

Attitudes Toward Roads on the National Forests: An Analysis of the News Media

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This report contains the draft results of a research study that was jointly carried out by Prof. David Fan, President of InfoTrend, Inc. 2115 Dudley Ave., St. Paul, MN 55108 (phone: 612-624-4718) and Dr. David Bengston, ecological economist with Research Work Unit 4803, "Social and Economic Dimensions of Ecosystem Management," North Central Forest Experiment Station, 1992 Folwell Ave., St. Paul, MN 55108 (phone: 612-649-

5162, e-mail: David.N.Bengston-1@umn.edu). The findings of the study are presented and briefly discussed in this draft report. The final version — to be submitted for publication in a refereed scientific journal — will be in a significantly different form.

Executive Summary

Attitudes Toward Roads in the National Forests: An Analysis of the News Media

- This study used innovative computer methods to analyze 10,000 online news media stories from 78 newspapers and newswires dealing with roads on the national forests.
- Content analysis of the media has repeatedly been shown to produce results that are remarkably similar to attitude surveys and opinion polls (see pp. 42-43). Analysis of the news media is an efficient way to indirectly measure public attitudes.
- We analyzed eight views of roads on the national forests expressed in the news media, four favorable and four unfavorable views (see p. 2). We also analyzed the amount of discussion of roads vs. the amount of discussion of roadless issues, and the intensity of conflict over roads.
- Three regions were analyzed separately: the East, InterWest, and West (see p. 3). National news sources were also analyzed.

Key Findings

- **Recreational uses of roads were expressed most often:** Recreational uses and benefits of roads on the national forests were discussed most often in the news media overall (p. 4). This discussion included both expressions of opinion about the value of roads for recreational purposes and, more commonly, descriptions of roads being useful for recreational access.

Discussion of recreational uses of roads was dominant in each region (p. 6, 8 and 10), but not in national news sources (p. 12).

- **Ecological costs of roads were also discussed frequently:** The view that roads entail ecological costs was the second most frequently expressed view in each of the regions during a 2-year base period . Ecological costs were the most often discussed view in national news sources (p. 14).
- **News media coverage of roads increased dramatically in recent months:** The total amount of news media coverage of roads on the national forests

increased dramatically in the third quarter of 1997. This increase was due to narrowly defeated proposals in the U.S. House of Representatives (July, 1997) and the U.S. Senate (September, 1997) to make major cuts in spending on logging roads.

The view that roads are a subsidy to the timber industry ("subsidy cost") was the most frequently discussed view in the third quarter of 1997 in the East, West, and national news sources. Recreational uses of roads were expressed most frequently in the InterWest during this quarter (p. 16).

- **Roads vs. roadless discussion:** About 90 % of the news media paragraphs analyzed in this report discussed roads and 10 % discussed roadless issues over the entire 3-year period. This was the case in each region and in the national media (pp. 18-22).

Discussion of roadless issues was significantly higher in national news sources than regional newspapers during a 2-year base period (p. 23). But discussion of roadless issues was less in national news sources than the regions during the third quarter of 1997 (p. 25).

- **Intensity of conflict over roads:** National news sources generally had a much higher and much more variable intensity of conflict over roads than any of the regions (p. 27).
- **National media coverage of roads was significantly different than regional coverage:** As revealed by most of the preceding findings, the composition of national news coverage of roads was different than regional coverage:
 - National media placed greater emphasis on subsidy costs, commodity benefits, ecological costs, and the ecological benefits of roadless areas than regional media (p. 14). National media also contained more discussion of roadless issues during a 2-year base period (p. 23) and a greater intensity of conflict (p. 27) than the regions.
 - National media placed less emphasis on recreational uses of roads on national forests than regional media (p. 14).

The difference between national and regional coverage of roads is due to the national media's focus on controversial policy issues, rather than on local and regional issues that are sometimes non-controversial.

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I. Favorable and Unfavorable Views of Roads on the National Forests

This study used innovative computer methods to analyze 10,000 online news media stories from 78 newspapers and newswires dealing with roads on the national forests over the past three years. We analyzed the following eight views of roads expressed in the news media:

Favorable Views of Roads:

1. Commodity-Related Benefits: Roads are good because they make possible the production of commodities that society needs (e.g., timber, cattle, minerals); roads are needed to provide access for small timber companies that are unable to pay for the full cost of roads.
2. Local Community Benefits: Roads are good because communities in and around national forests benefit from commodity-related jobs, payments in lieu of taxes, strong and stable local economies, and from subsistence uses made possible by roads (e.g., gathering firewood).
3. Recreational Use and Access: Roads are good because they provide access for a wide range of recreational activities; roads are needed for people with disabilities and senior citizens to have access to forests.
4. Fire Protection: Roads are good because they provide access to backcountry areas for firefighters, for rescue workers, and for forest management activities.

Unfavorable Views of Roads:

5. Subsidy Costs: Roads are bad because they represent taxpayer-financed corporate welfare.
6. Ecological Costs: Roads are bad because they cause significant ecological damage, such as erosion, siltation, destruction of wildlife habitat, etc.
7. Roadless Recreation: Roads are bad because roadless areas provide unique recreational, aesthetic and spiritual experiences not obtainable in roaded areas; roadless areas also are associated with high quality of life in a region, which attracts businesses to locate in the region.
8. Ecological Benefits of Roadless Areas: Roads are bad because roadless areas have various ecological benefits, such as clean water, high quality wildlife habitat, ecological integrity, ecological significance, etc.

Figure 1 illustrates the relationships between these eight views of roads.

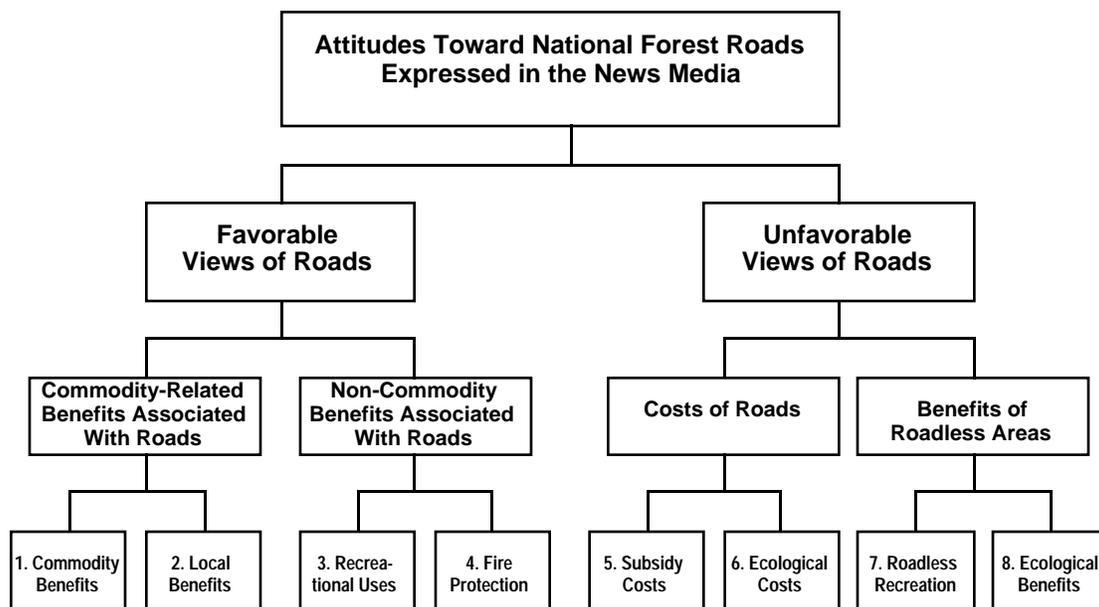


Figure 1. Eight views of roads on the national forests analyzed in this report.

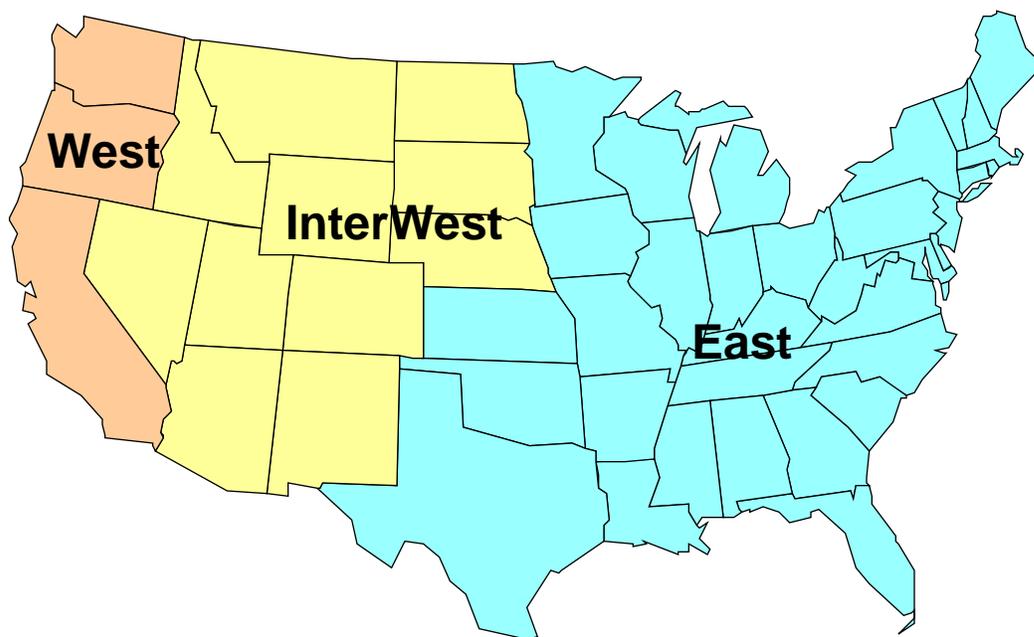


Figure 2. Regional breakdown used in this report: East (FS Regions 8 and 9), InterWest (FS Regions 1, 2, 3 and 4) and West (FS Regions 5 and 6). Forest Service Region 10

(Alaska) was not included due to a lack of online news sources. See Appendix A for a listing of news sources included in this analysis.

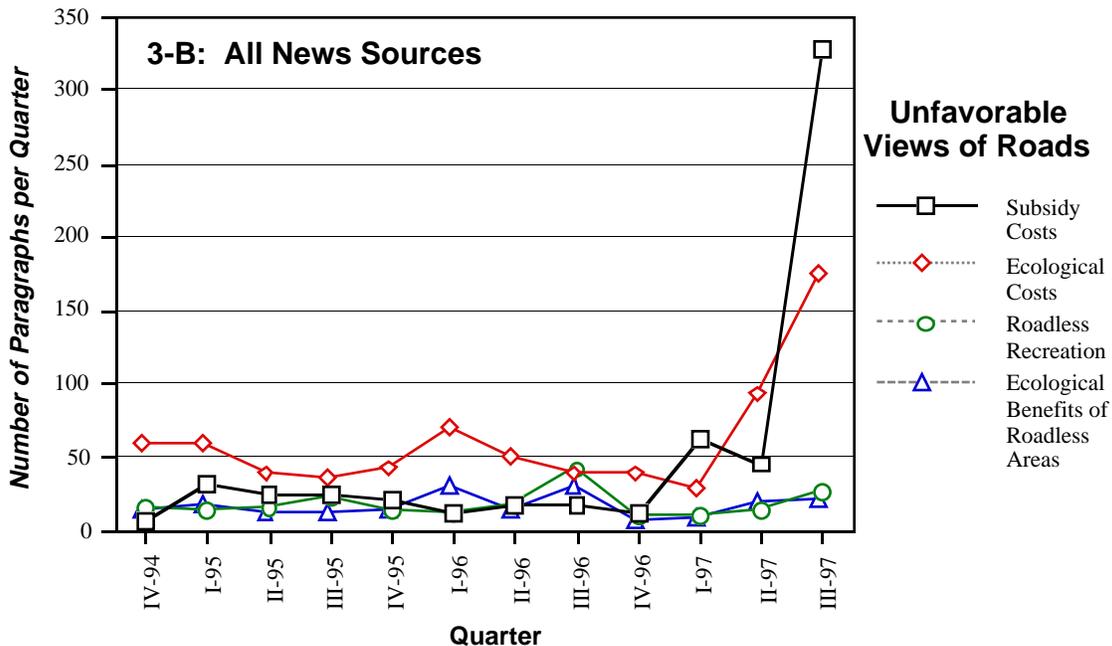
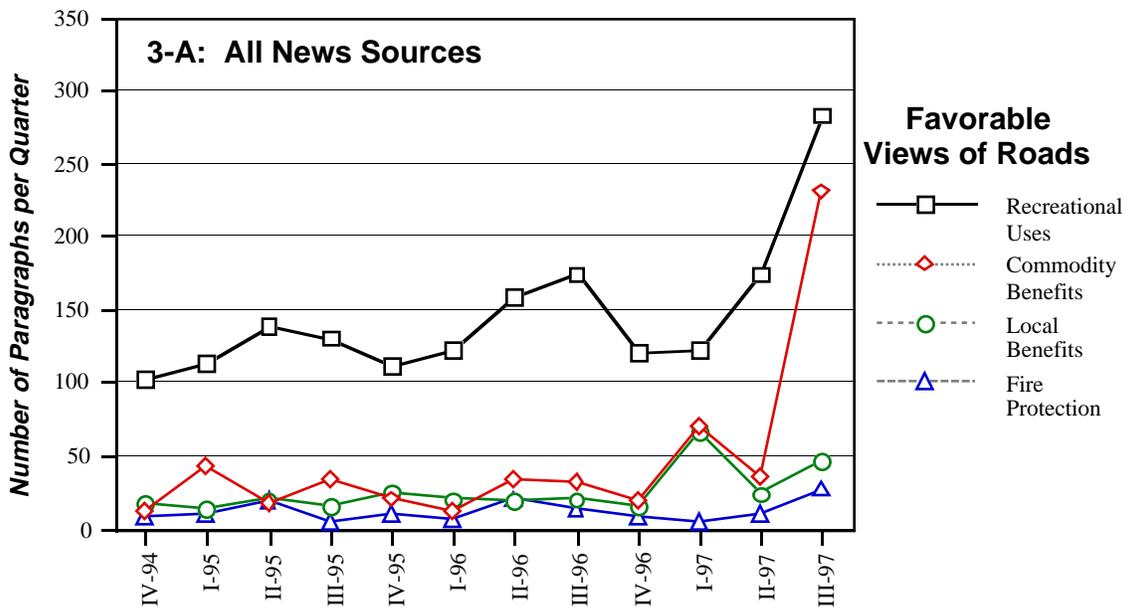


Figure 3-A. Favorable Views of Roads on National Forests (all news sources combined).

