivation of household items, the lower the likelihood of being affected by the cyclone. This has to do with the construction materials of the house, as wealthier households are just made of more solid materials.

A key factor in explaining the damage caused by GITA is the location of the households. The most affected areas were the villages in the north west and north east in Tongatapu and in the west in Eua. Based on these data the policy response should prioritize sanitation and the areas in the north of the main island and the most populated area in Eua.

6 Appendices

Table 16: Type of shelter

	%	N
Church	36	8,735
Community Hall	5	1,180
School	2	400
Relatives/ Friends	33	8,107
Neighbours	21	5,256
Guest House/ Hotel	1	160
Others	3	676

Table 17: Household and other dwellings damage

General damage			Main household		Other residential dwelling		
	%	N	%	N	%	N	
No damage	43	32,655	None	47	35,829	83	62,985
Damaged	57	43,631	Yes, Minimal damages	23	17,324	7	4,961
			Yes, Minor damaged	19	14,554	5	3,907
			Yes, Major damaged	8	6,051	3	2,369
			Yes, destroyed	3	2,528	3	2,064

Table 18: Household exterior damage

	Damage	Destroyed	Total	
	Row 100%		%	N
	%	%		
Roof	77	23	48	36,376
Structure	53	47	19	14,123
Walls	53	47	14	10,381
Windows	46	54	11	8,345
Foundation	21	79	1	1,083
Other	82	18	2	1,778

Table 19: Household utilities and assets damage

	Damage	Destroyed	Total	
	Row 100%		%	N
	%	%		
Electrical	89	11	37	28,514
Water Connection	95	5	24	18,042
Toilet	76	24	14	10,504
Bathroom	74	26	12	9,263
Sewerage	66	34	1	762
Household items	75	25	19	14,484
Hoe	74	26	3	1,953
Knapsack	48	52	3	2,315
Tractor	98	2	0.1	81
Screen	52	48	0.2	192
Boat	55	45	0.4	278
Fishing	57	43	0.9	666

Table 20: Household exterior damage by village

Village	Roof	Structure	Wall	Window	Foundation	Other
Kolofo'ou in Ton	51	16	11	10	1	3
Ma'ufanga	51	20	13	12	2	3
Nukumotu	56	37	37	37	28	0
Popua	43	21	18	16	2	9
Tukutonga	69	32	55	33	12	3
Kolomotu'a	41	19	13	11	1	3
Havelu	35	15	7	6	1	1
Tofoa	37	9	9	7	1	3
Hofoa	36	13	7	8	0	2
Puke	36	19	16	14	1	2
Sia'atoutai	21	5	4	4	1	0
Vaini	52	18	13	11	3	1
Malapo	46	24	16	12	3	1
Longoteme	58	26	15	14	1	0
Folaha	50	21	8	8	0	0
Nukuhetulu	40	8	7	2	0	0
Veitongo	27	12	8	2	1	3
Ha'ateiho	38	14	8	6	0	1
Pea	56	21	10	10	2	1
Tokomololo	48	21	14	6	0	2
Tatakamotonga	49	18	15	11	0	1
Holonga in Tonga	59	20	17	16	0	1
Pelehake	49	20	14	12	2	0
Fua'amotu	55	19	16	11	2	2
Nakolo	62	8	18	11	1	5
Ha'asini	46	11	11	7	1	2
Lavengatonga	42	9	8	13	0	0
Haveluliku	53	41	26	26	0	0
Fatumu	34	11	13	15	4	0
Lapaha	52	18	18	13	1	0
Talasiu	61	41	47	32	11	0
Hoi	49	32	23	18	0	1
Nukuleka	70	3	15	3	0	0
Makaunga	66	33	26	21	3	2
Talafo'ou	60	16	24	19	0	4
Manuka	51	12	11	6	0	3
Navutoka	62	31	16	14	2	12
Kolonga	51	20	16	12	1	9

