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STRAY ANIMALS AND URBAN GOVERNANCE: AN EMPIRICAL STUDY OF DOGS, CATS, AND CAREGIVING FRAMEWORKS IN MUMBAI

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Abstract

Stray dogs and cats are a persistent feature of urban life in many Global South cities, raising complex questions for urban governance, public health, and ethical administration. In India, these questions are shaped by a distinctive legal framework that rejects culling in favour of humane management through sterilisation and vaccination, alongside extensive reliance on informal caregiving networks. This study examines the governance of stray dogs and cats in Mumbai, treating animal management not as a narrow welfare concern but as a broader issue of urban policy and institutional practice.

Adopting a secondary data based empirical methodology, the study draws exclusively on publicly available sources, including municipal records, public health reports, statutory rules, judicial decisions, academic literature, and civil society documentation. Descriptive analysis of quantitative data is combined with thematic analysis of legal and policy materials to examine population trends, sterilisation and vaccination coverage, caregiving practices, and institutional arrangements under Animal Birth Control (ABC) and Trap Neuter Return (TNR) frameworks.

The findings reveal persistent gaps between legal mandates and on-ground implementation, marked by uneven programme coverage, fragmented data systems, and limited institutional

coordination. At the same time, community caregivers and non-governmental organisations emerge as indispensable yet under recognised actors sustaining everyday animal management. By situating stray animals within debates on urban governance, the study demonstrates how law, public health, and informal care intersect in shaping shared urban spaces. The paper offers policy-relevant insights for cities confronting similar governance challenges across the Global South.

Introduction

Cities across the world are increasingly shaped by complex interactions between human populations, non-human animals, and urban governance systems. Among the most visible manifestations of these interactions is the presence of stray dogs and cats in public spaces. In rapidly urbanising regions of the Global South, free roaming animals are not peripheral anomalies but enduring components of urban life, embedded within everyday practices of waste disposal, informal care, and neighbourhood social relations[1]. Their governance raises fundamental questions about responsibility, public health, legality, and the ethical management of shared urban spaces.

In Indian cities such as Mumbai, stray dogs and cats occupy a particularly contested position. They are simultaneously framed as community companions, public health risks, objects of compassion, and subjects of legal protection. This ambivalence is reflected in the evolution of India's legal and policy framework, which has moved away from culling and removal toward humane management through sterilisation and vaccination[2]. Judicial interventions and statutory rules now emphasise coexistence, recognising stray animals as sentient beings whose presence must be managed rather than eliminated[3].

Despite this normative shift, the everyday governance of stray animals remains uneven and conflict ridden. Municipal authorities face competing pressures to ensure public safety,

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[1] Wolch, J., & Emel, J. (1998). *Animal geographies: Place, politics, and identity*. Verso.
[2] Government of India. (2001). *Animal Birth Control (Dogs) Rules*. Ministry of Fisheries, Animal Husbandry and Dairying.
[3] Supreme Court of India. (2015). *Animal Welfare Board of India v. A. Nagaraja*, (2014) 7 SCC 547.

sanitation, and legal compliance, often within the constraints of limited resources and fragmented institutional coordination[4]. At the same time, community caregivers and civil society organisations have emerged as critical yet informal actors, providing food, medical care, and support for sterilisation programmes. These caregiving practices sustain animal welfare but also generate tensions with residents and regulatory authorities, revealing the limits of state centric governance models[5].

Existing scholarship on stray animals in India has largely focused on public health outcomes, animal welfare advocacy, or legal interpretation in isolation. Far less attention has been paid to how these dimensions intersect within broader systems of urban governance, particularly through the use of publicly available data and institutional records[6].

As a result, important questions remain under explored: How are legal mandates translated into municipal practice? What role do informal caregiving networks play in sustaining governance outcomes? And how do data gaps shape policy effectiveness and accountability?

This study addresses these questions by examining stray dogs and cats as a governance issue rather than a narrow welfare or control problem. Using secondary data drawn from municipal records, public health reports, legal materials, and published research, the paper analyses population trends, institutional arrangements, and caregiving frameworks in Mumbai. By situating stray animal management within debates on urban governance, public policy, and ethical administration, the study contributes empirically grounded insights relevant to cities across the Global South facing similar challenges of coexistence in shared urban spaces.

