Twenty Seconds that Shook the Agenda: An Assessment of Transportation Issues in the Mass Media Following the Northridge Earthquake

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Executive Summary

This study investigates how transportation issues were conveyed by the mass media, following the January 17, 1994 Northridge earthquake in Los Angeles. It is shown that the media are a vital tool for transportation planners, when a disaster causes damage to major arterials. The media are the primary means through which the public assesses damage to the transportation system, and learns which roadways and detours to use. They are also studied by out-of-town officials, who must appraise the damage. The media also expose people to new travel alternatives, like bus, carpooling, and rail service.

A content-analysis is used to study trends in major mass media, including radio, local and national television, and newspapers. This technique was used to quantify the volume of transportation news, as well as changes in emphasis over time. A number of related issues were investigated through content analysis including change in the overall level of traffic news; change in information about alternative modes, like train service and buses; and change in news about freeway recovery and rebuilding efforts. It is observed that stories about transportation were a regular, and continuous component of earthquake reports.

Unlike previous studies in transportation, this research used a very broad definition of information. "Official" transportation stories, like radio traffic reports, are not the primary source of travel information for the public after a disaster in which transportation facilities are destroyed. Instead, all media coverage, and television news stories, in particular, are relevant to an information-hungry public. This construct is well known in the communications discipline, but has not previously been applied to the transportation field.

This is shown to be of concern, since mass media have a tendency to select information which has a more visual and dramatic emphasis. A content analysis of television news on January 17, 1994, indicated that almost one-third of the content had mention of transportation damage. Gruesome pictures of mangled concrete and dangling rebars were shown over and over again. The transportation visual was so compelling that it was even overlaid on non-transportation stories. Findings from other disaster research suggest that this may have led people to over-emphasize the degree of damage to the transportation network at large, and over-estimate their personal risk. On the other hand, it may have also encouraged the public to travel less, and to investigate other modes of travel, like Metrolink. In fact, a time-series analysis of Metrolink ridership verifies a statistically significant association between increases in television coverage of Metrolink, and subsequent ridership on the Santa Clarita line.

The investigation examines other elements of disaster reporting in terms of their relevance for transportation planning. We note the media's tendency to cite

official channels, like government officials. This may benefit transportation agencies, since the public recognizes that transportation involves extensive coordination among federal, state, and local agencies. The role of the mass media in interpreting seismic conditions was not as clear-cut. Initially, there was a lot of information about seismic conditions, at large, and frequent mention that retrofitted structures had survived the quake. In later coverage, seismic retrofitting became a political and divisive issue.

The research also considers longer-term change on the transportation agenda. Event-study analysis indicated that media attention to Metrolink, freeways and bridges, and Caltrans, stayed at higher levels than would otherwise be predicted. Newspaper information about these topics did not dissipate as rapidly as other topics such as carpooling and telecommuting. If information levels are sustained over the longer term, they may reinforce awareness of transportation, and provide support for Metrolink.

The study makes evident that transportation officials must plan for, and have ready after a disaster, off-the-shelf strategies for dealing with the mass media. Following the Northridge earthquake, a number of commendable efforts were undertaken, like daily intra-agency press-briefings, rapid deployment of 1-800 phone numbers, and, in particular, the early arrival of men and equipment to damaged sites.

What transportation agencies can neither anticipate nor control, however, is the ability of the mass media to tell a vivid story, and to edit, film and shoot events in a way that tells the most dramatic story. The goals of transportation officials and media personnel are not always the same. Both have the needs of the public in mind, but transportation officials want to emphasize that recovery efforts are underway, and that public safety is a priority. The media tell the same story, but want to present news that will compel their audience to watch more and stay tuned to the same station. Transportation agencies should expect journalists to rely on more vivid footage, and seek out officials for interviews. They should also anticipate the search-for-responsibility after seismic-failures. What transportation agencies cannot control is the magnitude of the damage, and the journalistic penchant for showcasing loss-of-life or tragedy.

Accordingly, a final recommendation of this study is that transportation officials investigate and expand their own use of information technologies, like Highway Advisory Radio (HAR) and broadband-delivered traffic information. Augmented content could provide balance and depth to transportation reporting, and reach people before they commence trips. These technologies might be used as an alternative to the mass media by the public, and they would provide transportation officials with a relatively inexpensive, but high-technology solution to manage post-disaster response.

Acknowledgments

There was a saying shortly after the Northridge earthquake that the traffic was stopped, but the freeways were moving. The quake provided a tremendous opportunity to study how travel information was provided and disseminated. For getting the current study moving, I would like to thank Professor Martin Wachs of UCLA- a project team was convened as aftershocks jarred us into activity.

In terms of the current study, a major debt is owed to Gerald Gould, a beneficent mentor. The study would have been incomplete without his diligent investigation of coding algorithms and his continual vigilence of the data. His vast experience and engineering background provided a constant reality-test. I would also like to express thanks to Lyn Long, who participated as a research associate, and sharpened my ideas, and to Thomas Golob, a valued friend throughout.

Getting access to data was one of the most formidable and challenging aspects of this project. Without the able assistance of AVR Services of North Hollywood, Ca. and Kathy DelGado of KNBC television in Burbank, Ca., the task would have been daunting. I would also like to acknowledge special help from the Vanderbilt Television News Archive, the Nexis research service, and The Los Angeles Times Poll.

Appreciation is also extended to Sandra Ball-Rokeach of the Annenberg School for Communications who let me participate freely in her ongoing study of radio traffic reports. Dulce Leon contributed as an skillful research assistant during the start-up. Linda Bourque and Lisa Russell of UCLA's School of Public Health provided useful tables from their data analysis. Timely intervention from Judi Gold helped refine this report, as well as useful discussions with various media officials, including Marge Tiritelli, Steve Chesser, and Peter Hidalgo. Last but not least, I would like to thank my husband, Walter Torous, for reading the drafts, and providing suggestions.

Over the past decade transportation engineers have embraced new communication technologies. This study makes clear that the disciplines of communications and transportation share a great deal in common. While transportation research focuses more often on channels and transmission, communication researchers begin with the content and message of communication. I hope that the present study demonstrates the interdependence.

Support for the gathering of the data analyzed in this research came from the Bureau of Transportation Statistics, Northridge earthquake grant. All errors of omission or interpretation are those of the author.

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CHAPTER 1

INTRODUCTION

Traffic reports are a staple of broadcast media but the majority of transportation stories are not in the media spotlight. There are infrequent news stories about freeway openings, transit strikes, train derailments and other events. However, when a natural disaster strikes there is a meteoric increase in transportation news. There has been little or no systematic research on this phenomenon.

This investigation provides a case study of transportation and the media after the January 1994 Northridge earthquake in Southern California. Before sunrise on the morning of January 17 there were unconfirmed radio reports that the Santa Monica Freeway (I-10) had collapsed. Over the next few hours, details followed about damage to the I-10 Freeway and others. From the outset, it was clear that major damage had occurred to the transportation network in Los Angeles. What is not clear, and what we investigate in this report, is how that damage assessment was communicated by the mass media.

In the wake of the Northridge earthquake, the public was faced with great uncertainty about transportation. Given the magnitude of the earthquake, drivers had to determine first whether it was feasible to travel at all. Information about freeway conditions, surface street access, traffic light operations, and gasoline supplies were critical. The need for travel information did not stop with the decision to travel or not travel. *If* the decision to travel was made, drivers had to determine if alternative routes were available and whether they were likely to encounter congestion or delay.

The need for detailed information and guidance was even more complex for those who used mass transit, or made a mode change. Information was needed about train station access and parking, schedules, fares, and connecting transit modes. Figure 1.1 summarizes this complexity and illustrates the magnitude of information needs immediately after a disaster.

There are little data to help us reconstruct how people sought and acquired this new information. However, if we investigate the content of the mass media, we study the main source of information that was initially available. In the initial hours following the Northridge earthquake, television and radio broadcasts were the only source of information, and television was only available to those with electrical power. In subsequent days, local newspapers provided additional detail. The number of information sources grew, as transportation agencies publicized '1-800' telephone numbers, and distributed post-quake travel guides. Figure 1.2 depicts the (likely) flow of official travel information in the

days and weeks following the Northridge earthquake. A small, but technologically forward group gathered travel information from computer bulletin-boards and interactive networks, cellular phones and specialized advanced traveler information services (ATIS). Our investigation is centered upon public needs, so we do not study the role of private information networks used by truckers and commercial dispatchers.

If we compare the information need of the public (Figure 1.1) with the availability of information sources (Figure 1.2), it becomes apparent that the mass media played a critical role. All of the mass media, and radio and television, in particular, helped people assess the severity of the damage to the transportation system, the status and conditions of surface streets and freeways, and the availability of travel alternatives. Immediately after the earthquake, the mass media played a major role in the decision of whether or not to travel.

The influence of the mass media was not limited to the immediate need for traffic and transit information. Communication research on disasters has identified a number of other impacts. For example, it is commonly assumed that transportation agencies provide damage assessments for the media, and are able to interpret the situation for the press. However, aerial television cameras often arrive, and begin to broadcast live reports before transportation workers are on the scene. Some of the first broadcasts of freeway damage preceded announcements by Caltrans officials. These same broadcasts are often received by policy makers and officials on the East Coast, who must base decisions on the extent of the damage and the need for outside assistance.

Over the longer term, increased media attention and emphasis can promote travel alternatives, like telecommuting, carpooling, and mass transit. But it is not known whether a change in the media agenda will produce greater support for transportation issues, at large, or specific support for carpool lanes and other options. It is empirically known that the use of car-pooling was not sustained after restoration of the I-10 Freeway. But, but did media coverage succeed in changing overall attitudes towards the desirability and social value of car pool lanes?

The notion that the mass media have an important influence on transportation attitudes and behavior has been articulated by various researchers but there has been little empirical research to document this phenomenon. For example, Giuliano (1992) and others attribute a reduction in peak period trips and high levels of spectator transit use during the 1984 Olympics in Los Angeles to traffic management programs that included media information services. As Giuliano notes, these new travel behaviors were unlikely to be sustained over the long run. We observe parallel results in our analysis of media and Metrolink ridership after the earthquake.

This investigation uses content analysis to provide an analytical investigation of agenda setting, and to describe the role of the mass media after the 1994 Northridge earthquake. The methodology of content analysis is described in Appendix A. Specifically, we look at the frequency, type, and content of newspaper, radio, and both local and national broadcast reports. Throughout this report we provide examples of how the media provided information that helped to define and guide public understanding of the damage and the alternatives.

The ability of the media to do this is so overwhelming that in the final chapter of this report we recommend that transportation officials investigate new technologies for post-disaster communications. Advancements in advanced traveler information systems and other information-delivery services may help satisfy a public anxious for accurate travel updates, and provide them with post-disaster coverage that is both continuous and comprehensive.

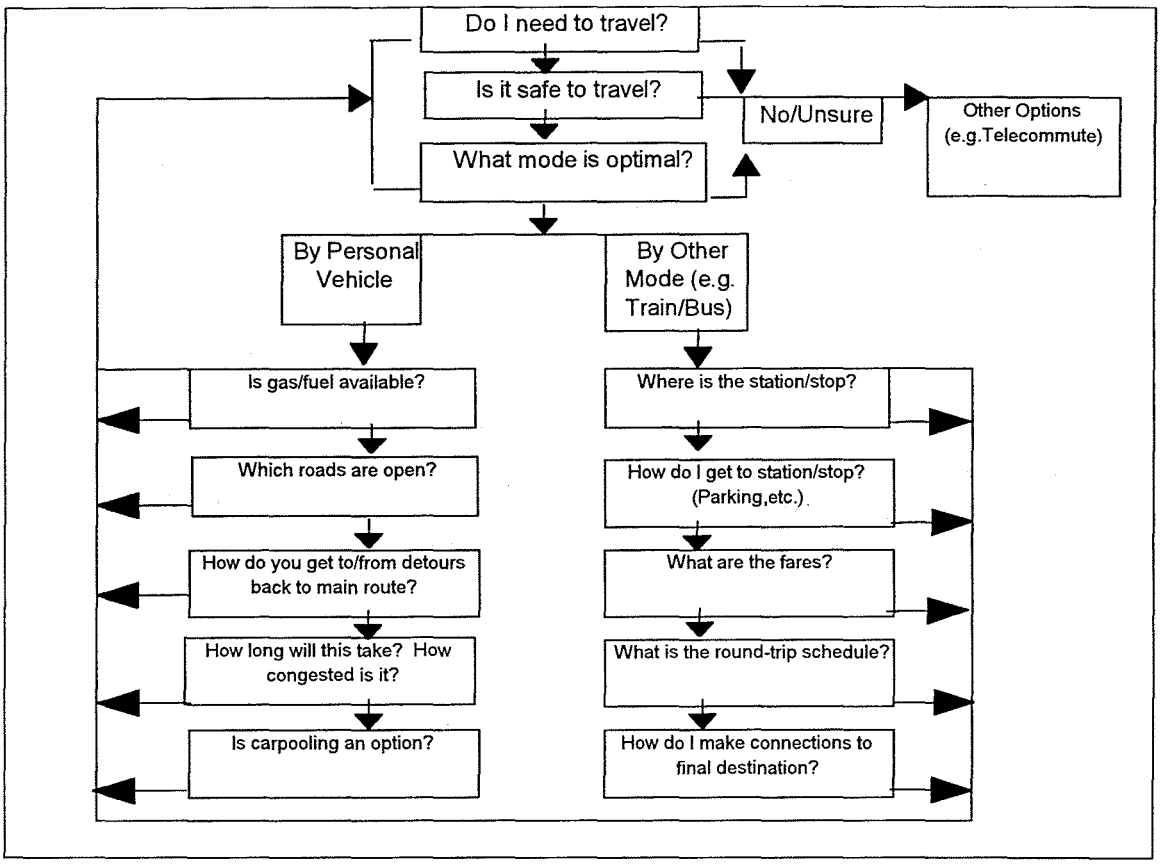
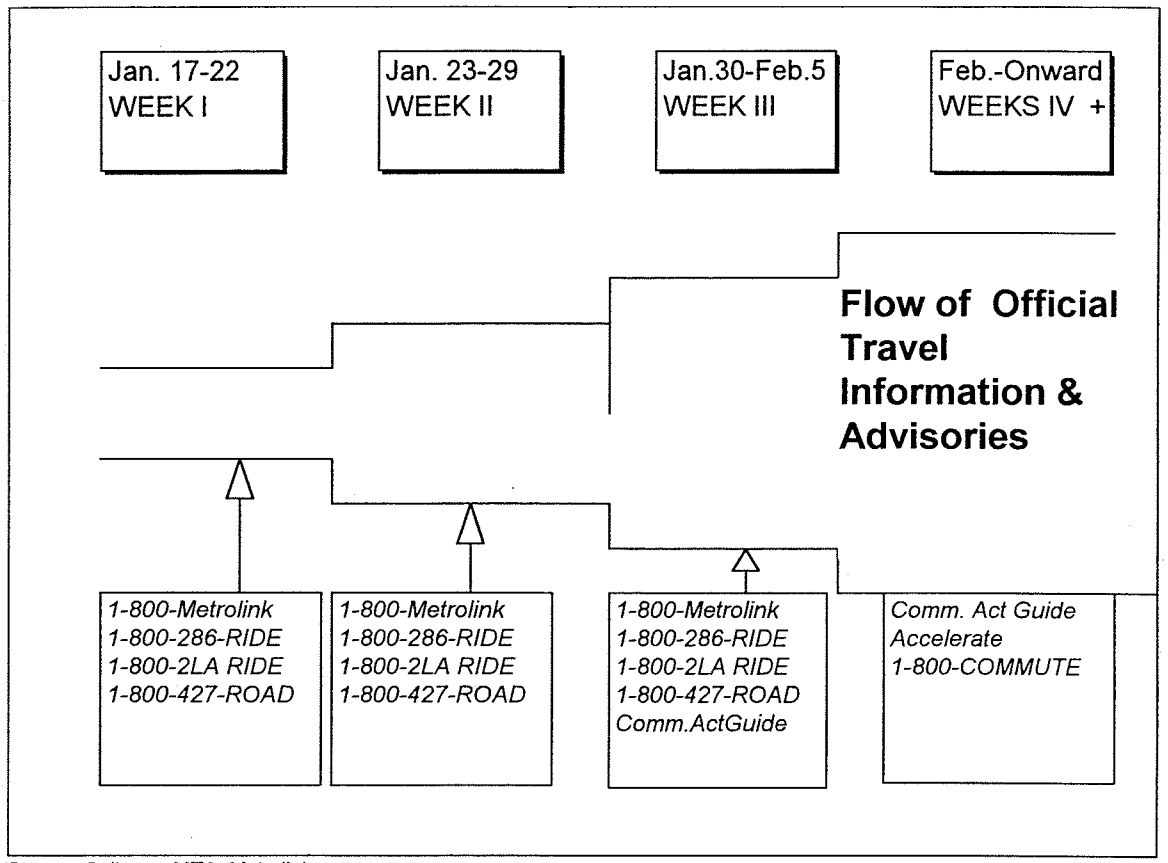


Figure 1.1: Information Needs Given Public Uncertainty About The Transportation Network



Source: Caltrans, MTA, Metrolink

Figure 1.2: Travel Information and Other Advisories After the Northridge Earthquake

CHAPTER **2**

OVERVIEW AND RESEARCH APPROACH

Under normal conditions, radio is the primary medium for delivery of traffic information. Dudek, et al.,(1971) and others have shown that radio traffic reports help drivers plan their trips or select alternate routes. (See also Daniels, et al., 1976; Abdel-Aty, et al.,1995; Polydoropoulou, et al., 1995). Studies by Khatttak and de Palma (1995) and others mention the importance of the message content (e.g. relevant and accurate) as well as characteristics of the audience. A multi-year study of Los Angeles traffic reports by communications scholar Sandra Ball-Rokeach (1994) shows that traffic news has many functional dimensions which have not been previously investigated.

Much of the transportation research on radio news is complementary to the current investigation. However, following an earthquake, the influence of the mass media is much greater, for a special situation of media dependency is created. People do not have personal sources of information, there is issue-conflict, and the need for information is heightened (Ball-Rokeach and DeFleur, 1975). The mass media become a primary source, and traffic information is a subset of greater information needs. Table 2.1 underscores that post-disaster reporting varies in characteristics like speed of reporting, story depth, and reliance on visual material.

	Television		**Newspapers**		**Radio**	
Attributes:	Norm	Crisis	Norm	Crisis	Norm	Crisis
Audience Size	+	+		+		+
Speed of Delivery		+			+	+
Freq. of News Updates		+			+	+
Graphic/ Visual Reports	+	+				
Analysis and Review			+	+		

Table 2.1: Attributes of Media and Likely Changes Under Crisis Conditions

In the following chapters we explore the characteristics of post-earthquake transportation coverage. Findings from other disaster studies, including the Loma Prieta quake, guide the analysis. The data and methodology for our content analysis are provided in Appendix A; the scope of our investigation is outlined here:

***(Chapter 3)**: What is the post-disaster response by the mass media to transportation issues?* We establish a base-line and examine how news about transportation varies relative to other earthquake coverage. Does transportation overwhelm the media agenda, or is there balanced coverage of many issues?

***(Chapter 4)**: What are the key patterns of mass media activity in reporting disaster information, and how can they shape primary images about transportation options?* This is a broad research question, implicating analysis of media content immediately following the disaster. We compare coverage of transportation issues, in both the Northridge and Loma Prieta disasters. Based on findings in the literature, we assess three main characteristics of media coverage: the vividness and emotional content of visual coverage, journalists' reliance on official sources, and media handling of technical material, in this case investigation of seismic retrofitting for transportation structures.

***(Chapter 5):** What is the level of factual reporting about travel information*? Restating an earlier point, all of the mass media become sources of information about travel alternatives, and official travel bulletins are a subset of much larger information needs. We introduce the notion of incidental learning from news media as an important source of information on road conditions, transit alternatives, and the like.

***(Chapter 6):** What perception was developed towards mass transportation, and did it vary over time?* This questions deals with the fact that most people in Los Angeles do not have direct experience with mass transit, and did not use it prior to the disaster. Did media coverage enhance knowledge about mass-transit options and portray it as a viable option?

***(Chapter 7)**: Was there a longer-term effect on public priorities and the public agenda?* There is no doubt that the earthquake brought overnight attention and assistance for transportation in Los Angeles. Will interest in transportation be sustained? Event-study methodology is used to examine changes in the media agenda towards telecommuting, carpooling, and other topics.

***(Chapter 8):** Are there other lessons from media coverage of the Northridge earthquake that have special applications for transportation?* This final question acknowledges that many post-disaster assessments are based on emotional appeals. Depictions of "human interest" elements in transportation are discussed.

CHAPTER **3**

TRENDS IN NEWS COVERAGE

In this chapter we analyze trends in media coverage based on content analysis of local radio, newspapers, and television. Many people associate stories of the Northridge earthquake with repeated pictures of sagging freeways and sheared-off interchanges. The earthquake clearly increased coverage of transportation issues. But how did the amount of coverage compare to disaster news at large? After the earthquake the news media had many stories to cover: injuries, fatalities, Red Cross and volunteer organizations, public health risks, housing, shelters, federal assistance and insurance. Within the totality of earthquake news, what percentage centered on transportation? This section provides a baseline and overall trends. In the next chapters, we examine the coverage in more detail.

3.1 Television Coverage

We begin with an examination of the ratio of transportation news to other earthquake coverage. Unless power is lost, television serves as the major outlet for hard news after a disaster (Walters and Hornig, 1989; Wilkins, 1985). In Los Angeles, Bourque (1995) polled respondents after the quake and found that 36% said that television was their primary source on January 17, 1994 and 58% said that it was their best source of information (Appendix B).

The data in Figure 3.1 compare trends in the 6 p.m. *national* news (NBC) with the 5:30 p.m. *local* evening newscast in Los Angeles (KNBC). The values are computed in minutes; a standard half hour news broadcast has twenty-two minutes, which is the amount of news-time after advertisements. On January 18, local news took precedence over ads. Coverage on January 17, 1994 was so extensive that we report on it separately (Chapter 4). The number of stories drops precipitously after the second day, and also declines over the weekend, when there are fewer commuter trips. In local news, transportation stories occur in about 20% of all earthquake coverage. The pattern is different for national news. After the third day, there was very limited national news about transportation, and by day six, no coverage at all. Thus, out-of-town audiences primarily saw pictures of the freeway collapse and damage, and did not see as much information about the recovery efforts.

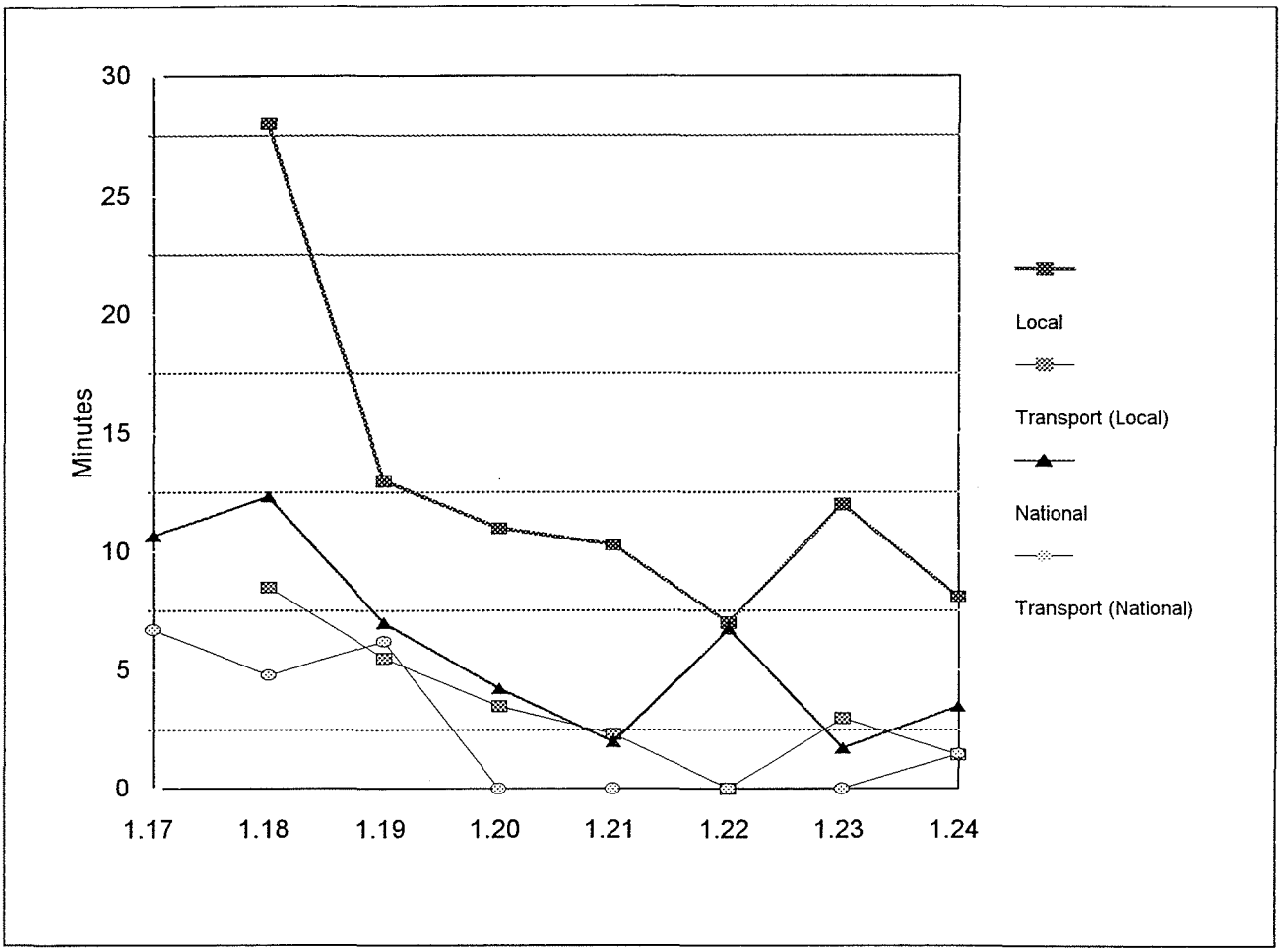


Figure 3.1: Transportation Coverage on Local and National Television News, in Relation to Total News Coverage of the Earthquake

3.2 Radio Coverage

We also examined radio's attention to transportation over the same period. The metric used here is an emphasis measure, based on the number of stations, and the number of times a story was aired. We are not able show a comparable, and reliable measure for earthquake-news at large because our metric is the story-unit and not air time. Information about transportation is more frequent on week-days and increased as commuters returned to work (Figure 3.2). These stories are exclusive of radio traffic reports, which were also broadcast. The limited number of transportation stories on January 17, 1994 may be due to several factors: the absence of television's visual material, few on-site reporters or news-services, and power-outages across radio stations.

