

INTENSITY AND MAGNITUDE SCALES FOR 'FAMINE'

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1. INTRODUCTION

In recent years, there has been considerable debate about the application of the term 'famine' to various crises around the world. Controversy has surrounded its use in Sudan (1998), Ethiopia (1999/2000), Malawi (2002), and a number of other countries. Recent attempts to develop an internationally accepted definition of 'famine' reflect an awareness of the potentially serious operational and political consequences of failing to resolve the ambiguities in its usage.

Operationally, the lack of consensus on a definition of famine has contributed to confusion and delays in implementing responses. In the period leading up to a crisis, disagreements over terminology and concepts have made it difficult for governments and donor agencies to interpret and act upon early warning information. Moreover, at the time of a crisis, principal stakeholders, such as non-governmental organizations (NGOs), governments, donors, media, and affected populations, have often been unable to reach consensus on whether or not a famine is occurring, adding to uncertainty about the seriousness of the crisis and the required scale of the response. The absence of benchmarks has also made it difficult to ensure that responses are equitable across crisis situations.

Politically, the absence of an agreed definition has made it difficult to hold relevant stakeholders accountable, where appropriate. Both during and after a crisis, it has been possible for stakeholders with nominal responsibility for ensuring the well-being of the affected population to contest the use of the term 'famine' and thereby evade even limited accountability for their actions (or inactions)².

2. INTENSITY SCALE

A potential way to address these differing sets of concerns is to make a distinction between the *intensity* and *magnitude* of a crisis³. Intensity refers to the severity of the crisis in a given area at a specific point in time. One reason that it has been so difficult to develop appropriate criteria for identifying a famine is that the situation on the ground during a crisis is dynamic and constantly evolving. A famine affects different areas to different degrees at different times, making it hard to employ a single label to characterize the entire situation. (It is common, for instance, to speak of a famine having an 'epicentre', suggesting that the impacts are more concentrated in some areas than in others.) The intensity parameter recognizes that famines do not have a uniform effect over an entire population area⁴.

A system of levels can be used to identify the intensity, or severity, of conditions in a given area and to make comparisons with the situation in other areas or in the same location at other times. The intensity level would be assigned to a population area using a combination of anthropometric and mortality indicators as well as food security descriptors⁵.

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² In addition to these operational and political considerations, a consistent definition is also important for making historical comparisons among crises.

³ A similar distinction is made in earthquake measurement.

⁴ The term 'population area' refers to the geographic location currently inhabited by the affected population.

⁵ Both the anthropometric indicators and the food security descriptors are illustrative at this point. Experts (including affected populations) would need to agree on appropriate criteria

Table 1: Intensity scale⁶

Level	Phrase designation	Malnutrition and mortality indicators	Food security descriptors ⁷
0	Food security conditions	CMR < 0.2 AND Wasting < 2.3%	Social system is cohesive; prices are stable; negligible use of coping strategies
1	Food insecurity conditions	CMR \geq 0.2 but < 0.5/10,000/day AND/OR Wasting \geq 2.3 but < 10%	Social system remains cohesive; price instability, and seasonal shortage of key items; 'reversible' coping strategies (.e.g. mild food rationing) are employed
2	Food crisis conditions	CMR \geq .5 but < 1/10,000/day AND/OR Wasting \geq 10% but < 20%	Social system is significantly stressed but remains largely cohesive; dramatic rise in price of food; 'reversible' coping strategies start to fail; increased adoption of 'irreversible' coping strategies
3	Famine conditions	CMR \geq 1 but < 5/10,000/day AND/OR Wasting \geq 20% but <40%	Clear signs of social breakdown appear; markets begin to close or collapse; 'coping strategies' exhausted, 'survival strategies' are more common; affected populations identify food as the dominant problem in the onset of the crisis
4	Severe famine conditions	CMR \geq 5 but < 15/10,000/day AND/OR Wasting \geq 40%	Widespread social breakdown; markets are closed or inaccessible to affected populations; 'survival strategies' are widespread
5	Extreme famine conditions	CMR \geq 15/10,000/day	Complete social breakdown; widespread mortality

CMR: Crude Mortality Rate

Wasting: proportion of child population (6 months to 5 years old) who are below 80% weight-for-height or below -2 Z-score weight-for-height

Since there are two sets of criteria (anthropometric/mortality and food security), it is important to know which ones should be given more weight in determining the intensity level for a given crisis. The assignment of levels might be made on the following basis:

- **Optimal:** both anthropometric/mortality and food security criteria point to a certain level
- **Sufficient:** anthropometric/mortality indicators on their own point to a certain level⁸
- **Strongly suggestive, but not confirmatory:** food security descriptors on their own point to a certain level.

