

The SPEED Project, Climate Change and Societal Stability

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**Climate Change, Social Stress and Violent Conflict: State of the Art
and Research Needs**

KlimaCampus, Hamburg University, Nov. 19 & 20, 2009

Outline

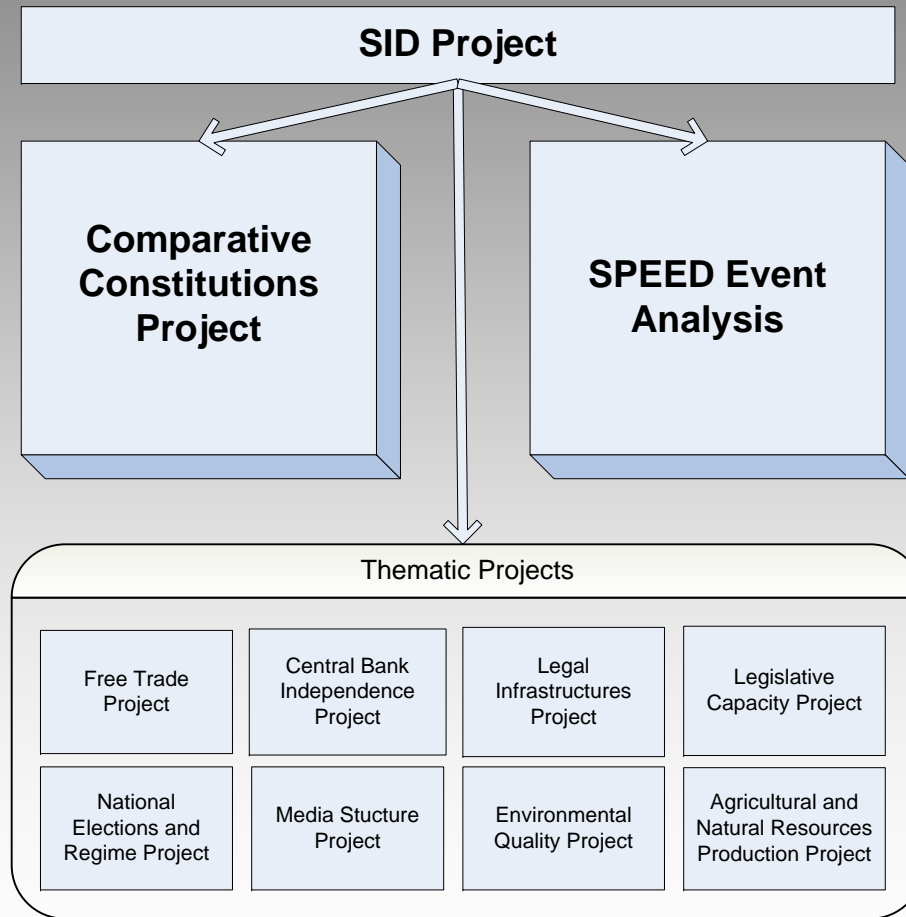
- **SID Introduction and Overview**
 - Parent Project
- **Introduction to SPEED Project**
 - Social, Political and Economic Event Database Project
- **In-depth Overview of SPEED**
 - Illustration of Societal Stability Protocol
- **Application to the Study of Climate Change**
 - Design of an on-going research initiative
- **Illustrative Data from Pilot Study**
 - Illustrative, not analytic/correlative



SID Components



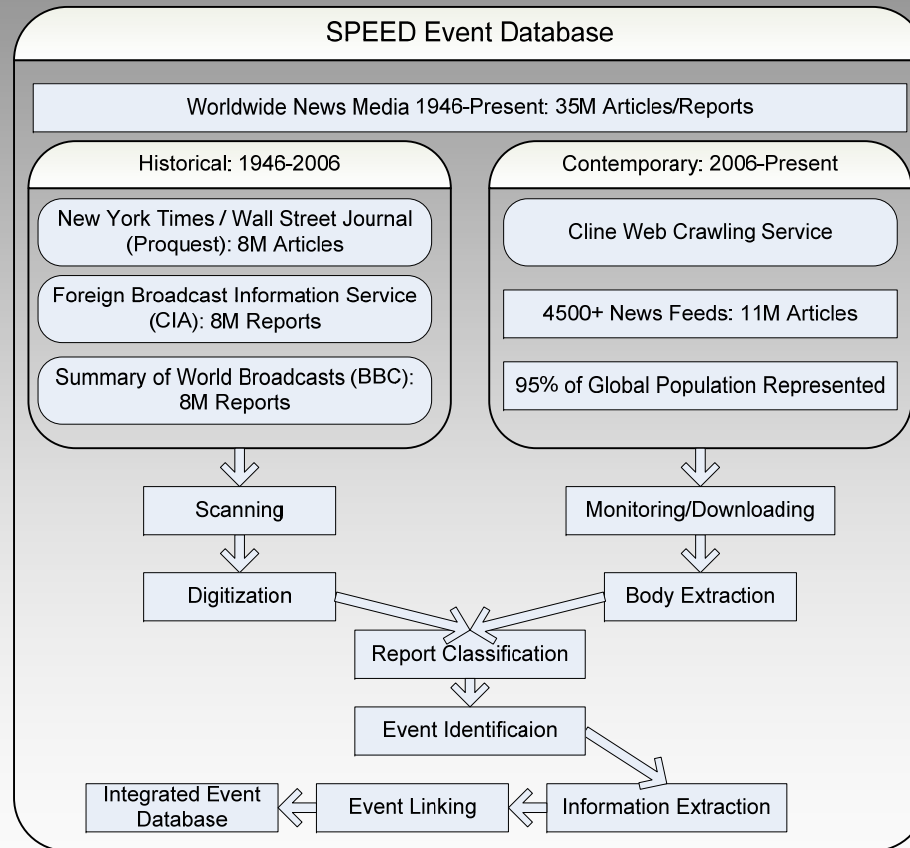
Original Data Collection Efforts: Three Major Components



Key Challenges in SPEED: Moving from Texts to Linked Events

- **Assembling a global archive of news reports**
- **Developing an event classification scheme**
- **Screening and classifying news reports**
 - BIN module
- **Geo-spatial referencing of event sequences**
 - LOCATE module
- **Identifying events within relevant news reports**
 - EAT module (Event Annotation Tool)
- **Extracting key pieces of information**
 - Protocol development, testing and training
 - EXTRACT suite of programs
- **Linking related events in different articles**
 - LINK module

The SPEED Project



BIN Program

- **Designed around SID Information Needs**
 - Highly refined event classification scheme
- **Based on statistical algorithms**
 - Key words, word correlations, semantic structure of text
 - False negative rate of 1% (repeated tests)



LOCATE Module

- Does full text scan, identifies and disambiguates geographic references
- Allows us to identify and segregate articles with relevant events by country automatically
 - Essential for studying climate change and societal stability, as discussed below