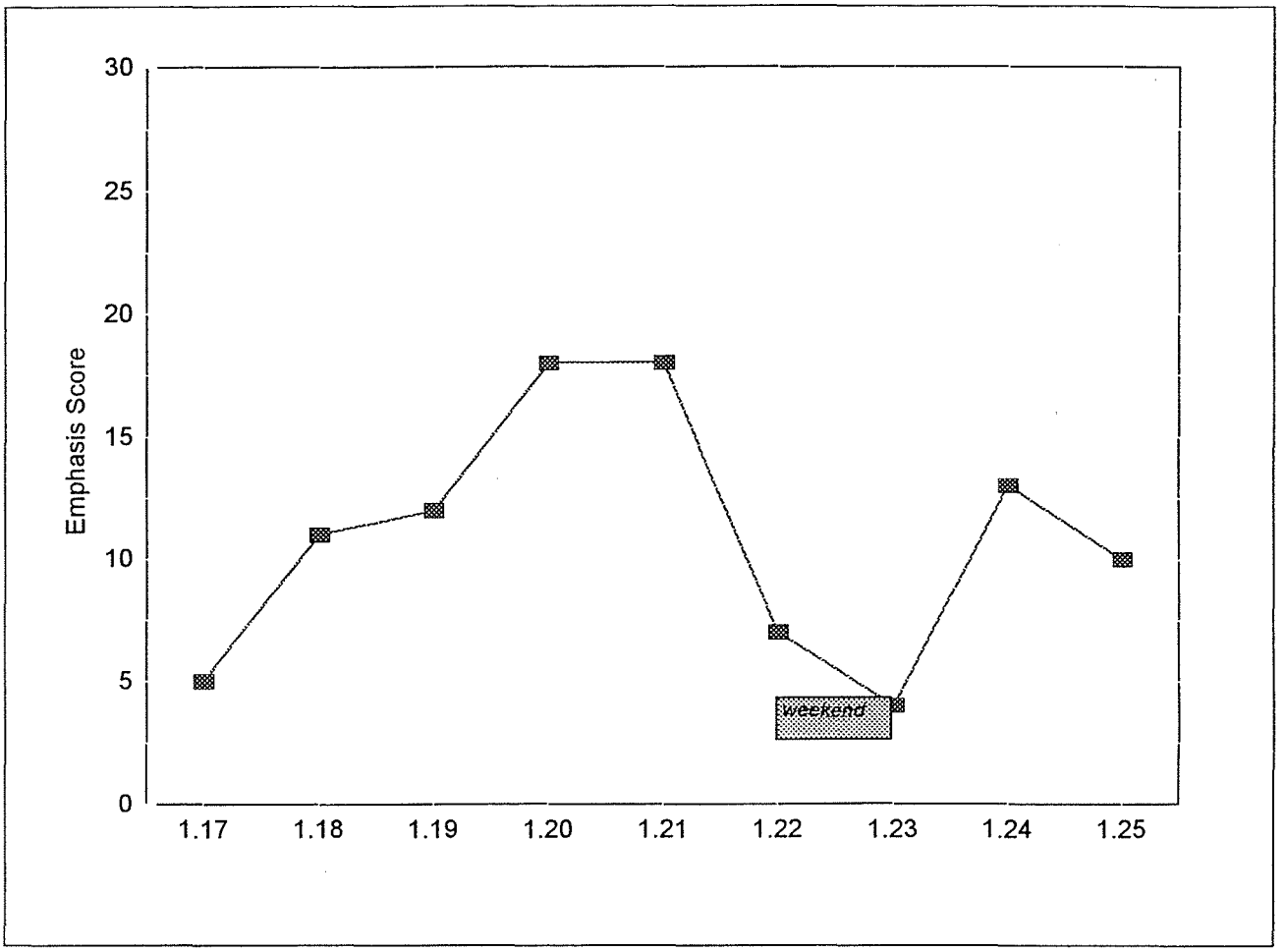


Figure 3.2: Coverage of Transportation News Stories on Radio

3.3 Print Coverage

Finally, we investigated the print media's coverage of transportation in relationship to disaster coverage at large. Figure 3.3 shows the number of stories in *The Los Angeles Times* over the same period as national television and radio. The occurrences are frequent throughout this period. Figure 3.4 takes a much longer horizon and examines coverage over the 7 months following the earthquake. This is a subset of all transportation coverage, since the story had to also mention the quake. It can be seen that there is a fairly steady but declining level of coverage until the fifth week after the disaster. After that point, both transportation coverage and earthquake news continue, but at lower rates. The rates parallel each other, and transportation appears to be a steady component of earthquake reporting. The scale used in Figure 3.4 obscures the rise in transportation news that occurred as sections of the damaged freeways were reopened in April, May, and July.

3.4 Summary

Monitoring news trends is commonly done in communications research because the number of times that an issue is mentioned can be associated with public opinion and policy initiatives. Issues that are repeated frequently over time are more likely to be prominent in people's minds and discourse. Conversely, issues that receive less coverage, or falling coverage, are believed to decline in importance. However, the lead-lag cycle between issue attention and public opinion is quite complex to model (see, for example, Watt, et al.,(1993)).

In Chapters 6 and 7 we revisit the issue of lag cycles, and examine whether the earthquake led to an exogenous change in transportation coverage. In Chapter 6 we do an exploratory analysis of the relationship between media attention and Metrolink ridership. We conclude this section by observing that the Northridge earthquake was an exogenous shock to news about transportation that led to initially high levels of coverage. In the subsequent chapters, we explore the characteristics of this coverage.

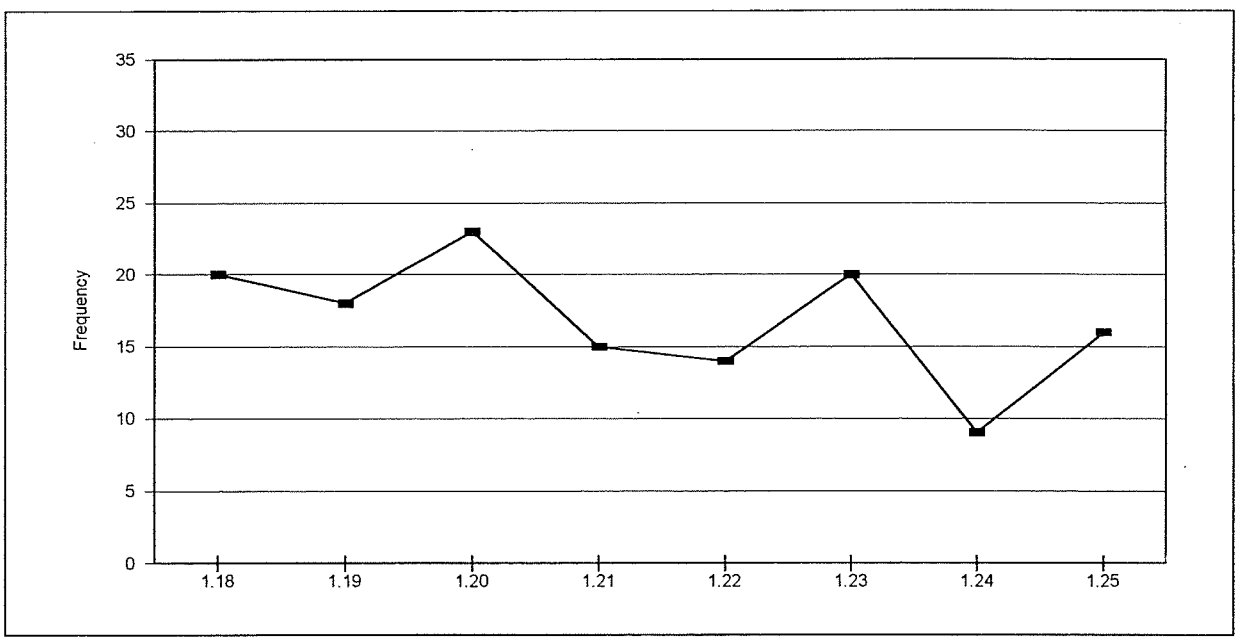


Figure 3.3: Press Coverage of Transportation News Stories (Week One)

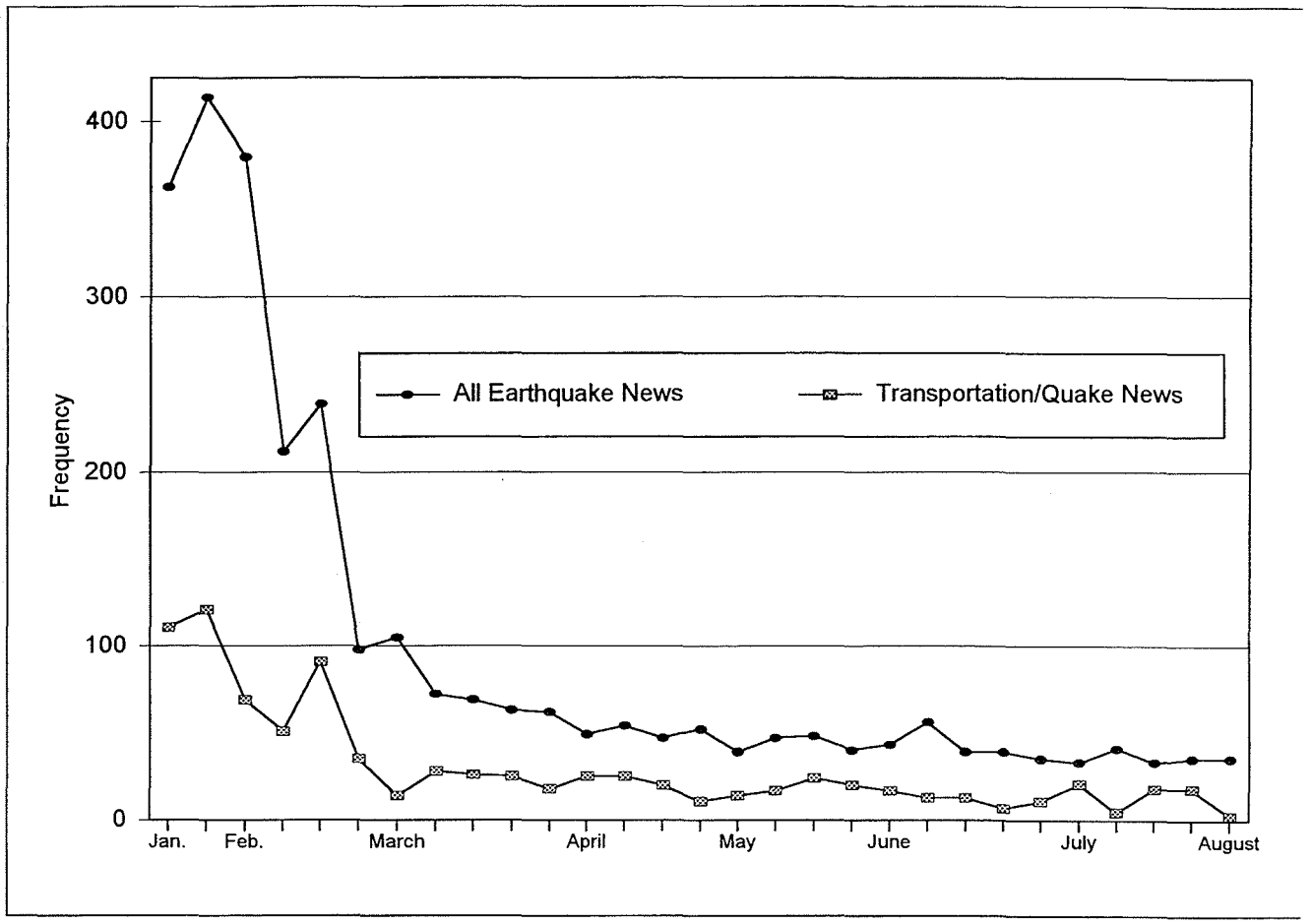


Figure 3.4: Press Coverage of Transportation & Total Earthquake News Over Time

CHAPTER **4**

CHARACTERISTICS OF DISASTER REPORTING: TRANSPORTATION STORIES AND TRANSPORTATION METAPHORS

There is a small, but growing literature on the media coverage that follows a disaster (e.g., Disasters and The Mass Media, 1980; Annenberg, 1989; Singer and Endreny, 1993). This literature often makes a distinction between disasters which have natural causes, like floods, earthquakes, or hurricanes and man-made disasters, like oil spills, hostage taking, and nuclear accidents. Whether the causes are natural or man-made, the literature points to uniform themes in the production and reporting of disaster news. In this chapter we examine, at some length, three major characteristics of disaster reporting. We develop a framework to show how the public acquires information, and why news about transportation is of such high priority.

The first characteristic we discuss is a tendency in disaster coverage to highlight the most *visually interesting or vivid events*. When these events are seen repetitiously, and displace other news that could be reported, they have a distorting effect. This is arguably of highest importance to transportation officials, because repeated emphasis upon damage to the transportation system may generate a chain of reaction: people may decide that it is too dangerous to travel, and stay home; or they may decide to investigate other modes; or they may try to learn about alternate routes. These and other possible reactions were described in Figure 1.1 (p.4). The effects can be both positive and negative. Visually interesting and vivid coverage can also provide a frame of reference for outside audiences, like policy officials. An assessment of extreme damage and need may speed the deployment of financial assistance and resources.

Almost all media studies on disasters have observed this characteristic, and it is often linked to television, which is inherently better than print at conveying images, schema, and emotions (for an example cf. Spencer et al., 1992).

A second characteristic of disaster reporting, is not as omnipresent, but seems to also occur during early coverage. The media *rely on official sources*, and report from the perspective of formal social control agencies, like the police, city government, and other public officials. This selectivity is called the "command post point of view" (Quarantelli, 1981). It is particularly relevant to transportation agencies which have information that is centrally organized and disseminated.

Finally, we assess a third characteristic of media coverage. Journalists try to make sense of a disaster, and *help their viewers/readers understand the*

underlying causes. Following earthquakes, the media provide technical facts about geology and seismograms. If buildings fall or freeways collapse, there is inevitably discussion about structural integrity, engineering, and seismic retrofitting. We analyze how the press interpreted and disseminated news about the freeway collapse. It is of tremendous importance to know whether the situation was presented as an avoidable mistake, or an unavoidable calamity.

We explore these three interrelated issues in the context of the Northridge earthquake and present relevant observations from media studies of the Loma Prieta quake.

4.1 Vivid Images and Visual Metaphors

Although there is general agreement that the media overemphasize visual stories during a disaster, there is some debate about why. One school of thought traces the visual emphasis to audience ratings, and a journalistic definition of what is "newsworthy". Others cite the inherent ability of television to transmit *experience* or emotional material powerfully. Smith (1992), who studied earthquake coverage after the Loma Prieta disaster, believes that transportation received more dramatic coverage than other issues. He writes:

> *television news stories quickly focused on the collapsed freeway on the I-880, the damaged Bay Bridge, and destruction in San Francisco Marina district as symbols (emphasis added) of the earthquake. The towns of Santa Cruz and Watsonville, while closer to the epicenter, received substantially less media attention (p.120)*

There is empirical evidence to support Smith's assertion that transportation images became symbols of the damage, at large. Two days after the Loma Prieta earthquake, researchers at the University of Southern California asked a non-random sample of 112 undergraduate students to identify their main visual image of the earthquake. Forty-five students (40%) mentioned the collapse of the Oakland Bay Bridge, and 46% mentioned the Nimitz Freeway collapse. Only 15 students (13%) mentioned fires in the marina district or other imagery (Rogers et al., 1990).

In Table 4.1 we explore some of the similarities and differences between the two earthquakes. Images from the Loma Prieta earthquake are more "newsworthy" on at least two counts. First, four out of five deaths in the Loma Prieta quake occurred in motor vehicles on public roadways (Eberhart-Phillips, et al., 1994). In the Northridge quake, the majority of deaths took place in a collapsed apartment building. There was also live footage of vehicles suspended on the Bay Bridge. If the Northridge earthquake had occurred during rush-hour there would have been more negative imagery. Content data indicates that the national news dropped regular coverage of Northridge transportation stories after the fifth day, while transportation stories appeared for twice as long (10 days) following the Loma Prieta earthquake (Appendix C).

IMAGE	LOMA PRIETA	NORTHRIDGE
Traffic or Transit Fatalities	+	-(low)
Video in Real-Time (e.g. Bay Bridge motorists)	+	-
"Perceived" Importance of Freeway to Community	-/+	++
Transportation Damage, but not Showing Commuters*	-	+*

*e.g. derailed freight train, death of motorcycle policeman

Table 4.1: Comparison Of Transportation Imagery-- Loma Prieta and Northridge

If a transportation image, or metaphor, did emerge after the Northridge earthquake, it would have different dimensions than Loma Prieta. From our data, it appears that there was a widespread belief about the extensiveness of the damage to Los Angeles freeways. This, in turn, probably incited fears of "commutes from hell" and propelled trial use of Metrolink.

Data from television coverage (Figure 4.1) show that on the first day of the quake, January 17, pictures about the freeways were presented in about 30% of the news stories. About 18% of the stories were directly about transportation, and an additional 13% were non-transportation stories that used a transportation overlay, i.e., the story showed a visual of the freeway collapse even though the narrative was not about transportation. For example, a story about the closures of public schools was accompanied by a visual of the freeway damage, presumably because the freeway picture was more visually interesting or available. In subsequent days, the freeway graphic was used only in bona fide transportation stories.

The amount of coverage on January 17, 1994 is of some import. These are the initial, and primary, images that people use to interpret the crisis. Research on disasters suggests that this imagery is likely to be recalled, even if later coverage contradicts or retracts the initial reports (e.g.,Wenger, 1980; Smith, 1992). One broadcast reporter even pronounced that the picture of the I-5/State Route 14 overpass was, "the major image of the quake, ...one that we'll remember..like we remember the collapse of the I-880 after Loma Prieta -". (KNBC, ID #17-12, story length: 1:13).

Had there had been more freeway fatalities, transportation coverage would have undoubtedly soared. As measured in both minutes and story occurrences, there was extensive coverage showing the search and removal of victims from the collapsed Northridge Meadows complex (19%). There was also a significant amount of broadcast time given to the rescue of a janitor trapped under parking

garage rubble (8%); and raging gas fires (11%). In comparison, 17% of the stories on the first day were directly about transportation.

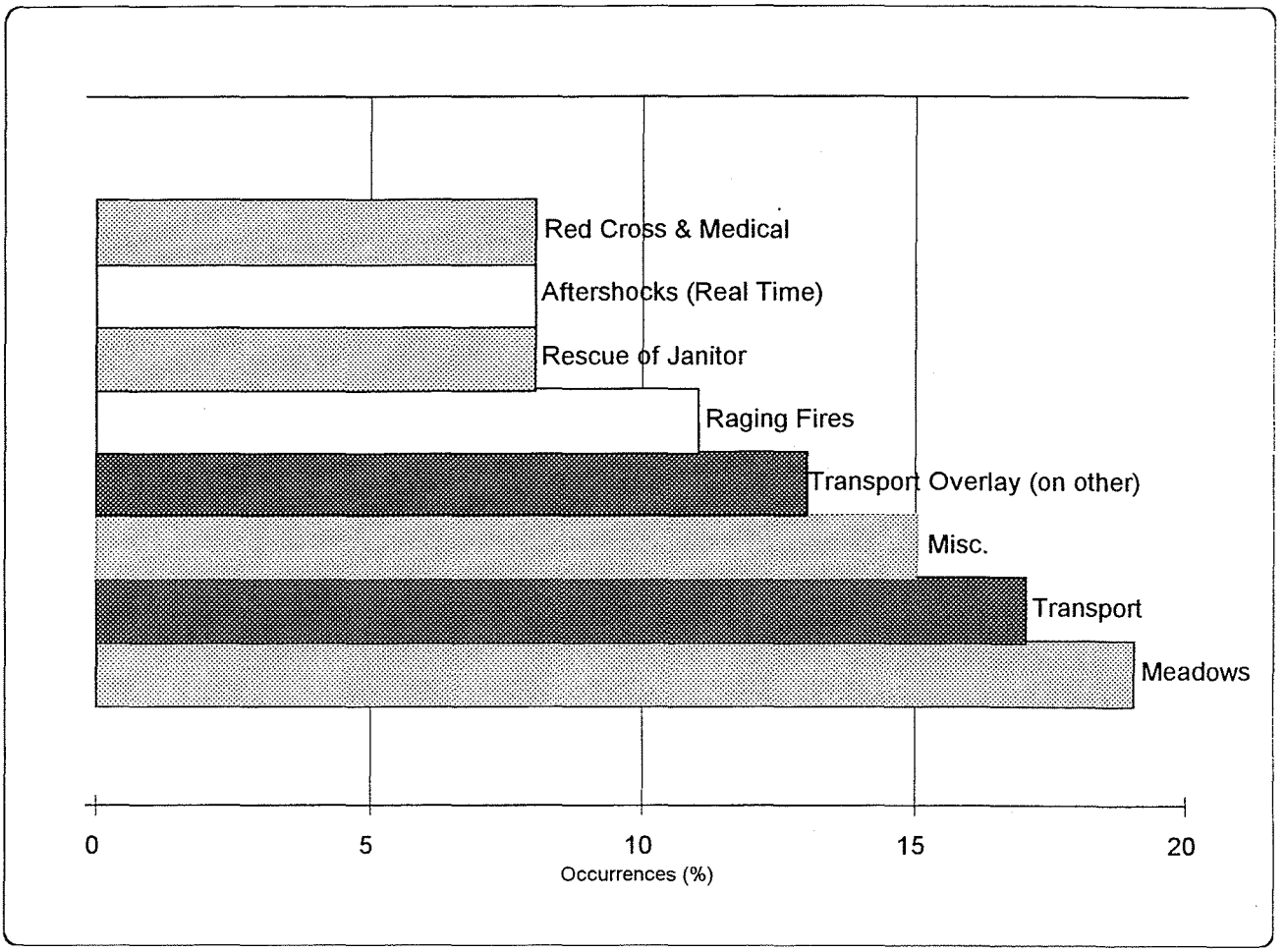


Figure 4.1: Local TV News Coverage of Transportation and other Topics on January 17

The information in Figure 4.1 is not, itself evidence of a transportation metaphor but it is suggestive. To assess evidence for, or against, visual emphasis in the print media we examined front page headlines and graphics in the local press and in three influential out-of-town newspapers. A vivid graphic of the freeway collapse was on the front-page of each paper on January 18, 1994 (Appendix F). Over the next two days, both The Washington Post and The New York Times continued to show transportation photos on their front page. Influential policy makers who got their news from these Eastern media saw coverage that emphasized damage to the transportation network.

	Date: Headline	%*	Date: Graphic & Caption
Washington Post	1/18:"Destructive Quake Shakes Los Angeles; at Least 29 Die, Hundreds are Injured; Roads Collapse, Crews Battle Dozens of Fires"	1/3	1/18: "Workers survey wreckage on collapsed overpass...
	1/19: "LA Takes Stock of its Wounds; Quake Leaves 40 Dead, Freeways Shattered, Houses without Water." (subtitle) "Quake Leaves 40 Dead, Freeways Shattered, Houses Without Water"	0/1	
	1/20: (No Front Page Stories Mentioning Transportation in Headline)	1/1	1/19:"Commuters are bumper to bumper..many..discovered.. Metrolink..."
New York Times	1/18: " Severe Earthquake hits L.A. At least 30 killed; Freeways Collapse"	2/3	1/18: "The earthquake severed the freeway system" (map)
	1/18: "Collapsed Freeways Cripple City Where People Live Behind Wheel"		1/18: " The body...near .. overpass that collapsed"
	1/19: (No Front Page Stories Mentioning Transportation in Headline)	1/1	1/19: "A work crew..shore up damaged.. Santa Monica Fwy."
	1/20 "Two days after Quake, A Taste of Traffic to Come".	1/1	1/20: "The snarl of morning traffic on.. Sierra Highway..."
Chicago Tribune	1/18: "City Wakes to Rubble, Ruined Roads"	1/2	1/18:".. body...lies on a collapsed portion of Hwy 14..."

*Total number of transportation graphics on front page /all earthquake graphics (including transportation) on front page

TABLE 4.2: Front Page Coverage of Transportation by Out-of-Town Newspapers

Interestingly, all three out-of-town newspaper printed on inside pages, a picture of a man grieving as a friend's mobile home is engulfed in flames. The man had also lost a motor home in a 1971 earthquake. This level of coverage might be explained by a strong "human interest" theme and human triumph in the face of adversity (cf. Chapter 8).

From television and newspaper account after the earthquake, it is evident that a substantial amount of coverage did focus on damage to the transportation network. We observed that newscasters soon began to speculate on the difficulty of commuting. The media made frequent mention of nightmare commutes, as evidenced by the headline in *The New York Times* on January 20, 1994: TWO DAYS AFTER QUAKE, A TASTE OF TRAFFIC TO COME. *The Los Angeles Times* even coined the headline THE LONG ROAD BACK for a daily column, with post-earthquake advisories (cf. Chapter 5). In balance, the *Times* did observe that..."*like most disasters in Southern California, Day I of the traffic apocalypse looked more sweeping on TV that it was in real life...*"(Los Angeles Times, 1/18/94, p.1).

Traffic count and survey data show that a number of trips were eliminated after the quake (Bare and Steinman, 1995) and that traffic volume dropped drastically in the first few weeks (Yee, et al., 1995). It is likely that extensive visualization of freeway damage led people to avoid travel, because they thought that large portions of the freeway system were unsafe. In the media- effects literature this is called the "Dresden Syndrome". A constant focus on destruction leads audiences to over-estimate damage, and infer that entire communities, rather

than individual blocks or tracts, are destroyed (Wenger, 1980). In the case of transportation, the public may have expected widespread damage throughout Los Angeles' 510 miles of freeways. In fact, most of the freeway system remained intact and the damage was confined to four freeway sections.