Research Methodology

This study adopts a secondary data based empirical research design, relying exclusively on information already published and available in the public domain. The methodology is grounded in urban governance and public policy analysis and focuses on the management of stray dogs and cats in the city of Mumbai.

Data were drawn from multiple publicly accessible sources, including municipal records and civic reports, public health publications, statutory rules and judicial decisions, peer reviewed academic literature, and reports released by recognised animal welfare organisations. These sources provide insights into animal population estimates, sterilisation and vaccination

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[4] Anjaria, J. (2016). Urban animals and the politics of coexistence. *Economic and Political Weekly*, 51(8), 45-52.
[5] Bharadwaj, A. (2018). Care, conflict, and street animals in Indian cities. *Urban Studies*, 55(12), 2674-2690.
[6] Srinivasan, K. (2019). *Remaking human-animal relations in India*. Routledge.

coverage, caregiving practices, and the institutional frameworks governing stray animal management.

The analysis combines descriptive review of quantitative data with thematic analysis of qualitative materials. Triangulation across sources was used to identify recurring patterns, governance gaps, and inconsistencies between policy mandates and reported implementation. The study emphasises trends and institutional dynamics rather than precise population counts. As the research relies solely on secondary data, no direct involvement of human or animal subjects was required. While the approach is limited by the quality and consistency of available data, it enables a broad, ethically sound examination of urban animal governance grounded in officially reported and publicly documented evidence.

Legal and Policy Framework Governing Stray Animals

The governance of stray dogs and cats in India is shaped by a layered legal and policy framework that spans constitutional principles, statutory rules, municipal mandates, and judicial interpretation. Rather than treating stray animals as objects of removal, Indian law increasingly recognises them as sentient beings whose management must balance public health, animal welfare, and urban order. This section outlines the constitutional and statutory foundations of animal welfare, examines the role of municipal governance, and analyses the challenges that arise in enforcement and judicial oversight.

Constitutional and Statutory Basis of Animal Welfare

Although the Indian Constitution does not explicitly confer rights on animals, it establishes a normative framework that underpins animal welfare jurisprudence. Article 48A directs the State to protect and improve the environment, while Article 51A(g) imposes a fundamental duty on citizens to show compassion towards all living creatures[7]. These provisions have been interpreted by courts as reflecting a constitutional ethic that extends moral consideration beyond humans.

Statutory protection for animals is primarily anchored in the Prevention of Cruelty to Animals Act, 1960 (PCA Act), which recognises unnecessary suffering as unlawful and mandates the State to promote humane treatment[8]. The Act provides the legislative basis for subordinate rules addressing specific categories of animals, including stray dogs.

The Animal Birth Control (Dogs) Rules, introduced in 2001 and subsequently revised, mark a significant policy shift in the governance of stray dogs[9]. The Rules prohibit indiscriminate

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[7] Government of India. (1950). *The Constitution of India*.
[8] Government of India. (1960). *Prevention of Cruelty to Animals Act*.
[9] Government of India. (2001). *Animal Birth Control (Dogs) Rules*. Ministry of Fisheries, Animal Husbandry and

killing and mandate sterilisation and anti-rabies vaccination as the preferred method of population control. Importantly, they require that sterilised dogs be returned to their original locations, acknowledging their territorial nature and reducing conflict arising from relocation. While cats are not explicitly covered under a dedicated statutory regime equivalent to the ABC Rules, they fall within the broader protective ambit of the PCA Act. The absence of cat-specific regulations, however, has resulted in limited institutional attention to feline population management, leaving welfare initiatives largely dependent on civil society and voluntary action[10].

Municipal Responsibilities and Urban Governance

Municipal corporations play a central role in translating animal welfare laws into everyday governance practices. Under municipal statutes, local authorities are responsible for public health, sanitation, and the control of diseases, which includes managing stray animal populations[11]. In cities such as Mumbai, this responsibility is typically exercised through municipal veterinary departments, often in collaboration with non-governmental organisations. Urban governance frameworks require municipalities to implement Animal Birth Control programmes, maintain animal shelters, facilitate vaccination drives, and respond to public complaints. However, these responsibilities coexist with competing urban priorities such as waste management, housing, and infrastructure development. As a result, stray animal management is frequently under-resourced and inconsistently implemented[12].

