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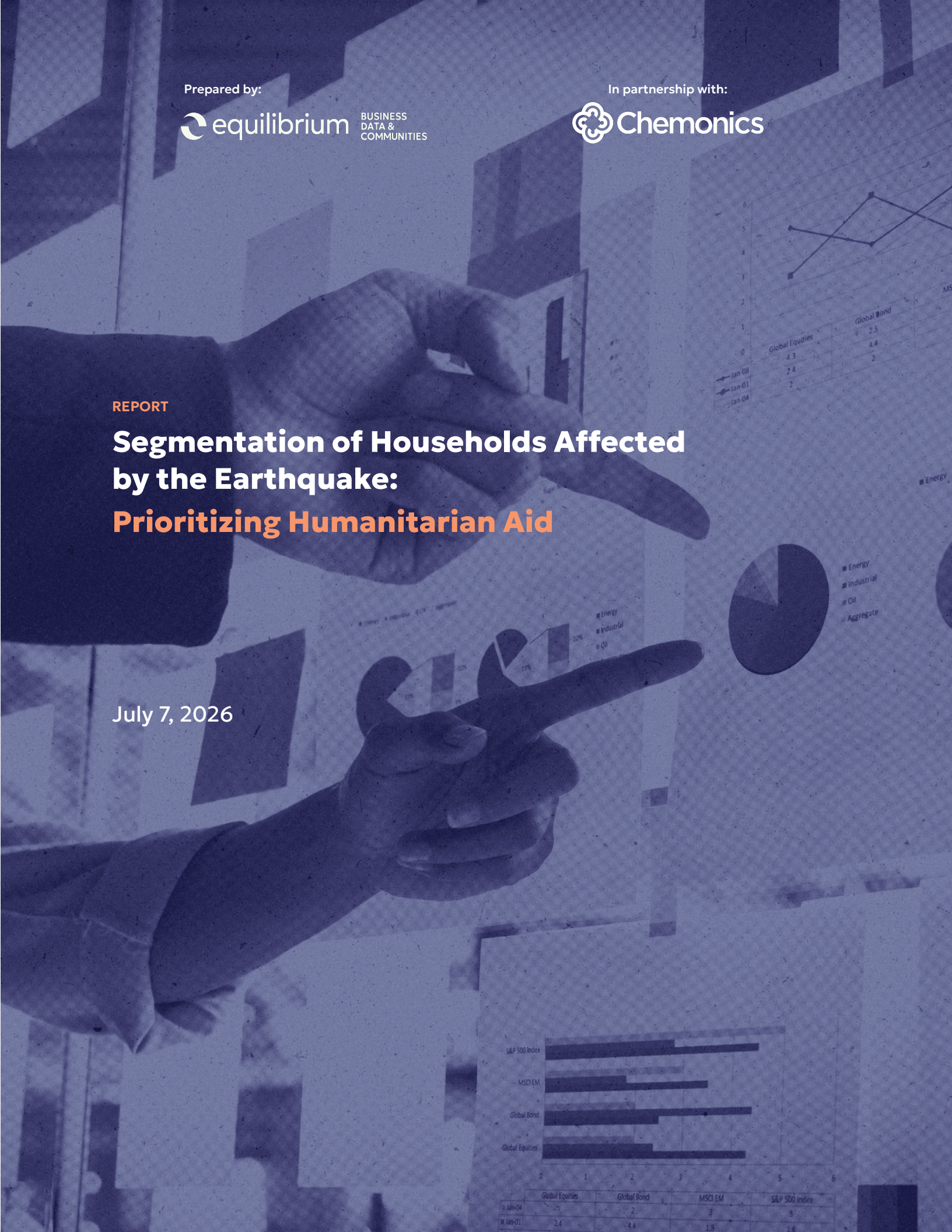
REPORT

Segmentation of Households Affected by the Earthquake:

Prioritizing Humanitarian Aid

July 7, 2026



1. INTRODUCTION

The magnitude 7.2–7.5 earthquake that struck north-central Venezuela on June 24, 2026 did not affect the population uniformly. The same seismic event produced, across the same territory, radically different damage trajectories: households that lost their home and their source of income on the same day, and neighboring households that, with lighter damage, retained much of their ability to cope. Understanding that heterogeneity — not just its aggregate magnitude — is the starting point for designing an effective response.

