

The Political Matrix of Natural Disasters:
Africa and Latin America.

✓ Steven Thomas Seitz
✓ Morris Davis

Department of Political Science
University of Illinois

Prepared for delivery at the World Congress of Sociology, Mexico City, 16-21
August 1982.

The Political Matrix of Natural Disasters:
Africa and Latin America.

Steven Thomas Seitz
Morris Davis

Department of Political Science
University of Illinois

Introduction

Insofar as natural disasters commonly are considered geophysical phenomena, it would seem interesting enough to contrast their incidence from one part of the world to another. Tables I and II do just that, providing simple frequency counts and percentages of recorded disasters by African and Latin American sub-region for nine categories of disasters during the decade 1964-1973. Table I provides overall figures while Table II breaks these down by disaster type. The nine types are the major disaster codes (except civil strife) employed by the Office of United States Foreign Disaster Assistance (n.d.): earthquakes, floods, accidents, landslides, volcanic eruptions, fires, storms, epidemics, and droughts. (Data restrictions govern the choice of end dates, 1964 being the year that OFDA was organized and its collection of information became more adequate, while 1973 is the final year in Banks' Cross National Times Series (1975), from which we draw various social, economic, and political details. For a further discussion of these two sources see Davis and Seitz, 1982.)

Of the disasters reported, more than 50 percent occur in Latin America. Eighty percent of the earthquakes happened there, as did almost 80 percent of the floods, virtually all the landslides and volcanic eruptions, 85 percent of the fires, and almost 80 percent of the storms. By contrast, 75 percent of the reported accidents occurred in Africa, more than 55 percent of the epidemics, and almost 80 percent of the droughts.

Such figures suggest an enormous difference in the contours of natural disasters facing countries on the two continents. But some caution is needed here. Natural disasters are generally low probability events, and the decade bounding our inquiry hardly establishes reliable probability estimates for them. In fact, the relatively infrequent occurrence of accidents (8), landslides (13), volcanic eruptions (3), and fires (13) requires that we drop them from further statistical analysis.

An equally serious question involves the reliability of event reporting. At least four conditions influence this process. First, the event itself must occur. Second, someone or some group of people must be aware of the event and what it portends. (Illiterate people and those from primitive cultures often offer interpretations different from those of Western observers.) Third, those aware of an event and its impact must be able to communicate that information to agencies responsible for recording (if not responding to) such disasters. Poor communication and transportation facilities still plague much of the hinterland in Africa and South America, and it still is possible that some events never reach the attention of salient officials. Finally, officials receiving the reports must be willing to bring them into the public domain; that is, the event and its consequences must not be subjected to political silence.

Although questions about the relative frequency of natural disasters indeed are interesting, the available data do not permit analysis beyond that already presented. The problem takes on a different light if we examine the relative severity of impact of natural disasters rather than their relative frequency. For this problem the data are more reliable. But it is not especially revealing to view disaster severity solely as a geophysical phenomenon. Disasters impact human beings. Forethought and planning can prevent or mitigate their effects. Political choices can affect their consequences. For these reasons, comparisons between continents may mask the human matrix of disasters, for each continent is far from organizationally homogeneous. Together the two continents include approximately 75 percent of the developing nations with populations exceeding one million people. Developmental strategies, however, are not unique to one continent or the other but rather cut across continental boundaries. The same can be said for various contextual factors.

We find it preferable to examine severity of disaster impact in light of factors like those above. In previous work (Davis and Seitz, 1982), we reported global findings as to the impact effect of social context (e.g. literacy and population density), economic development or level of industrialization, governmental instability and governmental effectiveness on such severity. Suppose we now assess the strengths of that global model by examining the developing countries of Africa and Latin America in isolation from countries on other continents, particularly the industrialized nations of North America, Europe, and Asia.

Structural Correlates of Severity of Impact

The global model made use of seven independent variables: population literacy and density, a factor score measure of industrialization, a judgmental assessment of legislative effectiveness, and three measures of governmental instability (a composite score of guerrilla warfare incidents and assassinations of politically significant persons, another of revolutions and coups, and a third of important changes in cabinet or executive leadership). Severity of disaster impact was encapsulated in three dependent variables--number of people killed, amount of property damage, and number of people victimized by the event.

Table III presents the findings from this sort of analysis for Africa and Latin America and reveals a few interesting results. Thus, the number killed in earthquakes decreases with governmental (legislative) effectiveness, as one might expect, while in floods the number killed in fact increases with governmental effectiveness, as well as with lack of guerrilla warfare or politically significant assassinations. In all probability, this apparently anomalous finding stems from the very nature of flood control policies. For controlling flood waters, through dikes and dams, and then allowing construction and habitation in the plains beyond, decreases their frequency; but when one does exceed the control capacity (e.g. a 25-year flood or a 100-year flood) it can be a devastating killer. Finally, deaths from storms plausibly enough decrease with literacy but increase with both population density and government instability (as indexed by guerrilla warfare and politically significant assassinations).

