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A competitive analysis of human and animal well-being in Nigeria

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Abstract

This quantitative study analyzed determinants of human and animal wellbeing in Nigeria and explored correlations between associated factors. Statistical analysis of secondary data on 30 variables related to healthcare, income, education, safety, animal health, welfare policies, and environmental conditions revealed positive correlations between human life expectancy and healthcare access, income, employment, and safety. Animal health positively associated with nutrition. However, animal welfare legislation negatively correlated with human lifespan. While correlational analysis provides valuable insights, limitations include inability to determine causation and capture temporal dynamics. Findings emphasize the need for integrated policies that holistically address socioeconomic, cultural, and policy dimensions shaping human-animal relations in Nigeria. Further research can build on this empirical foundation to inform synergistic approaches to optimizing wellbeing.

Keywords: Animal welfare; Human wellbeing; Nigeria; Correlation analysis; Integrated policy

1. Introduction

Improving human and animal wellbeing is a critical goal in many countries, including Nigeria. As the most populous nation in Africa with over 200 million people, Nigeria faces immense challenges in ensuring the health, prosperity, and quality of life for all its residents, both human and animal (Adetayo & Adebayo, 2017). Enhancing wellbeing requires a nuanced understanding of the complex factors that influence it. This research aims to shed light on the key determinants of human and animal wellbeing in Nigeria and examine the correlations between these factors through quantitative data analysis.

The concept of wellbeing encompasses multiple dimensions of physical, mental, and social health. For humans, it includes access to healthcare, education, economic stability, and personal safety (Alimi et al., 2021). Animal wellbeing depends on nutrition, housing, humane treatment, and species-specific needs (Dei et al., 2018). This research adopts a holistic perspective, considering how various elements interconnect to impact overall quality of life.

The aim of this study is to analyze the critical determinants of wellbeing for both humans and animals in Nigeria. The key objectives are:

- Identify socioeconomic, policy, environmental, and cultural factors that significantly influence human wellbeing
- Determine crucial factors affecting animal health, welfare, and wellbeing
- Explore the correlations between variables related to human and animal wellbeing
- Draw out implications of the findings for research, policymaking, and resource allocation

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This quantitative study utilizes statistical analysis of empirical data to illuminate the relationships between wellbeing factors. Correlation analysis is employed to quantify the connections between variables and detect meaningful patterns (Akinola & Oparinde, 2020). The methodology aims to extract actionable insights while recognizing the limitations of correlational findings in determining causation.

The scarcity of research examining animal welfare in developing countries highlights the significance of this study (Idowu et al., 2020). Most existing analyses focus exclusively on human wellbeing. This research aims to address that gap by considering both human and animal welfare in Nigeria through an integrated framework.

1.1. Understanding the Correlates of Human Wellbeing

For humans, health and longevity depend heavily on socioeconomic conditions (Alimi et al., 2021). Access to high-quality healthcare clearly influences life expectancy and overall population health. However, economic components like income, employment, and poverty rates also shape health outcomes (Nwosu & Ndinda, 2019). Education plays a role in determining quality of life, equipped citizens with knowledge and skills to attain economic stability (Akinola & Oparinde, 2020). Safety, security, strong social services, cultural values, and environmental factors also impact human wellbeing in complex ways (Amusan & Adedeji, 2018).

This analysis seeks to quantify how strongly these diverse elements correlate with critical indicators of human development like life expectancy. Positive correlations would signify that improvements in socioeconomic, cultural, and policy spheres can enhance human prosperity. Negative correlations may reveal risk factors that reduce quality of life. Recognizing these patterns can inform strategies to optimize wellbeing.

1.2. Understanding Drivers of Animal Welfare

For non-human animals, physical and psychological health depend on environmental conditions, nutrition, humane handling, and species-specific needs (Dei et al., 2018). Animal welfare legislation regulates practices like agriculture, testing, and transportation to prevent abuse (Adetayo & Adebayo, 2017). Stronger legislation typically correlates with better welfare standards. Access to natural habitats and biodiversity conservation also promote animal wellbeing (Fawole & Taiwo, 2019). Population size, proximity to humans, and cultural attitudes shape human-animal relations and stress levels (Tanimomo-Dagunduro et al., 2019). Quality of veterinary care further determines animal health (Idowu et al., 2020).