EAT Module

- **Prototype developed in summer, 2009**
- **Will identify and annotate key provisions in news text that are relevant to the protocol-specific event ontology**
 - Will enhance accuracy by detecting word phrases reporting relevant events
 - Will double efficiency



Event Annotation Tool (EAT)

1 Event Type Support Event Type Finish Sentence Annotation Submit < 2204/2587 > Sign out 'mmarti46'

Title: AROUND THE WORLD; 30 Killed in an Attack On a Bus in Uganda

Pub. date: 19830125 -- True Id: 22528357

Check	Sentence	Event Type
<input type="checkbox"/> 1	More than 30 people were killed and 14 were wounded when armed men, believed to be anti-Government guerrillas, opened fire on a passenger bus about 26 miles north of Kampala over the weekend, The Uganda Post said today.	other attacks on humans 1
<input type="checkbox"/> 2	The attack took place between the villages of Busura and Kalule on a main road leading to the provincial town of Goulou, the newspaper said.	other attacks on humans 1
<input type="checkbox"/> 3	Two weeks ago a bus was ambushed and seven passengers were killed on the same road.	other attacks on humans 2
<input type="checkbox"/> 4	In that attack, soldiers traveling on the bus drove off the attackers, killing several.	reactwithconseqcnc - counter attacked -- other attacks on humans 2 reactwithconseqcnc - killed -- other attacks on humans 2
<input type="checkbox"/> 5	The survivors of the latest attack said they had escaped by hiding under the bus.	
<input type="checkbox"/> 6	They said several people had been taken prisoner and tied up and then shot by their captors.	executions 1

EXTRACT Suite of Programs

- Electronic interface between news report and protocol
- Geocoder module
- Calendar module
- List sets
- Proper name module
- Lexicon-based modules
 - Social, religious, insurgent, political, etc.
- Link module



http://eventalyzer.ncsa.uiuc.edu/cgi-bin/eventreporter_code?ERID=1&PID=22&EID=82239&act=code

[CCD Login](#)
[Gmail Login](#)
[Moodle](#)
[Other bookmarks](#)

AID: 2177950
 Title: 6 Die in Riots as Indian State Prepares to Vote
 Source: Proquest Historical New York Times
 Source Location: New York City, United States
 Published: 02/13/1983

6 Die in Riots as Indian State Prepares to Vote

GAUHATI, India, Feb. 12 (Reuters) -- At least six people were killed today in clashes between Hindus and Moslems in India's northeastern state of Assam, where pre-election violence has so far taken more than 70 lives.

The bloodshed came as Prime Minister Indira Gandhi left here for New Delhi after a three-day campaign for her Congress Party in Assam and neighboring Meghalaya, where elections are also due next week. The deaths occurred in the Boko area, 50 miles west of Gauhati, the capital of Assam, and included three Assamese Hindu girls hacked to death in the village of Samaria where Assamese are in

the majority, a police official said. State elections, starting Monday, are opposed by Assamese groups who are demanding the removal of illegal immigrants, mostly Moslems from Bangladesh, from electoral rolls and their eviction from the state. The police official said hundreds of people armed with axes had mounted an attack on Samaria after rumors that Moslems in other parts of the district had been attacked. Rioting occurred in three villages and the police said more than 100 houses had been destroyed. The Press Trust of India news agency said today's deaths in the clashes and

other incidents had raised the overall death toll in pre-election violence to more than 70. Gauhati was virtually paralyzed today by a protest strike, organized by militants to protest Mrs. Gandhi's visit. Hundreds of policemen guarded her as she addressed a crowd estimated at 20,000 at Maligaon, outside Gauhati. Violence set off by the anti-election campaign led to at least 10 deaths on Friday, some caused when the police fired to disperse angry crowds. An explosion damaged a railway track in the Nowgong district, east of here. Until today most of the violence in Assam had apparently been directed at

the police and at candidates of political parties. But Moslems fear they could become the target during polling if they ignore the call by Assamese militants for a boycott of the elections. In Gauhati itself, election posters with Mrs. Gandhi's picture were smeared with black paint or torn up. The anti-election campaign, begun a week ago, has stopped oil drilling in Assam but pumping is being maintained by a skeleton staff.

Year: 1983

Event Type
This module includes questions regarding the ontology of events in the societal stability protocol.

Type of destabilizing event: Politically motivated attack

Type of attack:
Check all that apply; use "attempted" and "conspiracy" only with another category.

Other politically motivated attack on humans

Riot: spontaneous rampage
Brawl (fight)
Assassination
Suicide attack
Kidnapping/hostage taking
Executions
Other politically motivated attack on humans
Other politically motivated attack on property
Border incident
Military siege/blockade
Other

Type of unrealized attack:

Post-hoc Reactions
This module includes information about the reactions of others to the destabilizing event coded in a previous coding.

Initiators, Expressers, Rioters, and Reactors
This module includes information about initiators, expressers, rioters, and reactors.

Known or suspected actor: Known

Type of actor: Governmental actor

Foreign actor:
Is at least one of the actor(s) from a foreign country?
No

Select from Proper Name Module

Name of suspected actor:
Use proper name module

eventreporter_code.htm

start

http://eventalyzer.ncsa.uiuc.edu/

Sreenivas article.b...

12:19 PM

LINK Module

- **Links information across articles in archive**
- **Important for**
 - Subsequent updates of event information
 - Understanding event dynamics

http://eventalyzer.ncsa.uiuc.edu/cg-bin/eventreporter_link?AID=2177950&PID=22&ERID=1&e=1

CCD Login Gmail Login Moodle Other bookmarks

AID: 2177950
 Title: 6 Die in Riots as Indian State Prepares to Vote
 Source: Proquest Historical New York Times
 Published: 02/13/1983

6 Die in Riots as Indian State Prepares to Vote GAUHATI, India, Feb. 12 (Reuters) -- At least six people were killed today in clashes between Hindus and Muslims in India's northeastern state of Assam, where pre-election violence has so far taken more than 70 lives. The bloodshed came as Prime Minister Indira Gandhi left here for New Delhi after a three-day campaign for her Congress Party in Assam and neighboring Meghalaya, where elections are also due next week. The deaths occurred in the Boko area, 50 miles west of Gauhati, the capital of Assam, and included three Assamese Hindu girls hacked to death in the village of Samaria where Assamese are in the majority, a police official said. State elections, starting Monday, are opposed by Assamese groups who are demanding the removal of illegal immigrants, mostly Muslims from Bangladesh, from electoral rolls and their eviction from the state. The police official said hundreds of people armed with axes had mounted an attack on Samaria after rumors that Muslims in other parts of the district had been attacked. Rioting occurred in three villages and the police said more than 100 houses had been destroyed. The Press Trust of India news agency said today's deaths in the clashes and other incidents had raised the overall death toll in pre-election violence to more than 70. Gauhati was virtually paralyzed today by a protest strike, organized by militants to protest Mrs. Gandhi's visit. Hundreds of policemen guarded her as she addressed a crowd estimated at 20,000 at Maligaon, outside Gauhati. Violence set off by the anti-election campaign led to at least 10 deaths on Friday, some caused when the police fired to disperse angry crowds. An explosion damaged a railway track in the Nowgong district, east of here. Until today most of the violence in Assam had apparently been directed at the police and at candidates of political parties. But Muslims fear they could become the target during polling if they ignore the call by Assamese militants for a boycott of the elections. In Gauhati itself, election posters with Mrs. Gandhi's picture were smeared with black paint or torn up. The anti-election campaign, begun a week ago, has stopped oil drilling in Assam but pumping is being maintained by a skeleton staff.