Statistically relevant findings are more modest when we look at the amount of property damage and the number of victims. The amount of damage incurred from earthquakes, for example, appears positively associated with frequent changes in cabinet or executive leadership (the third measure of governmental instability). Similarly, the number of drought victims increases in countries where the government is beset by guerrilla warfare and politically significant assassinations (the first instability measure). More interesting perhaps is the fact that only these two cases (of a possible ten) demonstrate some association with the independent variables used in the global model.

The results of this analysis thus are somewhat mixed. Of the fifteen equations examined, only five show even modest statistical relations between the measures of severity and some of the theorized structural correlates. The linkage is strongest by far for number killed, which also involves the most reliable data (in large part because it is the most readily defined of the three impact measures). Damages and victims are more amorphous in both measure and meaning. It is reassuring, therefore, that the model works best with the most definite of the dependent variables. But it is not altogether surprising that the global model fares less well on the developing countries in isolation.

from more developed ones, given that it had focused on overall variance in severity of disaster impact for industrialized and non-industrialized countries together.

The purpose of looking at a restricted range of cases is not to demonstrate the explanatory shortcomings of a global model but rather to allow examination of forces at work in that restricted range that are not at work universally and that thus are masked by the global explanations. Our focus on the developing countries of Africa and Latin America permits closer scrutiny of political choices and the values underlying them. Resources available to developing regimes seldom keep pace with perceived needs and demands, and hence the allocation of scarce resources often favors certain social values over others. These preferred social values or goals are encapsulated in political ideologies.

Three Types of Value Allocation

Since ideological coding is new to our analysis, the method and assumptions we have employed probably deserve more expanded treatment here. We have relied primarily on the short evaluative reports by Thompson, Anderberg, and Antell (1982) which provided analogous data on all independent African and Latin American countries (apart from South Africa) with populations exceeding one million. Of the 57 countries so included, fifty could be matched with disaster reports in our master file. Each of these was classified under one of the following headings: ethnic pluralism, egalitarianism, or corporatism.

(1) Ethnic Pluralism. This form refers to a government which is essentially kept immobilized from central planning because of either ethnic factionalism or ethnic federalism. The former implies strong centrifugal tendencies (e.g. Benin) while in the latter power is fragmented under federal schemes for balancing ethnicity, region, race, culture, and so on (e.g. Kenya).

(2) Egalitarianism. Here one finds much stronger central planning but with emphasis on egalitarian or social welfare policies, sometimes even at the cost of developing an industrial infrastructure. Examples range from the Marxist model found in Cuba through L'Option Socialiste in Mali to the Ujamaa village orientation in Tanzania.

3. Corporatism. This type of central planning stresses development of an industrial infrastructure, even at the cost of various social inequities. Here, too, the nation and its future assumes an importance far beyond the individuals and groups comprising it. Examples for the decade 1954-1973 include Ethiopia and Argentina.

Of the 57 nations so classified, 15 were classified under ethnic pluralism, 19 under egalitarianism, and 22 under some form of corporatism. Although most of the ethnic pluralist states were in Africa (13 of 15), 9 of the egalitarian and 3 of the corporatist states also were located on that continent. Appendix I provides the complete listing. Excluding the seven for which we failed to find matching disaster reports, we use 15 ethnic pluralist states, 15 egalitarian, and 19 corporatist. The breakdown by continent can be seen in Table IV.

A classification scheme of this sort distinguishes regimes which typically prefer property values to humane values from those regimes that reverse this order. With limited resources almost everywhere, such choices are virtually mandatory. (Witness the current Reagan Administration in the United States.) The major exception is in ethnically pluralist systems, where little or no central planning occurs and these hard decisions are simply avoided. (A fourth alternative, full industrialization, where both property and humane values might be enhanced, finds no examples in Africa or Latin America).

Further discussion may be in order about the distinction between egalitarianism and corporatism. An egalitarian approach to development generally attempts to incorporate a vast portion of the citizenry in the related activities, burdens, and benefits. At the same time, it guards against "irresponsible" social sacrifices for rapid economic gain. An egalitarian state often attempts to mobilize the citizenry and encourages direct participation in national development through such devices as voting. Partisan controversy, however, likely will be limited lest it fragment the sense of national unity, and thus such states likely will restrict party competition and interest group articulation.

An egalitarian state tends to favor public ownership of productive enterprise, for citizens thereby will likewise feel some vicarious stake in their operation. Per contra, large-scale private enterprise, like multinational corporations and foreign investment generally, would be viewed with suspicion if not utterly prohibited.

Egalitarian states with large rural populations might well attempt to unite the populace through equitable distribution of benefits and burdens among the smallest social units possible, such as villages or extended families. Even so, the central government must still play an active role, guaranteeing parity among the various social units while diminishing the prominence of the capital and other urban settings. This type of regime similarly would guard against the de facto formation of a civil service elite. Whether the individual has contact with the central government in a direct manner or indirectly through the

local social unit, the central government would support a service infrastructure easily accessible and broad in the services provided. General policies would emphasize redistribution over "trickle-down" theories of national development.

