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Research paper

Decoding Sustainable Lifestyles: A Comprehensive Analysis of Life-Style Factors and Their Impact on Environmental Sustainability Ratings

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Abstract

As global environmental crises escalate, understanding how individual lifestyle factors affect sustainability outcomes is essential for informing effective interventions with measurable economic and environmental benefits. A cross-sectional survey was conducted with 499 participants across urban, suburban, and rural areas. Participants completed measures for 19 variables categorized under six domains: demographics, diet and consumption, transportation and energy use, environmental behaviors, resource usage, and social/physical activities. Transportation mode emerged as the strongest predictor of sustainability. Participants who primarily walked scored significantly higher, with 84.6% classified as high sustainability performers, compared to only 20% of car users. Diet type also significantly influenced ratings: plant-based diet adherents scored 4.37 on average, with 80.2% rated highly sustainable, versus 2.26 and 28.5% for those consuming animal-based diets. Environmental awareness exhibited a threshold effect; participants with awareness levels 4-5 showed 88% high sustainability, whereas those at levels 1-3 averaged 28%. Six key behaviors, never using plastic, walking, a plant-based diet, limited clothing purchases, renewable energy use, and composting, were associated with average sustainability ratings above 4.3. High-sustainability individuals used 39.2% less electricity and 36.0% less water than their lower-rated counterparts, representing substantial resource cost savings. Suburban residents demonstrated the highest sustainability rates (67.9%), surpassing urban (47.4%) and rural (46.4%) populations. These findings identify priority areas for promoting sustainable lifestyles and highlight the economic benefits of targeted behavioral interventions through reduced resource consumption and associated cost savings.

Keywords: *Environmental Behaviour; Lifestyle Factors; Pro-Environmental Behaviour; Sustainability Assessment; Sustainable Lifestyles; Resource Economics.*

1. Introduction

Environmental sustainability has emerged as a critical global priority as intensifying crises, including climate change, resource depletion, and biodiversity loss, threaten both ecological systems and economic stability. Defined as the responsible use and management of natural resources to preserve ecological balance and ensure long-term environmental quality, sustainability demands integrated action across individual, community, and policy levels (Rockström et al., 2009). The economic implications of environmental degradation are substantial, with resource scarcity driving increased costs, supply chain disruptions, and reduced productivity across sectors (Kates et al., 2005).

Recent research emphasizes that individual lifestyle factors consumption habits, dietary choices, energy use, and transportation, significantly determine ecological footprints and associated economic externalities (Stern, 2000). These behaviors affect not only local ecosystems but also influence global environmental health through cumulative impacts. Understanding how everyday lifestyle decisions contribute to environmental outcomes is essential for creating cost-effective interventions that generate both ecological and economic benefits (Kollmuss and Agyeman, 2002).

Demographic and behavioral predictors play crucial roles in determining sustainability outcomes. Socioeconomic variables, including age, income, and education, influence environmental attitudes and practices, with economic considerations often serving as both enablers and barriers to sustainable behavior adoption (Whitmarsh and O'Neill, 2010). Personal behavioral intentions, guided by knowledge, cultural norms, and perceived barriers, drive adoption of sustainable habits such as recycling, reduced energy consumption, and responsible food choices (Stern, 2000). This intersection creates a complex matrix through which sustainability outcomes are shaped, with significant implications for resource allocation and policy design.

This research examines how specific lifestyle factors predict environmental sustainability ratings among 499 participants across diverse geographic and demographic contexts. By quantifying the relative impact of transportation choices, dietary patterns, energy consumption, and waste management practices, this study provides empirical evidence for designing cost-effective sustainability interventions. The analysis particularly emphasizes the economic dimensions of sustainable behaviors, including resource consumption patterns, potential cost savings, and the economic feasibility of behavior change interventions. Understanding these relationships is essential for developing policies that balance environmental protection with economic viability while informing individual decisions that generate both ecological and financial benefits.

