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Gendered responses to the 2009 Black Saturday bushfires in Victoria, Australia

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Abstract

This paper presents findings from a gendered analysis of resident responses to the 2009 Black Saturday bushfires (wildfires) in Victoria, Australia. One hundred and seventy-three people lost their lives in the bushfires and more than 2000 houses were destroyed. Previous research on Black Saturday has largely focused on issues of resident preparedness and response, with limited consideration of the role of gender in household decisions and actions. This paper examines the gendered dimensions of risk awareness, preparedness and response among households affected by the bushfires. Data were collected through in-depth interviews with over 600 survivors and a questionnaire of 1314 households in fire-affected areas. Analysis revealed that women more often wanted to leave than men, who more often wanted to stay and defend property against the bushfires. Nevertheless, findings suggest that broad-brush characterisations of staying to defend as a masculine response and leaving as a feminine response are misguided. Although some women expressed a strong desire to leave, others were resolute on staying to defend. Equally, while some men were determined to stay and defend, others had never considered it an option. Despite this, the research identified numerous instances where disagreement had arisen as a result of differing intentions. Conflict most often stemmed from men's reluctance to leave, and was most apparent where households had not adequately planned or discussed their intended responses. The paper concludes by considering the degree to which the findings are consistent with other research on gender and bushfire, and the implications for bushfire safety policy and practice.

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Gendered responses to the 2009 Black Saturday bushfires in Victoria, Australia

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Abstract:

This paper presents findings from a gendered analysis of resident responses to the 2009 Black Saturday bushfires (wildfires) in Victoria, Australia. 173 people lost their lives in the bushfires and more than 2000 houses were destroyed. Previous research on Black Saturday has largely focused on issues of resident preparedness and response, with limited consideration of the role of gender in household decisions and actions. This paper examines the gendered dimensions of risk awareness, preparedness and response among households affected by the bushfires. Data were collected through in-depth interviews with over 600 survivors and a questionnaire of 1314 households in fire affected areas. Analysis revealed that women more often wanted to leave than men, who more often wanted to stay and defend

45　property against the bushfires. Nevertheless, findings suggest that broad-brush

46　characterisations of staying to defend as a masculine response and leaving as a feminine

47　response are misguided. Although some women expressed a strong desire to leave, others

48　were resolute on staying to defend. Equally, while some men were determined to stay and

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50　numerous instances where disagreement had arisen as a result of differing intentions. Conflict

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54　on gender and bushfire, and the implications for bushfire safety policy and practice.

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56

57　**Key words:** gender; bushfire; wildfire; preparedness; emergency response; evacuation; risk

58　reduction

59

60

61　*Andrew didn't want to leave. He wanted to stay and fight with the community. Our*

62　*daughter got very anxious and was crying and wanting to leave. James [our son]*

63　*was sort of in between that. He was getting anxious and he said 'I want to leave'.*

64　*The cloud of smoke finally descended on us and so we were in it – in the ash – and I*

65　*couldn't get Andrew to leave. I thought, 'Well, what do I do?' I walked out of the*

66　*clubhouse and a SES [State Emergency Service] man came along. He said, 'You*

67　*need to go. You need to get out because if you stay behind, there will be nobody left*

68　*to save you'. I ran out and said to Andrew, 'The SES have told us to leave. Put down*

69　*the hose and let's go'. And finally, he did.*

70　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Beth, Marysville[1]

71

72

Introduction

Research has shown that women and men tend to respond differently to bushfire (Cox, 1998; Hoffman, 1998; Proudley, 2008a; Eriksen *et al*., 2010; Haynes *et al.,* 2010). Beth's account (above) of the 2009 Black Saturday bushfires in Victoria, Australia, highlights some of the common differences in how men and women tend to perceive, prepare for and respond to bushfire risk.[1] Importantly, her account also provides insights into how gender relations influence household decisions and actions during bushfires. Her family had spent the evening and morning before the fire front arrived packing their cars and readying themselves to leave. Like many other local residents, they left their home when the bushfires hit the small town of Marysville, arriving at the local golf club a short time later. The golf club was believed by many to be a place of relative safety, but it too came under direct threat. As the fire front approached, Beth's husband joined others in attempting to defend the clubhouse. She pleaded with him to leave and, although their children were distressed and wanted to leave, it was only when they received authoritative directives from emergency service personnel that they left.

In the days preceding the bushfires Victorians had been warned to prepare for 'the worst [fire danger] day in the history of the state' (Premier of Victoria, John Brumby, cited in Moncrief, 2009). This prediction proved accurate with a record high maximum temperature of 46.4°C (115.5°F) in Melbourne, record low humidity and strong winds throughout the state (Karoly, 2009). More than 400 bushfires started across the state of Victoria on Saturday 7 February 2009 (Figure 1), with most of the major conflagrations started by fallen power lines or arson (Teague *et al*., 2010). The speed, intensity and extent of the fires meant that many communities came under threat with little or no official warning. In line with official advice for all bushfires, most residents responded without direct assistance from fire services. 172 civilians lost their lives in the bushfires and one volunteer firefighter was killed by a falling

98   tree limb during firefighting operations on 17 February (Blanchi *et al*., 2012). 2298 houses

99   were destroyed (Crompton *et al*., 2010).

100

101

102   [Figure 1 about here]

103

104   This paper presents findings from a gendered analysis of resident responses to the 2009 Black

105   Saturday fires in Victoria, Australia. Data were collected as part of a research project that

106   involved in-depth interviews with more than 600 survivors followed by a mail questionnaire

107   of 1314 households in fire affected areas (Whittaker *et al.* 2009a, 2009b). The paper reviews

108   research on gendered dimensions of bushfire, before discussing the research questions and

109   methods that were used to conduct this research. Results are presented from an analysis of the

110   interview and questionnaire data, including findings related to women's and men's: awareness

111   of bushfire risk; planning and preparation; intended responses; and actual responses to the

112   fires. The paper concludes by discussing the degree to which the findings are consistent with

113   other research on gender and bushfire, and the implications for bushfire safety policy and

114   practice.