To guide the response, Equilibrium conducted a phone-based needs survey of 525 households that experienced some form of impact in the hardest-hit municipalities, covering housing damage, displacement, food security, access to water, sanitation and health, basic services, protection, and aid received to date.

This report presents a segmentation (clustering) analysis built from that survey. Its objective is not to describe the general averages of the affected population — which have already been reported separately — but to identify subgroups of households with distinct need and vulnerability profiles, so that differentiated responses can be designed instead of a single response for the entire population. The exercise grouped households not by their location, but by the similarity of their actual situation, and from that process four statistically distinct profiles emerged, described and quantified in detail in the Results section.

The rest of the report is organized in four parts: Section 2 describes the methodology used to build the clusters; Section 3 presents the four profiles identified along with their main indicators; Section 4 presents cluster-specific strategic recommendations aimed at those designing or adjusting the response; and Section 5 closes with the conclusions.

2. METHODOLOGY

The data come from the needs survey conducted by Equilibrium among 525 households. For the segmentation, 19 variables capturing need and vulnerability — not general demographics or location — were selected, organized into six dimensions: housing damage and displacement, food security, income loss, access to water, sanitation and health, basic services, and protection and information. To these are added two household composition variables (household size and number of members in a vulnerable situation: children under 5, older adults, pregnant or breastfeeding women, people with disabilities or chronic illness) and one variable summarizing how many types of aid the household has received to date.

The household's geographic location was deliberately excluded from the segmentation variables: the clusters were meant to reflect need, not origin, so that the geographic concentration of each group — reported in Section 3 — would be a result of the analysis rather than a starting assumption.

Each variable was coded according to its nature — severity scales as ordinal values, counts as numerical variables, and only displacement status as a categorical variable — and combined using Gower distance, the standard metric for datasets that mix variable types. From that distance matrix, hierarchical clustering with complete linkage was applied, the variant that produces more balanced partitions when the underlying metric is non-Euclidean.

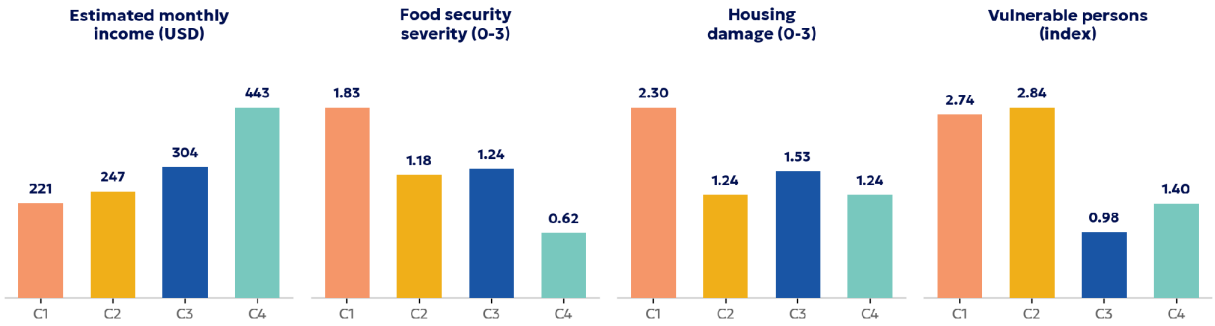
The number of clusters was determined by evaluating the silhouette coefficient for solutions ranging from 2 to 9 groups, discarding those in which any cluster represented less than 5% of households — fragments too small to justify a differentiated response. Maximizing the silhouette coefficient alone would have isolated a small, atypical group of 46 households from the rest of the sample, without adding further useful distinctions. The four-cluster solution — with a practically equivalent silhouette coefficient — instead makes it possible to distinguish, within the large group of non-displaced households, those carrying a high prevalence of chronic illness from those in a more resilient situation. For that reason, four clusters were adopted as the final result, numbered 1 through 4 according to a composite need index: Cluster 1 groups the households with the highest relative need, and Cluster 4 those with the lowest relative need.