Corporatist theory, by contrast, maintains that social justice cannot flow from a simple counting of needs. The diversity of social interests must also be taken into account, with each ranked in terms of its relative importance to the collectivity. A corporatist state likely would institutionalize social and economic interests in the very structure of government, each with a governmentally directed function in the pursuit of governmentally determined state interests. Although some form of universal suffrage remains possible, its policy impact would be far less than that of state-organized corporations, bureaus, remnants of feudal hierarchy, or perhaps a totalitarian party or military junta.

Corporatist regimes probably rule with strong spiritual support from an organized church. With such support they can appeal to objectives, interests, and will that transcend those of individuals and that indeed provide membership in a "spiritual society" that exceeds the immediate human condition. In this way, the social harmony derives not from popular sovereignty but from membership in an organic whole whose sum is greater than its constituent parts.

Corporatist thought often appeals to a "natural order of things" or a "universal purpose unfolding through history". This in turn encourages fatalism and "personalismo" among the populace. The state has its own inherent worth and dignity, either ordained by God or by its own nature and necessity. The individual inhabitants of a country thus owe duty to the state but have no claim against it.

Ideology and the Severity of Disaster Impact

The analysis that follows focuses upon 245 reported disasters for fifty countries of Africa and Latin America. Of the disasters 26 were earthquakes, 99 floods, 35 storms, 23 epidemics, and 62 droughts. (As noted earlier, accidents, landslides, volcanic eruptions, and fires have been dropped from further consideration because these samples were too small.) The fifty countries include 29 from Africa and 21 from Latin America. In the analysis that follows we examine the extent to which country ideologies (i.e., ethnic pluralism - EP, egalitarianism - EG, and corporatism - C) account for variations, within disaster types, of numbers killed, amount of damage, and number of victims.

We earlier noted that the available data did not permit examination of disaster frequencies. Frequency of disasters also is more beyond political control than is severity of impact. Further, underreporting seems systematically to affect the available data on disaster frequency. Such is particularly the

case in ethnically pluralist countries where the central government is either genuinely unaware of the event or is indifferent to the group affected or feels inaction is a protective reaction. Severity of impact, by contrast, contains a more obtrusive policy element in that permitted patterns and styles of human habitation, choices about prevention or mitigation, the availability of early warning systems, the provision of rapid and adequate response, and many other such decisions interact with geophysical phenomena to bring about greater or lesser degrees of death and destruction.

Ideology and Numbers Killed

In general, to reprise our earlier discussion, egalitarian regimes emphasize the importance of individual life, even at the cost of allocating resources needed by a growing industrial sector. Such regimes already aim at minimizing the loss of life through relevant political choices. Opposite priorities characterize corporatist regimes, save in those instances when prophylactic property measures result in lowered death rate as a side benefit. Ethnic pluralist states take little preventive or remedial action, which may, however, lower the average impact of disasters as more little one occur and as resources are not pushed to the limit. Precise predictive statements for each disaster type are given below.

Thus, the average death rate from earthquakes should be modest in ethnic pluralist states, because low population densities and minimal industrial infrastructure keep the death rates low. Underreporting further might reduce the observed levels. Egalitarian countries expectedly will follow policies that minimize death from earthquakes while, by contrast, a corporatist regime's emphasis would be on preserving or restoring the industrial infrastructure and hence it would invest less in the mitigation of quake-related deaths. Similarly, the corporatist emphasis on industrial development creates greater hazards potential when compared to the allocative strategies of egalitarian regimes. The data in Graph I illustrate very high death rates for corporatist regimes and relatively modest ones for egalitarian and ethnic pluralist ones.

A similar logic applies to floods in ethnic pluralist states, precisely because they do not cut off the lower ranges of flood destruction. For both egalitarian and corporatist regimes the logic runs the other way: out of the two, corporatist regimes should witness the larger death rate while egalitarian ones exercise greater efforts to control them. The data in Graph I also support this predicted configuration.

Egalitarian regimes should also minimize death rates in epidemics; corporatist regimes rank second; and do-nothing ethnic pluralist regimes rank highest. Our data indicate, however, that egalitarian countries rank highest, indeed much higher than ethnic pluralist countries. (Corporatist rates are lower than

ethnic pluralist ones, as predicted.) This apparently anomalous finding may just reflect an unstable mean value for egalitarian states, given that only four such events are in our subsample; but another possibility is that egalitarian states have, in a manner similar to flood control policies, cut off the lower ranges of epidemics through various forms of disease control, leaving only the big killers for the record books.

For droughts the clear expectation was that corporatist death rates would exceed egalitarian ones. (The relative position of the ethnic pluralist states was less clear; drought-induced death might be pre-empted by epidemics, or avoided through migration or adaptive changes in diet.) The data in fact reveal no deaths at all from droughts in ethnic pluralist states: this is surely just a consequence of reporting failures alluded to above. As expected, however, the death toll is extremely high in corporatist regimes and quite modest in egalitarian regimes.

Storms should induce considerable loss of life in ethnic pluralist states, given their governmental immobilization even in the face of crisis. The predicted ranking of corporatist and egalitarian regimes is less apparent, in part because prophylactic property measures may also reduce the death toll also. And the data do indeed indicate that death rates are highest in the ethnically pluralist states and lowest in corporatist states.