Research Questions

This study addresses three key research questions:

- Which lifestyle factors most strongly predict individual sustainability ratings, and what is the relative importance of each factor in determining overall environmental and economic impact?
- How do resource consumption patterns differ between high-sustainability and low-sustainability individuals, and what are the associated economic implications in terms of utility costs and resource efficiency?
- What role does environmental awareness play in translating sustainable intentions into behaviors, and how do demographic factors moderate this relationship with implications for targeted intervention design?

2. Literature Review

2.1. Sustainable lifestyles: Theoretical framework

Sustainable lifestyles represent patterns of behavior that minimize ecological footprints while promoting social equity and economic viability (Lorek and Fuchs, 2013). The concept encompasses choices related to consumption, mobility, energy use, and waste management, aiming to reduce environmental degradation while maintaining or enhancing the quality of life. The 1987 Brundtland Report defined sustainable development as meeting present needs without compromising future generations' ability to meet their own needs, establishing intergenerational equity as a cornerstone principle (WCED, 1987).

From an economic perspective, sustainable lifestyles address market failures related to environmental externalities. Individual consumption decisions often do not account for their full environmental costs, creating a divergence between private and social costs. Understanding the behavioral and economic factors driving sustainable choices is essential for designing interventions that internalize these externalities while maintaining economic efficiency.

Psychological theories provide frameworks for understanding behavior change. The Theory of Planned Behavior (Ajzen, 1991) posits that attitudes, subjective norms, and perceived behavioral control influence intentions and actions. The Value-Belief-Norm Theory (Stern, 2000) suggests that personal values lead to beliefs that activate personal norms, driving pro-environmental behavior. However, Kollmuss and Agyeman (2002) highlight a persistent value-action gap wherein individuals express environmental concern but fail to modify behavior, often due to economic constraints, convenience factors, and structural barriers.

2.2. Lifestyle factors and environmental outcomes

Transportation and Mobility

Transportation choices represent critical determinants of environmental impact and household expenditures. Research by Makkonen et al. (2024) demonstrates that active commuting behaviors correlate with higher environmental consciousness and shorter commute distances. Guan et al. (2025) quantified that low-carbon lifestyle changes in mobility-related consumption could reduce global carbon footprints by 1.23 gigatons CO_2e, representing significant potential for both environmental and economic benefits through reduced fuel costs and infrastructure demands.

Active transportation modes offer substantial co-benefits. Barrett et al. (2024) identified walking and cycling as interventions yielding both health improvements and carbon emission reductions, creating compound value through reduced healthcare costs and environmental protection. The economic implications extend beyond individual savings to include reduced infrastructure maintenance costs and decreased air pollution-related health expenditures.

Dietary Patterns and Food Systems

Dietary choices significantly influence both environmental outcomes and household economics. Mambrini et al. (2025) demonstrated that plant-based diets are associated with lower environmental impact and reduced obesity rates, generating dual benefits for environmental and public health economics. Tilman and Clark (2014) quantified that plant-based diets substantially reduce greenhouse gas emissions and land use compared to diets high in animal products.

Recent research by Wu et al. (2025) revealed mechanisms underlying dietary impacts, showing that plant-based diets reduce the production of trimethylamine N-oxide, a cardiovascular risk factor associated with red meat consumption. Sinclair et al. (2025) noted that few national dietary guidelines incorporate sustainability considerations, suggesting policy gaps in addressing food system economics and environmental costs.

Tang et al. (2025) found that adherence to sustainable dietary patterns is associated with slower cognitive decline and better environmental outcomes, demonstrating long-term health and economic benefits. Meyer et al. (2025) showed that individuals with higher organic food consumption exhibited better dietary quality and lower diet-related environmental impacts, though cost considerations remain significant barriers for many households.