Considerations and Limitations of the Analysis

- The composite indicators (food security severity, housing damage, vulnerability) are ordinal indices built from self-reported variables; they should be read as measures of relative intensity between clusters, not as absolute magnitudes comparable across different studies.
- The sample is concentrated in the municipalities with the greatest reported impact; the results characterize those areas robustly but should not be automatically extrapolated to areas not covered by the survey.
- The clusters describe households' situation at the time of the survey. The Recommendations section includes a proposed follow-up measurement to verify whether each segment's composition holds steady or shifts over time.

3. RESULTS: CLUSTER PROFILES

This section first presents a comparative reading of the four clusters through their most determinant indicators and their demographic and employment profile, and then develops the detailed profile of each segment, including its geographic concentration.



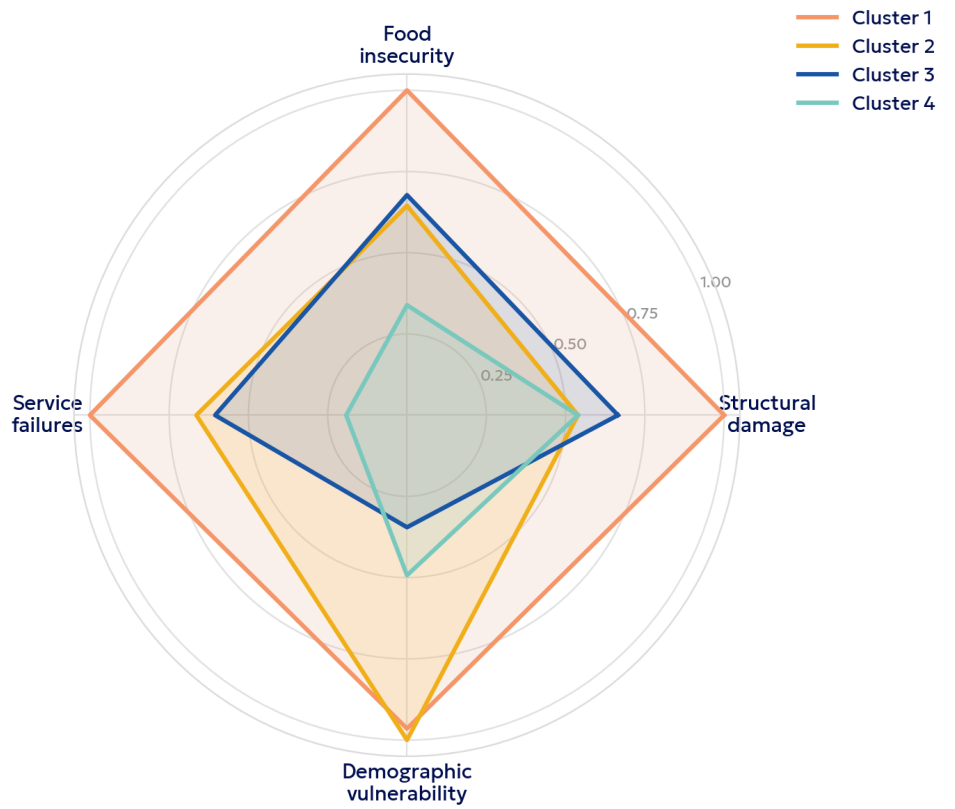
Average key indicators by cluster

Consolidated Comparative Table

Indicator	Cluster 1	Cluster 2	Cluster 3	Cluster 4
No. of households	46	142	168	169
% of sample	8.8%	27.0%	32.0%	32.2%
Housing damage (0-3)	2.30	1.24	1.53	1.24
Without adequate shelter (0-1)	0.28	0.07	0.25	0.04
Days without food (avg.)	2.09	1.50	1.65	1.25
Food security severity	1.83	1.18	1.24	0.62
Income loss	1.50	1.09	1.12	0.63
Est. monthly income (USD)	220.65	247.36	304.17	442.60
Sanitation service (failures)	1.28	0.65	0.79	0.33
Electricity (failures)	1.43	1.15	0.85	0.19
Household size (avg.)	4.83	4.04	3.38	3.87
Vulnerable persons (index)	2.74	2.84	0.98	1.40
Unaware of aid pathways	2.22	1.69	1.70	1.23
Dominant displacement pattern	To another area/municipality/state	Not displaced	Within the same community	Not displaced