Figure 3-B. Unfavorable Views of Roads on National Forests (all news sources combined).

Highlights of Figures 3-A and 3-B: All News Sources Combined

- These figures include data from all news sources — the three regions plus national news sources. They show the number of news media paragraphs per quarter containing each of the eight views of roads described on page 2.
- Recreational uses of national forest roads were discussed most often, accounting for 40% of expressions of all favorable and unfavorable views of roads over the entire 3-year period.
- An annual recreation cycle is evident in Figure 3-A, with discussion of recreational uses of roads higher in the warmer months during the second and third quarters, and lower in the first and fourth quarters.
- The ecological costs of roads was the second most prominent view, accounting for 16% of expressions of all favorable and unfavorable views of roads over the 3-year period. This was followed by subsidy cost (13%), commodity benefit (13%), local benefits (7%), roadless recreation (5%), ecological benefits of roadless areas (4%), and fire protection (3%).
- Media discussion of roads jumped dramatically in the third quarter of 1997. The nature of the overall news media discussion of roads shifted during this quarter: Subsidy costs of roads were expressed most frequently (accounting for 29% of all views), followed by recreational uses (25%), commodity benefits (20%) and ecological costs (15%).

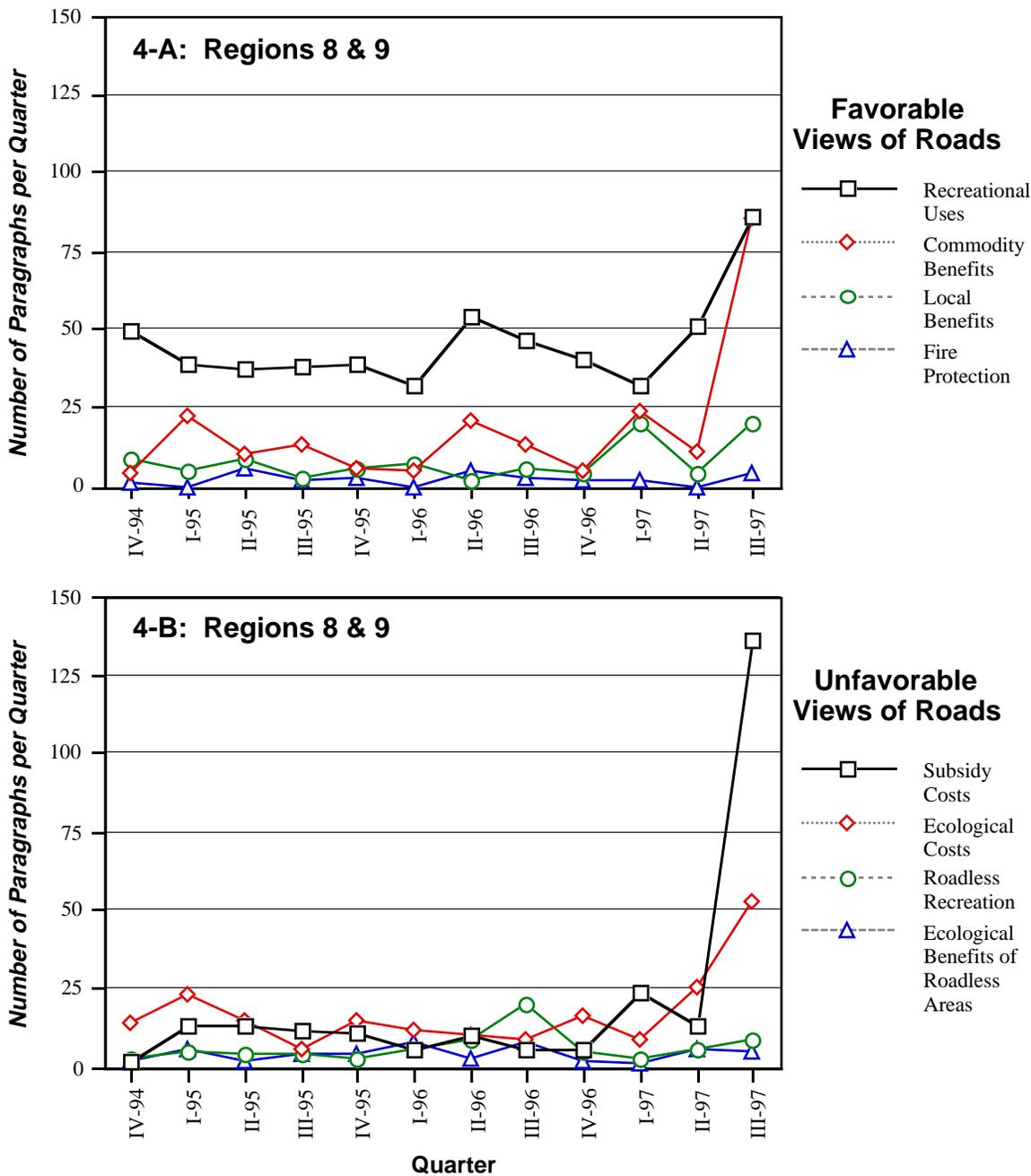


Figure 4-A. Favorable Views of Roads on National Forests in the East (news sources from Forest Service Regions 8 & 9).

Figure 4-B. Unfavorable Views of Roads on National Forests in the East (news sources from Forest Service Regions 8 & 9).

Highlights of Figures 4-A and 4-B: The East

- These figures are based on analysis of newspaper stories dealing with roads on the national forests from Forest Service Regions 8 and 9. See Appendix A for a list of the newspapers.
- Recreational uses of national forest roads account for 37% of expressions of all favorable and unfavorable views of roads over the entire 3-year period in the East.
- Subsidy costs associated with roads was the second most often discussed view in the East, accounting for 17% of all views of roads over the entire 3-year period. This was followed by commodity benefits (15%), ecological costs (14%), local benefits (6%), roadless recreation (5%), ecological benefits of roadless areas (3%), and fire protection (2%).
- Subsidy costs of roads became the most frequently expressed view in the third quarter of 1997 (accounting for 34% of all views expressed), followed by recreational uses (22%), commodity benefits (21%), ecological costs (13%), local benefits (5%), roadless recreation (2%), ecological benefits of roadless areas (1%), and fire protection (1%).

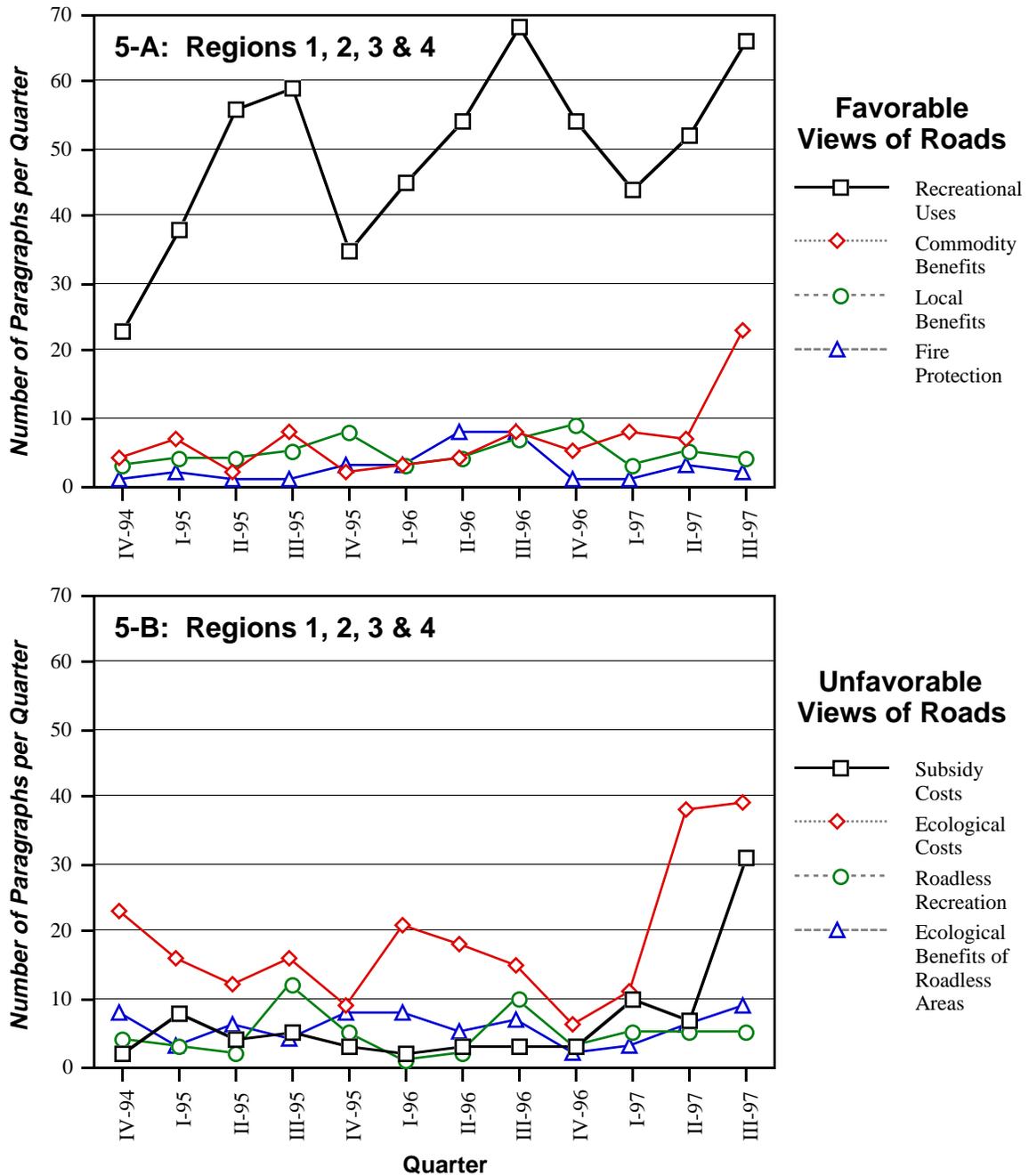


Figure 5-A. Favorable Views of Roads on National Forests in the InterWest (news sources from Forest Service Regions 1, 2, 3 & 4).

Figure 5-B. Unfavorable Views of Roads on National Forests in the InterWest (news sources from Forest Service Regions 1, 2, 3 & 4).

Highlights of Figures 5-A and 5-B: The InterWest

- These figures are based on analysis of newspaper stories dealing with roads on the national forests from Forest Service Regions 1, 2, 3 and 4. See Appendix A for a list of the newspapers.
- Recreational uses of national forest roads were discussed far more than the other views, accounting for about 50% of expressions of all favorable and unfavorable views of roads over the 3-year period.
- An annual recreation cycle is clearly evident in Figure 5-A, with discussion of recreational uses of roads higher in the warmer months during the second and third quarters, and lower in the first and fourth quarters.
- Ecological costs of roads on national forests account for about 19% of expressions of all favorable and unfavorable views of roads over the 3-year period, followed by commodity benefits (7%), subsidy costs (7%), ecological benefits of roadless areas (6%), local benefits (5%), roadless recreation (5%), and fire protection (3%).
- In the third quarter of 1997, recreational uses of roads were discussed more frequently than other views, but the level of discussion didn't rise dramatically as in Figures 3-A and 4-A. Recreational uses accounted for 37% of all discussion in this quarter, followed by ecological costs (22%), subsidy costs (17%), commodity benefits (13%), ecological benefits of roadless areas (5%), roadless recreation (3%), local benefits (2%), and fire protection (1%).

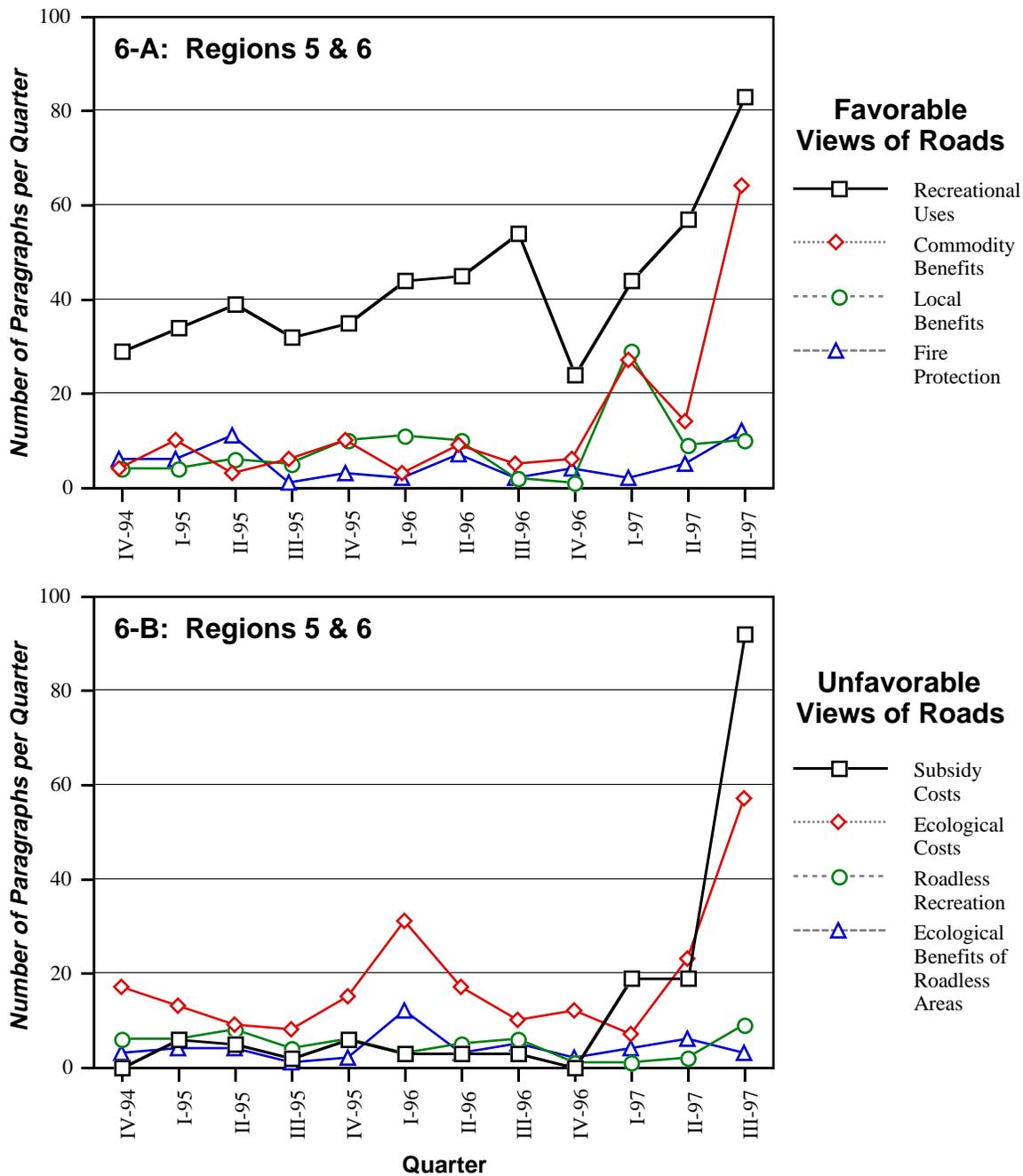


Figure 6-A. Favorable Views of Roads on National Forests in the West (news sources from Forest Service Regions 5 & 6).