115

116   **Gender and bushfire**

117   It is increasingly clear from research internationally that women and men are exposed to risk

118   in different ways and at different levels because of the everyday gender divisions of labour

119   and gendered norms that underpin intended and actual patterns of disaster preparedness

120   and response (Campbell *et al.*, 2006; Bryant and Pini, 2010; Enarson, 2012; Eriksen, 2014a

121   and 2014b). Women and men are variously at risk through, for example: the type of work they

122   do; distributions of power (and thus decision-making processes) domestically, locally and

4

123   officially; the need to care for children, elderly or disabled people; societal pressure to

124   perform certain roles; their economy, class and ethnicity (Enarson, 2012; Eriksen, 2014a and

125   2014b). While gendered dimensions of bushfire on the surface often appear to reinforce

126   women's vulnerability to bushfire more so than for men, Eriksen (2014a) highlights the

127   increased vulnerability of both women and men because of the activities they tend to perform

128   before, during and after bushfires. Many women deprioritize bushfire preparation in the

129   context of other pressing issues in everyday life, while societal pressure sees men attempt to

130   perform protective roles when the fire threatens that many have neither the knowledge nor

131   ability to fulfill safely.

132

133   Poignant statistics that drive home this message of gendered vulnerability in the context of

134   bushfires are those of the activities performed by women and men at time of death during

135   bushfires historically (Haynes *et al.*, 2010). From a total of 552 bushfire-related deaths in

136   Australia between 1900 and 2008, 373 were men (67 percent), most of whom died outside

137   while attempting to protect assets (46 percent of 277 total male deaths where the activity at

138   time of death was known) (Haynes *et al.*, 2010). Whilst male fatalities decreased during the

139   second half of this time period from 77 percent (of 292 total deaths from 1900-1954) to 57

140   percent of all deaths (of 260 total deaths from 1955-2008), there has been an increase in the

141   proportion of women who died in bushfires since 1955 from 16 percent (of 292 total deaths

142   between 1900-1954) to 38 percent of all deaths (of 260 total deaths between 1955-2008),

143   most of whom died while sheltering or evacuating. Haynes *et al.* (2010) highlight that the

144   changing gender trends seen over the last 100 years or so are likely to be related to shifting

145   social circumstances influencing the work people do and the locations in which they live. This

146   has a direct impact on the activities engaged in at the time of death. For example, fewer men

147   work outdoors today than in 1900, whilst widespread ownership of cars nowadays provide the

148   means to travel during times of danger. Blanchi *et al.*'s (2014) examination of environmental

149   circumstances surrounding bushfire fatalities in Australia from 1901-2011 aligns with Haynes

150   *et al.*'s (2010) findings on the significant gender differences in the circumstances and

151   temporal distribution of fatalities. The gender distribution of the Black Saturday fatalities is

152   similar to the trends seen in more recent fires. 58 percent of the 172 people who died (149

153   adults and 23 children under the age of 17) were male and 42 percent were female. Blanchi *et*

154   *al.* (2014) additionally identified that fire weather severity and proximity to forests are strong

155   qualifiers of fatalities, 'with a significant shift from open air fatalities at low FFDI's [Forest

156   Fire Danger Index] to a dominance of inside structure deaths at FFDI's greater than 100' (p.

157   198) and 'with over 78% of fatal exposures occurring within 30m and 85% within 100m of

158   the forest edge' (p. 201).

159

160   When gendered dimensions of risk engagement are contextualized in everyday gender roles

161   and traditions and compared with bushfire fatality trends during the last century, a frightening

162   correlation emerges between women's and men's activities at time of death historically and

163   intended plan of action during bushfires today. In short, 'most women intend to evacuate,

164   women predominantly die while attempting to evacuate or sheltering passively; most men

165   intend to stay and defend, men mostly die outdoors attempting to defend assets' (Eriksen,

166   2014a, p. 39). The 2009 Black Saturday bushfires highlight that bushfire risk information,

167   engagement and education initiatives have not managed to curb this trajectory of bushfire

168   fatalities. This research aims to re-analyse the quantitative and qualitative data collected

169   following the 2009 Victorian bushfires to better understand the gendered dimensions of

170   bushfire risk and response on Black Saturday. In doing so, the research explores, for the first

171   time, how gender influenced planning, preparedness, intended responses and actual responses

172   to the fires.

173

174 **Research methods**

175 Data were collected as part of the Bushfire Cooperative Research Centre's (CRC) Research

176 Taskforce following the 2009 Black Saturday bushfires. The Taskforce was established to

177 provide the Victorian Bushfires Royal Commission and Australian fire and emergency

178 services with an independent analysis of the factors that contributed to the fires' severity and

179 impacts. The scope of the research was determined by the Bushfire CRC and Victoria's

180 Country Fire Authority (CFA) and Department of Sustainability and Environment (DSE; now

181 Department of Environment Land Water and Planning). The Taskforce covered three areas of

182 research: fire behaviour, human behaviour and community safety, and building and planning

183 issues.

184

185 This paper presents findings from an analysis of data collected as part of the human behaviour

186 and community safety research component. The research examined residents' planning and

187 preparedness, decisions and responses to the 7 February 2009 fires through semi-structured

188 interviews with residents followed by a mail questionnaire of households within fire affected

189 areas. An earlier study (Whittaker *et al.*, 2009a; 2009b) analysed the data to address broader

190 questions related to household preparedness and response, with no detailed gender analysis

191 undertaken. The aim of the secondary analysis was to identify similarities and differences in

192 the preparedness and responses of women and men.

193

194 *Semi-structured interviews*

195 A team of researchers began interviewing residents affected by the fires on 12 February 2009,

196 with more than 600 interviews conducted over a 12-week period. An interview guide was

197 developed comprising questions about residents' planning and preparation, information and

198 warnings they received, their intended and actual responses to the fires, and what they would

199 do in future fires (see McLennan *et al*., 2013). Interviews were digitally recorded with the

200 permission of interviewees and subsequently transcribed. The qualitative data analysis

201 software *NVivo v.10* was used to manage the large volume of data and to assist the analysis. A

202 coding framework was developed, setting out the categories into which segments of interview

203 text could be grouped to enable closer analysis and comparison.

