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Livelihoods and Tourism: Capital Assets, Household Resiliency, and Subjective Wellbeing

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Abstract: Although a positive relationship between tourism and quality of life is the premise of using tourism to support biodiversity conservation, tourism scholars rarely assess the relationship between tourism and community livelihoods with rigorous empirical methods, even less so in African contexts. Focusing on communities in the Greater Virunga Landscape in Rwanda and Uganda, we conducted a household survey to acquire empirical data to test novel hypotheses about tourism's influence on capital assets, household resiliency, and subjective wellbeing. Using inferential statistical analyses (e.g., analysis of variance, chi-square difference test, and independent sample *t*-tests), we compared the responses from 346 residents who have direct access to tourism livelihoods with responses collected from 224 residents not engaged in tourism. Contrary to expectations, our findings suggest that tourism may not lead to dramatic differences in access to capital assets. However, we did discover moderate influences on household resiliency and subjective wellbeing. These intangible and subjective wellbeing outcomes of tourism-based livelihood programs are challenging to assess empirically. Yet, they may be among some of the most important from a human development standpoint. As a first effort to integrate three theoretical frameworks that have, to date, seen limited application in tourism research, this study has opened the door to further work at the intersections of capital assets, family resilience, and wellbeing theories. In conclusion, we argue that incentivizing the protection of local environments through tourism must be extended to other forms of capital, while also considering more nuanced manifestations of intangible wellbeing outcomes. As such, this paper makes a significant empirical contribution to the ongoing theoretical and practical debates about the tourism-conservation relationship.

Keywords: protected areas; livelihoods; capitals; household resiliency; conservation tourism

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1. Introduction

Research has long demonstrated a strong potential of tourism to improve residents' livelihoods in communities adjacent to protected areas (e.g., [1–3]). Tourism creates opportunities for employment and income, as well as markets for local goods and services that otherwise would not exist (e.g., [4–8]). It creates incentives to protect local environments upon which new livelihoods depend (e.g., [9–11]). Improved economic capabilities also reduce reliance on the extraction of forest resources and thereby reduce biodiversity loss as residents develop alternative livelihood means linked more closely to the protection of forests resources [11–13]. Tourism can also support the development of vital community infrastructures, such as schools, healthcare centers, and roads, which further support residents' livelihoods [14]. Improved tourism opportunities around protected areas often lead to enhanced community support for conservation [5,7]. The potential of tourism

to improve livelihoods has justified community-based tourism as a strategy for wildlife conservation in Sub-Saharan Africa [15,16].

However, other studies challenge tourism's potential to improve livelihoods and protect wildlife substantively, suggesting that tourism's potential to generate tangible benefits for residents and wildlife is limited [2,14,17–21]. For example, Armstrong [22] argued that vulnerable residents in tourism destinations lack the means to take full advantage of tourism opportunities, while Manyara and Jones [21] claim that tourism livelihood programs are often dominated by foreign actors with limited knowledge of the community and thus unlikely to succeed. In addition, scholars have identified further constraints that inhibit more evident linkages between conservation and tourism, including, but not limited to, inadequate capacity and management of conservation institutions [19], mismanagement of tourism-related initiatives [15], and the self-serving interests of community gatekeepers [14].

Ongoing theoretical debates stem from conflicting evidence on the links between tourism, livelihoods, and wildlife conservation. These debates suggest the need for further empirical examination of (1) tourism's potential to improve the livelihoods of people living adjacent to protected areas, and (2) the link between these improved livelihoods and wildlife conservation. To better understand tourism's potential to promote wildlife conservation, it is first essential to analyze the relationship between tourism and ideas about livelihood capabilities (e.g., [23,24]). Therefore, the purpose of this paper is to present the results of extensive survey-based research on the relationship between tourism-related livelihoods programs and livelihood improvement. We collected data in communities adjacent to the Greater Virunga Landscape (GVL) in East Africa, one of the most successful tourism destinations globally [25]. To frame the study research and to contextualize livelihoods in this context, we integrate theoretical perspectives from writings on sustainable livelihoods framework [26], family resilience theory [27], and the wellbeing concept [28]. This study provides a much-needed empirical analysis to complement ongoing theoretical debates regarding how tourism influences local livelihoods and supports wildlife conservation around protected areas.

2. Theoretical Background

Tourism studies have called for a holistic conceptualization of tourism's impact on community wellbeing [29–32]. Studies have shown that the use of traditional neoclassical economic theory-based objective indicators of wellbeing, such as income and jobs, to evaluate the community impact of tourism leads to a partial understanding of a positive tourism impact [29,30,32]. Arguably, integrating objective and subjective indicators of wellbeing (e.g., perceived satisfaction with quality of life) accounts for socio-psychological aspects of wellbeing and improves knowledge of the community impact of tourism [32]. To account for objective and subjective potential outcomes of tourism in communities around protected areas, this analysis integrates three theoretical perspectives: (1) sustainable livelihoods framework (e.g., [26]), (2) family resilience theory (e.g., [27]), and (3) the Wellbeing concept (e.g., [28]). These perspectives first account for the ways that households draw from their assets to access and transform livelihoods into desired livelihood outcomes, how such outcomes reflect subjective perceptions of wellbeing, and how wellbeing is further moderated by a households' resilience to adversity. As indicated in our conceptual model (Figure 1), understanding sustainable livelihood outcomes requires first understanding the nature of livelihood assets and how household resiliency moderates the ability to leverage and transform these assets into desired subjective or intangible wellbeing outcomes. The remainder of this section elaborates on this theoretical and conceptual framing.