Table 21: Continued household exterior damage by village

Village	Roof	Structure	Wall	Window	Foundation	Other
Afa	66	41	19	24	4	2
Niutoua	62	27	20	17	1	4
Eueiki	60	24	13	27	0	0
NUkunuku	36	13	11	10	1	1
Matahau	60	23	15	18	3	2
Matafonua	49	15	4	8	0	0
Fatai	49	14	18	14	3	0
Lakepa	41	10	21	16	2	0
Vaotu'u	56	24	11	14	0	6
Utulau	40	14	5	4	2	3
Ha'alalo	44	18	21	13	0	0
Ha'akame	40	17	17	10	1	1
Houma in Tongata	58	27	17	14	1	2
Kolovai	47	20	15	11	1	1
Te'ekiu	64	32	11	11	1	2
Masilamea	44	22	9	7	0	1
Fahefa	60	25	10	6	3	0
Ha'utu	51	20	11	0	0	0
Kala'au	59	28	18	9	2	7
Fo'ui	58	41	24	17	0	1
Ha'avakatolo	37	37	21	15	0	1
Ahau	44	45	30	10	4	0
Kanokupolu	57	30	24	3	0	0
Ha'atafu	33	26	13	11	0	0
Atata	48	17	24	29	2	0
Ohonua	60	20	22	16	2	3
Tufuvai	34	9	5	0	0	0
Pangai in Eua	55	7	10	10	1	7
Houma in Eua	46	7	16	15	4	4
Ha'atu'a / Kolom	52	10	17	7	1	3
Ta'anga	62	15	12	12	1	12
Angaha	64	23	11	20	2	3
Futu	54	9	16	11	1	0
Esia in Eua	51	7	4	1	0	0
Sapa'ata in Eua	49	7	13	8	4	7
Fata'ulua in Eua	61	17	10	10	0	0
Mu'a in Eua	65	13	10	11	4	1
Tongamama'o in E	53	2	4	2	2	4
Petani in Eua	50	9	17	6	0	0
Mata'aho in Eua	34	2	10	7	2	3
Total	48	19	14	11	1	2

Table 22: Household utilities and assets damage by village

Village	Electrical	Water connection	Toilet	Bathroom	Sewage tank	HH items	Hoe	Knapsack	Tractor	Screen	Boat	Fishing	Post-disaster assessment (GITA Cyclone)
Kolofo'ou in Ton	41	23	7	6	1	19	2	1	0	0	0	0	1
Ma'ufanga	50	35	10	10	1	17	0	0	0	0	0	0	1
Nukumotu	5	2	37	37	9	42	0	0	0	0	0	0	44
Popua	41	22	17	15	0	27	1	0	0	0	0	1	2
Tukutonga	26	21	40	42	4	34	1	0	0	0	0	9	11
Kolomotu'a	56	34	8	7	1	16	0	1	0	0	0	0	0
Havelu	69	52	7	5	0	14	1	0	0	0	1	0	1
Tofoa	57	39	4	4	0	17	0	1	0	0	0	1	0
Hofoa	18	2	7	7	0	11	0	1	0	0	0	0	0
Puke	28	13	7	7	1	13	0	1	0	0	0	0	1
Sia'atoutai	25	23	12	11	0	10	0	0	0	0	0	0	0
Vaini	29	19	14	11	5	18	2	3	0	0	0	0	1
Malapo	28	22	3	3	0	15	0	2	0	0	0	0	0
Longoteme	27	20	5	4	0	13	0	0	0	0	0	0	0
Folaha	26	17	2	2	1	7	0	3	0	0	0	1	0
Nukuhetulu	40	9	9	9	0	10	1	1	0	0	0	3	0
Veitongo	31	27	10	8	0	10	1	2	0	0	0	0	0
Ha'ateiho	27	28	13	9	1	12	3	4	0	0	0	0	1
Pea	21	17	13	11	1	20	1	2	1	0	0	0	1
Tokomololo	50	38	11	8	0	19	1	6	1	1	0	0	0
Tatakamotonga	40	36	12	12	0	20	3	5	0	0	0	0	0
Holonga in Tonga	26	5	26	26	1	16	4	7	0	0	1	0	2
Pelehake	10	5	26	21	2	25	3	3	0	0	0	0	0
Fua'amotu	23	16	22	19	1	19	3	7	1	0	0	0	0
Nakolo	35	29	25	21	3	1	3	4	1	2	0	0	0
Ha'asini	23	8	25	22	0	6	0	2	0	0	0	0	0
Lavengatonga	18	7	29	15	0	5	0	0	0	0	0	0	0
Haveluliku	26	0	40	38	3	3	0	6	0	0	0	0	6
Fatumu	18	0	12	11	0	8	0	0	0	0	0	0	0
Lapaha	46	27	14	11	1	10	4	5	0	0	0	0	0
Talasiu	66	41	38	37	0	20	0	0	0	0	0	0	0
Hoi	61	38	16	16	0	8	0	0	0	0	0	2	2
Nukuleka	44	12	7	8	3	3	3	3	0	0	0	0	7
Makaunga	78	40	19	16	0	15	6	2	0	0	0	4	0
Talafo'ou	79	38	11	8	5	5	3	0	0	0	0	0	0
Manuka	64	25	4	3	0	0	8	4	0	0	0	0	0
Navutoka	30	7	17	17	1	38	1	5	0	3	0	0	2
Kolonga	24	9	17	17	1	31	0	4	0	0	0	0	0