Figure 6-B. Unfavorable Views of Roads on National Forests in the West (news sources from Forest Service Regions 5 & 6).

Highlights of Figures 6-A and 6-B: The West

- These figures are based on analysis of newspaper stories dealing with roads on the national forests from Forest Service Regions 5 and 6. See Appendix A for a list of the newspapers.
- Recreational uses of national forest roads were discussed more often than the other views, accounting for 39% of expressions of all favorable and unfavorable views of roads over the 3-year period.
- Discussion of recreational uses of roads has increased over time in the West.
- The peak in discussion of ecological costs in the first quarter of 1996 corresponds to severe flooding during this quarter.
- Ecological costs of roads on national forests accounted for about 17% of expressions of all favorable and unfavorable views of roads over the 3-year period, followed by commodity benefits (12%), subsidy costs (12%), local benefits (8%), fire protection (5%), roadless recreation (4%), and ecological benefits of roadless areas (4%).
- Subsidy costs rose dramatically and dominated news media discussion of roads on national forests in the third quarter of 1997 (accounting for 28% of all discussion in this quarter), followed by recreational uses (25%), commodity benefits (19%), ecological costs (17%), fire protection (4%), local benefits (3%), roadless recreation (3%), and ecological benefits of roadless areas (1%).

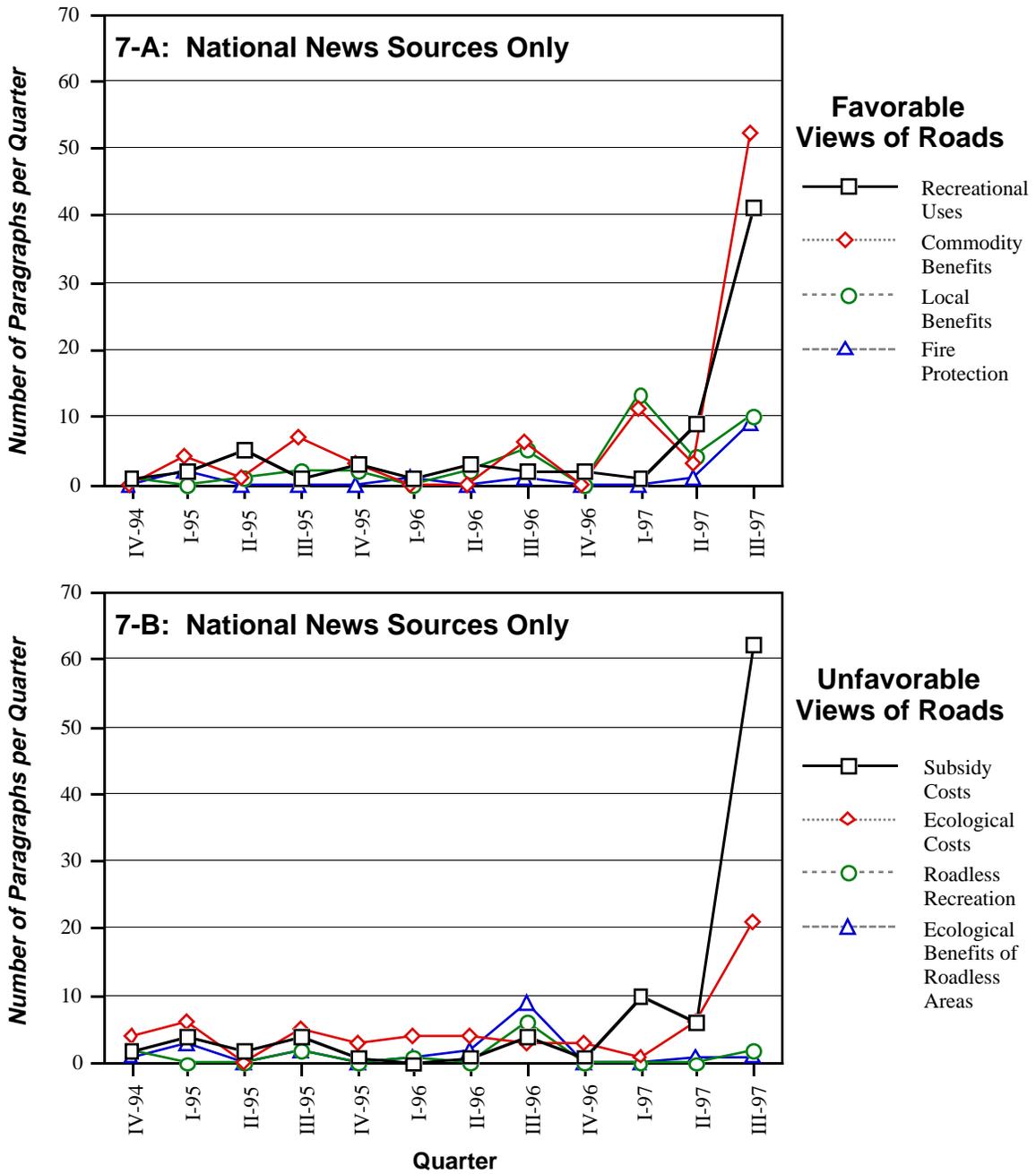


Figure 7-A. Favorable Views of Roads on National Forests (national news sources only).

Figure 7-B. Unfavorable Views of Roads on National Forests (national news sources only).

Highlights of Figures 7-A and 7-B: National News Sources Only

- These figures are based on analysis of national newspaper and newswire stories dealing with roads on the national forests. See Appendix A for a list of the news sources.
- The amount of discussion of roads on the national forests in national news sources is generally quite low (except for the third quarter of 1997).
- National news sources do not reflect a high level of discussion of recreational uses of roads on the national forests, in contrast to the regional newspapers depicted in Figures 4-A, 5-A, and 6-A.
- Subsidy costs were discussed more often than the other views, accounting for 24% of expressions of all views of roads over the 3-year period. This was followed by commodity benefits (22%), recreational uses (18%), ecological costs (15%), local benefits (10%), ecological benefits of roadless areas (5%), fire protection (3%), and roadless recreation (3%).
- In the third quarter of 1997, subsidy costs of roads were discussed most often in national news sources (accounting for 31% of all discussion in the quarter), followed by commodity benefits (26%), recreational uses (21%), ecological costs (11%), local benefits (5%), fire protection (5%), roadless recreation (1%), and ecological benefits of roadless areas (1%).

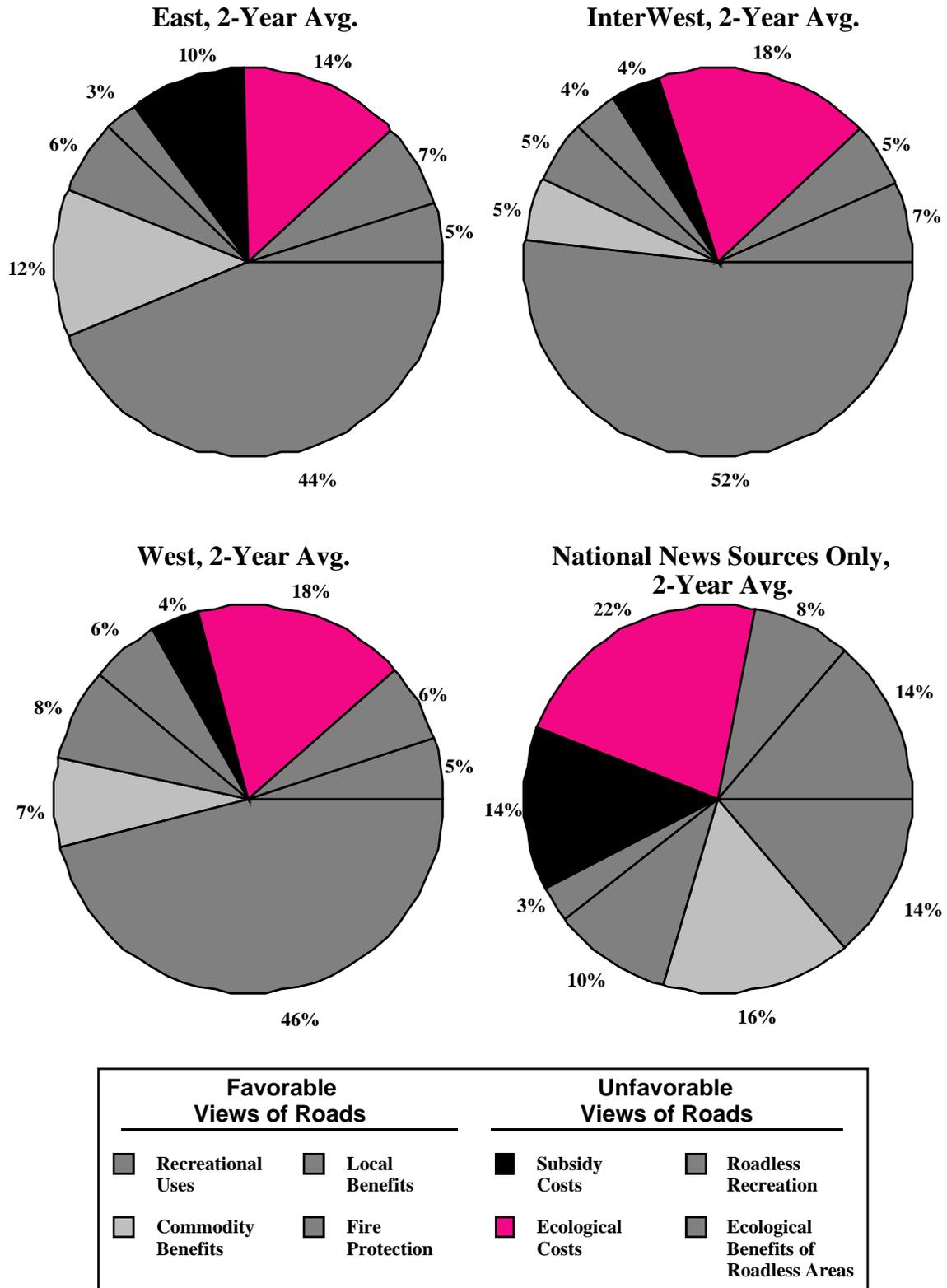


Figure 8. Favorable and unfavorable views of roads by region, (2-year average for the period IV-94 through III-96).

Highlights of Figure 8: Views of Roads Expressed in the 2-Year Base Period

- Figure 8 presents regional comparisons of favorable and unfavorable views of roads for the 2-year period IV-94 through III-96. **This 2-year period was selected as a base period during which media discussion of roads on the national forests was relatively stable and of an average volume (in contrast to more recent media discussion of roads summarized in Figure 9).**
- Recreational uses of national forest roads were the most frequently discussed view in each region during this base period (East: 44%; InterWest: 52%; West: 46%), but ecological costs were most frequently discussed in national news sources (22%).
- Subsidy costs of roads were discussed significantly more in national news sources (14%) and in the East (10%) than in the InterWest (4%) and West (4%) during this 2-year period.
- Ecological costs of roads were discussed more in national news sources (22%) than in the regions (East: 14%; InterWest: 18%; West: 18%).
- Ecological benefits of roadless areas were discussed significantly more in national news sources (14%) than in the regions (East: 5%; InterWest: 7%; West: 5%).
- Expressions of the four favorable views of roads outweighed unfavorable views in each of the three regions during this 2-year base period (East: 65% favorable; InterWest: 66% favorable; West: 67% favorable), due largely to the significant amount of discussion of recreational uses in each region. But in national news sources, unfavorable views of roads dominated (43% favorable, 57% unfavorable), due mainly to the low level of discussion of recreational uses (a favorable view) and high level of discussion of subsidy costs, roadless recreation, and the ecological benefits of roadless areas (unfavorable views). In general, the national news media tend to focus more on controversial policy issues than the regional media.