This study analyzes how these factors statistically correlate with tangible welfare outcomes like health, nutrition, and documented abuse. Positive correlations would underscore the importance of certain practices and policies for animal wellbeing. Negative links may reveal risk factors that policymakers could address. As animal and human realms intersect, these insights can inform integrated strategies.

1.3. Understanding the Connections

While existing research analyzes human or animal wellbeing separately, the complex interrelations between human and animal spheres deserve deeper examination. This study explores potential correlations between human and animal welfare factors. The connections can take various forms:

- Direct causal relationships, where one variable clearly influences another. For example, higher household income enables greater spending on animal welfare.
- Indirect links through intermediary factors. Better human healthcare may support veterinary training to treat animal diseases.
- Bidirectional associations, where variables reciprocally influence each other. Wildlife conservation protects habitats for both animals and humans.
- Spurious correlations arising from confounding factors. Cultural attitudes may independently influence both animal abuse and human behavior without directly causing each other.

Correlation analysis provides an empirical lens to identify potential connections between human and animal wellbeing factors. This can reveal synergies to leverage as well as tensions to reconcile through integrated policies. A major aim is uncovering statistically significant patterns that set the stage for further investigation into the causal mechanisms at play.

The findings carry meaningful implications for research, policymaking, and resource allocation in Nigeria. Quantitatively demonstrating how animal welfare policies may improve human prosperity could motivate legislation.

Likewise, showing how reducing poverty enhances human lifespan and environmental protection could inform integrated development programs. Revealing correlations allows stakeholders to look beyond siloed human or animal concerns toward synergistic solutions.

1.4. Research Limitations and Future Directions

While this quantitative methodology generates critical insights, the limitations of correlation studies must be acknowledged. Correlation does not equal causation. Significant statistical relationships do not prove definitive causal links or explain the reasons, contexts, and pathways involved. Experimental research is needed to determine causation and generalizability. Qualitative studies can provide rich details about the human experiences and cultural meanings shaping the dynamics.

Additionally, the use of quantitative data at one snapshot in time cannot capture long-term temporal trends. Wellbeing factors and their complex associations can evolve across months and years. Longitudinal tracking of correlations over time could illuminate further insights.

The research focuses specifically on Nigeria, and findings may not extend to other developing countries. Comparative analyses could identify contextual differences as well as commonalities across human-animal relations globally.

Finally, the study utilizes proxy indicators that may not holistically encompass all facets of human and animal wellbeing. Future research could incorporate additional dimensions beyond the quantified metrics.

This study seeks to advance knowledge as one part of expanding research on interrelations between human and animal wellbeing globally. The findings offer an empirical foundation for qualitative explorations, experimental designs, longitudinal tracking, and comparative approaches to enrich understanding of this vital topic.

1.5. Conclusion

In an increasingly interconnected world, human health and prosperity cannot be untangled from the wellbeing of animals sharing our ecosystems. This research aims to bring academic rigor to understanding these complex associations in the understudied context of Nigeria. Quantitative correlation analysis allows an empirical investigation of the multifaceted factors influencing quality of life across species. The insights can inform policies, resource allocation, and integrated care practices to enhance human-animal relations. While this methodology has limitations, it represents an important step toward elucidating the intricate connections between human and animal welfare. Further exploratory studies are needed, but strong quantitative analyses can catalyze real-world impact by shaping a holistic understanding that transcends entrenched anthropocentric paradigms. This research seeks to put that integrative, evidence-based vision into practice.

2. Literature Review

Research on human and animal wellbeing encompasses diverse academic fields and perspectives. This review synthesizes key literature on the determinants of human and animal welfare, particularly in the context of Nigeria. Studies have examined the socioeconomic, policy, cultural, and environmental factors influencing quality of life across species.

2.1. Human Wellbeing Research

A substantial body of scholarship analyzes drivers of human development and longevity. Alimi et al. (2021) applied an autoregressive distributed lag model to identify determinants of life expectancy in Nigeria. They found income, education, and fertility rates significantly predicted lifespan, though the links were complex and bidirectional. Akinola and Oparinde's (2020) analysis highlighted healthcare access, education, economic factors, and nutrition as key correlates of life expectancy. These quantitative studies demonstrate the need for multidimensional frameworks in assessing human wellbeing.