	Date: Headline	%*	Date: Graphic & Caption
LOS ANGELES TIMES	1/18: "33 Die, many hurt in 6.6 quake. Freeways buckle, building topple"	1/2	1/18: "...body...near his motorcycle which plunged off the Antelope Valley Freeway Overpass that collapsed..."
	1/18: "Commuters will face nightmare for months"		
	1/18:" Questions on Reinforcing of Freeways Raised"		
1/19	(Note: Special Section "T" on Earthquake)		
	1/19: "Commuters make the Adjustment"	0/1	1/19 (no transportation graphic on p.1A of LA Edition. Many on front page of special earthquake section)
	1/19:" Orange County Freeway Structures to be Reinforced" (Orange County Edition)		1/18: retrofitting for earthquake safety is a part of construction on Santa-Ana, Costa-Mesa freeway interchange. (Orange County edition)
1/20	1/20: "Delays Grow as Commuters Go Back to Work"	2/2	1/19: In Santa Clarita commuters swarm a Metrolink station as residents sought ways..."
	1/20: "Rescued from a Parking Lot in the Sky"		1/19: "Three vehicles that were stranded on I-5 by the quake are now reunited with their drivers"

*Total number of transportation graphics on front page /all earthquake graphics (including transportation) on front page

TABLE 4.3: Front Page Coverage Of Transportation by The Los Angeles Times

4.2 "Command Post" Reporting

A second characteristic of disaster reporting is a journalistic bias towards relying upon and citing official sources like policemen, public agencies, and civic leaders. This is more characteristic of local news coverage. It can be attributed to factors such as the dependence of journalists on outside sources, the necessity of meeting air deadlines or press runs, and close social ties between the media and community organizations that predate the crisis (Quarantelli, 1981). In the case of man-made disasters, like chemical spills or hostage taking, this so-called "command post" reporting may lead to over-reliance on official sources, and less in-depth investigation. However, in the case of a natural disaster like the Northridge earthquake, command-post reporting may facilitate the handling of the emergency. The public seeks assurance that facilities are being restored as soon as possible, and communications with official sources may reinforce this.

Beginning on January 19, 1994, daily meetings were held among the media, public officials, and the press. These meetings are credited with satisfying the public's hunger for information and accommodating needs for information on transportation options (Federal Highway Administration, 1995). It appears that these meetings were effective. For local television (January 17-January 22, 1994) we found that 2 out of 5 stories had interviews with government or transportation officials.

In newspapers we coded for transportation news that co-mentioned involvement or intervention by government officials (Figure 4.2). We see that attention to federal government sources is highest immediately after the quake, and that there was frequent mention of President Clinton. In subsequent weeks, FEMA (Federal Emergency Management Agency) increased as a frequently cited source in transportation. If FEMA is omitted, then stories from local government dominate over the first two weeks. Stories that mention involvement by the California governor and his office account for the peak in February, and can be traced to publication of a special report/edition by *The Los Angeles Times*. This report is discussed in some detail in the following section of this chapter.

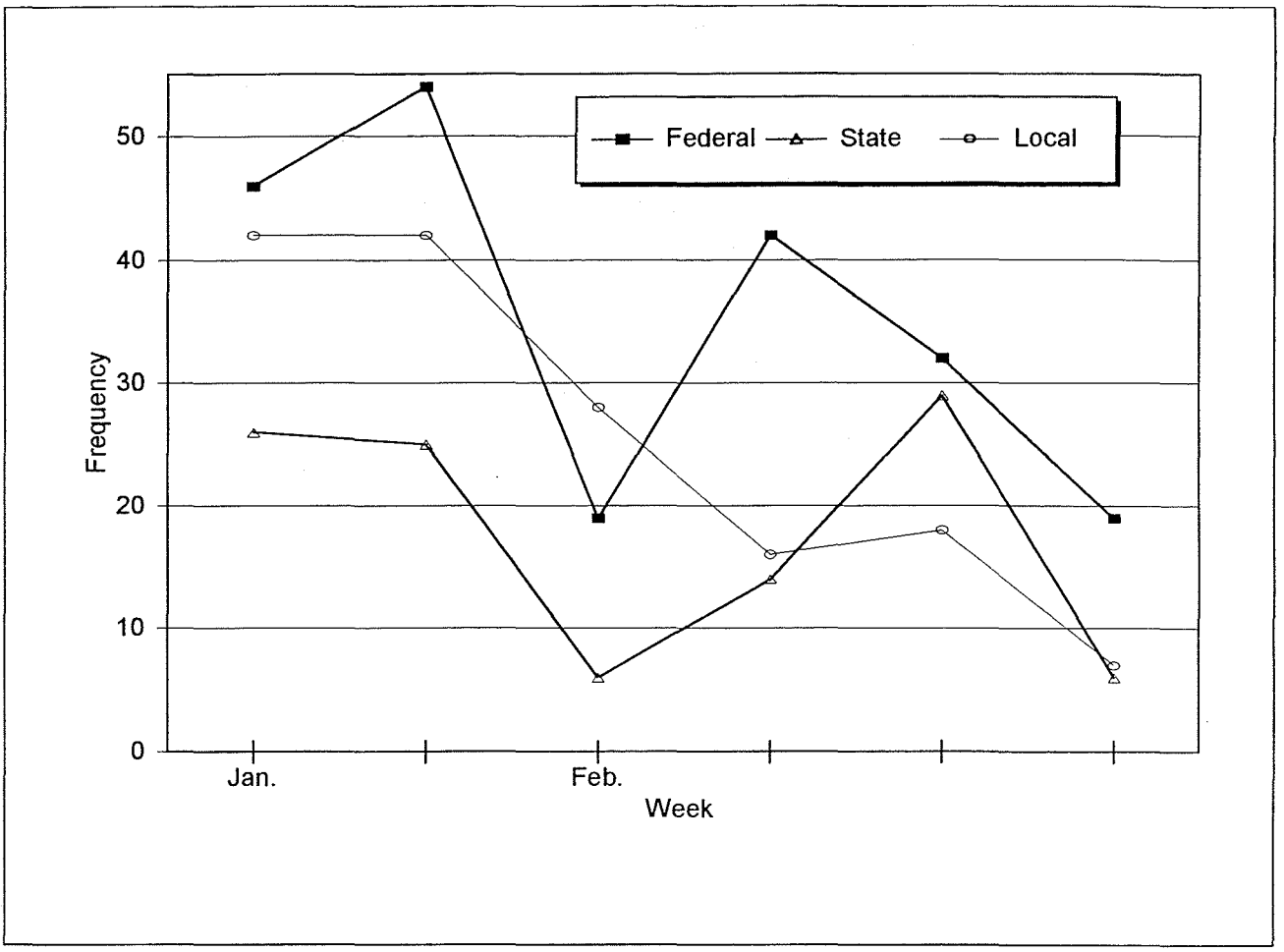


Figure 4.2: Occurrence of Transportation Stories that Mention a Government Official

Anecdotally, when President Clinton visited the quake-inflicted area on January 20, a picture of his visit was run on page eight of the *Washington Post*. The same day, a picture of snaking Los Angeles freeway traffic was run on the front-page. This seems to reinforce the importance of singular, defining themes.

4.3 Seismic Reporting

Public attitudes toward transportation issues are undoubtedly influenced by the media's reliance on public officials and government agencies. Transportation depends upon effective coordination, and information from agencies like Caltrans or the MTA (Metropolitan Transportation Authority) can restore public confidence and provide valuable travel information. One of the more vexing issues however, is to convey to the public that the majority of bridge and freeway structures are safe, and that the collapse of existing structures was an isolated and unavoidable event. This is tied to the issue of seismic-reporting.

The way in which seismic safety issues reported is extremely critical to transportation officials. If the public views seismic damage as inevitable, they are more likely to support transportation agencies and reconstruction efforts. If the damage is seen as the result of engineering negligence or a cover-up, public opinion may be irreparably damaged.

Smith (1992) studied seismic coverage for six-months following the Loma Prieta earthquake. He found extensive newspaper coverage on factors which caused the double-deck Nimitz Freeway to collapse. He also surveyed 13 seismic engineers whose consensus was that some of the problems should have been anticipated. Smith concludes that the press failed to provide vital *background* information, so that the public could understand the genesis of the problem. In the years before the earthquake, there was little or no coverage of the cuts in funding and personnel at Caltrans that had scuttled earthquake research and slowed the rate of seismic-retrofitting. The extensive coverage of the Nimitz collapse is also attributed to a journalistic bias to frame the issue as "the government agency that failed."

An important difference between the Northridge earthquake and Loma Prieta is that an investigative commission was established in response to the 43 deaths from the Nimitz Freeway collapse. In Los Angeles, a formal investigation was briefly proposed and then abandoned. Without a government investigation, the media lacked continual prompts, and an evolving source of information. In our content analysis, we found only one investigation. Significantly, it was conducted by *The Los Angeles Times.*

On January 17, 1994 television reporters began to suggest that more investigative analysis was likely. This was linked to pictures of the freeway collapse which were shown repeatedly throughout the day. There was also an extensive interview with a Caltech professor who was the head of the California Seismic Safety Commission. Interestingly, the professor had not inspected the sites personally, and was responding to the same pictures seen by the home-audience. Like Smith, (op.cit.) the professor cites the devastating effect of recent

budget cutbacks. He indicates, on the one hand, that freeway structures can never be 100% earthquake resistant, and that knowledge about seismic strengthening is a developing science. On the other hand, he says that the damage to the I-5 /State Route14 interchange should have been anticipated, since it appears similar to damage suffered during a 1971 earthquake.

When *The Los Angeles Times* resumed publication on January 18, 1994 there was only one story that directly mentions seismic conditions. This story makes it clear that the portions of the Santa Monica freeway that collapsed had been scheduled for retrofitting that spring. It is also emphasized that none of the structures that had been retrofitted had collapsed. These successes are summed up by a Caltrans spokesman who said, " In some sense, our program performed well, but not well enough. We didn't get them all." (*Los Angeles Times*, 1/18/94, p.1).

During the first week (January 17- January 25, 1994) there were 9 stories about freeway retrofitting and seismic conditions. With the exception of an item about funding, these stories cite Caltrans' responsibility, but they also observe that the existing retrofits survived the earthquake, that seismic safety is an evolving science, and that lessons from previous quakes were put to good use.

The content-analysis tracked freeway retrofit and seismic stories over a six month period. A total of 66 stories mentioned some aspect of seismic repair, and one-half of them (33) occurred during the first six weeks after the quake. During this period, three of these were front-page stories (January 18; January 19; February 17, 1994). There were also 4 editorial-type pieces. Eleven of the stories ran on a single day, February 16, 1994, when the *Times* published its special earthquake report.

This investigative report appears to shift the tone of discussion. The article revealed that 80% of the freeway structures that were considered most vulnerable in an earthquake had not been repaired four years after the Loma Prieta earthquake. Although the voters had approved doubling of the state's gas tax to cover improvements to the seismic program, much of the funding had not been allocated. The delays were attributed to many sources: conflict with unions over whether Caltrans could sub-contract projects; bottlenecks from other public agencies; Caltrans inefficiencies; and debate over the priority of new projects versus existing ones.

The *Times* special report received great prominence in the newspaper and stirred up tremendous political debate. Between March and June, 42% of the seismic-related stories were on the front-page of *The Los Angeles Times*. These stories focus on political and funding issues, like a proposed bond-measure earmarked for seismic retrofitting, use of the gas-tax, and a controversial judicial ruling on the use of outside engineering firms.

In Table 4.4 we examine reporting by *The Los Angeles Times* over two time periods which roughly coincide with the special report. We code for the category of "blame", which was defined as the "assignment or responsibility for hazard prevention or mitigation". (see instrument, Appendix E, for a more general discussion of "blame" after earthquakes see Philips and Ephraim (1992)).

During the first six weeks, Caltrans was frequently mentioned, but circumstances were often said to be outside of its control. During the second time-period, the Governor of California is drawn into the debate, and his office is blamed for unresponsive policy. During this time-period seismic policy emerges as a political football.

In June 1994, voters defeated a bond-measure to support the retrofitting program. Its demise might be traced, in part, to the complex, and politically-steeped discussion. While the funding was hotly debated it appears that, in the eyes of the public, Caltrans was able to deflect some criticism through its early reopening of freeways, and tangible evidence of public works.

	1/17- 2/28/94 (n=33)	3/1-6/30/94 (n=33)
Agency To Blame or At Fault*:	%	%
Caltrans	36	36
Employee Union	09	03
Stage Legislature	12	12
Governor	06	33
Other	06	03
Policy Which is Blamed or at Fault*:		
State Budget Constraints	03	09
Competition with other State Pgms.	06	03
Competition with Transportation Pgms.	06	12
Caltrans Priorities (new vs. old)	17	09
Competition with Bay Area Retrofits	03	09
Caltrans delays in Completing Retrofits	15	-
Poor Admin. or Supervision of Retrofit	06	12
Inadequate Assessment of Structures	03	12
Seismic Standards not Strict Enough	--	03
Bureaucratic Constraints on Contracting	15	12
Public Safety Compromised by Politics	18	36

(*% of occurrences, in time period. Multiple codes allowed p/story unit. Numbers do not sum to 100 because category (blame/fault) did not pertain to all)

TABLE 4.4: Agencies and Issues Cited in Seismic Reporting by the Press

CHAPTER **5**

THE AVAILABILITY OF TRAVEL INFORMATION IN THE MEDIA

In this chapter we examine the availability of travel information in the mass media immediately after the earthquake. Figure 1.1 (p.4) suggested that there was a tremendous need for travel information and this result is echoed in a post-quake survey. Getting route information was rated as nearly essential as getting electricity. People in quake-affected areas were interviewed about their needs five days later (Los Angeles Times Poll, 1/22/94). "Finding alternate routes to work or long traffic delays" was third in mention, after restoring electric and other utilities (#2), and coping with stress (#1). Traffic was the first problem (#1) mentioned among Orange County respondents.

Caltrans took a number of steps, along with other public agencies, to keep the media informed about recovery efforts. The focus of this activity was the daily meeting between transportation representatives and the press. It was timed so that the press could meet daily deadlines and conduct interviews with public officials in attendance. Travel news was disseminated through this meeting, as well as through other public relations efforts undertaken by transportation agencies.

During routine conditions, radio is the primary source of travel information. One 1992 survey of drivers in Los Angeles found that 36.5% of the respondents listened to traffic reports before leaving their homes, and 51.25% listened while driving (Abdel-Aty, et al.,1995). Another survey, with university employees, found that 37% of drivers indicated they listened to radio traffic reports (Polydoropoulou et al., 1995). It should be noted that in certain broadcast markets, like Los Angeles, traffic news is a growing staple of television programming.

If there is a single defining difference between the transportation literature and research in mass media, it is the following: *a great deal of ancillary, and additional information about road conditions, and travel at large, is learned from general news reporting...in addition to, or on top of, traffic-specific reports.*

The application can be readily seen: A person watching television news after the earthquake observes multiple pictures of transportation- such as grid-locked freeways, malfunctioning traffic signals, and rock slides and other debris obstructing the roadways. Pictures of freeway conditions, at large, are likely to become heuristics for assessing particular route choices and alternatives. Research on disasters research consistently shows that media use leads viewers to over-attribute damage and risk (Wenger, 1980).

Television is likely to be the primary source for travel news because its visual information is unambiguous and seemingly credible. After the quake, pictures of jammed freeways and surface streets may have deterred drivers, while equally vivid pictures of fast-moving Metrolink trains may have motivated commuters to try this mode. In our content-analysis we cannot reliably code for " incidental-learning" effects. However, in Chapter 6, we are able to corroborate an empirical association between television coverage and train ridership.

5.1 Television Content About Travel

We coded *local* television content, according to whether specific information was given about alternate routes or other travel information. Over the one-week period, including January 17, 1994 79% of the news stories that mentioned transportation had information about roads closures, bypasses, and other travel activity. The type of information is reported in Table 5.1. It can be seen that routing and detour information was prevalent.

Message Advisory	(%)
Stay at Home- Don't Travel	14.8
Vehicular Travel is Slow or Dangerous	11.1
Verbal Advice on Closed Roads, Detours	59.3
Time to Travel or Congestion	3.7
Other	11.1

Table 5.1: Travel Advisories/Information on Local T.V. News (1/17-1/22)

The information in Table 5.1 suggests that travel information was widely available. In addition, many local stations provided aerial traffic reports from air-borne helicopters. These traffic reports, by definition, look for stalled traffic; their most frequent visual was of 'stop and stop' conditions. Graphics were also used to describe alternate routes. Both the traffic reporter, and news anchors admonished the public to stay off the roads and if they had to go out, to try Metrolink (Metrolink footage of York,J. morning traffic news-1/19; 1/20).

5.2 Radio Content About Travel:

According to the producer of a local traffic service, it took about two weeks after the quake before 'non-routine' traffic news became 'routine' (personal notes, Metro Traffic Control visit). We did *not* code their ongoing traffic reports, and examined instead, the content of regular news programming.

Radio reports received an emphasis score, depending upon the frequency of broadcast, and number of stations (Appendix I). The category is about freeway repairs, closures, and road conditions at large. During weekdays, radio had a consistently high level of traffic information. The attention level was constant until the sixth work-day after the quake. Not surprisingly, traffic news is less frequent over the weekends: there are fewer commuters on the road, and less tie-ups, detours, and other newsworthy information.

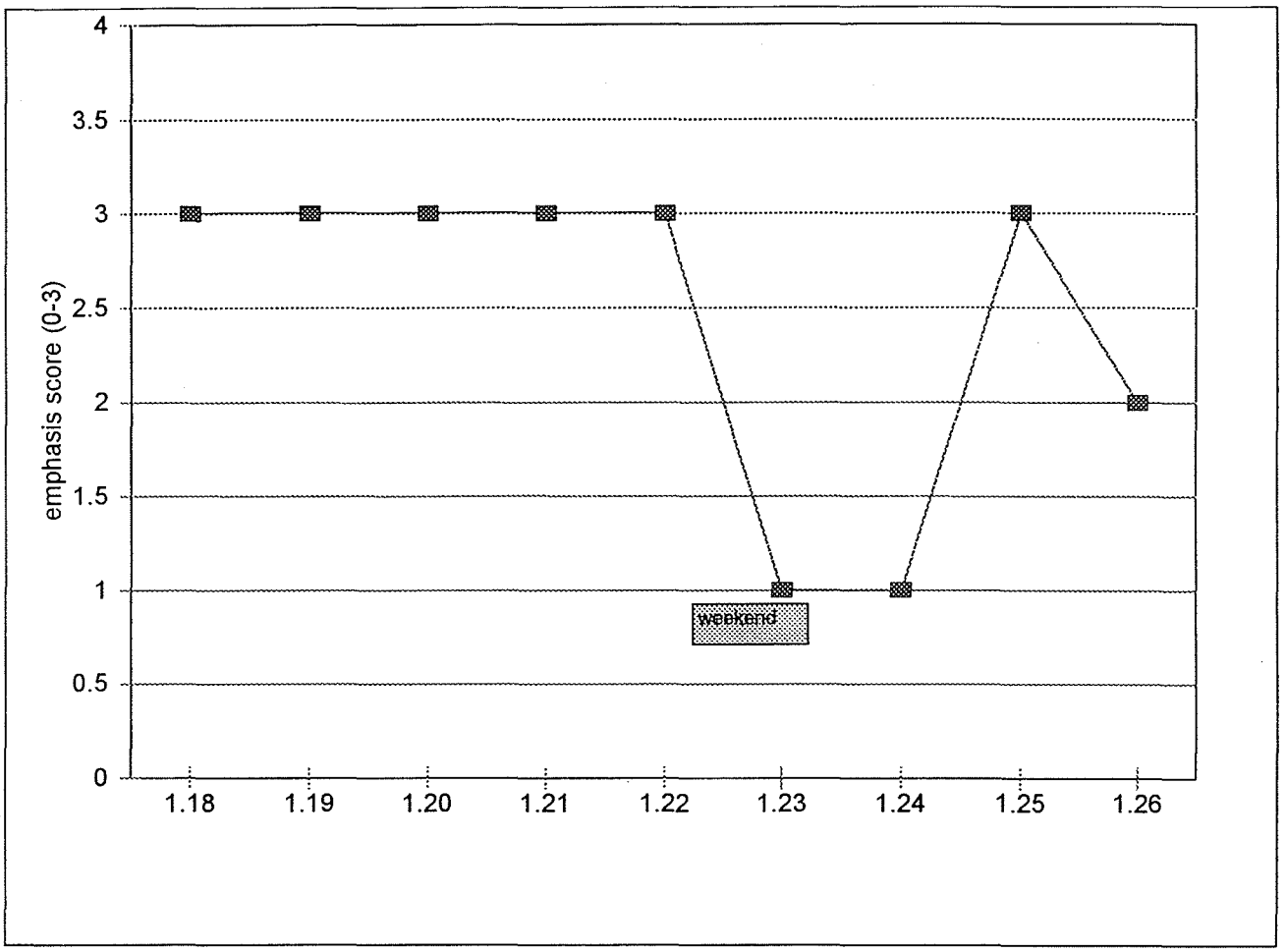


Figure 5.1: Radio Reports on Travel Information and Road Conditions

5.3 Newspaper Content About Travel

We expected newspapers to have the most detailed information about traffic since they can add extra special pages or sections to handle increased news flow. *The Los Angeles Times* began a regular feature called "The Long Road Back" on January 19, 1994. This series of articles provided detailed information about relief efforts and sources. It also listed contact numbers for all major transportation agencies. *The Los Angeles Times* also printed special editions with maps on January 23, 1994 and January 30, 1994. An example of their very detailed and specific route coverage information is excerpted below (Table 5.2).

January 23, 1994, Sunday, Home Edition, Los Angeles Times

SECTION: Special Section; Part U; Page 4; Column 1

LENGTH: 843 words

HEADLINE: THE 6.6 QUAKE; ON THE REBOUND: A GUIDE TO RECOVERY AND RESOURCES; FINDING YOUR ROUTE
(Source: Nexis)

BODY:
Navigating the quake -mangled freeway system will take planning and
perseverance, probably for many months to come. Here are some of the major road
...

2. Golden State Freeway (I-5) northbound, closed at Antelope Valley
Freeway (California 14) because of bridge damage, but truck lane to Antelope
Valley Freeway is open. Golden State Freeway northbound connector to
eastbound Foothill Freeway (210) is closed. Golden State Freeway, three
northbound lanes, closed from Lyons Avenue to McBean Parkway, two lanes closed at Magic Mountain Parkway. ...

... on Lyons Avenue, right (north) on Orchard Village, left (west) on McBean
Parkway to the Golden State Freeway. Temporary closure from Orchard/Lyons to Lyons/I-5 because of resurfacing.

3. The southbound Golden State Freeway (I-5) is closed between Lyons Avenue and the Foothill Freeway (I-210) because of bridge collapse.

Two lanes closed on I-5 southbound at Rye Canyon Road.

Primary alternate: Exit ...

... right (south) on Sepulveda Boulevard, left (east) to Roxford Street to
southbound I-5.

4. Golden State Freeway (I-5) southbound, north of California 138, local
traffic only past California 138. All other traffic will be detoured via
primary alternate.

Primary alternate: Golden State (I-5) southbound to California 138
(eastbound) to the Antelope Valley Freeway (California 14) southbound to
eastbound California 138 to the southbound Barstow Freeway (I-15). Use
westbound San Bernardino Freeway (I-10) or the Pomona Freeway (California
60) to Downtown L.A.

5. The eastbound Santa Monica Freeway (10) is closed from the San Diego
Freeway (405) to Washington Boulevard. Northbound and southbound connectors to 405 are open.

Primary alternate: Take eastbound (left) Pico Boulevard, then south (right)
on La Brea to eastbound Santa Monica Freeway.
6. The westbound Santa Monica Freeway is closed from Washington Boulevard to La Cienega Boulevard.

Primary alternate: Exit at Washington Boulevard, proceed right (north) to ...

... Cadillac Avenue, left (south) at La Cienega Boulevard to westbound Santa
Monica.

7. The westbound Santa Monica Freeway connector to the southbound San Diego Freeway (I-405) is closed because of structural damage.

Primary alternate: Westbound traffic exit at Overland Avenue, proceed
straight onto National Boulevard to southbound San Diego Freeway (I-405)
on-ramp.

8. Antelope Valley Freeway (California 14) One lane is closed between the
Golden State Freeway (I-5) split and San Fernando Road. Off-ramp to Sierra
Highway closed.

Primary alternate: Not required. Use off-ramp to Via Princessa to Sierra
Highway.

9. Antelope Valley Freeway (California 14) southbound closed at Placerita
Canyon Road (before the Golden State Freeway interchange).

Primary alternate: Exit southbound Antelope Valley Freeway at Placerita
Canyon Road, left (southbound) on Sierra Highway, which turns into San Fernando Road, proceed south (right) to Sepulveda Boulevard, right on Sepulveda Boulevard, east (left) to Roxford Street, proceed to southbound Golden State Freeway (I-5).

10. Hollywood Freeway (U.S. 101) connector northbound at California 170 has one of three lanes closed because of structural damage.

Primary alternate: Two lanes open on northbound Hollywood Freeway.
11. Eastbound Simi Valley Freeway (118) is closed from Reseda Boulevard to the Foothill Freeway (I-210). Two lanes closed on eastbound California 118
between Tapo Canyon Road and Stearns in ...

... Primary alternate: Exit onto southbound Tampa Avenue to Devonshire
Street, left on Devonshire Street to southbound San Diego Freeway or right on
Arleta Avenue, left on Van Nuys Boulevard to the Golden State Freeway or the
Foothill Freeway.

12. Ventura/Glendale freeways transition closed. Westbound Ventura (134) to
south and northbound Glendale Freeway (2) closed as well as the eastbound 134 to the southbound 2 closed. The bridge moved.

Primary alternate: Follow the California Highway Patrol officers who will be
escorting drivers off the 134 and then back ...

To examine trends in the reporting of traffic information, we conducted a content analysis of all transportation stories that mentioned road closures, bridges, traffic, or routing information. We classified travel information at a broad level, and stories were included if they had peripheral travel information. On January 18, 1994 and January 19, 1994 more than 20% of the stories have advisories, but the percentage declines over the weekend. By Monday, (not shown) the coverage resumes at weekday levels.