Edit Links The event boxes below correspond to the highlighted text to the left and represent the coded events from this article. Double-click on an event to display its event record. The Event Numbers below indicate the order the events were coded in, NOT the order they occurred in. Blue links represent "Stems From" connections (meaning the second event stems from the first), while orange are "Part Of" links, meaning the first event is a part of the second).

Submit Links: [Submit Links](#)

EVENT 1
 EVENT 3
 EVENT 6

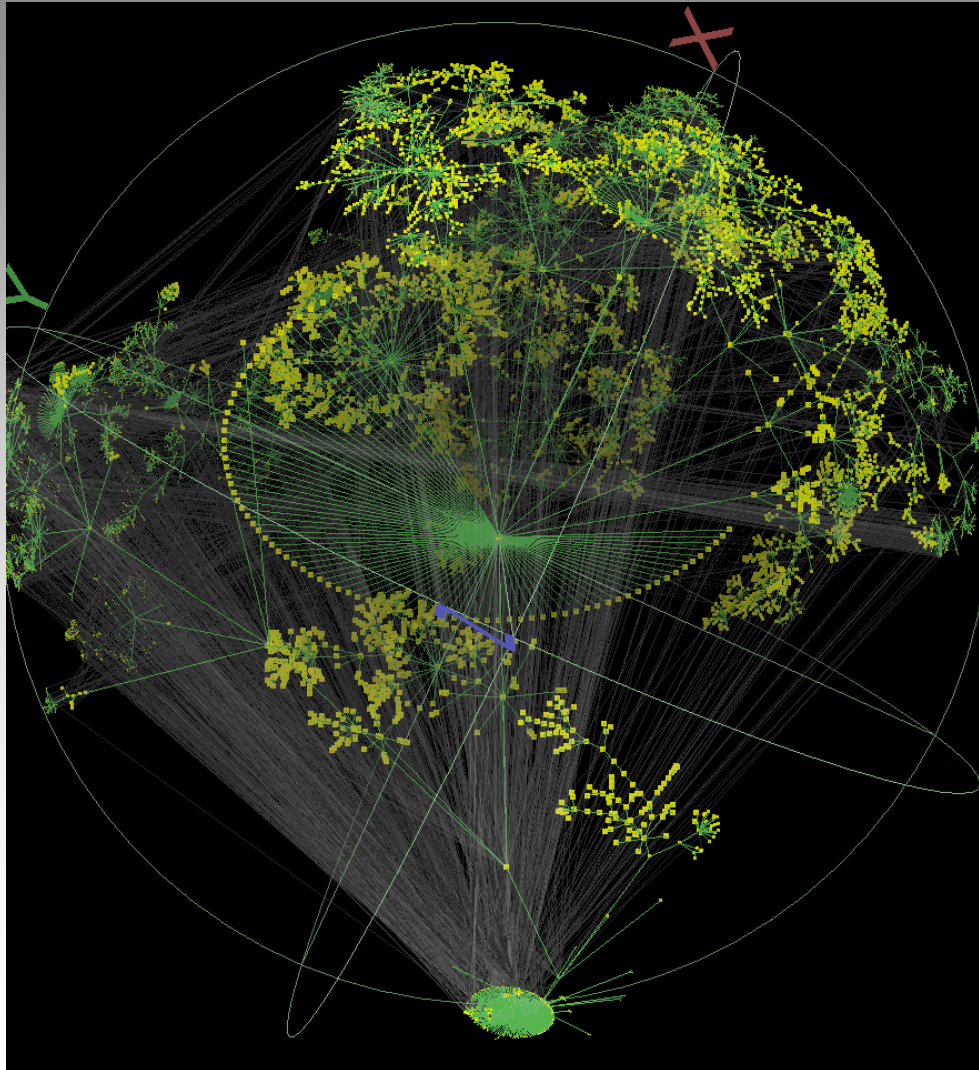
EVENT 4
 EVENT 5

start

http://eventalyzer.ncsa.uiuc.edu/

12:25 PM

Sample Visualization of Linked Events



Overview of Societal Stability Protocol



Societal Stability: Definition and Approach

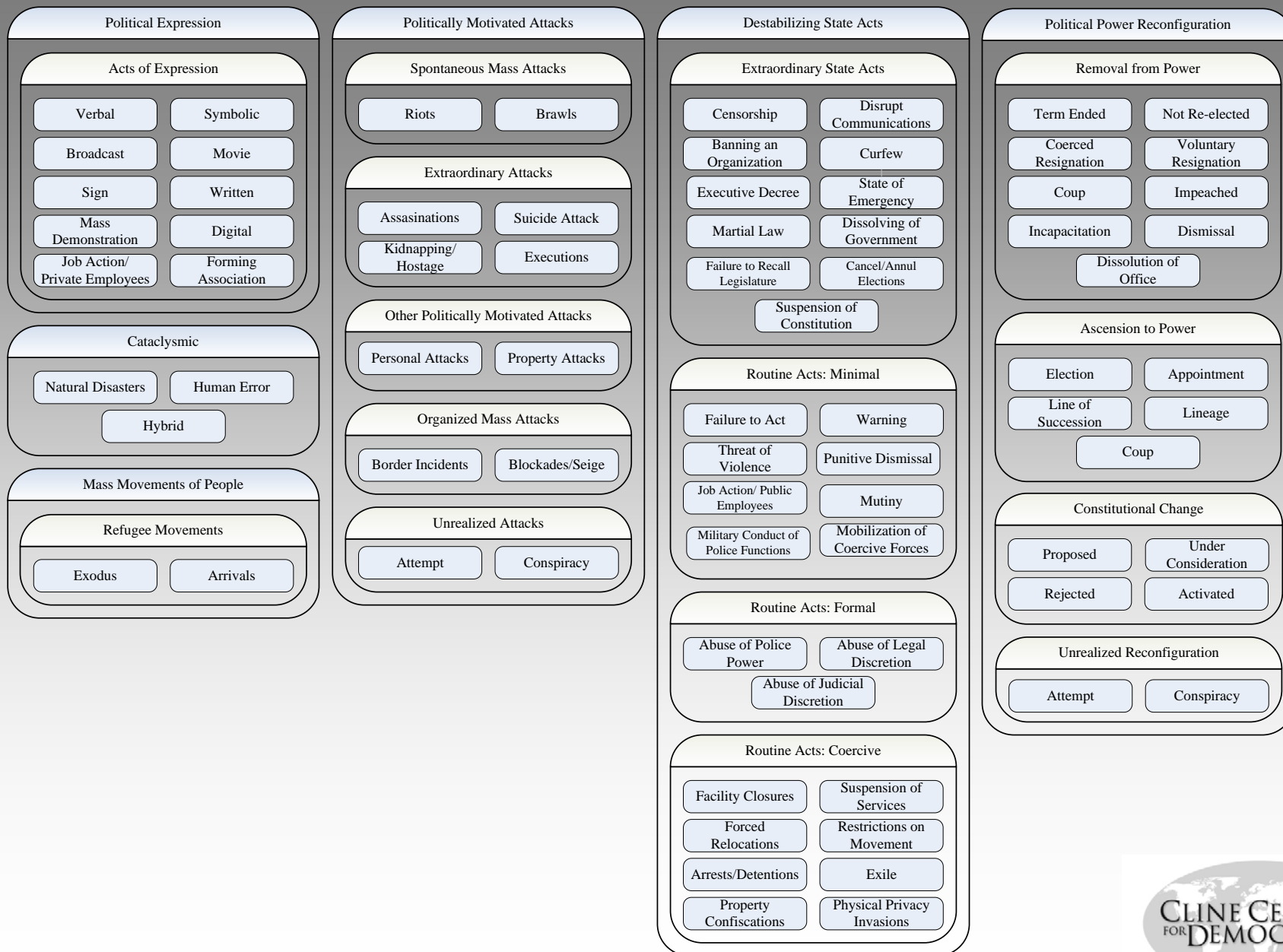
- **Stability refers to domestic tranquility**
 - A harmonious, peaceful environment for living
 - Good for what it is and what it does
- **Approach to capturing differences in stability over time and space**
 - Identify a set of “**instability events**”
 - Construct comparable intensity measures
 - Create links among them



