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Sustainable Camping Practices Among Malaysian Youth

Hazi Hafizah Usolludin

Department of Tourism, Kulliyyah of Sustainable Tourism & Contemporary Languages, International Islamic University of Malaysia, Malaysia

haziusolludin@iium.edu.my

Corresponding author: haziusolludin@iium.edu.my

ABSTRACT

Camping has become increasingly popular among Malaysian youth; however, its environmental consequences, including soil erosion, wildlife disturbance, and pollution, remain underexplored. This study investigates the relationship between youth campers' travel behaviour, conservation practices, and environmental impacts. Employing a quantitative approach, data were collected via structured online questionnaires from 159 Malaysian campers aged 18–30. Descriptive statistics and Pearson's correlation analysis revealed a strongly positive relationship between youth campers' travel behaviour and environmental degradation ($p < .001$), with campers' preferences emerging as the most influential factor ($r=0.913$). In stark contrast, campsite conservation practices exhibited a very weak positive correlation ($p<.001$). These findings highlight the critical need for targeted educational campaigns and policy measures focused on behaviour-driven strategies to promote sustainable camping practices and mitigate ecological harm. The study adds to the ecotourism literature by highlighting the dominance of individual choices over management practices in determining environmental outcomes.

Keywords: Conservation practices; Environmental impact; Malaysia; Sustainable Camping; Youth travel behaviour

Article Classification: Research Paper

1. INTRODUCTION

Camping is an enjoyable outdoor activity where individuals stay temporarily in tents or various shelters, appreciating nature, wildlife, and fresh air. Many campers visit designated campsites that offer amenities such as electrical outlets, showers, and restrooms; these campsites are typically located in national parks and forests and often require reservations well in advance. Campers participate in canoeing, biking, and hiking activities and pack necessary items such as cooking gear, tents, and sleeping bags. Proper food storage is crucial to prevent drawing in wild animals, which reinforces the importance of responsible camping. Fundamentally, camping offers a means to escape urban life, strengthen social bonds, and develop an appreciation for adventure and community.

Campsite conservation practices have garnered increasing attention recently to counteract the negative biophysical impacts of recreational camping. Since 2020, management approaches have increasingly emphasised visitor regulation, such as limiting group sizes and controlling the frequency and duration of site use, to reduce cumulative impacts on soil, vegetation, and wildlife (Mallikage et al., 2021). Regular monitoring of environmental indicators, including soil compaction, vegetation loss, tree damage, exposed roots, and litter, provides crucial data for adaptive management. Educational initiatives have also been introduced to increase campers' awareness of responsible behaviours, including proper waste disposal and minimising disturbances in natural habitats. Research indicates that environmental degradation, such as soil erosion and vegetation loss, can occur regardless of campsite usage frequency, making it imperative to implement proactive conservation strategies.

Malaysia currently has over 7,000 campsites, including Mutiara Taman Negara in Pahang, which offers river cruises, forest treks, and nocturnal wildlife viewing, and Kuala Mu in Perak, a remote site within the Piah Forest Reserve offering rainforest exploration and Temiar cultural experiences. These sites illustrate the diversity of Malaysia’s camping offerings, blending nature-based activities with cultural engagement. Recent safety concerns have accelerated regulatory reforms, particularly following the Batang Kali landslide tragedy, which claimed 31 lives. The newly approved *Camping Site Planning Guidelines* mandate safety measures, such as maintaining a 10-metre distance from waterfalls, and provide operators two years for full compliance (The Star, 2023). These guidelines also integrate environmental sustainability and legal requirements. While campsite operators, such as AsiaCamp Sdn Bhd, faced initial challenges adapting to these regulations, they acknowledge their long-term benefits for safety and sustainability. Environmental organisations, including Sahabat Alam Malaysia, emphasise strict

adherence to these measures to protect ecosystems, prevent future incidents, and promote responsible tourism.

