

Gendered Dimensions of Livestock Ownership in Lesotho: An Analysis of Socioeconomic Determinants

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ABSTRACT

This study examines the gendered aspects of household livestock ownership in Lesotho from the perspectives of Feminist Political Ecology (FPE). Drawing on nationally representative cross-sectional data from the 2023–2024 Lesotho Demographic and Health Survey (LDHS), involving 9,810 households, the study utilises logistic regression to examine how gender, marital status, education, wealth, land tenure, rurality, and ecological zones influence livestock ownership. Findings reveal that male-headed households have significantly higher ownership rates than their female-headed counterparts, highlighting persistent patriarchal norms in resource access and decision-making. Ownership is positively associated with rural residence, land access, household size, and specific agro-ecological zones such as the Mountains and the Senqu River Valley. Additionally, higher educational attainment is inversely related to livestock ownership, especially among men, suggesting a shift away from agricultural livelihoods. The study emphasises the structural nature of gender disparities and calls for policy interventions that address land tenure reforms, enhance support for female-headed households, and tailor rural development strategies to ecological and social contexts. These insights are essential for promoting inclusive and equitable livestock development in Lesotho.

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1. INTRODUCTION

Lesotho, a landlocked country in Southern Africa, faces persistent challenges of food insecurity, hunger, and poverty, with 58% of its population living below the poverty line (Government of Lesotho, Ministry of Agriculture and Food Security, Department of Livestock Services [GoL MoAFS DLS] 2019; Ogunleye *et al.*, 2024). The agricultural sector, particularly livestock farming, is crucial for rural livelihoods; however, its contribution to GDP has declined to 16.5% (GoL MoAFS DLS, 2019). Despite its importance to economic stability, livestock productivity remains constrained by socioeconomic and environmental factors. Lesotho's geography, comprising four agro-ecological zones—Mountains (59%), Foothills (15%), Lowlands (17%), and the Senqu River Valley (9%)—significantly influences livestock farming (Pitikoe, 2018; Leduka *et al.*, 2019). With only 10% of the land being arable, rangelands support extensive livestock production, which is essential for food security and household resilience (Danso-Abbeam *et al.*, 2024). However, rural households engaged in agriculture remain vulnerable to food insecurity, despite livestock having the potential to provide income, food, and social stability (Ahmed *et al.*, 2017; Danso-Abbeam *et al.*, 2024).

Livestock ownership enhances financial security, food production, and social cohesion, offering benefits such as income generation, fertiliser, and draught power (Nkonki-Mandleni *et al.*, 2019; Herrero *et al.*, 2013). It serves as a financial asset, strengthens community ties, and reduces labour burdens (Dumas *et al.*, 2018; Taruvinga *et al.*, 2022; Manyike *et al.*, 2025). However, ownership patterns are influenced by socioeconomic factors, such as wealth, education, and access to land, as well as demographic factors, including gender and household size (Nigussie *et al.*, 2024). Gender disparities, particularly in decision-making and access to resources, further limit ownership opportunities for women and young people, necessitating inclusive policies to address these inequalities (Hoag, 2018; Hegde, 2019). These factors underscore the need for policies that address inequalities, thereby ensuring broader access to livestock ownership and promoting more inclusive agricultural growth.

The objectives of this study, therefore, are to examine whether a relationship exists between livestock ownership and the socioeconomic characteristics of households in Lesotho and to determine the extent to which these factors influence livestock ownership. This approach helps

us understand how rural households in the country can secure a stable food supply through livestock, as well as inform the design of targeted interventions and policies. Identifying these factors and their impacts enables the development of strategies and policies that are better aligned with the realities faced by livestock owners, ultimately promoting sustainable and equitable growth within the sector.

2. THEORETICAL FRAMEWORK: A FEMINIST POLITICAL ECOLOGY APPROACH TO LIVESTOCK OWNERSHIP

This study employs Feminist Political Ecology (FPE) as its primary theoretical framework to examine the complex interplay between gender, power relations, and access to resources in livestock ownership patterns. FPE, according to Clement *et al.* (2019), is a framework that explores how power operates not only through visible hierarchies—such as formal laws, institutions, and traditional gender roles—but also through everyday relationships and interactions. It focuses on how gender, along with other social factors such as class, age, and race, influences people's roles, responsibilities, and access to environmental resources. FPE sees gendered power as complex, shifting over time, and deeply influenced by social, cultural, and economic systems. These overlapping systems of power shape how individuals and communities interact with environmental resources, resulting in diverse experiences, knowledge systems, and varying levels of vulnerability or empowerment. In this way, FPE emphasises that people's relationships with the environment are neither neutral nor universal, but are instead deeply influenced by social positioning and historical context. It explores how access to resources, decision-making power, and environmental responsibilities are unequally distributed, and how these inequalities are often justified or maintained through socio-cultural norms and everyday practices (Sundberg, 2017). FPE provides perspectives to understand and challenge unjust systems. It challenges mainstream development approaches and illustrates how power, particularly in relation to gender and social roles, is intricately intertwined with environmental governance. FPE, therefore, offers a framework for rethinking more equitable and inclusive approaches to sustainability, resource management, and community resilience (Resurrección & Elmhirst, 2020).

