



FIGURE 8. IMPACT PERCEPTION RESPONSES ORDERED IN SUMMARY SCALE STRUCTURE.

5.1.2 Significant findings

Differences in these impact scales according to age-group (over and under 40 years), gender (male/female), nationality (New Zealand/overseas), and crowding perception (uncrowded/crowded) were analysed (refer Section 4.1 for method). The significant effects and interactions associated with the analysis using these independent variables are summarised in Table 3, where the mean values show that while the perceptions of impact were not high (means <2), some differences were apparent according to crowding perception, age-group and nationality.

Crowded effect

Visitors who felt crowded had higher perceptions of most types of impacts, and most particularly those related to social impacts from overall congestion and hut congestion. Higher perceptions of impacts from physical damage and over-development of facilities were also important, while higher perceptions of

TABLE 3. SIGNIFICANT EFFECTS ON IMPACT SCALES.

| SOURCE OF SIGNIFICANT EFFECT | SIGNIFICANT IMPACT SCALES† | MEAN VALUES (ADJUSTED)‡ | |
|--|---|-------------------------|-----------------|
| | | Uncrowded | Crowded |
| Crowded effect $F(6,558) = 7.49, p = .000$ | Overall congestion $F(1,563) = 32.32, p = .000$ | 1.58 | 1.79 |
| | Hut congestion $F(1,563) = 17.44, p = .000$ | 1.39 | 1.50 |
| | Physical damage $F(1,563) = 9.51, p = .002$ | 1.55 | 1.68 |
| | Over-development $F(1,563) = 6.35, p = .012$ | 1.47 | 1.66 |
| | Boats disturbance $F(1,563) = 3.72, p = .054$ | 1.70 | 1.96 |
| Age effect $F(6,558) = 2.94, p = .008$ | Water/toilet/hygiene $F(1,563) = 5.00, p = .026$ | Under 40 2.20 | Over 40 1.95 |
| | Over-development $F(1,563) = 4.82, p = .029$ | 1.63 | 1.43 |
| Nationality/age interaction $F(6,558) = 3.10, p = .005$ | Boat disturbance $F(1,563) = 9.22, p = .002$ | New Zealand | Overseas |
| | | Under 40 2.11 | 1.81 |
| | Over 40 1.63 | 2.08 | |
| | Physical damage $F(1,563) = 8.58, p = .004$ | New Zealand | Overseas |
| Under 40 1.78 | | 1.57 | |
| | Over 40 1.62 | 1.93 | |

* The significance of overall impact effects was tested using the Wilks' criterion in the SPSS MANOVA. If possible, these notes would have been attached to any earlier table of significant effects on satisfaction scales (Section 4.1.2).

† A series of univariate ANOVAs in the MANOVA identified the contribution of each satisfaction scale to the overall significant effect, and identified these listed scales as being significant.

‡ Mean values for the summary scales are divided by the number of constituent items to give an interpretation using the original question categories (e.g., 1 = Not noticed 2 = Not bothered 3 = Bothered a little 4 = Bothered a lot).

impacts related to boat disturbance were notable to a lesser extent. Additional exploration of the most prominent overall congestion scale indicated that in particular, crowded visitors perceived greater levels of seeing too many people on the track and at campsites, and seeing too many big groups. Additional exploration of the hut congestion scale indicated greater perceptions of all impact items by crowded visitors. Additional exploration of the physical damage scale indicated that in particular, crowded visitors perceived greater levels of litter at campsites, litter at huts, and seeing human waste/toilet paper. The distinction here highlighted perceptions of litter-related impacts. Additional exploration of the over-development scale indicated greater perceptions of over-development of all facilities by crowded visitors; and additional exploration of the boat disturbance scale indicated greater perception by crowded visitors of boat impacts at beaches and, to a lesser extent, at hut and campsite settings. There were no differences in how crowded and uncrowded visitor perceived impacts related to water/toilet/hygiene conditions. Overall these results indicate a generally greater perception of all impacts among crowded visitors, although with a more particular emphasis on impacts related to campsite, track and hut congestion, littering, and boats at beaches.

Age effect

Visitors who were in the younger age-group (under 40 years) had higher perceptions of impact from water/toilet/hygiene conditions, and perceived over-development of facilities. Additional exploration of the water/toilet/hygiene scale indicated that compared with older visitors, younger visitors perceived greater impacts from perceptions of inadequate water supply and, to a lesser extent, inadequate toilet facilities. The differences in perceptions of uncertain water hygiene were not notably high. Additional exploration of the over-development scale indicated younger visitors perceived greater levels of both hut and track over-development and, to a lesser extent, camp and sign over-development.

Nationality/age interaction

This was a significant interaction, based mostly on perceptions of impacts related to boat disturbance and physical damage. It featured least as an impact perception among older New Zealand visitors, and most as an impact perception among younger New Zealand visitors. Younger overseas visitors had relatively lower impact perceptions, but older overseas visitors had much higher impact perceptions. These distinctions indicate a different pattern of impact perception between older and younger New Zealand and overseas visitors. Satisfaction of other visitor groupings were similar. Additional exploration of the boat disturbance scale, which contributed most to this interaction, featured similar contributions from both boat disturbance at beaches, and boat disturbance at huts and campsites. Additional exploration of the physical damage scale indicated that apart from perceptions of track trampling, this interaction was prominent for all physical damage impact items, and particularly those items related to littering. Overall, while younger New Zealand visitors appear more sensitive to these impacts, for overseas visitors it was the older age-group that are the more sensitive.