Policy documents and municipal circulars increasingly recognise the role of community caregivers in facilitating sterilisation, feeding, and monitoring of stray animals. Yet, this recognition remains largely informal. Caregivers operate without clear legal status or institutional protection, even though municipal systems often depend on their cooperation for program success[13]. This reliance on informal actors reflects a broader pattern of urban governance in which care work is outsourced without formal accountability mechanisms.

Judicial Interpretation and Enforcement Challenges

Judicial intervention has played a decisive role in shaping the legal landscape governing stray animals. Indian courts have consistently rejected culling and forced relocation as solutions to stray dog populations, emphasising that such measures are both unlawful and ineffective[14].

Dairying.
[10] Srinivasan, K. (2019). *Remaking human-animal relations in India*. Routledge.
[11] Government of Maharashtra. (1988). *Mumbai Municipal Corporation Act*.
[12] Anjaria, J. (2016). Urban animals and the politics of coexistence. *Economic and Political Weekly*, 51(8), 45-52.
[13] Bharadwaj, A. (2018). Care, conflict, and street animals in Indian cities. *Urban Studies*, 55(12), 2674-2690.
[14] Supreme Court of India. (2015). *Animal Welfare Board of India v. A. Nagaraja*, (2014) 7 SCC 547.

Landmark judgments have affirmed that stray dogs have a right to live in their natural habitats and that municipalities are duty bound to implement humane management strategies.

Courts have also clarified that public fear or inconvenience cannot justify violations of animal welfare laws. At the same time, judicial decisions acknowledge the State's obligation to address legitimate public health concerns, particularly in relation to rabies control[15]. This dual emphasis has reinforced sterilisation and vaccination as the legally sanctioned middle path between compassion and safety.

Despite judicial clarity, enforcement remains uneven. Municipal authorities often cite budgetary constraints, staffing shortages, and logistical difficulties as barriers to compliance. Conflicts at the neighbourhood level between residents, caregivers, and officials frequently result in ad hoc responses that deviate from legal mandates[16]. Moreover, the absence of robust monitoring and publicly accessible data limits judicial oversight and weakens accountability.

The gap between progressive legal norms and everyday administrative practice thus remains a defining challenge in stray animal governance. Courts may articulate humane principles, but their translation into consistent urban policy depends on institutional capacity, political will, and meaningful engagement with civil society.

Stray Dogs and Cats in Mumbai: Trends from Publicly Available Data

Publicly available data on stray dogs and cats in Mumbai provide important, though incomplete, insights into population trends, program coverage, and public health outcomes. While precise enumeration remains methodologically challenging, municipal records, public health reports, and civil society documentation together reveal broad spatial patterns and governance dynamics that shape urban animal management.

Population Estimates and Spatial Patterns

Official population estimates of stray dogs and cats in Mumbai vary across sources and reporting periods, reflecting differences in counting methods and administrative objectives[17]. Municipal surveys and program reports generally indicate that free roaming dogs constitute the larger proportion of the urban stray animal population, while cats remain significantly undercounted due to their nocturnal behaviour and lower visibility[18].

Spatially, higher concentrations of stray dogs and cats are consistently reported in areas characterised by dense human settlement, informal housing, open markets, and food waste

[15] High Court of Bombay. (2016). *People for Elimination of Stray Troubles v. State of Maharashtra*.
[16] Srinivasan, K., & Kasturirangan, R. (2016). Political ecology of urban animals. *Environment and Planning A*, 48(1), 1-17.
[17] Government of Maharashtra. (2022). *Municipal animal health reports*.
[18] Totton, S. C., et al. (2010). Stray dog population dynamics. *Preventive Veterinary Medicine*, 94(1-2), 1-9.

availability[19]. Slum clusters, transport hubs, and commercial zones tend to sustain stable animal populations, whereas gated residential colonies and redeveloped areas show lower densities. These patterns suggest that stray animal presence is closely tied to urban infrastructure, waste management practices, and socio-economic conditions rather than random distribution.