FPE offers a critical perspective on understanding how socio-cultural norms and environmental factors intersect to create and perpetuate gendered disparities (Sundberg, 2017) in agricultural systems. At its core, FPE challenges conventional political ecology by centring gender as a

crucial analytical category that interacts with class, ethnicity, and other axes of difference in influencing resource access and control (Sundberg, 2017; Vercillo, 2022). This framework is particularly salient for our investigation of livestock ownership in Lesotho for three key reasons:

- i. FPE's emphasis on gendered resource governance helps unpack how patriarchal systems influence access to productive assets. As demonstrated in similar sub-Saharan African contexts (Dumas *et al.*, 2018; Vercillo, 2022), customary land tenure systems often systematically disadvantage women in livestock ownership through inheritance practices and decision-making norms. The framework predicts that these structural barriers will manifest in measurable disparities between male-headed and female-headed households.
- ii. FPE's attention to intersectional vulnerabilities provides crucial context for understanding how environmental and economic pressures compound gender inequalities. Research in northern Ghana (Vercillo, 2022) has shown how climate variability and agricultural commercialisation can exacerbate existing gendered disparities in resource access. This insight is particularly relevant for Lesotho's varied agro-ecological zones and changing rural economy.
- iii. FPE's focus on the gendered division of labour illuminates the often-overlooked disparities between women's substantial contributions to livestock care and their limited control over benefits (Dumas *et al.*, 2018). This aspect helps frame our examination of labour inputs versus decision-making authority in Lesotho's livestock sector.

The framework also highlights how social identities are constituted through everyday practices and relations with nature (Sundberg, 2017). This perspective informs our analysis of how gender roles and livestock ownership mutually reinforce each other in Lesotho's cultural context. Critically, FPE moves beyond merely identifying gender disparities to interrogating the power structures that produce and maintain them (Nam, 2018). This theoretical orientation directly informs our study's focus on factors influencing livestock ownership patterns.

This theoretical foundation will subsequently inform our methodological approach to measuring livestock ownership disparities and interpreting their socio-cultural dynamics. The FPE perspective provides both an explanatory framework for understanding observed patterns of livestock ownership and a normative foundation for evaluating potential policy interventions.

3. METHODOLOGY

3.1. Research Framework, Approach, and Data Collection

This study utilised a quantitative cross-sectional design, using data from the 2023–2024 Lesotho Demographic and Health Survey (LDHS-8). The LDHS provides nationally representative data on demographics, health, agriculture, asset ownership, and socioeconomic factors (Ministry of Health, Lesotho & Inner-City Fund [ICF], 2024). A stratified, multi-stage sampling method ensured broad geographical representation, with 9,810 households surveyed to examine the determinants of livestock ownership.

3.2. Analytical Framework and Statistical Methods

The relationship between livestock ownership and its predictors was modelled using the following equation:

$$\begin{aligned} LO_i = & \beta_0 + \beta_1 \text{household head gender} + \beta_2 \text{household head age} \\ & + \beta_3 \text{household head marital status} \\ & + \beta_4 \text{household head education attainment} + \beta_5 \text{household size} \\ & + \beta_6 \text{place of residence} + \beta_7 \text{ecological zone} + \beta_8 \text{district} \\ & + \beta_9 \text{wealth status} + \beta_{10} \text{ownership of agricultural land} \\ & + e_t \dots \dots \dots (1) \end{aligned}$$

Where: LO_i = livestock ownership, β_1 = intercept, $\beta_1 - \beta_{10}$ = coefficients of the independent variables, e_t = error term. The coefficients ($\beta_1 - \beta_{10}$) indicate the likelihood of a household owning livestock as a function of changes in the corresponding independent variables.

To evaluate these relationships, both descriptive and inferential statistical techniques were applied. All analyses were performed using STATA version 15.1 (StataCorp LLC, College Station, TX, USA). A chi-square test was used to assess the associations between categorical variables, although it does not indicate the strength or direction of these associations. Logistic regression was employed to estimate the specified model and determine the effect size and direction of predictors on the binary outcome of livestock ownership. Logistic regression is well-suited for binary-dependent variables, with parameter estimates derived using the maximum likelihood estimation (MLE) method to ensure accuracy. The analysis produced detailed outputs, including coefficients, standard errors, and p-values. Model fit was evaluated using Pearson's goodness-of-fit test to confirm the model's appropriateness for the data.

TABLE 1: Summary Description of Variables

Variables	Description
Ownership of livestock	1 = Yes; 0 is otherwise
<i>Gender of Head</i>	
Age	The age of the household's head in years
<i>Marital Status of Household Head</i>	
Never Married	1 = Yes; 0 is otherwise
Married	1 = Yes; 0 is otherwise
Widowed	1 = Yes; 0 is otherwise
Divorced	1 = Yes; 0 is otherwise
Not Living Together	1 = Yes; 0 is otherwise
<i>Educational: Level of education of household head</i>	
<= Preschool	1 = Yes; 0 is otherwise
Primary	1 = Yes; 0 is otherwise
Secondary	1 = Yes; 0 is otherwise
Higher	1 = Yes; 0 is otherwise
Do not know	1 = Yes; 0 is otherwise
<i>Household size</i>	
Urban	1 = Yes; 0 is otherwise
<i>Ecological zone</i>	
Lowlands	1 = Yes; 0 is otherwise
Foothills	1 = Yes; 0 is otherwise
Mountains	1 = Yes; 0 is otherwise
Senqu River Valley	1 = Yes; 0 is otherwise
<i>District</i>	
Butha-Buthe	1 = Yes; 0 is otherwise
Leribe	1 = Yes; 0 is otherwise
Berea	1 = Yes; 0 is otherwise
Maseru	1 = Yes; 0 is otherwise
Mafeteng	1 = Yes; 0 is otherwise
Mohale's Hoek	1 = Yes; 0 is otherwise
Quthing	1 = Yes; 0 is otherwise

Qacha's Nek	1 = Yes; 0 is otherwise
Makhotlong	1 = Yes; 0 is otherwise
Thaba-tseka	1 = Yes; 0 is otherwise
<i>Household Wealth Status: Household Wealth Index</i>	
Poorest	1 = Yes; 0 is otherwise
Poorer	1 = Yes; 0 is otherwise
Middle	1 = Yes; 0 is otherwise
Richer	1 = Yes; 0 is otherwise
Richest	1 = Yes; 0 is otherwise
Ownership of agric. land	1 = Yes; 0 is otherwise

4. RESULTS AND DISCUSSION

4.1. Overview of Livestock Ownership Patterns

The ownership patterns revealed in Figure 1 demonstrate how gender fundamentally structures access to livestock assets in Lesotho. While the national ownership rate appears balanced at 50.02%, disaggregation reveals that male-headed households (MHHs) maintain 54.35% ownership compared to just 43.63% for female-headed households (FHHs) – a statistically significant 10.72 percentage point gap rooted in patriarchal systems. This, for example, aligns with Lesotho's 2022 Agricultural Census, which shows that men control 81% of cattle herds (Ministry of Finance and Development Planning, Bureau of Statistics, 2022), reflecting cultural norms that position livestock as a form of masculine capital (Taruvunga *et al.*, 2022). FHHs are more engaged in rearing small stock such as poultry (Hoag, 2018; Manyike *et al.*, 2025), which require less land and capital.