Qualitative and mixed-methods research provides further context on how culture, environment, and policy shape quality of life in Nigeria. Amusan and Adedeji (2018) conducted a content analysis of wildlife conservation policies, finding poor implementation constrained environmental protection efforts that impact human habitats. Nwosu and Ndinda (2019) used demographic data along with focus groups to explore how socioeconomic inequality contributed to adult mortality. Their study revealed perceptions of inadequate political responsiveness to community health needs.

This scholarship collectively underscores that enhancing human prosperity requires addressing socioeconomic access, cultural attitudes, and governance shortcomings. As Akinola and Oparinde (2020) emphasized, "Good health is indispensable to human welfare and sustained economic development" (p.1954).

2.2. Animal Welfare Research

Animal wellbeing has received growing research attention. Dei et al. (2018) reviewed the status of animal welfare legislation across Africa, finding limited laws in most nations including Nigeria. However, Adetayo and Adebayo (2017) noted public concern over animal cruelty has increased pressure for stronger legal protections in Nigeria. Analyzing veterinary drug sales as an indicator, they found animal health regulations remained poorly enforced.

Anthropological studies reveal cultural complexity in human-animal relations. Tanimomo-Dagunduro et al. (2019) conducted surveys and focus groups on attitudes toward wildlife in Southwest Nigeria. Despite valuing conservation, community dependence on bushmeat and clashes over livestock farming challenged environmental protection. Changing cultural mores through education and dialogue emerged as essential.

Agricultural research examines animal husbandry practices. Fawole and Taiwo (2019) reviewed impacts of intensive farming on animal habitat quality, citing biodiversity loss, pollution, and deforestation pressures. They recommended agricultural policy reforms focused on sustainability and rural community engagement. Similarly, Oyinbo and Rekwot (2019) called for legislation against inhumane livestock transportation methods.

Overall, scholarly consensus indicates progress on animal welfare in Nigeria requires strengthened legal frameworks along with cultural shifts and sustainable agriculture policies. As Idowu et al. (2020) summarized, "The greatest challenge...is developing pragmatic animal welfare policy interventions that fit the social-cultural context" (p.1767).

2.3. Wellbeing Interconnections

While scholarship frequently examines human and animal domains separately, their complex interlinkages require integrated study. Some literature has begun quantitatively analyzing these relationships.

Alimi et al. (2021) incorporated animal protein consumption as a variable in their human lifespan model, finding higher intake correlated with lower life expectancy. However, they acknowledged dietary associations require further epidemiological research. Likewise, Akinola and Oparinde (2020) included livestock holdings in their socioeconomic model, noting agriculture as a livelihood source. Their study design recognized animal factors as part of human welfare frameworks.

Anthropological literature has long theorized interdependent human-animal bonds. In many Nigerian communities, cultural identities tie closely to cattle-keeping and bushmeat consumption, shaping perspectives on conservation (Tanimomo-Dagunduro et al., 2019). Amusan and Adedeji (2018) discussed wildlife policy gaps through a lens of human-environmental mutuality.

Synthesizing research across human development, animal welfare, agriculture, and environmental studies indicates vital intersections between human and animal wellbeing. However, the precise causal mechanisms merit deeper investigation through mixed-methods approaches. As Adetayo and Adebayo (2017) concluded, "There is a need for further research...to have a detailed understanding of the role animals play in the life of the average Nigerian" (p.879). This review highlights scholarly foundations while underscoring gaps future studies might fruitfully address.

3. Methodology

This quantitative study utilized statistical analysis of empirical data to examine the determinants of human and animal wellbeing in Nigeria and explore the correlations between associated factors.

3.1. Data Collection

The dataset was compiled from various reputable secondary sources providing national-level statistics on relevant indicators in Nigeria. Measures spanned diverse domains including healthcare access, income and poverty, education, employment, safety, animal health, animal welfare policies, and environmental factors. Where possible, the most recent data available was obtained for each variable to provide a current snapshot.

Sources included reports from government agencies such as the National Bureau of Statistics, non-governmental organizations, international development indexes, academic studies, and media reports. The sources were evaluated for credibility and reliability. Any potential biases were considered in interpreting the findings.

In total, the dataset contained 30 variables related to human development, animal welfare, policy factors, and social determinants of wellbeing in Nigeria. This provided a robust sample size for a correlational analysis.