Energy Consumption and Resource Use

Energy choices directly affect both environmental outcomes and household operating costs. Renewable energy adoption and energy-efficient appliances significantly reduce ecological footprints while generating long-term cost savings through reduced utility bills (Ürge-Vorsatz et al., 2015). The economics of energy transitions increasingly favor sustainable options as technology costs decline and fossil fuel prices remain volatile.

Resource consumption patterns reveal substantial economic opportunities. Households adopting comprehensive sustainability practices achieve significant reductions in utility costs while contributing to broader environmental goals. Understanding these consumption patterns is essential for designing interventions that appeal to both environmental values and economic self-interest.

Waste Management and Circular Economy

Waste management practices, including recycling and composting, reduce environmental impact while potentially generating economic value through resource recovery. The circular economy framework emphasizes efficient resource use and waste reduction as both environmental and economic imperatives (Geissdoerfer et al., 2017). Effective waste management reduces landfill costs, extends resource availability, and creates economic opportunities in recycling and reprocessing industries.

2.3. Environmental awareness and behavior change

Environmental awareness serves as a critical mediator between knowledge and action. Granda-Beltrán et al. (2025) found that environmental awareness accounted for an 8-10% improvement in pro-environmental behaviors, confirming its role as a primary driver of sustainable actions. However, awareness alone proves insufficient without addressing structural barriers and economic constraints.

Duong et al. (2025) demonstrated that personal moral norms mediate the relationship between beliefs and sustainable behaviors, suggesting that interventions must engage both cognitive and normative dimensions. Wolfson et al. (2025) found that climate change menu labels in university dining halls generated modest behavior change, indicating that information interventions require complementary structural and economic supports to achieve substantial impacts.

2.4. Economic considerations in sustainable behavior

The economic dimensions of sustainable lifestyles operate at multiple levels. At the household level, sustainable behaviors may require upfront investments but generate long-term savings through reduced resource consumption. At the societal level, widespread adoption of sustainable practices reduces environmental externalities, potentially avoiding substantial future costs associated with climate change adaptation and resource scarcity.

Understanding the economic incentives and barriers to sustainable behavior adoption is essential for policy design. Interventions that align environmental benefits with economic self-interest demonstrate higher adoption rates and greater persistence over time. Identifying behaviors that offer both environmental and economic advantages creates opportunities for intervention designs that appeal across diverse motivational frameworks.

3. Methodology

3.1. Research design

This study employed a cross-sectional survey design to examine relationships between lifestyle factors and individual sustainability ratings. The research utilized a comprehensive quantitative approach to identify key predictors of environmental sustainability behaviors and assess the relative impacts of different lifestyle choices on overall sustainability performance.

3.2. Participants and sample

The study analyzed data from 499 participants representing diverse demographic and geographic backgrounds. Participants ranged in age from 18 to 96 years (M = 44.1, SD = 18.2), with representation across urban (n = 190, 38.1%), suburban (n = 159, 31.9%), and rural (n = 150, 30.1%) locations. The sample included males (n = 168, 33.7%), females (n = 251, 50.3%), and non-binary individuals (n = 80, 16.0%).

3.3. Measures and variables

The primary dependent variable was Sustainability Rating, measured on a 5-point Likert scale (1 = very low sustainability, 5 = very high sustainability). This rating reflected participants' overall lifestyle patterns and environmental impact behaviors.

The study examined 19 predictor variables across six domains: demographic factors (age, location, gender, home characteristics), dietary and consumption patterns (diet type, local food frequency, clothing purchase frequency, sustainable brand preferences), transportation and energy (primary transportation mode, home energy source), environmental behaviors (plastic product usage, waste disposal methods, environmental awareness level), resource consumption (monthly electricity and water usage), and social/physical activity (community involvement level, physical activity level).

3.4. Data analysis

Analysis proceeded through multiple stages. Descriptive statistics characterized all variables, including measures of central tendency, dispersion, and frequency distributions. Participants were stratified into high-sustainability (ratings 4-5, n = 267, 53.5%) and low-sustainability (ratings 1-2, n = 131, 26.3%) groups for comparative analysis.