Structural barriers exacerbate this disparity. As Leduka *et al.* (2019) noted in their analysis of Lesotho's land governance, customary tenure systems often exclude women from inheriting grazing rights. This limits the ability of FHHs to use land as collateral for livestock investments, creating exclusions from both physical and financial assets. Even when women provide 60–80% of livestock care labour, decision-making authority typically remains with male relatives, perpetuating cyclical disadvantage (Dumas *et al.*, 2018).

Our findings suggest three pathways for reform: First, policies promoting equitable land distribution and access to commonage land are essential. Community-based land management

initiatives may also be effective in ensuring sustainable and fair access to grazing resources while mitigating resource-related conflicts. Implementing Land Act provisions for joint titling could strengthen FHHs tenure security. Second, gender-targeted extension programmes could address knowledge gaps identified by Mokati *et al.* (2024). Third, microfinance products tailored to small stock enterprises might bypass traditional collateral requirements, building on models discussed in the Organisation for Economic Co-operation and Development [OECD] (2012) empowerment frameworks.

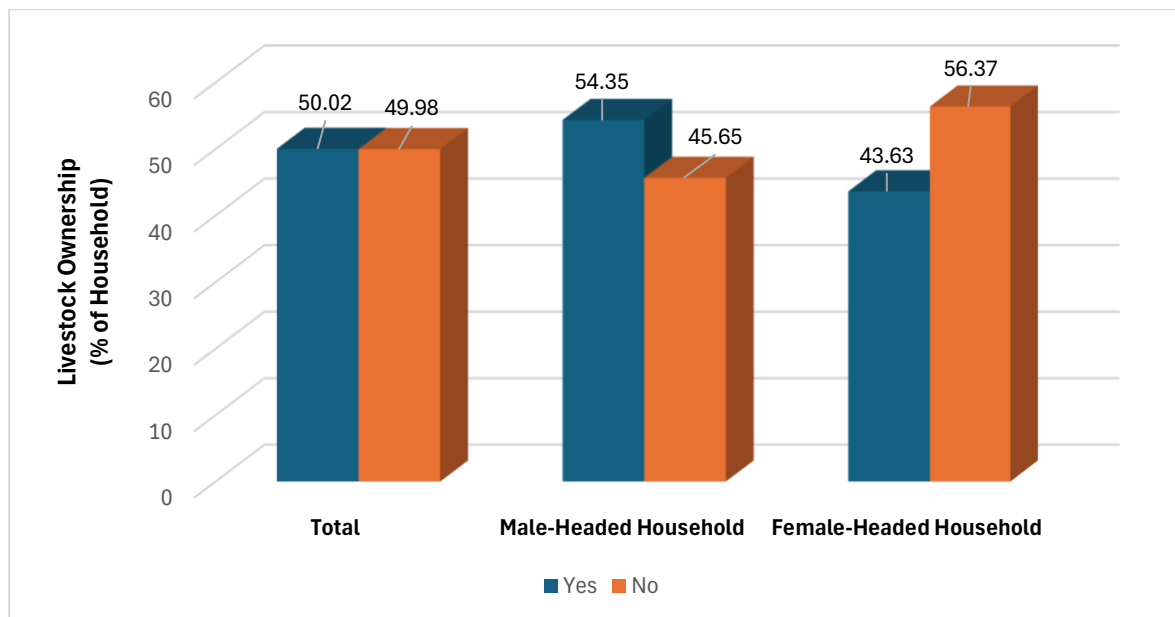


FIGURE 1: Livestock Ownership by Household

4.2. Socioeconomic Determinants of Livestock Ownership

Table 2 presents an analysis of livestock ownership in relation to various socioeconomic factors across households. The results reveal significant differences in livestock ownership based on gender, marital status, education, place of residence, ecological zone, wealth status, and land ownership. MHHs consistently show higher livestock ownership rates than FHHs across multiple socioeconomic factors.

The chi-square statistics and significant p-values (consistently below 0.05) further validate that these factors are strongly associated with livestock ownership, highlighting the importance of socioeconomic variables in influencing livestock ownership patterns in Lesotho. These findings reflect the complex, multifaceted nature of livestock ownership, emphasising its reliance on factors such as gender, education, geographical location, and wealth status.