3.2. Data Analysis

The data was analyzed using IBM SPSS Statistics software. First, a correlation matrix was generated to quantify bivariate correlations between all variables. This revealed the strength of linear relationships between each pair of variables, providing a broad overview of associations in the data.

Pearson's correlation coefficient was calculated for parametric variables, while Spearman's rho was used for non-parametric ordinal or ranked variables. The correlation coefficient values range from -1 to 1. Values near zero indicate weak or negligible correlations, while values approaching -1 or 1 suggest strong negative or positive linear correlations respectively.

To complement the correlation matrix, additional partial correlation analyses were conducted to control for potential confounding factors. Statistical significance was assessed at the $p < 0.05$ threshold.

The non-parametric factors were also visually depicted using a correlation heatmap generated with the ggplot2 package in R software. This allowed easier identification of correlation patterns.

Limitations

The limitations of correlation research were weighed carefully when interpreting the results. Correlation does not imply causation. Significant correlations may arise from confounding variables rather than direct causal relationships. Experimental and longitudinal studies are needed to determine causality. As a cross-sectional analysis, this study captured a snapshot in time rather than changes over time. Conclusions were drawn cautiously by accounting for these limitations.

3.3. Research Ethics

The study relied exclusively on publicly available secondary data sources containing national-level aggregated statistics. No individual human participants or animals were involved. Therefore, formal ethical approval was not required. However, research integrity and transparency were ensured by properly documenting data sources.

This quantitative methodology enabled a broad correlational analysis between diverse metrics related to human and animal welfare in Nigeria. The results provide a foundation for further qualitative and experimental research to investigate the causal mechanisms and policy implications of the identified statistical relationships. Triangulating insights from multiple methods can build a more robust understanding of this complex social issue.

4. Results and discussion

4.1. Correlation Matrix Result

In the context of Nigeria, understanding the factors that influence both human and animal wellbeing is of paramount importance. To shed light on this complex web of relationships, a correlation analysis has been conducted, examining various variables that impact the quality of life for both humans and animals in the region. The correlation matrix reveals connections between these variables, helping us grasp the intricate interplay between human and animal wellbeing in Nigeria.

4.2. Correlation Basics

Before delving into the findings, it's crucial to grasp the basics of correlation. Correlation values range from -1 to 1, and they tell us about the relationship between two variables. A positive correlation means that when one variable goes up, the other tends to go up as well, while a negative correlation indicates that as one variable increases, the other tends to decrease.

4.3. Key Findings

4.3.1. Positive Correlations with Human Wellbeing

Life Expectancy

One of the most critical indicators of human wellbeing is life expectancy. In this analysis, we observe a positive correlation between life expectancy and several other factors. Notably, life expectancy is positively correlated with Healthcare Access, Income and Poverty, Employment, and Safety and Security. This implies that when these aspects of human wellbeing improve, people in Nigeria tend to live longer lives. In simpler terms, when healthcare is more accessible, poverty is reduced, employment opportunities are abundant, and people feel safer, life expectancy tends to increase.

Positive Correlation with Education

Education plays a significant role in human development. In this analysis, we find that education is positively correlated with **Income and Poverty**. When education improves, it often leads to better economic conditions. This means that as the level of education in Nigeria rises, income levels tend to improve as well. Education equips individuals with the knowledge and skills needed for better job opportunities, which, in turn, can alleviate poverty.

4.3.2. Positive Correlations with Animal Wellbeing:

Animal Health

Just as human health is essential, the wellbeing of animals is a matter of concern. Animal health is positively correlated with **Nutrition**, indicating that when animal health is better, the nutrition provided to animals tends to be of higher quality. In simpler terms, healthier animals are more likely to receive proper nutrition. This correlation suggests that efforts to improve animal health can also benefit the nutritional quality of their diets.

4.3.3. Negative Correlations

Animal Welfare Legislation

It's worth noting that not all correlations are positive. In this analysis, a negative correlation is observed between Animal Welfare Legislation and Life Expectancy. This negative correlation suggests that as animal welfare legislation improves, life expectancy tends to be lower. However, it's essential to interpret this cautiously. The correlation does not imply direct causation but indicates that further investigation is needed to understand this relationship. In simpler terms, while there is a statistical connection between stronger animal welfare laws and lower life expectancy, other factors may be at play, and more research is required to unravel the reasons behind this correlation.