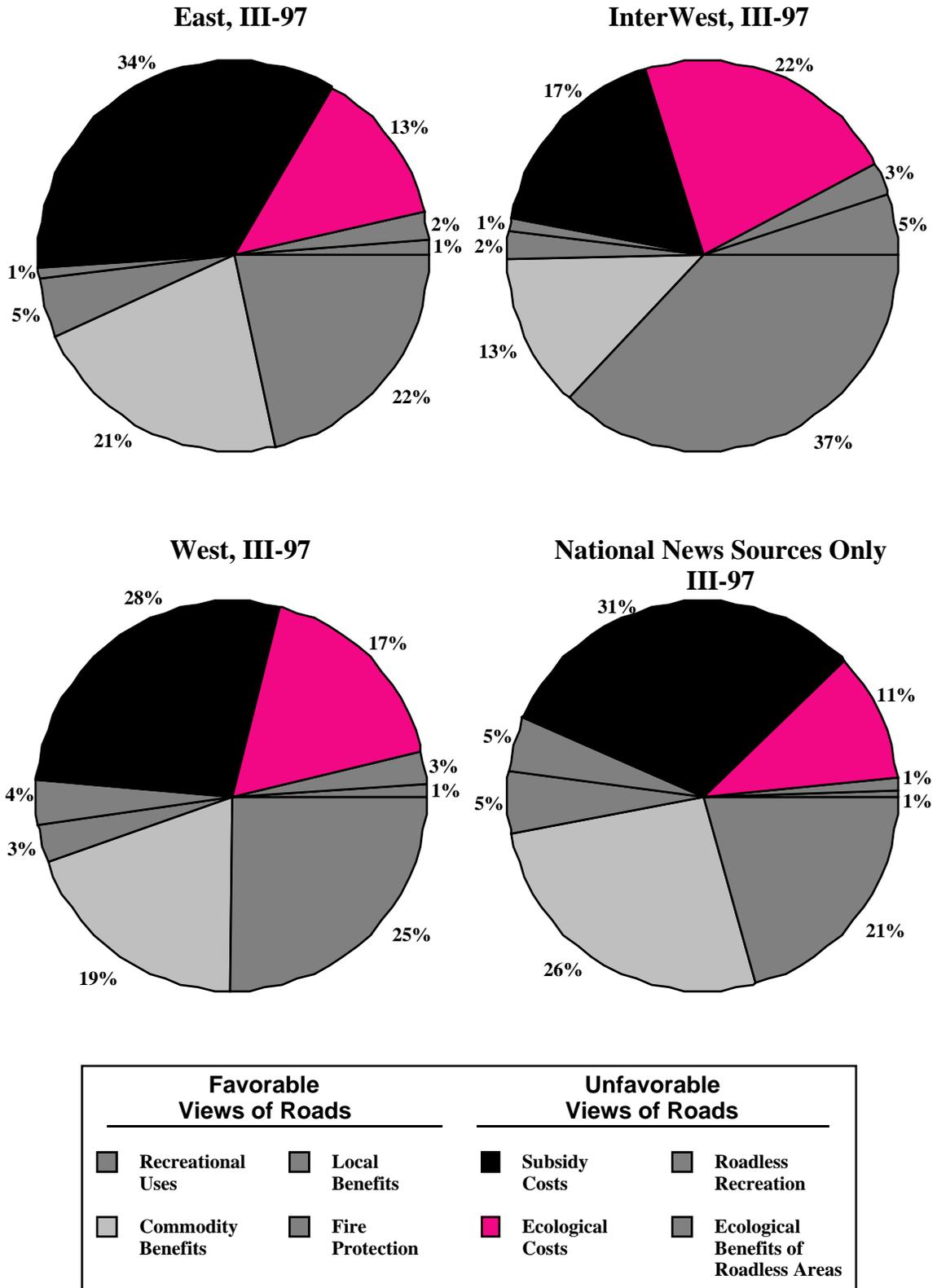


Figure 9. Favorable and unfavorable views of roads by region (third quarter of 1997).

Highlights of Figure 9: Views of Roads Expressed in the Third Quarter of 1997

- Figure 9 presents regional comparisons of favorable and unfavorable views of roads for the third quarter of 1997. **This quarter was analyzed separately due to the unusually high volume of discussion of roads on the national forests during this period (in contrast to the average level of media discussion during the 2-year base period summarized in Figure 8).** The large amount of media discussion was due to narrowly defeated proposals in the U.S. House of Representatives (July, 1997) and U.S. Senate (September, 1997) to make major cuts in spending on logging roads.
- Subsidy costs of roads were the most frequently expressed view of roads in the East (34%), the West (28%), and in national news sources (31%) during this quarter.
- Recreational uses of roads were discussed most frequently in the InterWest (37%).
- Expressions of the four favorable and four unfavorable views of roads were roughly equal in each of the three regions during the third quarter of 1997 (East: 49% favorable; InterWest: 53% favorable; West: 51% favorable). In national news sources, however, expressions of favorable views slightly outweighed unfavorable views (57% favorable, 43% unfavorable), due mainly to the high level of discussion of commodity benefits (26%) and low level of discussion of roadless recreation and the ecological benefits of roadless areas (about 1% each).

Comparison of Figure 8 (average volume of media discussion of roads) with Figure 9 (unusually high volume of media discussion):

- The percent of discussion of recreational uses of roads decreased in each region in the third quarter of 1997 relative to the 2-year base period (see Figure 8, p. 14 and Figure 9, p. 16). But discussion of recreational uses in national news sources increased from 14% during the 2-year base period to 21% during the third quarter of 1997.
- The percent of discussion of commodity benefits associated with roads and subsidy costs increased in each region and in national news sources in the third quarter of 1997 relative to the 2-year base period.
- The percent of discussion of roadless recreation and the ecological benefits of roadless areas decreased in each region and in national news sources in the third quarter of 1997 relative to the 2-year base period. The decrease was most dramatic in national news sources, where these two views dropped from 22% of all views during the base period to about 2 percent in the third quarter of 1997.

II. Roads vs. Roadless Discussion

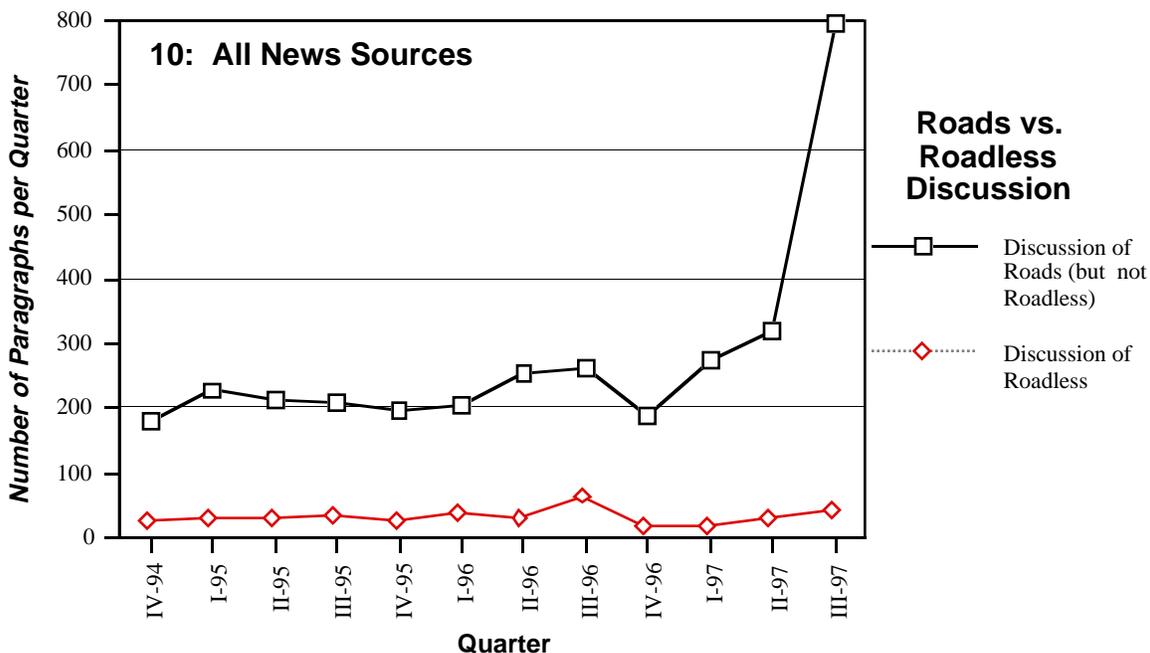


Figure 10. Amount of discussion of roads vs. roadless issues (all news sources).

Highlights of Figure 10: Roads / Roadless Discussion in All News Sources Combined

- This figure shows the number of news media paragraphs per quarter discussing roads and the number discussing roadless issues. Only paragraphs that included at least one of the eight views of roads analyzed in Part I of this report were analyzed.
- Over the entire 3-year period, 90 % of the media discussion focused on roads, and 10 % discussed roadless issues.

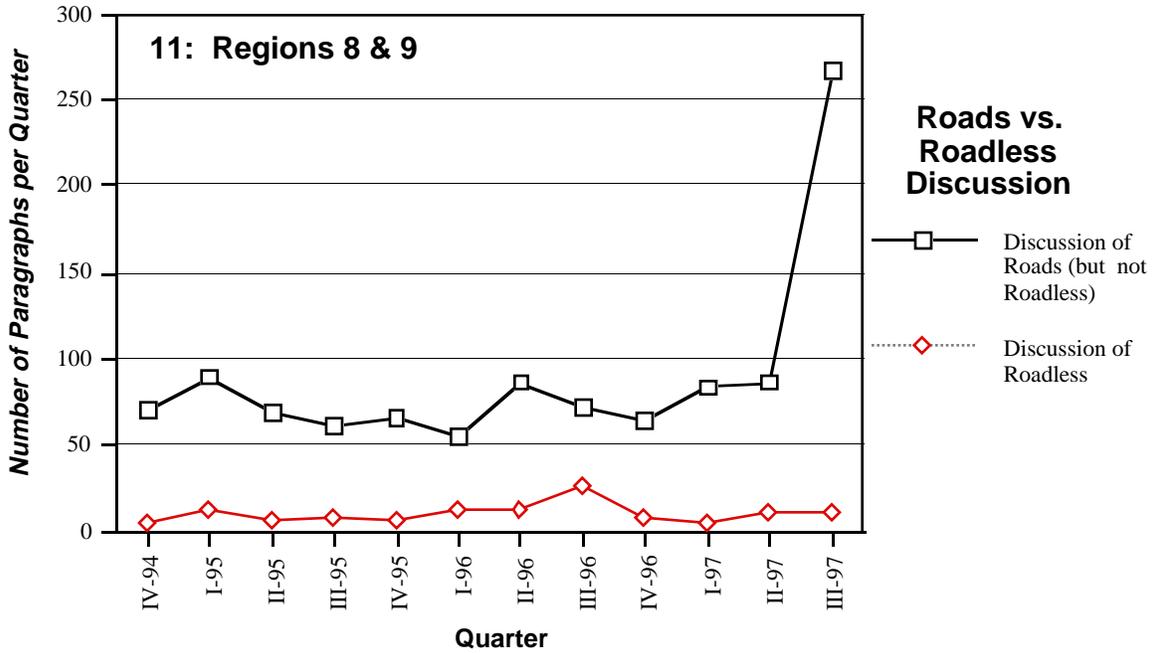


Figure 11. Amount of discussion of roads vs. roadless issues in the East (news sources from Forest Service Regions 8 & 9).

Highlights of Figure 11: Roads / Roadless Discussion in the East

- This figure shows the number of news media paragraphs per quarter discussing roads and the number discussing roadless issues in the East.
- Over the entire 3-year period, 90 % of the media discussion focused on roads, and 10 % discussed roadless issues in the East. (See Figures 15 and 16, pp. 23 and 25, for a further breakdown of roads vs. roadless media discussion).

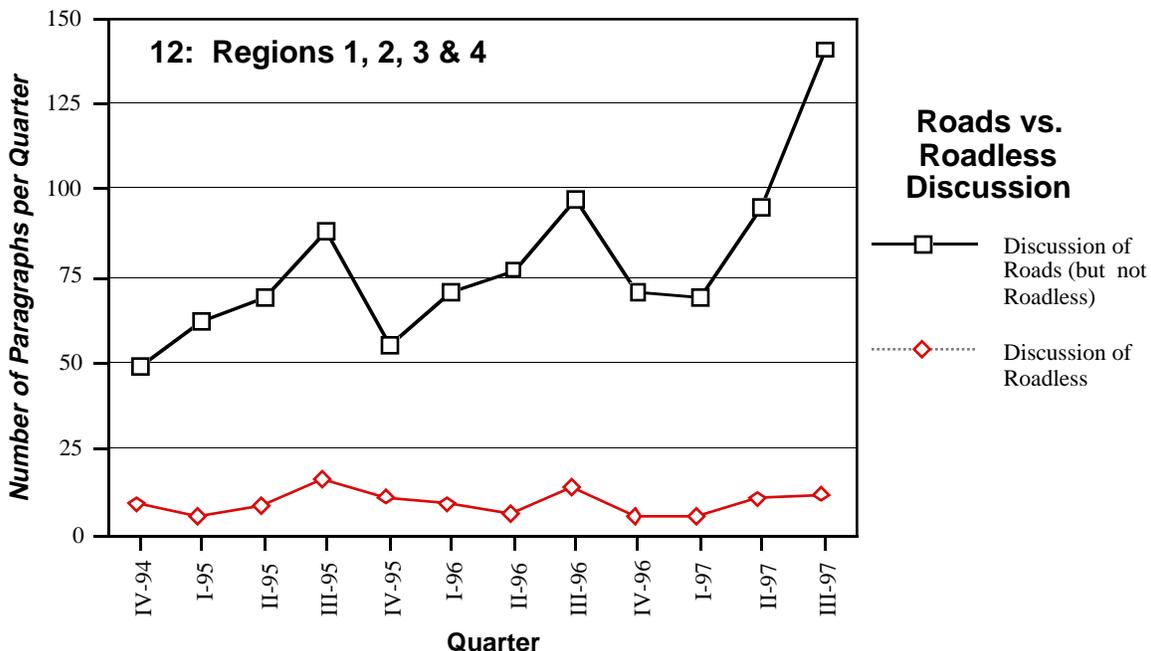


Figure 12. Amount of discussion of roads vs. roadless issues in the InterWest (news sources from Forest Service Regions 1, 2, 3 and 4).

Highlights of Figure 12: Roads / Roadless Discussion in the InterWest

- This figure shows the number of news media paragraphs per quarter discussing roads and the number discussing roadless issues in the InterWest.
- Over the entire 3-year period, 90 % of the media discussion focused on roads, and 10 % discussed roadless issues in the InterWest.
- The increase in total discussion of roads in the InterWest over time is driven by discussion of recreational uses. (See Figures 15 and 16, pp. 23 and 25, for a further breakdown of roads vs. roadless media discussion).