Independent t-tests compared continuous variables between groups, while chi-square tests examined associations between categorical variables and sustainability levels. Mean sustainability ratings within each category of predictor variables assessed relative impact, with effect sizes estimated to determine practical significance. Resource consumption analysis used analysis of variance to test for significant differences, calculating effect sizes to quantify consumption differences. Missing data were handled through listwise deletion after confirming that missing values represented less than 5% of any variable.

3.5. Ethical considerations

The study utilized anonymous survey data with no personally identifiable information collected or analyzed. All participants provided informed consent for the research use of their data, and the study followed established ethical guidelines for survey-based research.

4. Results

4.1. Sample characteristics

The sustainability rating distribution revealed a bimodal pattern, with 35.3% achieving maximum sustainability (Rating 5), 20.2% moderate sustainability (Rating 3), and 19.4% minimal sustainability (Rating 1). This polarization indicated that 53.5% achieved high sustainability ratings (4-5) while 26.3% demonstrated low performance (1-2).

Demographic analysis showed diverse representation across location types and age groups. Home size averaged 1,518 square feet (range: 407-2,997), and environmental awareness scores averaged 3.1 on the 5-point scale.

4.2. Transportation mode and sustainability

Transportation choices demonstrated the strongest association with sustainability ratings. Walking as primary transportation yielded the highest average rating (M = 4.38), with 84.6% achieving high sustainability. Biking followed (M = 4.03, 61.3% high-rated), while public transit users achieved moderate sustainability (M = 3.54, 54.5% high-rated). Car dependency is associated with the lowest performance (M = 2.04, only 20.0% high-rated).

Table 1: Mean Sustainability Ratings and High Sustainability Percentages by Lifestyle Factor

Lifestyle Factor	Category	Mean Rating (1-5)	% High Sustainability (4-5)	n
Transportation Mode				
	Walking	4.38	84.6%	130
	Biking	4.03	61.3%	62
	Public Transit	3.54	54.5%	88
	Car	2.04	20.0%	219
Diet Type				
	Plant-based	4.37	80.2%	131
	Balanced	3.34	43.0%	207
	Animal-based	2.26	28.5%	161
Home Energy Source				
	Renewable	4.33	85.2%	122
	Mixed	3.54	43.9%	205
	Non-renewable	2.22	25.7%	172
Plastic Product Usage				
	Never	4.54	91.2%	102
	Rarely	3.89	68.5%	127
	Sometimes	3.65	52.3%	133
	Often	2.07	22.4%	137
Waste Disposal Method				
	Composting	4.41	81.5%	108
	Recycling	3.84	65.5%	145
	Combination	3.61	47.2%	127
	Landfill	2.04	20.6%	119
Clothing Purchase Frequency				
	Rarely	4.37	82.1%	134
	Sometimes	3.42	48.6%	218
	Often	2.48	29.9%	147
Sustainable Brand Preference				
	Yes	4.16	74.1%	251
	No	2.62	30.5%	248
Environmental Awareness Level				
	Level 1	2.28	27.2%	92
	Level 2	2.47	29.4%	85
	Level 3	3.25	27.3%	99
	Level 4	4.41	90.6%	117
	Level 5	4.52	88.8%	106
Location Type				
	Suburban	3.85	67.9%	159
	Urban	3.28	47.4%	190
	Rural	3.19	46.4%	150

Note: Total N = 499. Mean ratings are on a scale of 1 (very low sustainability) to 5 (very high sustainability). A high sustainability percentage represents participants achieving ratings of 4 or 5. Champion behaviors (mean rating ≥ 4.30) are indicated by the highest-performing categories in each factor domain.

From an economic perspective, transportation choices significantly affect household expenditures. Active transportation users avoid fuel costs, vehicle maintenance, and parking fees, while potentially incurring lower insurance premiums (Table 1). These savings represent substantial annual household budget reductions while simultaneously achieving environmental benefits.