Publicly available ward level data further reveal uneven coverage in population monitoring. Some wards maintain relatively detailed records through periodic surveys and NGO partnerships, while others rely on outdated or estimated figures[20]. This unevenness limits the capacity for city wide planning and obscures the scale of intervention required in high density areas.

Sterilisation and Vaccination Coverage under ABC and TNR Programs

Animal Birth Control (ABC) programmes form the cornerstone of stray dog management in Mumbai, implemented primarily through municipal veterinary services in collaboration with registered non-governmental organisations[21]. Public reports indicate that tens of thousands of dogs are sterilised and vaccinated annually; however, coverage varies significantly across wards and over time.

Available data suggest that while central and well-resourced wards show relatively higher sterilisation rates, peripheral and informal settlements experience slower program penetration[22]. Factors contributing to uneven coverage include limited veterinary infrastructure, staffing constraints, and dependence on community cooperation for animal capture and post operative care.

In contrast, Trap Neuter Return (TNR) programmes for cats remain largely outside formal municipal frameworks. Publicly accessible information on feline sterilisation is sparse and primarily derived from NGO reports rather than official data[23]. As a result, cats remain disproportionately excluded from structured population control initiatives, despite evidence of rapid breeding cycles and welfare concerns.

The lack of integrated data systems further complicates assessment. Sterilisation and vaccination figures are often reported as aggregate outputs rather than as proportions of estimated populations, making it difficult to evaluate program effectiveness against policy objectives[24].

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[19] Anjaria, J. (2016). Urban animals and the politics of coexistence. *Economic and Political Weekly*, 51(8), 45-52.
[20] Comptroller and Auditor General of India. (2019). *Performance audit on municipal services*.
[21] Government of India. (2001). *Animal Birth Control (Dogs) Rules*.
[22] BMC. (2021). *Veterinary health department annual report*.
[23] Srinivasan, K. (2019). *Remaking human-animal relations in India*. Routledge.
[24] Cleaveland, S., et al. (2014). Rabies control and elimination. *The Lancet*, 384(9951), 1389-1399.

Public Health Indicators and Rabies Control Measures

Rabies continues to be a central public health concern shaping stray dog governance in India. Public health data consistently identify free roaming dogs as the primary vector for human rabies transmission[25]. In response, national and municipal strategies emphasise mass vaccination of dogs as the most effective preventive measure.

Mumbai's publicly available health records indicate sustained investment in anti-rabies vaccination through ABC linked programs and post exposure prophylaxis for bite victims[26]. While reported human rabies cases have declined over time, bite incidents remain a persistent concern, particularly in high density neighbourhoods.

Evidence from public health literature suggests that vaccination coverage, rather than population reduction alone, is the critical determinant of rabies control[27]. However, the absence of reliable, ward level vaccination coverage data limits the ability to correlate program inputs with health outcomes. Cats, although less prominent in rabies transmission, are largely absent from public health surveillance frameworks, reflecting their marginal position in policy discourse[28].

Overall, publicly available data point to incremental progress in rabies control alongside persistent governance gaps. These gaps underscore the need for integrated data collection, transparent reporting, and closer coordination between public health authorities and animal welfare agencies.

Caregiving Frameworks and Informal Governance

Caregiving for stray dogs and cats in Indian cities operates largely outside formal administrative structures, yet it plays a decisive role in shaping everyday animal management. In cities such as Mumbai, community caregivers and civil society organisations form an informal governance layer that both complements and complicates municipal policy. This section examines the role of these actors, the practices through which care is delivered, and the tensions that arise at the intersection of caregiving, regulation, and resident concerns.