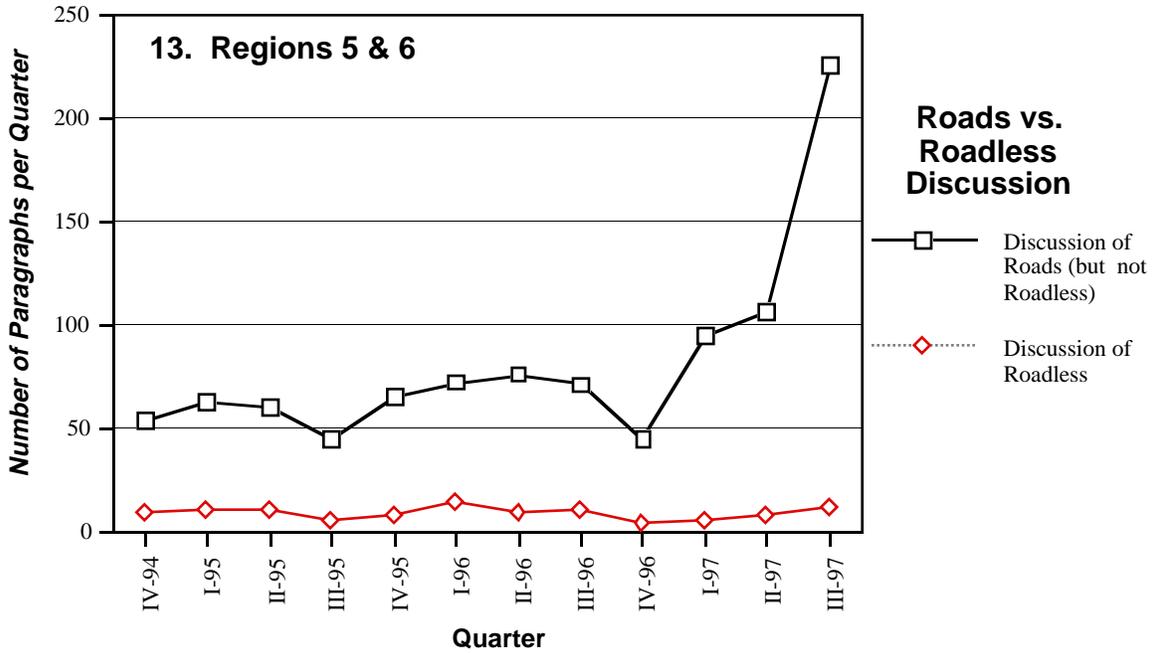


Figure 13. Amount of discussion of roads vs. roadless issues in the West (news sources from Forest Service Regions 5 and 6).

Highlights of Figure 13: Roads / Roadless Discussion in the West

- This figure shows the number of news media paragraphs per quarter discussing roads and the number discussing roadless issues in the West.
- Over the entire 3-year period, about 89 % of the media discussion focused on roads, and about 11 % discussed roadless issues in the West. (See Figures 15 and 16, pp. 23 and 25, for a further breakdown of roads vs. roadless media discussion).

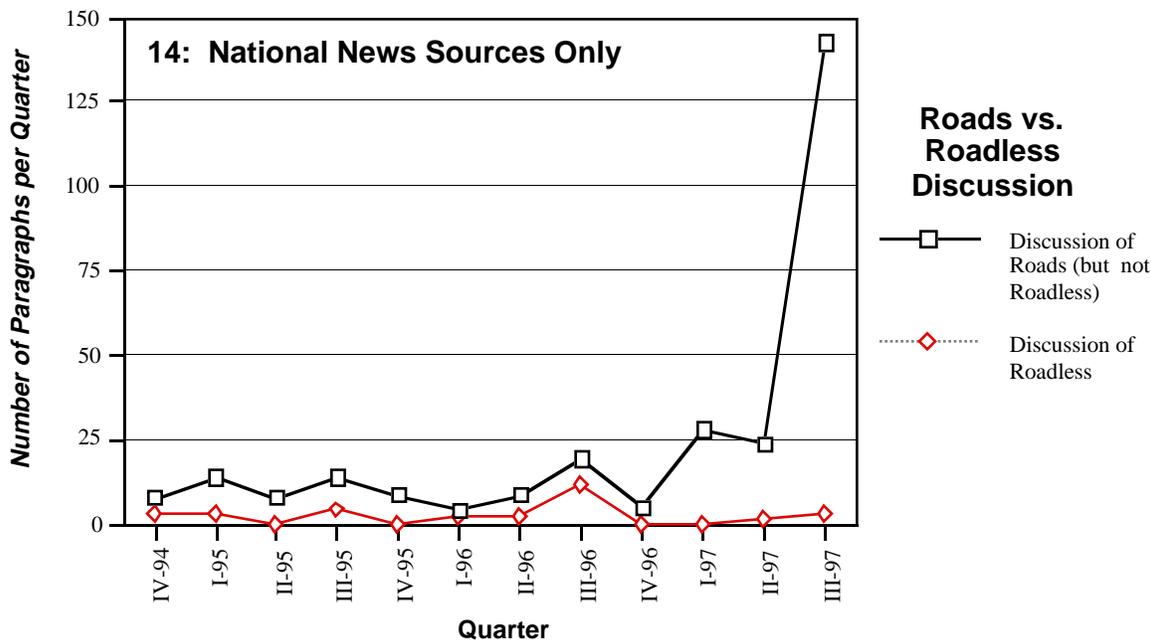


Figure 14. Amount of discussion of roads vs. roadless issues (national news sources only).

Highlights of Figure 14: Roads / Roadless Discussion in National News Sources Only

- This figure shows the number of news media paragraphs per quarter from national news sources discussing roads and the number discussing roadless issues.
- Over the entire 3-year period, 90 % of the media discussion focused on roads, and 10 % discussed roadless issues. (See Figures 15 and 16, pp. 23 and 25, for a further breakdown of roads vs. roadless media discussion).

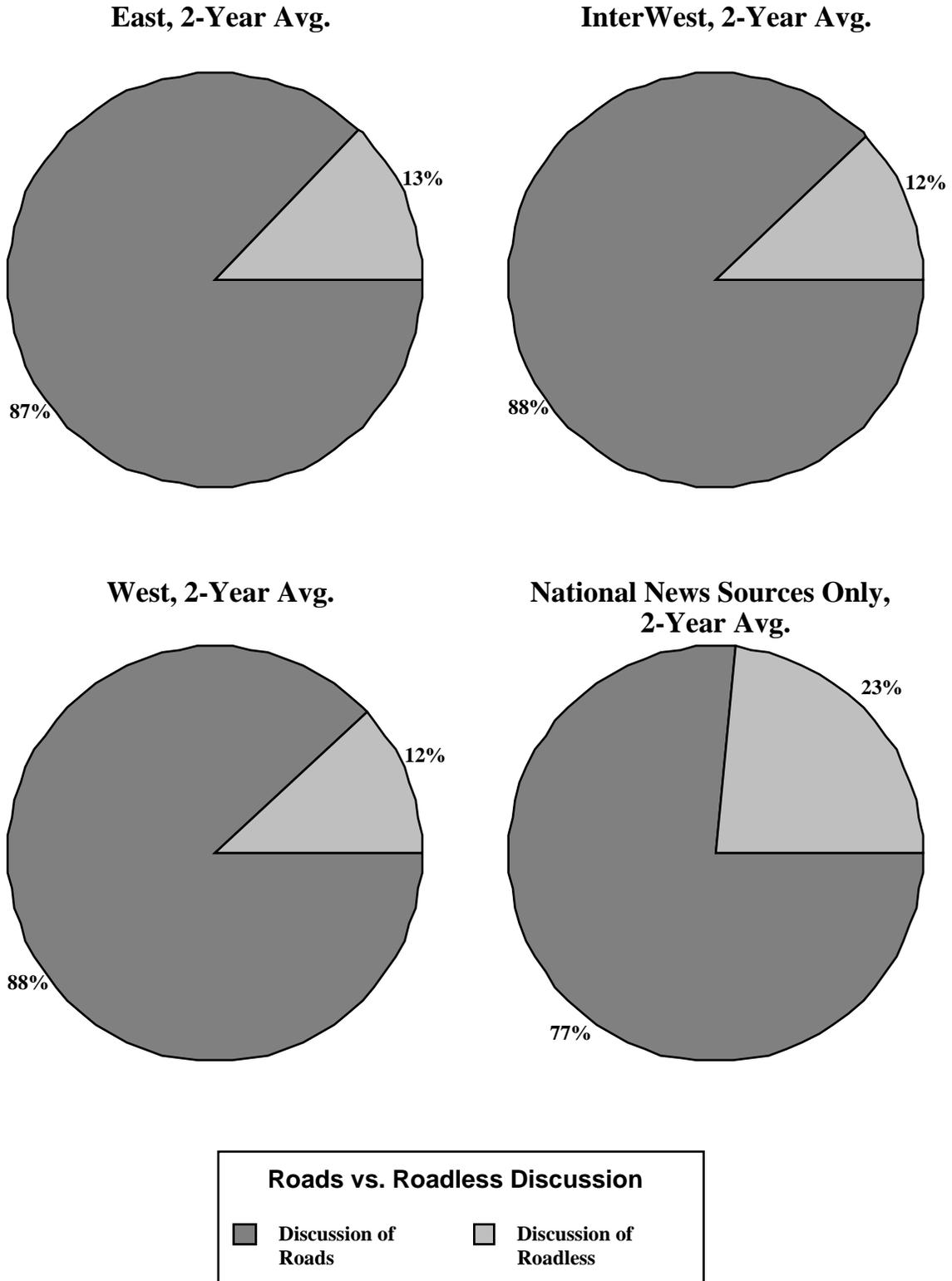


Figure 15. Proportion of roads vs. roadless discussion by region (2-year average for the period IV-94 through III-96).

Highlights of Figure 15: Roads / Roadless Discussion in a 2-Year Base Period

- Figure 15 presents regional comparisons of the proportion of roads vs. roadless discussion for the 2-year period IV-94 through III-96. **This 2-year period was selected as a base period during which media discussion of roads on the national forests was relatively stable and of an average volume (in contrast to more recent media discussion of roads summarized in Figure 16).**
- During the period IV-94 through III-96, about 12 to 13% of the media discussion of roads focused on roadless issues in each of the regions.
- About 23% of the discussion in national news sources focused on roadless issues — significantly more than in the regions.
- The higher proportion of discussion of roadless issues in national news sources is due mainly to the national media's tendency to focus on controversial policy issues of national concern, rather than local or regional issues such as recreational use of roads, local road repairs or closings, etc.

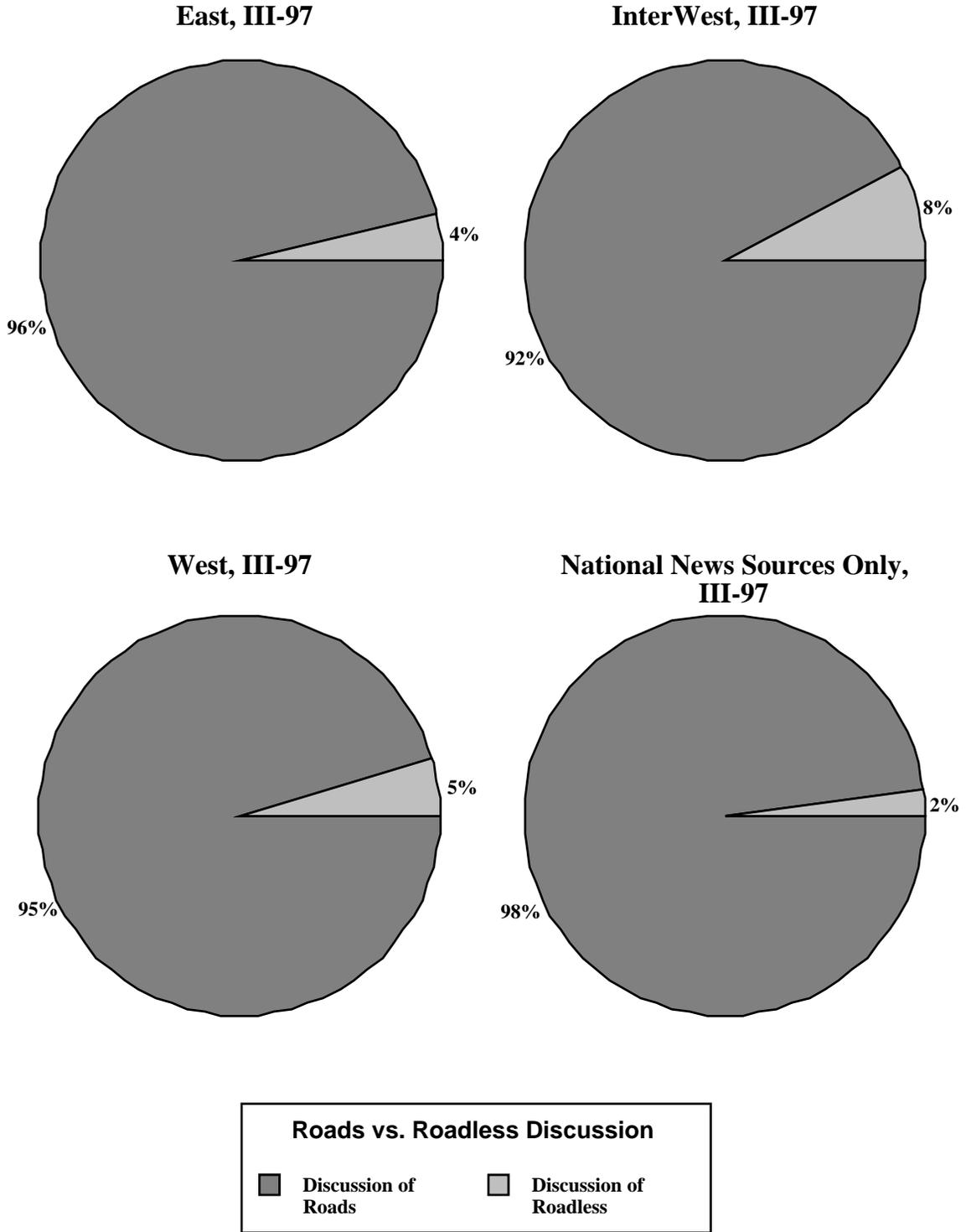


Figure 16. Proportion of roads vs. roadless discussion by region (third quarter of 1997).

Highlights of Figure 16: Roads / Roadless Discussion in the Third Quarter of 1997

- Figure 16 presents regional comparisons of the proportion of roads vs. roadless discussion for the third quarter of 1997. **This quarter was analyzed separately due to the unusually high volume of discussion of roads on the national forests during this period (in contrast to the average level of media discussion during the 2-year base period summarized in Figure 8).** The large amount of media discussion was due to narrowly defeated proposals in the U.S. House of Representatives (July, 1997) and U.S. Senate (September, 1997) to make major cuts in spending on logging roads.
- During the third quarter of 1997, discussion of roadless issues was greatest in the InterWest (about 8 % of coded paragraphs), and least in national news sources (only about 2% of coded paragraphs).
- Discussion of roadless issues was squeezed out by the large volume of discussion of Congressional proposals to cut funding for logging roads in the third quarter of 1997. This was especially true in national news sources, where discussion of roadless issues dropped from 23% of the total media discussion of roads (Figure 15) to just 2% of the total (Figure 16).

III. Intensity of Conflict Over Roads

We examined the intensity of the news media debate on roads by using a computer content analysis procedure developed to measure the level of conflict related to policy and management of the national forests (see Bengston and Fan 1997, Fan and Bengston 1997). First, news media paragraphs in our database which contained one or more of the eight views of roads (described on p. 2) were scored for conflict. Then, as a measure of the intensity of conflict, we calculated the ratio of the number of conflict paragraphs to the total number of scored paragraphs for each region and for national news sources. The resulting ratios (the percent of scored paragraphs involving conflict) are shown in Figure 17.