4.3. Dietary patterns

Participants following plant-based diets achieved significantly higher sustainability ratings (M = 4.37) compared to balanced diets (M = 3.34) or animal-based diets (M = 2.26). Notably, 80.2% of plant-based dieters achieved high sustainability ratings, compared to 43.0% of balanced dieters and 28.5% of animal-based dieters.

The economic implications of dietary choices extend beyond grocery costs to include health outcomes and agricultural resource efficiency. Plant-based diets often reduce food costs while lowering long-term healthcare expenditures through improved health outcomes, creating compound economic benefits alongside environmental improvements.

4.4. Energy sources and consumption behaviors

Renewable energy users achieved high average ratings (M = 4.33, 85.2% high-rated), while mixed energy source users showed moderate performance (M = 3.54, 43.9% high-rated), and non-renewable dependence was associated with low sustainability (M = 2.22, 25.7% high-rated).

Plastic product usage frequency showed strong associations with sustainability. Participants who never use plastic products achieved the highest rating (M = 4.54), followed by rare users (M = 3.89), occasional users (M = 3.65), and frequent users (M = 2.07). Waste disposal methods also significantly influenced outcomes, with composting practitioners achieving high ratings (M = 4.41, 81.5% high-rated) and landfill-dependent participants showing poor sustainability (M = 2.04, 20.6% high-rated).

Clothing purchase frequency revealed clear patterns, with rare purchasers achieving high sustainability (M = 4.37) and frequent purchasers showing poor performance (M = 2.48). Sustainable brand preference significantly influenced outcomes, with users achieving higher ratings (M = 4.16, 74.1% high-rated) versus non-users (M = 2.62, 30.5% high-rated).

4.5. Resource consumption and economic implications

Significant differences in resource consumption emerged between sustainability groups. High-rated participants consumed substantially less electricity (M = 236 kWh/month) compared to low-rated participants (M = 388 kWh/month), representing a 152 kWh reduction (39.2% decrease). At average US electricity rates of $0.14 per kWh, this translates to approximately $256 annual savings per household (Table 2).

Table 2: Resource Consumption Patterns and Economic Implications by Sustainability Level

Resource Type	High Sustainability (Ratings 4-5) n=267	Low Sustainability (Ratings 1-2) n=131	Absolute Difference	Percentage Reduction	Annual Cost Savings per Household
Electricity Consumption					
Mean monthly usage (kWh)	236	388	152 kWh	39.2%	-
Mean annual usage (kWh)	2,832	4,656	1,824 kWh	39.2%	-
Annual cost at $0.14/kWh	$396	$652	$256	39.2%	$256
Water Consumption					
Mean monthly usage (gallons)	2,599	4,063	1,464 gallons	36.0%	-
Mean annual usage (gallons)	31,188	48,756	17,568 gallons	36.0%	-
Annual cost at $0.004/gallon	$125	$195	$70	36.0%	$70
Combined Utility Savings					
Total annual utility costs	$521	$847	$326	38.5%	$326

Economic Impact Projections.

Scale	Household Count	Annual Aggregate Savings	10-Year Cumulative Savings
Single Household	1	$326	$3,260
Small Community	1,000	$326,000	$3,260,000
Medium Community	10,000	$3,260,000	$32,600,000
Large City	100,000	$32,600,000	$326,000,000

Notes:

- Electricity cost based on the average US residential rate of $0.14 per kWh (U.S. Energy Information Administration, 2024)
- Water cost based on the average US residential rate of $0.004 per gallon (American Water Works Association, 2024)
- High sustainability group: participants with sustainability ratings of 4 or 5
- Low sustainability group: participants with sustainability ratings of 1 or 2
- Percentage reduction calculated as: [(Low - High) / Low] × 100
- Annual savings represent the financial benefit that low-sustainability households could achieve by adopting high-sustainability behaviors
- Economic impact projections assume uniform adoption of high-sustainability behaviors and do not account for infrastructure costs or implementation expenses
- Projections represent direct household utility cost savings only and do not include indirect benefits such as reduced infrastructure maintenance costs, decreased healthcare expenditures from improved air quality, or avoided environmental remediation costs

Water consumption patterns paralleled electricity usage. High-sustainability participants consumed 2,599 gallons monthly, while low-sustainability participants consumed 4,063 gallons, a 1,464-gallon difference (36.0% reduction). At average water rates of $0.004 per gallon, this represents approximately $70 annual savings.