A Four-Dimensional Need Index

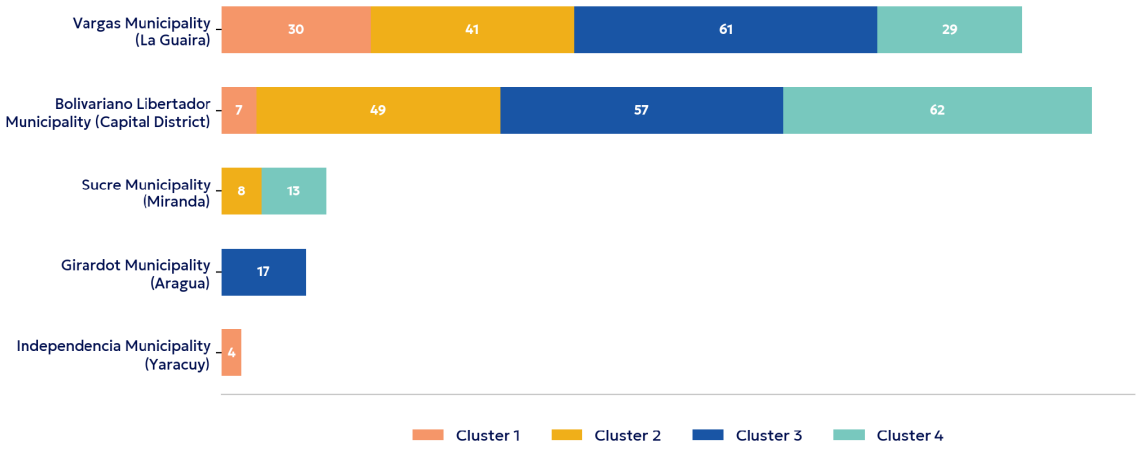
To compare clusters operating on different scales — dollars, days, headcounts — a relative need index was built: each dimension is normalized by dividing each cluster's value by the highest value observed in the sample for that same dimension, so that 1.00 always identifies the most affected cluster on that axis. The result, shown in the following chart, reveals at a glance that no cluster dominates all four dimensions at once: Cluster 1 leads in structural damage, food insecurity, and service failures, but it is Cluster 2 — not Cluster 1 — that tops demographic vulnerability.



Relative need index by dimension (1.00 = most affected cluster in that dimension)

Overall Geographic Distribution

Two of the hardest-hit municipalities — Vargas Municipality (La Guaira) and Bolivariano Libertador Municipality (Capital District) — simultaneously concentrate acute-crisis profiles and relatively resilient profiles, confirming that geography alone does not determine the type of need: households in critical emergency coexist with households with good recovery capacity within the same jurisdiction. Girardot Municipality (Aragua) and Independencia Municipality (Yaracuy), given their smaller sample weight, appear associated with a single dominant profile (Cluster 3 and Cluster 1, respectively), suggesting a more homogeneous impact in those specific localities — pending expanded sample coverage to confirm.



Distribution of households by cluster and main municipality

Cluster 1 · 46 households (9%) — Maximum severity, displaced to another municipality

Cluster 1 is, strictly speaking, a habitability emergency before it is an income problem: it combines the highest structural housing damage in the sample (2.30 on a 0-to-3 scale) with the largest share of households without adequate shelter (0.28) and simultaneous failures in sanitation service (1.28) and electricity (1.43). No other cluster accumulates failures in these three dimensions at once, indicating that the home is not only damaged but has ceased to provide minimum habitability conditions.

That infrastructure collapse translates directly into food insecurity: households in this segment go without food for 2.09 days on average — the highest value in the sample — and register the highest food security severity (1.83), against a backdrop of an estimated monthly income of just USD 220.65, the lowest of the four groups, and the largest income loss caused by the earthquake (1.50). The causal chain is legible in the data itself: without housing or services, the household's capacity to generate and sustain income deteriorates, and that deterioration is immediately reflected at the table.