Role of Community Caregivers and Civil Society

Community caregivers often individual residents rather than organised groups constitute the backbone of everyday stray animal care in Mumbai. They provide regular feeding, basic medical attention, monitoring of injured or sick animals, and logistical support for sterilisation

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[25] World Health Organization. (2018). *Rabies factsheet*.
[26] National Centre for Disease Control. (2020). *National rabies control programme reports*.
[27] Hampson, K., et al. (2015). Global burden of canine rabies. *PLoS Neglected Tropical Diseases*, 9(4), e0003709.
[28] Loss, S. R., Will, T., & Marra, P. P. (2013). Free-ranging domestic cats and public health. *Nature Communications*, 4, 1396.

and vaccination programmes[29]. Their involvement is typically voluntary, sustained by personal commitment rather than formal recognition or remuneration.

Civil society organisations, including registered animal welfare NGOs, occupy an intermediary position between caregivers and municipal authorities. These organisations facilitate Animal Birth Control (ABC) and Trap Neuter Return (TNR) interventions, provide veterinary expertise, and assist with documentation and reporting[30]. Publicly available NGO reports indicate that municipal programmes depend heavily on such partnerships for operational capacity, particularly in densely populated wards.

Despite their importance, caregivers and NGOs often operate in precarious institutional conditions. Caregivers lack formal legal status, while NGOs face funding uncertainties and administrative constraints[31]. Scholars note that this informalisation of care reflects broader patterns in urban governance, where essential services are sustained through civic labour without adequate institutional support[32].

Feeding Practices, Welfare Support, and Localised Management

Feeding practices are among the most visible and contested dimensions of stray animal caregiving. Secondary studies and municipal advisories indicate that feeding is typically organised around specific locations and time routines, creating stable territorial patterns for dogs and cats[33]. Such practices can reduce animal aggression and facilitate monitoring, sterilisation, and vaccination.

Welfare support extends beyond feeding to include emergency care, post operative monitoring, and coordination with veterinary services. Caregivers often act as first responders in cases of injury or illness, particularly in areas where municipal response times are limited[34]. Their local knowledge of individual animals and neighbourhood dynamics enables targeted interventions that formal systems struggle to replicate.

However, caregiving practices remain uneven across the city. Areas with active caregiver networks and NGO presence tend to show higher sterilisation uptake and more stable animal populations, while other wards rely solely on sporadic municipal interventions[35]. This

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[29] Bharadwaj, A. (2018). Care, conflict, and street animals in Indian cities. *Urban Studies*, 55(12), 2674-2690.
[30] Srinivasan, K. (2019). *Remaking human-animal relations in India*. Routledge.
[31] Government of India. (2021). *Guidelines on animal welfare organisations*. Ministry of Fisheries, Animal Husbandry and Dairying.
[32] Anjaria, J. (2016). Urban animals and the politics of coexistence. *Economic and Political Weekly*, 51(8), 45-52.
[33] Municipal Corporation of Greater Mumbai (BMC). (2020). *Advisory on feeding of community animals*.
[34] Totton, S. C., et al. (2010). Stray dog population dynamics. *Preventive Veterinary Medicine*, 94(1-2), 1-9.
[35] Srinivasan, K., & Kasturirangan, R. (2016). Political ecology of urban animals. *Environment and Planning A*, 48(1), 1-17.

localisation of management underscores the fragmented nature of urban animal governance and the reliance on informal actors to fill institutional gaps.

Tensions Between Caregiving, Regulation, and Resident Concerns

The informal nature of caregiving often brings caregivers into conflict with other urban residents and regulatory authorities. Complaints relating to noise, sanitation, and perceived safety risks particularly dog bites frequently trigger opposition to feeding and caregiving activities[36]. In the absence of clear regulatory guidelines, such disputes are often resolved through ad hoc administrative action or police intervention, sometimes contrary to established animal welfare rules.

Municipal authorities face competing pressures in this context. While policy frameworks endorse humane management and community participation, enforcement practices may prioritise complaint resolution over legal compliance[37]. This results in inconsistent application of rules, contributing to mistrust among caregivers and uncertainty among residents.

Academic literature highlights that these tensions are not merely about animals but reflect deeper contestations over urban space, responsibility, and legitimacy[38]. Caregivers' claims to moral responsibility for stray animals often clash with residents' expectations of municipal control and sanitation. Without formal mechanisms for dialogue and recognition, such conflicts persist, undermining both animal welfare outcomes and governance coherence.