Beyond safety governance, environmental impacts from campground operations and visitor behaviour pose another challenge. Campers' preferences increasingly influence sustainability outcomes, with some brands, such as Camper, adopting circular design strategies and certified materials to meet rising consumer demand for eco-friendly products (Camper, 2023). However, research in sensitive areas like Kinabalu Park reveals that tourism activities, including hiking, birdwatching, and sightseeing, can cause soil erosion, vegetation loss, litter accumulation, and wildlife disturbance (Latip et al., 2020). Weak waste management and inadequate visitor controls exacerbate these issues. Addressing these intertwined safety, regulatory, and environmental problems is essential to developing practical guidelines that prevent future tragedies while promoting sustainable camping practices.

Despite increasing attention on both management strategies and visitor regulation, a critical research gap remains in understanding whether individual camper actions or established campsite conservation practices have a greater impact on environmental degradation. The existing literature often addresses these factors in isolation, failing to provide a clear, relative comparison of their influence. This study directly addresses this gap by quantitatively assessing the relative influence of youth campers' behaviour versus campsite management efforts on environmental impacts. By confirming the stronger correlation of camper behaviour, this research provides a more explicit rationale for shifting strategy toward behaviour-driven interventions. This focus is essential for developing practical guidelines that prevent future tragedies while promoting sustainable camping practices, thereby enhancing the perceived contribution to behaviour-driven strategies in the ecotourism literature.

Overall, camping remains a dynamic tourism segment that offers recreational, social, and environmental value. However, its sustainability depends on integrated management strategies, regulatory enforcement, and continuous education to ensure natural resources are preserved for future generations while meeting campers' evolving expectations.

2. LITERATURE REVIEW

2.1 Conservation Practices

Conservation methods address challenges such as high water flows, soil degradation, and pollution through nature-centred approaches, whose effectiveness depends on technical viability, ecological stability, economic feasibility, and community acceptance (Srivastava et al., 2023). Implementation barriers include limited knowledge, restricted equipment access, financial constraints, and site-specific soil conditions. In the United States, farmland conservation faces additional challenges due to the high proportion of land

owned by non-operator landowners (NOLs). Programs like CRP, WRP, EQIP, and CSP exist, but NOL awareness and engagement remain low, and short-term rental agreements discourage long-term investment. Nonetheless, NOLs generally trust renters and may adopt conservation clauses if supported with adequate information (Petrzelka et al., 2021). The Konso community in Ethiopia applies long-standing indigenous soil and water conservation (SWC) methods, including stone terraces, agroforestry, crop rotation, and conservation agriculture, rooted in sociocultural traditions and supported by local institutions (Gashure & Wana, 2023). Similarly, Nyamuriro Wetland conservation in Uganda involves wetland restoration, community participation, and monitoring, with restoration receiving the highest community support. However, corruption, invasive species, flooding, and inadequate funding persist (Turyasingura et al., 2022). These cases illustrate the importance of locally adapted, community-driven strategies supported by technical, institutional, and financial resources.

2.1.1 Waste

Effective waste management is essential for campsite conservation in Malaysia, where broader national strategies can inform site-specific practices. General principles, such as waste segregation, recycling, composting, and waste-to-energy conversion, are crucial for reducing environmental impacts (Azlina Muhammad et al., 2023). Malaysia generates over 30,000 tonnes of municipal solid waste daily, necessitating integrated supply chain solutions and transitioning to a circular economy that extends product lifespans and reuses resources (Sundram et al., 2016; Vatumalae et al., 2022). Public education on separation at the source and biodegradable material use is vital for transforming waste behaviours (Sivan et al., 2023). Lessons from the construction sector underscore the importance of reducing, reusing, recycling, and material recovery and adopting technologies, such as building information modelling, to address illegal dumping through more vigorous enforcement (Lim & Norazman, 2024; Chan, 2021). In camping contexts, waste—from organic scraps to packaging and human waste—can pollute soil and water, harm wildlife, and degrade natural surroundings (Potapova, 2018). The persistence of non-biodegradable materials illustrates the importance of *Leave No Trace* principles and designated sanitation facilities. Organic waste dominates campsite refuse, requiring effective composting and recycling to minimise carbon footprints and promote sustainable outdoor recreation (Malakahmad et al., 2017).