Instability Event Ontology

- **Political Expression Events**
- **Politically Motivated Attacks**
- **Destabilizing State Acts**
- **Mass Movement of People**
- **Political Power Transfers**
- **Disasters**

Figure A-1 Societal Stability Event Types



Design of Societal Stability Protocol

- **Who**
 - Initiators; Targets/Victims
 - International involvement
- **What**
 - Event type
 - Impacts (people, property, society)
 - Consequences (for initiators)
 - Type of international involvement
 - Reactions (to event)
 - Subsequent events
- **How**
 - Weapon, modes of expression, type of natural force
- **Where**
 - Geo-spatial location, geo-physical setting
- **When**
 - Date
- **Why**
 - Societal context
 - Attributed origins
 - Attributed motivations



Application of SPEED's Societal Stability Protocol to Climate Change

A Quasi-experimental design



Overview of Approach

- **Objective**
 - To gauge the impact of weather-related events related to climate change on societal stability rigorously
 - Responds to desires expressed yesterday
- **Rationale for focus on stability:**
 - Impact of CC is most likely reflected in small bore events that conditionally lead to major events
 - Responds to void in research noted yesterday by Ole and others
- **Research design**
 - Randomized, quasi-experimental analysis
 - Avoids selecting on dependent variable
 - Provides basis for sound assessment



Source of Information on “Treatment”

- **Information on weather-related events**
 - Centre for Research on Epidemiology of Disasters
- **Criteria for selection of “treatments”**
 - Droughts, heat waves, famines, floods, tropical storms
 - Happened between 1980 – 2005
 - 100 people killed or 10,000 people affected
- **1,752 events met the criteria**



Design of Pilot Study

- Did a random sample of 100 events
- Used BIN program, LOCATE, and date information to identify all news reports in our global news archive that
 - Contained reports of destabilizing events
 - Transpired within a three-year period surrounding the event
 - 18 months before
 - 18 months after



Plan of Analysis

- **We will compare differences in destabilizing events in the 18-month period before and after the weather event**
 - Individual measures of instability intensity
 - Demonstrations, attacks, government repression, etc.
 - Aggregate measure of instability intensity?
- **We will examine impact on instability of**
 - Institutions
 - Contexts
 - Interventions