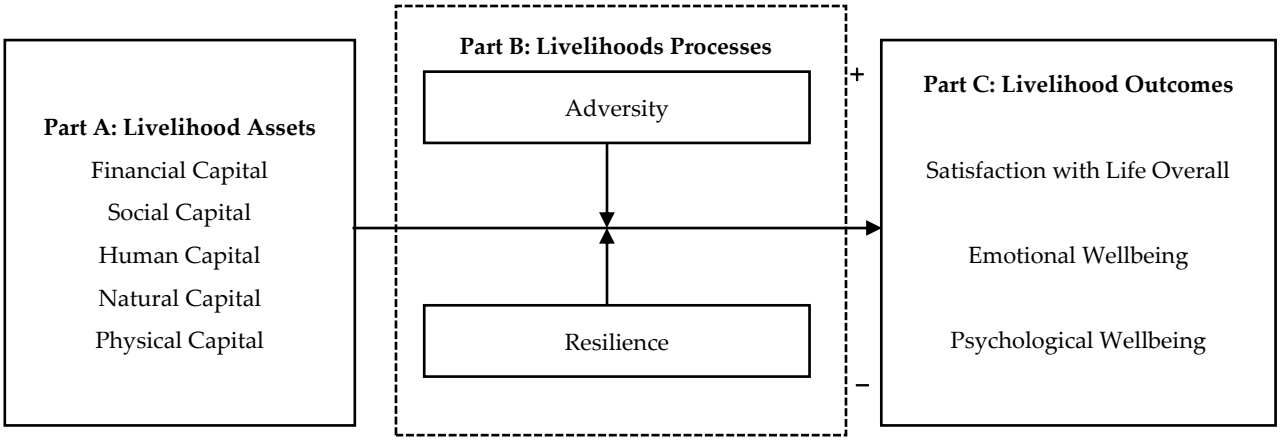

Figure 1. The conceptual model.

2.1. Sustainable Livelihood Assets

Development scholars describe livelihood assets as the means through which households access, transform, and maintain livelihoods [23], thus shaping their wellbeing [33–35] and improving their development capabilities [24]. Early capital frameworks distinguished between several forms of assets, namely: financial, social, human, natural, and physical capital (e.g., [23,35]), and later frameworks incorporated political and built capital to this list [36]. These livelihood assets are essential for producing and maintaining desired livelihood outcomes [23,33], and, where present, livelihood assets strengthen resilience to adversity at both household (e.g., [33,35]) and community (e.g., [37,38]) levels.

Livelihoods assets (i.e., capitals) have been so extensively examined in tourism studies that a full review is not possible here (see meaningful discussions in [6,14,39–42]). Suffice to say that this body of knowledge indicates that tourism linked directly to nature conservation can provide rural destination residents with livelihoods that enable them to acquire new livelihood assets and improve wellbeing; however, the ways that conservation-based tourism livelihoods generate benefits for residents vary by the nature of the livelihood opportunities provided [3,17,25]. Based on the abundant literature on tourism and capital assets, empirical tests should be able to confirm the following over-arching hypothesis:

Hypothesis 1 (H1). *Capital assets will be significantly higher for individuals who have direct access to tourism-related livelihood reporting than for those who are not directly involved in the tourism industry, though these differences will depend on the nature of involvement in the tourism sector.*

2.2. Household Resilience

Consistent with the conceptualization of resiliency across numerous disciplines, family resilience theory (FRT) characterizes resilience as the ability of households to overcome and recover from adversity [43,44]. FRT emphasizes the ability to adjust and adapt to stressful conditions [45] and to withstand severe challenges in life [27]. As Bebbington [23] notes, it is the process through which households leverage their livelihood assets (i.e., forms of capital) in response to such disturbances that determines whether meaningful wellbeing outcomes occur. Sen [46] refers to this process as the set of "doings" (i.e., actions) that produce a desired "being" (i.e., wellbeing).

Research has also shown that the process for households to acquire and transform livelihood assets into desired outcomes can be disturbed by any number of intra-household events, including, but not limited to, births, deaths, illness, and loss of employment [47]. Similarly, the acquisition and transformation of assets can also be affected by adversity from unexpected external events to the household, including, but not limited to, natural disasters, political instability, civil wars, and economic crises. The current COVID-19 pandemic also illustrates the vulnerability of tourism-based community livelihoods and resilience systems [48–50]. While these external events are typically rarer, they can happen suddenly

and have particularly acute effects on household resiliency [27,47]. Some scholars have also pinpointed a sense of coherence (i.e., the feeling that an adverse event is comprehensible, manageable, and meaningful; see [51]) as a critical factor influencing how households respond to adverse internal and external events. A household with a strong sense of coherence can therefore withstand, and recover from, adversity. For this reason, we used a sense of coherence to conceptualize household resilience (e.g., [52]).

Given the inevitability of adversity, understanding how tourism may produce or maintain desired livelihoods and how it influences the process through capital assets to adapt to disturbance is critical for determining how tourism influences individual and household wellbeing. Consideration of resilience in the context of tourism and integrated conservation has been rare, though examples are emerging (e.g., [53,54]). Yet, these applications of resilience theory tend to analyze response to disturbances at the destination level rather than the household level. To confirm the theoretical relationships posited by FRT, we suggest a second general hypothesis in this study:

Hypothesis 2 (H2). *The level of household resilience will be significantly higher for individuals who have direct access to tourism-related livelihood reporting than for those who are not directly involved in the tourism industry, although these differences will depend on the nature of involvement in the tourism sector.*

2.3. Subjective Wellbeing

Wellbeing represents the state of a person's condition [28]. The concept of wellbeing is multidimensional, encompassing varied material, social life, and emotional conditions, indicating how people feel and function [32]. Yet, although wellbeing is composed of both objective and subjective domains [28], subjective wellbeing (SWB) has been the focus of much more attention and scale development. One approach to SWB describes it as a function of the perceived emotional state and feelings of satisfaction with life [28]. In the context of tourism, SWB is therefore often considered as an indicator of a good quality of life [55,56].

Despite a vast tourism literature on wellbeing, tourism scholars have little consistency regarding how it is best measured. One influential scholar of wellbeing, social psychologist Ed Diener, developed the measures that have arguably been the most influential among both scholars and development practitioners [57–60]. The many writings of Diener and colleagues have been influential on SWB assessments ranging from the individual to the nation level, and these assessments have been applied in numerous cultural contexts. These approaches often included distinctions between satisfaction with life components [61,62], the positive psychological (i.e., eudaimonic) dimensions, and separate emotional dimensions of SWB [59]. With these three dimensions of subjective wellbeing in mind, we will test a third general hypothesis in this study:

Hypothesis 3 (H3). *The life satisfaction, affective, and psychological dimensions of wellbeing will be significantly higher for individuals who have direct access to tourism-related livelihood reporting than for those who are not directly involved in the tourism industry, although these differences will depend on the nature of involvement in the tourism sector.*

3. Methods

3.1. Study Site

We obtained data from communities adjacent to the Greater Virunga Landscape (GVL) of Uganda and Rwanda in the summer of 2016. The GVL is comprised of three contiguous protected areas: Mgahinga Gorilla National Park (MGNP) in Uganda, Virunga National Park (ViNP) in the Democratic Republic of Congo (DRC), and Volcanoes National Park in Rwanda (VNP). The GVL is one of the most biodiverse ecological regions globally [63], containing more endemic and threatened terrestrial wildlife species than any other East African eco-region [64].