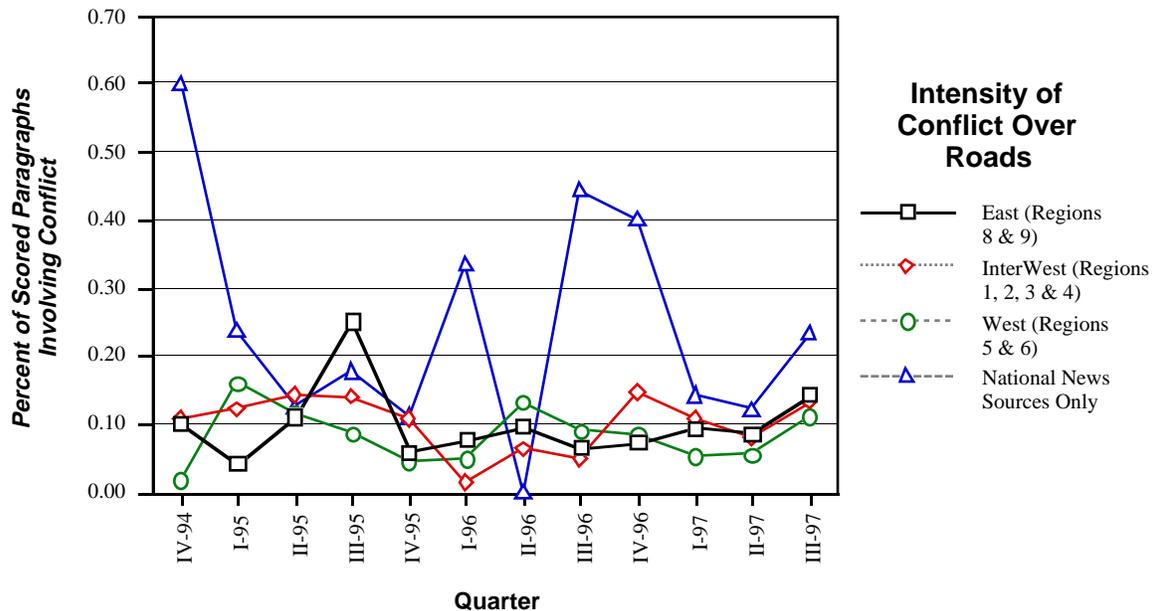


Figure 17. Intensity of conflict over roads in the national forests, measured by percent of scored paragraphs involving conflict. For example, a value of 0.10 in this figure indicates that 10 percent of the scored paragraphs involved conflict. (A "scored paragraph" is a paragraph of news media text from our database which contains one or more of the eight views of roads described on p. 2 of this report).

Highlights of Figure 17: Intensity of Conflict Over Roads

- National news sources generally had a much higher and much more variable intensity of conflict over roads than any of the regions. This higher level of conflict in the national media is likely due to a tendency to focus on controversial national policy issues, rather than on local and regional issues (such as recreational use of roads, road repairs, etc.) that are sometimes non-controversial.
- Intensity of conflict over roads in each of the regions generally hovered around 0.10.
- The intensity of conflict over roads did not increase significantly in the third quarter of 1997, but rather remained at an average level in each region. (However, the total

number of news media paragraphs involving conflict jumped in each region and in national news sources in the third quarter of 1997 (not shown in Figure 17), due to the dramatic increase in the amount of media coverage of roads during this quarter).

Appendix A:

National and Regional News Sources

Selection of News Sources

NEXIS is an online commercial database which, among other things, contains a large number of newspapers (Gongla-Coppinger 1996). To avoid bias, we selected only newspapers with the full texts of all articles archived in the database for our analysis (plus several newswires that we included with the national news sources).

The search command used to search NEXIS for text discussing roads and roadless issues on the national forests was: (((forest service) or (national forest)) and (unroad! or road!)). The truncation "road!" captured news media stories discussing roads and roadless.

Using this search command, we found 10,152 stories in the NEXIS commercial database over the 3-year period from the beginning of the fourth quarter of 1994 through the end of the third quarter of 1997, of which a total random sample of 10,000 stories were downloaded for analysis.

Table A-1. News media sources for the East: Forest Service Regions 8 and 9. (The number of stories dealing with roads on the national forests published over the 3-year period of this study for the top five news sources are given in parentheses).

Forest Service Region 8

1. Orlando Sentinel (45 stories)
2. Palm Beach Post (W. Palm Beach, FL)
3. St. Petersburg Times
4. Sun-Sentinel (Ft. Lauderdale, FL)
5. Tampa Tribune
6. Atlanta Constitution / Journal (GA) (66 stories)
7. Courier Journal (Louisville, KY)
8. Advocate, The (Baton Rouge, LA)
9. Times-Picayune, The (New Orleans, LA)
10. News & Record (Greensboro, NC)
11. Herald-Sun, The (Durham, NC)
12. Commercial Appeal (Memphis, TN)
13. Austin American Statesman
14. Dallas Morning News
15. Houston Chronicle
16. Houston Post
17. Post and Courier, The (Charleston, SC)
18. Roanoke Times & World News (38 stories)
19. Virginian-Pilot and The Ledger-Star (Norfolk, VA)
20. The Sunday Gazette Mail (Charleston, WV)
21. Charleston Gazette

Forest Service Region 9

22. Hartford Courant, The
23. Chicago Sun-Times
24. Chicago Tribune
25. State Journal-Register (Springfield, IL)
26. Des Moines Register
26. Indianapolis Star
27. Indianapolis News
28. Baltimore Sun, The
29. The Capital (Annapolis, MD)
30. Boston Globe
31. Bangor Daily News
32. Boston Herald
33. Daily Variety (Newton, MA)
34. Star Tribune (Minneapolis, MN)
35. Kansas City Star
36. St. Louis Post-Dispatch
37. Record, The (Bergen/Passaic Co's, NJ)
38. Buffalo News, The
39. New York Times, The (41 stories)
40. Times Union (Albany, NY)

-
41. Newsday
 42. Cincinnati Enquirer
 43. Columbus Dispatch
 44. Dayton Daily News
 45. Plain Dealer, The (Cleveland, OH)
 46. Morning Call, The (Allentown, PA)
 47. Pittsburgh Post Gazette
 48. Providence Journal, The
 49. Washington Post (56 stories)
 50. Washington Times
 51. Capital Times (Madison, WI)
 52. State Journal (Madison, WI)
-

Table A-2. News media sources for the InterWest: Forest Service Regions 1, 2, 3, and 4. (The number of stories dealing with roads on the national forests published over the 3-year period of this study for the top five news sources are given in parentheses).

Forest Service Region 1

1. Billings Gazette, The *

Forest Service Region 2

2. Denver Post, The (141 stories)
3. Omaha World-Herald
4. Rocky Mountain News (100 stories)

Forest Service Region 3

5. Arizona Republic (129 stories)
6. Phoenix Gazette, The
7. Santa Fe New Mexican (74 stories)

Forest Service Region 4

8. Idaho Falls Post Register
9. Lewiston Morning Tribune (157 stories)
10. Salt Lake Tribune

* Contains only selected stories of regional interest online.

Table A-3. News media sources for the West: Forest Service Regions 5, 6, and 10. (The number of stories dealing with roads on the national forests published over the 3-year period of this study for the top five news sources are given in parentheses).

Forest Service Region 5

1. The Fresno Bee
2. Los Angeles Times (113 stories)
3. Sacramento Bee (68 stories)
4. San Diego Union - Tribune
5. San Francisco Chronicle
6. San Francisco Examiner

Forest Service Region 6

7. Columbian, The (Vancouver, WA) (159 stories)
8. News Tribune, The (Tacoma, WA) (72 stories)
9. Seattle Times, The (145 stories)

Forest Service Region 10

(No news sources were available online during the entire period being studied)

Table A-4. National news media sources. (The number of stories dealing with roads on the national forests published over the 3-year period of this study for the top five news sources are given in parentheses).

National Newswires & Newspapers:

1. The Associated Press (50 stories)
 2. Christian Science Monitor (29 stories)
 3. Gannett News Service (28 stories)
 4. States News Service
 5. UPI Newswire (17 stories)
 6. USA Today (30 stories)
-

Appendix B:

Outline of Methodology

This section briefly outlines the methodology used in this analysis. See Fan (1988) or Bengston and Fan (1997) for a more detailed description of the methodology.

1. *Downloading text.* The NEXIS commercial online database was searched for news media text on the Forest Service or national forests and roads (with roads truncated to include discussion of unroaded and roadless areas). A retrieval was made of a random sample of 10,000 stories (national and regional) out of a total of 10,152 available online in NEXIS.

The downloaded stories covered a 3-year period, from the beginning of the fourth quarter of 1994 through the end of the third quarter of 1997.

2. *Filtering text.* InfoTrend computer instructions were written to “filter” the downloaded text to eliminate irrelevant paragraphs. For example, instructions were written to discard paragraphs not discussing the Forest Service or national forests or only mentioning these topics incidentally, as in murder investigations in which a body was found on a national forest, obituaries of former Forest Service employees, etc.
3. *Scoring paragraphs.* InfoTrend computer instructions were then developed to score the remaining paragraphs for each of the concepts of interest (the eight views of roads discussed on page 2 of this report). The computer instructions for each concept were based on “dictionaries” of words and phrases created for each analysis. Sets of word relationship rules were then written to combine the groups of dictionary words to give complex meanings.
4. *Checking validity.* Finally, we examined random samples of paragraphs that were coded using our computer instructions in order to determine whether or not the instructions were able to identify expressions of the various concepts of interest with an accuracy level of at least 80 percent. In each case, we were able to achieve more than an 80 percent accuracy level.

Appendix C:

Examples of News Media Text Illustrating Views of Roads

In this study, we analyzed eight views of roads on the national forests, four favorable and four unfavorable views. These eight views are described on page 2 of this report and shown in Figure 1 (p. 3). This appendix provides additional explanation of the eight views of roads by giving examples of news media text illustrating each view.

In the following examples, certain words and phrases are underlined. The underlined words are included in the content analysis dictionaries developed for this analysis. Highlighting these words in this way is intended to help the reader understand why a paragraph of text coded for a particular view of roads. For simplicity, the idea transition rules — which specify how pairs of ideas are combined to give new meanings — are not illustrated or explained in these examples.

Favorable Views of Roads:

- 1. Commodity-Related Benefits: Roads are good because they make possible the production of commodities that society needs (e.g., timber, cattle, minerals); roads are needed to provide access for small timber companies that are unable to pay for the full cost of roads.**

This view of roads on the national forests focuses on the idea that the access provided by roads is essential to commodity production — especially timber production — as illustrated in the following example:

Industry leaders contend the system allows for the roads to be constructed in the most cost - effective manner, and that without them, the timber could not be harvested. (The Associated Press, 9-16-97. File 11, story 178).

Commodity-related benefits of roads includes the idea that roads provide access for a variety of commodity uses, as illustrated in the following examples dealing with access for livestock production:

Hamilton also would be allowed to use chain saws to clear downed timber on old logging roads he uses to reach his fences and cows. (The Salt Lake Tribune, 8-27-97. File 26, story 450).

Commodity-related benefits also includes the idea that abolishing the purchaser credit program would be unfair to small timber firms, as illustrated in the following examples:

Industry leaders opposing the move maintain it would hit hardest on smaller timber companies, preventing them from bidding for timber against larger companies that

could more easily swallow the cost of road building. (The Associated Press, 9-16-97. File 11, story 178).

But western lawmakers — many of them from states with vast areas of federal forests — argued that the government-built roads are essential for the economic survival of small logging companies, for forest management, firefighting and recreational uses. (Associated Press, 7-11-97. File 9, story 964).

2. Local Community Benefits: Roads are good because communities in and around national forests benefit from payments in lieu of taxes, strong and stable local economies, commodity-related jobs, and from subsistence uses made possible by roads (e.g., gathering firewood).

This view of roads on the national forests includes a wide range of economic benefits to local communities made possible in part by the existence of roads. The dominant theme in this category is the idea that timber sales — which require roads to move the wood to mills — generate important economic benefits for local governments in the form of payments in lieu of taxes, as illustrated by the following examples:

Everyone agrees that eliminating the road credit program will drive down the price of timber sales. That will cost states and counties more than \$11 million in national forest logging receipts, according to a study funded by the timber industry. Rural counties and schools in many states rely heavily on those funds. (Gannett News Service, 7-11-97. File 25, story 974).

Federal law requires that 25 percent of timber receipts be returned to the counties with the forests for use in financing schools and roads. (The Associated Press, 2-5-97. File 4, story 2345).

Irby said the major issue in the county is getting more federal timber sales available to local loggers and mills. Not only would the sales bolster the local economy, she said, but the county can also use the 25 percent kickback in dollars from such sales for roads, bridges and schools. (Lewiston Morning Tribune, 5-25-96. File 11, story 4903).

Local community benefits also includes the idea that roads provide access for subsistence uses of forests such as gathering firewood:

Both Schiff and Max Cordova, President of the Truchas Land Grant, said firewood gathering is by its nature limited to roaded areas because people use pickups to haul out wood. (The Santa Fe New Mexican, 4-18-97. File 3, story 1770).

3. Recreational Use and Access: Roads are good because they provide access for a wide range of recreational activities; roads are needed for people with disabilities and senior citizens to have access to forests.

The idea that roads in the national forests are useful for recreational access was the most frequently expressed view in the news media. Many of the paragraphs expressing this view were either a description of the recreational use of roads or directions to remote recreational sites that involved logging roads, rather than a direct argument that roads are useful for recreational purposes:

We camped on a stony ridge that still showed a few signs of the well-used logging road it had once been. (The Courier-Journal, Louisville, KY, 11-12-95. File 26, story 6668).

For mountain bikers, the county has many miles of abandoned logging roads. The county is developing a map of the trails, but in the meantime, bikers can buy a map from the U.S. Forest Service ... (The San Diego Union-Tribune, 5-19-96. File 5, story 5002).

In a light snowfall, we headed out skiing down a gated logging road. (Lewiston Morning Tribune, 12-13-94. File 9, story 9588).

Nilles recommends beginning mountain bikers — or those who have ridden only on city sidewalks — put in a little time on some of the area's logging roads and forest trails before jumping on the lifts. (News Tribune, Tacoma, WA, 8-23-95. File 3, story 7406).