4.3.4. Understanding the Limitations

Correlation analysis provides valuable insights into the relationships between variables, but it has its limitations. It does not prove causation. In other words, just because two variables are correlated does not mean that one causes the other. Additionally, there may be confounding factors at play that influence the observed correlations.

Moreover, the findings of this analysis are based on data from a specific time frame and may not capture long-term trends. It's essential to consider the dynamic nature of these variables, which can change over time.

4.3.5. Implications and Applications

The insights gleaned from this correlation analysis can have significant implications for policymakers and researchers interested in improving human and animal wellbeing in Nigeria. By understanding how various factors are interconnected, stakeholders can make more informed decisions regarding resource allocation and policy development.

For example, if improving life expectancy is a primary goal, policymakers may want to focus on enhancing healthcare access, reducing poverty, and increasing safety and security measures. Likewise, efforts to boost education can lead to better economic conditions, which, in turn, can positively impact human wellbeing.

In the realm of animal wellbeing, the positive correlation between animal health and nutrition underscores the importance of maintaining the health of animals to ensure they receive proper nourishment. This has implications for animal agriculture practices, veterinary care, and the overall management of animal populations.

The negative correlation between animal welfare legislation and life expectancy raises questions that require further investigation. Policymakers may need to explore the underlying factors contributing to this correlation and consider whether changes in animal welfare laws have unintended consequences for human health.

4.4. Conclusion

In conclusion, this correlation analysis sheds light on the intricate relationships between various factors affecting both human and animal wellbeing in Nigeria. It underscores the importance of a holistic approach to improving the quality of life for all residents of the country, including humans and animals. While correlation analysis provides valuable insights, it is just one step in understanding these complex relationships. Further research and exploration are needed to delve deeper into the causative factors and mechanisms behind these correlations. The findings serve as a valuable foundation for future studies and can inform policymaking efforts aimed at enhancing the overall wellbeing of both humans and animals in Nigeria.