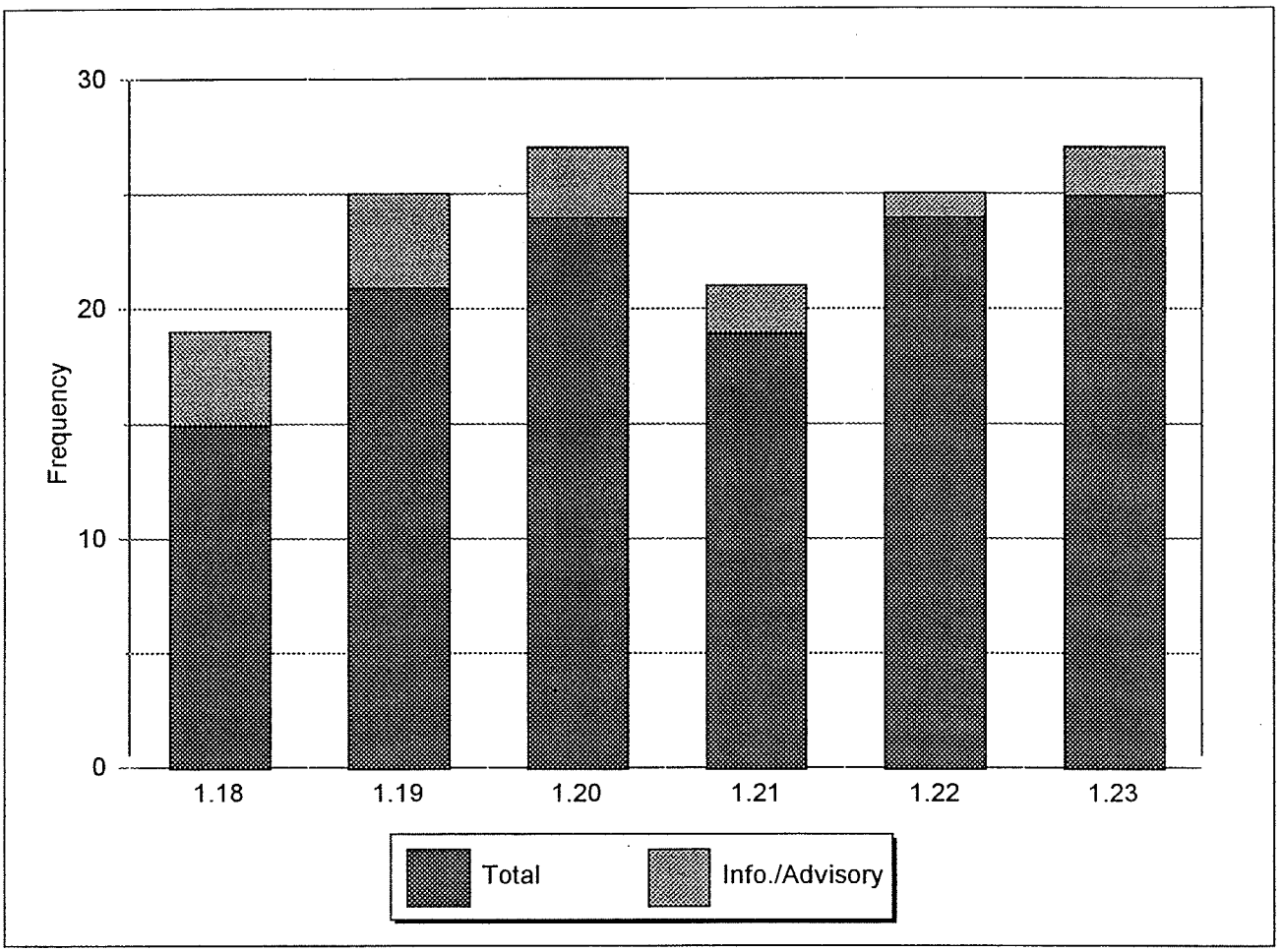


Figure 5.2: Newspaper Reports on Travel Information and Road Conditions

5.4 New Electronic Sources and Content on Travel

We conclude this section on travel information by noting that there was very detailed and extensive reporting in all of the mass media. However, another source also emerged as a conveyor of travel information. The use of electronic bulletin boards, and Internet services is documented in a recent academic paper (Neff and Karrh, 1994) and in a *Washington Post* feature. The academic authors conducted a content-analysis of 285 articles, sampled from the first 1,000 postings to a USENET bulletin board called "alt.current-events.la-quake". Twenty- four percent of the comments mentioned conditions or area updates, which includes updates on road damage, building conditions, and hospital evacuations. 19.3% had general comments on the quake and 16.8% discussed the future/funding/and mass transit in L.A (e.g. "Is LA ready for mass transit now). The metaphor of the electronic highway was not lost *upon Washington Post* staff writers...

> *Forget exploding gas mains, collapsed freeways, heroic rescue efforts. The Santa Monica Freeway might have been wrecked, but the information highway was reaching for glory. The buzz about television being the "electronic hearth" in times of crisis may be aging. The techno-scenti in the last two days were overwhelmingly reaching out to their electronic community. Many of them wanted the news absolutely crucial to them and not available from CNN: How is Aunt Ethel? (Washington Post, 1/19/1994).*

A number of specialized electronic based -services also delivered travel information to their clients, after the quake (Inside IVHS, 1/31/1994). Increasing use of these services and the Internet may, over time, reduce a reliance on the mass media as the primary source for post-disaster travel information.

CHAPTER **6**

THE PRESENTATION OF ALTERNATIVE MODES: THE CASE OF MASS TRANSIT

After the Northridge earthquake, officials expressed hope that mass transit would be widely adopted by commuters. Summing up the sentiment in *The Los Angeles Times*,"... *For all the damage this latest earthquake did to the region's transportation system, there may be a sliver of silver lining in the cloud hanging over us all. Hard to envision just now, of course, but the truth is that if this experience gets enough people out of their autos and traveling to work by bus or rail, this quake may help put Los Angeles on its way to a more efficient, far less vulnerable 21st Century transit system.*" (Los Angeles Times,1/18/94, Metro, p.6). The editorial continues, *"transit officials will have to respond with their own special effort."*

In this chapter, we examine how mass transit was portrayed in the media after the quake. We look specifically at coverage of Metrolink train service, and at bus service. We track coverage levels over time in different media, and examine editorials about mass transit. We also provide an exploratory empirical study; daily Metrolink ridership is predicted as a function of media coverage. This is an heuristic, since media coverage is clearly not the only variable that explains mode choice. For example, both Metrolink and the Metropolitan Transportation Authority (MTA) ran advertisements, sent direct mail, and used other means to reach the public directly.

The content analyses rely primarily on frequency counts; i.e., the number of stories about bus and train service. At our request, Metrolink provided us with about two hours of broadcast clippings from local and national news. Metrolink continued to receive extensive television coverage, over time, because the news media covered the opening of new train stations.

6.1 Print Media

In Figure 6.1 we track *Los Angeles Times* coverage on a weekly basis for the first six weeks after the earthquake. We see that Metrolink received far greater mention in the print media than buses. Metrolink probably received disproportionate coverage because of the frequent opening of new stations, and because the novelty of the service in Los Angeles made it "newsworthy". In contrast, expansion of bus service may have seemed routine to journalists. Coverage about bus service peaks in February, 1994 about four weeks after the

earthquake. However, even these early press relations might have been clouded by an impending bus operator's strike and fare increase, which occurred about five months later. News coverage about buses increased later in the year, in response to these "newsworthy" issues.

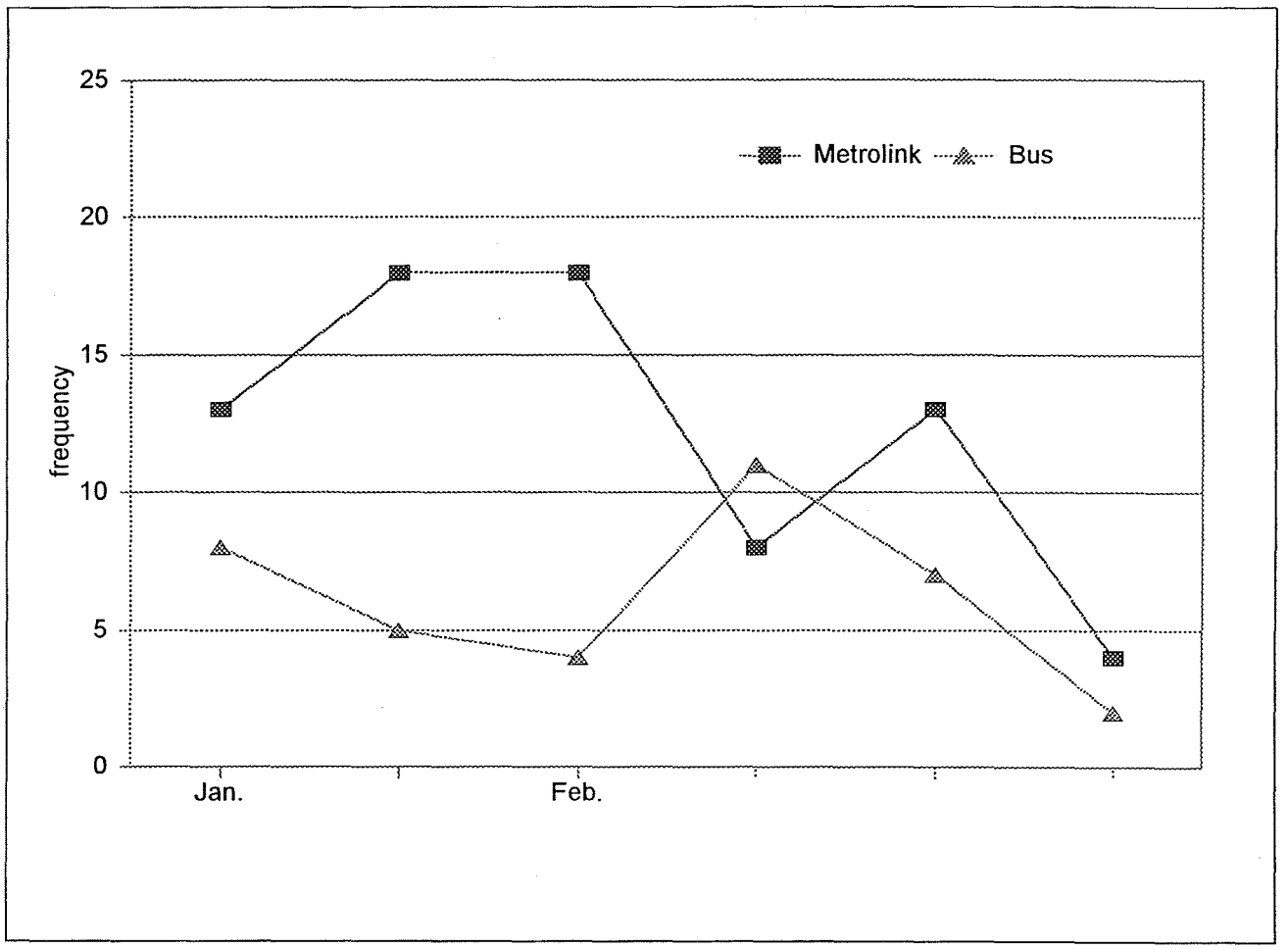


Figure 6.1: Coverage of Metrolink and Buses in the Print Media (1/17-2/28)

The next table cites editorial material from *The Los Angeles Times* which mentioned mass transit, over a six month period. Although only 14 items are cited, there was additional material in letters-to-the-editor, special features, and area- specific news, such as the Orange County edition. Mass transit may have also been cited in editorials about related topics, like freeway opening and repairs.

DATE	EDITORIAL TYPE	THEMED EXCERPT OR HEADLINE
1/18/94	Opinion Desk	" Beef Up Buses and Fine Tune Traffic Flow"
1/20/94	Op-Ed Desk	"Suggestion to ease commute: give carpool and buses exclusive use of freeway entrances and exits"
1/31/94	Op-Ed Desk	"Maybe more people will take trains and stay off freeways"
2/6/94	Editorial	"Mass Transit, now more than ever; the quake was a lesson..."
2/13/94	Opinion Desk	"Is Metrolink more than an insurance policy against disaster?"
2/13/94	Opinion Desk	"Commuters can't be railroaded...Metrolink success..unmeasured"
2/20/94	Editorial	"Metrolink: concern for drivers and pedestrians"
2/20/94	Editorial Writers Desk	"Unfortunate that Angelinos have returned to their cars. Should consider incentives to foster more carpooling and Metrolink"
2/21/94	Editorial Writers Desk	"We learned what happens when our economic lifeblood, the freeways are cut, and the benefits of mass transit"
3/6/94	Opinion Desk	"Revamped bus service is less expensive, can ease traffic"
3/20/94	Editorial	"Metrolink fare cut is on the right track"
4/3/94	Editorial	"Metrolink expansion gives commuters new options"
4/28/94	Opinion	"Bus service needed by lower income urban users"
5/15/94	Editorial	"With freeway restored...hope Metrolink upgrades keeps autos off it"

Table 6.1 :Editorial Material on Mass Transit -Los Angeles Times (1/17-6/1/94)

To assess mass transit in more detail, we compared coverage rates for Metrolink and Caltrans in *The Los Angeles Times.* This analysis explores whether there was a tendency to favor one agency over another, and implicitly, one mode over another since Caltrans does not operate trains in Southern California. It was expected that Caltrans would receive more coverage, because freeway repairs were such a pivotal concern following the quake. In fact, the content analysis revealed that after an initial surge of stories mentioning Caltrans, both agencies received a very similar level of coverage. Other surges in Caltrans coverage reflect front-page news of freeway reopenings.

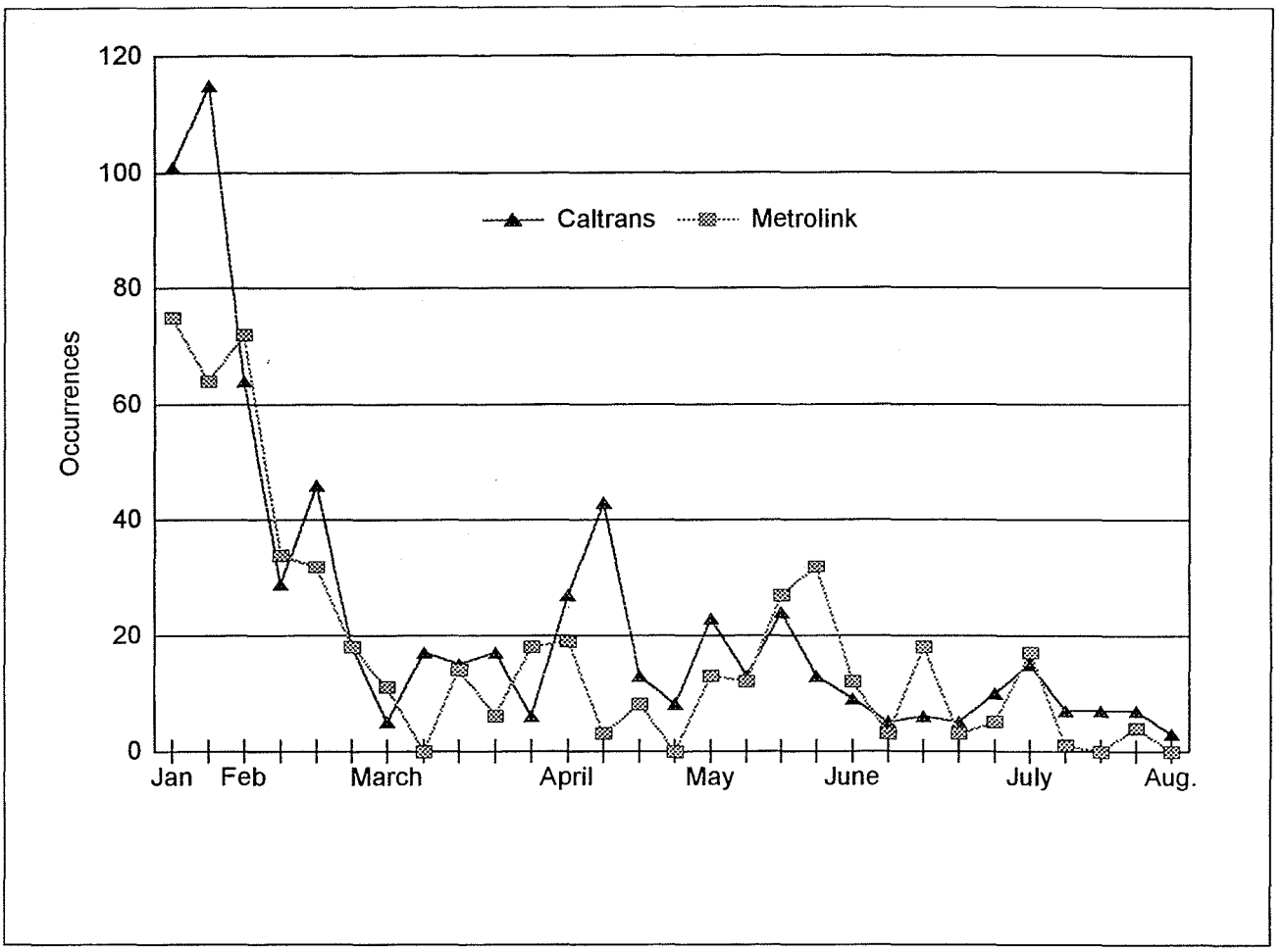


Figure 6.2: Coverage Rate in Press of Metrolink and Caltrans

6.2 Radio

Radio content might precipitate drivers who are stalled in traffic to contemplate future use of an alternative, like mass transit. Using the same 45 day period, we coded radio content using an emphasis score (see Appendix I). The data in Figure 6.3 are summarized as a weekly moving average in light of high volatility observed in the raw data. It can be seen, again, that stories about Metrolink far exceed bus coverage, and that the gap between coverage rates widens over time. From the inception, Metrolink stories were more prominent, and did not decline as rapidly. An examination of the story type revealed that bus coverage shifted from mention of new routes and schedules, to more routine operating problems. The increase in Metrolink stories is not always earthquake related; twice in February 1994, reporting is about train-pedestrian accidents.

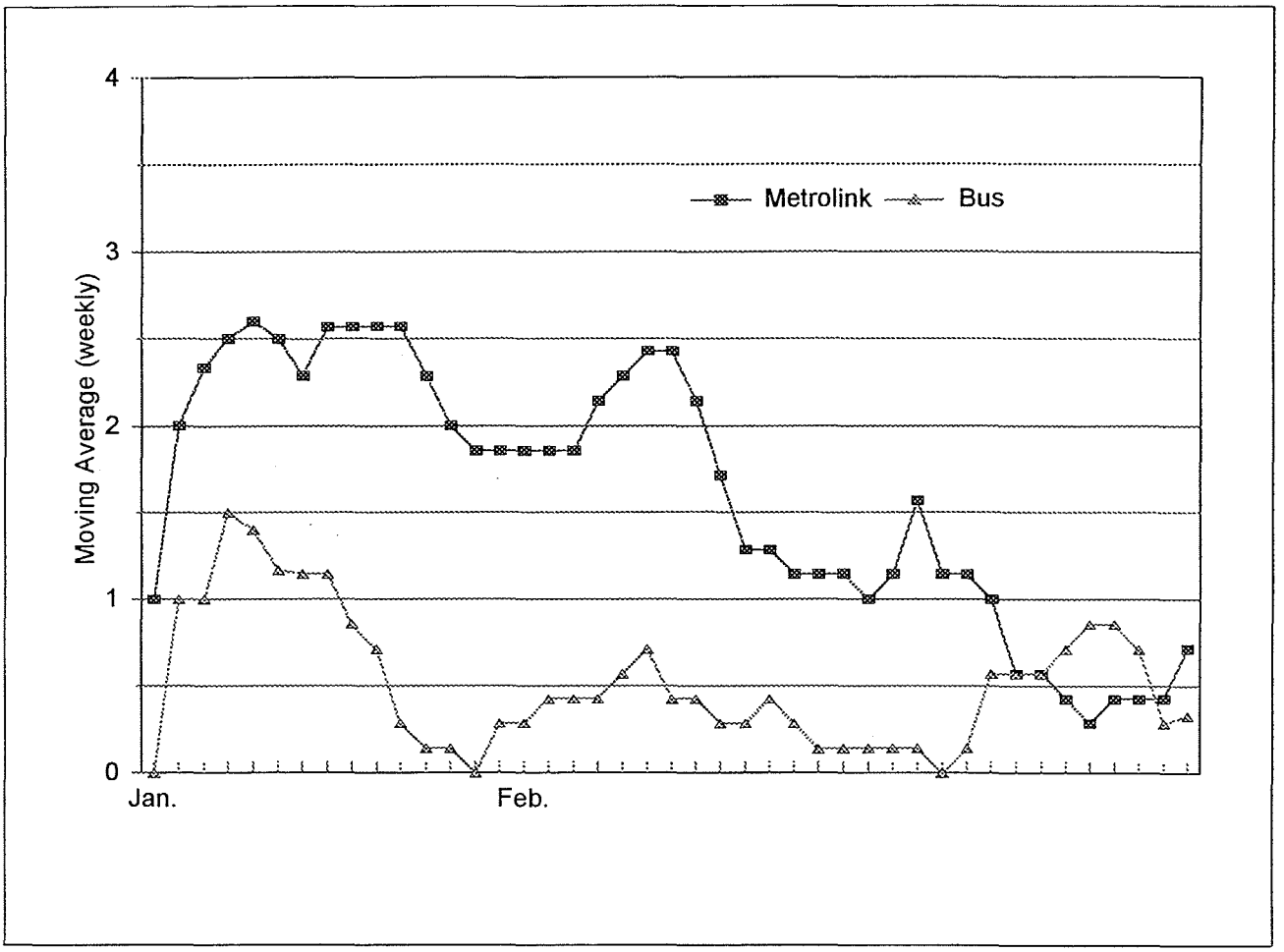


Figure 6.3: Coverage of Metrolink and Buses in Radio News (1/17-2/28)

6.3 Television

Although Metrolink had been operating train service in Los Angeles 15 months prior to the earthquake, it has to credit the quake, and probably television, for creating public awareness and name recognition. In television footage, "prescriptive" references are frequently made by news anchors and traffic reporters alike urging people to stay home or ride Metrolink. One reporter even described his first experience traveling to work on Metrolink, implying that viewers should do the same (KNBC, 1/18/94, #18.1, length, 2:18).

We requested press clippings from the MTA and they show that there were many announcements of new bus routes, and some schedule changes. However, the content analysis indicated that buses received very few mentions on television.

6.4 Predicting Train Ridership

Under normal conditions, it is difficult to isolate the role of the mass media in shaping individuals' transportation choices. Many of the exogenous factors like attitudes, situational factors, and the perceived accuracy of travel information are hard to measure.

The case of Metrolink provides a set of special conditions. In Los Angeles, most people did not have pre-existing information about Metrolink; they were unaware of Los Angeles' commuter train service before the earthquake. People also lacked direct experience; very few had tried rail services. After the quake, the mass media were the first source, and there was no competing or conflicting source of information. Meanwhile, the public was hungry for alternatives to bumper-to bumper-commuting. Under these special circumstances, where there is a high need for information and very limited direct experience, learning from the mass media is predicted to be strong. (Gould, 1982).

We conducted a time-series analysis which examines trends in media coverage through February 1994, and ridership on the Santa Clarita line of Metrolink. We examine a 45 day news-period based on data compiled specially for this study by KNBC. As we show in Appendix C, other television stations will tend to have similar coverage.

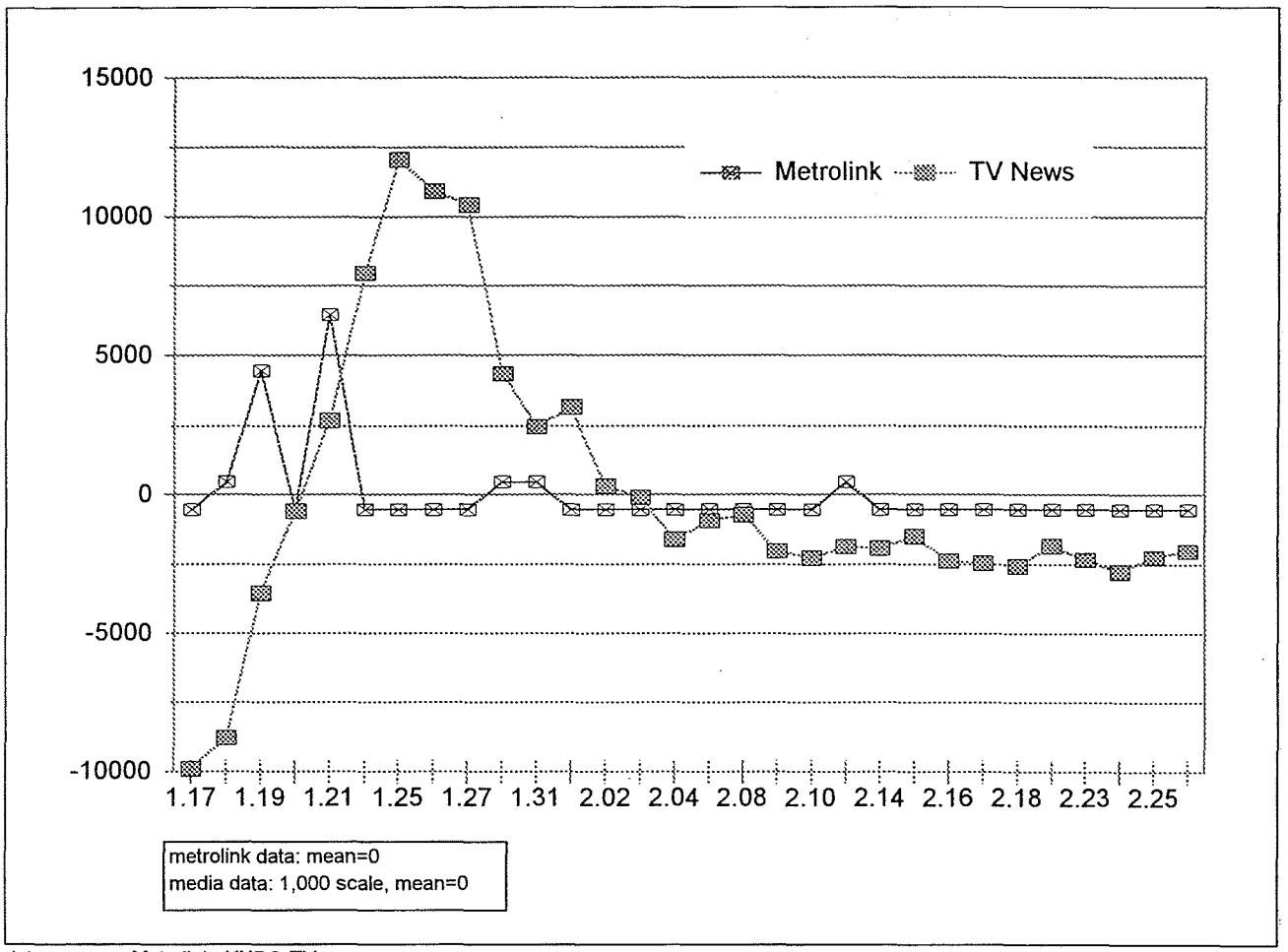
Each series is demeaned, and a single outlier was removed from the Metrolink data for February 21. Since Metrolink service is only available on weekdays, weekend media coverage was treated as a Friday occurrence. Table 6.2 presents the correlations between Metrolink ridership on the Santa Clarita line, and lags or leads in media coverage. In particular, we present correlation coefficients of the form

$$\text{corr}\ (X_t, Y_{t-\tau})$$

where X_t is ridership on day T, while $Y_{t-\tau}$ is media coverage on day $t-\tau$ (television or paper). For $\tau < 0$ the correlation coefficients provide information about the reaction of the media to changes in ridership, while for $\tau > 0$ media coverage precedes train ridership.