This system has the advantage that it recognises the constraints facing governments and aid organisations by allowing them to plot any available information on a map. For example, an NGO that has only been able to complete nutritional surveys in two locations (the blue

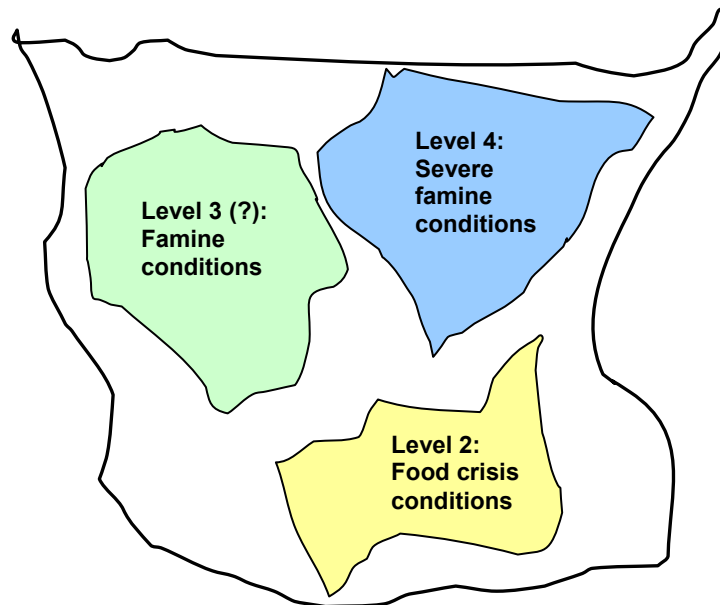
and cut-off points. One area of debate is whether an elevated crude mortality rate (CMR) is an indicator of famine conditions, and if so, should the cut-off be CMR \geq 1 or CMR \geq 2?

⁶ The idea of using a system of levels was originally suggested to the authors by Hamish Young of UNICEF.

⁷ These food security descriptors are examples of the types of experiences that may be associated with each intensity level, but not all of them have to be present in every situation that is given that intensity designation. Also, the relevant 'coping strategies' (both 'reversible' and 'irreversible') and 'survival strategies' would need to be identified in each context.

⁸ One food security descriptor would be necessary in this case, namely, that the affected population indicated that the crisis was predominantly about food in its onset. Otherwise, the anthropometric and mortality data might, for example, reflect an epidemic situation.

and yellow shaded areas) and a rapid food security assessment in another (the green shaded area) might summarise the information for a hypothetical country in the manner shown on the map below. The level identification in the green-shaded area has a question mark beside it because it is based solely on food security descriptors, without confirmation from an anthropometric assessment.



Although these designations may only be known for certain areas and would be subject to revision over time, they do convey important *operational* information. First, they offer a relatively clear-cut way to determine whether or not a famine is occurring at the time of the crisis. Once an area reaches 'level 3: famine conditions', a 'famine' can be said to be occurring among that population. As other areas receive that designation, the dimensions of the famine will increase. The famine can be said to have ended when all the affected areas return to 'level 2: food crisis conditions' or lower (for an extended period of, say, three months, in order to ensure it was not just a temporary improvement). By providing a means of identifying both the start and end of a famine, the scale helps to address the ambiguities in our understanding of the temporal dimensions of these crises.⁹

Second, the intensity levels offer a means of monitoring situations and may contribute to famine early warning efforts¹⁰. Concerned stakeholders would watch trends carefully (based on context-specific indicators) in areas that have received a 'level 1' or 'level 2' designation and make recommendations for appropriate interventions. (It is important to stress that reaching one level does not imply an inevitable progression to the next in the absence of assistance. Circumstances could change on their own in ways that prevent a