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Table 23: Continues household utilities and assets damage by village

Village	Electrical	Water connection	Toilet	Bathroom	Sewage tank	HH items	Hoe	Knapsack	Tractor	Screen	Boat	Fishing
Afa	38	12	28	27	2	29	2	1	0	4	5	2
Niutoua	23	10	28	28	0	27	3	1	0	1	0	0
Eueiki	17	3	0	0	0	14	0	0	0	0	0	0
NUkunuku	28	26	11	12	0	23	1	1	1	0	0	0
Matahau	45	44	26	25	0	45	4	6	0	0	0	0
Matafonua	24	16	16	14	0	48	13	8	1	0	0	0
Fatai	46	24	24	24	2	26	5	5	0	3	0	1
Lakepa	35	14	11	11	0	26	0	5	0	0	0	1
Vaotu'u	34	8	20	19	2	37	0	4	0	0	0	0
Utulau	2	0	5	6	1	33	1	2	0	0	0	0
Ha'alalo	7	0	14	14	0	28	0	2	0	0	0	0
Ha'akame	8	1	9	7	0	27	0	0	0	0	1	0
Houma in Tongata	31	15	18	18	1	28	25	18	0	0	0	2
Kolovai	9	0	3	3	0	15	37	24	0	0	0	3
Te'ekiu	13	6	24	22	0	31	29	16	0	0	0	2
Masilamea	13	10	22	18	3	24	4	6	0	0	0	0
Fahefa	23	12	26	16	5	28	6	8	0	2	0	2
Ha'utu	29	18	29	21	5	42	0	4	0	0	0	0
Kala'au	36	35	39	20	13	45	3	0	0	0	0	3
Fo'ui	35	14	23	15	2	38	8	4	0	0	0	2
Ha'avakatolo	33	12	30	15	12	27	8	8	0	0	0	0
Ahau	36	40	45	38	3	36	5	11	0	0	0	0
Kanokupolu	34	33	42	30	7	20	0	0	0	0	4	15
Ha'atafu	35	24	27	19	1	28	2	7	0	0	0	5
Atata	29	9	53	53	5	39	0	0	0	0	11	24
Ohonua	20	4	26	24	0	26	2	8	0	0	0	1
Tufuvai	0	3	9	9	0	2	7	9	0	3	0	0
Pangai in Eua	14	3	36	34	0	18	2	10	2	0	0	0
Houma in Eua	21	8	39	29	0	13	2	6	0	0	0	6
Ha'atu'a / Kolom	8	1	27	22	2	14	2	14	0	1	0	0
Ta'anga	19	20	32	30	0	13	0	8	0	0	0	0
Angaha	11	7	23	24	0	29	0	1	0	0	0	1
Futu	12	8	24	23	0	21	3	3	2	0	0	0
Esia in Eua	11	10	15	13	0	14	0	0	0	0	0	3
Sapa'ata in Eua	4	0	29	32	0	10	0	6	0	0	0	0
Fata'ulua in Eua	0	0	34	36	0	11	1	19	0	0	0	0
Mu'a in Eua	24	0	31	35	0	23	0	0	0	0	0	0
Tongamama'o in E	6	6	20	20	0	0	5	0	0	0	0	0
Petani in Eua	8	5	28	32	0	7	0	2	0	0	0	0
Mata'aho in Eua	0	0	19	14	0	9	1	14	0	0	0	0
Total	37	24	14	12	1	19	3	3	0	0	0	1