Figure 6.4 depicts the association between television news coverage and daily Metrolink ridership. Because television can present simple, graphic pictures that are readily understood, news can be a powerful vehicle for communicating information about new behaviors, like train ridership. It can be seen that an increase in television coverage precedes a gain in Metrolink ridership

immediately after the earthquake, and at the end of January, 1994. After this, there was very limited coverage of Metrolink on television, but even brief coverage on February 10, 1994 appears to be associated with an upturn in Metrolink ridership. The small ridership increases on February 8, 1994 and February 18, 1994 are the only events not associated with expanded media coverage. The time lag between television coverage and ridership varies between 2 and 5 days (Table 6.2). That is, after broadcast on television, ridership increases over the subsequent week.



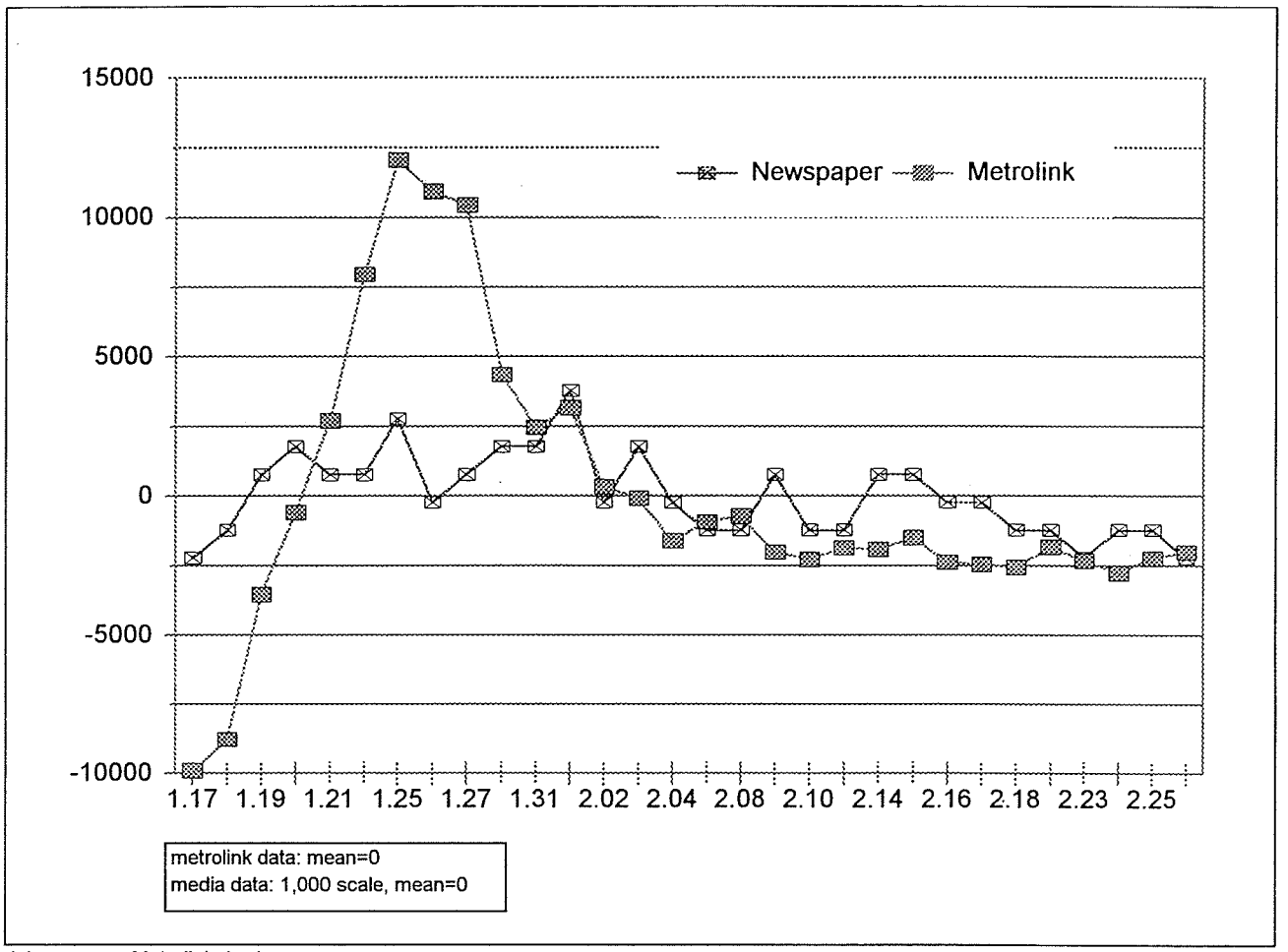
data sources: Metrolink, KNBC-TV

Figure 6.4: Time Series of Metrolink Coverage on TV News & Santa Clarita Ridership

As we might expect, there is a different relationship between newspaper coverage and Metrolink ridership. Newspapers lack television's ability to convey pictorial content that is simple, direct and instructive. On the other hand, newspaper reports are less limited by space constraints and can present more analysis and interpretation. Newspaper coverage also tends be more continuous

and more frequent than television (e.g., compare news amount in Figures 6.4 and 6.5). Although there was more news about Metrolink in the press, it was largely reactive. Table 6.2 shows that an increase in Metrolink ridership was associated with more coverage in the paper. However, the association is somewhat reciprocal: an increase in newspaper coverage is statistically associated with increased ridership through the second day.

From ridership data, we know that the initially high levels of Metrolink use were not maintained. They dropped once roadway detours were opened. It appears that the mass media, and television in particular, may have had an initial role in acquainting people with the service and expediting trial usage. This result is consistent with other disaster research which suggests that information shown on T.V is often used in emergency planning (Spencer, et al., 1992). Concrete and visually detailed information showing commuters buying tickets, boarding a train, and relaxing enroute can become a valuable heuristic for audiences.



data sources: Metrolink, Lexis

Figure 6.5: Time Series of Metrolink Coverage in the Press and Santa Clarita Ridership

Another interpretation of the data is that the mass media play a role in introducing travelers to new mode choices, and interest them in making trial use. However, like other transportation behaviors (Giuliano, 1992), the choice is unlikely to be sustained unless travelers find it effective and suitable.

Lag: (Day)	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7
TV	-.14	.01	.18	-.29	-.22	-.26	-.21	-.01	.23	**.46**	**.55**	**.65**	**.42**	.39	.33
Paper	.08	.16	.31	**.38**	**.38**	.35	**.43**	**.56**	**.52**	**.52**	.35	.17	.00	-.22	-.30

p < .05

Table 6.2 Lagged Correlation Coefficients between Media and Metrolink Ridership

CHAPTER 7

LONGER-TERM COVERAGE AND EFFECTS ON THE TRANSPORTATION AGENDA

Front-page pictures of sagging freeways and twisted rebars bombarded the public after three recent earthquakes: the Kobe disaster in Japan, Loma Prieta, and, of course, Northridge. In this chapter we ask whether intensive disaster coverage has heightened awareness and sensitivity towards transportation issues. Did the Northridge earthquake open a debate about the value of mass transit, telecommuting, carpools and other alternatives to single occupancy commuting? Some analysts cite the quick removal of carpool lanes on the Santa Monica freeway as evidence against the latter, while others believe that Los Angeles emerged with new appreciation for transportation options.

One way to examine this is to study the public discourse. Transportation alternatives like carpooling or telecommuting involve complex behavioral changes, and are likely to be deliberated and debated. If the earthquake was a wake-up call, then stories about these alternatives should continue once the emergency period is over. On the other hand, if disaster reporting has a more narrow, short-term influence, then mention of transportation alternatives is likely to have a meteoritic rise followed by a precipitous decline. This slope can be an indicator of news priorities, public attention, and issue salience.

We use event-study analysis to examine whether the earthquake has heightened the public agenda towards transportation issues. This methodology is frequently used in financial economics to isolate the effects of new information. It it has been used also to study the media's influence on underlying variables. (Fama, et al.,1969). We analyze one year of data from *The Los Angeles Times*, divided into six-month intervals, before and after our event, the quake. Arguably, other news sources like television are important. However, newspapers remain a primary means for encouraging more complex and ambiguous debate, and influencing political elites. Newspapers provide the greatest in-depth coverage and more editorial space.

7.1 Methodology

The dynamics of many variables are characterized by mean reversion. That is, the variable possesses a long-term mean around which it naturally evolves. For example, for a given level of public awareness regarding mass transit, all else equal, we may expect a certain average or mean level of mass transit coverage in newspapers. Of course, the occurrence of a major event, such as an earthquake, may dramatically increase coverage far above and beyond this

mean. As the event's effects dissipate, however, the level of this coverage will revert back towards a potentially higher mean.

The speed with which a variable reverts back towards its mean may be taken as a measure of the event's permanence. The quicker this reversion, the more transient or *temporary* the event. On the other hand, the slower this reversion, the more likely the event's effects are *permanent*.

To examine the reversion properties of a particular variable, X_t, we must investigate its time series properties. The nature of this temporal relationship is most easily seen by relating the behavior of X_t to its preceding value X_{t-1} via the following autoregression :

$$X_t = \alpha + \beta X_{t-1} + \varepsilon_t, \quad \varepsilon_t \sim iid(0, \sigma^2), \quad X_0 = 0.$$

Stationarity requires that $\beta < 1$, or else X_t grows without bound as *t* increases. The dynamics of X_t follow from first differencing the preceding expression:

$$\Delta X_t \equiv X_t - X_{t-1} = (\beta - 1) X_{t-1} + \varepsilon_t - \varepsilon_{t-1}.$$

The speed of reversion is governed by the parameter β or equivalently β-1. Notice that if stationarity requires $\beta < 1$ then it follows that β -1< 0. The negativity of this coefficient reflects mean reverting behavior: if X_t increases (decreases) as a result of the event in question, mean reversion subsequently brings it down (up). The smaller the value of β, or equivalently, the larger in absolute value β-1, the quicker this mean reversion. Alternatively, the closer the value of β is to 1, the slower is the variable's speed of reversion. In the limit, as $\beta \to 1$, the behavior of X_t approaches a random walk and the event's effect becomes permanent.

To quantify X_t's speed of reversion we calculate its mean half-life. The mean half-life ($\equiv \ln(\frac{1}{2}) / (\beta - 1)$) is simply the expected amount of time needed by the variable to recover half of the amount by which it increased or decreased because of the event. The shorter the mean half-life, the quicker the speed of reversion.

The particular time series variables we analyze are the number of stories per week which appeared in *The Los Angeles Times* in the twenty-eight weeks which immediately followed the Northridge earthquake dealing specifically with (1) Metrolink (2) freeways, bridges and traffic (3) carpool lanes (4) buses (5) Caltrans and (6) telecommuting. For each, we estimate a first-order autoregression using demeaned values of the variables. Estimation was carried out using ordinary least squares. Given the small sample size, the results

should be interpreted with some caution. Nevertheless some interesting patterns emerge from this analysis.

7.2 Results

Our results are tabulated in Table 7.1. For each category of story we provide the average weekly number of stories before and after the Northridge quake. The estimated slope coefficient β from the autoregression and the corresponding implied mean half-life is also presented. Finally, the autoregression's fit is summarized by its R^2.

Category	Pre-quake mean number stories p/week	Post-quake mean number stories p/week	$\hat{\beta}$ (se $\hat{\beta}$)	R^2	Mean half-life (weeks)
Metrolink	1.208	6.414	0.62017 (0.1497)	0.398	1.82
Freeway and Bridges	--	16.345	0.68456 (0.0861)	0.709	2.20
Carpool Lanes	1.167	2.138	0.21686 (0.1914)	0.047	0.89
Buses [1]	5.708	7.517	0.40531 (0.1850)	0.156	1.17
Caltrans	3.625	6.714	0.4874 (0.1597)	0.271	1.35
Telecommuting	0.167	1.000	0.0164 (0.1961)	0.001	0.71

Table 7:1: Time Series Analysis of Transportation Issues in the Press

As expected, the mean number of stories per week increased across all categories after the Northridge earthquake. In some cases, this increase was significant, e.g., Caltrans, while in other cases it was minimal, e.g., telecommuting.

With respect to the speed of reversion, we see that the estimated β coefficients are largest for 'Metrolink' and the 'freeway and bridges' categories, implying that the Northridge earthquake's effects on these categories was the most enduring. This can also be seen in their relatively long mean-half lives: on average, approximately two weeks were needed to move half way to their now higher

[11] The increase in bus coverage over time is largely associated with an increase in coverage about coach operator's wages and an impending transit strike in Los Angeles.

average *Los Angeles Times* coverage. The fit of these autoregressions is particularly good as evidenced by their relatively high R^2s.

In contrast, the Northridge earthquake's effects on the *Los Angeles Times'* coverage of the 'commuter lane' and 'telecommuting' categories appears to have been transient. In each case, the resultant mean half-life was less than one week. As mentioned earlier, the increase in the mean number of stories per week devoted to these categories was minimal. Further, the autoregressions provided a relatively poor fit to these data.

Although it is difficult to reliably assess whether priorities and expectations towards transportation were shaped by the exogenous event of the earthquake, the analysis provides useful insight. To the extent that public opinion is based upon media discourse, we see that certain issues remained on the agenda longer than others. It appears that the window for alternatives like carpooling and telecommuting opened momentarily, and then closed. On the other hand, discourse about the freeways and Caltrans persisted at higher levels. This is readily understood, since repairs to the freeway system continued throughout 1994.

The data for mass transportation appear to offer guarded optimism. The increase in coverage about bus transit is unfortunately related to a major transit strike in the summer of 1994. In the case of Metrolink, there were no exogenous events to propel its coverage rate. Among competing transportation issues, Metrolink shows the second highest mean-half life. This suggests that the earthquake brought more sustained attention to Metrolink, as well as to news about freeways and road conditions.

CHAPTER **8**

COVERAGE OF HUMAN INTEREST ELEMENTS: "GOING THE EXTRA MILE"

We title this next-to-final chapter "going the extra mile", in recognition of the joint Caltrans/FWHA task force finding (Federal Highway Administration,1995) which observed that:

> *Caltrans set a tone that they would go "the extra mile" in working with the public and industry to get the necessary reconstruction work done.. (there are) many stories of personal commitment and responsibility on the part of Caltrans, FHWA, and industry participants." (p.63)*

After a disaster, the media become a vehicle for restoring order in the community. They also help people cope with stress and fear by providing useful information and reassuring messages. Certain reporting styles, like continual broadcasting of the most vivid damage scenes, might appear to be in conflict. However, in balance, mass media coverage is associated with the regeneration of the community, accountability for the response the crisis, and even mitigation of potential damage caused by future disasters (Walters and Hornig, 1993).

It appears that transportation officials reacted to the disaster with great sensitivity, and took a number of steps to keep the public well informed. The daily press briefing, which began on the third day following the earthquake, was a masterstroke of public relations. It reduced the volume of media requests to individual agencies, and allowed them more time to attend to the emergency. The daily meeting also demonstrated for the press that transportation operations were well-organized; this was communicated, in turn, to broader audiences. The sessions also provided evidence that transportation agencies and government officials could work together harmoniously and coordinate efforts.

One of the most telling comments in the FHWA/Caltrans/Industry task force report is the seeming acknowledgment that the media could serve as a powerful ally. Caltrans workers arrived on the scene of the damaged freeways with television cameras already in place. The workers' presence was not accidental. As the Task Force notes:

> *Because of the media's coverage of the major locations of damage, Caltrans and industry's experience from previous disasters (emphasis added), and good communications and coordination between Caltrans and contractors, demolition contractors showed up at each of the 4 major*

damaged freeway locations with labor and equipment ready to work. (p.20)

The resulting television coverage, which showed transportation officials busily at work, conveyed that recovery efforts were underway, and that public agencies were working to mend the community. This lightening-quick response may have also produced a less obvious, but far-reaching benefit: it helped Caltrans and the FHWA deflect criticisms, like the ones which followed the Loma Prieta earthquake. After Northridge, there was relatively little conflict about noise pollution caused by heavy machinery, environmental impact statements for reconstruction, and discussion of community in the freeways' footprint. An editorial-page story in *The Los Angeles Times* on January 18 bears notice. It reads:

> *There are two immediate priorities as Southern California tries to pick itself up from the Northridge earthquake. We must get as much relief as possible...food, drinkable water and shelter. ...And, efforts to repair the region's transportation system must begin immediately.* (*Los Angeles Times*, 1/18/94)

In our content analysis of the broadcast media on January 17, 1994 we observed multiple mentions, across 6.5 hours of footage, of Caltrans workers on-site at damaged freeways. The next morning, January 18, 1994 workers are shown clearing rubble from the I-10 freeway collapse so that demolition efforts can begin. Television's aerial coverage of the damage site was interrupted by 10 a.m., so that rescue helicopters could bring in heavy equipment and tools.

In Figure 8.1, we track the occurrence of *Los Angeles Times* stories about transportation rebuilding, and repair and restoration of the roadways. Initially, the occurrences are very high, but decline by the sixth week. Spikes in coverage reoccur with the opening of the I-10 freeway in April and the I-5 and State Route 14 and 118 freeways in May and July. Each of these events generated a spate of "human interest", and other stories such as a close-up, life-history of the contractor and his work-crew.

We also tracked, but were unable to graph because of their low-incidence, stories that mentioned "noise pollution" and others concerns raised by the round-the-clock reconstruction of the Santa Monica freeway. This is in sharp contrast to coverage of transportation issues after the Loma Prieta earthquake, where there was frequent airing of environmental and social concerns. A headline from a page- three story in the *Los Angeles Times* (1/29/94) captures the regional differences. It says, *"EARTHQUAKE/ THE LONG ROAD BACK: BAY AREA DRIVERS SAY IT'LL BE A LONG HAUL; TRANSPORTATION: FOUR YEARS AFTER LOMA PRIETA QUAKE NOT A SINGLE DAMAGED FREEWAY HAS BEEN COMPLETELY REOPENED BUT CALTRANS SAYS THE TASK IN L.A. ISN'T AS DAUNTING."*

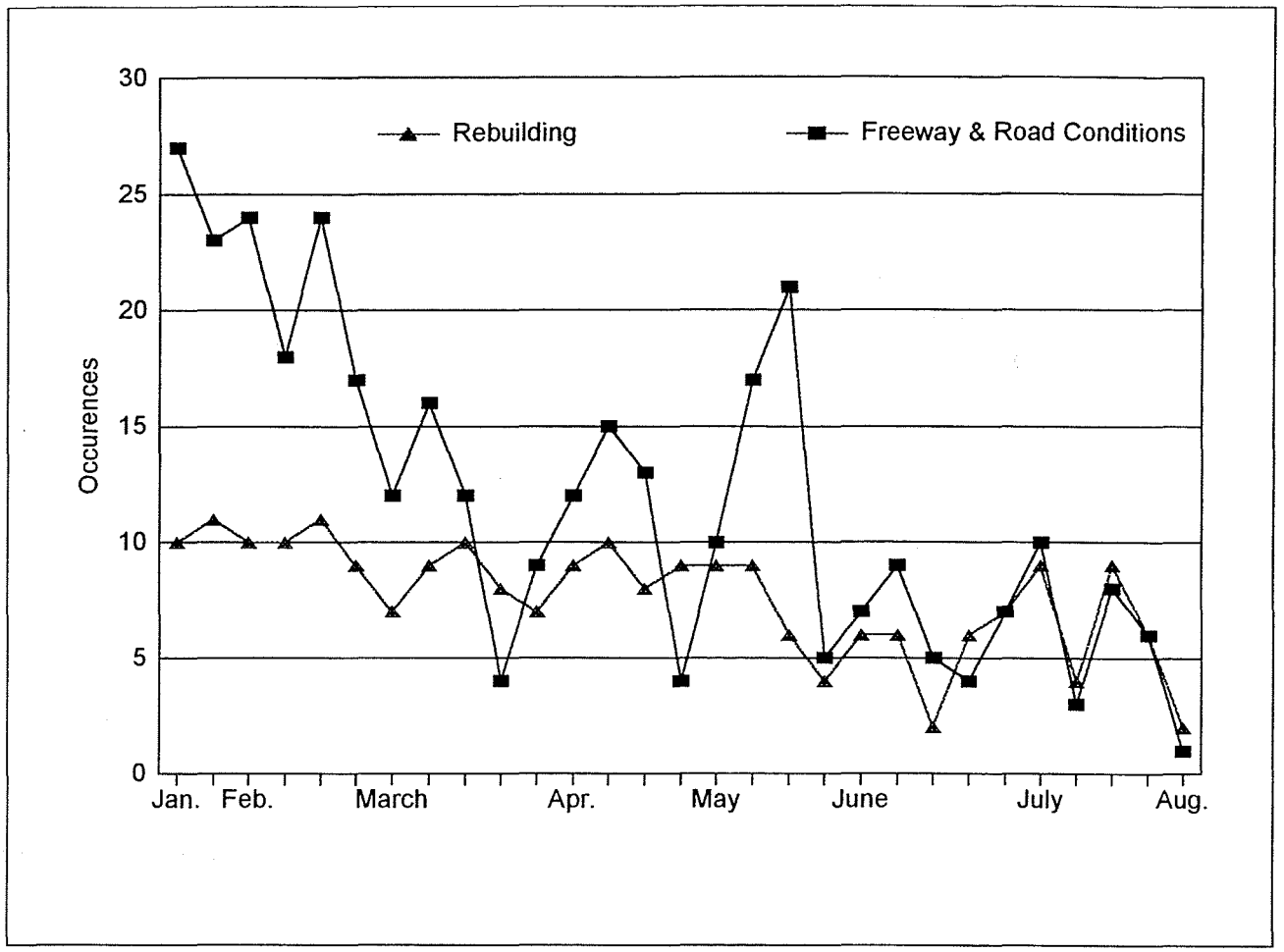


Figure 8.1: Coverage by Press of Rebuilding Effort and Freeway & Road Conditions

We end this section on "Going the Extra Mile" by noting two additional stories that filled the airwaves on the morning of the earthquake. They may have helped deflect criticism of public agencies and reinforced a view that heroic efforts were underway. Both are associated with transportation. First, the rescue of a maintenance worker, trapped under the rubble of a collapsed parking structure, received almost 10% of the television coverage. The images are directly related to concrete parking garages, and may be peripherally linked to evaluation of seismic safety. Another "human interest" story that received extensive radio and television coverage was the sad story of a motorcycle policeman who died when his vehicle plunged off the broken I-5/ State Route 14 interchange in pre-dawn darkness. This tragedy, which has direct transportation imagery, also depicts public officials putting themselves at service and ultimate risk.

CHAPTER **9**

CONCLUSIONS AND RECOMMENDATIONS

When transportation officials rank the importance of emergency activities, media-relations is unlikely to be at the top of their list. They are more likely focus on immediate engineering concerns like assessing damage, ensuring that remaining facilities are safe, and initiating contracts for debris removal. These are clear priorities. However, a lesson from this study is that emergency planners must recognize that communication is also a tool. The media are like an invisible force that partakes in disaster recovery from the beginning. In many cases, aerial television crews arrive on the scene and make damage assessments before transportation workers arrive. Their broadcasts affect people's transportation choices. They can also influence the judgment of state and federal policy makers who assess the need for relief assistance based on visual images of the damage. Follow-up analysis in papers can influence public opinion about seismic-safety and expenditures for transportation at-large.

This analysis suggests that the mass media have tremendous power to shape public images and reactions. "Official" transportation stories, like radio traffic reports, are not the primary source of travel information for the public after a disaster in which transportation facilities are destroyed. Instead, all media coverage, and television news stories, in particular, are relevant to an information-hungry public. This construct is well known in the communications discipline, but has not previously been applied to the transportation field.

This study suggested that information took two forms. One was surveillance: the media provided pictures to assess how severe the damage was and whether it was safe to travel. The media also provided a great deal of information about alternative routes, expected congestion and delays, and some alternatives, particularly Metrolink. Again, this content occurred in on-going news-coverage, and not in special transportation reports.

Transportation officials may debate whether the information about route choices and alternatives was sufficient or comprehensive. As we will discuss, new and evolving technologies may provide future alternatives. But, at least in the short term, it is difficult for transportation officials to escape the media's pervasive role in surveilling the damage and making initial assessments. In some cases, devastation of the transportation system is used as a metaphor to describe damage at large.

We referred to this in Chapter Three as an example of vivid-reporting. News media seek out "newsworthy" stories that have a captivating visual element. This is not the sole explanation, but it helps us understand why major newspapers

had page-one pictures of the freeway collapse on January 18, 1994. On television on January 17, 1994 almost one-third of the day-time coverage showed images of transportation damage. Gruesome pictures of mangled concrete and dangling rebars were shown over and over again. There is some evidence that this was particularly "newsworthy" since the video images were used as overlays for other stories that were not about transportation.

The investigation also examined other elements of disaster reporting in terms of their relevance for transportation planning. We noted the media's tendency to cite official channels, like government officials. This may benefit transportation agencies, since the public recognizes that transportation involves extensive coordination among federal, state, and local agencies. The role of the mass media in interpreting seismic conditions was not as clear-cut. Initially, there was a lot of information about seismic conditions, at large, and frequent mention that retrofitted structures had survived the quake. In later coverage, seismic retrofitting became a political and divisive issue. Clearly the mass media have an important role in educating the public and shaping their attitudes towards reconstruction efforts.

In this study, we have exclusively investigated the mass media. We realize this excludes additional factors that influenced perceptions and behaviors and we recognize that the media co-exist within a larger sphere of influence. As an heuristic, we have examined the media and isolated its role.

9.1 Conclusion

Compared to the Loma Prieta experience, it is remarkable how positive and well-orchestrated coverage of the Northridge disaster appears. As in the Loma Prieta earthquake, the damage to the transportation system was highly reported, and seems to be used as a metaphor for the calamity at large. However, these damage reports did not stall repair of the Southern California freeways or undermine confidence that the damage could be repaired quickly.

Several factors, *on the part of the transportation agencies*, appear to have provided an innovative approach:

(a) *Going the extra mile*: There was demonstration that transportation workers were on top of the situation, and were taking immediate efforts to mitigate the problem. Some of the earliest television pictures, on January 17, 1994 show Caltrans officials assessing the damage. This fast action was reinforced by broadcast pictures on the morning of January 18, 1994. They show demolition efforts beginning, and by association, quick decision making and response, on the part of transportation officials.

(b) *Daily press conferences*: The press coverage, for the most part, shows accountability and responsibility in traffic and transit planning. There are a number of interviews with public officials, and transportation milestones like the opening of new Metrolink stations, receive extensive coverage. This might be attributed to daily meetings with the press that began three days after the earthquake. Members of the various transportation agencies, public officials, and the press met together. This daily briefing relieved transportation agencies from *ad-hoc* media requests, and provided the media with central, uniform, and timely updates. It is a vital example of how "command-post" reporting (Chapter 4) can be channeled effectively.