In this study, the analysis is limited to MGNP and VNP. Data collection was not possible in ViNP due to armed conflict in DRC. However, both MGNP and VNP are the most visited mountain gorilla tourism destinations in the GVL. These two research sites were selected as the study context for multiple reasons. First, the GVL region is one of the two remaining natural habitats for mountain gorillas, a critically endangered species [64]. Second, it is also a primary attraction for high-spending tourists and generates substantial revenue for all three countries [25]. Third, communities in this region are often the target of investments to support improved livelihood opportunities linked to the conservation of mountain gorillas specifically and biodiversity more broadly [3,25]. Fourth, both parks primarily rely on mountain gorilla trekking, which helped them achieve the highest growth in annual tourist visitations and tourism revenue compared with other parks in the region.

The increasing tourism revenue in both parks represents growth opportunities for neighboring communities. At VNP, for example, visitation increased from about 23,372 tourists a year in 2010 to 34,888 in 2019, raising tourism revenue from about US$ 8.5 million to about US$ 26.4 million [65]. A 200% increase in tourism revenue at VNP in the last ten years, despite only a modest increase in visitor numbers, is attributed to the low volume−high value tourism strategy for Rwanda that led to increasing the gorilla trekking fee from US$ 350 to US$ 1500 [65]. In addition, the revenue growth at VNP is significant for adjacent residents, considering Rwanda's policy of sharing 10% of the annual tourism revenue with communities [17]. For instance, 40% of Rwanda's revenue-sharing fund is re-invested in communities neighboring VNP in order to improve social infrastructure, agricultural productivity, and social entrepreneurship that links communities to the mountain gorilla tourist market [14].

Nevertheless, tourism growth at MGNP is modest compared with the adjacent VNP. According to the Uganda Bureau of Statistics, MGNP had 7593 visitors and an annual growth rate of about 30% visitation between 2015–2019. Unfortunately, the tourism revenue associated with this modest growth in visitation is not readily available for MGNP. Although tourism revenue data are lacking for MGNP, the demand for mountain gorilla trekking appears to be growing steadily. Thus, the potential for adjacent communities to benefit from tourism growth is likewise increasing.

Despite such a tourism growth potential at GVL and the associated benefits to communities, civil war and armed conflict in GVL region represent a significant risk to tourism as a means to enhance the wellbeing of adjacent communities. GVL is in the East African Great Lakes region, which has been affected by civil war and armed conflict for many years [66]. These conflicts have made it impossible for tourists to visit the parts of GVL in the Democratic Republic of Congo, and tourism visits at VNP and MGNP typically slow when the region experiences conflict. For example, in the 1990s, mountain gorilla trekking at VNP and MGNP was significantly affected by the civil war and genocide in Rwanda [66]. Studies show that tourism revenue at VNP was lower (i.e., ranged between US$ 10,000 and US$ 341,000 from 1994 to 2000) when Rwanda was recovering from civil war and genocide [14]. The impact of civil war and tensions in the region far exceeds the reduced tourism demand. It also adversely affects the livelihoods of GVL residents, thereby increasing forest-dependent livelihoods in adjacent communities, which in turn threatens wildlife like the endangered mountain gorillas that sustain tourism growth in the region. In an attempt to mitigate the impact of political conflict on wildlife and tourism, Rwanda, Uganda, and the Democratic Republic of Congo created the Greater Virunga Transboundary Landscape (GVTL) secretariat in 1991. Through dialogue, communication, and policy coordination, the inter-governmental GVTL secretariat helps to create a collaborative management mechanism to advance shared wildlife conservation and tourism development goals in the GVL region [67].

3.2. Sampling and Data Collection

We conducted this quantitative study in village cells adjacent to VNP in Rwanda and MGNP in Uganda. A stratified sampling approach was utilized to select survey participants. Stratification of participants was based on whether or not residents have directly benefited from community-based tourism enterprises (e.g., ecolodge employment, craft-making

cooperatives, and cultural villages hosting cultural tourism attractions). Therefore, we used two sampling strata to identify potential respondents. The first sample included active members of community-based tourism enterprises at both VNP and MGNP. We obtained a membership list for each of the three types of community-based tourism enterprises (e.g., cultural tourism members, ecolodge beneficiaries, and craft-making cooperative members) and used it to randomly select every fourth member to participate in the study. If a selected member could not participate in the survey, we chose the next member on the list. The second sample included residents who are not members of any community-based tourism enterprise at VNP in Rwanda or MGNP in Uganda. Similarly, the list of residents obtained from local administration offices in Rwanda and Uganda served as a sampling frame to randomly select every fourth name of the household head on the list.

Overall, a stratified random sample of 570 respondents participated (out of a total of 605, we deleted 35 cases due to incomplete or outlier responses). This sample included 346 members of community-based tourism enterprises who therefore have direct access to tourism-related livelihood opportunities. In contrast, 224 participants did not have direct access to tourism-related livelihood opportunities. Interviews with these individuals lasted for about an hour. Trained field research assistants conducted interviews in Kinyarwanda language for respondents in Rwanda and Kifumbira language for respondents in Uganda. The Kinyarwanda and Kifumbira languages are similar and prevalent in Rwanda and southwestern Uganda, respectively.