Combined, high-sustainability households achieve approximately $326 in annual utility cost savings compared to low-sustainability households, demonstrating measurable economic benefits of sustainable behavior adoption. These household-level savings aggregate to substantial economic impacts across communities and regions.

4.6. Environmental awareness threshold effects

Environmental awareness demonstrated clear threshold effects on sustainability behaviors. Participants with awareness levels 1-3 showed consistently low performance (Level 1: M = 2.28, 27.2% high-rated; Level 2: M = 2.47, 29.4% high-rated; Level 3: M = 3.25, 27.3% high-rated). However, awareness levels 4-5 are associated with dramatically improved outcomes (Level 4: M = 4.41, 90.6% high-rated; Level 5: M = 4.52, 88.8% high-rated), indicating a critical threshold at level 4 (Figure 1).

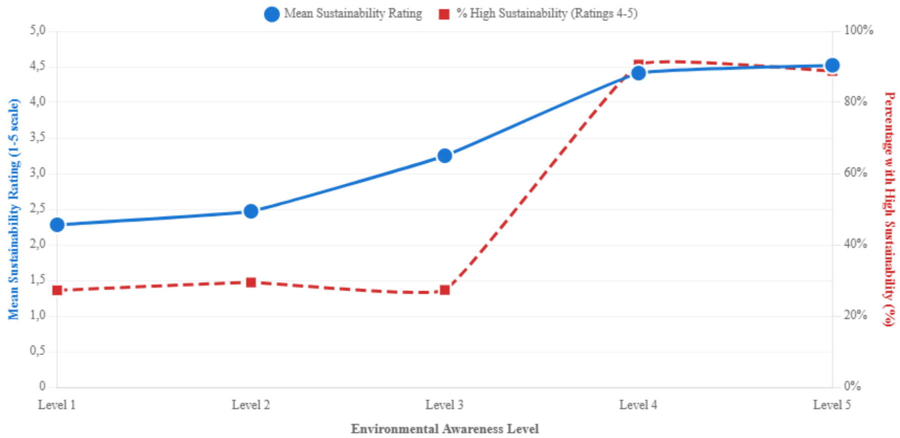

Fig. 1: Environmental Awareness Threshold Effect on Sustainability Performance (n=499).

This threshold effect has important implications for intervention design and resource allocation. Environmental education programs must achieve sufficient intensity to cross this critical threshold, suggesting that superficial awareness campaigns may prove economically inefficient compared to more comprehensive interventions.

4.7. Geographic and demographic patterns

Location type influenced sustainability outcomes, with suburban residents demonstrating the highest performance (M = 3.85, 67.9% high-rated) compared to urban (M = 3.28, 47.4% high-rated) and rural residents (M = 3.19, 46.4% high-rated). This pattern may reflect suburban access to renewable energy infrastructure, composting facilities, and active transportation options while maintaining lower resource consumption than dense urban areas (Figure 2).