(c) *Speedy response in terms of 1-800 numbers, and direct means* to reach the public: Transportation agencies recognized that the public was hungry for information, and rushed to provide useful phone numbers, pamphlets, and other assistance. The limitation of these methods is that it takes a realistic time to get them into service, and the initial demand can exceed staffing capabilities.

The timing and conditions of the earthquake itself expedited recovery, and led to more positive imagery about transportation. Specifically:

(a) The earthquake occurred during early morning hours when there were few commuters on the road. There was only one direct traffic fatality. Had there been more fatalities, media coverage would have shifted from the collapsed apartment building to other sites of injury and death.

(b) Only four sections of the freeways collapsed. Entire portions remained unscathed, and most of Los Angeles' 510 miles of freeways were untouched.

(c) The Century Freeway, Los Angeles' newest freeway, was not damaged by the earthquake, despite its proximity to the I-10. The freeway had opened shortly before the earthquake, and after the disaster, Caltrans was heralded for providing engineering redundancy for I-10 traffic. The Century Freeway also provided empirical evidence that state-of-the-art engineering was earthquake resistant.

Our analysis showed that, in the short- term:

(a) News about transportation did, at least initially, overwhelm the media agenda, vis a vis other types of coverage. On television, transportation was frequently mentioned during the first two days of coverage, but then dropped off

rapidly. This was true for both local and national news. In print, reporting is more continuous, but tends to decline after the third week.

The sudden emergence of transportation stories after a disaster means that public develops an overnight awareness/exposure to transportation issues and alternatives. This provides a tremendous opportunity, but a very narrow window, for transportation agencies to reach the public.

(b) Media coverage tends to emphasize more vivid events, and graphic visuals of freeway damage are frequently overlaid on non-transportation stories. Apparently, damage scenes make "newsworthy" visual background or filler. This may be of concern to transportation officials, faced with the need to restore public confidence in the transportation system and allay fears. On the other hand, this same imagery might help transportation officials alert public officials to the damage, and serve as a catalyst for their intervention.

(c) The mass media provide a large amount of road and traffic information, in addition to, or ancillary to, traffic reports. News stories are often a source of information about detours and routing, and they introduce new modes of travel, like Metrolink. Discrete news-stories can aggregate to a larger picture about the status of travel and road conditions at large. For example, pictures of rock slides on the freeway suggest that conditions are going to be slow and treacherous. News stories about train station openings publicize the availability of this mode.

(d) New electronic sources, like the Internet, are also used for information about travel conditions. The availability and widespread use of electronic media following a disaster will grow.

(e) The mass media *did* present information about alternatives like telecommuting and carpooling. However, statistical analysis using a reversion to mean-half life indicates that mention of these alternatives was not sustained. There was also very little coverage, over time, about carpooling and telecommuting on television.

(f) There was a relatively higher level of discussion in the press about freeways, road conditions, and Caltrans. This is understandable, since single-occupancy vehicle travel emerged as the preferred mode within the second or third week after the disaster. Los Angeles is heralded for its auto-dependence, and it was assumed from almost the beginning that heroic efforts would be

made to restore vital freeway arteries. In the press, increased spikes of coverage are associated with the re-opening of each new interchange.

(g) Mass media coverage is associated with trial use of Metrolink, the commuter train. Our analysis is not causal and involved study of ridership over a short-time period. Nonetheless, time series analysis found that increases in television coverage were associated with modest increases in train ridership over the subsequent two to five days. Other factors clearly motivated ridership, as well. Television was effective in providing mode information and showing potential riders a concrete, easy-to-follow, heuristic.

Over a longer term, it is difficult to summarize the impact made by media coverage on transportation issues and planning. The event-study analysis showed that discussion of Metrolink, freeways and bridges, and Caltrans, stayed at higher levels than would otherwise be predicted. Newspaper information about these topics did not dissipate as rapidly as other topics such as carpooling and telecommuting. This is preliminary evidence that the media agenda changes. If sustained over the longer term, it may reinforce awareness of transportation, and provide support for Metrolink. It is quite likely that an image of recovery will long be associated with the brief, but extraordinary response, of Metrolink officials.

9.2 Recommendations

A major key to the success of the Northridge earthquake recovery was that despite their volume, transportation stories did not turn ugly or blameful, and they helped reinforce a view that the transportation crisis was under control. Many factors could be responsible: restraint on the part of the press, harmonious relationships between the press and transportation agencies, or limited investigative reporting because there were few fatalities. In a different setting, the heightened coverage level could have stalled recovery. In this case, it may have actually encouraged it. Constant repetition about the damage may have led people to stay off the road and reduce trips during the first several weeks. The more gradual resumption of commuting volumes, in turn, assisted transportation officials who planned detours, and quelled fears of county wide grid-lock.

This outcome was serendipitous. A different media emphasis could have led to more dire effects. The rapid ascension of transportation news means that transport officials must be prepared to meet the next disaster with a number of on-the-shelf scenarios. Most major transit agencies have this in place today, and

it was confirmed by the rapid deployment of 1-800 numbers and other public information by transportation agencies.

What these agencies can neither anticipate nor control, however, is the ability of the mass media to tell a vivid story, and to edit, film and shoot events in a way that tells the most dramatic story. The goals of transportation officials and media personnel are not always the same. Both have the needs of the public in mind, but transportation officials want to emphasize that recovery efforts are underway, and that public safety is a priority. The media tell the same story, but want to present news that will compel their audience to watch more, stay tuned to the same station, and provide an audience for prime-time specials and spin-off programming. Thus, transportation agencies can benefit from an expectation that journalists will rely on more vivid footage, and will seek out interviews with public officials. They should also anticipate the search-for-responsibility after seisimic-failures. What transportation agencies cannot control is the magnitude of the damage, and the journalistic penchant for showcasing loss-of-life or tragedy.

This is a very difficult problem to control but it is one that transportation agencies must wrestle with, and plan for, if they wish to stay on-top of emergency response. The ability of the media to provide vivid and interesting coverage of a disaster is a double-edged sword for transportation officials. Repeated news coverage of innovations like Metrolink can provide exposure, awareness, and credibility that cannot be duplicated in an advertising campaign or public relations.

A second type of response may be somewhat easier for officials to develop, and will also help stabilize the flow, if not the type of news, in the mass media. This second response is centered on providing the public with additional sources of information about their transportation options. Updates about detours, road conditions, travel time, and mode choices are extremely critical after an earthquake. The reader will recall the myriad of decisions described by Figure 1.1 (p.4). Currently, the mass media are the only source for this information in the initial hours and days following a disaster. It is something of a paradox that when the information needs are highest, there is also the highest constraint in the number of open and available channels (Figure 1.2).

We observed the use of new electronic media, like the Internet, following the Northridge earthquake (Chapter 5). It is likely that this source, and others, will develop as both an *alternative* and parallel source to the mass media. Some specific suggestions are that:

(a) Emergency planning be investigated within new guidelines for the Emergency Broadcast System (EBS). The EBS is currently being overhauled to take advantage of new electronic technology, and reform its chain-dependent

protocol (see *New York Times*, 11/7/93). In the new system, a central computer can originate an emergency message, transmit it to broadcast or cable stations, automatically intercept local programming, and activate the "on" switch in newer receivers. Two features of the new EBS make it particularly amenable for transportation planning. First, the emergency management can be localized so that only people in an affected area are alerted. More localized warnings may help control traffic flow where there is limited capacity, and avoid traffic grid-lock. Perhaps the most interesting application of the new EBS is that it can send an audio message, or a text message that crawls across a television screen like subtitles, or even a message that fills the whole picture. Transportation officials could find this text capability useful for transmitting detailed information about road conditions, or travel advisories at large. This type of information can feed an information-hungry public and would provide an alternative, and countervailing source to general mass media coverage.

(b)Transportation agencies investigate and expand their own electronic capabilities to communicate directly with the public. A number of technologies have been proposed for post-quake communications, including handheld devices that deliver travel information, an audiotext system with real-time ride matching, and subsidized distribution of navigation systems to high occupancy vehicles (Inside IVHS, 1994). We recommend, in particular, that efforts be taken to expand radio coverage. Radio had the advantage of being a high-coverage, low-cost communication channel. It is widely listened to after a disaster, and commuters identify it as the most reliable source for travel information.

Caltrans has in operation, a radio broadcasting system known as HAR (Highway Advisory Radio), which uses flashing beacons to notify drivers that it is broadcasting. As part of its post-earthquake response, Caltrans expanded it HAR broadcasts, and coordinated them with changeable message signs. The footprint of the HAR system was limited however, and only drivers within a range of 2 to 8 miles could receive the broadcasts (Notes from personal interview with Al Martinez, Caltrans).

HAR is possible under Part 90 of FCC regulations. Agencies of city, county, and state government are able to set up small radio stations known as Travelers information System (TIS) radio stations, and transmit information on the AM radio band, at either 530 or 1610 Kilohertz (Auf der Heide, 1989). The advantage of this system is that it uses both the existing infrastructure, and existing radio receivers (for another point of view see Kiljan, (1995)). Small advancements to the technology might allow a greater coverage area, and could allow those at home, as well as in vehicles, to monitor traffic news. If more people received HAR and it was used in a traditional, and limited manner, its messages could advise people where to turn for additional information (e.g., Cable Station Coverage). As an expanded, extended message system, it could also broadcast detour-information, suggestions for shifting the time of travel, and

train and bus news. An expanded HAR system would accomplish two important goals: it would help satisfy an information hungry public and also provide them with an updated, centralized, and comprehensive source of travel news. Importantly, an expanded HAR could counterbalance the mass media's tendency to select and report more "newsworthy" stories.

If travelers receive HAR broadcasts in their home, then a further tie-in could be made to full graphic information using either television or personal computers. Caltrans currently provides color-coded maps of traffic conditions on the Los Angeles freeways over the Internet, and on the city's public access cable channel (Traffic Operations Center,1994). The transmitted information is based upon electronic sensors embedded in the freeways. Since both television and radio are so widely used after a disaster, for-profit television stations might be requested to broadcast these graphics as a public service. These stations could provide them as picture-in-picture inserts, or, at the minimum, announce that travel information was available on public-access cable. Adding information to the broadcast maps about parallel arterials and detours would clearly increase their usefulness.

It appears that we are on the brink of a new era in disaster planning. Tools, like HAR and cable-ready traffic graphics are already in operation. After the Northridge earthquake, Caltrans engineers recognized that a mutual dependence between communications and transportation was a powerful tool for handling post-disaster traffic management strategies (Traffic Operations Center, 1994). Enhanced information systems will encourage the public to shift time of travel, trial new travel modes, and make use of new detours.

In the short run though, newspapers, radio, and over-the-air television broadcasts will still produce outcomes that are unintended and unanticipated by transportation engineers. While new technologies can provide an alternative to the mass media, they will not replace it. Thus, it is essential that transportation officials and media personnel work closely together. Press relations after an earthquake are a continuation of relationships established before it. An earthquake provides a very brief, but focused period in which to move forward the transportation agenda.

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APPENDIX A

CONTENT ANALYSIS SOURCES AND PROCEDURES

Content Analysis Overview:

Content analysis is a research technique used to study newspapers, transcripts, and other materials where the content of communication serves as the basis of inference. The technique has been used primarily in three disciplines: sociology/anthropology, general communications, and political science. The history of content analysis dates from the beginning of the twentieth century. One of the most significant advances has been the development of techniques for computerized content analyses.

Although different methods are used to conduct a content analysis, Holsti (1969) maintains that there are three broad requirements: these are *objectivity, system*, and *generality*. Content analysis uses explicitly formulated rules and procedures so that other researchers can repeat the procedures. It also uses a systematic, and rule based method, to include or exclude content and categories, and must be based on theoretical relevance.

In our analysis, we chose computerized content analysis, or human/coder based on the characteristics of the raw data (content) . For example, the analyses of long-term trends in print coverage (Chapter 3) are based on a computerized content analysis since over 900 stories were analyzed, and standard categories could be developed. In the case of the seismic analysis (Chapter 4), it was more practical to use human coders, since there were only 66 stories, and a more archival review was desirable. In the case of the television broadcasts, the material existed in tape-format, and human coders were essential for categorizing two tracks of material: both the visual content and words. The coding instruments for these analyses are reproduced in other sections of the appendix. They were subject to extensive pre-testing. Written instructions were also developed to facilitate coder training.

The television data were content analyzed by two coders. One coder had a professional background in transportation research and the other was a retired electrical engineer. Their results were reviewed by the principal author who was responsible for reviewing the original material and resolving their disagreement. The analysis of seismic coding was made by the principal author, and one other coder. There are several different formulas used in content analysis to determine the reliability between coders (Holsti, 1969). Scott's pi yielded coefficients above .75 for both analyses. However, there was .95 agreement between the coders for the most critical issues: the identification of transportation news stories, and the enumeration of transportation modes. The agreement was lower for non-

transportation items, and particularly, in the decision to multiple-code secondary themes. In the case of computerized content-analysis, reliability measures are not used, since the computer will code uniformly. However, the validity of the computer content analysis was analyzed by the principal author with one other coder. Their manual coding of headlines was compared to the computerized analysis. Intercoder reliability was .82 and the reliability to the computerized coding was also high.

The following sections provide more detail on the sources of the media content, and procedures that were followed.

Print:

The Los Angeles Times was the primary source for the trend analyses. It was chosen because it is the main newspaper in Los Angeles, and has a larger circulation than other daily papers. We did not use any sampling, because news events are not randomly distributed, and it is important to capture the daily flow of news to assess cumulative impact.

A filter was used to select stories that pertained to transportation, and the full text was downloaded from the Nexis-Lexis data base service. The filter was developed to screen out stories that had only peripheral mention of transportation. An example of the latter might be a sports feature: the story could mention players being transported to a stadium in buses and traffic jams that occurred during the event. The decision was made to filter out this type of story. An effort was also made to eliminate duplicate listings from the downloaded stories. In some cases, stories occur in a specific edition of *The Los Angeles Times* (e.g. Orange County Edition) and these were retained.

The Nexus data base was used to sort stories by broad categories, such as Metrolink, Caltrans, and telecommuting, and the results are reported in the event-study analyses (Chapter 8). When more specific coding was required, the downloaded story content was moved to a content-analysis program called Textpack PC (Zuma, 1990). This program is based upon the General Inquirer approach to content analysis, and requires a category system. A specified code is assigned when a search entry is found in the text. The analysis of rebuilding (Chapter 9) is an example of this analysis. Word or phrase occurrences are aggregated to the story level-unit, according to their presence or absence in the underlying text.

An additional analysis of the print media was made based on a comparison of out-of-town headline coverage. This was performed by the author, using microfilm copies of *The Washington Post, The Chicago Tribune, and The New*

York Times. The data collection also included downloads of one-year of transportation news coverage from 1989 through 1990 in *The San Francisco Chronicle*. This data was used as background material, but not formally analyzed.

Television:

The content analysis of television messages was based on local and national sources. The local news source is an unedited, six hour broadcast (10-4:30) on the first day of the quake (January 17) from Los Angeles television station KNBC-TV. There were no commercial interruptions (ads) during the day. The analysis of the local evening news is based on the 5:30 p.m. evening broadcasts on the same stations, KNBC, from January 18 through January 22, 1994. This footage was purchased from a broadcast monitoring service in Los Angeles. This service took heroic efforts to record news footage on the day of the earthquake, and personnel entered a high-rise building without elevator service, in order to gain access to the recording studio.

A second broadcast monitoring service in Los Angeles, AVR Services, had extensive coverage of news programming for January 18th, the second day following the quake. They allowed the principal author to code this material at their studios.

As in the print media, we did not sample television footage, for news events are not randomly distributed and we were interested in cumulative coverage. Several studies in communications have demonstrated that the news content across television stations is very similar, and that the proportion of various types of news is almost identical (Appendix C). There is little concern that those who saw different television stations were exposed to different patterns of news, although we recognize that local stations can have different emphases. We were able to do a simple test of this using the earthquake footage for January 18, across six local TV stations. Uniformly, all six stations had news-stories about the demolition of the 10 freeway beginning, but the time and visual substance of the stories varied.

The source for the national news is the Vanderbilt Television News Archive. They provided about four hours of evening news broadcasts for NBC-TV from January 17 to January 25,1994 and for CBS network TV for January 17 and January 18 only. As in local news, a comparative analysis was made between the differences in the newscasts. They were found to be almost identical in the proportion, and type of earthquake coverage. The Vanderbilt Television Index (a print index) was also used to examine longer term trends and make comparisons to reporting after Loma Prieta (Appendix C).

The instrument in Appendix D was used to code television news stories. At the start of the project, three coders, including the principal author, were used. Since the intercoder reliability rate was high, we opted to use only two coders. An additional investigation of television content was made by the principal author, using footage of morning traffic reports on television. The data source was provided by Metrolink, and is based on a video compilation of their on-air clippings. This sample was extremely valuable but may not be as representative as the other broadcast data.

The analysis in Chapter 7 is also based upon a separate, and proprietary, data source. KNBC- TV used data-base archives to develop a special report, which they donated for this study. It reports the date, time, and length of Metrolink news stories. Other video footage for KNBC was procured from the afore-mentioned monitoring services.

Radio:

There has been almost no content analysis in the disaster literature of radio, because its content is so extensive and diffuse. Serendipitously, a local monitoring service had preserved its recording notes from the quake, and agreed to donate them for this study. This service monitors, at-length, two local all-news stations, a local talk/news station, and in less-detail, seven or eight mixed format (music and talk) stations. Their coverage of the all-news stations is complete, while the coverage of mixed format stations tends to be less extensive during evenings and weekends. The period from January 17, 1994 through February 28, 1994 was studied.

Each news-story is summarized (in words) by the monitoring service, and the output resembles an abbreviated news index. The abstracts also contain secondary information, which can be extrapolated to infer the number of stations and number of times the story appears across a 14 hour day. This extrapolation was made by the principal author. It is based on (1) a frequency count of the number of stations that aired the story and (2) the number of times that each station repeated and/or updated the story. A simple ordinal scale was used to aggregate the stories. A one was assigned to story units with only one occurrence on one radio station; a two was assigned for two occurrences on one station; or one occurrence on two stations; a three was coded for all story units with higher occurrence rates.

This scale is used to infer news-emphasis, and more frequently occurring stories receive a higher score. It is an ordinal scale. In contrast, interval scales are used for television and print media, since their emphasis score is constructed from a count of occurrences.

APPENDIX B

"COMMUNITY RESPONSES TO THE NORTHRIDGE EARTHQUAKE"

Principal Investigator: Linda B. Bourque, Ph.D.

Funded by the National Science Foundation

(Data Collection Grant No.: CMS-9411982)

(Data Analysis and Dissemination Grant No.: CMS-9416470)

Media:

Thinking back to the day of the earthquake on January 17, 1994, where did you get your information about the earthquake that day?

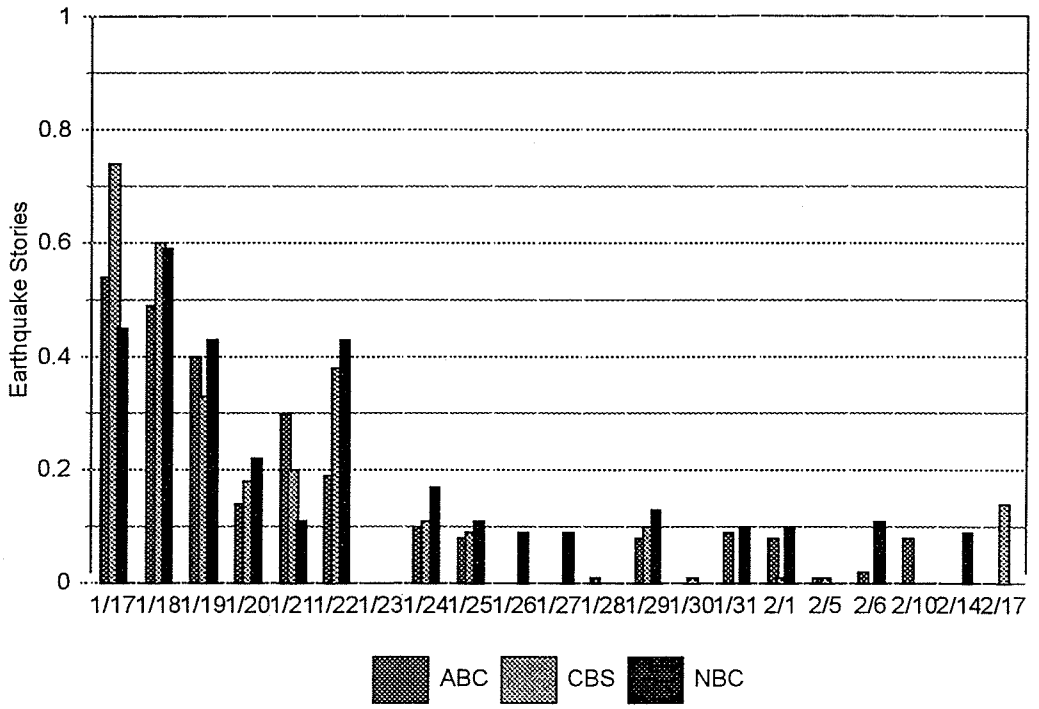
%	N	Label
1.6	8	No information
51.3	259	Radio
33.9	171	T.V. News Program
2.2	11	T.V. Specials
1.4	7	Newspapers
1.0	5	Other
1.0	5	Friends/Relatives Outside the Los Angeles Area
2.4	12	Friends/Relatives Inside the Los Angeles Area
1.2	6	Neighbors
4.2	21	Own Observations
	1	Don't Know

Of the sources of information you had on January 17th, which one would you say was the best source of information that day?

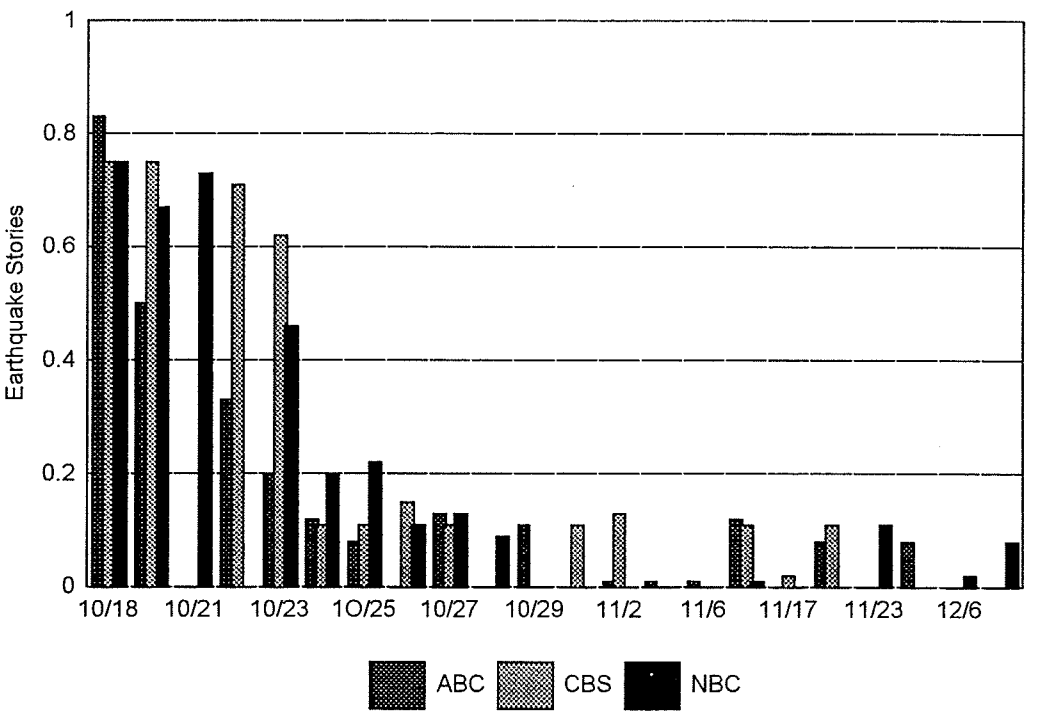
32.2	78	Radio
54.1	131	T.V. News Program
3.7	9	T.V. Specials
1.2	3	Newspapers
0.4	1	Movies (Fictional/Documentary)
3.3	8	Other
3.7	9	Friends/Relatives Inside the Los Angeles Area