TABLE 2: Socioeconomic Distribution of Sample by Livestock Ownership

Variables	Total		Female-Headed Household		Male-Headed Household	
	No %	Yes %	No %	Yes %	No %	Yes %
Gender						
Female	56.37	43.63	-	-	-	-
Male	45.65	54.35	-	-	-	-
	Pearson χ^2 (1) = 108.68 Pr = 0.000		-	-	-	-
Marital Status						
Never Married	75.86	24.14	85.48	14.52	68.85	31.15
Married	42.69	57.31	61.88	38.13	39.70	60.30
Widowed	45	55	45.13	54.87	44.40	55.60
Divorced	69.12	30.88	72.44	27.56	64.44	35.56
Not Living Together	68.78	31.22	77.11	22.89	62.72	37.28
	Pearson χ^2 (4) = 583.50 Pr = 0.000		Pearson χ^2 (4) = 369.62 Pr = 0.000		Pearson χ^2 (4) = 270.80 Pr = 0.000	
Education Attainment of Head						
<= Preschool	33.17	66.83	50.68	49.32	29.35	70.65
Primary	41.56	58.44	46.29	53.71	37.54	62.46
Secondary	63.73	36.27	70.14	29.86	59.31	40.69
Higher	76.25	23.75	79.80	20.20	73.97	26.03
Don't Know	48.97	51.03	56.48	43.52	42.96	57.04
	Pearson χ^2 (4) = 750.46 Pr = 0.000		Pearson χ^2 (4) = 263.31 Pr = 0.000		Pearson χ^2 (4) = 492.03 Pr = 0.000	
Place of Residence						

Urban	72.71	27.29	78.00	22.00	69.00	31.00
Rural	38.92	61.08	45.53	54.47	34.53	65.47
	Pearson χ^2 (1) = 986.09 Pr = 0.000		Pearson χ^2 (1) = 377.90 Pr = 0.000		Pearson χ^2 (1) = 612.15 Pr = 0.000	
Ecological Zone						
Lowlands	59.47	40.53	64.58	35.42	56.06	43.94
Foothills	33.97	66.97	41.21	58.79	29.25	70.75
Mountains	40.46	59.64	49.60	50.40	34.67	65.33
Senqu River Valley	44.84	55.16	50.15	49.85	40.23	59.77
	Pearson χ^2 (3) = 374.75 Pr = 0.000		Pearson χ^2 (3) = 113.67 Pr = 0.000		Pearson χ^2 (3) = 271.62 Pr = 0.000	
District						
Butha-Buthe	48.70	51.30	58.65	41.35	42.88	57.12
Leribe	54.07	45.93	64.92	35.08	47.56	52.44
Berea	56.62	43.38	61.27	38.73	53.69	46.31
Maseru	67.32	32.68	68.87	31.13	66.36	33.64
Mafeteng	44.97	55.03	51.64	48.36	40.00	60.00
Mohale's Hoek	44.07	55.93	48.68	51.32	39.88	60.12
Quthing	46.90	53.10	50.94	49.06	43.17	46.83
Qacha's Nek	52.58	47.42	57.61	42.39	48.75	51.25
Makhotlong	43.95	56.05	55.38	44.62	37.67	62.33
Thaba-Tseka	34.64	65.39	44.11	55.89	28.95	71.05
	Pearson χ^2 (4) = 307.77 Pr = 0.000		Pearson χ^2 (9) = 89.53 Pr = 0.000		Pearson χ^2 (9) = 250.89 Pr = 0.000	
Wealth Status						
Poorest	34.51	65.49	40.55	59.45	30.62	69.38
Poorer	40.90	59.10	45.18	54.82	37.84	62.12
Middle	55.67	44.33	63.00	37.00	50.09	49.91
Richer	69.03	30.97	74.31	25.69	65.23	34.77

Richest	62.51	37.49	73.31	26.69	56.67	43.33
	Pearson χ^2 (4) = 689.99 Pr = 0.000		Pearson χ^2 (4) = 318.23 Pr = 0.000		Pearson χ^2 (4) = 387.44 Pr = 0.000	
Own Agricultural Land						
No	77.85	22.15	77.56	22.44	78.09	21.91
Yes	40.86	59.14	37.73	62.27	42.56	57.44
	Pearson χ^2 (1) = 1.4e+03 Pr = 0.000		Pearson χ^2 (1) = 645.02 Pr = 0.000		Pearson χ^2 (1) = 756.06 Pr = 0.000	

4.3. Analysis of Factors Influencing Household Livestock Ownership

The results presented in the logistic regression analysis in Table 3 provide a comprehensive examination of the factors influencing household livestock ownership. The goodness-of-fit statistics for the logistic regression model, as shown in Table 3, demonstrate strong model performance. The likelihood ratio chi-square of 2878.95 with a p-value of 0.000 indicates that the model fits significantly well as a whole. The Pearson chi-square test yields a chi-square statistic of 9,524.59 ($P > \chi^2 = 0.5740$), indicating that the model fits the data well.

TABLE 3: Logistic regression on Factors Influencing Household Ownership of Livestock

hv246	Coefficient	Std. Err.	t-value
Gender of Head (Male)	0.545***	0.063	8.60
Age of Head	0.012***	0.002	6.82
Marital Status of Head (base category: Never Married)	0	.	.
Married	0.531***	0.090	5.88
Widowed	0.335***	0.103	3.27
Divorced	0.154	0.183	0.84
Not living together	-0.140	0.117	-1.20
Educational Attainment of Head (base category: No education, preschool/early childhood education)	0	.	.

Primary	0.062	0.079	0.78
Secondary	-0.254***	0.095	-2.67
Higher	-0.648***	0.123	-5.25
Do not know	-0.364**	0.163	-2.24
Household Size	0.180***	0.012	15.06
Wealth Status of Household (base category: Poorest)	-	.	.
Poorer	0.124*	0.072	1.72
Middle	-0.120	0.079	-1.51
Richer	-0.136	0.094	-1.45
Richest	0.359***	0.110	3.25
Urban	-0.742***	0.066	11.32
Ecological zone (base category: Lowlands)	-	-	.
Foothills	0.183*	0.096	1.90
Mountains	0.624***	0.141	4.44
Senqu River Valley	0.361***	0.139	2.60
District (base category: Butha-Buthe)	-	.	.
Leribe	-0.061	0.106	-0.57
Berea	-0.114	0.108	-1.06
Maseru	-0.232**	0.107	-2.16
Mafeteng	0.224**	0.108	2.06
Mohale's Hoek	0.293**	0.119	2.45
Quthing	-0.068	0.165	-0.41
Qacha's Nek	-0.534***	0.165	-3.23
Mokhotlong	-0.416**	0.169	-2.46
Thaba-Tseka	-0.183	0.165	-1.11
Ownership of agricultural land	1.124***	0.051	21.83
Constant	-3.720***	0.21	-17.73
Number of Observations	9810		
LR chi2 (29) =	2878.95; Prob> chi2 = 0.000		
Pearson chi2 (9551) =	9524.59; Prob> chi2 = 0.5740		
*** $p < .01$, ** $p < .05$, * $p < .1$			