3.3. Measures and the Survey Instrument

3.3.1. Livelihood Assets Concept

Consistent with prior studies [68,69], we measured the livelihood assets construct with items related to land and livestock ownership (i.e., physical capital), income (i.e., financial capital), household labor (i.e., human capital), and access to education and healthcare (i.e., built capital). Specifically, the following six questions were included in the survey instrument: (1) Does your household have farmland that sustains your livelihoods (i.e., grow crops)? (2) Does your household have livestock that sustains your livelihoods (i.e., milk or income)? (3) Does your household have access to healthcare (i.e., ability to seek and gain medical support)? (4) Does your household have access to education (i.e., children able to attend school)? (5) Is your annual household income mostly above $250 a year? (5) Does your household have more than two adults working to sustain your livelihoods? Responses were restricted to "yes" or "no" response categories.

3.3.2. Household Resilience Concept

Antonovsky's 13-item sense of coherence scale was used to measure the level of resilience to adversity in this study [51,70]. The sense of coherence concept measures people's feelings toward adverse and stressful events in their lives, and it is multidimensional: sense of comparability, sense of manageability, and sense of control [70]. Five statements were added to the survey instrument (see Table 1) to measure the sense of comparability of adversity dimension. We also included four statements to measure the sense of manageability of adversity dimension and four statements to measure the sense of control of adversity dimension [70]. All 13 statements were measured on a seven-point scale, where 1 is strongly disagree and 7 is strongly agree.

3.3.3. Wellbeing Outcomes Concept

Following the literature, we assessed the concept of wellbeing with items representing three dimensions: satisfaction with life, emotional wellbeing, and psychological wellbeing [59]. We then assessed the satisfaction with life dimension with Pavot and Diener's [62] five-item satisfaction with life scale, and we used the six-item positive affect subscale to measure the emotional wellbeing construct [59]. Negative affect components of the scale were not included given the positive expectation of livelihood outcomes. Finally, the psychological wellbeing construct was measured using an eight-item scale also developed

by Diener and colleagues [59]. Statements representing wellbeing outcomes were also measured on a seven-point scale rather than the typical five-point (see Table 2). This decision ensured consistency and minimized measurement errors, given that most participants had little or no formal education.

Table 1. Reliability of measures for household resiliency (n = 570).

Scale	Mean	SD	Item Total Correlation	Alpha if Item Deleted	Cronbach Alpha
Family resiliency scale					0.81
It has happened in the past that you were surprised by the behavior of people who you thought you knew well.	3.31	1.740	0.244	0.817	
You have the feeling that you are in an unfamiliar situation and do not know what to do.	3.47	1.594	0.547	0.790	
You have very mixed-up feelings and ideas.	3.69	1.677	0.572	0.788	
It has happened that you experience feelings that you would rather not have to endure.	3.18	1.754	0.540	0.790	
When certain events occurred, have you generally found that: you overestimated or underestimated their importance.	3.88	1.597	0.404	0.802	
It has happened that people who you counted on disappointed you.	2.68	1.600	0.420	0.801	
You have the feeling that you are being treated unfairly.	2.32	1.597	0.447	0.799	
In the past, you have often felt that many people, even those with a strong character, sometimes feel like losers in certain situations.	2.87	1.747	0.396	0.804	
You often have feelings that you are not sure you can control.	2.46	1.494	0.484	0.796	
You often have the feeling that you really do not care about what is going on around you.	1.86	1.171	0.346	0.806	
Until now your life has had: no clear goals and purpose.	2.28	1.477	0.508	0.794	
You have very mixed-up feelings and ideas.	2.46	1.446	0.501	0.795	
You often have the feeling that there is little meaning in the things you do in your daily life.	2.13	1.397	0.425	0.801	

Note: SD—standard deviation; family resiliency scale is adapted from Antonovsky's 13 sense of coherence scale (70).

Table 2. Reliability of measures for wellbeing outcomes (n = 570).

Scale	Mean	SD	Item Total Correlation	Alpha If Item Deleted	Cronbach Alpha
Satisfaction With Life scale					0.747
In most ways my life is close to my ideal.	2.99	1.294	0.545	0.668	
The conditions of my life are excellent.	1.78	1.157	0.525	0.680	
I am satisfied with my life.	2.74	1.375	0.353	0.733	
So far I have gotten the important things I want in life.	3.05	1.456	0.679	0.609	
If I could live my life over, I would change almost nothing.	3.21	1.916	0.443	0.726	
Emotional Wellbeing scale					0.888
I have often had good feelings in the past 12 months.	4.76	1.095	0.466	0.901	
I have often had positive feelings in the past 12 months.	4.05	1.237	0.729	0.864	
I have often had pleasant feelings in the past 12 months.	4.19	1.322	0.821	0.848	
I have often had joyful feelings in the past 12 months.	4.37	1.251	0.738	0.862	
I have often had happy feelings in the past 12 months.	4.22	1.345	0.811	0.849	
I have often had contented feelings in the past 12 months.	3.59	1.434	0.660	0.877	
Psychological Wellbeing scale					0.880
I lead a purposeful and meaningful life.	3.57	1.302	0.719	0.858	
My social relationships are supportive and rewarding.	4.81	1.215	0.691	0.861	
I am engaged and interested in my daily activities.	4.91	1.189	0.644	0.866	
I actively contribute to the happiness and wellbeing of others.	3.88	1.595	0.645	0.868	
I am competent and capable in the activities that are important to me.	3.67	1.489	0.549	0.877	
I am a good person and live a good life.	3.65	1.080	0.686	0.863	
I am optimistic about my future.	4.53	1.369	0.720	0.857	
People respect me.	4.04	1.144	0.564	0.873	

Note: SD—standard deviation; measures of wellbeing were adapted from Pavot and Diener [62], and Diener et al. [59].

3.4. Data Analysis

Data were coded and analyzed using the Statistical Package for Social Science (SPSS). Data screening involved cleaning data using Mahalanobis distance analysis to identify outliers [71]. First, we established the internal consistency of scales utilized in this study using Crombach alpha reliability coefficients (see Tables 1 and 2). Next, we used a means command in SPSS to create composite means for latent variables of interest from their respective scales [72]. These composite means were then used to conduct inferential statistical analyses (e.g., chi-square difference test, independent samples t-tests, and the one-way analysis of variance) to understand the differences in responses between members and non-members of community-based tourism enterprises [72]. Similarly, we conducted group difference tests to examine distinctions in responses between participants from three types of residents with direct access to community-based tourism enterprises: (1) cultural tourism enterprises, (2) handicraft producers, and (3) hotels owned by community−private sector joint ventures. Finally, the effect sizes associated with the group difference test results were examined and reported to demonstrate the strength of differences in the hypothesized relationships across the sample strata [72].