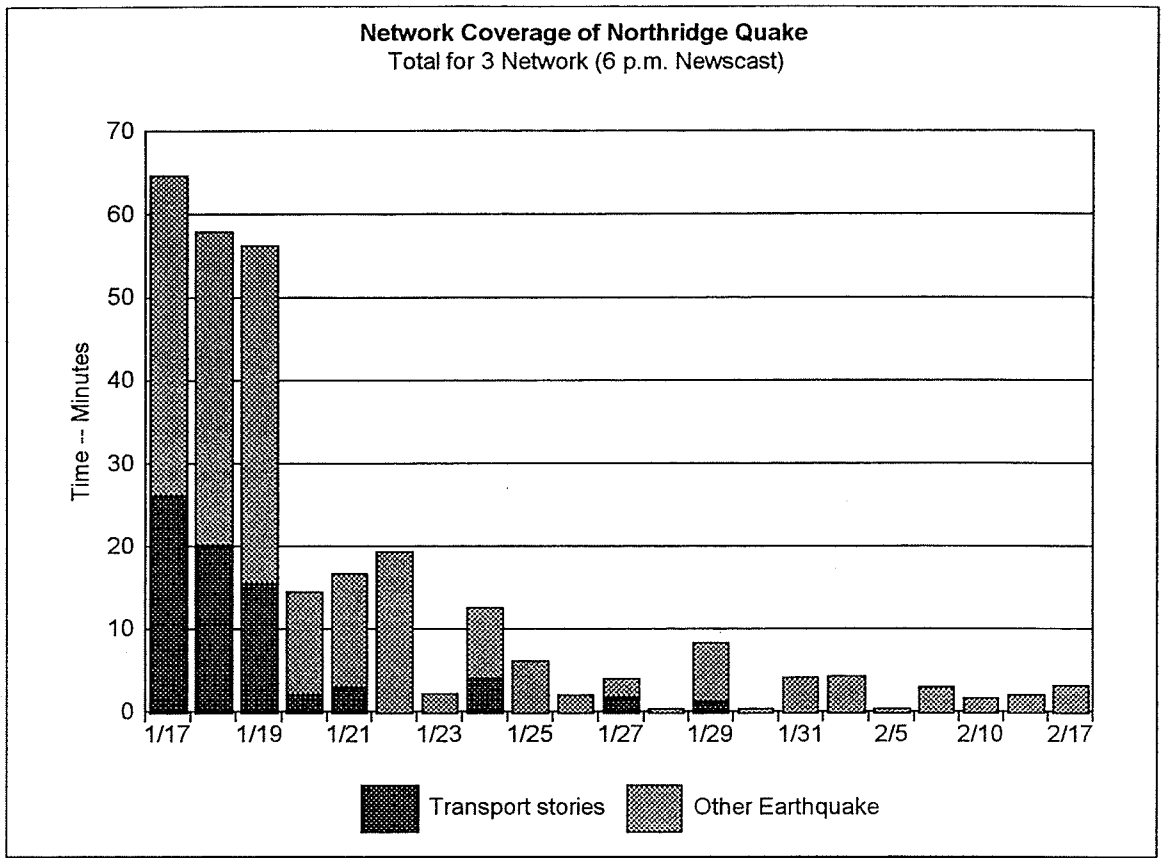
APPENDIX C

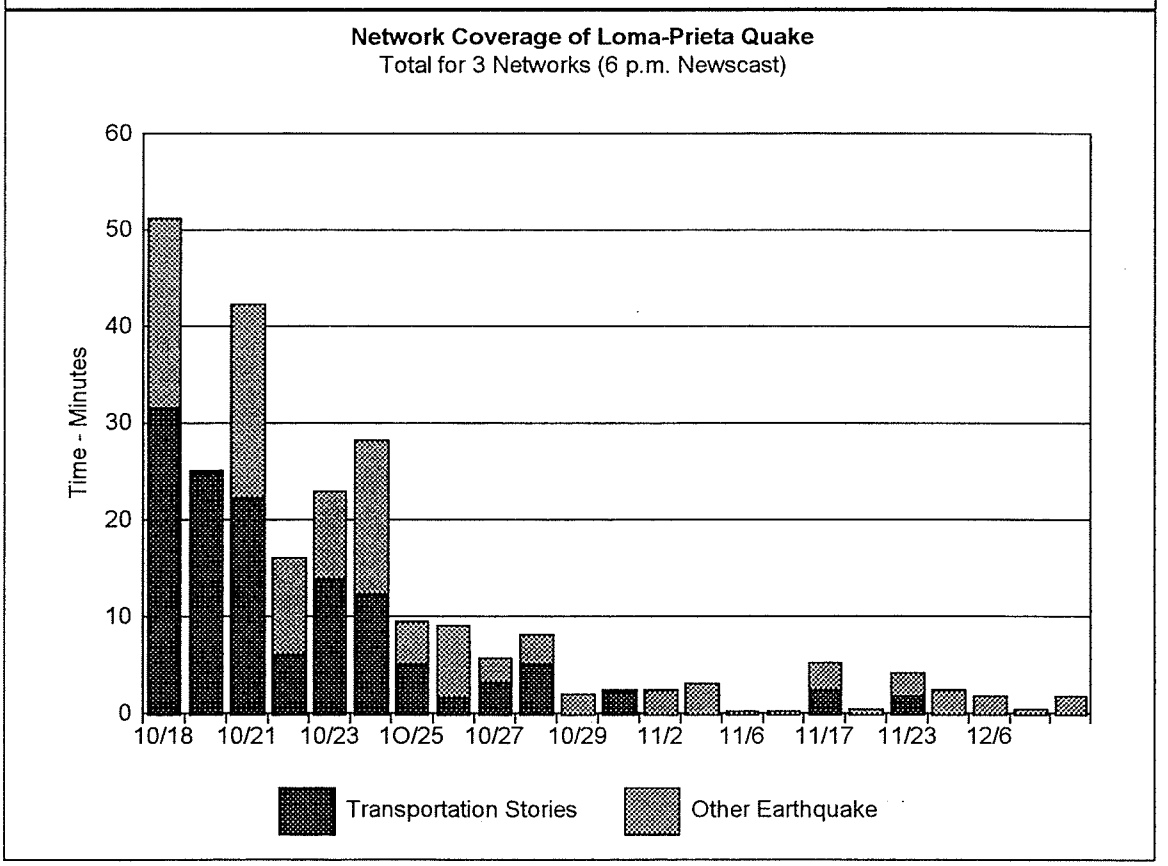
Comparison of Network Programming
Evening News After Northridge Quake



Comparison of Network Programming
Evening News After Loma Prieta Quake




Network Coverage of Northridge Quake
Total for 3 Network (6 p.m. Newscast)
Time -- Minutes
70
60
50
40
30
20
10
0
1/17
1/19
1/21
1/23
1/25
1/27
1/29
1/31
2/5
2/10
2/17
Transport stories
Other Earthquake


Network Coverage of Loma-Prieta Quake
Total for 3 Networks (6 p.m. Newscast)
Time - Minutes
60
50
40
30
20
10
0
10/18
10/21
10/23
1O/25
10/27
10/29
11/2
11/6
11/17
11/23
12/6
Transportation Stories
Other Earthquake

APPENDIX D
TELEVISION INSTRUMENT -TRANSPORTATION

Transportation Story/ Unit
Date_____ Broadcast Time_____ ID# _____

1. Site:
☐1 5/14 Freeway Overpass Collapse
☐2 10 Freeway Collapse
☐3 118 Freeway Collapse
☐4 Unspecified Freeway
☐5 Commuting
☐6 Metrolink trains or rail stations
☐7 Metrolink passengers
☐8 Buses
☐9Other (_____)

☐1010Travel information

2. Damage:
☐1overpass damage
☐2stranded cars on bridge
☐3demolition or repair
☐4damage-
☐5demolition or repair
☐6damage
☐7demolition or repair
☐8 Cars at stand-still
☐9 Rock slide or road obstruction

☐10Travel Graphic
☐11Other (_____)

For each transportation story unit, code EMPHASIS on 1 to 5 scale:

		(NA= not applicable	1=least severe			5=most severe)
3.	Congestion/delay encountered	NA3	1	2	3	4	5
4.	Seismic Safety of bridges/roads	NA4	1	2	3	4	5
5.	Commercial traffic/freight movement	NA5	1	2	3	4	5
6.	Mobility in LA - Car is key theme	NA6	1	2	3	4	5
7.	General Damage Assessment	NA7	1	2	3	4	5
8.	Demolition	NA8	1	2	3	4	5
9.	Travel Info	NA9	1	2	3	4	5
10.	None of above ( )						
11.	None of above ( )						

12. Is an alternative(s) to SOV explicitly mentioned or implicitly suggested?
☐1 Yes ☐2 No ☐3 Not Clear
if Yes: (is there a visual image?)

		Visual		or	Voice Only	
		Yes	No		Yes	No
13.	Trains/Metrolink	13. ☐1	☐2		☐3	☐4
14.	Buses	14. ☐1	☐2		☐3	☐4
15.	Carpool/Vanpool	15. ☐1	☐2		☐3	☐4
16.	Telecommute	16. ☐1	☐2		☐3	☐4
17.	Other(_____)	17. ☐1	☐2		☐3	☐4

18. Does the story unit provide information for commuters?
- ☐1 No mention of this in the story unit
- ☐2 Recommendation to stay at home- not travel
- ☐3 Advisory:vehicular travel is dangerous or slow
- ☐4 Verbal description of closed roads and alternative routes or detours
- ☐5 Display of a traffic graphic
- ☐6 Prediction of congestion, or time to travel
- ☐7 Other_____

19. Is a source mentioned for travelers to contact for route or mode information?

☐1 Yes ☐2 No ☐3 Not Sure

If yes, name sources, phone #, other detail_____
_____

20. Does story unit include an interview:

☐1 Yes ☐2 No (Anchor) ☐3 Not Clear

If Yes, with whom (multiple code)

21.	☐ fed govt	27.	☐ victim
22.	☐ state govt	28.	☐ expert
23.	☐ local govt	29.	☐ eyewitness
24.	☐ Caltrans (by name)	30.	☐ Metrolink
		31.	☐ MTA
25.	☐ affected business		
26.	☐ scientist	32.	☐ Other (_____)
		33.	☐ none of above mentioned

if government agency/elected official is cited above, code :

34.	☐**Federal:**	**38.**☐**State:**		**42.**	☐**Local:**
35.	☐Clinton/Gore	39.☐Wilson		43.	☐Riordan
36.	☐Pena/ Transportation	40.☐State Polit.		44.	☐Other____
37.	☐ Other_____	41.☐Other_____			

45. Other comments, observations on the transportation story unit (e.g. types of riders shown using mass transit, other themes not mentioned in this instrument such as transit strike or unions, general observations)_____
_____
_____

46. Is there a "human interest" story that is told?

☐1Yes ☐2No_____
_____

APPENDIX E
SEISMIC CODING INSTRUMENT

VAR #	VAR. NAME	VAR. DESCRIPTION	CODES
1	ID#	Story date/sequence	MMDD##
2	WD#	Story length	
3	TYPE	Story type	1 News/Column 2 Times editorial 3 OP/ED 4 Feature 5 Human interest
4	PAG1?	Does story appear on front page of main section?	0 No 1 Yes
5	EPAG1?	Does story appear on front page of editorial section?	0 No 1 Yes
6	NEUTRL?	Is story 'neutral', i.e. informational only?	0 No 1 Yes
7	INVES?	Is formal investigation of retrofit program called for?	0 No 1 Yes
8	SOURCE	Information sources cited (code up to 3)	1 Van Loben Sels 2 Other Caltrans official 3 Caltrans engineer 4 Federal official 5 Wilson 6 State legislator/elected official 7 City/county legislator/elected official 8 City/county/state agency 9 Seismic expert 10 Employee union/contractor 11 LAT editorial staff 12 Other
9	ORGBLM?	Does the story assign 'blame' to any individual or organization?	0 No 1 Yes
10	CODE1	Who is 'blamed'? (code up to 3)	1 Caltrans 2 Other city/county/state agency 3 State Legislature 4 Wilson 5 Other elected official 6 Employee union 7 Contractor 8 Other

11	SITBLM?	Does the story assign 'blame' to any policy or situation?	0 No 1 Yes
12	CODE2	What is 'blamed'? (code up to 3)	1 State budget constraints 2 Competition with other state programs 3 Competition with other transportation projects, incl. transit 4 Caltrans priorities (new construction vs. reconstruction) 5 Competition with Bay Area retrofit needs 6 Caltrans delays in completing retrofits 7 Poor administration/supervision of retrofit program 8 Inadequate assessment of at-risk structures 9 Seismic standards not strict enough 10 Bureaucratic constraints on contracting 11 Public safety compromised by politics 12 Other
13	ORGPRS?	Does the story defend any individual or organization?	0 No 1 Yes
14	CODE3	Who is defended? (code up to 3)	1 Caltrans 2 Other city/county/state agency 3 State Legislature 4 Wilson 5 Other elected official 6 Employee union 7 Contractor 8 Other
15	SITPRS?	Does the story defend any policy or situation?	0 No 1 Yes
16	CODE4	What is the defense? (code up to 3)	1 Existing retrofits survived quake 2 Lessons from previous quakes put to good use 3 Reconstruction completed ahead of schedule 4 More flexible contracting arrangements were needed 5 No such thing as 100% quake-proof structure 6 Impossible to predict failure on unknown fault 7 Seismic safety an evolving science 8 Other

APPENDIX F
NEWSPAPER HEADLINES

Los Angeles Times

CIRCULATION: 1,138,353 DAILY / 1,521,197 SUNDAY

TUESDAY, JANUARY 18, 1994
COPYRIGHT 1994 / THE TIMES MIRROR COMPANY / CCC / 102 PAGES

DAILY 50¢
DESIGNATED AREAS HIGHER

33 Die, Many Hurt in 6.6 Quake

L.A. Area Freeways Buckle, Buildings Topple

Sylmar Jolted by Ghosts of Horror Past

■ **History:** The city that crumpled under a 6.5 quake in 1971 remembers well the terror that came when the earth gave way. On Monday, it seemed like it was cursed.

By CRAIG TURNER and RICHARD E. MEYER
TIMES STAFF WRITERS

Beate Heuss had nearly conquered her fear when she felt it again.

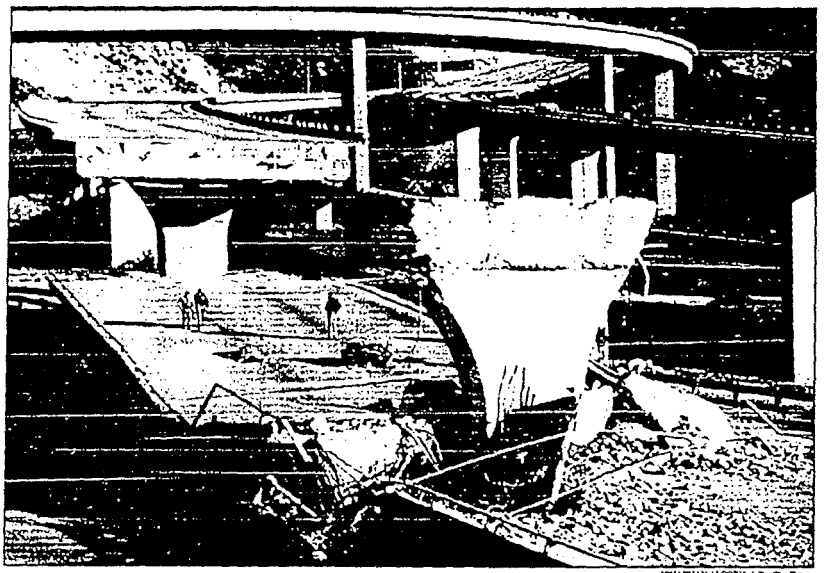
That's why it was so terrifying. It was happening again. She and her husband, David, were in bed, like the last time. In a mobile home, just like the last time. It was, in fact, the same mobile home, at the same trailer park.

"This one felt much worse," she said afterward, calm but able to remember every tremor, then the shaking, then the violence. "It was much harder, a hard jolt. The '71 one swayed a little." But this one did not sway. It simply slammed David and Beate Heuss and their community. Again.

Sylmar does not look cursed. It is just half an hour from the heart of Los Angeles, but rural enough for corrals.

But at 4:31 a.m. Monday, in the quiet darkness, ruin struck with thunder and vengeance—for a second time. It trampled Sylmar and its peace of mind, and when the shaking finally stopped, roads had crumbled, structures had collapsed

Please see SYLMAR, A9



JONATHAN ALCORN / For The Times

The body of LAPD Officer Clarence W. Dean lies near his motorcycle, which plunged off the Antelope Valley Freeway overpass that collapsed onto the Golden State Freeway during Monday's earthquake. The 6.6 temblor closed at least 11 major freeways or interchanges.

■ **Disaster:** Epicenter is in Northridge, where three-story apartment complex pancakes. Ruptured gas lines erupt in fire in strongest temblor in city's modern history.

By TRACEY KAPLAN and GREG KRIKORIAN
TIMES STAFF WRITERS

A deadly magnitude 6.6 earthquake—the strongest in modern Los Angeles history—ripped through the pre-dawn darkness Monday, awakening Southern California with a violent convulsion that flattened freeways, sandwiched buildings, ruptured pipelines and left emergency crews searching desperately for bodies trapped under the rubble.

The 10-second temblor, which was not the long-dreaded Big One but erupted so fiercely that it initially seemed every bit as intense, was blamed for at least 33 deaths—nearly half of which occurred when a three-floor apartment complex near the epicenter in Northridge collapsed into two stories.

Triggered by a fault that squeezed the northern San Fernando Valley between two mountain ranges like a vise, the 4:31 a.m. earthquake swamped hospitals with hundreds of injured victims and left thousands more homeless as fires, floods and landslides dotted a landscape that has been visited by destruction with disturbing regularity.

The major developments:

• The death toll continued to grow throughout the day. Fifteen bodies were discovered under the rubble of what had been the Northridge Meadows apartments. Other victims of the quake included a Los Angeles police officer who drove his motorcycle off a sheared-off freeway, a Skid Row resident who may have hurled himself out the sixth-floor window of a Downtown hotel and a Rancho Cucamonga mother who slipped on a toy as she raced to check on her child, striking her head on the curb.

Please see JOLT, A10

To Our Readers

The Times today publishes a special report, "Coping With the Quake," a resources guide that includes information on construction and tells how to clean up, and how to guard your personal and financial health.

This material appears in Section B and takes the place of the Metro section.

As a result of the quake, there may be delays in receiving papers and difficulty in reaching The Times. We hope to correct these problems as soon as possible.

Thrust Faults Pose Brutal Danger to Basin

By ROBERT LEE HOTZ and KENNETH REICH
TIMES STAFF WRITERS

The earthquake that convulsed the San Fernando Valley early Monday demonstrated as brutally as possible the danger posed by a complex web of deeply buried thrust faults underlying the Los Angeles Basin.

Seismologists said Monday that dozens of such faults underlay the basin, many unmapped and unknown until they abruptly announce their presence with a powerful shudder. Although they may lack the capacity to generate the devastating force of the Big One, these faults can cause severe injury and widespread property damage.

"There are so many [faults] that can produce stress of this magnitude," said Hiroo Kanamori, director of the Caltech Seismological Laboratory. "We have to be pre-

Please see FAULTS, A11

Commuters Will Face Nightmare for Months

■ **Transportation:** Several freeway sections are shut. Golden State, Santa Monica routes are heavily damaged.

By NORA ZAMICHOW and RALPH FRAMMOLINO
TIMES STAFF WRITERS

The 10-second earthquake that rocked Southern California early Monday will create a commuting nightmare for months to come, officials said.

Portions of one local highway and six freeways—including the Golden State and the Santa Monica—were closed after the quake flattened overpasses and buckled swaths of asphalt. The two major routes out of the Santa Clarita Valley were severely damaged, virtually isolating the area.

Caltrans officials said they are uncertain how long the roads will remain closed. But they estimated that some sections will be shut for 12 to 18 months, including a stretch of the Santa Monica Freeway, the nation's busiest highway. That closure will force the detour of about 300,000 cars a day.

"We've got some major problems—people are going to be using city streets for a period of time," said Ken Nelson, a deputy district director of the local Caltrans office. "It is certainly not going to be business as usual. . . . People are going to have to use alternative modes of transportation for a long time."

Do not drive today, officials advised, unless you must. For those with no alternative, allow extra time for your commute, take a detailed map and listen to the radio because aftershocks may cause more closures.

Monday's earthquake collapsed a bridge on the Golden State Freeway near Sylmar and ruptured a part of the Antelope Valley Freeway (California 14)—the main roads between Los Angeles and the Santa Clarita Valley, a suburb of about 130,000 people. Many, if not most of the residents of this growing area on the edge of the desert work in Los Angeles.

Please see COMMUTERS, A14

Questions on Reinforcing of Freeways Raised

By VIRGINIA ELLIS and DAVID FERRELL
TIMES STAFF WRITERS

With sobering force, Monday's earthquake devastated much of Southern California's massive roadway system, causing officials to begin reassessing a $1.5-billion reinforcement program designed to prevent the state's highways from buckling under seismic stress.

The magnitude 6.6 quake caught state highway engineers in the midst of a costly program to reinforce or retrofit key freeway bridges and interchanges that were considered vulnerable to large temblors.

Despite that program, portions of six freeways were closed because of structural damage. The hardest hit were two of the region's busiest routes: the Santa Monica Freeway near La Cienega Boulevard, where an elevated portion of roadway buckled onto the street below, and the Golden State Freeway, which was closed by the collapse of an Antelope Valley Freeway overpass. The collapses caused sections

Please see FREEWAYS, A25

Quake Coverage

At Least 15 Die in Collapsed Apartments

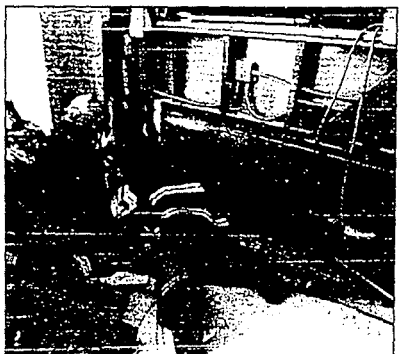
■ **Epicenter:** Residents are trapped and killed as 40 units on the first floor of a three-story Northridge complex are flattened. Rescuers with dogs comb rubble for survivors.

By ANN W. O'NEILL and HENRY CHU
TIMES STAFF WRITERS

At the place the huge temblor took its greatest toll, the woman stood vigil by an oak tree, peering into the rubble of what had been her home.

For four hours, Hyun Sook Lee stood by the Northridge Meadows apartments, where as many as 40 first-floor apartments collapsed under the weight of the two floors above, killing at least 15 people early Monday morning when the earthquake hit. What had once been a courtyard with waterfalls and streams was now sandwiched

Please see COLLAPSE, A9



TODD BOELOW / Los Angeles Times

Firemen work to free a resident at Northridge Meadows apartments.

INSIDE TODAY'S TIMES

WEATHER: Sunny, warmer today. Wednesday after morning fog at the coast. Civic Center [illegible]/high: 50/78. Details: B7

■ TOP OF THE NEWS ON A2

A Rush of Fear, and Even the Lucky Are Left Shaken

■ **Emotional toll:** For many, home no longer seems safe. Some find comfort in loved ones. Others consider leaving.

By SHERYL STOLBERG and GLENN F. BUNTING
TIMES STAFF WRITERS

Curled up like a frightened baby, Elsie Thull lay on the floor of an elevator in the 21-story New Otani Hotel in Downtown Los Angeles and prayed. Everything was black, except for the incessant blinking of the floor numbers, and the contraption was rattling in the throes of an earthquake that was about to bring the region to its knees.

She was trapped.

She fumbled for the emergency telephone. Hotel officials put her husband, Ted, on the line. In quiet tones, the retired airline pilot tried to calm his wife, hoping to reassure her, failing miserably. "Ted!" she cried. "Get me out of here! Get me out of here!"

Elsie Thull's terror—10 seconds of sheer panic shared by millions—stretched to nearly an hour before help arrived. And the 56-year-old Ohio woman, who had escaped the freezing cold that gripped much of the nation for a weekend trip to Southern California's famed winter warmth, was left with an impression unlikely to change.

"I don't like Los Angeles," she declared once she was out.

There is a joke going around the region these days, ever since the wildfires of this past fall: Los Angeles has four seasons—fire, flood, earthquake and drought. It is black humor, but on Monday it

Please see NERVES, A11

Weather
Today: Partly sunny. Windy, cool. High 20. Low 6. Wind northwest 15-30 mph.
Wednesday: Mostly sunny, very cold. High 17. Low 2. Wind 15-25 mph.
Yesterday: Temp. range: 16-35. Wind chill: -13. Details on Page D2.

The Washington Post

FINAL

Inside Today's Contents on Page A2

117TH YEAR .... No. 44 TUESDAY, JANUARY 18, 1994 25¢

Destructive Quake Shakes Los Angeles; At Least 29 Die, Hundreds Are Injured

Workers survey wreckage on collapsed overpass near the Interstate 5 and State Highway 14 interchange northwest of downtown Los Angeles. A motorcycle officer died after the road fell.

Roads Collapse; Crews Battle Dozens of Fires

By John Lancaster
Washington Post Staff Writer

A violent earthquake shook Los Angeles awake before dawn yesterday, creating a smoky, chaotic tableau of flaming gas mains, crumpled buildings and buckled freeways in the midst of one of the nation's most crowded metropolitan areas. At least 29 people died, and hundreds more were reported injured.

The most destructive quake to hit Southern California since 1971 concentrated its fury on the San Fernando Valley, a suburban area northwest of downtown Los Angeles, where 15 people died in the collapse of a single apartment building in Northridge.

Several streets in that hard-hit city, at the quake's epicenter, were transformed into surreal, apocalyptic scenes of broken, gushing water mains and ruptured gas pipes spewing flames 50 feet into the air. Scores of homes were destroyed, including 45 gutted by fire in a trailer park in Sylmar at the northern end of the valley.

Anxiety remained high last night as strong aftershocks rumbled through the area. With electrical power and traffic lights disrupted, many residents stayed outdoors, wary of crestfallen damaged buildings. Some appeared to be driving aimlessly on darkened roads. A curfew was imposed at dusk.

Although damage outside the valley generally was less severe, the quake proved a rare common experience in the polyglot city, spilling bookshelves, emptying kitchen cabinets and toppling television sets in communities rich and poor. Several hospitals set up makeshift emergency rooms in their parking lots to deal with the flood of injured.

In a swanky neighborhood of West Hollywood, broken glass littered sidewalks, residents traded survival stories over brunch at Le Petite Four and onlookers made souvenirs of a collapsed wall that had been painted with a mural of Hollywood film legends.

The quake, which measured 6.6 on the open-ended Richter scale, shook buildings in San Diego, 125 miles south, and Las Vegas, 275 miles to the northeast, and disrupted electrical power as far away as Oregon, Wyoming and Canada, according to the Associated Press. In Los Angeles, it left hundreds of thousands without power or telephone service, and city authorities urged residents to boil drinking water to avoid disease.

The most obvious casualty of the San Fernando Valley Earthquake was the city's infamous network of interstate freeways, three of which collapsed in places, including the Santa Monica Freeway, the nation's busiest. The damage to the transportation network dealt yet another blow to Southern California's depressed economy, already reeling from massive defense industry cutbacks and a recent spate of devastating brushfires.

Because the quake occurred on a federal holiday at a time when most people were in bed, freeways were nearly empty of traffic

See LOS ANGELES, A12, Col. 1

- *It registered 6.6 on the Richter scale, but the quake was not the Big One. Page A7*
- *Insurance losses may be $7 billion, but economic damage may be more. Page A12*
- *From the television network cameras that shook the nation. Page B1*

'It Was One Big Explosive Jolt'

Neighbors Rescue Dozens After Apartment Collapse

By Lou Cannon and Jessica Cra[illegible]
Washington Post Staff Writers

NORTHRIDGE, Calif., Jan. 17—"I kind of felt like a bomb went off," said Susan Pearson, who was sleeping with her husband, Erik, on the third floor of the Northridge Meadows apartments when the earthquake struck. "It tossed me up in the air and when I came down it tossed me up again."

"We were airborne, thrown from our bed," said Erik Pearson. "It was one big explosive jolt that slammed up and down and then pitched the whole building diagonally about 12 feet."

The Pearsons were two of the lucky ones here in Northridge, along Reseda Boulevard, at the center of the San Fernando Valley earthquake. When the shaking subsided, nearly a minute later, they were able to scramble over the balcony of their apartment and slide down to the street.

But at least 16 others died when the second and third floors of the apartment building came crashing down to ground level, trapping, battering and crushing scores of people who had been sound asleep moments before.