204

205 *Mail questionnaire*

206 The mail questionnaire comprised a range of questions concerning community safety issues,

207 including awareness of bushfire risk before Black Saturday, the information and warnings

208 people received, actions taken to plan and prepare, intended and actual responses to the fires,

209 effects of the fires on households, and basic demographic information. Questionnaires were

210 mailed in October 2009 to 6000 addresses in areas affected by the bushfires. Addresses that

211 fell within the 'burnt area', as defined by DSE, were extracted from the Vicmap database.[2]

212 Residents were given three weeks to return the questionnaire. They were encouraged to

213 complete the questionnaire via a series of radio interviews, newspaper articles and flyers left

214 at recovery centres. A response rate of 25 per cent was obtained, with 1314 questionnaires

215 received from residents within the major fire complexes. This figure excludes 699

216 undeliverable surveys that were returned. It is likely that more undeliverable surveys were not

217 returned to researchers (e.g. where residents had relocated or perished). Men and women were

218 more or less equally represented in the sample (53% women, n=642; 47% men, n=574)[3] and

219 the majority of respondents (59%) were aged between 35 and 54.

220

221 The data analysis software SPSS v.17 was used to re-analyse the quantitative data and run

222 Pearson's chi-squared test of contingencies (Bryman, 2008) to evaluate whether questionnaire

223 components, such as perceptions of preparedness, and intended and actual responses were

224 related to gender (for more details of the statistical approach see Allen and Bennett, 2008).

225 Although other demographic data were collected from participants, the analysis reported in

226 this paper focused on gender only.

227

228 Ethics approval for the research was obtained from RMIT University's Human Ethics

229 Research Committee, with measures taken to ensure the safety and rights of participants and

230 researchers. Anonymity was assured to all participants, who gave their consent for aggregated

231 data and quotes to be used in publications.

232

233 Findings from the qualitative and quantitative components of the research are presented

234 together below. In this paper, findings from the qualitative research are used to contextualise

235 and provide deeper insights into findings derived from the quantitative research. Quotes are

236 presented to give voice to the survivors of Black Saturday and to provide meaning to the often

237 decontextualised quantitative findings. Except where noted otherwise, quotes were selected to

238 be representative of gender patterns identified in the qualitative analysis.

239

240 **Research findings**

241 *Pre-fire awareness of bushfire risk*

242 The questionnaire results suggest high levels of bushfire awareness before Black Saturday. It

243 should be recognised that hindsight bias – where outcome information influences respondents'

244 recollections of their prior knowledge or beliefs (Bradfield and Wells 2005) – is likely to have

245 influenced these results. More than three quarters (78% of 1193) of all respondents reported

246 that they had previously thought it likely or very likely that a bushfire could occur in their

247 town or suburb. No significant differences were identified for male and female respondents in

248   their pre-fire awareness. Around two-thirds (67% of 1187) of all respondents indicated they

249   had perceived a high or very high level of threat. Slight gender differences were identified,

250   with male respondents more often having rated the threat as high or very high (men 71% of

251   559, women 64% of 628) and female respondents more often having rated the threat as low or

252   very low (women 35%, men 28%).

253

254   Analysis of the qualitative data did not identify clear differences between women and men's

255   pre-fire awareness of bushfire risk. Household location and past experience of bushfire appear

256   to exert a stronger influence on awareness (Whittaker *et al.*, 2009a; 2013).

257

258   *Planning and preparation*

259   More than two-thirds of male (70% of 530) and female (67% of 594) respondents claimed to

260   have had a 'firm' plan for what they would do in the event of a bushfire. Similar proportions

261   reportedly discussed their plan with all members of the household (men 87% of 484, women

262   84% of 531), thought about what each person would need to do (men 77% of 402, women

263   72% of 479)[4], and let neighbours know what they intended to do (men 52% of 432, women

264   56% of 531). A minority of respondents reported having written down important things to do

265   and remember, with women (28% of 499) slightly more likely to report having a 'written plan'

266   than men (22% of 402).

267

268   When asked to reflect on their level of preparedness for the Black Saturday fires, almost half

269   of the questionnaire respondents rated their preparedness as high to very high (45% of 1189),

270   with the remainder assessing their preparedness as average (37%) and low or very low (18%).

271   Men (49% of 563) were slightly more likely than women (41% of 626) to rate their

272   preparedness as high or very high, with women (23%) more likely than men (13%) to

273   consider their preparedness level as low or very low [X^2 (4, n = 1189) = 25.59, p = .000]. Women

274   (78% of 611) more often than men (68% of 550) said they had wanted to be more prepared

275   for the fires [X^2 (1, n = 1161) = 15.51, p = .000]. This was evident in an interview with a

276   woman whose husband had been intent on staying to defend, despite what she believed to be a

277   lack of preparedness:

278

279   *I always knew this place wouldn't be safe if there was a bushfire. It's not*

280   *prepared. We always talk about preparing it but we never do. And to prepare it*

281   *we'd have to get – there's a lot of work throughout the year that we're trying to*

282   *do anyway. But my husband's different. He'd stay and defend, whereas I just*

283   *think, nah you don't do that, it's not worth it […] So I guess being 'fire ready'*

284   *involves a lot more, obviously. I suppose there are bits and pieces that I can*

285   *see that I didn't realise that I would certainly hope to change […] Gas bottles*

286   *and gum trees have obviously been a drama. I wouldn't mind seeing those*

287   *things changed…*

288   Female, Marysville

289

290   Statements that there was nothing more that could have been done to prepare were more

291   common in interviews with men, many of whom felt that the Black Saturday bushfires were

292   so extreme that preparedness counted for little:

293

294   *So really in terms of fire preparation, no. But nobody was expecting a*

295   *firestorm. I mean, if it had just been a bushfire and it had just been some*

296   *strong winds and some embers and all of that kind of stuff, I would have been*

297   *quite happy to stay and fight it.*

299

300   Of course, there were examples of men who had reflected deeply on their lack of

301   preparedness and women who had not. However, what is apparent from the qualitative data,

302   and perhaps more important, is the tendency for men to speak about 'hard' preparations, such

303   as reducing fuel and setting up sprinkler systems, and for women to speak about 'soft'

304   preparations, such as planning household responses and measures to ensuring the safety of

305   children and other vulnerable household members.