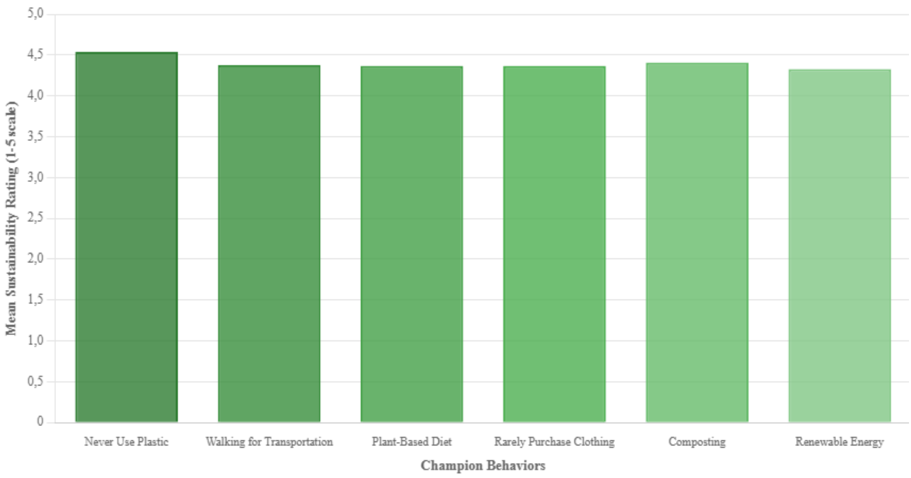

Fig. 2: Mean Sustainability Ratings of Champion Behaviors (n=499).

The analysis identified six sustainability champion behaviors with ratings exceeding 4.3: never using plastic products (4.54), walking for transportation (4.38), following plant-based diets (4.37), rarely purchasing clothing (4.37), using renewable energy (4.33), and practicing composting (4.41). These behaviors consistently demonstrated both high individual ratings and high percentages of high overall sustainability scores.

5. Discussion

5.1. Principal findings and economic implications

This study provides empirical evidence quantifying how lifestyle factors predict sustainability outcomes with measurable economic benefits. Three principal findings merit emphasis.

First, transportation mode represents the strongest predictor of sustainability ratings, with walking yielding 84.6% high sustainability performance compared to only 20% for car users. This finding has substantial economic implications. Active transportation eliminates fuel costs averaging $2,000-3,000 annually per household, reduces vehicle maintenance expenses, and decreases parking costs. At community and societal levels, reduced car dependency lowers infrastructure maintenance costs and decreases air pollution-related health expenditures, which the American Lung Association estimates exceed $150 billion annually in the United States.

Second, dietary patterns significantly influence both sustainability and household economics. Plant-based diets achieved 80.2% high sustainability rates versus 28.5% for animal-based diets. Beyond environmental benefits, plant-based diets often reduce grocery costs while generating long-term healthcare savings through improved health outcomes. Research by Springmann et al. (2016) estimated that widespread adoption of plant-based diets could reduce global mortality by 6-10% and decrease diet-related healthcare costs by $700 billion to $1 trillion annually by 2050, demonstrating the substantial economic potential of dietary transitions.

Third, the environmental awareness threshold effect at level 4 suggests that interventions must achieve sufficient intensity to generate behavioral change. From an economic efficiency perspective, this implies that modest awareness campaigns may yield poor return on investment compared to comprehensive programs that reliably cross the critical threshold. Resource allocation for environmental education should prioritize program intensity over breadth to maximize cost-effectiveness.

5.2. Resource consumption economics

The 39.2% reduction in electricity consumption and 36.0% reduction in water usage among high-sustainability individuals demonstrate that behavioral changes generate measurable economic benefits. Annual household savings of approximately $326 in utility costs represent direct financial incentives for sustainable behavior adoption. These individual savings aggregate to substantial economic impacts: in a community of 10,000 households, widespread sustainable behavior adoption could generate $3.26 million in annual utility cost savings.

Beyond household economics, reduced resource consumption alleviates pressure on utility infrastructure, potentially delaying or avoiding costly capacity expansions. Water conservation particularly offers economic benefits in regions facing scarcity, where marginal costs of new water sources significantly exceed average supply costs. Understanding these multi-level economic benefits strengthens the case for policies supporting sustainable behavior adoption.