Ideology and Amount of Damage

Expected damage patterns are generally the reverse of those observed for death rates (see Graph II), though with some notable exceptions such as earthquakes. Here corporatist emphasis on industrial infrastructure should enhance sensitivity to damage sustained and thus enhance effort to mobilize internal and external resources for repair and renovation. In addition, the limited infrastructure found in ethnic pluralist states should result in far scantier damage reports being made. The data fully bear out these predictions, although the magnitude of difference between corporatist and egalitarian damage rates is excessive, perhaps suggesting some overreporting by the corporatist regimes for political purposes.

Because flood plains are more clearly susceptible to preventive actions of governments than are quake zones, one should expect corporatist regimes to emphasize reducing the damage from floods, in contrast to egalitarian regimes, whose concern would focus on death rates. Because ethnic pluralist states invest little in flood control, floods there would also cause less property damage on average. The available figures fully bear out these predictions.

Epidemics appropriately enough were associated with very little property damage and need not be discussed further here. Droughts show a different face. Threats to livestock are considerable, particularly if the human beings affected destroy capital stock for their own survival. Such damage would plausibly be most extensive in ethnic pluralist states. Egalitarian states, with their frequent emphasis on agriculture, are far less likely to damage capital stock (though they may sustain potential crop losses) and thus would report relatively small losses, even smaller than in corporatist systems. The data also bear out these expectations.

Damage from storms is predictably small in ethnic pluralist states, given the relative lack of extensive property infrastructure. Conversely, corporatist regimes try to protect their much more developed and highly valued infrastructure. (Prophylactic measures here, we assume, are more effective than in earthquake situations: the argument is similar to that used earlier.) The data conform to the expectations, too, with egalitarian states reporting by far the most extensive average rates of damage and corporatist and pluralist states the least.

Ideology and Number of Victims

The final set of predictions relates to expected victimization rates. An egalitarian emphasis on human needs should see victim rates lower than in corporatist states. This logic should apply to disasters generally, with the exception of storms, where less extensive rates would be a side benefit of corporatist prophylactic property measures. And, in fact, these expectations are already borne out for earthquakes, floods, and droughts. Storms deviate in the predicted way, while epidemics present an anomaly in terms of our theory.

In addition, as noted earlier, the notion "victim" like that of persons "affected" is nebulous in the extreme. The low victim counts in ethnic pluralist states may reflect in part their susceptibility to smaller scale disasters that would have been avoided elsewhere. A more likely explanation, and one we have resorted to previously, is that such states grossly underreport occurrences within their borders. They are unaware of, or indifferent to, the extent of the population discomforted by a disaster, just as they are less knowledgeable about property damaged and even the number killed. (See Graph III for complete victimization data.)

Conclusion

Clearly, natural disasters are more than just geophysical events. The severity of their impact--in terms of numbers killed, amount of damages, and number of victims--can be traced in part to social, economic, and political contextual variables such as population density, literacy, industrialization, legislative effectiveness, and governmental instability. Even clearer, however, are the explanatory pathways linking ideology and impact. Relatively consistent patterns are observable according to whether the ideology emphasizes property or personality. It is not just the country's natural resources that count, in other words, but its political will. Choices can be made and are made. The data also reveal tremendous underreporting from ethnic pluralist states, especially for victimization. Considerable underreporting undoubtedly also occurs in other regime types. This observation should make us cautious about the data reported here. It also suggests that disaster problems throughout the world are even more massive than the currently available documentation alone indicates.

Notes and Bibliography

*For the countries included in each subregion see Appendix I. Countries are omitted if their population is less than a million or if they lacked independence during that period. The Republic of South Africa also is excluded.

Banks, A. (1975) Cross-national time series: 1815-1973. Ann Arbor: Inter-university Consortium for Political and Social Research. (ICPSR 7412).

Davis, M. and S.T. Seitz (1982) "Disasters and governments." Journal of Conflict Resolution.

(Office of United States Foreign Disaster Assistance.) (n.d.) Disaster history update program. (Duplicated).

Thompson, C.L., M.M. Anderberg, and J.B. Antell (eds.) (1982) The current history encyclopedia of developing nations. New York: McGraw-Hill.

Appendix I:
Countries and Ideological Classification.

Africa South of the Sahara

Benin	Ethnic Pluralism	
Burundi	Ethnic Pluralism	
Cameroon	Corporatism	
Central African Republic	Corporatism	
Chad	Ethnic Pluralism	
Congo (Brazzaville)	Egalitarianism	(Excluded)
Ethiopia	Corporatism	
Ghana	Corporatism	
Guinea	Egalitarianism	
Ivory Coast	Corporatism	(Excluded)
Kenya	Ethnic Pluralism	
Lesotho	Corporatism	
Liberia	Corporatism	(Excluded)
Madagascar	Egalitarianism	
Malawi	Corporatism	
Mali	Egalitarianism	
Mauritania	Ethnic Pluralism	
Niger	Ethnic Pluralism	
Nigeria	Ethnic Pluralism	
Rwanda	Ethnic Pluralism	
Senegal	Egalitarianism	
Sierra Leone	Ethnic Pluralism	(Excluded)
Somalia	Egalitarianism	
Sudan	Ethnic Pluralism	
Tanzania	Egalitarianism	
Togo	Ethnic Pluralism	
Uganda	Egalitarianism	
Upper Volta	Ethnic Pluralism	
Zaire	Ethnic Pluralism	
Zambia	Egalitarianism	