Added to this accumulation of physical and economic damage is the largest household size in the sample (4.83 members) and the second-highest demographic vulnerability after Cluster 2 (2.74), with a pattern of displacement toward another area, municipality, or state — the only cluster where long-distance displacement is the norm rather than the exception. The most operationally significant data point in this profile is, perhaps, the least visible one: a score of 2.22 for unawareness of aid pathways, the highest of the four clusters, revealing that this segment not only concentrates the greatest need but also has the least capacity to access available assistance on its own initiative.

Geographic Concentration

Municipality	No. of Households	% of Cluster
Vargas Municipality (La Guaira)	30	65.2%
Bolivariano Libertador Municipality (Capital District)	7	15.2%
Independencia Municipality (Yaracuy)	4	8.7%

Cluster 2 · 142 households (27%) — High severity

At first glance, Cluster 2 looks like a lower-urgency profile: it reports no displacement, and its housing damage is comparatively low (1.24), with service failures noticeably lower than Cluster 1's. Read only through those variables, this segment would rank below Cluster 3 on the priority scale. Yet it is precisely the cluster with the highest vulnerable-persons index in the entire sample (2.84, even higher than Cluster 1), and that figure is not a statistical artifact: it responds to a concrete demographic composition, with an average of 0.98 people aged 60 or older per household — the highest concentration of older adults among the four segments — and the heaviest burden of chronic illness (1.19 people per household).

In food security and economic terms, the cluster occupies an intermediate position: 1.50 days without food on average and an estimated monthly income of USD 247.36, just above Cluster 1. It is also the segment with the highest share of households whose prior employment status was retired or pensioned (17.6%) and the lowest rate of formal employment with fixed salary (26.8%) among the four clusters, suggesting a structurally more rigid income base that is less able to recover on its own in the face of an economic shock.

This is, on average, the cluster that has received the fewest types of aid since the earthquake (1.0 of 6 possible types) — a signal that current assistance is not reaching this group in proportion to its need, likely because it does not appear at distribution points associated with shelters or displacement.

Geographic Concentration

Municipality	No. of Households	% of Cluster
Bolivariano Libertador Municipality (Capital District)	49	34.5%
Vargas Municipality (La Guaira)	41	28.9%
Sucre Municipality (Miranda)	8	5.6%

Cluster 3 · 168 households (32%) — Medium-high severity

With 168 households, Cluster 3 is the largest segment in the sample and, in several respects, the most representative of a "typical" impact: moderate housing damage (1.53), a share of households without adequate shelter of 0.25, and a displacement pattern within the same community or local area — unlike the longer-distance displacement that dominates in Cluster 1 — suggesting that the household's link to its immediate surroundings was not entirely broken.

In food and economic terms, this cluster records 1.65 days without food on average, a food security severity of 1.24, and an estimated monthly income of USD 304.17, higher than Clusters 1 and 2. It is also the segment with the second-strongest prior employment base after Cluster 4: 38.7% of households relied on formal employment with a fixed salary before the earthquake, and in 61.9% of cases the main economic provider is an adult man — the highest share among the four clusters.

The most distinctive trait of this profile is the near-total absence of demographic vulnerability: the vulnerable-persons index is just 0.98 — less than a third of what is observed in Clusters 1 and 2 — and the count of household members with chronic illness is only 0.08, the lowest value in the sample. That combination of moderate damage, an active economic base, and a low protection burden explains why this segment offers, household by household, the highest return per unit of investment in stabilization.

Geographic Concentration

Municipality	No. of Households	% of Cluster
Vargas Municipality (La Guaira)	61	36.3%
Bolivariano Libertador Municipality (Capital District)	57	33.9%
Girardot Municipality (Aragua)	17	10.1%

Cluster 4 · 169 households (32%) — The most resilient group

Across the four dimensions analyzed, Cluster 4 is the profile with the best indicators in the sample: the lowest housing damage (1.24), the smallest share of households without adequate shelter (0.04), and the lowest values for sanitation service failures (0.33) and electricity failures (0.19). No household in the segment reports displacement.

That structural strength has an identifiable economic base: it is the cluster with the highest share of formal employment with a fixed salary before the earthquake (53.3%, well above the rest), which largely explains why it also shows the best food and economic indicators — 1.25 days without food on average, the lowest food security severity (0.62), the smallest income loss (0.63), and the highest estimated monthly income in the sample (USD 442.60), double that of Cluster 1. Demographic vulnerability is low (1.40) and household size is intermediate (3.87 members).