⁹ Note: Although this paper focuses on *acute* as opposed to *chronic* crises, the scales can be used to categorize chronic situations as well. A 'chronic food crisis', for instance, might be defined as a population area experiencing intensity levels that fluctuate between '1: Food insecurity conditions' and '2: Food crisis conditions' over a minimum period (say, three years). Similarly, a 'chronic famine' could be described as a population area where the intensity levels varied between '2: Food crisis conditions' and '3: Famine conditions' over a three-year period. Some confusion might arise if an acute crisis lasted for longer than three years. The difference would be that the chronic situation would be characterized by the spaced recurrence of the more severe conditions, whereas in the acute crisis, the severe conditions would be almost continually present (i.e., would not disappear for more than three months at a time). Because of the longer temporal period involved, chronic crises should probably be categorized on a different magnitude scale than the one described here.

¹⁰ The scales and early warning systems are complementary, but different tools. The scales register intensity and magnitude, while early warning systems predict potential movements (up or down) on the scales.

further deterioration.) Third, these designations allow stakeholders to prioritize their resource allocations among different areas and design an overall strategy for response.

3. MAGNITUDE SCALE

Over time, the areas of famine and food insecurity will change - expanding and contracting in size, and increasing and decreasing in level. It is only in retrospect that a complete assessment of the *magnitude* of the crisis can be made. Magnitude refers to the scale of the entire crisis, as measured in excess human mortality¹¹. Since it is not possible to measure all the impacts of a crisis (e.g., psychological, economic, etc.), mortality is used as a proxy for the suffering associated with famine. The determination of the magnitude is based on an evaluation of the conditions in all the areas affected by the famine. (In some cases, an element of judgment must be used to decide if a region has experienced one or two famines, based on an assessment of causes and geographical contiguity.)

A graduated system of categories can be used to make rough estimates of the magnitude of the famine at the time of the crisis as well as to classify famines *ex post*:

Table 2: Magnitude scale¹²

Category	Phrase designation	Mortality range
A	Minor famine	0 – 999
B	Moderate famine	1,000 – 9,999
C	Major famine	10,000 – 99,999
D	Great famine	100,000 – 999,999
E	Catastrophic famine	1,000,000 and over

4. USING INTENSITY AND MAGNITUDE SCALES TOGETHER

The intensity and magnitude scales are designed to be complementary. Any intensity level of 3 or above will register as a famine on the magnitude scale, even if it occurs in a very localized area for a brief period of time, since relatively small amounts of excess mortality are covered by Category A. However, this does not mean that every situation that involves excess mortality is a famine. 'Level 2: food crisis conditions' may also result in mortality, but the crisis associated with them may not be given a famine classification¹³. In order for a situation to be designated as a 'famine', it is necessary for the intensity of conditions to reach level 3 or above in at least one of the relevant assessment areas. (As long as one population area experiences famine conditions, the mortality from other areas associated with the crisis should probably also be included in the total used to determine the magnitude, even if the intensity only reaches level 1 or 2 in those places.)

¹¹ We realise that there is a danger that an emphasis on mortality will reinforce a reductionist view of famine. However, we also believe that mortality represents one of several 'universal' indicators that allow direct comparisons across situations, and therefore provide a basis for achieving political accountability.

¹² It may also make sense to try to develop appropriate qualitative indicators for each category that reflect the broader dimensions of suffering associated with famines.

¹³ The magnitude scale in Table 2 refers only to famines. However, the intensity scale in Table 1 measures food insecurity conditions (level 1) and food crisis conditions (level 2) in addition to famine conditions (levels 3-5). Therefore, a crisis with 'Level 2: food crisis conditions' would have to have its magnitude determined on a separate magnitude scale devoted exclusively to food crises.

Using these scales, it is possible to make more precise differentiations among crises and to suggest proportionate assignments of accountability under different circumstances. For instance, a small population area may experience 'level 4: severe famine conditions', but the crisis, because it involves such a limited population, will register as a 'minor famine'. The scales allow concerned stakeholders to acknowledge the intensity of the crisis in that area, but at the same time, to distinguish the magnitude of this localized crisis from ones that involve larger and more widespread populations. Greater *accountability* would be expected for famines of greater magnitude¹⁴.