2.1.2 Use of Utilities

Electricity use in campsites can influence plant growth, ecosystem balance, and sustainability. While electric fields and currents can enhance plant biomass and photosynthetic efficiency (Dannehl, 2018), improper applications may disrupt electromagnetic fields, alter wildlife behaviours, and affect plant metabolism. Non-

renewable energy use for campsite lighting and amenities increases carbon emissions, undermining sustainable practices. Additionally, electricity generation and transmission introduce pollutants—such as electromagnetic fields, noise, and vibrations—that can reduce biodiversity by causing plant DNA mutations and altering animal behaviour (Liu et al., 2020; Havas et al., 2017; Glibovytska et al., 2024). In Malaysia, energy management for campsite conservation emphasises sustainability through renewable energy adoption, efficient resource usage, and waste management. The strategy includes reduction efforts and environmental education (Jing et al., 2023). Legislative measures, such as the Energy Efficiency and Conservation Act (EECA) 2023, regulate energy efficiency and promote conservation among large consumers, offering principles transferable to campgrounds (Hasim et al., 2021). Complementary strategies from the 11th National Energy Efficiency Action Plan (NEEAP) support renewable energy integration, including hydropower and solar, aligning with the United Nations Sustainable Development Goals (KeTTHA, 2015). Standards like MS ISO 50001:2011 systematically monitor efficiency gains while fostering environmental values among younger generations, strengthening long-term conservation behaviours (Mohd Tarmizi Mat Asim et al., 2017).

2.1.3 Safety

Tourism safety management is essential for sustaining a positive destination image and visitor satisfaction, with high crime rates posing significant threats to the industry (Ahmad et al., 2024). At Pahang National Park, safety strategies aim to mitigate risks and enhance visitor trust, a key factor in sustainable tourism development. In Chamang Forest Eco-Park, drowning risk management employs the Risk Assessment Management System (RAMS), integrating objective assessments—site observations, staff interviews, and hazard identification—with subjective evaluations of visitor perceptions. Findings highlight the importance of high visitor numbers in safety planning, affirming RAMS's applicability for nature-based tourism (Azizi Zainal Abidin et al., 2023). Campsite safety management requires routine facility inspections, fire safety enforcement, proper waste management, wildlife monitoring, and emergency preparedness measures, supported by comprehensive visitor education (Abdullah, 1995). Negeri Sembilan introduced the Campsite Planning Guidelines (GPP) following the 2022 Batang Kali landslide, setting structured criteria for site suitability, land zoning, tent placement, and essential facilities (Malay Mail, 2024). The GPP aims to reduce risks from natural disasters while promoting responsible camping, granting existing operators a compliance grace period until the end of 2024. Collectively, these measures illustrate a multi-layered approach to safety in tourism, balancing risk mitigation with industry growth.

2.2 Environmental Impacts

Human, animal, and industrial activities have caused severe environmental degradation, intensifying since the Industrial Revolution and resulting in air, water, and soil pollution, deforestation, and waste accumulation (Wang et al., 2021). Healthcare contributes approximately 5% of global CO_2 emissions, ranking as a major polluter after the energy sector (Williams et al., 2024). Emissions arise from energy-intensive operations, transport, and medical product lifecycles, alongside impacts such as water and energy consumption, waste generation, chemical contamination, and resource depletion. Sustainable clinical practices, disease prevention, and integration of environmental considerations into health technology assessments are vital for reducing the sector's footprint. Environmental regulations influence economic activity through two competing perspectives: the Pollution Haven Hypothesis, which argues that strict regulations shift pollution-intensive industries to countries with lenient policies, and the Porter Hypothesis, which posits that such regulations stimulate innovation and competitiveness (Dechezleprêtre & Sato, 2020). While short-term costs include reduced productivity and trade shifts, long-term benefits may outweigh these impacts through emissions reductions and clean technology growth. Environmental conditions also affect human health positively—through exposure to nature, enhancing physical and mental well-being (Frumkin, 2001)—and negatively, via hazards like radiation, industrial chemicals, and pathogens (Seymour, 2016; Ali, 2001). Sustainable practices are essential to mitigate these risks (Ezzati, 2002).