And it [the Forest Service] has closed the roads with deep mud in early spring, to the delight of countless mountain bikers and hikers who later enjoy the rustic, rugged, unimproved backcountry roads. (The Denver Post, 4-17-95. File 25, story 8622).

Though convenient, it wasn't easy skiing. We started with a short, steep uphill to the Bitterroot-Big Hole Road, which might be driveable in a 4x4 in the summer, but in the winter is not maintained. We made slow progress skiing south along the road, breaking trail through more than a foot of snow. (Lewiston Morning Tribune, 2-20-97. File 11, story 2226).

Recreational use and access includes the argument that roads are needed to provide equal access for senior citizens and the disabled who otherwise would not be able to enjoy the national forests (this view was not frequently expressed):

It is the belief of the Committee to Reopen the Rim Road that reopening the road would appropriately allow all citizens, including seniors and disabled, to view the finest portion of Hells Canyon... (Oregonian, 9-2-97, Letters to the Editor. Note: The Oregonian is not included in the NEXIS commercial database. This story was reviewed during the early stages of this analysis).

4. Fire Protection: Roads are good because they provide access to backcountry areas for firefighters, for rescue workers, and for forest management activities.

This positive view of logging roads focuses on the idea that they provide essential access for fighting wildfires. This perspective is often expressed in conjunction with other uses of roads, such as recreational access:

“Ninety percent of the roads we have are used for recreation and fire suppression,” Dicks said. “That’s something that’s not understood by some Easterners.” (Gannett News Service, 7-11-97. File 25, story 974).

Doug Bartels, a spokesman for Boise Cascade, said it’s wrong to call them logging roads because they also are used for camping, fishing and fire control. (The Associated Press, 9-16-97. File 11, story 178).

But the program’s defenders in Congress argued that the roads are used by hikers, hunters, and others who want to enjoy the backcountry and aid the U.S. Forest Service’s firefighting efforts. (Gannett News Service, 7-11-97. File 25, story 974).

Our "fire protection" category also includes the idea that logging roads are beneficial because they are used for backcountry rescue activities (this view was not frequently expressed):

Clallam County Sheriff’s Sgt. Don Kelly and Sequim Fire Department paramedic Matt Newell trudged through a maze of logging roads blocked by downed trees to reach the site. They heard Drovdaahl calling out for help. (News Tribune, Tacoma, WA, 1-16-95. File 10, story 9361).

Fire protection also includes the idea that logging roads are beneficial because they provide access for various forest management activities (this view was not frequently expressed):

... \$222 million to purchaser road credits, which represents the cost of roads built by purchasers and deducted from timber sale contracts. Many have non-timber uses, such as for recreation, firefighting, and general forest management. (The Arizona Republic, Phoenix, AZ, 11-14-95. File 10, story 6649).

Also, outside Kasich’s news conference Tuesday, a representative of the American Forest and Paper Association was ready with detailed fact sheets arguing the federally financed roads in national forests are good for recreation, wildlife and fisheries projects, fire protection, and ecosystem management, as well as for logging. (The Post and Courier, Charleston, SC, 1-29-97. File 14, story 2418).

Unfavorable Views of Roads:

5. Subsidy Costs: Roads are bad because they represent taxpayer-financed corporate welfare.

This is not merely a giveaway of public assets; in addition the taxpayer is to pay for the privilege of being raped. Many of these sales will be money-losing transactions; the costs to the Forest Service (in building access roads, etc.) will

exceed the revenues. (The Times Union, Albany, NY, 7-12-95. File 4, story 7814).

Examples are all too easy to find: Recently, the U.S. House of Representatives voted to spend another \$49.5 million of taxpayer dollars to build new logging roads through America's national forests. (The Record, Hackensack, NJ, 7-24-96. File 3, story 4210).

Since the Forest Service sells the trees for less than the costs of building the roads and administering the program, taxpayers lose an estimated \$244 million a year in forest road programs. (The Baltimore Sun, 3-9-95. File 13, story 8937).

Nearly one-third of the \$40 million in logging road credits at the center of a Senate debate over timber subsidies went to just three large companies last year, the Forest Service said Tuesday. (The Associated Press, 9-16-97. File 11, story 178).

Included with this view of roads on the national forests is the argument that the purchaser credit program encourages excessive logging in areas — especially in remote, old-growth, or pristine forests — that would otherwise not be economical to log (this view was not frequently expressed):

The purchaser credit program also encourages logging companies to cut in the so-called ancient or old-growth forests. Very often, these areas are so remote that timber companies would not consider cutting the trees if they had to pay the full road-building costs themselves. (The Denver Post, 7-26-97. File 13, story 799).

6. Ecological Costs: Roads are bad because they cause significant ecological damage, such as erosion, siltation, destruction or fragmentation of wildlife habitat, etc.

The expansion of the forest road system furthers the pollution of our water supply, fosters landslides and fragments precious wildlife habitat. (Pittsburgh Post-Gazette, 7-23-97. File 20, story 828).

The increased fragmentation of wilderness areas by these roads has had a devastating effect on forest health. (The Indianapolis Star, 10-6-96. File 11, story 3374).

The study warns of environmental damage caused by logging roads, including erosion and sedimentation in streams that harm dwindling salmon populations. (The Times-Picayune, New Orleans, LA, 12-12-95. File 9, story 6363).

Clear-cutting and road construction may make a landslide occur as much as five to 20 times more often than on a forested site, says Gordon Grant, a researcher with the US Forest Service in Corvallis, Ore. (The Christian Science Monitor, 12-27-96. File 3, story 2694).

If there is a bright side to this sad story, it is the New Jersey Congressional delegation. They all voted against Gingrich and the House leadership to stop the road-building and forest destruction. At least in New Jersey, environmental health and safety is not a partisan issue. (The Record, Hackensack, NJ, 7-24-96. File 3, story 4210).

It may be that Dombeck's stint in the BLM gave him a more critical appraisal of how the Department of Agriculture treated the nation's forest lands in the recent past. Certainly, the lessons learned from the 1995 mudslides in Northern Idaho, which were blamed on excessive timber harvests and road building, were not lost on him. The watershed in that region was devastated. (The Denver Post, 4-6-97. File 1, story 1861).

7. Roadless Recreation: Roads are bad because roadless areas provide unique recreational, aesthetic and spiritual experiences not obtainable in roaded areas; roadless areas also are associated with high quality of life in a region, which attracts businesses to locate in the region.

In short, no roads or use of motorized vehicles... Just an outstanding opportunity for solitude or a primitive and unconfined type of recreation. (The Palm Beach Post, 11-6-94. File 10, story 9853).

The agreement ensures that the entire Rabun Bald Area will remain eligible for designation as a wilderness or scenic area. The Rabun Bald "roadless area" is one of about 20 tracts containing century-old trees and brook-trout streams that environmentalists have identified as deserving special protection in the 750,000-acre Chattahoochee Forest. (The Atlanta Journal and Constitution, 5-25-96. File 14, story 4900).

Among those places that a recreational backpacker can cherish, the Grandmother Mountain Roadless Area is certainly a favorite in our neck of the woods... Picturesque scenes such as this await the hiker in the Grandmother Mountain Roadless Area. (Lewiston Morning Tribune, 8-17-95. File 6, story 7452).

8. Ecological Benefits of Roadless Areas: Roads are bad because roadless areas have various ecological benefits, such as clean water, high quality wildlife habitat, ecological integrity, ecological significance, etc.

Biologists consider central Idaho a key missing link in the 22-year-old effort to increase bear populations in the northern Rocky Mountains to the point of removal from the list of endangered species. It is a 3.8-million-acre roadless area with the Selway-Bitterroot Wilderness at its core, and Kasorm said it could provide valuable insurance against extinction... (Idaho Falls Post Register, 7-4-97. File 12, Story 1079).

Environmentalists say the tract is an ecologically significant roadless area with groves of 200-to 300-year-old ponderosa pines. (The Seattle Times, 3-2-97. File 14, story 2157).

The comparison can be dramatic. On the one hand you will have an area interspersed with logging roads, skid trails, slash, and other debris left behind by the logging operation (and prone to wildfire), whereas if the area is left undisturbed, you will experience tall, mature trees, an undisturbed forest floor, clear streams, and no soil erosion caused by the road building and logging operations. (The Des Moines Register, 3-20-96. File 4, story 5581).

This view of roads includes the idea that roads pose a threat to the ecological health of roadless areas:

But an environmental group said the project would disturb pristine areas and that the building of roads into the area could cause erosion and disrupt the habitat. The Wyoming Outdoor Council said the area is under study as a possible wilderness area. (The Denver Post, 11-15-96. File 5, story 3015).

He is concerned the Forest Service moved too quickly to offer the timber there and hasn't given enough consideration to... an estimated 3,000 acres without roads where wildlife flourishes. (The Columbian, 6-17-97. File 11, story 1233).

With the Porter-Kennedy Amendment, we have the opportunity to stop these sales. But this vote is far from won. Our latest count shows that more than 100 representatives have not decided how to vote. What they hear from their constituents in the next week will make the difference in their votes, and possibly in the fate of dozens of threatened roadless areas and the forests and wildlife they shelter. (St. Louis Post-Dispatch, 6-30-97. File 13, story 1122).

Appendix D:

Frequently Asked Questions About Computer Content Analysis of the News Media

Computer content analysis and media discourse analysis are social science research approaches that are unfamiliar to most people working in forestry and related natural resource fields. The following questions are frequently asked by managers, policymakers and researchers interested in this type of analysis.

1. How much of the news media text analyzed in this study was factual vs. opinion articles?

The text used in this analysis contains both news articles ("straight news") and opinion articles (editorials and letters to the editor). We did not analyze the proportion of text accounted for by straight news vs. opinion articles, but for most issues, all opinion material combined accounts for about 10 percent of total news coverage. Past studies have shown that predictions of public attitudes and opinion are accurate when news and opinion articles are combined.

The distinction is often made between news stories based on fact (which are viewed as objective) and editorials or opinion-based material (which are viewed as subjective and based on value-judgements). But two points tend to blur this dichotomous view of the news media. First, environmental "facts" are usually complex and contested by different stakeholders (Anderson 1997). Facts have evaluative dimensions, i.e., significantly different interpretations of the same set of facts often result from different ideological or philosophical views. Second, factual news coverage is full of expressions of values, attitudes, and opinions. For example, a story about logging roads might contain the views of many stakeholders — government administrators, politicians, representatives of environmental groups, university scientists, timber industry representatives, loggers, etc. — each expressing their attitudes and opinions regarding logging roads.

2. How much of the text analyzed in this study was original (i.e., originated with the news source in which it was published) vs. a repeat of a newswire story?

It is often difficult to determine the influence of newswires because news articles do not always acknowledge a newswire source, especially when only part of a story comes from the wire. But even when newspaper reporters draw on news services to write an article, they frequently tailor the story to fit the interests of their readers. Therefore, we would expect some regional variation even in "repeat" newswire stories.

If newswire stories were heavily used in the text analyzed in this study, then we would expect the regional profiles to be similar to the national profiles. Since we found pronounced differences, it appears that the regional newspapers did generate a lot of their own articles. Differences were most pronounced for recreational use of roads, which makes sense given the location-specific nature of recreation activities.

3. What is the average number of paragraphs in articles about roads vs. other topics? Are they longer or shorter than news articles about other issues?

We don't know the length of the average article on roads or on other topics, because we downloaded text within 100 words of the search words — 50 words on either side. Downloading text within a 100 word window of the key concepts of interest greatly reduces the amount of irrelevant text that would have been retrieved from stories that mentioned roads and the national forests only in passing, and helps ensure the validity of the analysis.

4. Isn't the news media biased? (e.g., liberal or conservative political bias, pro-environmental or pro-development bias, etc.).

This is a common complaint against the news media. Bias — or the absence of neutrality — in news content may be intended or unintended, open or concealed (McQuail 1992). The news media have been accused of many types of bias, including distorting reality, portraying minority groups negatively, neglecting or misrepresenting the role of women in society, and favoring a particular political party or ideology (Shoemaker and Reese 1991). Both liberal and conservative politicians accuse the media of political partisanship (see Eldridge 1993).

Media bias is difficult to evaluate but it has been extensively researched. Although there are no completely uncontested or unambiguous findings about media bias, McQuail (1994:255-256) summarizes the best-documented generalizations as follows:¹

- Media news tends to overrepresent official voices in its sources.
- A disproportionate amount of news attention is given to members of political and social elites.
- The social values most emphasized are consensual and supportive of the status quo.
- Political news tends to be neutral or support parties to the right of the center.

This last point requires clarification, because surveys of the public reveal that many people believe the press has a liberal bias. In a recent study, Watts, et al. (1997) found that the press is neutral in its election coverage, but its frequent quotes of conservative politicians

¹ McQuail (1994:255-256) gives several additional generalizations about media bias not relevant to environmental and natural resource issues, relating to such issues as foreign news and crime.

saying that the media has a liberal bias has contributed to the view among the public that coverage has a liberal bias.

5. Why analyze the news media to measure public attitudes about natural resource management?

Analysis of the media has repeatedly been shown to produce results that are remarkably similar to attitude surveys and opinion polls. Many studies have shown that the media have played an important role in influencing public opinion about various environmental issues (e.g., Brosius and Kepplinger 1990, Gamson and Modigliani 1989, Hoffman 1996, Noelle-Neumann 1991, Parlour and Schatzow 1978, Ranthum 1996, Rogers and Ramthun 1996, Salwen 1988) and a wide range of other issues (e.g., Hauss 1993, Fan 1988, Fan 1994, Fan and Holway 1994). Other studies have found that the news media has an influence on agenda-setting for environmental issues, i.e., there is a relationship between the relative emphasis given by the media to environmental issues and the degree of salience these topics have for either the general public (e.g., Ader 1995, Anderson 1997, Atwater, et al. 1985) or the political agenda (e.g., Downs 1973, Prottess, et al. 1987, Schoenfeld, et al. 1979, Solesbury 1976).²

The reason is twofold. First, natural resource management issues — ranging from timber salvage to ecosystem management — are debated in a variety of forums in society. As shown in Figure D-1, social debates about natural resources and the environment take place in the courts, legislatures, meetings and hearings, confrontations, and the media. The media plays two important roles in these debates, serving as a direct forum for public discourse on natural resources (through editorials, letters to the editor, etc.) and reporting on debates occurring in all other forums. Pollster George Gallup theorized in 1939 that the media were creating a national town meeting in which issues were debated:

The newspapers and radio conduct the debate on national issues, presenting information and argument on both sides, just as the townsfolk did in person at the old town meeting. (quoted in Smith 1997:56).