4. Results

4.1. Sample Profile

Forty-nine percent of participants were from villages around MGNP, with 51% from those near VNP. About 86% of all participants engaged in agriculture, and 61% of all participants had direct access to tourism-related livelihood programs through membership in community organizations. Among the residents with direct access to tourism-related livelihood programs, 51% were from Rwanda and 48% were from Uganda. The difference in the number of residents with direct access to tourism-related livelihood programs and those without access was not statistically significant ($\chi^2 = 0.14$, $p = 0.71$, $\varphi = 0.02$).

The number of relatively young (<45 years old) and active residents was higher among the group with access to tourism-related livelihoods programs (59%) compared with the group without direct access (48%) ($\chi^2 = 6.03$, $p = 0.01$, $\varphi = 0.1$). The sample had more females (54%) than males (46%). However, the number of male participants was significantly higher in the group without direct access to tourism-related livelihood programs (51%) compared with the residents with access to tourism-related livelihoods programs (43%) ($\chi^2 = 3.74$, $p = 0.05$, $\varphi = 0.08$). The number of residents with annual income less than $250 was not significantly different among residents who do not have direct access to tourism-related livelihoods programs (66%) compared with residents with access to tourism-related livelihoods programs (59%) ($\chi^2 = 2.26$, $p = 0.13$, $\varphi = 0.06$). Together, the above demographic information indicates that the two samples of residents (i.e., the residents with access to tourism-related livelihoods programs and residents who do not) are relatively similar, with minimal differences.

4.2. Access to Capital Assets

To test our first hypothesis, we determined if (a) there is a difference in livelihood assets between residents who have access to tourism-related livelihood opportunities and residents who do not, and (b) whether there are differences in assets between those involved in different forms of tourism-related livelihoods. The results (Table 3) reveal no statistically significant differences in livelihood assets between the tourism and non-tourism groups. However, the results indicate that farmland ownership is slightly higher among residents who have no direct access to tourism-related livelihood programs (94%) than residents who have access to tourism-related livelihood programs (90%). This difference likely reflects the greater dependence on agricultural livelihood strategies. About 69% of residents in both groups have access to livestock. Access to healthcare is slightly higher among residents who have access to tourism-related livelihood opportunities (61%) than residents who do not (57%).

Annual income above US$ 250 is higher among residents who have no direct access to tourism opportunities (41%) compared with those who do not (34%), and this difference

is not statistically significant. There are no differences between residents with tourism-related opportunities and those who do not, regarding access to capital assets such as ownership of land and livestock (χ^2 = 0.01 to 2.34, p = 0.13 to 0.92, see Table 3). Residents who have direct access to tourism-related livelihood programs are significantly more likely (χ^2 = 5.88, p = 0.02) to reside in a household with two working adults (42%) than residents in households with less than two working adults (32%); however, the effect size (φ = 0.1) indicates that the difference is minimal [72].

Table 3. Ownership of livelihoods assets.

	Hypotheses	Response	Percentage of Response (%)			χ^2-Value	p-Value	Effect Size (φ)
			Group 1 (n = 224)	Group 2 (n = 346)	Total			
H1	Land ownership	Yes	94	90	92	2.34	0.13	0.06
H2	Livestock ownership	Yes	69	69	69	0.01	0.92	0.00
H3	Access to healthcare	Yes	57	61	60	1.18	0.28	0.05
H4	Access to education	Yes	64	55	58	4.46	0.04	0.1
H5	Annual income above USD$250	Yes	41	34	37	2.26	0.13	0.06
H6	More than two adults in household	Yes	32	42	38	5.88	0.02	0.1

Group 1 = Residents with no direct access to tourism-related livelihood programs for conservation. Group 2 = Residents with direct access to tourism-related livelihood programs for conservation.

Finally, access to education is greater among residents without access to tourism-related livelihoods (64%) than residents with access to tourism livelihoods (55%). The difference between groups is statistically significant (χ^2 = 4.46, p = 0.04), but the effect size again indicates that the difference is minimal (φ = 0.1).

The first general hypothesis also requires testing to determine how involvement in varied tourism-based livelihood opportunities affect differences in capital assets. Similarly, the results presented in Table 4 show that farmland ownership is higher among residents who are not involved in tourism (94%) compared with residents with access to cultural tourism-based opportunities (91%), handicraft-based opportunities (92%), and tourist lodge joint-ownership opportunities (87%). Livestock ownership is higher among residents who have access to handicraft-based livelihoods programs (73%) and lower in residents who have direct access to tourist lodge joint-ownership initiatives (62%).

Table 4. Ownership of livelihood assets across varied types of tourism-related livelihood programs.

	Hypotheses	Response	Percentage of Response (%)					χ^2-Value	p-Value	Effect Size (φ)
			Group 1 (n = 224)	Group 2 (n = 109)	Group 3 (n = 128)	Group 4 (n = 111)	Total (n = 570)			
H1a	Land ownership	Yes	94	91	92	87	92	3.89	0.27	0.09
H2a	Livestock ownership	Yes	69	71	73	62	69	3.34	0.34	0.08
H3a	Access to healthcare	Yes	57	61	60	63	60	1.41	0.70	0.05
H4a	Access to education	Yes	64	51	55	60	58	6.28	0.1	0.10
H5a	Annual income above USD$250	Yes	41	42	31	31	37	6.24	0.1	0.10
H6a	More than two adults per household	Yes	32	40	40	46	38	6.82	0.08	0.10

Group 1 = Residents with no direct access to tourism-related livelihoods programs for conservation. Group 2 = Residents with direct access to tourism-related livelihoods programs based on membership in cultural tourism initiatives. Group 3 = Residents with direct access to tourism-related livelihoods programs based on membership in handicraft enterprises. Group 4 = Residents with direct access to tourism-related livelihoods programs based on membership in tourism lodge joint venture.