2.3 Campers' Preferences

Campers increasingly seek unique, authentic, and transformative experiences aligned with sustainability, inclusivity, and personal growth values. Generation Z, in particular, prioritises life-enriching adventures over material possessions, pursuing cultural immersion and social connection through tech-enabled research, social media, and travel apps (Ahmad & Idris, 2024). A study at Murog Purog Camp Site (MPCST) in Kota Belud, Sabah, found that most visitors were female (68.6%), aged 21–30 (91.5%), unmarried (92.9%), and highly educated (82.9% with a diploma or degree). The majority were students (87.1%) from Sabah districts, including Kota Belud, Kudat, Semporna, and Tawau. The location, scenic beauty, river quality, and unique flow were key attractions. The structure and diverse activities contribute to high satisfaction with facilities and services, including utilities, online reservations, and staff quality (Alex Jo Marjun et al., 2024). At Min House Camp (MHC) in Kelantan, preferences for community-based ecotourism (CBE) are centred on comprehensive "super" packages that offer immersive environmental and cultural experiences, strong local participation, and clear, informative communication about activities and community impacts. These findings highlight that contemporary campers value meaningful, well-facilitated, and socially responsible

tourism experiences, emphasising the necessity of integrating environmental quality, cultural engagement, and service excellence in camping destinations (Abdullah et al., 2024).

2.3.1 Mode of Transportation

Transportation exerts substantial environmental and ecological impacts on campsites, contributing to air, noise, and soil degradation. Vehicular emissions, including carbon monoxide, nitrogen oxides, hydrocarbons, and particulate matter, deteriorate air quality, exacerbate global warming, and pose health risks such as respiratory and cardiovascular diseases (Asaf Aliyev et al., 2024; Shadimetov & Ayrapetov, 2024). Noise pollution from road traffic, often exceeding 80 dBA, disrupts wildlife and human well-being (Jacyna, 2017). Transportation infrastructure fragments habitats, accelerates soil erosion, and increases water pollution, altering local ecosystems (Əliyev, 2017; Perera et al., 2022). Vehicles in campsite areas can compact soil, reduce vegetation cover, and modify hydrological patterns, leading to sedimentation in nearby water bodies (Perera et al., 2022). At Kuro-dake Campsite, the ropeway and chairlift systems enhance accessibility but also facilitate overcrowding, vegetation loss, and bare-ground proliferation, particularly from campers using non-designated sites (Wang & Watanabe, 2019). Increased access may also attract less environmentally conscious visitors, intensifying ecological strain. Mitigation strategies include promoting cleaner fuels, enforcing stricter emission standards, implementing noise reduction measures, and encouraging sustainable transport modes such as public transit, carpooling, cycling, and walking. Effective management of transportation impacts is critical to preserving campsite ecological integrity and ensuring long-term sustainability.

2.3.2 Frequency and Duration of Stay

Frequency and duration of stay are critical determinants in campsite design, management, and environmental sustainability. Visitor behaviour patterns—shaped by psychological time allocation, spatial factors, and environmental cues—can be optimised through strategic amenity placement, such as shaded seating and picnic areas, to regulate flow and prevent overcrowding (Wang & Huang, 2024). Greenery enhances stay length, supporting both comfort and experiential quality. Environmentally, frequent short visits may heighten transportation-related CO_2 emissions, whereas extended stays can elevate on-site emissions. The emissions production includes the consumption of resources such as water and energy (Deb et al., 2023).

Nevertheless, prolonged stays can foster stronger environmental connections, encouraging adherence to conservation principles such as *Leave No Trace* and participation in local stewardship programmes (Wang et al., 2017). Conversely,

inadequate management of extended stays risks increased waste generation, soil compaction, vegetation loss, and wildlife disturbance (Moghimehfar et al., 2017). This case illustrates the importance of balanced strategies that leverage more extended visits' educational and stewardship potential while mitigating ecological degradation. Integrating sustainable infrastructure, eco-friendly technologies, and targeted visitor education can align economic and experiential benefits with environmental preservation. Ultimately, the ecological outcome of camping activities depends on aligning stay patterns with responsible management practices to maintain campsite ecological integrity over the long term.

The current literature highlights the distinct impacts of conservation practices (e.g., waste, utility, safety) and camper behaviour (e.g., transport, duration, preferences) on environmental quality. However, a significant debate and knowledge gap persist regarding the relative dominance of these two factors: whether management's preventative measures or individual visitor actions are the primary drivers of environmental impacts. Existing research does not consistently differentiate the magnitude of these influences, making it difficult for policymakers to allocate resources effectively.