Africa North of the Sahara

Algeria	Egalitarianism	
Egypt	Egalitarianism	(Excluded)
Libya	Egalitarianism	(Excluded)
Morocco	Corporatism	
Tunisia	Egalitarianism	

Appendix I:
(Continued)

Central America and the Caribbean

Costa Rica	Egalitarianism	
Cuba	Egalitarianism	
Dominican Republic	Egalitarianism	
El Salvador	Corporatism	
Guatemala	Ethnic Pluralism	
Haiti	Egalitarianism	
Honduras	Corporatism	
Jamaica	Ethnic Pluralism	
Mexico	Egalitarianism	
Nicaragua	Corporatism	
Panama	Corporatism	
Trinidad and Tobago	Corporatism	(Excluded)

South America

Argentina	Corporatism	
Bolivia	Ethnic Pluralism	
Brazil	Corporatism	
Chile	Corporatism	
Colombia	Corporatism	
Ecuador	Corporatism	
Paraguay	Corporatism	
Peru	Corporatism	
Uruguay	Egalitarianism	
Venezuela	Corporatism	

Note: "Excluded" denotes omission from the OFDA disaster file.

Table I
Geographic Distribution of Disasters

<u>Region</u>	Absolute <u>Freq</u>	Relative Freq <u>(%)</u>	Regional Subtotal <u>(%)</u>
Afr So. Sahara	100	33.2	
North Africa	17	5.3	38.3
Centr Am & Caribb	80	25.0	
South America	104	34.0	51.2
	-----	-----	-----
Total	301	100.0	100.0

Table II:
Geographic Distribution and Disaster Type

Earthquakes

<u>Region</u>	Absolute <u>Freq</u>	Relative Freq <u>(%)</u>	Regional Subtotal <u>(%)</u>
Afr So. Sahara	3	11.5	
North Africa	2	7.7	19.2
Centr Am & Caribb	8	30.8	
South America	13	50.0	30.3
	-----	-----	-----
Subtotal	26	100.0	100.0

Floods

Afr So. Sahara	12	12.1	
North Africa	10	10.1	22.2
Centr Am & Caribb	21	21.2	
South America	56	56.6	77.8
	-----	-----	-----
Subtotal	99	100.0	100.0

Accidents

Afr So. Sahara	5	12.5	
North Africa	1	12.5	75.0
Centr Am & Caribb	1	12.5	
South America	1	12.5	25.0
	-----	-----	-----
Subtotal	8	100.0	100.0

Table II:
(Continued)

Landslides

<u>Region</u>	<u>Absolute Freq</u>	<u>Relative Freq (%)</u>	<u>Regional Suptotal (%)</u>
Centr Am & Carrib	1	7.7	
South America	12	92.3	100.0
	-----	-----	-----
Subtotal	13	100.0	100.0

Volcanos

<u>Region</u>	<u>Absolute Freq</u>	<u>Relative Freq (%)</u>	<u>Cum Freq (%)</u>
Centr Am & Carrib	2	66.7	
South America	1	33.3	100.0
	-----	-----	-----
Subtotal	3	100.0	100.0

Fires

Afr So. Sahara	1	7.7	
North Africa	1	7.7	15.4
Centr Am & Carrib	3	31.5	
South America	3	23.1	64.6
	-----	-----	-----
Subtotal	13	100.0	100.0

Storms

Afr So. Sahara	3	22.9	22.9
Centr Am & Carrib	21	50.0	
South America	5	17.1	77.1
	-----	-----	-----
Subtotal	35	100.0	100.0

Table II:
(Continued)

Epidemics

<u>Region</u>	Absolute <u>Freq</u>	Relative Freq <u>(%)</u>	Regional Subtotal <u>(%)</u>
Afr So. Sahara	12	52.2	
North Africa	1	4.3	55.5
Centr Am & Caribb	5	21.7	
South America	5	21.7	43.4
Subtotal	<u>23</u>	<u>100.0</u>	<u>100.0</u>

Droughts

Afr So. Sahara	47	75.8	
North Africa	2	3.2	79.0
Centr Am & Caribb	8	12.9	
South America	5	8.1	21.0
Subtotal	<u>62</u>	<u>100.0</u>	<u>100.0</u>

Table III:
Structural Determinants of Disaster Severity.

