

Exploring information for residents on websites of fire authorities — practical experiences

Bernd Rohrmann outlines a research project investigating the usefulness of websites as bushfire information sources

Abstract

The project *Potential of the internet for enhancing residents' bushfire preparedness 2004–2006* (PIB) was carried out to analyse the capability and the utility of information sources provided by authorities for the public via the Internet/WWW. Crucial research questions were: How well are these risk communication means used by residents, and why or why not? How likely are they to significantly advance problem awareness, preparedness and coping with actual fires? How can the usability and effectiveness of these tools for individual emergency management be improved? Last year, sub-study PIB-E *Surveying bushfire events on websites – experience of people from different cultural backgrounds* was conducted. Participants were experienced students; they assessed internet information of fire authorities in South Australia, Victoria and N.S.W., focussing on then present bushfire events. Predominantly, these websites were found to be informative, comprehensive and helpful. However, the respondents also identified shortcomings, in both content and presentation of fire preparedness information for residents, and stated limitations of addressing cultural variety. Obviously there is considerable potential for the improvement of websites. Pertinent suggestions and resultant research needs are outlined.

Problem area: Significance of bushfire websites

Websites as information source for residents

In Australia, the bushfire hazard affects large areas, and residents are regularly exposed. Consequently, emergency management is a permanent task. Risk information/communication/education about bushfires near residential settings are crucial components. Residents need to be properly informed about relevant hazard characteristics, preventative measures and appropriate behaviours during the onset of an emergency situation and after the event. Information campaigns for enhancing disaster preparedness make use of media activities (television, radio, internet) meetings with residents, and a variety of visual communication means, such as information leaflets, brochures and video-tapes. Internet-based information provision, especially websites run by authorities, have been commonly established within the last decade. They are widely available and accepted as an essential and increasingly indispensable information source for both experts and residents; however, they are not yet 'mainstream' procedures.

Research on the value of fire websites

Given the increasing relevance of fire authority websites, the capability and utility of information sources provided via the Internet became a significant issue. To get empirical data, the project *Potential of the internet for enhancing residents' bushfire preparedness* [PIB] was conducted from 2004 to 2006. Conceptually, this research is based on the author's socio-psychological Risk Communication Model. The investigation comprises six studies, which combine several approaches, including focus groups, experiments, surveys and expert panels. Last year, sub-study PIB-E *Surveying bushfire events on websites — experience of people from different cultural backgrounds* was conducted. The research questions to be clarified are summarised below in table 1.

Table 1: RESEARCH ISSUES

Focus:

How are events, i.e., current bushfires in an area, represented and explicated on websites of pertinent fire authorities.

Crucial research questions:

- How well are new risk communication means using the Internet utilised by residents, and why or why not?
- How is information provided in websites perceived in comparison to reports in local newspapers?
- To what degree does website information advance problem awareness, preparedness and coping with actual fires?
- How can the usability and effectiveness of these tools for individual risk management be improved?

Critical perspective:

Explorations and expectations of residents (rather than fire experts), and differences between people from diverse cultural backgrounds.

The focus of this study is experiences of residents, both local ones and those from a different linguistic and cultural background.

Project design

Designing the study

The research plan was to focus on a current bushfire during the 'fire season', to choose the three most relevant websites of the pertinent governmental fire authorities, to ask experienced people for a continuous appraisal of these internet information sources, to examine newspaper reports during the same time period, and to incorporate people from different cultural backgrounds into the study. Details are listed in table 2. In figures 1 to 4, sample pages from these four information sources are presented.

In January 2006, the largest bushfire happened in South Australia, claiming nine lives and destroying 83,000 hectares of farmland.

Website assessment

The websites listed above were regularly inspected by the participants and finally assessed using the author's 'Questionnaires for the Appraisal of Website Utility for Residents'.

Furthermore, an agenda for describing and comparing reports in Melbourne newspapers was developed.

Table 2: PROJECT DESIGN – STUDY PIB-E

Information sources:

Monitoring and assessing of three websites:

- CFS = South Australia's Country Fire Service (Adelaide; responsible for the area which had disastrous fires in Jan 2005) =>> <http://www.cfs.org.au/>
- CFA = Country Fire Authority of Victoria (Headquarter in Melbourne; a large institution; in parts progressive) =>> <http://www.cfa.vic.gov.au/>
- RFS = New South Wales (NSW) Rural Fire Service (located in Sydney; is the world's largest fire service) =>> <http://www.bushfire.nsw.gov.au/>

Newspapers:

- The Age;
- Herald-Sun (both from Melbourne).