Furthermore, there is a distinct lack of empirical studies focusing specifically on the sustainable camping practices of Malaysian youth campers (aged 18-30), a demographic with significant potential to shape future tourism norms. This study, therefore, aims to fill these gaps by explicitly testing the strength of the correlation between two independent variables (camper behaviour and conservation practices) against environmental impacts to provide a more explicit, data-driven directive for conservation policy in Malaysia.

3. METHODOLOGY

3.1 Measurement of Variables

This study uses a quantitative research design to examine the relationships between camper travel behaviours (IV1), campsite conservation practices (IV2), and environmental impacts (DV). Data will be collected using structured questionnaires with items measured on a five-point Likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*). Camper Travel Behaviour is assessed through items measuring the frequency of camping trips, travel distance, transportation mode, and environmentally responsible travel behaviour. Example item: “I usually choose eco-friendly transportation when going camping.” As for Campsite Conservation Practices, it is measured via items evaluating campsite management’s environmental initiatives, including recycling, sustainable resource use, and environmental education. Example item: “This campsite promotes recycling.” In the meantime, Environmental Impacts is evaluated based on perceived and observed effects

of camping activities on the natural environment, including litter, wildlife disturbance, pollution, and vegetation damage. Example item: “Wildlife is frequently disturbed by campers.” In this study, a purposive sampling technique will target campers and operators with direct experience in camping activities. The sample size will be determined based on participant accessibility and the requirement for sufficient data for robust statistical analysis.

3.2 Timeframe and Sampling Limitations

The sample comprised 159 respondents, exceeding the minimum threshold of 75 suggested by Shore (2009) for reliable quantitative research outcomes, thus enhancing the accuracy of the data. Participants included individuals who completed the questionnaire and were directly involved in camping-related activities.

Data were collected via online questionnaires over a six-week period in July and August 2024, distributed through digital platforms. This study employed a non-probability convenience and purposive sampling technique, selected for its practicality and efficiency (Nikolopoulou, 2022). While practical, this approach restricts the generalisability of the findings to a broader population of Malaysian campers and may introduce selection bias. A more in-depth discussion on this is necessary to ensure transparency. Future research is strongly recommended to consider probability sampling methods (e.g., stratified or cluster sampling) to minimise bias and enhance the representativeness of the results.

3.3 Instrument Structure, Reliability, and Validity

The final questionnaire consisted of 25 items, including demographic questions and sections for each variable. Camper Travel Behaviour was measured with eight items, Campsite Conservation Practices with eight items, and Environmental Impacts with nine items, all using a five-point Likert scale.

A critical omission in this study's methodology is the absence of empirical assessment for instrument reliability and validity, such as reporting Cronbach’s Alpha values or conducting Exploratory Factor Analysis (EFA). Given the acknowledged lack of pilot testing due to a mid-project change, conducting rigorous pilot testing is highly recommended for all future studies to ensure construct clarity and data robustness.

3.4 Ethical and Mitigation Measures

The study adhered to essential ethical considerations, including obtaining informed consent from all participants prior to commencing the survey and ensuring anonymity and confidentiality of responses through data aggregation. Technical difficulties during online survey distribution were noted, including inaccessible links and mobile device

compatibility issues. To mitigate such issues in future studies, proactive measures should include pre-testing the survey link across multiple devices and browsers, employing a robust, commercial survey platform, and providing technical support contact information within the survey invitation.

4. FINDINGS AND DISCUSSION

4.1 Respondent Profile

A total of 159 respondents participated in the survey, providing demographic, motivational, and behavioural data related to camping activities (Refer to Table 1 for Demographic Profile).

4.1.1 Demographics

The 159 respondents are largely defined by their educational and occupational status, with over half holding a bachelor's degree (55.3%, n=88) and exactly half being students (50.3%, n=80), while the next largest groups include those with a secondary school education (21.4%, n=34) and those employed full-time (32.7%, n=52). The minority of the sample consisted of male respondents (40.3%, n=64), who were least likely to be aged 26–30 years (19.5%, n=31), with only a small fraction holding a master's degree (2.5%, n=4) and the smallest segment of the sample being unemployed (1.9%, n=3).