Hut and campsite user responses

Additional exploratory analyses were undertaken for the Abel Tasman survey to compare impact perceptions between the large numbers of campsite users and hut users. The hut user group included all those who used a hut on their trip (n = 278), and the campsite user group included all those who used a campsite (n = 429) (refer Appendix 1). The analyses of responses followed the same procedures applied in Section 5.1.2, but were not included in the main analysis because of limitations from data incompatibility/compatibility, and high missing values. The results represent indications of effects rather than definitive effects, and will require further specific analyses before more conclusive statements can be made.

Apart from the expected differences found in perceptions of hut and campsite congestion, campsite users appeared to be more bothered by impacts related to boat disturbance and physical damage. Additional exploration of the boat disturbance scale suggested that campsite visitors were most bothered by disturbance at overnight huts/campsites and, to a lesser extent, by disturbance at beaches. In addition, while campsite users (New Zealand and overseas) appeared to perceive similar levels of boat disturbance impacts, hut users were less bothered by this impact, and particularly overseas visitors using huts. Additional exploration of the physical damage scale suggested that campsite visitors were more bothered by seeing litter around campsites, seeing wear and other evidence of informal campsites, and seeing trampling of shortcuts off the main track. They noticed greater levels of most other physical damage impacts, but to a lesser extent. Overall, these results suggest campsite visitors have greater perceptions of boat disturbance and physical impacts, and that hut users from overseas are least sensitive to boat disturbance.

5.2 RELATING IMPACT PERCEPTION SCALES TO OVERALL TRIP EVALUATIONS

None of the impact scales were statistically associated with overall satisfaction, indicating that no specific social or physical impact perceptions were related to how the trip was evaluated. However, significant associations were found between impact perceptions and the overall crowding evaluation. An SPSS multiple regression ($F(2,315) = 60.82$, signif. $F = .0000$) identified a weak association (adjusted $r^2 = .198$) between the impact scales (independent) and Crowding (dependent). The overall congestion scale ($\beta = .328$, $t = 7.75$, $p = .0000$) was the most important predictor of crowding. That is, being more bothered by the social impacts of overall congestion, was weakly associated with feeling more crowded.⁴ This interpretation was supported by the moderate correlations between crowding and the overall congestion scale ($r = .39$). The most important individual items correlated with crowding from the overall congestion scale were 'seeing too many on the track' ($r = .52$), and 'seeing too many big groups' ($r = .29$). While the association was weak, the prominence of these individual items emphasises the importance of their social impacts on crowding perceptions.

⁴ In addition, a temporary variable composed of the extreme high and low crowding scores was used in a separate multiple regression analysis to test this association further, and demonstrated a stronger association with the overall congestion scale (e.g., $r^2 = .241$; $\beta(\text{overall}) = .421$).

6. Visitor attitudes towards management options

Attitudes toward 20 options for managing future increases in track use-levels were surveyed, with visitors indicating the degree to which they agreed or disagreed. These options included increasing the capacity of accommodation, dispersing use pressures, imposing use-limits, providing pre-walk information and managing boat use (refer Appendix 1, Question 8). The complete list of responses, as summarised in Figure 9, indicates a variety of visitor attitudes. The only type of management approach attracting consistently high support was that associated with using pre-walk information to influence visitor choices about making track visits. Around 60% of visitors agreed with these approaches while less than 5% disagreed. A majority of visitors (54%) also agreed with limits to motorboat access, while only 13% disagreed.

Disagreement was much higher with the more direct control methods (e.g., reducing facilities and services in order to discourage use, making the track one-way, allowing more freedom of campsite choice, making peak times cost more for visits), with over 60% of visitors disagreeing with these. Between 40–60% of visitors also disagreed with some of the facility development options (e.g., building more huts, allowing more guided trip opportunities) and all of the rationing options (e.g., booking systems, permits). While visitor attitudes to these management options were predominantly negative, notable minorities did support them, and in some cases the proportions of visitors either for or against were relatively equal. For example, the options related to providing more camping facilities, alternative tracks, more bunks in huts, and promoting smaller group sizes all received similar degrees of positive and negative response.

Overall these results indicated a pattern of preferences by visitors for different management options (also refer Table 4 and Figure 10). Indirect information-based approaches were clearly most favoured by almost all visitors. Altering use of existing facilities and providing some alternative opportunities for walking and accommodation tended to split visitors fairly evenly for or against. More direct actions to control and channel use, and to provide more huts or guided trip opportunities are clearly much less favoured.

6.1 EFFECTS OF AGE, GENDER, NATIONALITY, AND CROWDING PERCEPTION

6.1.1 Background to analyses

Additional analyses were required to assess whether these management items varied significantly among the visitors according to age group, gender, nationality and crowding perception. Table 4 and Figure 10 (next page) show the attitudes to management scales created for these analyses (refer Section 4.1.1).

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