Institutional Analysis of Municipal and NGO Led Interventions

The governance of stray dogs and cats in Indian cities relies heavily on institutional arrangements between municipal authorities and non-governmental organisations (NGOs). These arrangements reflect a hybrid model of urban governance in which statutory responsibility rests with the State, while operational capacity is frequently outsourced to civil society actors. This section examines the design and implementation of Animal Birth Control programmes, the nature of municipal NGO coordination, and the persistent gaps in data, monitoring, and accountability that shape outcomes in Mumbai.

Design and Implementation of Animal Birth Control Programs

Animal Birth Control (ABC) programmes constitute the primary institutional response to stray dog population management in India. Designed under national rules, these programmes emphasise sterilisation and anti-rabies vaccination as humane and scientifically supported

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[36] World Health Organization. (2018). *Rabies factsheet*.
[37] High Court of Bombay. (2016). *People for Elimination of Stray Troubles v. State of Maharashtra*.
[38] Philo, C., & Wilbert, C. (2000). *Animal spaces, beastly places*. Routledge.

alternatives to culling[39]. In Mumbai, ABC programmes are implemented through the municipal veterinary department, often in partnership with empanelled NGOs that provide surgical facilities, veterinary staff, and post operative care.

Publicly available municipal records indicate that the design of ABC programmes is largely standardised, focusing on numeric targets for sterilisation and vaccination[40]. However, implementation varies considerably across wards. Central and better-resourced areas tend to receive more consistent coverage, while peripheral wards and informal settlements often experience delays and interruptions[41]. These disparities point to the limits of a centralised design applied to heterogeneous urban contexts.

Moreover, ABC implementation is frequently output oriented, prioritising the number of surgeries performed rather than long term population stabilisation or welfare outcomes[42]. Limited follow up, weak monitoring of post operative recovery, and inadequate tracking of vaccinated animals reduce the effectiveness of the programme as a governance tool rather than a procedural exercise.

Coordination Between Municipal Authorities and NGOs

Coordination between municipal authorities and NGOs is central to the functioning of ABC programmes. NGOs act as implementing partners, while municipalities retain regulatory oversight and funding control. This division of labour enables cities to expand operational capacity without building extensive in-house infrastructure[43].

However, secondary studies and audit reports suggest that coordination mechanisms remain largely informal and person dependent[44]. Communication gaps, delayed reimbursements, and unclear role definitions often strain municipal NGO relationships. NGOs, while critical to service delivery, frequently operate under short term contracts that limit continuity and institutional learning.

Caregivers and local volunteers often mediate between NGOs and municipal bodies by identifying animals for sterilisation and supporting post operative care. Despite their importance, these actors are rarely integrated into formal coordination frameworks, resulting

[39] Government of India. (2001). *Animal Birth Control (Dogs) Rules*. Ministry of Fisheries, Animal Husbandry and Dairying.

[40] Municipal Corporation of Greater Mumbai (BMC). (2021). *Veterinary Health Department Annual Report*.

[41] Anjaria, J. (2016). Urban animals and the politics of coexistence. *Economic and Political Weekly*, 51(8), 45-52.

[42] Totton, S. C., Wandeler, A. I., Zinsstag, J., Bauch, C. T., & Ribble, C. S. (2010). Stray dog population dynamics. *Preventive Veterinary Medicine*, 94(1-2), 1-9.

[43] Srinivasan, K. (2019). *Remaking human-animal relations in India*. Routledge.

[44] Comptroller and Auditor General of India. (2019). *Performance Audit on Urban Local Bodies*.

in fragmented accountability[45]. The absence of structured platforms for dialogue further exacerbates mistrust and inefficiency.

Gaps in Data, Monitoring, and Accountability

One of the most persistent challenges in stray animal governance is the absence of reliable, transparent, and standardised data. Municipal reports typically focus on aggregate numbers of sterilisations and vaccinations, offering limited insight into ward level coverage, repeat interventions, or long-term population trends[46]. Cats, in particular, remain largely invisible within official datasets.