306

307   *Intended responses*

308   Analysis revealed significant differences in men and women's intended responses [X^2 (7, n =

309   1134) = 50.25, p = .000]. Men (56% of 534) more often wanted to stay and defend throughout

310   a fire than women (42% of 590), while women (23%) more often than men (11%) wanted to

311   leave as soon as they knew a fire was threatening. In terms of those who intended to 'wait and

312   see' (an approach discouraged by fire authorities due to the increased risk of late and

313   dangerous evacuations or becoming trapped at an un-defendable property), men (11%) were

314   more likely than women (7%) to intend to wait until the fire arrived before deciding whether

315   to stay or leave, and women (20%) were more likely than men (15%) to intend to stay and

316   defend but leave if they felt threatened. Very few men or women said they had planned to

317   leave on all days of high fire danger, regardless of whether a fire had started (both 2%).

318

319   Analysis of the qualitative data revealed that responsibilities for children, the elderly and

320   other vulnerable household members greatly influenced many people's intentions to leave. In

321   some cases, all members of the household planned to leave. In many cases, however, women

322   left with children and elderly household members, while men stayed behind to defend the

323 house and property:

324

325 *Our plan was: I leave with the kids and he stays and fights.*

326   Female, Flowerdale

327

328 *We weren't intending to stay with the three kids [at home]. It probably*

329 *wouldn't worry me if I stayed. But I didn't want to get in an argument, so we*

330 *thought we'd leave.*

331   Male, Kinglake West

332

333 *They were gone first thing that morning, even before the fire – because we*

334 *knew it was going to be a hot day. She normally goes into town to her*

335 *mother's, takes the kids straight away.*

336   Male, Callignee

337

338 The interview analysis revealed a number of cases where members of a household disagreed

339 over their intended responses to bushfires. A number of women reported that their intention

340 for everyone in the household to leave conflicted with their male partner's intention.

341

342 *My plan was to get the hell out – don't stay and defend the house 'cause it's*

343 *going to go up. […] We'd had a few arguments about it: 'No, no, he'd stay,*

344 *he'd defend, we'd be able to grab buckets quick enough, we'd be able to do*

345 *this …'. But we haven't got tanks. The water would stop. He talked about*

346 *getting a fire pump, but we never did. So I think that if it wasn't for us having*

347 *to leave around 4pm … maybe he would have done something dicky and stayed.*

348   *I think I would have been screaming at him, 'cause I knew I wasn't fire ready.*

349   *So that was our plan… Even though we haven't got insurance, you don't risk*

350   *your life. You don't need to see something horrific.*

351   Female, Marysville

352

353   Conflicting intentions were evident in a discussion between a husband and wife in St

354   Andrews. While the wife discussed the family intention to leave, if they could, the husband

355   interjected and stated that his plan was to stay:

356

357   Female: *Not written, but if we could leave with the animals we would. But if there*

358   *was any doubt that we couldn't get out, we weren't going. We didn't want to stay but*

359   *we've got the animals to care for.*

360

361   Male: *No. My plan was to stay, by myself. And they were going to go. That happened*

362   *last time. They all went and they wanted me to go, but I said: 'I'm staying, because I*

363   *want to keep the house'.*

364   Couple, St Andrews

365

366   Similarly, another interviewee recounted being told by a volunteer firefighter that his house

367   was defendable, which led to disagreement with his wife:

368

369   *She mustn't have taken it on board, because when the actual fires were coming I said I*

370   *was going to stay. And that caused a bit of a ruckus because she wanted me to go. But I*

371   *made the decision that I would stay because I didn't want to see the house go and I*

372   *knew she had to go because of her asthma. So after a bit of yelling at each other, she*

373   *did go and I stayed. I'm sure in my own mind that if I hadn't been here, I would not*

374   *have a house.*

375   Male, Steels Creek

376

377 Less commonly, women were able to convince their male partners to leave or stay away from

378 their property. A man in his 70s was in Melbourne when the fires threatened his Strathewen

379 property:

380

381   *She made me stay, yeah. The only time I really listened to my wife! […] Yes, I'm glad I*

382   *listened to her. I would have maybe saved something [if I went to defend the house]*

383   *but… there was no place where you can save yourself.*

384   Male, Strathewen

385

386 *Actual responses*

387 Reflecting the data on intended responses, there were significant differences between

388 women's and men's actual responses to the fires [X^2 (7, n = 1149) = 54.92, p = .000]. Men

389 (62% of 548) more often stayed to defend their homes and properties than women (42% of

390 601), who more often left before or when the fire arrived (women 54%, men 35%). A small

391 proportion of women (5%) and men (3%) reported that they sheltered inside a house or some

392 other structure, in a vehicle, or somewhere outside.

393

394 Those who left:

395 As noted above, a greater proportion of women (54%) left before or when the fires arrived

396 than men (35%). For women (55% of 324) and men (49% of 189), the most common reasons

397 for leaving were believing it was too dangerous to stay and defend, and seeing or smelling

398   smoke nearby (women 35%, men 28%). Similar proportions of women (26%) and men (24%)

399   left because there was fire in the vicinity of their property, and to remove other household

400   members from danger (women 27%, men 25%). However, results indicate that women (35%)

401   more often left on the advice of others. They were far more likely than men (13%) to leave

402   because relatives, friends or neighbours told them to or on the advice of police, fire or

403   emergency services (women 14%, men 8%).

404

405   Analysis of the interview data also revealed evidence of women being more receptive to

406   advice from relatives, friends, neighbours and emergency services. One interviewee described

407   her husband and son's advice to leave as a 'gentlemanly' thing to do, while another noted that

408   her husband's advice was potentially dangerous:

409

410   *I suppose it was a very gentlemanly thing to do for my son and husband to say, you*

411   *know, 'leave now'. I guess it was a very protective sort of thought, about keeping us*

412   *safe, whereas they may have been in danger themselves. So it was a gentlemanly thing,*

413   *a courtesy thing I suppose.*

414   Female, Labertouche

415

416   *Pete told me to put the kids in the car. But if I'd reversed out it would have engulfed us.*

417   Female, Maiden Gully

418

419   In terms of the timing of people leaving, similar proportions of men (47% of 201) and women

420   (49% of 345) left between an hour or more before the fires arrived in their town or suburb.