4.3.1. Gender Disparities in Livestock Ownership

The study reveals significant gender disparities in livestock ownership, with MHHs exhibiting 54.4% ownership compared to 43.6% for FHHs ($p < 0.01$). This 10.8 percentage point gap reflects deeply entrenched socio-cultural norms in Lesotho; livestock management has traditionally been male-dominated due to patriarchal inheritance systems and unequal access to productive resources (Hoag, 2018; Taruvinga *et al.*, 2022). While some recent studies suggest that FHHs are increasingly engaging in small stock rearing (Manyike *et al.*, 2025), Taruvinga *et al.* (2022) confirm that they remain disadvantaged in owning larger, more economically valuable animals, such as cattle and sheep.

A Feminist Political Ecology perspective helps to unpack the structural nature of these disparities. The findings exemplify FPE's central tenet that access to resources is mediated through gendered power relations (Sundberg, 2017), where patriarchal systems transform women's labour into assets controlled by men (Dumas *et al.*, 2018). The preference for large livestock among MHHs reflects a process in which culturally valued assets become markers of male status. Meanwhile, FHHs' concentration on small stock mirrors the relegation of women to less profitable agricultural activities. These patterns cannot be explained by economic factors alone; they arise from intersecting inequalities in land tenure, decision-making authority, and cultural norms, which FPE illuminates.

This disparity has profound implications, as livestock serve not only as economic assets but also as social capital in rural communities (Dumas *et al.*, 2018; Nkonki-Mandleni *et al.*, 2019; Danso-Abbeam *et al.*, 2024). The findings align with broader regional patterns observed in Ghana and Ethiopia, where FHHs face similar structural barriers (Duku *et al.*, 2011; Debela, 2017). Addressing these inequities requires transformative policies that challenge existing gender norms while providing FHHs with targeted support, including land rights reforms, improved access to extension and veterinary services, credit facilities, and other essential production resources and services.

4.3.2. Household Structure and Age Factors

The analysis demonstrates important variations in ownership patterns across different household structures. Married households exhibit the highest livestock ownership rates (60.3% for married households with children and 38.1% for married households without children), likely benefiting from combined labour resources and economic stability. In contrast,

households that are divorced or separated exhibit significantly lower ownership levels, suggesting that marital dissolution often leads to the depletion of assets. Taruvinga *et al.* (2022) found that marital status has a positive effect on ownership, particularly of goats and pigs, due to the need for intensive labour and the advantages for larger families. This suggests that household structure and labour availability are important factors in livestock ownership.

Interestingly, widowed households maintain relatively strong ownership rates (55%), indicating that livestock serve as crucial safety nets for vulnerable groups. Age emerges as another significant factor, with older household heads more likely to own livestock ($\beta = 0.012$, $p < 0.01$), consistent with findings from across sub-Saharan Africa (Pica-Ciamarra *et al.*, 2015; Debela, 2016; Moyo & Mlilo, 2019; Taruvinga *et al.*, 2022), which attribute this trend to greater wealth, experience, and access to resources. This reflects both lifecycle accumulation of assets and the traditional nature of livestock rearing, although it raises concerns about intergenerational transfer and youth engagement in the sector.

These patterns reflect FPE's fundamental perspective that access to resources is mediated through household power structures (Sundberg, 2017). The marital status gap exemplifies how women's entitlement rights remain conditional on male relationships (Vercillo, 2022), with divorce exposing FHHs' systemic disadvantages in maintaining livestock assets. The sustained ownership among widowed households (55%) aligns with FPE's recognition of livestock as a critical safety net when formal systems fail women (Dumas *et al.*, 2018), though their smaller herds reflect the feminisation of subsistence farming (Manyike *et al.*, 2025). The age correlation further demonstrates FPE's emphasis on lifecycle inequalities - where older women's accumulated experience cannot overcome structural barriers to resource control (Nyantakyi-Frimpong, 2019).

4.3.3. Education, Wealth and Rural Livelihood Strategies

Contrary to expectations, higher educational attainment correlates negatively with livestock ownership ($\beta = -0.65$ for tertiary education, $p < 0.01$), suggesting that education facilitates an exit from agricultural livelihoods (Manyike *et al.*, 2025). This trend reflects broader patterns across sub-Saharan Africa, where education enables access to non-agricultural employment (e.g., formal wages, entrepreneurship), thereby reducing reliance on livestock (Lesorogol *et al.*, 2011; Van Anda *et al.*, 2021). Educated individuals are more likely to migrate to urban areas in

search of better job opportunities, further diminishing their engagement in agriculture and livestock farming.

Figure 2 illustrates the interaction plot showing the effect of gender and education level on livestock ownership:

- Both male- and female-headed households show a decline in ownership as education level increases.
- MHHs consistently own more livestock than FHHs across all education levels.