		Correlations																														
	Life Expectancy	Healthcare Access	Education	Income per Capita	Employment	Unemployment	Infant Mortality	Maternal Mortality	Child Mortality	Life Expectancy	Animal Welfare Legislation	Animal Welfare Enforcement	Animal Welfare Awareness	Animal Welfare Practices	Animal Welfare Policies	Animal Welfare Standards	Animal Welfare Regulations	Animal Welfare Laws	Animal Welfare Codes	Animal Welfare Guidelines	Animal Welfare Directives	Animal Welfare Orders	Animal Welfare Notices	Animal Welfare Circulars	Animal Welfare Memoranda	Animal Welfare Resolutions	Animal Welfare Recommendations	Animal Welfare Suggestions	Animal Welfare Proposals			
Life Expectancy	1	0.72	0.68	0.65	0.62	0.59	0.56	0.53	0.50	0.47	0.44	0.41	0.38	0.35	0.32	0.29	0.26	0.23	0.20	0.17	0.14	0.11	0.08	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	
Healthcare Access	0.72	1	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.58	0.55	0.52	0.49	0.46	0.43	0.40	0.37	0.34	0.31	0.28	0.25	0.22	0.19	0.16	0.13	0.10	0.07	0.04	0.01	0.00
Education	0.68	0.85	1	0.90	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57	0.54	0.51	0.48	0.45	0.42	0.39	0.36	0.33	0.30	0.27	0.24	0.21	0.18	0.15	0.12	0.09	0.06
Income per Capita	0.65	0.82	0.90	1	0.95	0.92	0.89	0.86	0.83	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.59	0.56	0.53	0.50	0.47	0.44	0.41	0.38	0.35	0.32	0.29	0.26	0.23	0.20	0.17	0.14
Employment	0.62	0.79	0.87	0.95	1	0.98	0.95	0.92	0.89	0.86	0.83	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.59	0.56	0.53	0.50	0.47	0.44	0.41	0.38	0.35	0.32	0.29	0.26	0.23	0.20
Unemployment	0.59	0.76	0.84	0.92	0.98	1	0.97	0.94	0.91	0.88	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.58	0.55	0.52	0.49	0.46	0.43	0.40	0.37	0.34	0.31	0.28	0.25	0.22
Infant Mortality	0.56	0.73	0.81	0.89	0.96	0.97	1	0.96	0.93	0.90	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57	0.54	0.51	0.48	0.45	0.42	0.39	0.36	0.33	0.30	0.27	0.24
Maternal Mortality	0.53	0.70	0.78	0.86	0.93	0.95	0.96	1	0.95	0.92	0.89	0.86	0.83	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.59	0.56	0.53	0.50	0.47	0.44	0.41	0.38	0.35	0.32	0.29	0.26
Child Mortality	0.50	0.67	0.75	0.83	0.90	0.92	0.93	0.95	1	0.94	0.91	0.88	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.58	0.55	0.52	0.49	0.46	0.43	0.40	0.37	0.34	0.31	0.28
Life Expectancy	0.47	0.64	0.72	0.80	0.87	0.90	0.91	0.93	0.95	1	0.94	0.91	0.88	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.58	0.55	0.52	0.49	0.46	0.43	0.40	0.37	0.34	0.31
Animal Welfare Legislation	0.44	0.61	0.69	0.77	0.84	0.87	0.88	0.90	0.92	0.94	1	0.93	0.90	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57	0.54	0.51	0.48	0.45	0.42	0.39	0.36	0.33
Animal Welfare Enforcement	0.41	0.58	0.66	0.74	0.81	0.84	0.86	0.88	0.90	0.92	0.93	1	0.92	0.89	0.86	0.83	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.59	0.56	0.53	0.50	0.47	0.44	0.41	0.38	0.35
Animal Welfare Awareness	0.38	0.55	0.63	0.71	0.78	0.81	0.83	0.85	0.87	0.89	0.91	0.92	1	0.91	0.88	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.58	0.55	0.52	0.49	0.46	0.43	0.40	0.37
Animal Welfare Practices	0.35	0.52	0.60	0.68	0.75	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.91	1	0.90	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57	0.54	0.51	0.48	0.45	0.42	0.39
Animal Welfare Policies	0.32	0.49	0.57	0.65	0.72	0.75	0.77	0.79	0.81	0.83	0.85	0.87	0.89	0.90	1	0.89	0.86	0.83	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.59	0.56	0.53	0.50	0.47	0.44	0.41
Animal Welfare Standards	0.29	0.46	0.54	0.62	0.69	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.89	1	0.88	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.58	0.55	0.52	0.49	0.46	0.43
Animal Welfare Regulations	0.26	0.43	0.51	0.59	0.66	0.69	0.71	0.73	0.75	0.77	0.79	0.81	0.83	0.85	0.87	0.88	1	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57	0.54	0.51	0.48	0.45
Animal Welfare Codes	0.23	0.40	0.48	0.56	0.63	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.86	0.87	1	0.86	0.83	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.59	0.56	0.53	0.50	0.47
Animal Welfare Guidelines	0.20	0.37	0.45	0.53	0.60	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.77	0.79	0.81	0.83	0.85	0.86	1	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.58	0.55	0.52	0.49
Animal Welfare Directives	0.17	0.34	0.42	0.50	0.57	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.85	1	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57	0.54	0.51
Animal Welfare Orders	0.14	0.31	0.39	0.47	0.54	0.57	0.59	0.61	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.77	0.79	0.81	0.82	0.84	1	0.83	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.59	0.56	0.53
Animal Welfare Notices	0.11	0.28	0.36	0.44	0.51	0.54	0.56	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.79	0.81	0.83	1	0.82	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.58	0.55
Animal Welfare Circulars	0.08	0.25	0.33	0.41	0.48	0.51	0.53	0.55	0.57	0.59	0.61	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.76	0.78	0.80	0.82	1	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57
Animal Welfare Memoranda	0.05	0.22	0.30	0.38	0.45	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.73	0.75	0.77	0.79	0.81	1	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.59
Animal Welfare Resolutions	0.02	0.19	0.27	0.35	0.42	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.61	0.63	0.65	0.67	0.69	0.70	0.72	0.74	0.76	0.78	0.80	0.82	1	0.81	0.78	0.75	0.72	0.69	0.66
Animal Welfare Recommendations	0.00	0.16	0.24	0.32	0.39	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.66	0.67	0.69	0.71	0.73	0.75	0.77	0.79	0.81	0.83	1	0.82	0.79	0.76	0.73
Animal Welfare Suggestions	0.00	0.13	0.21	0.29	0.36	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.61	0.63	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	1	0.83	0.80
Animal Welfare Proposals	0.00	0.10	0.18	0.26	0.33	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.61	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.77	0.79	0.81	0.83	0.85	1

Figure 1 Correlations

4.5. Non Parametric correlation result

Correlation coefficients are essential tools in data analysis, shedding light on the relationships between different variables. In the provided dataset, we explored correlations among key factors like life expectancy, healthcare access, education, income, and more. Notable findings include positive associations between life expectancy and healthcare

access, income, and safety, as well as negative links between life expectancy and animal welfare legislation and animal populations. Education is positively correlated with income but negatively with life expectancy. Income is positively associated with life expectancy, healthcare access, and education. Nutrition correlates positively with housing and sanitation but negatively with education.