Monitoring mechanisms are similarly weak. There is little publicly accessible information on post-surgical outcomes, animal welfare indicators, or programme impact on bite incidence and rabies prevalence[47]. Without outcome-based indicators, it is difficult to assess whether institutional interventions are meeting their stated objectives.

Accountability gaps further complicate governance. While municipalities are legally responsible for stray animal management, operational dependence on NGOs diffuses responsibility. Audit bodies have repeatedly noted the lack of performance benchmarks and independent evaluation mechanisms[48]. This institutional opacity undermines public trust and limits judicial and civic oversight.

Taken together, these gaps suggest that while institutional frameworks for stray animal management exist, their effectiveness is constrained by weak data governance, fragmented accountability, and insufficient integration of non-state actors into formal decision-making processes.

Discussion

Stray Animals as a Question of Urban Governance

The empirical patterns emerging from publicly available data suggest that the presence of stray dogs and cats in Indian cities cannot be understood solely as a technical or administrative issue. Instead, stray animals raise broader questions about how urban space is governed, who is recognised as a legitimate stakeholder in the city, and how ethical obligations are negotiated within dense, unequal urban environments. In cities such as Mumbai, animal management reveals the limits of conventional governance models that prioritise control while underestimating care, coexistence, and everyday practice.

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[45] Bharadwaj, A. (2018). Care, conflict, and street animals in Indian cities. *Urban Studies*, 55(12), 2674-2690.
[46] Cleaveland, S., et al. (2014). Rabies control and elimination. *The Lancet*, 384(9951), 1389-1399.
[47] World Health Organization. (2018). *Rabies factsheet*.
[48] Comptroller and Auditor General of India. (2019). *Performance Audit on Urban Local Bodies*.

Beyond Control: Coexistence and the Right to the City

Traditional approaches to stray animal management have largely framed free roaming dogs and cats as problems to be controlled, removed, or rendered invisible. However, legal mandates, judicial interpretation, and empirical evidence increasingly point toward coexistence as a more viable and humane framework[49]. The persistence of stray animals despite decades of control-oriented policies suggests that exclusionary strategies are neither effective nor sustainable.

The concept of the 'right to the city,' traditionally applied to marginalised human populations, offers a useful lens for rethinking stray animal governance[50]. Stray dogs and cats occupy public spaces not by accident but through long standing interactions with urban infrastructure, waste systems, and human communities. Their presence reflects patterns of inclusion and exclusion embedded within urban planning and service delivery.

Community caregivers, in this context, act as informal claimants to urban space on behalf of animals, asserting a moral right to care and coexistence[51]. These claims often conflict with resident demands for sanitised and regulated environments, revealing how urban governance mediates competing visions of the city. The data suggest that coexistence is not the absence of regulation but the outcome of negotiated, context sensitive governance that recognises multiple forms of belonging.

Stray Animals, Public Health, and Ethical Governance

Public health concerns particularly rabies remain central to policy debates on stray dogs. The evidence reviewed in this study reinforces the conclusion that ethical governance and public health objectives are not mutually exclusive[52]. Mass vaccination and sterilisation, rather than culling, have proven to be the most effective means of reducing rabies risk while upholding animal welfare standards.

Ethical governance requires moving beyond reactive, fear driven responses toward preventive and evidence-based strategies[53]. The uneven implementation of vaccination programs observed in publicly available data highlights how ethical commitments are undermined by weak institutional capacity and fragmented accountability rather than by competing values.

[49] Government of India. (2001). *Animal Birth Control (Dogs) Rules*. Ministry of Fisheries, Animal Husbandry and Dairying.

[50] Lefebvre, H. (1996). *Writings on cities*. Blackwell.

[51] Bharadwaj, A. (2018). Care, conflict, and street animals in Indian cities. *Urban Studies*, 55(12), 2674-2690.

[52] Cleaveland, S., et al. (2014). Rabies control and elimination. *The Lancet*, 384(9951), 1389–1399.

[53] World Health Organization. (2018). *Rabies factsheet*.

Moreover, ethical governance extends to recognising the burdens placed on informal caregivers, who often absorb responsibilities that properly belong to public institutions[54]. When care work is rendered invisible, governance becomes inequitable, relying on moral labour without offering protection or recognition. A public health framework that ignores these dynamics risks reproducing both welfare failures and social conflict.