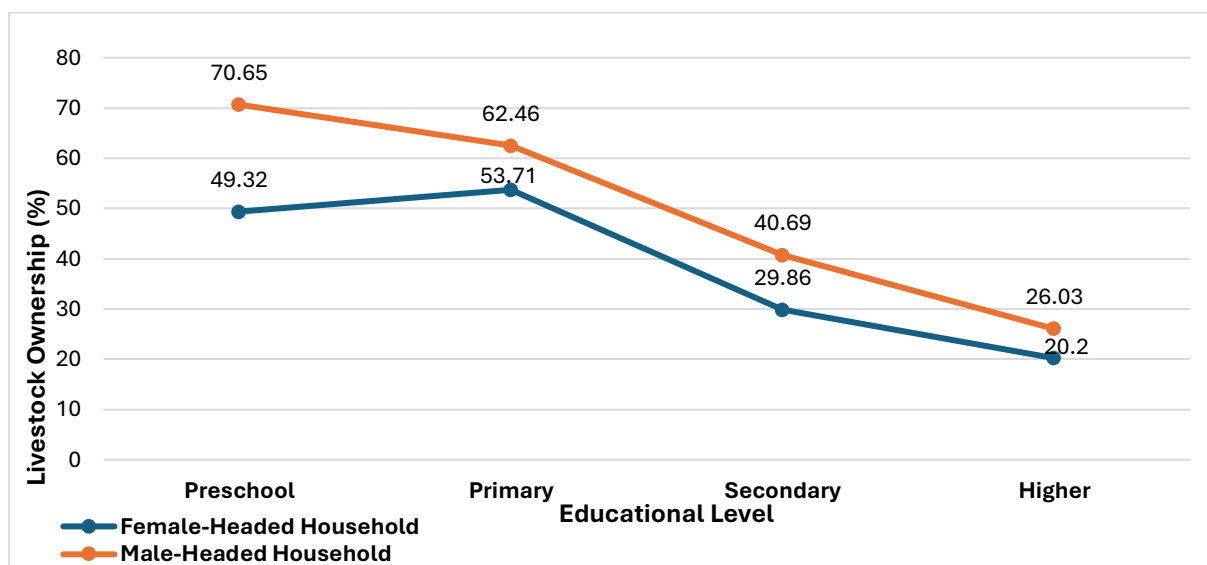


FIGURE 2: Interaction Plot – Gender and Education Level on Livestock Ownership

Youth aspirations further drive this shift, as younger, educated households often perceive livestock rearing as low status (Lesorogol *et al.*, 2011). Research by Magagula and Tsvakirai (2020) highlighted that, despite ongoing government efforts to promote agricultural entrepreneurship, many young people remain reluctant to pursue careers in the agricultural sector. This reluctance is often rooted in persistent cognitive biases and economic challenges that influence their career decisions, limiting their involvement in the sector. This disengagement risks depleting the sector of skilled labour.

This trend can also be understood through the perspective of gender, social, and generational imbalances in the agricultural sector. As Nigussie *et al.* (2024) observed, gender and structural inequalities in agriculture limit opportunities for women and young people, thereby curbing their participation and innovation. This suggests that youth disengagement from livestock

farming is not merely a matter of individual choice or educational attainment, but also the result of deep-rooted systemic barriers influenced by intersecting socioeconomic and generational dynamics. Older individuals, by contrast, are better positioned to invest in and sustain livestock due to accumulated wealth and access to productive resources. To address youth disengagement, policy responses must modernise livestock farming and align it with the aspirations of younger, educated populations. Interventions should include youth-focused training in modern husbandry practices, the integration of agricultural education into formal curricula, and the expansion of financial support mechanisms such as grants and microloans. Integrating agricultural education into formal education systems could help bridge the gap between traditional practices and emerging economic opportunities, promoting a more inclusive and resilient agricultural sector. Additionally, the introduction of digital extension platforms, value-chain incentives (Gebremedhin *et al.*, 2016; Jaiswal *et al.*, 2023), and climate-resilient livestock systems could further enhance the sector's appeal to educated youth. Such approaches would not only improve sectoral resilience but also encourage more inclusive participation across age and gender groups.

Wealth patterns reveal that both the poorest (65.5% ownership) and wealthiest (37.5%) households maintain significant livestock holdings, albeit for fundamentally different reasons, while middle-income groups show lower engagement. For poorer households, livestock serve as critical safety nets for subsistence and risk mitigation (Hoag, 2018; Collishaw *et al.*, 2023), aligning with evidence from Zambia where smallholders rely on animals to buffer shocks (Miura *et al.*, 2012). Conversely, wealthier households treat livestock as investment assets (Pica-Ciamarra *et al.*, 2015), using them for collateral, social capital (e.g., dowry), or speculative gains (Nganga *et al.*, 2013). Middle-income households' disengagement likely reflects diversification into non-farm enterprises or constraints, such as limited grazing access, despite having modest capital.

These disparities emphasise the necessity for tailored support programmes addressing the distinct needs of different wealth groups. For impoverished households, interventions could focus on strengthening safety nets through livestock insurance schemes and feed subsidies to prevent asset depletion during crises. Middle-class households would benefit most from targeted credit facilities that enable small-scale intensification practices, such as stall-feeding and poultry production, helping them transition to more sustainable operations. Meanwhile, wealthier households require incentives for commercial investments in climate-resilient breeds

and value-added production, implemented in ways that do not marginalise smaller producers. Such differentiated approaches would more effectively address the varying roles livestock play across the socioeconomic spectrum while promoting inclusive sector growth. These findings emphasise that livestock policies must consider the multifaceted roles livestock play across socioeconomic strata—from subsistence to accumulation—while addressing structural barriers, such as limited land access and youth disinterest, that perpetuate inequalities.

4.3.4. Geographical and Ecological Dimensions

The study highlights striking spatial variations in ownership patterns. Rural households are nearly twice as likely to own livestock as urban households (61.1% vs 27.3%, $p < 0.01$), reflecting agriculture's central role in rural livelihoods (Pitikoe, 2018). Ecological conditions further influence these patterns, with foothills and mountainous zones exhibiting particularly high ownership rates (66.0% and 59.6% respectively) due to favourable grazing conditions. In contrast, lowland areas face intense competition for land, thereby constraining livestock activities. These geographical disparities suggest that blanket national policies may be ineffective; instead, support programmes should be tailored to local agro-ecological conditions (Danso-Abbeam *et al.*, 2024).