Earthquakes

Dependent Variable: # killed

Mean Response 3277.33 Std. Dev. 13379.74

Multiple R .29 F
R Square .08 2.010
Std Dev 13388.3701 Sig. .170
Adj R Square .0421 Coeff of Variability 403.5 %

Variable	B	S.E. B	F	Sig.	Beta	Elasticity
Effective	-3253.55	2301.82	2.01	.17	-.29	-1.53
Constant	8445.12	4555.44	3.44	.03		

Floods

Dependent variable: # killed

Mean Response 73.34 Std. Dev. 143.74

Multiple R .25 F
R Square .07 3.377
Std Dev 140.20 Sig. .04
Adj R Square .05 Coeff of Variability 191.2 %

Variable	B	S.E. B	F	Sig.	Beta	Elasticity
Effective	29.59	14.54	4.14	.04	.21	.49
GW + Ass	12.57	7.32	2.95	.09	.174	.12
Constant	28.94	23.45	1.52	.22		

Storms

Dependent variable: # killed

Mean Response 50.80 Std. Dev. 90.33

Multiple R .54 F
R Square .41 5.912
Std Dev 73.55 Sig. .003
Adj R Square .34 Coeff of Variability 144.8 %

Variable	B	S.E. B	F	Sig.	Beta	Elasticity
Literacy	-1.28	.49	5.32	.02	-.40	-1.39
GW + Ass	12.87	4.94	5.78	.02	.40	.29
Density	.02	.01	3.52	.07	.29	.45
Constant	109.42	43.11	5.44	.02		

Table III:
(Continued)

Droughts

dependent variable: y killed

Mean Response 1759.48 Sta. Dev. 13128.55

No variables meet the statistical requirements.

Epidemics

dependent variable: y killed

Mean Response 459.57 Sta. Dev. 1645.22

No variables meet the statistical requirements.

=====

Earthquakes

dependent variable: amount of damage (\$)

Mean Response 77275.83 Sta. Dev. 200773.13

Multiple R .31 F
R Square .09 2.257
Sta Dev 195450.31 Sig. .15
Adj R Square .05 Coeff of Variability 252.9 %

Variable	B	S.E. B	F	Sig.	Beta	Elasticity
Exec Ch.	79130.72	52552.80	2.27	.15	.31	.43
Constant	44304.70	45512.00	.95	.34		

Floods

dependent variable: amount of damage (\$)

Mean Response 14135.10 Sta. Dev. 31508.00

No variables meet the statistical test.

Storms

dependent variable: amount of damage (\$)

Mean Response 12211.00 Sta. Dev. 34545.99

No variables meet the statistical test.

Table III:
(Continued)

Droughts

dependent variable: amount of damage (\$)

Mean Response 23054.31 Stu. Dev. 94111.43

NO variables meet the statistical test.

Epidemics

dependent variable: amount of damage (\$)

Mean Response .32 Std. Dev. 1.49

NO variables meet the statistical test.

=====

Earthquakes

dependent variable: # OF VICTIMS

Mean Response 272818.48 Stu. Dev. 793304.19

NO variables meet the statistical test.

Floods

dependent variable: # OF VICTIMS

Mean Response 221334.73 Stu. Dev. 840633.91

NO variables meet the statistical test.

Storms

dependent variable: # OF VICTIMS

Mean Response 113370.83 Stu. Dev. 453984.73

NO variables meet the statistical test.

Table III:
(continued)

Droughts

dependent variable: # of victims

mean response 55097.14 Std. Dev. 1400931.52

Multiple R .44 F
 R Square .20 13.199
 Std Dev .13E+07 Sig. .00
 Adj R Square .18 Coeff of Variability 227.9 %

Variable	B	S.E. B	F	Sig.	Beta	Elasticity
GI + ASS.	.11E+07	.29E+05	13.20	.00	.44	.35
Constant	363438.58	.17E+05	4.19	.04		