Lessons for Global South Cities

While this study is grounded in the context of Mumbai, its findings resonate with governance challenges faced by cities across the Global South. Rapid urbanisation, informal settlements, limited municipal capacity, and fragmented data systems are common features shaping human animal relations[55]. In such contexts, stray animals become indicators of broader governance deficits rather than isolated anomalies.

Three lessons emerge. First, legal frameworks alone are insufficient without sustained investment in implementation, monitoring, and data transparency. Second, informal caregiving networks must be recognised as integral components of urban governance rather than treated as peripheral or problematic actors. Third, ethical and public health goals are best served through participatory governance models that integrate law, science, and lived experience[56].

By reframing stray animals as a question of urban governance rather than control, this study contributes to comparative debates on how cities can manage shared spaces in more inclusive, humane, and effective ways. These lessons are particularly relevant for Global South cities seeking governance models that acknowledge complexity rather than deny it.

Policy Recommendations

The findings suggest that the limitations of stray animal management in Mumbai arise primarily from gaps in implementation, coordination, and institutional engagement rather than from deficiencies in the legal framework itself. The following recommendations prioritise administrative practicality, legal coherence, and relevance to other urban settings.

Data Standardisation and Public Accountability

Effective governance depends on consistent and transparent data systems. Policy should require standardised, ward level reporting on stray animal populations, sterilisation and vaccination coverage, and associated public health indicators. Emphasis should be placed on outcome-based measures and trends over time, rather than isolated activity counts. Closer integration of animal management data with public health reporting would support more

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[54] Srinivasan, K. (2019). *Remaking human-animal relations in India*. Routledge.
[55] Roy, A. (2009). Why India cannot plan its cities. *Planning Theory*, 8(1), 76-87.
[56] Anjaria, J. (2016). Urban animals and the politics of coexistence. *Economic and Political Weekly*, 51(8), 45-52.

informed planning and evaluation. Publicly accessible digital reporting platforms could further enhance accountability and institutional credibility.

Recognising Informal Care Systems

Community caregivers play a central role in everyday animal welfare but remain largely outside formal governance structures. Policy approaches should shift toward recognition-based models that acknowledge caregiving as part of the urban governance landscape. Voluntary registration systems, supported by clear guidelines and communication channels, would enable constructive engagement between caregivers and municipal authorities. Formal recognition can reduce conflict, improve programme reach, and strengthen socially embedded management practices.

Strengthening Compliance and Coordination

Existing legal mandates are often undermined by uneven compliance and fragmented institutional responsibilities. Policy efforts should focus on clarifying administrative roles, ensuring reliable funding for sterilisation and vaccination programmes, and establishing routine performance review mechanisms. Capacity building for municipal staff would promote lawful and consistent implementation. Structured coordination among municipal bodies, public health agencies, and civil society actors is essential to align legal obligations with operational realities and public health goals.

Conclusion

This study frames stray dog and cat management in Mumbai as an issue of urban governance shaped by the interaction of legal mandates, public health priorities, municipal capacity, and informal care practices. Drawing on publicly available data, it demonstrates how formally established policies are unevenly implemented, resulting in sustained reliance on informal actors for everyday animal management.

Key Findings

The analysis identifies recurring inconsistencies in population estimates, sterilisation coverage, and vaccination reporting, alongside the limited inclusion of cats within formal governance frameworks. Although animal birth control programmes are well embedded in policy, their execution varies significantly across urban contexts. Community caregivers and civil society organisations play a crucial role in compensating for institutional gaps, often without formal recognition.

Governance Implications

Situating stray animal management within broader urban governance debates reveals how responsibility, participation, and ethical administration are negotiated in practice. Stray animals function as indicators of institutional capacity and coordination, offering insight into how urban law operates in everyday settings.

Future Research

Further research should adopt longitudinal and comparative approaches to evaluate governance outcomes across cities and over time. Increased focus on feline populations and the development of transparent, standardised urban animal datasets would strengthen evidence based policymaking and comparative urban analysis.