421   However, women (35%) more often left in the hour leading up to the fire than men (27%) and

422   men (26%) more often left once the fire had arrived than women did (22%). The majority of

423   women (57%) and men (53%) believed they had left late or very late, with between one-

424   quarter and one-third deeming themselves to have left early or very early (women 30%, men

425   27%). No significant differences were observed in perceptions of the danger encountered

426   when leaving, with the majority of men (80% of 218) and women (78% of 354) rating the

427   danger as high or very high. One-third of women (75% of 344) and men (74% of 213) who

428   left before or when the fires arrived indicated that they would take the same action in a future

429   bushfire.

430

431   One interviewee explained how people could pressure others into responses they had not

432   intended or prepared for.

433

434   *She said she was lucky because she was by herself, she could make her own*

435   *mind up. She felt as though she was overreacting. She said 'I felt stupid driving*

436   *out to Buxton. Everyone is going to say 'What the hell is the matter with you*

437   *over reacting?' She said down in the town she did see some couples arguing…*

438   *The bloke says, 'No, I'm going to stay on the roof watering' and the woman*

439   *says, 'Let's go, I want to go' and he says, 'Well, you go'. And so she said that's*

440   *what saved her, the fact that she didn't have to argue with anyone.*

441   Female, Marysville

442

443   However, highlighting the diversity of experiences, there were cases where men who intended

444   to stay and defend ended up leaving to remain with their partner to ensure their safe

445   evacuation.

446

447   *My plan was actually to stay. And I probably would have but she wouldn't*

448   *leave, and then in the end I wasn't happy for her to drive on the road anyway. I*

449   *would have liked her to have gone very early in the day but she wouldn't leave,*

450   *so that probably altered my opinion on staying right through to the end.*

451   Male, Flowerdale

452

453   Those who stayed to defend:

454   Consistent with the data on intended responses, a greater proportion of men (62% of 548)

455   stayed to defend their homes and properties than women (42% of 601). Of these, the majority

456   stayed throughout the fire and actively defended (men 79%, women 74%), with a smaller but

457   considerable proportion leaving once they felt the danger was too great (men 18%, women

458   22%). The remainder stayed to defend but did not experience fire at their home or property

459   (men 3%, women 4%).

460

461   The main reason men (86% of 342) and women (78% of 249) stayed with their home during

462   the bushfires was to protect their homes and property. However, women (17%) were more

463   likely than men (9%) to stay because they felt it was not safe to leave or because their

464   attempts to leave were unsuccessful. While men (35%) more often reported feeling safe than

465   women (23%), a considerable proportion still felt unsafe while staying with their house (men

466   29%, women 36%). Similarly, men (85%) were more likely than women (71%) to report that

467   they had felt confident that they could protect themselves and others $[X^2 (3, n = 645) = 33.45,$

468     $p = .000]$, as well as their house and property (men 75%, women 59%) from the fires $[X^2 (3, n$

469     $= 628) = 22.38, p = .000]$.

470

471   Consistent with the results presented above, women (68%) were found to be less likely to

472   want to stay and defend against future bushfires than men (83%) $[X^2 (1, n = 642) = 20.15, p$

473 = .000].

474

475   *I wouldn't change a thing. I would always stay and defend. I would only be a*

476   *little bit better prepared next time.*

477   Male, Kinglake

478

479   *We thought it was only going to last for 20 minutes, you know, give or take a*

480   *few. I was willing to be flexible there but nothing compared to what it did. I*

481   *would never recommend anybody stay for a fire, ever. You can't – I don't know*

482   *how you can sit there and wait not knowing if you are going to die or not*

483   *without going absolutely insane.*

484   Female, Kinglake West

485

486 The data demonstrate that the decision to stay or leave is rarely straightforward. An

487 interviewee who left to take her children to safety explained her conflicting desire to stay with

488 her husband to defend their home against future fires, despite acknowledging the substantial

489 benefits of her actions on Black Saturday:

490

491   *I think I'd be more inclined to stay in the respect that I think my husband would*

492   *have been better off having someone to help him and I felt a bit guilty about the*

493   *fact that he was on his own here. But at the same time my children seemed to*

494   *be a little less traumatised because I actually got them out of the area. They*

495   *didn't have to see the flames. […] I have friends in that situation and their kids*

496   *are very clingy and they're having a few little issues, whereas my kids sort of*

497   *seem to be okay with that. So yeah, maybe if I could get the kids out, I'd*

498   *probably consider coming back and helping, but I don't think we'll see*

499   *anything as disastrous as that in our lifetime, hopefully.*

500   Female, Flowerdale

501

502 Those who took shelter:

503 No statistically significant differences were identified for male and female respondents who

504 took shelter. A small proportion of men (5%, n=17) and women (3%, n=28) did not actively

505 defend the house or property but stayed throughout the fire and took shelter. Men (55%, n=9)

506 most often sheltered somewhere outside (vs. women 32%, n=9), while women (39%, n=11)

507 more commonly sheltered inside the house (vs. men 29%, n=5). The remainder sheltered in a

508 structure other than a house or a vehicle (women 29%, n=17; men 18%, n=12).

509

510 There were a number of reasons why residents who took shelter during the fires stayed at their

511 homes and properties. Similar proportions stayed because they wanted to protect their house

512 and property (men 38%, n=5; women 32%, n=7) or because it was too late to leave (men 15%,

513 n=2; women 18%, n=4). Women (41%, n=9) were more likely to stay and take shelter

514 because their attempts to leave were unsuccessful (vs. men 23%, n=3).

515

516 Men (67%, n=10) more commonly reported feeling unsafe or very unsafe while sheltering

517 than women (47%, n=10), who more often said they felt neither safe nor unsafe (women 38%,

518 n=8; men 20%, n=3). This is probably because men more often sheltered outside - where they

519 were more likely to be exposed to extreme heat, wind, smoke, embers and flames - while

520 women more often sheltered in the relative safety of the house. Most did not feel confident

521 that they could protect themselves and others while sheltering (men 63%, n=10; women 52%,

522 n=13); much less protect their house and property (men 75%, n=12; women 87%, n=21).