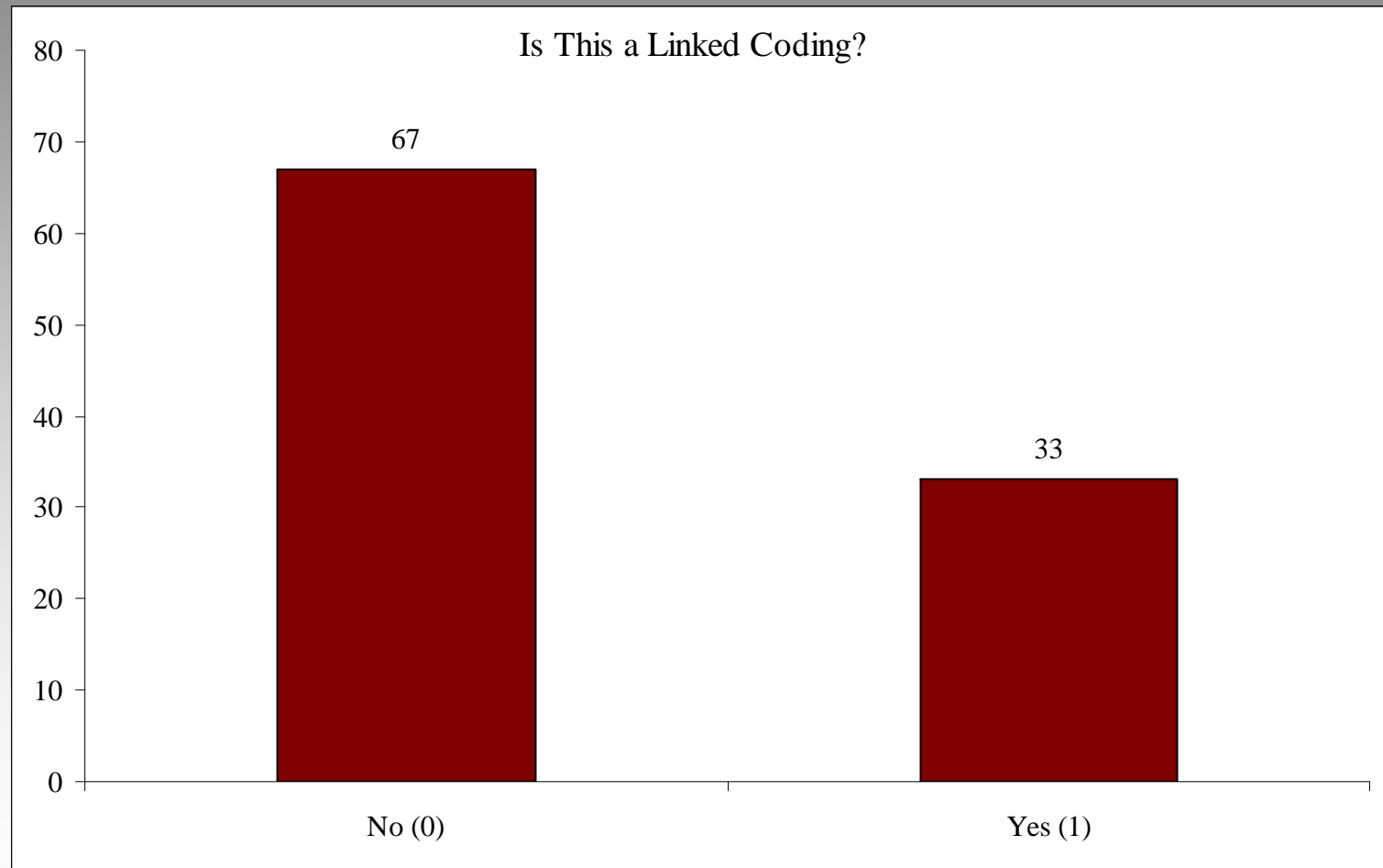


SPEED's Societal Stability Protocol

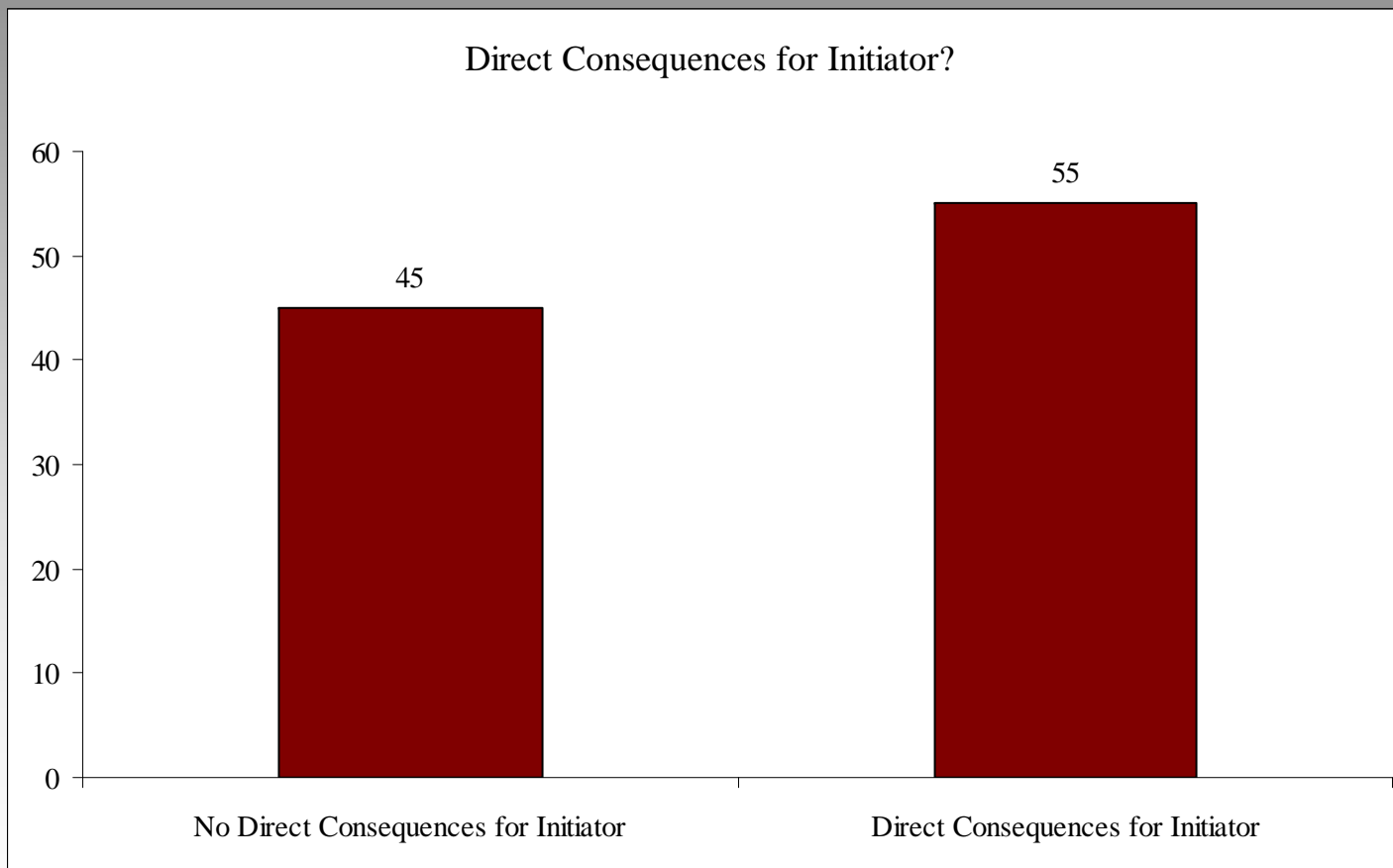
Overview of Pretest Data



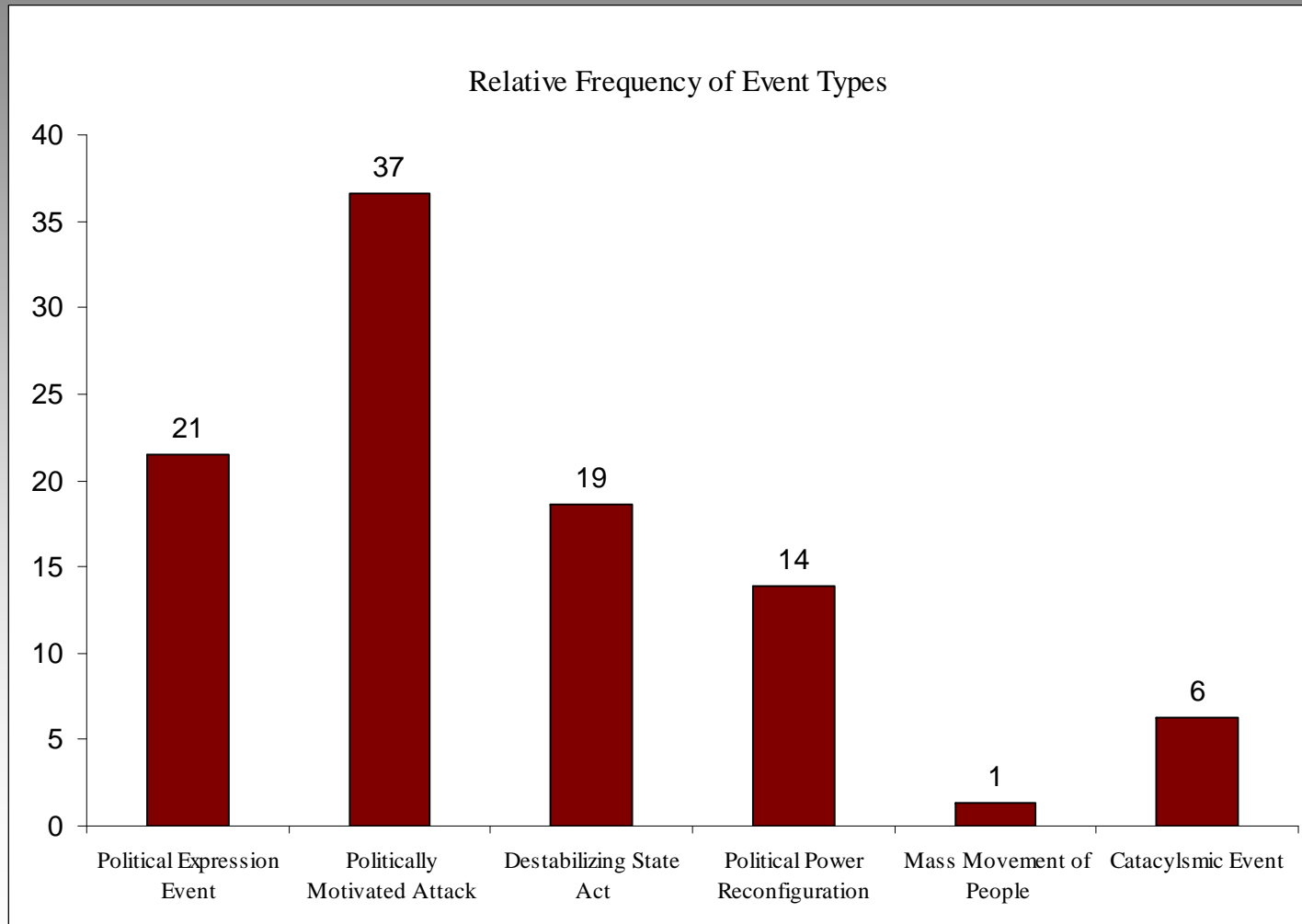
Type of Coding (excluding independent events)