Access to healthcare is highest among residents with access to tourist lodge joint-ownership initiatives (63%) and lowest among residents without access to tourism-related livelihoods programs. The annual income above US$ 250 is higher among residents with access to cultural-based opportunities (42%) and lower among residents working

in handicrafts (31%) or tourist lodge joint-ownership (31%). Households with more than two adults or children are most common among residents with access to tourist lodge joint ownership initiatives (46%) and the least among residents who do not have direct access to tourism-related livelihoods programs (32%). Lastly, access to education is greatest among residents with no direct access to tourism-livelihoods opportunities (64%) and lowest among residents with direct access to cultural tourism-related livelihoods programs (51%). However, differences in access to education are not statistically significant (χ^2 = 1.41 to 6.82, p = 0.08 to 0.70; see Table 3).

4.3. Differences in Household Resilience

The second hypothesis in this study requires testing whether there are significant differences in household resilience between residents who have direct access to tourism-based livelihood opportunities and those who do not. The results in Table 5 indicate that resilience is relatively low across both groups (mean ranging between 2.72 and 2.88 on a 7-point scale). Resilience is slightly higher among residents who have access to tourism-related livelihoods programs (mean = 2.88, SD = 0.90) compared with residents who do not (mean = 2.72, SD = 0.81), a difference that is statistically significant (t = 2.197, p = 0.03), although the point biserial effect size (r_{pb} = 0.092) indicates that the difference is minimal.

Table 5. Differences in livelihood outcomes.

Hypothesis		Reported Levels of Livelihood Outcomes [a]		t-Value	df	*p*-Value	Effect Size (r_{pb})
		Group 1 (n = 224)	Group 2 (n = 346)				
H7	Resilience	2.72	2.88	2.20	568	0.03	0.09
H8	Satisfaction with life	2.62	2.84	2.54	568	0.01	0.1
H9	Emotional wellbeing	4.11	4.26	1.67	568	0.10	0.07
H10	Psychological wellbeing	4.08	4.17	1.08	568	0.28	0.04

Group 1 = Households with no direct access to tourism-related livelihoods programs. Group 2 = Households with direct access to tourism-related livelihoods programs. [a] Level of livelihood outcomes and resilience conditions are represented by mean values on a 7-point scale (1 = strongly disagree; 7 = strongly agree).

The second hypothesis also requires determining how the level of resilience varies between residents involved in the various types of tourism-based opportunities. The results partially confirm a significant difference in resilience (F = 4.77, p < 0.01). As shown in Table 6, the Tamhene T2 post-hoc test indicates that residents working with handicrafts are more resilient than residents without access to tourism-based livelihood opportunities (mean difference = 0.51, p < 0.01).

Table 6. Differences in livelihood outcomes compared by incentive type.

Hypothesis		Reported Levels of Livelihood Outcomes [a]				F-Value	df	*p*-Value	Effect Size Eta (η)	Post-Hoc Differences [a]	
		A (n = 224)	B (n = 109)	C (n = 128)	D (n = 111)						
H7a	Resilience	2.72	2.99	2.97	2.67	4.77	566	<0.01	0.16	C > A	0.25(0.91) **
H8a	Satisfaction with life	2.62	2.88	3.04	2.57	6.66	566	<0.001	0.19	C > A	0.42(0.12) *
										C > D	0.47(0.13) *
H9a	Emotional wellbeing	4.11	4.51	4.43	3.82	11.78	566	<0.001	0.24	B > A	0.41(0.11) *
										C > A	0.32(0.11) *
										B > D	0.70(0.13) **
										C > D	0.61(0.13) **
H10a	Psychological wellbeing	4.08	4.40	4.35	3.73	12.29	566	<0.001	0.25	B > A	0.32(0.10) *
										A > D	0.35(0.11) *
										B > D	0.67(0.12) **
										C > D	0.62(0.13) **

A = households with no direct access to tourism-related livelihood programs. B = Households with direct access to cultural-based tourism-related livelihood programs. C = Households with direct access to handicraft-based tourism-related livelihood programs. D = Households with direct access to tourist lodge joint-venture initiatives. ** Tamhene T2 post-hoc mean differences are significant at p < 0.001. * Tamhene T2 post-hoc mean differences are significant at p < 0.05. [a] Mean differences (standard errors are presented in parentheses).

4.4. Differences in Wellbeing Outcomes

The third hypothesis in this paper requires testing for whether there are significant differences in wellbeing among residents who have access to tourism-based livelihood opportunities compared with residents who do not. As seen in Table 5, the results show that satisfaction with life is relatively low across both groups (mean ranging between 2.62 and 2.82 on a seven-point scale). However, satisfaction with life is statistically significantly higher among residents with access to tourism-related livelihoods programs (mean = 2.84, SD = 1.03) compared with residents who do not (mean = 2.62, SD = 0.99). This provides partial support for the third hypothesis (t = 2.54, $p = 0.01$), although the point biserial effect size ($r_{pb} = 0.1$) is again minimal.

Overall, emotional wellbeing is moderate across both groups (rated above 4, where 7 is strongly in agreement). Residents with direct access to tourism-based livelihood opportunities rate perceived emotional wellbeing higher (mean = 4.26, SD = 0.99) than residents without direct access (mean = 4.11, SD = 1.09); however, this difference is not significant (t = 1.67, $p = 0.1$), indicating that the hypothesized relationship to emotional wellbeing is not supported.

Regarding the third dimension of wellbeing tested here, residents across both groups are moderately satisfied with their psychological wellbeing (mean rating above 4, on a seven-point scale). Psychological wellbeing is slightly higher ($\chi^2 = 0.01$ to 2.34, $p = 0.13$ to 0.92) among residents with access to tourism-related livelihoods programs (mean = 4.17, SD = 0.96) compared with residents without access (mean = 4.08, SD = 0.97). This difference is also not statistically significant (t = 1.08 $p = 0.28$), indicating that the hypothesized relationship to psychological wellbeing is likewise not supported.