523

524   There was a tendency for women to shelter inside, often caring for children and other

525   vulnerable household members, and for men to shelter outside, often attempting to defend

526   against the fire or monitor its progress. However, analysis of the interview data revealed

527   considerable variation among men and women's experiences of sheltering.

528

529   *The kids have got their own lounge room, and all the bedrooms go off that, so*

530   *we closed all the doors so there were no exposed windows and made the kids*

531   *and dogs sit in the lounge room and we said: 'Now stay there and don't move.*

532   *No matter what, we will come and check on you'. That was the hardest part,*

533   *the kids. My youngest daughter was freaking, saying: 'Mum, we are going to*

534   *die aren't we?' and I said 'No we are not love. Sit in here, stay calm, let us do*

535   *our job and we won't die.*

536   Female, Kinglake

537

538   *We had been fighting it for a few hours and we were tired. […] I dropped to*

539   *the ground and my uncle put the hose on me because he thought I had passed*

540   *out, but it was like I was dry, my body dried out […] So he just doused me with*

541   *water and I just stayed on the ground for five or ten minutes and just breathed*

542   *into the wet towel. And the oxygen level on the ground was a lot easier for my*

543   *lungs to cope with than standing up. It was hard going.*

544   Male, Flowerdale

545

546   Most of those who stayed and sheltered through the fires said they would not take the same

547   action in a future bushfire (women 60%, n=15; men 53%, n=9). While some did believe that it

548 was safe for them to shelter without defending, qualitative responses suggest that in the future

549 most respondents would attempt to leave early or actively stay and defend their house and

550 property instead. However, some noted that when fires threaten with little or no warning,

551 seeking shelter may be the only option.

552

553 **Discussion**

554 Findings from the gendered analysis of the mail questionnaire and in-situ interview data

555 collected after the Black Saturday bushfires highlight both similarities and differences in how

556 women and men perceive, prepare for and respond to the threat of bushfire. It is important to

557 note that while patterns or tendencies were identified, there was no absolute gender divide.

558 However, findings from the analysis of interview data in particular provide insights into how

559 risk and response are negotiated within households, with gender relations often playing a key

560 role.

561

562 Findings suggest similar levels of pre-fire risk awareness of men and women. Slight

563 differences were identified for planning and preparation, with women tending to rate their

564 level of preparedness marginally lower and more often having a written plan than men.

565 Perhaps most significantly, women more often indicated that they could have been better

566 prepared and wanted to be more prepared for future bushfires. This suggests that bushfire

567 awareness and education programs designed specifically to engage and meet the needs of

568 women may be an effective way to increase household planning and preparation in at-risk

569 communities (see also Eriksen, 2014b).

570

571 As noted above, analysis of intended responses reinforces findings from other studies that

572 suggest men more often intend to stay and defend and women more often want to leave early

573 (Proudley, 2008a; Eriksen *et al.*, 2010; Haynes *et al.*, 2010; Eriksen, 2014a). Nevertheless,

574 and although defending has been characterised as a masculine response (Tyler and Fairbrother,

575 2013), a considerable proportion of women (42%) intended to stay and defend. Equally,

576 almost half of all men intended to leave before they were threatened.

577

578 Gender relations appear to play a far more significant role in *actual* responses to bushfires.

579 Trends in actual responses to the Black Saturday fires broadly aligned with those for intended

580 responses, with men more often staying to defend and women more often leaving. Again,

581 significant proportions of women defended (42%) and around one-third (35%) of men left.

582 Importantly, women were found to be more likely than men to leave on the advice of relatives,

583 friends, neighbours and emergency services (see also Proudley, 2008b). Again, this suggests

584 that messages specifically designed for and communicated to women may be effective in

585 encouraging early evacuations. However, it may also mean that some women may be more

586 receptive to poor advice, ultimately exposing them to greater danger.

587

588 Reasons people stayed with their homes during the fires reveal distinctive gender differences.

589 Men more often stayed because they wanted to protect their home and property (although this

590 was still a major reason for women), while women were more likely to stay because they

591 thought it was not safe to leave or because their attempts to leave were unsuccessful. Given

592 this, it is perhaps not surprising that women tended to feel less confident than men that they

593 could protect life and property. Similarly, women who stayed to defend were significantly

594 less likely than men to say they would defend against future bushfires. A previous analysis of

595 the same dataset (Whittaker *et al.*, 2013a) reported that 75% of respondents who stayed to

596 defend said they would take the same action in a future bushfire (compared with 68% of

597 women and 83% of men in this analysis). This difference highlights the importance of even a

598   basic gendered analysis.

599

600   Analysis of the qualitative data provides insights into how decisions about bushfire response

601   were negotiated within the household. In some households decisions were relatively

602   straightforward, with general agreement on each person's response. In households where

603   children were present, women often left with the children while men stayed to defend.

604   However, cases where disagreement was evident were common. In these instances, women

605   tended to be more concerned about risks to life, whereas men often claimed they had no other

606   option than to stay and defend the house and assets (Parkinson, 2011; Parkinson and Zara,

607   2011; Eriksen, 2014a). Disagreements were most apparent where people had not adequately

608   planned or discussed their response with other household members, as well as in situations

609   where plans changed at the last moment. These disagreements most often stemmed from

610   men's reluctance to leave. While some men discussed and negotiated their responses with

611   their partners and other members of the household (staying or leaving), others appear to have

612   seen themselves as relatively autonomous decision-makers. This is evident in Beth's story,

613   which begins this paper, where her husband decides to stay and defend the golf clubhouse

614   against his family's wishes. Ultimately, it is the authority of the emergency services that

615   persuades him to leave.