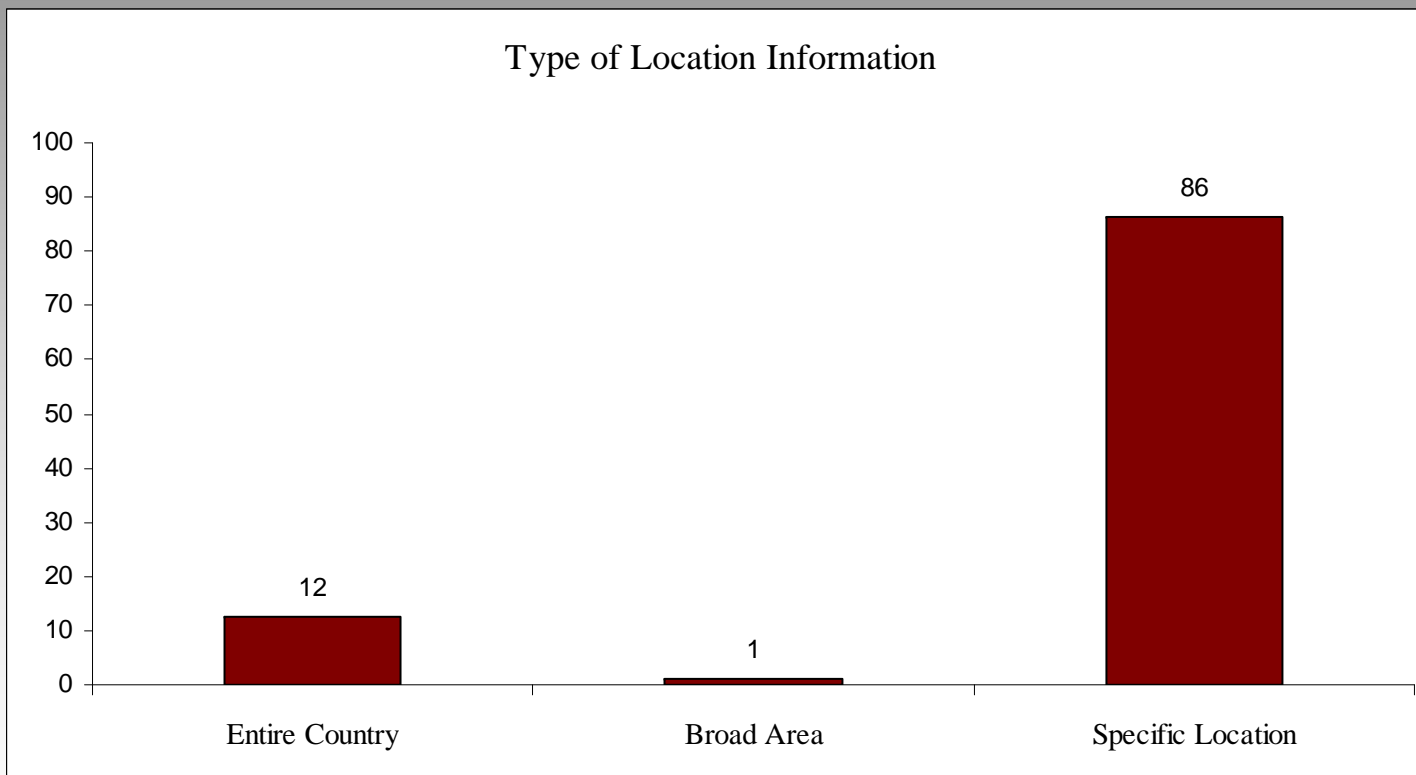
Reactions that affect Initiator



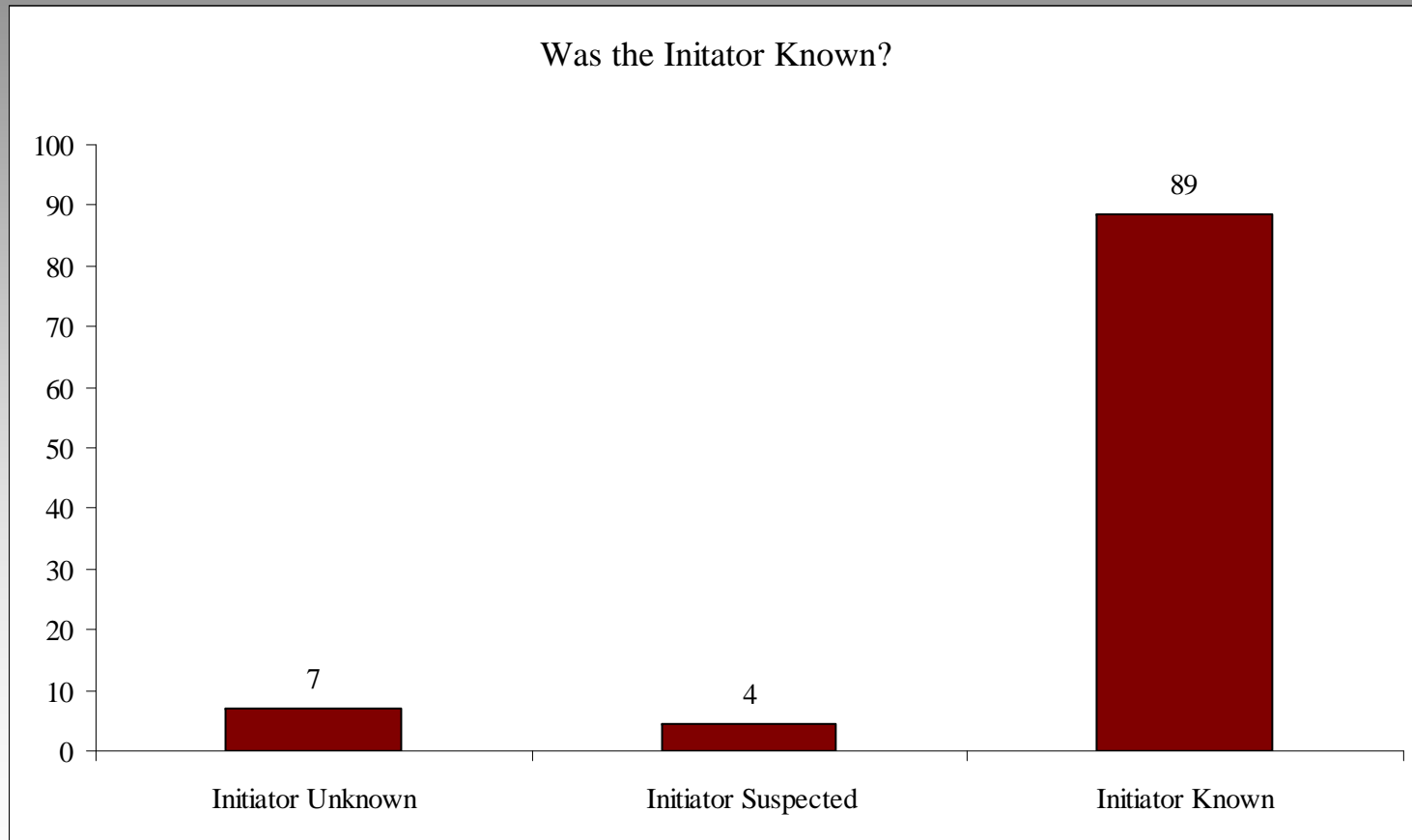
Distribution of Focal Events



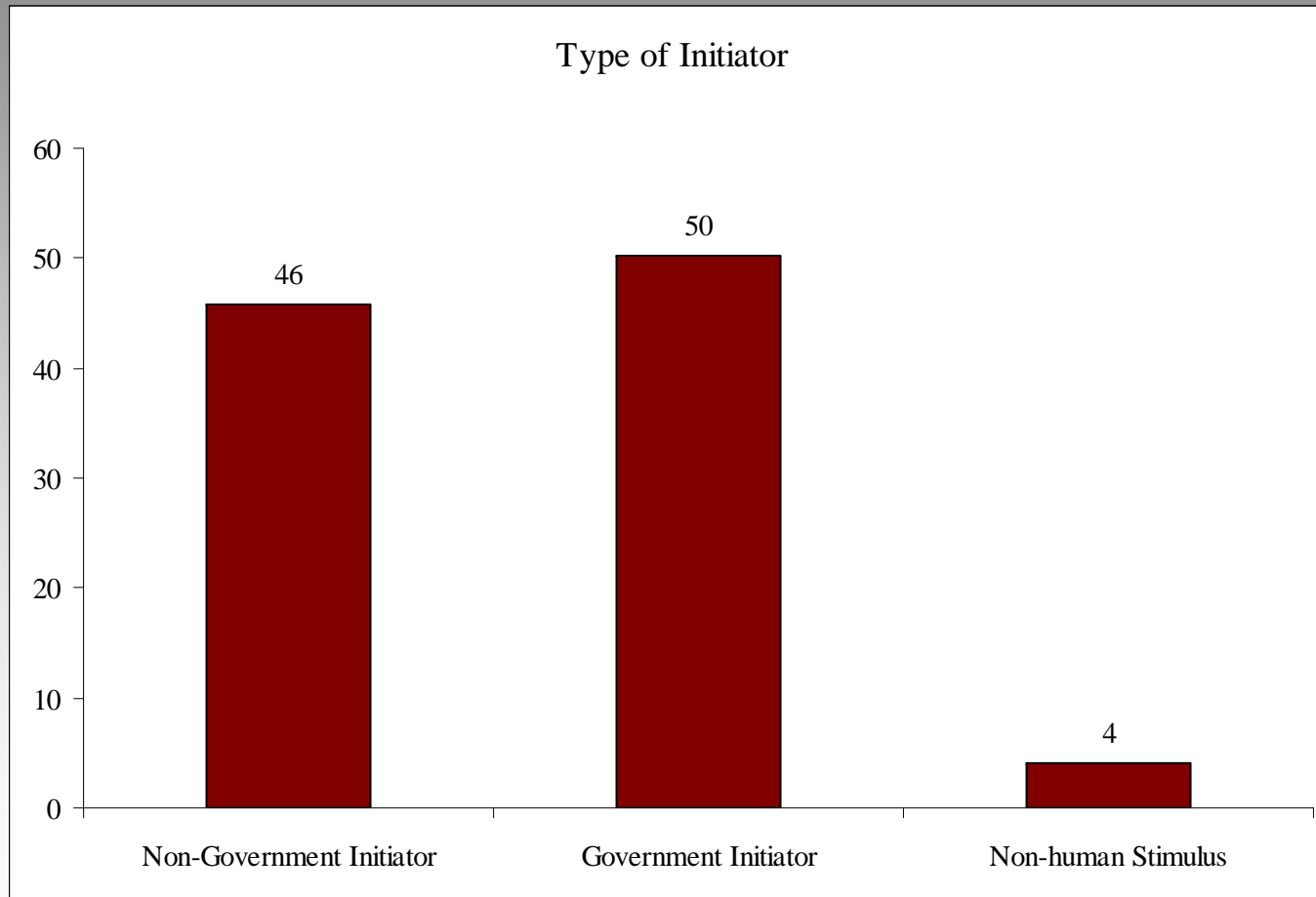
Location Type



Information on Initiator of Event



Type of Initiator



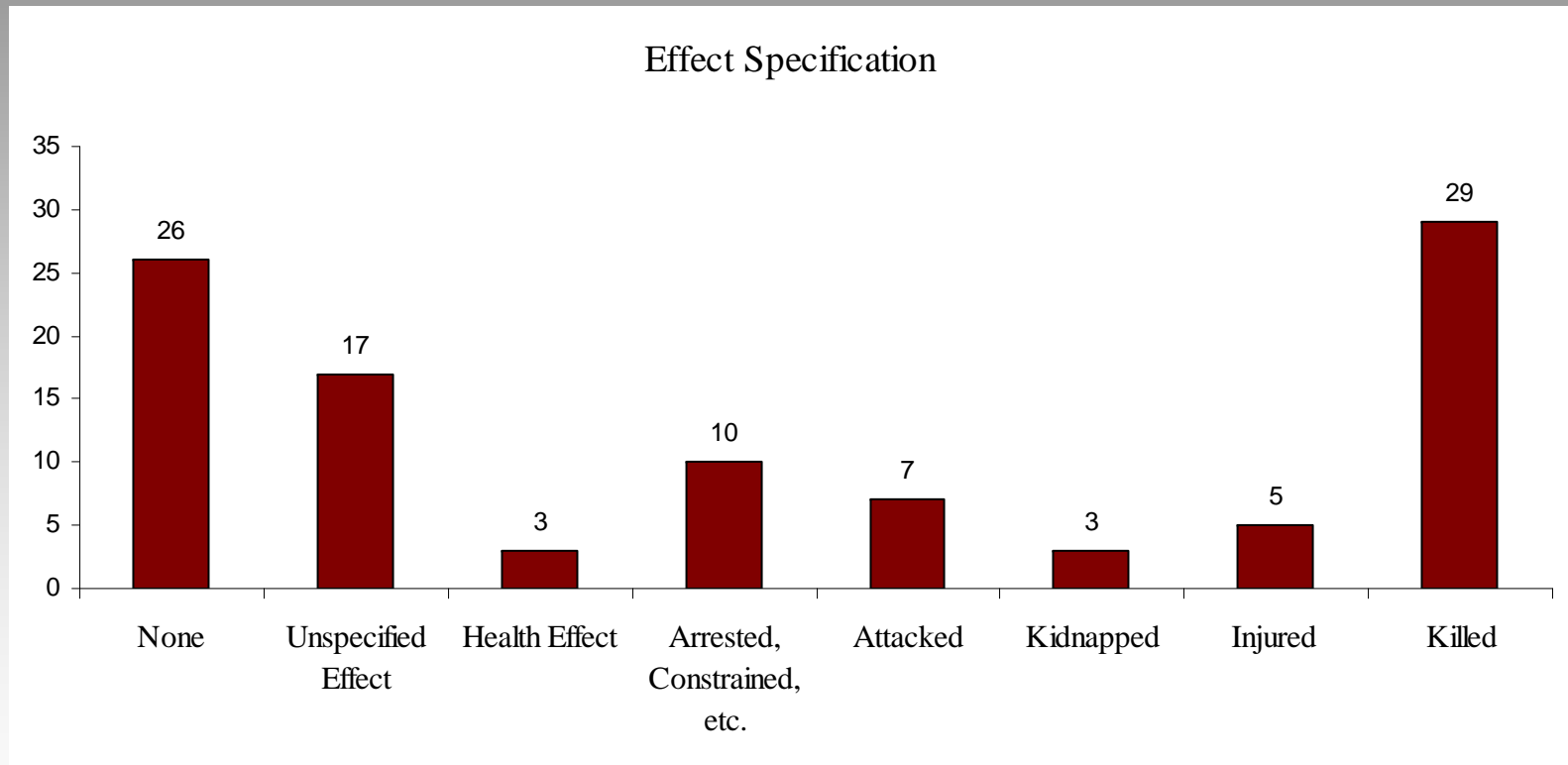