The third hypothesis also requires testing whether there is a significant difference in the three dimensions of wellbeing based on the access to cultural, handicraft, and lodge joint-venture types of tourism livelihood opportunities. The results show that satisfaction with life is highest among residents who have direct access to handicraft-based livelihoods programs (mean = 3.04, SD = 1.06) and lowest among residents who have direct access to tourist lodge joint-ownership (mean = 2.57, SD = 0.89). The results in Table 6 show significant differences in wellbeing measures across all four groups (F = 4.77 to 12.29, $p < 0.01$), supporting the third hypothesis. The effect sizes, ranging from eta(η) of 0.185 to 0.25, indicate that the differences revealed in the four groups of residents range from minimal to typical (Vaske, 2008).

Tamhene's T2 post-hoc tests show that satisfaction with life is significantly higher among residents who have access to handicraft-based opportunities when compared with both residents with tourist lodge joint ownership opportunities (mean difference = 0.42, SE = 0.116, $p < 0.05$) and residents who do not have direct access to tourism-related livelihoods programs at all (mean difference = 0.47, SE = 0.126, $p < 0.05$). The post-hoc results in Table 6 also show that residents with direct access to cultural-based livelihoods programs and handicraft-based livelihoods programs are emotionally stronger than residents who have no direct access to tourism-related livelihoods programs and residents who have access to tourist lodge joint-ownership. Similarly, post-hoc tests show that the psychological wellbeing of residents with direct access to cultural-based livelihoods programs and handicraft-based livelihoods programs is more robust than residents who have access to tourist lodge joint-ownership and those who have no direct access to tourism-related livelihoods programs. Collectively, the results appear to confirm the third hypothesis.

5. Discussion

5.1. Variation in Access to Capital Assets

Overall, the results show that most residents at GVL have access to essential capital assets. The results indicate that over 90% of all residents at GVL own land, and there is no statistically significant difference in land ownership between residents who have direct access to tourism-related livelihoods programs and residents who do not. We observed a similar trend in livestock ownership across both groups. Almost 70% of

residents own livestock, and 60% of residents have access to healthcare, regardless of access to tourism-related livelihoods. Considering that land and livestock are essential assets in this context, the similarity of ownership across both groups of residents indicates that tourism is at least as effective as other livelihood strategies at affording access to cultural and financial resources.

The findings are in some ways inconsistent with writings that have suggested that protected areas provide tourist-related livelihoods that improve livelihood opportunities (e.g., [2,4]). This study shows a few statistically significant differences in access to capital assets between residents working directly in tourism and those that do not. Tourism in this context has a limited influence on capital assets at GVL. The lack of empirical evidence here and elsewhere is likely to lead to continued scholarly challenges regarding the potential of tourism to improve livelihoods in communities adjacent to protected areas [15,18,20].

The lack of demonstrable differences in capital assets between residents working in tourism and those that do not may also be a proxy indicator of the success of government poverty eradication programs such as "*Ubudehe*", a social protection program in Rwanda [73], and "*SUUBI*", a social support project in Uganda [74]. Considering the potential of such development programs to strengthen access to capital assets, integrating such development programs into wildlife conservation and nature-based tourism development efforts at GVL is essential [68].

While results here indicate no statistically significant difference in perceived access to healthcare between residents working in tourism and those that are not, perceived access to education is significantly higher among residents not working in tourism. Among the residents with access to tourism-related livelihood programs, access to education appears to be slightly higher among residents associated with tourist lodge joint-ventures with the private sector than among residents associated with cultural tourism and handicraft programs. These results may not be surprising, given that tourism is expected to enhance education opportunities for rural communities [3]. Similarly, there are aggressive government programs aimed at strengthening access to healthcare and education in both countries, which have the potential to influence perceptions. For example, Rwanda's universal healthcare program has enabled the poorest and most vulnerable to access subsidized healthcare [75]. Similarly, the Ugandan government has funded rural health centers.

The universal primary education programs in both Rwanda [76] and Uganda [74] have also improved access to education among the poorest people. The finding of a low level of access to education among the residents with direct access to tourism-related livelihoods may indicate that such labor-intensive livelihoods programs may inadvertently create unintended consequences. Alternatively, other studies have shown that employment in the nature-based tourism sector may limit the time one has available for additional educational (i.e., training) opportunities (e.g., [7]). Other evidence shows that education is often not given the same priority as agricultural labor or other income-generating activities [77].

5.2. Variation in Household Resilience

The level of household resilience is low for all residents; however, it is higher among residents who have access to tourism opportunities. Specifically, results show that residents with access to cultural tourism and handicraft opportunities are more resilient than residents involved in tourist lodge joint-ventures. Inconsistent with studies emphasizing the importance of participation in management, decision-making, and ownership opportunities (e.g., [6,7,78]), this study found that residents involved in the tourist lodge joint-ventures are less likely to receive direct income or dividends. Lack of access to hotel revenue may be due to the structure of many lodge-based community joint ventures, where most of the generated revenue is passed on to community collectives and invested in social programs [25]. This research does not account for these alternative distribution pathways. Nevertheless, they can be powerful in creating the perception that tourism contributes to the wellbeing of the community as a whole, even when individual benefits are minimal, a perspective accounted for by the altruistic surplus theory [79–81].

The findings here support Benzies and Mychasiuk [82], who argue that access to education and healthcare positively influences resilience to adversity. Yet, as indicated earlier, our results show that residents with direct access to lodge joint-ventures had the most access to education and healthcare, yet they were less resilient than other residents. It may be that access to physical assets (e.g., land and livestock) connects culturally to self-esteem and efficacy for residents at GVL, and may thus be an important protective factor with a disproportionate contribution to resilience [82]. In addition, capital assets also act as moderators of risk [23,24,43,44]. From our findings, it appears that tourism can also enhance residents' resilience by strengthening access to capital assets. However, given the family resilience theory's focus on intra- and extra-household risks [47], more research is needed to determine if tourism-related livelihoods provide unique protective factors to moderate both risks.