Figure 3 highlights how ownership is highest in the foothills and mountainous zones. Male-headed households consistently show higher ownership rates across all zones. The gap is especially wide in Mountain zones, reinforcing spatial and gendered patterns in livestock access.

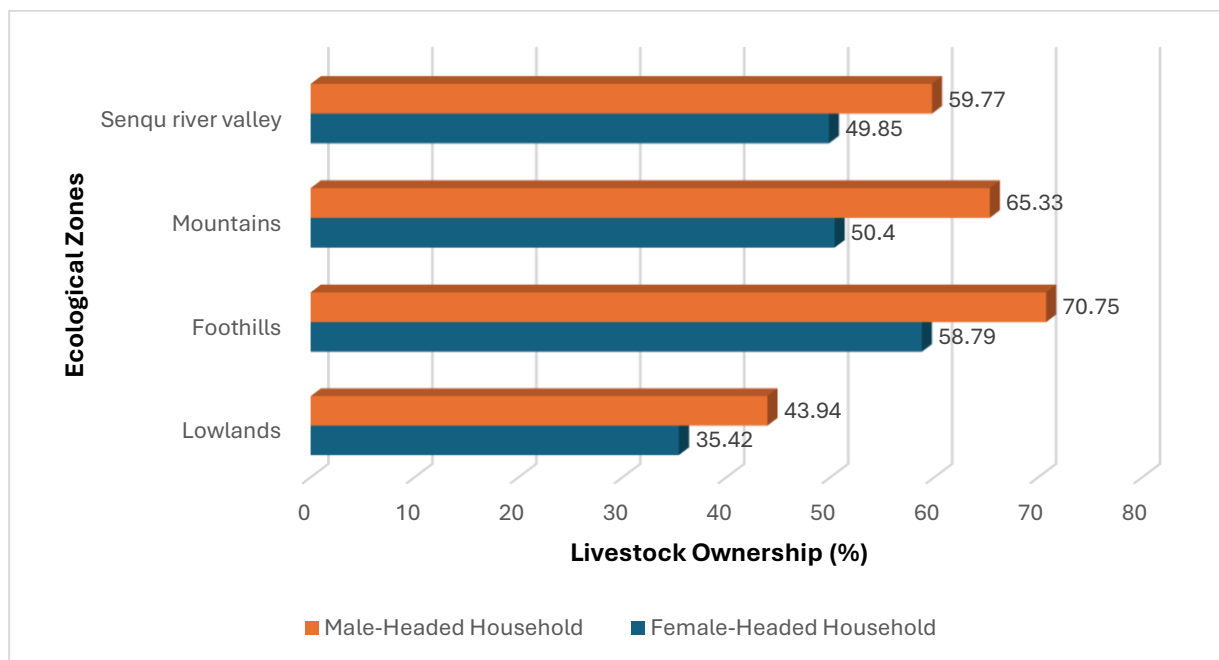


FIGURE 3: Livestock Ownership by Ecological Zone and Gender

4.3.5. Land Tenure as the Fundamental Constraint

Owning agricultural land is the strongest predictor of livestock ownership (coefficient = 1.124, $p < 0.01$). Households with access to land are significantly more likely to own livestock, underscoring the importance of secure land tenure in supporting sustainable livestock farming. A lack of land ownership severely limits households' ability to rear animals, thereby reinforcing economic disadvantages for landless groups. The current land tenure system, combining formal leasehold and customary arrangements, presents both opportunities and challenges (Leduka *et al.*, 2019). While customary grazing rights enable poorer households to maintain small herds, insecure tenure discourages long-term investments in pasture improvement or animal health. With 77.9% of households lacking formal land titles, tenure insecurity represents a significant barrier to sector development (Leduka *et al.*, 2019; Nkonki-Mandleni *et al.*, 2019). Addressing these constraints requires comprehensive land governance reforms that balance customary practices with the need for secure, transferable rights, particularly for vulnerable groups such as FHHs and young farmers.

4.4. Gender Dynamics in Factors Influencing Livestock Ownership

The results presented in Table 4 reveal important gender-based variations in the factors influencing livestock ownership in Lesotho. While some predictors such as age ($\beta=0.012$ for FHHs, $\beta=0.013$ for MHHs, $p<0.01$), household size ($\beta=0.187$ for FHHs, $\beta=0.168$ for MHHs,

$p < 0.01$), urban residence ($\beta = -0.625$ for FHHs, $\beta = -0.809$ for MHHs, $p < 0.01$), and agricultural land ownership ($\beta = 1.145$ for FHHs, $\beta = 1.116$ for MHHs, $p < 0.01$) show consistent patterns across male- and female-headed households, other factors demonstrate distinct gendered effects that warrant closer examination through the FPE perspective.

The analysis reveals particularly striking differences in the effects of marital status. Widowed FHHs show significantly stronger positive coefficients ($\beta = 0.917$, $p < 0.01$) compared to their male counterparts ($\beta = -0.230$, ns), while divorced FHHs also demonstrate stronger ownership likelihood ($\beta = 0.579$, $p < 0.01$) versus divorced MHHs ($\beta = -0.092$, ns). These patterns align with FPE's emphasis on how women's access to resources is often mediated through marital status and household structures (Nyantakyi-Frimpong, 2019). The findings suggest that for many women in Lesotho, livestock serve as crucial safety nets following marital dissolution, providing economic security where formal support systems may be lacking (Dumas *et al.*, 2018). However, FPE reminds us that this apparent resilience should not obscure the structural inequalities that make livestock ownership a necessity rather than a choice for many FHHs. The smaller scale of women's livestock operations compared to men's further reflects what FPE scholars identify as gendered patterns where women are systematically channelled into smaller-scale, less profitable agricultural activities (Taruvinga *et al.*, 2022; Vercillo, 2022).