It is important to stress that "resilient" does not mean "without need": this segment was affected by the earthquake too, and its recovery can accelerate or stall depending on the type of support it

receives. The difference relative to the other clusters is not whether it needs support, but what type of instrument benefits it most — one that leverages its active economic base, rather than one designed to compensate for the absence of that base.

Geographic Concentration

Municipality	No. of Households	% of Cluster
Bolivariano Libertador Municipality (Capital District)	62	36.7%
Vargas Municipality (La Guaira)	29	17.2%
Sucre Municipality (Miranda)	13	7.7%

4. RECOMMENDATIONS BY CLUSTER

The four profiles call for different intervention approaches. Below are cluster-specific recommendations, followed by a cross-cutting recommendation on prioritization sequencing.

Cluster 1 — Focus: Emergency Stabilization and Restoring Habitability

Requires an immediate, simultaneous multi-sector response combining emergency liquidity, reconstruction, and protection:

- Emergency shelter or support for safe relocation.
- Immediate food and water assistance.
- Continuity of care for chronic illness through mobile health brigades, given that these households are displaced outside their usual care network.
- Short-term cash assistance, prioritized over the delivery of specific goods, given the combination of severe food insecurity and income loss.
- Coordination with authorities and organizations in both the municipality of origin and the destination municipality — particularly Vargas Municipality (La Guaira) — given that these are households displaced outside their municipality or state.

Cluster 2 — Protecting Vulnerable Populations and Primary Health Care

This is the cluster where the gap between need and aid received is most evident, and the one that benefits most from an active outreach strategy rather than relying on households to reach distribution points:

- House-to-house visit routes in Bolivariano Libertador Municipality (Capital District) and Vargas Municipality (La Guaira), rather than shelter-centered mechanisms, given that these households did not displace.
- Continuous access to chronic medication through home-based or mobile health brigades, or partnerships with local pharmacies and health centers.
- Targeted support for older adults within the household to cover chronic illness treatment.

Cluster 3 — Local Temporary Shelter and Community Economic Recovery

With a low chronic-health burden and displacement within the same community, this group benefits more from economic recovery than from specialized medical assistance:

- Support for housing repair or recovery.
- Economic recovery programs: credit, seed capital, or replacement of work tools.

- Temporary employment or transfers conditioned on reactivating productive activities, leveraging the fact that these are younger households with greater physical capacity for labor reinsertion.

Cluster 4 — Productive Financing and Strengthening Local Capacities

This cluster does not require direct assistance as a priority, but rather economic recovery instruments that consolidate its resilience and free up resources for the critical clusters.

- Productive credit and guarantee lines, aimed at households with formal or self-employed economic activity, to accelerate income recovery.
- Strengthening local capacities through community resilience programs and preparedness for aftershocks or future seismic events.

In terms of sequencing, operational priority should follow the order Cluster 1 (immediate response), Cluster 2 (active outreach, given its gap between need and aid received), Cluster 3 (housing and livelihood recovery), and Cluster 4 (early recovery). The dataset accompanying this report includes the cluster assignment for each of the 525 households surveyed, along with their municipality and parish, allowing each organization to cross-reference this segmentation with its own geographic coverage and operational capacity.

5. CONCLUSION

The June 24, 2026 earthquake did not produce a homogeneous crisis, and treating it as one would be the most costly mistake the response could make. The 525 households analyzed fall into four distinct realities that call for four distinct instruments: liquidity and reconstruction for Cluster 1, active outreach and continuity of care for Cluster 2, livelihood recovery for Cluster 3, and productive financing for Cluster 4. The most important finding is not the magnitude of the damage, but its shape: vulnerability does not always match what is visible, and Cluster 2 — the one with the least structural damage but the highest protection risk — is the proof of it.

The central recommendation, then, is not an amount or a timeline, but a criterion: use the household's cluster, not the name of its municipality, as the unit of decision, since Vargas and Libertador simultaneously contain both the country's most critical and most resilient households. And because this segmentation describes households at a given point in time, not a permanent condition, repeating the measurement at 3, 6, and 12 months is the most direct way to know whether the response is working.