616

617   It is important to recognise that official bushfire safety policy was modified after Black

618   Saturday, due largely to the recommendations of the 2009 Victorian Bushfires Royal

619   Commission (Teague *et al*., 2010). Key among these changes was the revision of Fire Danger

620   Ratings to include a category beyond 'Extreme'. This led to the development of the 'National

621   Framework for Scaled Advice and Warnings to the Community' and the introduction of the

622   'Catastrophic / Code Red' rating (see Whittaker *et al*., 2013b). In Victoria, the CFA

623   developed 'scaled advice' to more clearly communicate what residents can expect, and what

624   they should do for different levels of fire danger (CFA, 2015). Residents are advised that

625   homes are not designed or constructed to withstand fires burning under catastrophic

626   conditions, and that leaving high bushfire risk areas the night before or early in the day is

627   always the safest option. There has been a marked shift in the advice provided by fire

628   authorities to emphasise the risks to life associated with staying to defend and the relative

629   safety of 'leaving early'.

630

631   The extent to which this shift has altered intentions and actions amongst Australian residents

632   post-2009 is not known. At the time of writing, there has not been a subsequent bushfire of

633   the scale or severity of Black Saturday in Victoria or elsewhere in Australia. A survey of

634   householder preparedness in Australia during the 2012-2013 fire season (n=516) found that

635   significantly more men (61%) than women (22.5%) intended to stay and defend their property

636   (Eriksen, 2014a, p.28), and that women (60%) more often expressed a desire to leave as soon

637   as a bushfire was threatening or orders to evacuate were given than men did (25%). These

638   findings suggest even greater disparity between women and men's intended responses and

639   emphasises the ongoing need to examine and accommodate gendered dimensions of risk

640   perceptions, preparedness and responses (intended and actual) in different regions,

641   jurisdictions and communities.

642

643   **Conclusion**

644   This paper has examined gendered dimensions of bushfire risk awareness, preparedness and

645   response among residents affected by the 2009 Black Saturday bushfires. The findings

646   presented largely support past research on gender and bushfire, which has identified

647   differences in women and men's perceptions of risk and intended and actual responses. This

648   research found that women more often wanted to leave than men, who more often wanted to

649   stay. However, it is important to resist broad-brush characterising of staying to defend as a

650   masculine response and leaving as a feminine response. Just as there were women who

651   expressed a strong desire to leave, there were other women who were resolute on staying to

652   defend. Equally, while there were men who were determined to stay and defend, there were

653   others who never considered it as an option. Nevertheless, the research did identify instances

654   where disagreement had arisen as a result of differing intentions. These disagreements most

655   often stemmed from men's reluctance to leave, and were most apparent where households had

656   not adequately planned or discussed their intended responses.

657

658   A number of findings suggest opportunities for enhancing community bushfire safety.

659   Women were found to have reflected more critically on their level of planning and

660   preparedness than men, suggesting opportunities to develop bushfire awareness and education

661   programs designed specifically to engage and meet the needs of women. Similarly, women

662   were found to be more receptive to advice from relatives, friends, neighbours and emergency

663   services, suggesting opportunities for tailoring and communicating information, advice and

664   warnings to women. People should also be encouraged to plan and discuss the intended

665   responses of all household members, including contingency plans, to avoid last minute

666   disagreements and decisions.

667

668   Finally, the findings in this paper highlight the benefits of designing community safety

669   initiatives tailored for women and men respectively, and that the popular belief in 'man as

670   autonomous decision-maker' only applied to a small minority of the research participants.

671   However, it is important to stress that because of the deeply ingrained gendered norms that

672   pervade Australian culture, many of the issues raised in this paper are unlikely to be resolved

673 by outreach programs and information provision by emergency services alone. Cultural

674 change is needed more broadly for a lasting transformation to take place (Pease, 2010). This

675 is evident not only in the gendered dimensions of residents' intended and actual responses to

676 bushfires, as well as activities at time of death during bushfires historically, but also in the

677 systemic failing of society towards the domestic violence that followed the Black Saturday

678 bushfires (Parkinson, 2011; Parkinson and Zara, 2011; see also Enarson, 2012) and the

679 patriarchal structures that continue to challenge gender equity and awareness within

680 emergency management (Desmond, 2007; Pacholok, 2013; Eriksen, 2014a). The

681 acknowledgment of bushfires as gendered social experiences is a vital first step towards

682 building communities and emergency responders who are more resilient before, during and in

683 the aftermath of disaster.

684

685

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687 [removed for peer review]

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812   Figure 1: Areas of Victoria affected by bushfires during January and February 2009 (shaded
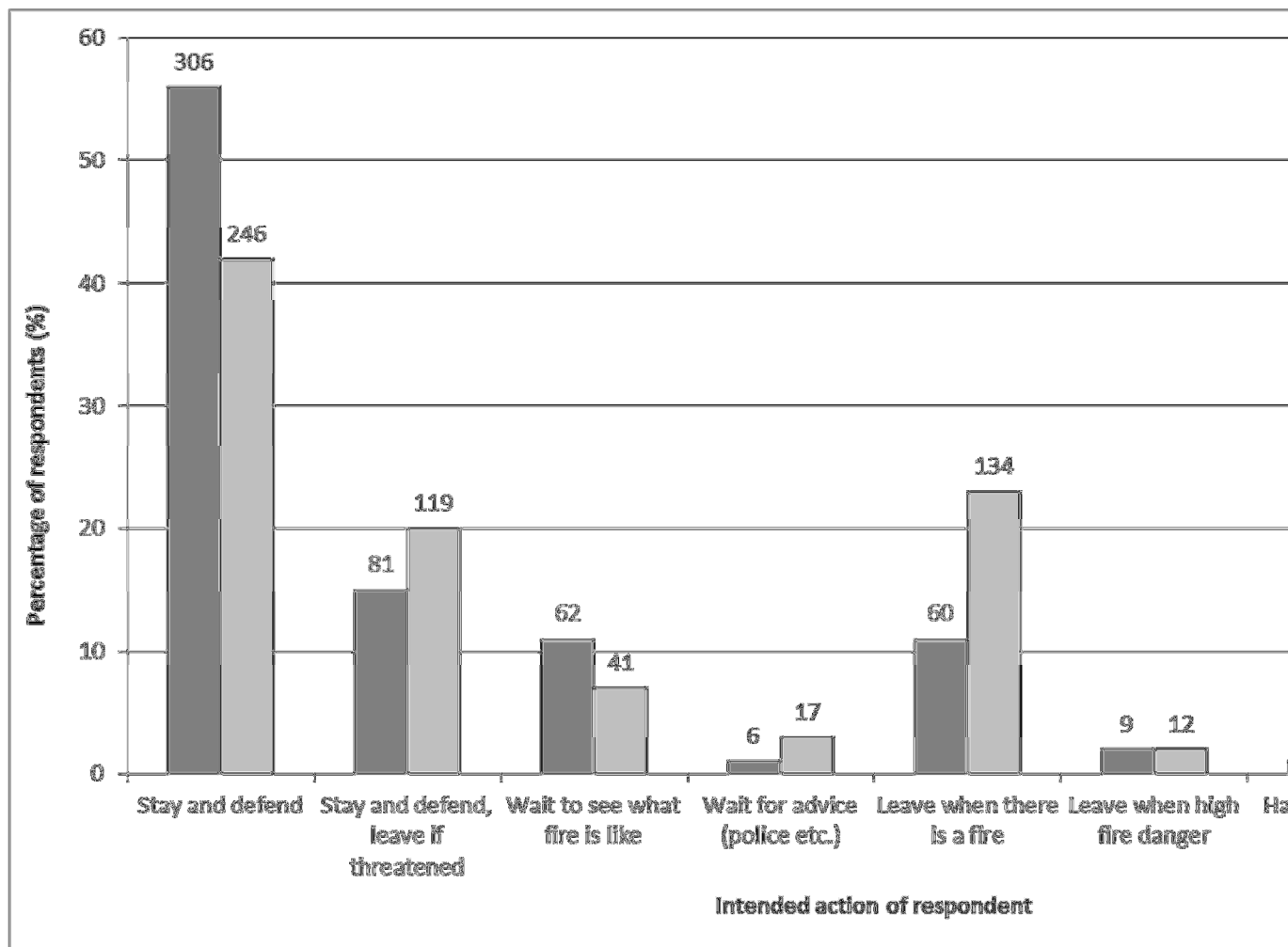
813   dark grey)