The gender disparities in education effects are particularly revealing. While higher education shows a negative association with livestock ownership for both genders, this relationship is significantly stronger for MHHs ($\beta = -0.950$, $p < 0.01$) compared to FHHs ($\beta = 0.112$, ns). This pattern reflects FPE's perspectives about how gender intersects with education to create differential livelihood opportunities. The results suggest that educated men in Lesotho have greater freedom to transition to non-agricultural livelihoods, while educated women may face persistent barriers to exiting livestock production entirely due to their gendered roles in household resource management (Dumas *et al.*, 2018).

Ecological patterns also demonstrate clear gender dimensions. MHHs show significantly stronger positive effects in mountainous ($\beta = 0.864$, $p < 0.01$) and river valley regions ($\beta = 0.521$, $p < 0.01$) compared to FHHs ($\beta = 0.316$ and $\beta = 0.163$, respectively, both ns). These geographic disparities exemplify FPE's concept of how environmental factors interact with gendered resource control (Vercillo, 2022). The concentration of MHHs in ecologically favourable zones for livestock farming, despite women's substantial contributions to animal care labour,

highlights the systemic nature of resource allocation inequalities (Nyantakyi-Frimpong, 2019) in rural Lesotho.

These findings collectively highlight FPE's central argument that gender serves as a fundamental organising principle in natural resource access and control (Sundberg, 2017). The variations observed across marital status, education, and ecological zones cannot be explained solely by individual choices or economic factors; rather, they reflect deeper structural inequalities in how livestock resources are distributed and managed (Vercillo, 2022). From a policy perspective, this FPE-informed understanding suggests that interventions must move beyond simply improving women's access to livestock and instead challenge the patriarchal norms and practices that systematically disadvantage female-headed households (Nam, 2018). Future research could productively employ FPE's qualitative methodologies to explore further how these structural dynamics play out in the everyday lives of livestock owners across Lesotho's diverse communities.

TABLE 4: Logistic Regression by Gender of Household Head

	Female Headed-Household		Male Headed-Household	
	Coefficient	Std. Err.	Coefficient t	Std. Err.
Age of Head	0.012***	0.003	0.013***	0.002
Marital Status of Head (base category: Never Married)	0	.	0	.
Married	0.926***	0.168	0.301***	0.112
Widowed	0.917***	0.160	-0.230	0.149
Divorced	0.579**	0.260	-0.092	0.266
Not living together	0.223	0.202	-0.335**	0.147
Educational Attainment (base category: No education, preschool/early childhood education)	0	.	0	.
Primary	0.331**	0.161	-0.019	0.094

Secondary	0.185	0.186	-0.411***	0.115
Higher	0.112	0.232	-0.950***	0.150
Do not know	0.016	0.268	-0.536**	0.213
Household Size	0.187***	0.018	0.168***	0.017
Wealth Status (base category: Poorest)	0	.	0	.
Poorer	0.171	0.112	0.085	0.096
Middle	-0.245**	0.122	-0.017	0.106
Richer	-0.275*	0.148	-0.036	0.123
Richest	0.063	0.184	0.558***	0.141
Urban	-0.625***	0.106	-0.809***	0.084
Ecological zone (base category: Lowlands)	0	.	0	.
Foothills	0.047	0.151	0.275**	0.126
Mountains	0.316	0.216	0.864***	0.190
Senqu River Valley	0.163	0.207	0.521***	0.190
District (base category: Butha-Buthe)	0	.	0	.
Leribe	-0.070	0.180	-0.039	0.133
Berea	0.081	0.179	-0.205	0.136
Maseru	0.124	0.179	-0.407***	0.135
Mafeteng	0.264	0.175	0.236*	0.140
Mohale's Hoek	0.517***	0.187	0.158	0.159
Quthing	0.350	0.252	-0.355	0.224
Qacha's Nek	-0.136	0.256	-0.810***	0.221
Mokhotlong	-0.191	0.269	-0.593***	0.223
Thaba-Tseka	0.139	0.259	-0.385*	0.220
Agricultural land ownership	1.145***	0.082	1.116***	0.067
Constant	-4.381***	0.365	-2.985***	0.247
Number of Observations	3961		5849	
LR chi2 (29)	1134.58		1704.56	

Prob > chi2	0.000	0.000
Pearson chi2	3810.25	5677.23
Prob > chi2	0.7502	0.4076
*** p<.01, ** p<.05, * p<.1		

5. CONCLUSION AND POLICY IMPLICATIONS

This study demonstrates that complex interactions between socio-cultural norms, household characteristics, economic factors, and environmental conditions influence livestock ownership in Lesotho. Through an FPE perspective, the findings reveal how deeply entrenched male-controlled systems mediate women's access to livestock resources, with marital status, education levels, and ecological zones creating distinct gendered patterns of ownership. The results highlight how FHHs often rely on livestock as critical safety nets, while facing systemic barriers to accessing prime grazing lands and transitioning to alternative livelihoods.

Three key policy priorities emerge from this analysis. First, transformative interventions must address gender disparities by improving women's access to resources that could facilitate enhanced livestock production. Second, differentiated support programmes should recognise how livestock's economic role varies across household types and ecological contexts. Third, integrated rural development strategies must connect livestock policies with broader initiatives in land reform, education, and social protection to create meaningful change. Importantly, the study emphasises that equitable livestock development requires moving beyond superficial empowerment approaches to tackle the structural roots of gender inequality.

6. FUTURE RESEARCH DIRECTIONS

To build on the findings of this study, future research should adopt qualitative or mixed methods approaches to explore how shifting gender norms, youth aspirations, and household dynamics influence livestock ownership in Lesotho. Longitudinal studies could provide perspectives into how ownership patterns evolve over time and in response to policy or environmental changes. Expanding research across more ecological zones and communities would also help uncover regional variations in gendered livestock practices. Ultimately, a greater focus on power relations, land tenure, and decision-making dynamics is crucial to inform policies that extend beyond access and promote genuine gender equity in livestock development.

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