Table 24: Roof damage by different household-level characteristics

	Roof damage		Total %
	Not damaged %	Damaged %	
Education attainment head household			
None	48	52	100
Primary	50	50	100
Lower secondary (Form 1-Form 4)	47	53	100
Upper secondary (Forms 5-Form 7)	52	48	100
Technical and Vocational (TVET)	57	43	100
University	63	37	100
Total	52	48	100
Disability HH			
not disable	54	46	100
disable	48	52	100
Total	52	48	100
Sex HH			
Male (Tangata)	53	47	100
Female (Fefine)	50	50	100
Total	52	48	100
MD index from IRT in quintiles			
Very low deprivation	64	36	100
Low deprivation	56	44	100
Moderate deprivation	55	45	100
High Deprivation	48	52	100
Very high deprivation	38	62	100
Total	52	48	100
Island			
Tongatapu	53	47	100
'Eua	46	54	100
Total	52	48	100

Table 25: Roof structure damage by different household-level characteristics

	Roof structure damage		Total
	Not damaged	Damaged	
	%	%	%
Education attainment head household			
None	75	25	100
Primary	80	20	100
Lower secondary (Form 1-Form 4)	79	21	100
Upper secondary (Forms 5-Form 7)	81	19	100
Technical and Vocational (TVET)	83	17	100
University	87	13	100
Total	81	19	100
Disability HH			
not disable	82	18	100
disable	80	20	100
Total	81	19	100
Sex HH			
Male (Tangata)	82	18	100
Female (Fefine)	81	19	100
Total	81	19	100
MD index from IRT in quintiles			
Very low deprivation	88	12	100
Low deprivation	85	15	100
Moderate deprivation	85	15	100
High Deprivation	80	20	100
Very high deprivation	69	31	100
Total	81	19	100
Island			
Tongatapu	81	19	100
'Eua	87	13	100
Total	81	19	100

Table 26: Wall damage by different household-level characteristics

	Wall damage		Total %
	Not damaged %	Damaged %	
Education attainment head household			
None	86	14	100
Primary	81	19	100
Lower secondary (Form 1-Form 4)	82	18	100
Upper secondary (Forms 5-Form 7)	87	13	100
Technical and Vocational (TVET)	89	11	100
University	93	7	100
Total	86	14	100
Disability HH			
not disable	86	14	100
disable	86	14	100
Total	86	14	100
Sex HH			
Male (Tangata)	86	14	100
Female (Fefine)	86	14	100
Total	86	14	100
MD index from IRT in quintiles			
Very low deprivation	94	6	100
Low deprivation	90	10	100
Moderate deprivation	89	11	100
High Deprivation	85	15	100
Very high deprivation	73	27	100
Total	86	14	100
Island			
Tongatapu	86	14	100
'Eua	86	14	100
Total	86	14	100