5.3. Policy and intervention design

The identification of six champion behaviors provides clear targets for cost-effective interventions. Policies promoting active transportation, plant-based diets, renewable energy adoption, waste reduction, and minimal consumption align environmental goals with economic incentives. Effective intervention designs should emphasize these compound benefits rather than framing sustainability solely as environmental responsibility.

Infrastructure investments supporting sustainable behaviors generate both environmental and economic returns. Bicycle lane networks facilitate active transportation, reducing both carbon emissions and household transportation costs. Community composting programs decrease landfill expenses while creating soil amendment products with economic value. Renewable energy subsidies accelerate adoption while building industries that generate employment and economic growth.

The suburban sustainability advantage (67.9% high-rated) suggests that location-specific factors, including infrastructure access and built environment characteristics, influence behavioral outcomes. Urban planning and development policies should incorporate these insights, designing communities that facilitate rather than hinder sustainable behaviors through strategic infrastructure placement and mixed-use development patterns.

5.4. Limitations and future research

Several limitations warrant acknowledgment. The cross-sectional design precludes causal inferences about relationships between lifestyle factors and sustainability outcomes. Longitudinal research tracking individuals over time would strengthen the understanding of how behavior changes influence sustainability performance and identify critical transition periods.

Self-reported sustainability ratings introduce potential bias. Future research incorporating objective measures, including carbon footprint calculations, actual utility bills, and verified consumption data, would provide more robust validity. Cost-benefit analyses quantifying the economic returns of specific interventions would strengthen policy recommendations.

The sample may not fully represent global populations, particularly in developing countries with different economic contexts and cultural frameworks. Cross-cultural replication would enhance generalizability and identify culturally specific factors requiring tailored intervention approaches.

Future research should examine how policy environments, infrastructure availability, and economic incentives interact with individual choices. Studies evaluating intervention effectiveness through randomized controlled trials would establish causal relationships and optimal implementation strategies. Research examining the persistence of behavior changes and factors promoting long-term sustainability adoption would inform program design for sustained impact rather than temporary compliance.

6. Conclusion

This research demonstrates that sustainable lifestyles result from identifiable, modifiable behavioral patterns with measurable economic and environmental benefits. Transportation choices, dietary patterns, and resource consumption practices represent high-impact intervention targets that simultaneously advance environmental goals and generate household cost savings.

The findings provide actionable guidance for policymakers, organizations, and individuals. The six identified champion behaviors—active transportation, plant-based diets, renewable energy use, waste reduction, minimal consumption, and composting—offer clear priorities for intervention design. The environmental awareness threshold effect indicates that education programs must achieve sufficient intensity to generate behavior change, informing resource allocation decisions.

Economic analysis reveals that high-sustainability behaviors generate approximately $326 in annual household utility savings compared to low-sustainability patterns, creating financial incentives that complement environmental motivations. At community and societal levels, widespread adoption of identified champion behaviors could yield substantial economic benefits through reduced infrastructure costs, decreased healthcare expenditures, and improved resource efficiency.

The polarization observed in sustainability ratings, with participants clustering at high and low performance levels, suggests that sustainability represents a distinct lifestyle orientation requiring comprehensive rather than piecemeal approaches. Effective interventions should target multiple behaviors simultaneously while ensuring environmental awareness crosses the critical threshold for translating knowledge into action.

As environmental challenges intensify, understanding and promoting the lifestyle factors identified in this research becomes increasingly critical for achieving sustainable futures that balance ecological protection with economic viability. The quantified relationships between specific behaviors and sustainability outcomes provide empirical foundations for designing policies and interventions that maximize both environmental effectiveness and economic efficiency, supporting individual and collective transitions toward sustainable living patterns that serve both planetary and economic imperatives.

Research and Publication Ethics Statement

Throughout the research process, the researchers fully complied with ethical standards. The data collected from the participants were not used outside the current study, and the reporting process complied with the research ethics guide.

Contribution Rates of Authors to The Article

The authors provide equal contributions to this study.

Statement of interest

The authors declare no conflict of interest.

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