Epidemics

dependent variable: # of victims

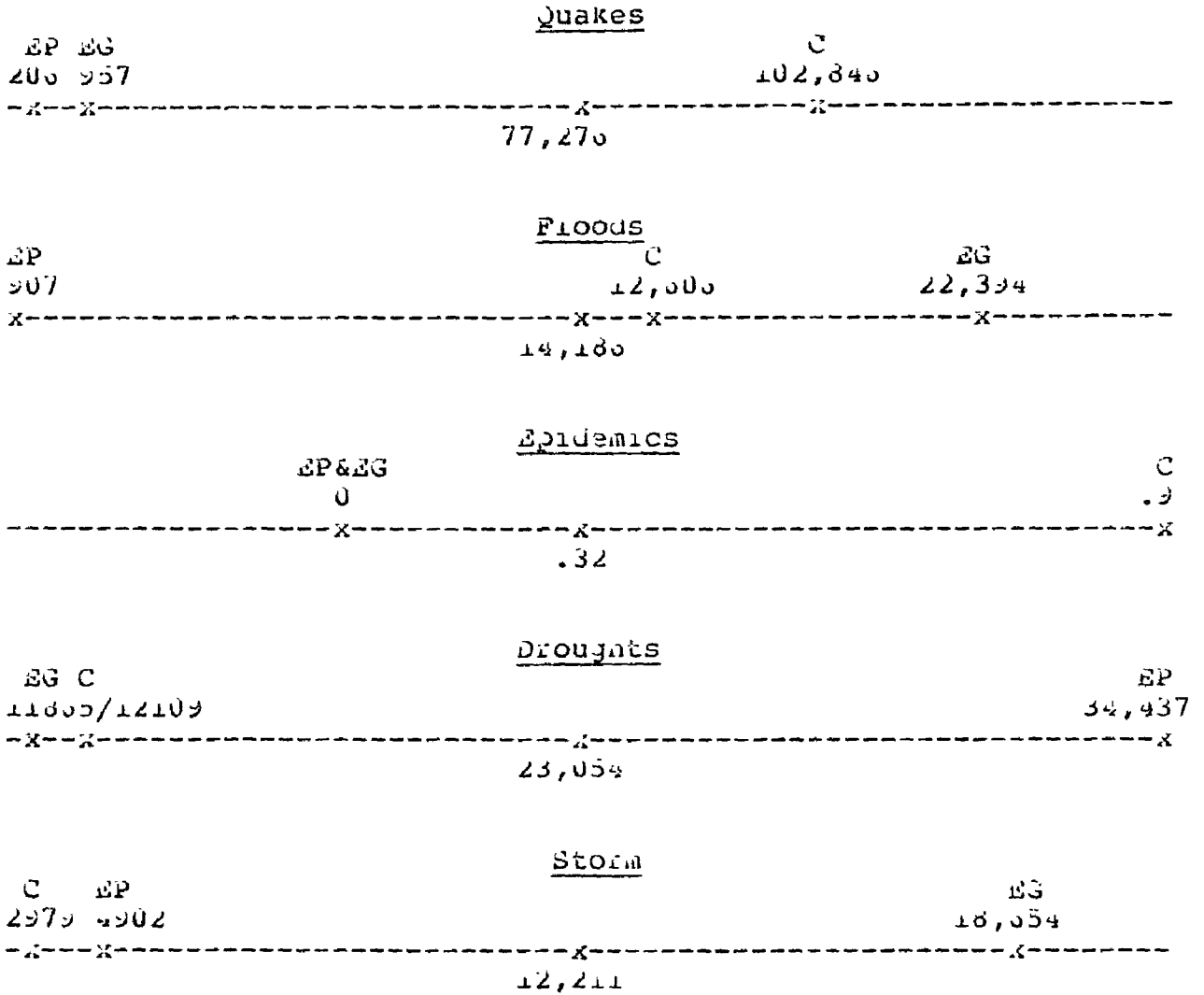
mean response 19051.32 Std. Dev. 64351.95

No variables meet the statistical test.

Table IV:
Ideology by Region

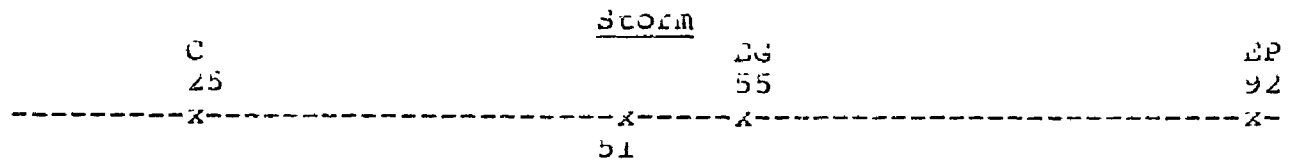
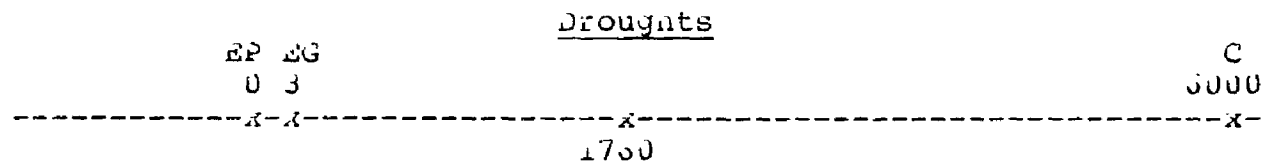
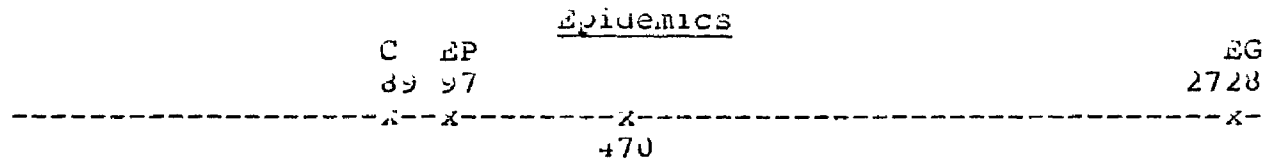
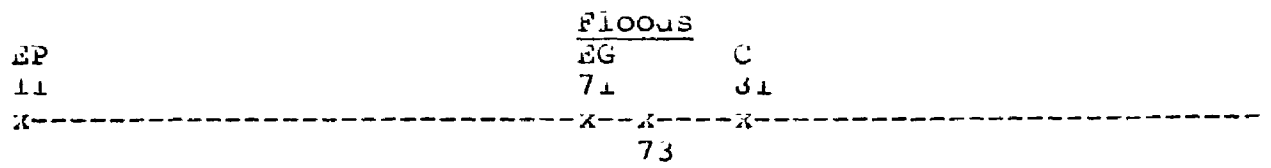
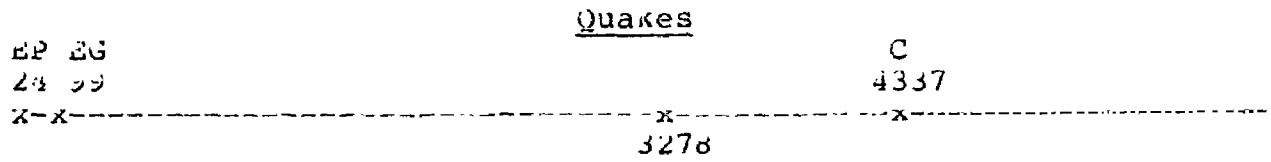
	Africa	Latin America	Row Total
Ethnic Pluralism	12	3	15 30.0
Egalitarian	10	5	15 32.0
Corporatism	1	12	13 33.0
Column Total	23 53.0	21 42.0	44 100.0