4.1.2 Camping Motivations:

Top Motivators were classified as adventure/exploration (76.7%, n = 122), affordability (64.8%, n = 103), relaxation/stress relief (61.6%, n = 98), connecting with nature (56.6%, n = 90), spending time with family/friends (54.7%, n = 87), and physical activity (54.7%, n = 87).

4.1.3 Travel Companionship:

Most respondents camped with friends (28.3%, n = 45), followed by family (23.3%, n = 37), partners (22.0%, n = 35), alone (13.8%, n = 22), or in organised groups (12.6%, n = 20).

4.1.4 Frequency of Camping:

Annually, the frequency of camping is 2–3 times (34.0%, n = 54), once annually (26.4%, n = 42), 4–6 times annually (20.8%, n = 33), and more than six times annually (18.9%, n =30).

The findings indicate that the camping population surveyed is predominantly young, educated, and student-oriented, with strong motivations linked to adventure, affordability, and nature-based experiences.

Table 1. Demographic Profile

Demographic variables	Question Items	Frequency	Percentage (%)
Gender	Male	64	40.3
	Female	95	59.7
Age	18-21	65	40.9
	22-25	63	39.6
	26-30	31	19.5
Education	Secondary school	34	21.4
	Diploma/Certificate	33	20.8
	Bachelor's degree	88	55.3
	Master's degree	4	2.5
Occupation	Student	80	50.3
	Employed (Full-time)	52	32.7
	Employed (Part-time)	11	6.9
	Self-employed	13	8.2

	Unemployed	3	1.9
Motivation 1: M1 (Adventure & Exploration)	Yes	122	76.7
	No	37	23.3
Motivation 2: M2 (Relaxation & Stress Relief)	Yes	98	61.6
	No	61	38.4
Motivation 3: M3 (Spending time with family/friends)	Yes	87	54.7
	No	72	45.3
Motivation 4: M4 (Connection with nature)	Yes	90	56.6
	No	69	43.4
Motivation 5: M5 (Physical activity & exercise)	Yes	87	54.7
	No	72	45.3
Motivation 6: M6 (Affordability compared to other travel)	Yes	103	64.8
	No	56	35.2
Who do you usually travel with?	Alone	22	13.8
	Friends	45	28.3
	Family	37	23.3
	Partner	35	22

	Camping group or organisation	20	12.6
How often do you go camping per year?	Once a year	42	26.4
	2–3 times a year	54	34
	4–6 times a year	33	20.8
	More than 6 times a year	30	18.9

4.2 Result Analysis

The results in Table 2 indicate the 'moderate' average scores (M=3.0) for responsible travel behaviour (M=3.08), conservation practices (M=3.06), and environmental impacts (M=3.04) are based on a 5-point Likert scale (where 3 is the neutral midpoint). This result indicates that respondents generally operate at the neutral or 'neither-agree-nor-disagree' position. This is a crucial finding, suggesting that the youth camper population is neither highly responsible nor highly destructive, and their perceived impacts are neither very high nor very low. This 'moderate' level highlights a significant opportunity for interventions to shift behaviour from neutral to strongly agreeable with sustainable practices.

Table 2. Summary of all variables

	Mean	Standard Deviation	
Campers' Travel Behaviour	3.08	0.92	Moderate level of responsible travel behaviour
Campsite Conservation Practices	3.06	0.88	Moderate engagement in campsite conservation efforts
Environmental Impacts	3.04	0.89	Moderate perception of environmental consequences

The strong positive correlation between camper behaviour and environmental impact (r=0.881) confirms that individual actions are the most substantial driver of ecological degradation. While the overall link is clear, a deeper analysis reveals that the most damaging behaviours include collecting firewood, improper waste disposal, and heavy reliance on private vehicles for campsite access. These choices directly contribute to vegetation loss, soil pollution, and increased carbon emissions. The discovery that campers' preferences are the most influential factor on environmental impacts (r=0.913) provides the most actionable finding. This suggests that personal choices and inclinations are the primary drivers of negative environmental outcomes, surpassing the impact of frequency or mode of transportation. These preferences manifest as choices for resource-intensive activities (e.g., long-distance travel via RVs, high utility usage) or a preference for convenience over conservation (e.g., using private vehicles, not adhering to waste segregation). This implies that environmental harm is driven less by a lack of knowledge and more by a willful choice and a gap between pro-environmental attitudes and actual on-site practice (refer to Table 3).