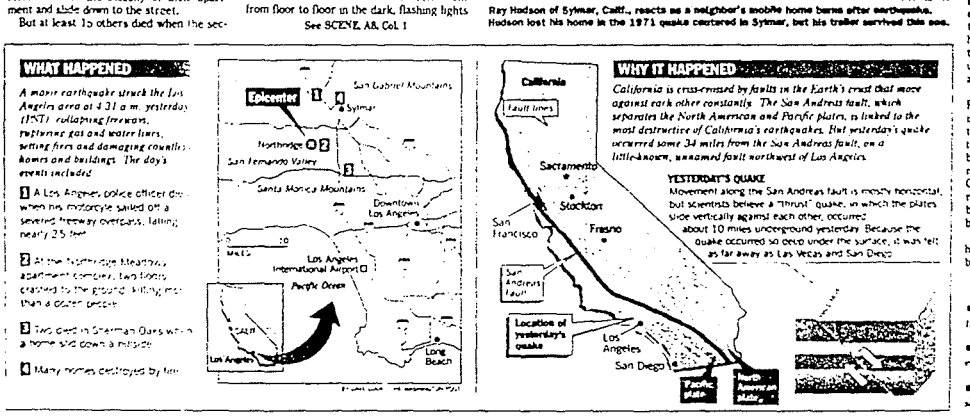
Many more might have died at Northridge Meadows but for the impromptu rescue operation of survivors and others who arrived on the scene, said Erik Pearson, an emergency medical technician.

"There were five or six of us," he said. "We worked as a team rescuing about 150 people from the third and second stories. . . . We formed a human chain, stretching fire hoses between balconies and using a ladder to reach people.

"People were screaming," he said. "They were crawling all over each other. People came down in front and between your legs." Pearson said he and other rescuers went from floor to floor in the dark, flashing lights

See SCENE, A8, Col. 1

Ray Hudson of Sylmar, Calif., reacts as a neighbor's mobile home burns after earthquake. Hudson lost his home in the 1971 quake centered in Sylmar, but his trailer survived this one.



Woodward & Lothrop Files For Bankruptcy Protection

By Kirsten Downey Grimsley
Washington Post Staff Writer

Weighed down by debt and battered by tough competitors, Woodward & Lothrop Inc., a prominent Washington retailing institution for 113 years, yesterday filed for Chapter 11 bankruptcy protection in New York City.

Woodward & Lothrop said its 11 department stores will operate as usual, that it has no plans to close stores or lay off employees and that no returns will lose premium benefits as a result of the action.

Instead, the company said it intends to use the bankruptcy process as a way to negotiate a reduction in the heavy debts that have eaten up the profits earned by its stores. A Chapter 11 filing gives a company protection from its creditors while it continues to operate and develop a reorganization plan.

The bankruptcy filing also affects another long-time center-city retailing institution, Philadelphia-based department store chain John Wanamaker. Woodies' sister retailer, which has been in business for 125 years.

Woodies has lined up $300 million in interim financing from New York City-based CIT Group to allow it to pay its immediate bills and keep its shelves stocked during the bankruptcy process. "It's more than enough to operate this business,"

See WOODIES, A14, Col. 3

INSIDE

Clinton Invokes MLK
■ President Clinton said Martin Luther King Jr. would be alarmed at the gun-related violence in cities today and he called on all Americans to do what they can to help end it.
NATION, *Page A4*

Textile Trade Pact
■ China and the United States reached an agreement to halt illegal exports of textiles and clothing to the United States, and to curb legal exports.
BUSINESS, *Page C1*

Allen's Agenda
■ Republican Gov. George F. Allen yesterday gave the Virginia legislature a list of proposals to reverse Democratic policies.
METRO, *Page D1*

Peoples Drug Stores To Be Renamed
■ Peoples Drug Stores, a corporate name that has been familiar to Washingtonians for nearly a century, soon will be changed to CVS, after the chain's Rhode Island-based corporate parent.
BUSINESS, *Page C1*

Storm Sets Trap for Traffic Between Layers of Snow, Ice

By Stephen C. Fehr
Washington Post Staff Writer

Snow, sleet and freezing rain blanketed the Washington area yesterday, covering roads with a frozen "snow sandwich" that made driving treacherous, especially on back roads, and threatened to play havoc with schools and businesses today.

The latest blast in a month-long siege of icy weather will blow in later today, pushing temperatures back into single digits and wind chills into minus territory. "It's going to be just as bad as the weekend, but with snow and ice," said Chris Strong, a National Weather Service meteorologist.

The weather here is part of a major storm system that stretched from the Central Plains across the eastern two-thirds of the nation, extending south as far as Georgia and Alabama. [Details on Page A14.]

The snow started at National Airport about 8:40 a.m. yesterday, and precipitation continued through the day: snow, sleet, freezing rain and sometimes all three at once. Strong said the forecast called for the precipitation to turn back into snow before stopping sometime after midnight, creating a "snow sandwich" of ice between layers of snow.

"We were lucky [Monday] was a holiday. It would be a lot worse if more people were on the road," said Michael Gerber, a National Weather Service forecaster.

As precipitation continued to fall and freeze last night, officials in most area jurisdictions announced that public schools will be closed today.

See FREEZE, A14, Col. 3

JAN 18 1994

"All the News That's Fit to Print"

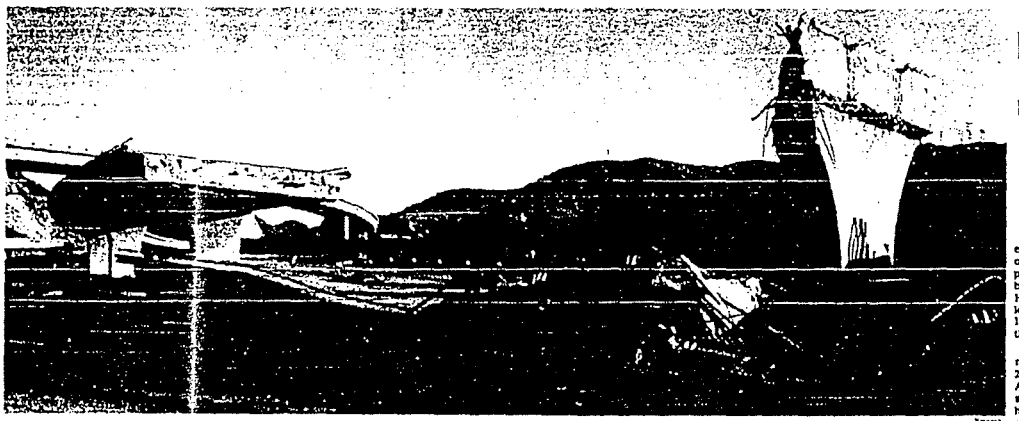
The New York Times

Late Edition
New York: Today, some clouds, windy, becoming very cold. High 30. Tonight, frigid. Low 4. Tomorrow, partly sunny, windy. High 11. Yesterday, high 47, low 12. Details, page B8.

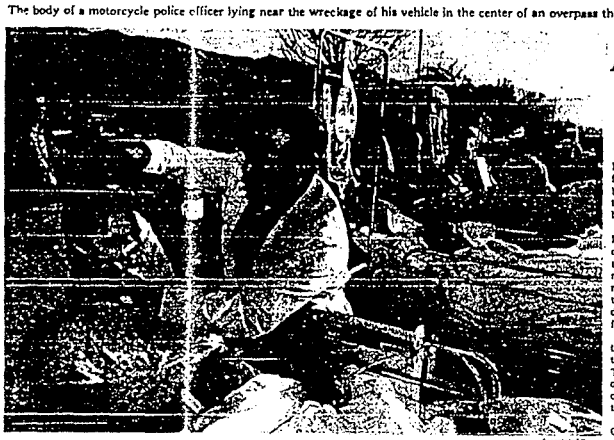
VOL. CXLIII ... No. 49,580 | NEW YORK, TUESDAY, JANUARY 18, 1994 | 50 CENTS

75 cents beyond the greater New York metropolitan area.

SEVERE EARTHQUAKE HITS LOS ANGELES; AT LEAST 30 KILLED; FREEWAYS COLLAPSE



The body of a motorcycle police officer lying near the wreckage of his vehicle in the center of an overpass that collapsed onto Interstate 5. He drove off the edge and fell 25 feet.



An injured man being treated at an emergency unit set up outside Olive View Medical Center in Sylmar.

HUNDREDS INJURED

Predawn Tremor Levels Buildings and Ignites Dozens of Fires

By SETH MYDANS
Special to The New York Times

LOS ANGELES, Jan. 17 — A violent earthquake jolted millions of people out of bed before dawn today, crumpling freeway overpasses, leveling buildings and igniting scores of fires. Hundreds of people were injured and at least 30 were reported killed, including 15 at a three-level apartment complex that was reduced to two stories.

The quake, centered in the Northridge area in the San Fernando Valley, 20 miles northwest of downtown Los Angeles, measured 6.6 on the Richter scale of ground motion and was felt for hundreds of miles, knocking out power and water service for hundreds of thousands of residents.

In a region held together by its network of freeways, three overpasses collapsed, crippling major highways for weeks and possibly months. Roads cracked and buckled across the San Fernando Valley.

State of Emergency

People lingered on the streets throughout the day as the shocks of aftershocks sent dust rising above the mountains. Others formed long lines outside hardware stores and tried to buy batteries, water, propane or plywood to repair damaged homes. And when evening came, hundreds of people whose homes were destroyed or too dangerous to re-enter camped in city parks and on tennis courts in a nervously festive atmosphere, some of them with campfires and cases of beer.

A state of emergency was declared at the local, state and Federal levels in this latest disaster to strike the city. Aerial pictures of blocks of burning buildings evoked traumatic memories of the 1992 riots and last autumn's wildfires.

"I couldn't stop screaming as I ran out of the house," said Erik Wyler, 19, still shaking an hour after the quake. "I looked up and all I could see was darkness coming toward us, and it got real windy. I thought it was the sun exploding."

Hundreds of buildings were damaged, including Anaheim Stadium, which was expected to need $3.4 million in repairs. The quake, which struck at 4:31 A.M., was not the strongest to hit the region in recent years but was by far the most destructive because it struck in a heavily populated area.

Curfew Is Imposed

The Chief of Police, Willie L. Williams addressed the city on television this evening, telling people to remain calm and to stay home from work on Tuesday if possible. He said that city offices would be open on Tuesday but that schools in the Los Angeles Unified School District would be closed.

He also announced a dusk-to-dawn curfew and issued a warning against any potential looters, with reference to the rampage that overtook the city during the 1992 riots.

"We're not going to tolerate what

Continued on Page A17, Column 1

Airborne in Bed: A Building Collapses, Leaving 15 Dead

By ELIZABETH KOLBERT
Special to The New York Times

LOS ANGELES, Jan. 17 — Erik Pearson heard a loud explosion and felt a jolt like a bomb. Still on their bed, he and his wife then fell 12 feet through the ceiling of the apartment below.

"We were airborne," said Mr. Pearson, a 27-year-old nursing student. "I heard the glass break from the glass sliding doors. Our apartment came down and pitched diagonally." The door was jammed shut, the couple said, but they climbed down to safety off their once third-floor, now second-floor, balcony.

But at least 15 other residents of the tan stucco apartment complex, the Northridge Meadows, did not. They died as building suffered some of the worst damage of the earthquake today and its residents bore the brunt of the casualties.

The building, half a block from California State University at Northridge, housed many college students. An identical building next to it, the Northridge, buckled but did not collapse.

The Meadows, a three-story, 164-unit apartment complex near the epicenter of the quake in the San Fernando Valley, looked like a cardboard box that someone had stepped on. In several sections of the building, the first floor no longer existed; it lay crushed beneath the two other floors. Windows had popped out of their frames, balconies dangled at odd angles and entire walls buckled.

Famous From Now On

Until 4:31 A.M. today this sleepy middle-class section of Los Angeles, about 20 miles northwest of downtown, was known only for its tree-lined branch of the California State University. From now, it will be known as the epicenter of a devastating 6.6 earthquake.

Simply put, city officials said the 15 deaths made this building the site of the largest number of earthquake fatalities in the city's history.

John William, 38, a survivor who lived on the first floor, managed to slither to safety by following a small path of light to a crack in the building's foundation.

"I pushed open the crack in the wall; my fiancée and I were pressed together, and we squeezed ourselves free," said Mr. William, who had cuts on both hands and arms. "I felt like we were going to lose circulation at any minute.

"I was hearing moans and whining and banging from people pinned in the other apartments. I'm not exaggerating: the second floor is now in the dirt. There is not two inches of room in my apartment."

Residents described a scene of panic in the hours before dawn as people tried to climb from their balconies or pick their way down dark staircases that had been torn apart by the quake.

Search for Bodies

This afternoon, many residents of the complex were still milling around in front of the ruined building, at 9565 Reseda Boulevard, as firefighters, sweaty and exhausted, continued to search the debris. Eight hours after the quake, firefighters held out little hope that anyone still trapped would be found alive, but they said they were inserting electronic listening devices into the rubble that could pick up sounds as soft as human breathing. Earlier, they brought in dogs trained to find survivors in building rubble.

There was no power in the area, most of the shops were closed and, in an incongruously festive gesture, people up and down the street had taken to eating half-melted ice cream cakes from a nearby Baskin-Robbins.

The force of the tremor ripped apart homes, businesses, roads and utilities, leaving thousands of people without water, power or shelter.

Reseda Boulevard, a main thoroughfare, resembled a war zone: broken water mains flooded streets; gas permeated the air, fuel for numerous fires that were controlled by the late afternoon. Traffic lights were knocked out, and accidents occurred throughout the area.

Many of the community's 20,000

Continued on Page A19, Column 1

Collapsed Freeways Cripple City Where People Live Behind Wheel

By BERNARD WEINRAUB
Special to The New York Times

LOS ANGELES, Jan. 17 — The earthquake that struck Los Angeles before dawn today crippled crucial freeways, raising the prospect that the American city most defined by its cars and interlocking highways would be gripped by traffic chaos for months.

The city's freeways and highways, mostly built since World War II, soar and wind like roller coasters, often resting atop columns as they criss-cross one another. The buckling and collapse today of three heavily traveled elevated portions raised the prospect of at least partial paralysis for a city where the automobile is seen as intrinsic to the region's life.

As a result, city officials said, almost every facet of life for the nine million people in the Los Angeles area is likely to be disrupted for up to a year or more.

With nearly 3 million vehicles using 618.3 miles of freeway in Los Angeles during the evening rush hour, the city's residents are extraordinarily dependent on main highway arteries. The city has never confronted, until today, the possibility that many of these freeways would be partially unusable for long periods.

The city's new subway line, the Metro Red Line, which opened in January 1993, is expected to offer little help. It runs through just 4.4 miles of downtown Los Angeles, from Union Station to MacArthur Park.

'Not Going to Be Easy'

The area's Metrolink commuter trains will operate on Tuesday, though some stations and stretches of track that were damaged will be closed. The service will add passenger cars to trains on the line from Santa Clarita and Antelope Valley, the Associated Press reported. Freeways linking those areas to Los Angeles were severed by the quake.

"It's not going to be easy," a grim Mayor Richard J. Riordan said this afternoon as Gov. Pete Wilson stood beside him.

Patricia Reid, a spokesman at Cal

Continued on Page A18, Column 1

The earthquake severed the freeway system in three places and killed 15 people in a building near its epicenter in the Northridge section.

OTHER MAJOR NEWS

U.S.-China Pact Averts Trade Fight

China and the United States reached an 11th-hour textile agreement, averting a major clash about the $7.3 billion in Chinese textiles sold annually in the American market.

The Clinton Administration had threatened to reduce Chinese textile imports by more than $1 billion unless a new agreement could be signed to end persistent instances of cheating by Chinese companies. Page D1.

Israelis Are Hopeful But Cautious on Syria

Israel said it saw a promise of peace, but expressed caution about remarks by Syria's President that he was ready for normal relations. "Normalization was also mentioned by the Syrians in the past," Prime Minister Yitzhak Rabin said. Page A8.

Facing Down Boos, Giuliani Praises King

After days of criticism over two confrontations between blacks and the police, Mayor Giuliani faced hecklers at a tribute to Martin Luther King Jr. He told his audience, "For you to succeed, I have to succeed." Page B1.

Lives and Nerves Shattered, but Not Civility

By JANE GROSS
Special to The New York Times

LOS ANGELES, Jan. 17 — Ventura Boulevard, the main thoroughfare through the devastated San Fernando Valley, was ghostly this morning, its shops a shambles, its sidewalks littered with broken glass, its traffic signals out and its automatic teller machines useless.

But the stillness was misleading.

Behind a shattered Thrifty drugstore in the Studio City section, where the aisles were clogged with fallen ceiling tiles, a tangle of toys and broken cosmetic bottles, employees peddled batteries and flashlights to a stunned throng of men and women still shaking from the jolt of a lifetime, which occurred before dawn.

"I need a good flashlight! And eight D batteries! And a couple of Triple A's! And one of those heavy-duty things!" sputtered one man in line, as harried clerks dispensed these limited goods from a shopping cart and apologized that nothing else was for sale because the store was knee-deep in ruined merchandise.

Across the region — from the eastern edge of the San Fernando Valley, where buildings shuddered and fell, to the graffiti-scarred streets of downtown, to the manicured confines of Beverly Hills and Pasadena — residents were stunned and shaken, but largely composed.

Some homes were ruined. Most were without power. Some lacked telephone service. And all of their inhabitants were shaken to the core. But residents of the City of Angels, where disasters have lately been heaped one upon the other, kept their heads.

The closest thing to bedlam, as of nightfall, was the scene at Hughes Market, the only open grocery store for

Continued on Page A19, Column 6

Chicago Tribune

Tuesday, January 18, 1994

North Sports Final

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147th Year — No. 18 © Chicago Tribune 7 Sections N -

Tribune photo by Carl Wagner

James Thomas wears the fruits of his labors Monday. He used a snowblower on a sidewalk.

Cold, colder and maybe the coldest

By Laurie Goering
Tribune Staff Writer

Chicago-area residents hunkered down for what is expected to be one of the coldest days in history Tuesday—maybe even the coldest—but they found that preparing was as difficult as coping with the bitter cold.

Families rushed to hardware stores Monday for last-minute insulating supplies, motorists mobbed gas stations in search of fuel additives, utilities double-checked their lines, and homeowners' calls flooded furnace-repair shops.

Deep freeze

■ Many schools decide to close. **Page 6.**

■ Heavy snow, ice sock Ohio Valley. **Page 6.**

But as people mobilized to cope with the cold, many of them found they were too late. Hardware stores had been picked clean of heaters and insulating supplies, automobile clubs had huge backlogs of stalled cars, and furnace repairs could take hours or days.

As of 1 a.m. Tuesday, the temperature had dipped to minus 14 degrees with a windchill of minus 55. Tuesday's predicted low of 20 to 22 below is expected to easily beat the record of 16 below for a Jan. 18 set in 1930. The all-time lowest recorded temperature in Chicago was 27 below on Jan. 20, 1985. The coldest point of the day will be about 8 a.m.

At midnight, O'Hare recorded a tem-

See Mobilize, Page 6

Weather

Chicago area: Tuesday: Severe cold; high -5 to -10 degrees; wind gusts up to 25 m.p.h. Tuesday night: Low -15 to -20. Wednesday: Snow late; high 5 degrees. Details in **Sec. 2, pg. 5.**

Big field helps Rostenkowski

By Thomas Hardy
Tribune Political Writer

Upon hearing of the crowded field lined up against him in this year's Democratic primary, House Ways and Means Committee Chairman Daniel Rostenkowski coyly observed, "One could always suggest there is safety in numbers."

Results of a new Tribune poll suggest exactly that: Voter opinion of Rostenkowski is at an all-time low as a result of a protracted federal investigation into his conduct, but he still enjoys the bedrock support of about 30 percent of 5th Congressional District Democrats and is leading a six-candidate primary field.

Tribune poll

Three out of 10 voters in the Northwest Side district said they have a favorable opinion of Rostenkowski, and 29 percent said that his influence in Washington is so significant that he should be re-elected "even if he might have done something wrong."

After surviving the toughest re-election campaign of his long career two years ago, the 66-year-old incumbent finds himself in what promises to be another spirited contest as he tries for a 19th term in Congress.

Considering voters' doubts about him, the

'A runaway train roared through our home'

By George de Lama
Tribune Staff Writer

STUDIO CITY, Calif.—The wakeup call from hell picked up our split-level California condo and dropped it back on its tail.

It came from deep in the dark, before Los Angeles' usual crush of humanity took over the streets and the freeways and the malls, a primal force reminding everyone just who rules around here.

After hearing innumerable survivors of natural disasters say that a (pick one) fire, earthquake, explosion or storm sounded like a locomotive, damned if a runaway freight train didn't come roaring through our home Monday morning.

Up and down Southern California, but especially in the once-idyllic San Fernando Valley where we live, life changed in an instant for hundreds of thousands of people long used to living on the edge.

Just a day before, the local TV news was full of smug, self-satisfied pictures of Nature's latest flex, the snowstorms and brutal cold that have battered the East Coast and Midwest. Look at them shiver, the announcers seemed to say. Who in their right mind would put up with that? But on Monday, most of their sun-loving viewers would have given a lot to be back east.

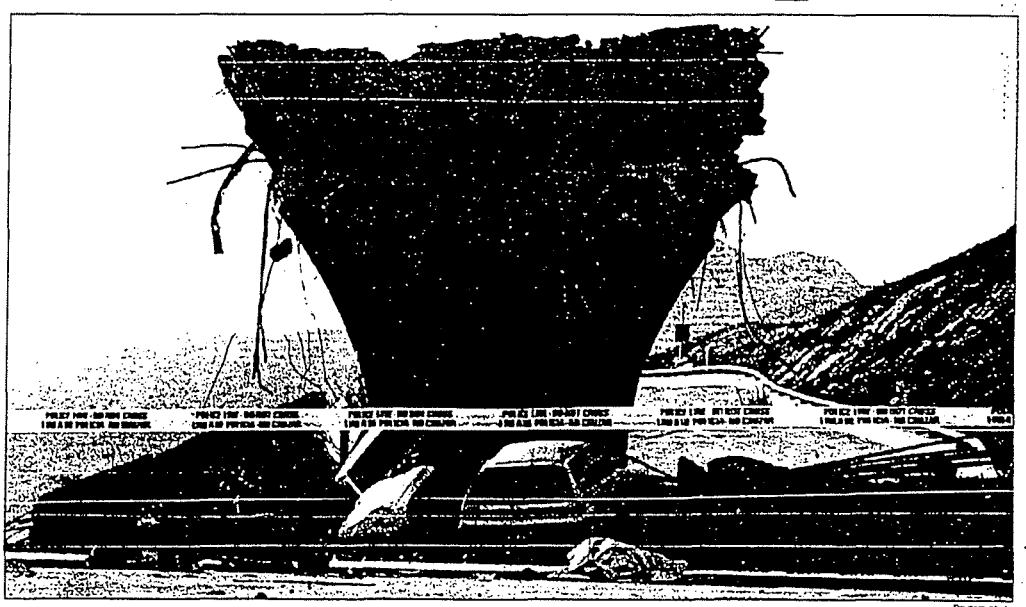
Of course, everyone has to be somewhere, as the storefront philosophers say. For those in the Los Angeles area Monday morning, home was where the heart is in your throat.

With all the subtlety of a sonic boom, the walls and ceilings and floors of our third-floor unit in a 10-year-old building began their violent convulsions shortly after 4:30 a.m.

The shaking, worse than the worst airplane turbulence, tossed us out of bed, groping and clinging to each other and scrambling into a door frame, holding our heads down and

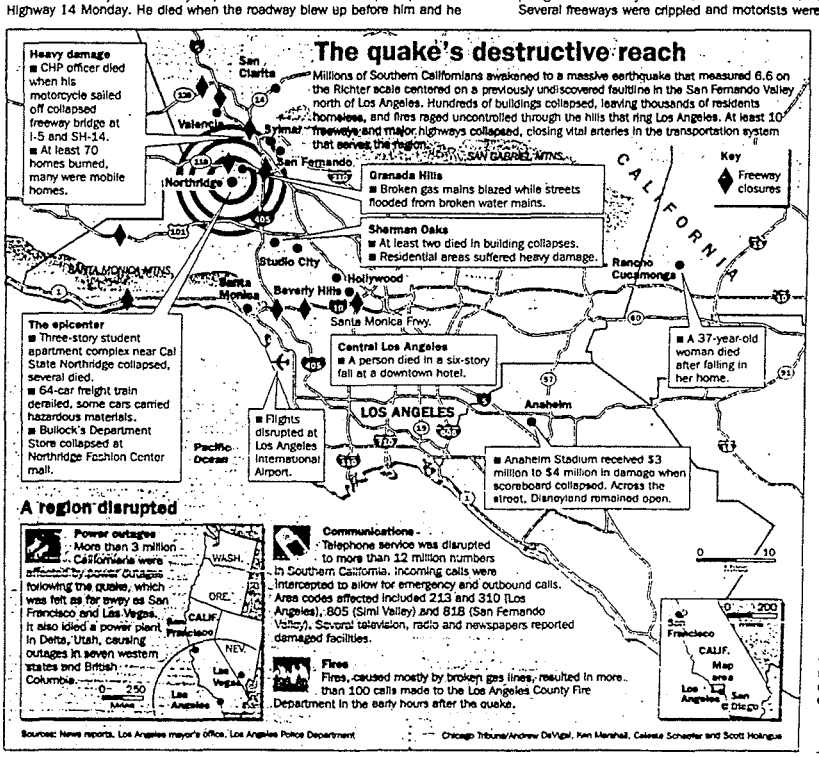
See Wakeup, Page 12

L.A.'s nightmare quake



Reuters photo

The covered body of a motorcycle police officer lies on a collapsed portion of Highway 14 Monday. He died when the roadway blew up before him and he plunged into the abyss as the 6.6 Richter scale earthquake struck Los Angeles. Several freeways were crippled and motorists were trapped in tons of debris.



City wakes to rubble, ruined roads

By George DeLama and Jessica Seigel
Tribune Staff Writers

LOS ANGELES—It was not the earthquake that nervous Californians fear the most—"The Big One" along the San Andreas Fault. But it was big and bad and murderous enough.

Rescue workers and firefighters combed the rubble in the San Fernando Valley Monday night, searching for survivors in the wake of the powerful predawn quake that exploded along a phantom fault zone 20 miles northwest of downtown Los Angeles.

California authorities said at least 30 people were killed by the quake, which registered 6.6 on the Richter scale at 4:31 a.m. The death count undoubtedly would have been higher had the quake hit on a business day after freeways were jammed with traffic.

All day long the smoking, rubble-strewn image of disaster was broadcast from Los Angeles, giving the earthquake that strange "made for television" feel as helicopter-borne cameras panned from wrecked superhighway to flaming gas leak to burning home.

Police patrolled gasoline stations and supermarkets, trying to control large crowds gathered outside and to prevent food riots or looting.

Los Angeles Mayor Richard

See Quake, Page 10

Quake ravages L.A.

■ Despite shaky history, ... | ■ Authorities second-guess ... | ■ Angelenos face commuting ... | ■ Survivors tell of terror, ...

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