Participant Sampling:

Sampling of six people who are knowledgeable about bushfire issues from a residents point of view, familiar with Internet and website features, and are from different national and cultural backgrounds: South Australia & Victoria (i.e. Australia), Hong Kong & China (i.e. Asia), Germany & Netherlands (i.e. Europe).

Timing:

Regular website observation for 1 month, mid-Jan to mid-Feb 2005; during the same time, checking for newspaper articles about bushfires.

Empirical results

Only selected results can be presented here, regarding the appearance of the websites of fire authorities, their usefulness for residents' hazard preparedness, and the eminence of internet-based information in relation to newspapers.

Appraisal of the 'face' of the websites

As the results in table 3 demonstrate, the governmental websites of interest were generally rated positively, including their navigation features. However, basic requirements, such as an organisation's name and contact provisions, are not always transparent.

Assessment of information regarding 'fire preparedness'

In table 4, the main results regarding the convenience and utility of information for residents are presented, focussing on preparedness for fire hazards. The observed websites were found to be generally helpful and informative. Positive evaluations include: 'Understandibility', 'Clarity of fire safety actions' and 'Motivating for fire preparation'; they are seen as "Meeting own information need" and "Better than brochures".

**Table 3: Mean responses compared for the websites of CFS (S.A.), CFA (Victoria), RFS (N.S.W.)
A: ASSESSMENT OF THE INTRODUCTORY PAGE**

Facet	Variable content	Response scale	CFS	CFA	RFS
A1	Name of authorisation stated	% "yes"	100%	50%	83%
A2	Contact details provided	% "yes"	100%	67%	83%
A3	Organisation of home page	1= very poor to 5= excellent	4.5	3.7	3.7
A4	Ease of navigation	1= not at all to 5= very	4.5	3.7	4.0
A5	Ease of locating relevant information	1= not at all to 5= very	4.2	4.5	4.0
A*	Ratings as favourite site	1= most, 3= least favourite	1.7	1.7	2.7

**Table 4: Mean responses compared for websites of CFS (S.A.), CFA (Victoria), RFS (N.S.W.)
B: EVALUATION OF INFORMATION REGARDING "FIRE PREPAREDNESS"**

Facet	Variable content	Response scale	CFS	CFA	RFS
B1	Interesting to look at	1= not at all to 5= very much so	3.8	3.7	2.7
B2	Understandibility	1= not at all to 5= very much so	4.3	4.4	3.7
B4	Visual appeal	1= not at all to 5= very much so	4.0	4.0	2.2
B5	Helpfulness of pictures/illustrations	1= not at all to 5= very much so	3.2	3.7	2.4
B7	Comprehensiveness	1= not at all to 5= very much so	4.5	4.3	3.7
B9	Length section safety/preparedness	1= far too short to 5= far too long	3.3	3.0	2.7
B10	Keypoints & summaries provided	% "yes"	100	83	100
B11	Good examples given	1= not at all to 5= very much so	4.2	4.2	3.5
B12	Clarity of fire safety actions	1= not at all to 5= very much so	4.2	4.6	3.3
B13	Own info need is met	1= not at all to 5= very much so	4.0	4.0	3.8
B15	Extent of motivating fire preparation	1= not at all to 5= very much so	3.8	3.7	3.0
B16	Difficulty remembering information	1= not at all to 5= very much so	1.8	2.5	2.7
B17	Seen as reliable source of information	1= not at all to 5= very much so	4.2	4.3	3.7
B18	Clarity of where to get assistance	% "yes"	100	100	83
B19	Better than brochures	1= much poorer to 5= much better	3.6	4.0	2.8
B22	To be recommended to lay people	1= not at all to 5= very much so	4.0	4.0	2.8

Relevance of linguistic and cultural background

The ratings of the participants from a European or Asian background tended to be slightly less positive — they are less familiar with the English language (which dominates in websites) and the significance of bushfires for Australians.

Evaluation of newspapers in relation to websites

Regarding alternative media, the websites were appraised as far more comprehensive in scope, yet the respondents emphasised that newspapers are easier to obtain, usually less demanding and likely to be more explicit and emotive. This judgment is stricter for websites which deal with principal bushfire matters rather than current events.

Conclusions and considerations for research

Evaluation of websites' strengths and weaknesses

All study participants identified shortcomings, either regarding the content or the presentation of bushfire impacts and proposed procedures to enhance preparedness for hazardous events; see the list in table 5. Information complexity and comprehensibility for non-Australian citizens are core issues, i.e., limitations of addressing cultural variety were stated.