Table 3. Correlation Analysis Between IV1 and DV

		Campers' behaviour	**Environmental impacts**
Campers' behaviour	Pearson Correlation	1	.881
	Sig. (2-tailed)		<.001
	N	159	159

The analysis found a weak correlation between campsite conservation practices and environmental impacts, which is a critical finding. It suggests that management efforts alone are insufficient to counteract the stronger, cumulative effects of individual camper behaviour. This weak link could be attributed to a lack of rigorous enforcement of existing conservation rules, initiatives being perceived as token gestures rather than integrated practices, or simply being outweighed by the sheer scale of individual poor behaviour.

Further analysis of the conservation practices sub-attributes showed that utility usage (r=0.287) and waste generation (r=0.167) had a stronger, statistically significant association with environmental impacts than safety measures. (r=0.154). This combined result suggests that environmental mitigation efforts should be prioritised toward managing resources and waste through better recycling facilities and energy-efficient amenities, as these yield a more direct, albeit small, environmental benefit. While safety measures are paramount for visitor well-being, their direct link to ecological harm is minimal, underscoring the need for a multi-faceted approach where environmental and safety regulations are separately targeted and enforced (refer to Table 4).

Table 4. Correlation Analysis Between IV2 and DV

		Campsite conservation practices	**Environmental impacts**
Campsite conservation practices	Pearson Correlation	1	.101
	Sig. (2-tailed)		<.001
	N	159	159

4.3 DISCUSSIONS

4.3.1 To examine the relationship between campers' behaviours and campsite conservation practices

The findings indicate that campers travelling longer distances demonstrate greater environmental awareness, possibly due to a higher investment in their trip. However, larger groups were associated with increased waste generation, indicating the importance of targeted waste reduction strategies. Transportation choice emerged as an essential factor: recreational vehicle (RV) users showed higher utility consumption, while hikers and cyclists demonstrated stronger waste management practices. Frequency The frequency of visits influenced rule compliance, as regular campers were more likely to follow established regulations than first-time visitors, highlighting the importance of educational outreach for newcomers. The length of stay was positively correlated. We established a correlation between declining adherence to safety measures like fire

management, resource use, waste production, and extended stays. Practical conservation efforts were associated with the availability of recycling facilities, visible signage, and awareness campaigns. Arrival briefings and initiatives promoting responsible behaviour, such as alcohol consumption guidelines, could enhance safety.

4.3.2 To investigate the relationships between the environmental impact of campers' behaviour.

The Pearson correlation analyses examined the relationships between campers' behaviour, campsite conservation practices, and environmental impacts. The results indicate a strong positive correlation between campers' behaviour (IV1) and environmental impacts (DV) ($r = 0.881$, $p < .001$), suggesting that careless or harmful actions by campers substantially increase environmental degradation. In contrast, campsite conservation practices (IV2) demonstrated a very weak positive correlation with environmental impacts ($r = 0.101$, $p < .001$). While statistically significant, this relationship indicates that conservation measures alone have a limited influence compared to the impact of individual camping behaviours. Further analysis of IV1 attributes revealed that campers' preferences were the most influential factor, exhibiting a robust positive correlation with environmental impacts ($r = 0.913$). This effect size surpassed those observed for frequency/duration of stay ($r = 0.417$) and mode of transportation ($r = 0.101$). The findings suggest that personal choices and inclinations are closely tied to environmental consequences, possibly due to engagement in more resource-intensive activities. Developing targeted strategies to mitigate environmental impacts may require addressing these preferences.