5.3. Variation in Wellbeing Outcomes

The results show that satisfaction with life, a cognitive-judgmental dimension of subjective wellbeing, is low among all residents at GVL. The results also show only moderate levels of emotional and psychological wellbeing. These findings are surprising considering the high levels of physical capital (e.g., over 90% of residents have access to land and 70% have access to livestock) and built capital (e.g., about 60% have access to healthcare and education). The potential for the low incomes (37% above $250 per year) to explain the low satisfaction with life is not consistent with the literature. For example, Diener [57] argues that the potential for income to influence satisfaction with life diminishes with access to basic needs of life, in this case, land, livestock, health, and education. Future research should explore underlying factors influencing low to moderate levels of subjective wellbeing, some of which may include additional psychological, political, and socio-demographic variables [58].

The results did show that the level of life satisfaction is significantly higher among residents who have access to tourism-based livelihood opportunities. This finding is consistent with the strong evidence that tourism can improve life satisfaction in tourism destination communities [21,25,30]. Furthermore, the results show that among residents involved in tourism, life satisfaction is significantly higher for those working in handicraft enterprises or cultural tourism, and lower for residents who work in lodge joint-ventures. While the empirical link between small-scale community-based handicraft and cultural tourism enterprises to improved life satisfaction (vs. larger-scale joint-ventures) is a novel finding, the literature has long-suggested that large-scale enterprises do not always strengthen the overall quality of life of residents (e.g., [83]). Among the many reasons for this disconnect include the limited capacity of residents to engage effectively with the private sector (e.g., [19]) and a lack of genuine participation, ownership, or resident control (e.g., [22,84]).

When residents with access to varied types of tourism livelihoods were compared, the results indicate that residents working in cultural tourism and handicraft enterprises have significantly higher emotional and psychological wellbeing than residents with access to tourist lodge joint-venture initiatives. As was the case with life satisfaction, tourism's potential to improve emotional and psychological wellbeing may be higher in small-scale, resident-controlled tourism enterprises than in large-scale, joint ventures, where residents may not feel empowered to engage equitably. The research has indicated that where tourism entrepreneurship partnerships involve vulnerable residents, residents stand to lose, and benefit opportunities are more likely to fail [19,21,22]. On the other hand, active participation in tourism management, and income that goes directly to residents involved in cultural tours and handicraft enterprises, are more likely to yield positive psychological outcomes, including self-esteem and confidence about the future [31].

5.4. Future Research

This research has several implications for both research and practice. First, the low overall life satisfaction and resilience among residents, despite the relatively strong capital

assets, suggests that further research is needed to identify other potential factors moderating life satisfaction and household resilience. Second, access to livelihood assets, household resilience, and wellbeing outcomes are, counterintuitively, lowest among residents participating in tourist-lodge joint-ventures, presumably the most lucrative of the tourism-related livelihoods assessed here. Future research needs to better account for these lower ratings' constraints and identify ways to improve joint ventures between rural communities and a robust private sector to open up more resilience and wellbeing benefits for residents. Such research efforts would also benefit from considering the effect of the tourism scale (i.e., large vs. small scale tourism areas).

Additionally, household resilience remains a relatively new concept in the tourism literature, which has to date emphasized destination (i.e., community) resiliency. Therefore, future research should aim to evaluate the potential of tourism to strengthen the resiliency of households, a critical social and economic organization unit in rural and lesser developed contexts. Finally, future research exploring the relationship between tourism, community wellbeing, and community support for conservation should control for the effect of socio-psychological, economic, and political factors, which, according to Diener et al. [58], are likely to moderate wellbeing perceptions.

6. Conclusions

This research tested hypotheses regarding tourism's ability to provide greater access to capital assets, strengthen household resiliency, and promote improved wellbeing outcomes. The findings were mixed. While there was minimal empirical evidence of differences in access to capital assets between individuals working in tourism and those without livelihood opportunities in the tourism sector, household resilience and subjective wellbeing outcomes were slightly higher among residents with access to tourism livelihoods. Specifically, residents actively engaged in cultural tourism and handicraft enterprises were more resilient, satisfied with life overall, and emotionally and psychologically stronger. Therefore, in the context of tourism research, the key finding of this study is that tourism may be contributing more significant benefits to the communities neighboring protected areas than previously reported. However, such benefits can only be observed if scholars account for intangible, subjective wellbeing outcomes.

Furthermore, tourism's intangible wellbeing benefits are more likely to emerge from small-scale, resident-controlled tourism-based livelihoods programs (i.e., cultural tourism demonstration and handicraft enterprises) than large-scale enterprises (e.g., private sector and community joint venture ownership of tourist lodges). These intangible and subjective wellbeing outcomes of tourism-based livelihood programs are more challenging to demonstrate empirically. Yet, they may be among the most important outcomes from a human development standpoint [24]. These results have theoretical and practical implications. For example, the neoclassical economic conceptualization of tourism benefits is a blindspot in tourism studies. Such conceptualization potentially overlooks hidden but significant socio-psychological benefits of community-based tourism programs.

Additionally, our analysis shows that the management of tourism programs is better served by tracking socio-psychological benefits of tourism to inform tourism policy and decisions, not simply income and employment. Unfortunately, given the historical armed conflict situation in the GVL region, the potential of management to advance the economic and socio-psychological benefits of tourism for communities remains at risk. However, the intergovernmental collaborative wildlife management mechanism, through the GVTL secretariat, presents the opportunity to minimize the adverse effect of conflict on tourism growth and positive community impacts of tourism.

These results, however, ought to be interpreted with caution due to limitations. First, the site-specific context of mountain gorilla tourism, a unique tourism product, may challenge the external validity of this study's findings. Similar studies across diverse geographical locations are needed in order to confirm the external validity of this study's results. Second, the data analyzed here were collected five years ago, and the results may

not account for recent changes in mountain gorilla tourism and the associated opportunities or risks. Future research may address this limitation by testing similar hypotheses. Third, the socio-demographic, political, and economic factors that are likely to moderate wellbeing perceptions were not controlled, and future research is needed in order to account for these effects.

Notwithstanding the limitations, this study opens the door to further work at the intersections of capital assets, family resilience, and wellbeing theories. Tourism's potential to contribute to biodiversity conservation is not limited to economic or financial outcomes. This analysis demonstrates that a better understanding of how tourism can incentivize the protection of local environments results from extending the analysis to other forms of capital, to benefits occurring between individual and community levels of social organization, and to more nuanced conceptualizations of subjective wellbeing.

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