Clearly there is considerable potential for improving websites (cf. part 2 of table 5). When working on website enrichments, some audiences deserve particular attendance, e.g. children, elderly people, and residents with a non-Australian background.

Table 5: APPRAISAL OF WEBSITES – CRITICISMS AND SUGGESTIONS

Perceived shortcomings:

- Some information and instructions too 'texty',
- information about present bushfires not as current as newspaper or TV reports,
- some parts difficult to understand for people with a 'non-English' linguistic and cultural background,
- some summaries of key points too complex,
- explanation of technical terms occasionally hard to find and/or to understand,
- inconvenient if information comes in 'pdf' format and needs a printer.

Suggested improvements:

- Reflecting the (restricted) awareness and knowledge of residents,
- using more maps, pictures, diagrams, charts to convey information,
- providing downloadable videos for demonstrating fire risks and enhancing preparedness,
- including facilities for those with not-so-good eyesight,
- adding information aimed at children,
- placing up-to-date information about current bushfires on prominent frontpage position,
- making core information usable for all website users, including those who have restricted download capabilities, no flash player and can't print website texts,
- enhancing accessibility for the wider Australian audience, by providing information in languages other than English.

Table 6: RESEARCH SUGGESTIONS

- Comparing the communication efficiency of pictures versus diagrams versus charts versus videos as visual enrichments of text information,
- critically analyzing the options for providing multi-language bushfire information and preparedness advice,
- exploring differences in website utilization across people of high or low familiarity with internet & web-browser procedures,
- website utilisation regarding specific information needs 'before' versus 'during' versus 'after' bushfire events/disasters,
- empirically investigating the links between website features and the real behaviour when preparing for or coping with actual fires,
- testing the linkage and potential mutual enrichment of information provided by various media, such as websites, newspapers, television and meetings of community groups such as 'fireguard',
- investigating necessary features in case children and/or the elderly are to be addressed in websites.

Considerations for further research

Improving the potential utility and actual use of a website has better chances if based on empirical research about residents' responses to the content and appearance of forestfire information.

In table 6, a set of pertinent research topics are suggested. These issues refer to the presentation mode (e.g. the role of pictures), the links to other media (e.g. radio), the fire situation (before versus during versus after an event), linguistic and cross-cultural problems (e.g. non-Australian residents), and website requirements regarding specific groups (e.g. children).

Research projects about the soundness and efficiency of internet-based fire information should be conducted both before and after re-designing a website.

Significance of bushfire websites

It appears almost certain that 'electronic' information channels will become as commonplace in disaster preparedness as in many other fields of public information, communication and education. In fact, WWW-based risk communication has considerable advantages: The Information to be provided can be

updated regularly and quickly; users can bookmark and store relevant hazard info; access is fast; and blockage is unlikely (unlike telephone contacts).

Concluding Remark

To conclude, the results from the current study, *Surveying bushfire events on websites – experience of people from different cultural backgrounds*, will help to better identify (1) why and how residents seek and utilise information regarding forestfire preparedness, (2) whether current websites of fire authorities meet the reading style and information needs of residents, and (3) which features of websites are essential and deserve substantial improvement in order to maximise their potential for enhancing residents' preparedness.

Far-reaching website quality and information presented in several languages are crucial features in a country like Australia which has a multi-cultural society and numerous residents who live outside of towns and cannot easily reach a fire authority centre — internet facilities are of significant value to them.

Figure 1: CFA Website sample page

Figure 2: RSF/NSW Website: Sample Page

Figure 3: CSF Website: Sample Page

Figure 4: The Age – Article regarding bushfires

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About the Author

Bernd Rohrmann received his scientific education in Germany and has held various positions as a social scientist and professor at research institutions and universities. He was Director of a social-scientific consultancy team and a visiting lecturer in Austria, Switzerland, Australia and New Zealand. He has been with the University of Melbourne since 1993.

His main research areas include: applied social research, environmental psychology, and research methodology. Special substantive interests: risk perception/ communication/ management; impacts of environmental stressors; hazard appraisal and disaster preparedness; appraisal of virtual environment presentations and decision processes. Methodological interests: response scales, survey methodology, evaluation research, and conceptualisations via structural models. He has conducted numerous empirical investigations with a strong emphasis on interdisciplinary approaches and applicability of findings. This includes cross-cultural studies in collaboration with researchers from Germany, Switzerland, Brazil, Japan and Hong Kong. Also worked as consultant with governmental agencies, courts and industry/companies. He lectures at university and to non-academic audiences. His publications comprise 130 articles, reports, chapters and books.

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