4.3.3 To investigate the relationships between the environmental impact of campsite conservation practices.

The Pearson correlation analysis examined the relationships between campers' behaviours (IV1) and campsite conservation practices (IV2) and environmental impacts. Results indicated that campers' behaviour had a strong and statistically significant positive correlation with environmental impacts ($r = 0.881$, $p <.001$), suggesting that more careless or harmful behaviour was associated with greater environmental degradation. Among the attributes of IV1, camper preferences emerged as the most influential factor ($r = 0.913$), substantially exceeding the correlations observed for frequency/duration of stay ($r = 0.417$) and mode of transportation ($r = 0.101$). This study points out the vital importance of camper choices and inclinations in driving environmental outcomes. In contrast, campsite conservation practices demonstrated a very weak but statistically

significant positive correlation with environmental impacts ($r = 0.101$, $p < .001$). This indicates that, while such practices are relevant, their direct effects are limited compared to behavioural factors. Analysis of IV2 attributes revealed that utility usage ($r = 0.287$) and waste generation ($r = 0.167$) showed stronger associations with environmental impacts than safety measures ($r = 0.154$), which exhibited the weakest link. These findings suggest that prioritising behavioural change among campers, particularly by addressing their preferences, along with targeted waste management and resource conservation improvements, would likely yield the most substantial benefits in mitigating environmental impacts.

5. CONCLUSION AND IMPLICATIONS

The limitations of the study, specifically technical difficulties during the online survey and the absence of pilot testing, threaten the overall trustworthiness and applicability of the findings. The technical issues likely introduced non-response bias by excluding participants with limited digital access, while the lack of pilot testing may have compromised instrument clarity and data reliability/validity, ultimately restricting the generalizability of the results beyond the convenience sample. Future research should mitigate these risks by mandating rigorous pre-testing across all major digital platforms and including a clear Cronbach's Alpha analysis to ensure instrument reliability before final distribution. Crucially, the finding that campers' preferences are the most influential factor ($r=0.913$) necessitates a policy focus on changing these underlying inclinations to bridge the gap between pro-environmental attitudes and actual behaviour. Specific, actionable ideas include implementing educational campaigns (e.g., interactive videos at check-in) that link specific actions to environmental harm, enacting policy changes such as a mandatory 'Pack-It-In, Pack-It-Out' waste system, offering incentives for public transport, and using behavioural nudges like highly visible signage to simplify sustainable choices. Building on these results, future research should explore why these preferences exist and how to best encourage sustainable habits among young Malaysian campers.

The Pearson correlation analysis revealed varying strengths of relationships between campsite conservation practices and environmental impacts. Waste management practices demonstrated the strongest relationship ($r = 0.167$), followed by utility usage ($r = 0.287$), while safety recorded the weakest link ($r = 0.154$). These findings suggest that, while safety remains important for the overall visitor experience, its direct influence on environmental outcomes is less significant compared to wasteful and utility-related behaviours. The author gratefully acknowledges the respondents for their candid feedback on these attributes, which provided the empirical basis for identifying these nuanced differences.

An analysis of the campers' behaviour further highlighted that, although many participants expressed concern for environmental preservation, specific actions—such as collecting firewood or improper waste disposal—persisted. The study benefited greatly from the willingness of campsite operators to share operational insights, which supported a more accurate interpretation of these behavioural patterns. Contextualising the gap between environmental awareness and actual conservation practices would have been difficult without such cooperation.

Regarding travel behaviour, most campers reported arriving at campsites via private vehicles, a practice that contributes significantly to carbon emissions. This finding aligns with broader patterns in rural tourism mobility, where public transport access remains limited. The author extends appreciation to local tourism authorities for providing supplementary transportation data, which enhanced the reliability of this interpretation.

The research faced certain limitations, notably technical difficulties in distributing and completing the questionnaire. Some participants experienced inaccessible links and mobile device compatibility problems, leading to incomplete responses. The author wishes to thank those who persevered through these challenges to complete the survey, as their commitment ensured a more representative dataset despite these setbacks.
Another limitation arose from the mid-project change in research topic, which prevented conducting a pilot test. While this posed challenges in refining the instrument, the author acknowledges the valuable input from academic mentors and peers in reviewing the revised questionnaire to maintain its validity and clarity.

Despite these constraints, the findings provide a valuable foundation for future research. The behaviour of Malaysian youth campers emerges as a promising area for investigation. The author is grateful to the younger participants in this study, whose perspectives shed light on this topic. This section highlights the role of emerging generations in shaping sustainable outdoor recreation. Their voices reinforce the need for targeted education, more straightforward conservation guidelines, and behavioural nudges to bridge the gap between intention and practice.

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