Table 27: Window damage by different household-level characteristics

	Windows damage		Total %
	Not damaged %	Damaged %	
Education attainment head household			
None	89	11	100
Primary	85	15	100
Lower secondary (Form 1-Form 4)	88	12	100
Upper secondary (Forms 5-Form 7)	89	11	100
Technical and Vocational (TVET)	91	9	100
University	92	8	100
Total	89	11	100
Disability HH			
not disable	89	11	100
disable	88	12	100
Total	89	11	100
Sex HH			
Male (Tangata)	89	11	100
Female (Fefine)	88	12	100
Total	89	11	100
MD index from IRT in quintiles			
Very low deprivation	94	6	100
Low deprivation	92	8	100
Moderate deprivation	92	8	100
High Deprivation	89	11	100
Very high deprivation	78	22	100
Total	89	11	100
Island			
Tongatapu	89	11	100
'Eua	89	11	100
Total	89	11	100

Table 28: Foundation damage by different household-level characteristics

	Foundation damage		Total %
	Not damaged %	Damaged %	
Education attainment head household			
None	98	2	100
Primary	98	2	100
Lower secondary (Form 1-Form 4)	98	2	100
Upper secondary (Forms 5-Form 7)	99	1	100
Technical and Vocational (TVET)	99	1	100
University	99	1	100
Total	99	1	100
Disability HH			
not disable	99	1	100
disable	98	2	100
Total	99	1	100
Sex HH			
Male (Tangata)	99	1	100
Female (Fefine)	99	1	100
Total	99	1	100
MD index from IRT in quintiles			
Very low deprivation	99	1	100
Low deprivation	99	1	100
Moderate deprivation	99	1	100
High Deprivation	99	1	100
Very high deprivation	96	4	100
Total	99	1	100
Island			
Tongatapu	99	1	100
'Eua	98	2	100
Total	99	1	100

Table 29: Electrical damage by different household-level characteristics

	Electrical Damage		Total %
	Not damaged %	Damaged %	
Education attainment head household			
None	73	27	100
Primary	64	36	100
Lower secondary (Form 1-Form 4)	64	36	100
Upper secondary (Forms 5-Form 7)	62	38	100
Technical and Vocational (TVET)	59	41	100
University	62	38	100
Total	63	37	100
Disability HH			
not disable	63	37	100
disable	61	39	100
Total	63	37	100
Sex HH			
Male (Tangata)	63	37	100
Female (Fefine)	62	38	100
Total	63	37	100
MD index from IRT in quintiles			
Very low deprivation	60	40	100
Low deprivation	62	38	100
Moderate deprivation	64	36	100
High Deprivation	64	36	100
Very high deprivation	63	37	100
Total	63	37	100
Island			
Tongatapu	61	39	100
'Eua	88	12	100
Total	63	37	100

Table 30: Water connection damage by different household-level characteristics

	Water Connection damage		
	Not damaged	Damaged	Total
	%	%	%
Education attainment head household			
None	84	16	100
Primary	79	21	100
Lower secondary (Form 1-Form 4)	78	22	100
Upper secondary (Forms 5-Form 7)	76	24	100
Technical and Vocational (TVET)	72	28	100
University	76	24	100
Total	76	24	100
Disability HH			
not disable	77	23	100
disable	75	25	100
Total	76	24	100
Sex HH			
Male (Tangata)	76	24	100
Female (Fefine)	76	24	100
Total	76	24	100
MD index from IRT in quintiles			
Very low deprivation	72	28	100
Low deprivation	75	25	100
Moderate deprivation	77	23	100
High Deprivation	79	21	100
Very high deprivation	78	22	100
Total	76	24	100
Island			
Tongatapu	75	25	100
'Eua	95	5	100
Total	76	24	100

Table 31: Toilet damage by different household-level characteristics

	Toilet damage		Total %
	Not damaged %	Damaged %	
Education attainment head household			
None	87	13	100
Primary	80	20	100
Lower secondary (Form 1-Form 4)	82	18	100
Upper secondary (Forms 5-Form 7)	87	13	100
Technical and Vocational (TVET)	89	11	100
University	92	8	100
Total	86	14	100
Disability HH			
not disable	87	13	100
disable	83	17	100
Total	86	14	100
Sex HH			
Male (Tangata)	86	14	100
Female (Fefine)	86	14	100
Total	86	14	100
MD index from IRT in quintiles			
Very low deprivation	95	5	100
Low deprivation	93	7	100
Moderate deprivation	88	12	100
High Deprivation	84	16	100
Very high deprivation	72	28	100
Total	86	14	100
Island			
Tongatapu	87	13	100
'Eua	74	26	100
Total	86	14	100