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817   Figure 2: Intended responses of residents threatened by the 2009 Black Saturday bushfires.

818   Data labels indicate raw numbers.
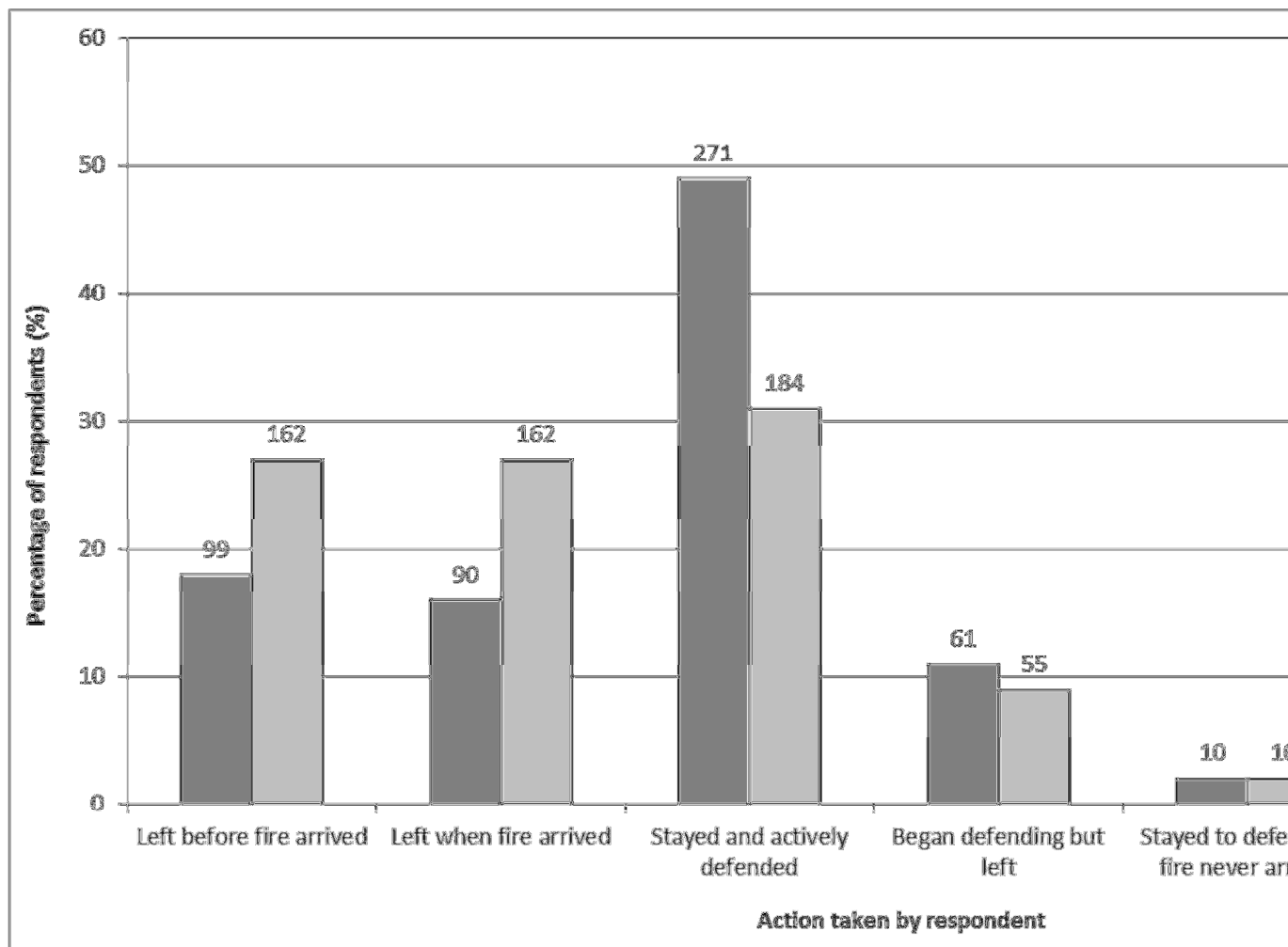
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822   Figure 3: Action taken by residents during the 2009 Black Saturday bushfires. Data labels

823   indicate raw numbers.