To illustrate the use of these scales, it may be helpful to return briefly to the cases mentioned at the outset of this thesis. The crises in Sudan (1998), Ethiopia (2000), and Malawi (2002) would all be recognised as famines, but they would be categorised differentially within the scale, in accordance with their magnitudes.

Table 3: Examples of magnitude classifications

Famine (year)	Estimated mortality	Magnitude classification	Phrase designation
Sudan (1998)	70,000	Category C	Major famine
Ethiopia (2000)	6,070	Category B	Moderate famine
Malawi (2002)	400 - 600	Category A	Minor famine

Sources: for Sudan, Deng (1999); for Ethiopia, Salama et al (2001), most conservative estimate based solely on Gode District without extrapolation; for Malawi, Devereux (2002)

Within each of these crises, the intensity level varied from place to place, as can be seen in the table below. Looking at the crisis in southern Sudan (1998), for example, Ajiep Village experienced 'Level 5: Extreme famine conditions', while Rumbek Town suffered 'Level 3: Famine conditions'. Similar distinctions could be made among sites in the other famines.

Table 4: Examples of intensity classifications

Famine (year)	Location	CMR	Intensity classification	Phrase designation
Sudan (1998)	Ajiep Village	26/10,000/day	Level 5	Extreme famine conditions
	Rumbek Town	3.7/10,000/day	Level 3	Famine conditions
Ethiopia (2000)	Gode District	3.2/10,000/day	Level 3	Famine conditions
Malawi (2002)	Salima District	1.23/10,000/day	Level 3	Famine conditions
	Mchinji District	0.21/10,000/day	Level 1	Food insecurity conditions

Sources: for Ajiep and Rumbek, Sudan, SCN (1999); for Gode District, Ethiopia, Salama et al. (2001); for Salima and Mchinji Districts, Malawi, King (2002). These figures are 'snap-shots' and do not reflect the trends in each of these locations.

Combining the scales, we can say in hindsight that southern Sudan (1998) was a 'Category C: Major famine' with intensity levels varying between 3 and 5. At the time of the crisis, stakeholders would have identified the level 5 and level 3 conditions in Ajiep Village and Rumbek Town, respectively, and been able to declare a 'famine'. They might also have projected that the magnitude of the crisis would qualify it as a 'Category C: Major famine', and that without greater intervention, it could become a 'Category D: Great famine'.

¹⁴ The aim of the magnitude scale is to ensure accountability for all categories of famine, not just the larger ones. The distinction is that the accountability would be proportionate to the magnitude.

It is interesting to note that even though Ethiopia (2000) registers in retrospect as a 'Category B: Moderate famine', the intensity of conditions in Gode District were similar to those experienced in parts of southern Sudan, which became a 'Category C: Major famine'. The difference in the magnitude of the two crises is attributable to the fact that in Ethiopia the intensity levels affected a smaller population for a shorter time period than in southern Sudan and that, in other areas of southern Sudan, the intensity levels were much higher. It would be appropriate to demand greater accountability in the case of Sudan, since the magnitude of the famine was greater, indicating that many more people lost their lives.

In applying these scales, there is a danger that agencies will be incentivized to devote their energy and resources to ensuring that the threshold criteria in terms of malnutrition and mortality are not crossed, since that is what they will be judged upon, instead of taking a broader view which also protects, for instance, livelihoods. Clearly, there is a trade-off here: taking a more reductionist view and applying universal indicators allows for a greater degree of accountability, but removes some complexity and potentially promotes a more short-sighted view of famines. The intention, however, is that greater accountability for famine will promote greater efforts to address the underlying causes.

5. CONCLUSION

The scales described in this paper perform three operations on the current, catch-all usage of 'famine':

- (1) disaggregating two distinct features of famines: their *intensity*, which varies from place to place, and their *magnitude*, which represents the aggregate impact of the crisis;
- (2) moving from a binary judgement of 'famine' / 'no famine' to a graduated assessment based on scales;
- (3) assigning (artificially) harmonized, 'objective' criteria in place of individual subjective judgements.

These operations provide a means of reducing the ambiguities inherent in the term famine. Using the scales together, the system will hopefully contribute to addressing the need for greater operational clarity and political accountability in famine responses.

References

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