Table 32: Bathroom damage by different household-level characteristics

	Bathroom damage		Total
	Not damaged	Damaged	
	%	%	%
Education attainment head household			
None	91	9	100
Primary	82	18	100
Lower secondary (Form 1-Form 4)	84	16	100
Upper secondary (Forms 5-Form 7)	89	11	100
Technical and Vocational (TVET)	90	10	100
University	93	7	100
Total	88	12	100
Disability HH			
not disable	89	11	100
disable	85	15	100
Total	88	12	100
Sex HH			
Male (Tangata)	88	12	100
Female (Fefine)	88	12	100
Total	88	12	100
MD index from IRT in quintiles			
Very low deprivation	96	4	100
Low deprivation	94	6	100
Moderate deprivation	90	10	100
High Deprivation	85	15	100
Very high deprivation	74	26	100
Total	88	12	100
Island			
Tongatapu	89	11	100
'Eua	75	25	100
Total	88	12	100

Table 33: Sewerage tank damage by different household-level characteristics

	Sewerage tank damage		
	Not damaged	Damaged	Total
	%	%	%
Education attainment head household			
None	99	1	100
Primary	98	2	100
Lower secondary (Form 1-Form 4)	99	1	100
Upper secondary (Forms 5-Form 7)	99	1	100
Technical and Vocational (TVET)	99	1	100
University	99	1	100
Total	99	1	100
Disability HH			
not disable	99	1	100
disable	99	1	100
Total	99	1	100
Sex HH			
Male (Tangata)	99	1	100
Female (Fefine)	99	1	100
Total	99	1	100
MD index from IRT in quintiles			
Very low deprivation	99	1	100
Low deprivation	99	1	100
Moderate deprivation	99	1	100
High Deprivation	99	1	100
Very high deprivation	98	2	100
Total	99	1	100
Island			
Tongatapu	99	1	100
'Eua	100	0	100
Total	99	1	100

Table 34: Household items damage by different household-level characteristics

	Household Items damage		
	Not damaged	Damaged	Total
	%	%	%
Education attainment head household			
None	86	14	100
Primary	84	16	100
Lower secondary (Form 1-Form 4)	79	21	100
Upper secondary (Forms 5-Form 7)	80	20	100
Technical and Vocational (TVET)	82	18	100
University	85	15	100
Total	81	19	100
Disability HH			
not disable	82	18	100
disable	79	21	100
Total	81	19	100
Sex HH			
Male (Tangata)	81	19	100
Female (Fefine)	81	19	100
Total	81	19	100
MD index from IRT in quintiles			
Very low deprivation	86	14	100
Low deprivation	84	16	100
Moderate deprivation	83	17	100
High Deprivation	79	21	100
Very high deprivation	71	29	100
Total	81	19	100
Island			
Tongatapu	81	19	100
'Eua	83	17	100
Total	81	19	100

Table 35: Sources for repairing external damages

	%	N
No repairs	31	13,441
Members of the household	59	25,530
Friends or Family	8	3,347
Hired Labour	2	681
Construction Builders	1	233
Organisation, Church, charity	1	360
Other source	0.1	39
Total	100	43,631

Table 36: Expected repair or replacement of damaged household utilities

	Repair	Replace	Total	
	Row 100%		%	N
	%	%	%	N
Electrical work	93	7	31	23,805
Water connection	97	3	21	15,714
Toilet	87	13	10	7,650
Bathroom	86	14	9	6,702
Sewerage tank	72	28	1	372
Household items	83	17	14	11,023

Table 37: Request and need of aid

	%	N
With damage but not asked about aid	36	27,497
Aid not needed	5	3,745
Needed but not received	12	9,458
Did not know aid was available	3	2,468
Other	1	463
No damage	43	32,655
Total	100	76,286