Graph 1--
 Disaster Severity--Amount Damaged,
 Mean Value Distributions



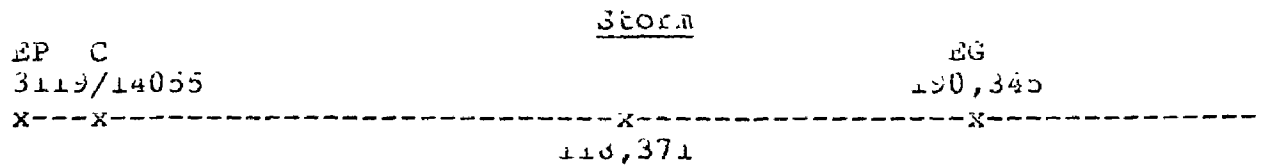
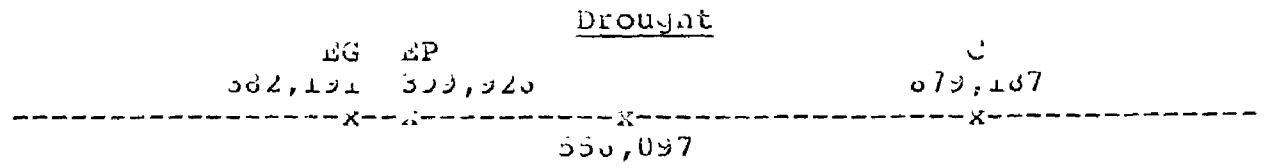
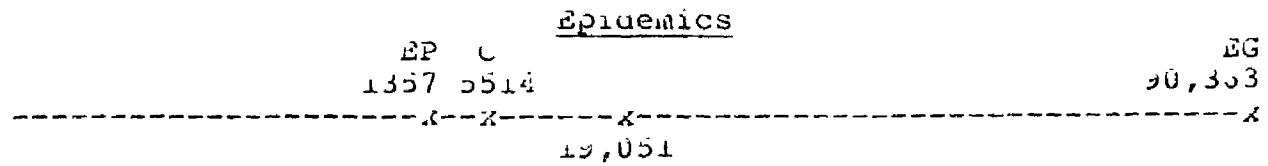
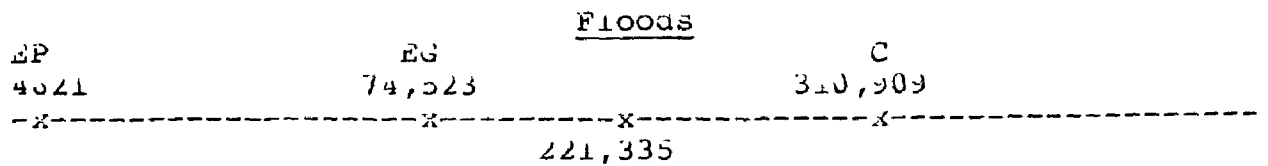
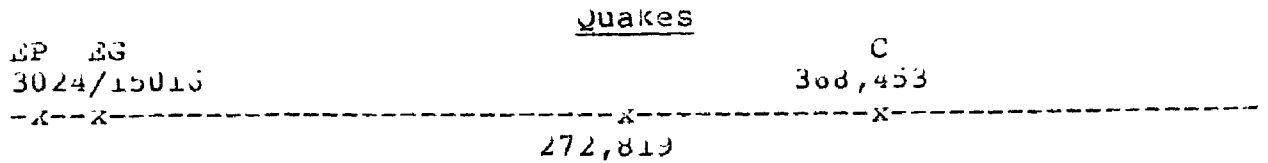
EP: Ethnic Pluralism
 EG: Egalitarianism
 C: Corporatism

Graph I:
 Disaster Severity--Number Killed:
 Mean Value Distributions



EP: Ethnic Pluralism
 EG: Egalitarianism
 C: Corporatism

Graph III
 Disaster Severity: Number of Victims:
 Mean Value Distributions



EP: Ethnic Pluralism
 EG: Egalitarianism
 C: Corporatism