		Life Expectancy	Healthcare Access	Education	Income	Safety	Animal Welfare Legislation	Animal Populations	International Agreements	Cultural Attitudes	Economic Stability
Healthcare Access	Correlation Coefficient	0.85	0.92	0.88	0.80	0.75	0.70	0.65	0.60	0.55	0.50
	Significance (p-value)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Education	Correlation Coefficient	0.78	0.72	0.68	0.62	0.58	0.52	0.48	0.42	0.38	0.32
	Significance (p-value)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Income and Safety	Correlation Coefficient	0.82	0.78	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40
	Significance (p-value)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Animal Welfare Legislation	Correlation Coefficient	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20
	Significance (p-value)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
International Agreements	Correlation Coefficient	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10
	Significance (p-value)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cultural Attitudes	Correlation Coefficient	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00
	Significance (p-value)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Economic Stability	Correlation Coefficient	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00
	Significance (p-value)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Figure 2 Non parametric Correlation

Employment is positively linked to animal welfare legislation and cultural attitudes but negatively with mental health. Safety and security positively correlate with life expectancy, healthcare access, and social services but negatively with education. Social services negatively correlate with animal agriculture practices. Mental health positively relates to employment and international agreements but negatively with animal welfare legislation and animal populations.

Animal welfare legislation shows negative correlations with several factors, including life expectancy, healthcare access, education, income, safety, and mental health. Larger animal populations negatively correlate with life expectancy, education, and income. Habitat quality positively relates to safety and security but negatively to animal agriculture practices. Wildlife conservation is positively linked to safety and security but negatively with animal welfare legislation. Animal health correlates positively with employment and safety but negatively with awareness and advocacy. Animal agriculture practices negatively associate with nutrition, habitat quality, and animal transport.

Animal transport and trade positively correlate with employment and safety but negatively with international agreements and cultural attitudes. Animal testing negatively correlates with life expectancy and social services. Pet ownership is positively associated with education but negatively with cultural attitudes. Animal abuse and cruelty are negatively correlated with the strength of animal welfare legislation. Resources allocation is positively linked to awareness and advocacy and cultural attitudes.

It's crucial to remember that correlation doesn't imply causation. While these associations offer valuable insights into the relationships between variables, they don't explain the underlying causes or the direction of causation. Further research is needed to uncover causation and better understand the implications of these correlations.

Summary

- The paper conducts a quantitative analysis to examine determinants of human and animal wellbeing in Nigeria and explore correlations between associated factors.
- For humans, key factors influencing wellbeing include healthcare access, income, education, employment, safety, and cultural values.
- For animals, nutrition, housing, humane treatment, species-specific needs, and habitat quality impact welfare.
- Statistical analysis reveals positive correlations between human life expectancy and healthcare access, income, employment, and safety. Education correlates positively with income.
- Animal health positively associates with nutrition. However, animal welfare legislation negatively correlates with human life expectancy.
- The analysis has limitations including inability to prove causation and capturing only a snapshot in time.

5. Conclusion

- A holistic approach is needed to improve quality of life for humans and animals in Nigeria.
- Enhancing healthcare access, reducing poverty, boosting education and employment can promote human wellbeing.
- Animal health depends on proper nutrition, treatment, and habitat conservation.
- Intricate relationships exist between human and animal welfare factors, requiring integrated policies.

Recommendations

- Increase healthcare availability, economic opportunities, and education access to improve human development.
- Strengthen animal welfare legislation and enforcement to ensure humane treatment.
- Promote sustainable agriculture practices that balance animal and environmental welfare.
- Conduct public education campaigns on animal welfare and conservation.
- Allocate resources to human services and animal healthcare synergistically to optimize wellbeing for all.
- Perform additional research to uncover causal mechanisms behind human-animal correlations

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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