Median and Range of Initiator #'s

- **Political Expression: 275; 1-3,000,000**
- **Political Attacks: 9; 1-20,000**
- **Destabilizing State Acts: 2; 1-12,000**
- **Political Reconfigurations: 1;1-1500**
- **Mass Movements: 12,000: 300-315,000**

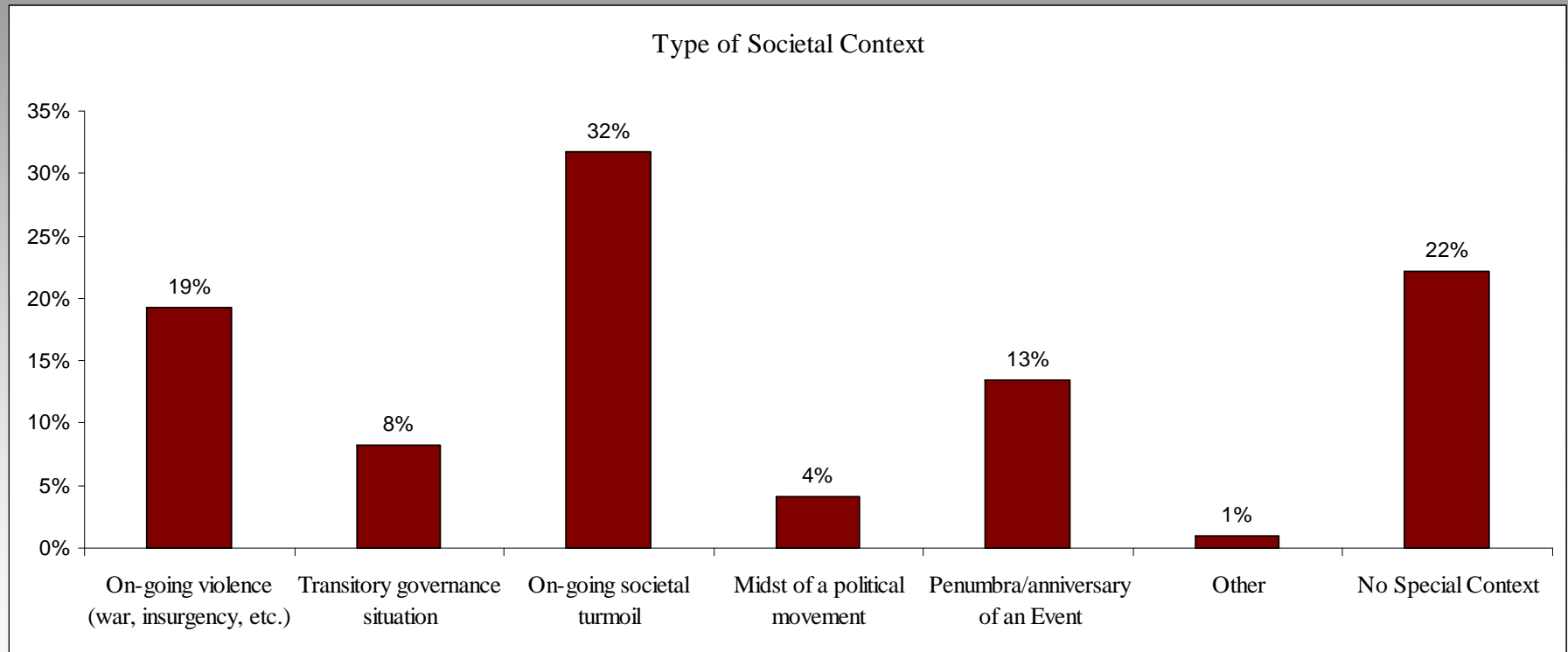
Names of Participants

- **Names are key for linking events**
- **Proper Names**
 - 18% of Initiators
 - 21% of Targets
 - 17% of Victims
- **Groups names**
 - 90%+

Distribution of Victim Effects



Societal Context of Event



Origins of Destabilizing Events

Attributed Origins of the Event