Computer content analysis of the news media thus allows us to take the pulse of on-going debates and discussions about natural resource issues as reflected in tens of thousands of stories.

² Several studies have suggested that the media have little direct effect on public attitudes toward specific environmental issues, especially for the case of television viewing (Gunter and Wober 1983, Wober and Gunter 1985) and in developing countries (Sekar 1981). See also Gooch (1996) for the case of the Swedish regional press.

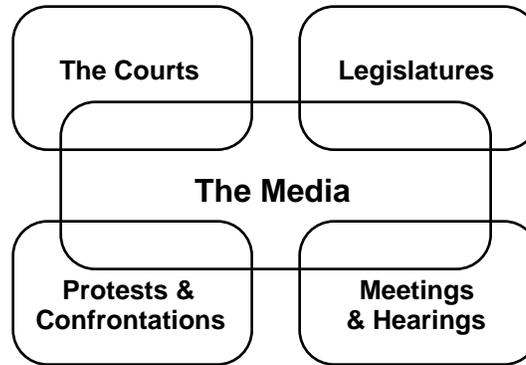


Figure D-1. Forums for public debates about natural resource policy and management.

Second, several studies have shown that the news media is the most important source of information for most people about environmental issues (e.g., Atwater, et al. 1985, Fortner, et al. 1991, Ostman and Parker 1987, Wilson 1993). Shindler, et al. (1996) found that the most important source of information about federal forest management for residents of Oregon's Central Cascades was newspapers, followed by television, radio, magazines/books, friends/relatives, interest groups, and lastly natural resource agencies. In a study of forest policy committees in state legislatures, Lewis and Ellefson (1993:37) found that:

Committee staff identified the press and media organizations as the most skilled at mobilizing public opinion... The media is clearly seen as a powerful communicative actor, being the principal medium (in a logistical sense) for disseminating to the general public both factual information and the views and recommendations of actors in a state's forest policy domain.

Therefore, since the news media summarizes ongoing social discussion and debates about natural resource issues and is the main source of information for the public about natural resource issues, analysis of the news media is an efficient way to indirectly measure public attitudes.

6. How does the amount of media discussion of roads on the national forests compare with the total amount of media discussion of the Forest Service? How does it compare with the amount of media discussion of other issues?

Comparing the amount of media discussion of different issues that were analyzed in different studies is complicated by the fact that the set of news sources used varies between studies. More news sources become available online every year, so more recent studies generally include a larger number of news sources. Therefore, in an analysis of this type, it is more relevant to compare the relative frequency of expression of the various concepts analyzed within the study or to analyze trends in the expression of these concepts, rather than focus on the total amount of media discussion and how that compares with media discussion of other topics.

Having said that, Figures D-2 and D-3 provide some perspective on the amount of media discussion of roads on the national forests relative to total media discussion of the Forest Service (Figure D-2) and relative to total media discussion of ecosystem management (Figure D-3) for roughly comparable sets of news sources.

Figure D-2 shows the number of news media paragraphs about the Forest Service for the period 1992 through 1996 (from Fan and Bengston 1997) and the number of news media paragraphs about roads analyzed in this study. A similar — but not identical — set of news sources obtained from NEXIS was used in each study. Forest Service paragraphs are shown to range from about 4,000 paragraphs per quarter to more than 9,000 paragraphs. Peak quarters of news coverage of the Forest Service are due mainly to major fire seasons. During a major fire season, coverage of firefighting activities on national forests dominates media discussion of the Forest Service (Fan and Bengston 1997). Other than major fire seasons, the amount of news media discussion the Forest Service has generally fallen in the range of 4,000 - 6,000 paragraphs per quarter. Media discussion of roads and roadless issues has generally been in the range of 400 - 600 paragraphs per quarter (except for the third quarter of 1997). Therefore, media discussion of roads on the national forests has accounted for roughly 10% of total discussion of the Forest Service — perhaps somewhat less than 10%, because some additional news sources are included in this study.

In the third quarter of 1997, media discussion of roads jumped significantly from 400 - 600 paragraphs per quarter to 1,270 paragraphs, or about 25% of typical total media discussion of the Forest Service.

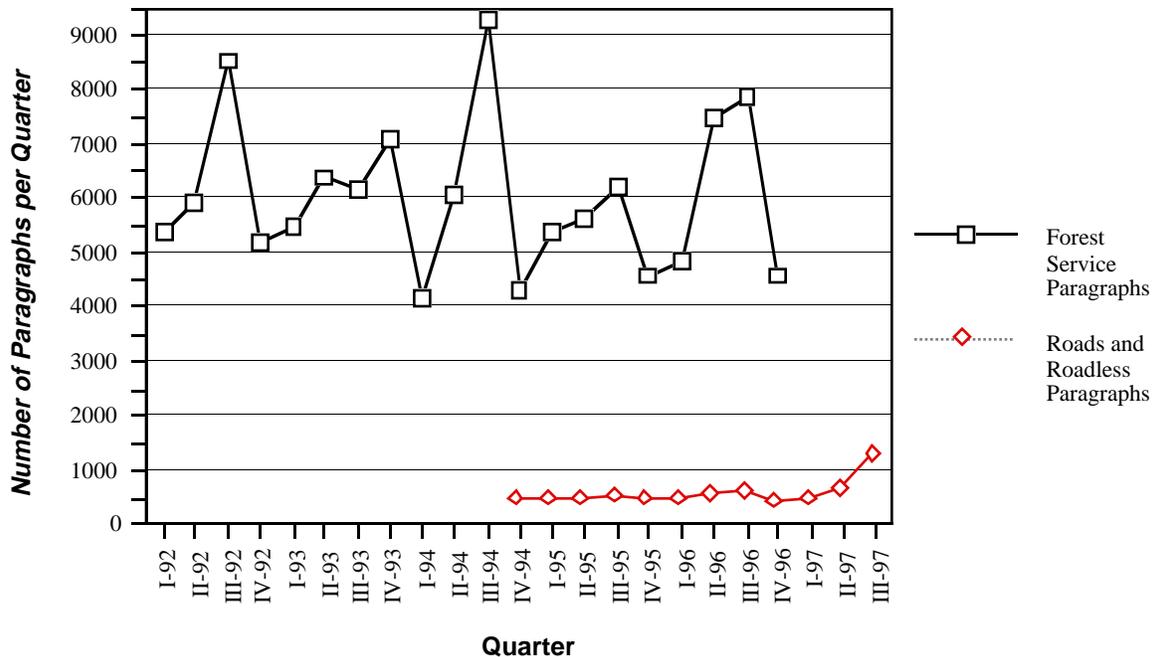


Figure D-2. Total number of paragraphs about the Forest Service and about roads on the national forests from roughly comparable sets of news sources, plotted quarterly.

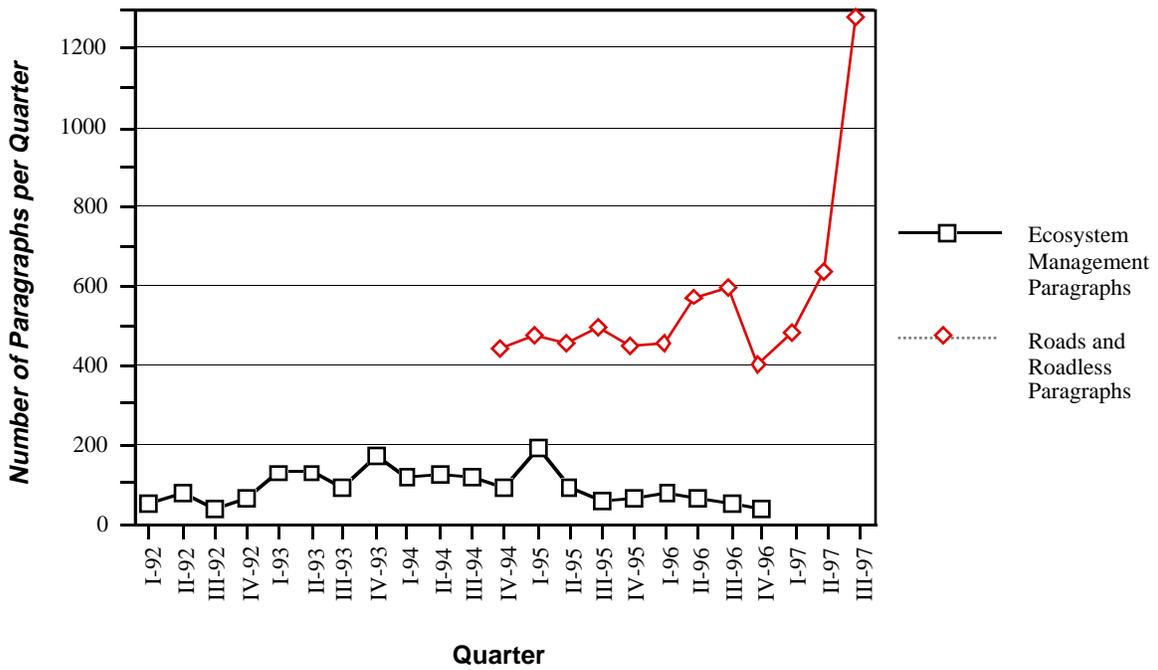


Figure D-3. Total number of paragraphs about ecosystem management and about roads on the national forests from roughly comparable sets of news sources, plotted quarterly.

Figure D-3 compares the number of news media paragraphs about roads to paragraphs about ecosystem management.³ Media coverage of ecosystem management was generally in the range of 50 - 150 paragraphs per quarter in the set of news sources used in Fan and Bengston (1997) over the 5-year period analyzed, significantly less than media discussion of roads. The dramatic increase in discussion of roads in the third quarter of 1997 is easier to see in Figure D-3, since the vertical axis is scaled differently than in Figure D-2 (i.e., not compressed). The increased media discussion of roads in this quarter is clearly far outside the normal range of variability for discussion of this issue.

³ The news media stories about ecosystem management were not required to involve the Forest Service. Some of the stories in this database discussed ecosystem management in the Forest Service, but others discussed ecosystem management in context of various Interior Department agencies, state natural resource agencies, the private sector, and nonindustrial private forest landowners.

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=====EXTRA TEXT CLIPS:

COMMODITY-RELATED BENEFITS:

The group is pushing a plan that calls for more roads, livestock and timber and less wilderness than what has been proposed for the 1.8 million acre forest. (Idaho Falls Post Register, 5-26-96. File 11, story 4889).

Logging in the national forest is also an economic mainstay for many piney woods communities. At least southeast Texas counties have mills, loggers, road construction firms and other timber-related businesses. (The Dallas Morning News, 9-14-97. file 12, story 219).

A group of regional resource users and off-road vehicle riders still hope to boost annual timber sales to at least 20 million board feet, which members think might be enough to reopen a major mill. (The Idaho Falls Post Register, 3-3-96. File 12, story 5732).

LOCAL COMMUNITY BENEFITS:

Of the total timber sale receipts from 1992-94, the years the report covered, approximately \$2.7 billion was distributed to accounts authorized by statute. The largest, \$900 million, was the share distributed to states where the national forests are located. These receipts provided funding for schools and roads in the counties where the timber sale receipts were generated. (The Arizona Republic, 11-14-95. File 10, story 6649).

Instead of paying property taxes to Idaho, the federal government pays the state 25 percent of the money collected as land-use fees on national forests and grasslands in Idaho. Seventy percent of the money goes to roads and 30 percent to schools. (Lewiston Morning Tribune, 12-22-94. File 20, story 9517).

RECREATIONAL USE & ACCESS:

3a. Recreation & Access (but really rescue access, which is part of Fire Protection): Soaked from a night of rain, hungry and without the strength to even lift his hiking stick, Vetterlein just kept walking, eventually finding a logging road. (The Buffalo News, 9-16-97. File 3, story 181).

3. Recreation & Access (FAIRNESS in access for the disabled): BUT THIS CLIP DOESN'T EXPLICITLY MENTION ROADS: At Saturday's meeting was Jane Ann Willett of Sanford, a paraplegic ranch wife who enjoys riding an all-terrain vehicle. Several off-road groups cite the Americans with Disabilities Act and use her as an example of someone whose use and enjoyment of the forest is hurt by the new plan. (The Denver Post, 3-16-97. File 14, story 2045).

NOTE: this is an ex. of the COUNTER ARGUMENT to rec. benefits of roads: the eco-damage caused by roads & logging ruins rec. opps. (e.g., "ruins fishing streams"):

* Recreation&Access: Supporters say the roads open the forest to recreation. But have you ever tried driving on one? When they are passable at all, they usually lead to vast fields of deadwood and slash, hardly paces that invite picnicking or other pleasures. Moreover, the roads contribute to runoff that ruins fishing streams. Or isn't fishing a recreation? (USA Today, 7-9-97. File 25, story 1013).

NOTE: This is more an argument for roadless areas, & an ex. of the argument that roadless areas have big economic benefits (although, since it doesn't mention roadless, it coded for Rec. & Access instead of Roadless4People):

The mountain counties are expecting economic growth precisely because of the attractiveness of their natural settings, including clean water, scenic beauty, and recreational opportunities of the nearby Chattahoochee National Forest. The construction of costly logging roads damages these values and is opposed by environmentalists and fiscal conservatives alike. (The Atlanta Journal and Constitution, 9-29-97. File 9, story 7).

FIRE PROTECTION:

4. FireProtectBen: "My company lost \$3 million worth of timber sales in the fire on the Peyette," Connell said. Connell blames the Forest Service for eradicating a fire road that had led to the area... (States News Service, 2-10-95. File 11, story 9164).

SUBSIDY COST:

SubsidyCost: Congress should end the timber industry's road-building subsidies. (The Denver Post, 7-26-97. File 13, story 799).

ECOLOGICAL COST:

?? [this is apparently talking about industry land?] EcoCost: Robert Michie Jr., Simpson's timberland manager for Northwest operations, said erosion [EcoCost] from roads has a big impact on conditions downstream. (The Columbian (Vancouver, WA), 12-27-94. file 3. story 9487).

EcoCost: Said Vincent: "While they were experimental zones, if you will, they were still to be guided by principles protecting old growth, staying out of roadless areas and protecting fish and wildlife habitat. (The Columbian, Vancouver, WA, 8-3-97. File 11, story 713).

ROADLESS RECREATION:

????? Roadless 4 People: Headline: Showdown over Dark Divide; hikers, bikers compete for trail use in the largest unprotected roadless area in western Washington. (News Tribune, Tacoma, WA, 8-18-96. file 14, story 3970).