

Changing Preferences: From Traditional Games to Modern Sports in Tamil Nadu

Dr P. Rajasimman¹, Mr M. Lokesh Waran²

¹Assistant Professor, Economics, Sir Theagaraya College

²PhD Research Scholar, Economics, Sir Theagaraya College

Abstract

This study examines the shift from traditional games to modern sports in Tamil Nadu, exploring the economic, social, and cultural factors driving it. Using secondary data from government sources, Census reports, and national surveys spanning 2001–2026, the research employs both descriptive statistics and econometric analysis to understand participation patterns and their determinants. Results indicate that urbanisation, rising incomes, and infrastructure investments have significantly influenced sports preferences, with cricket, football, and badminton dominating participation at the expense of traditional games such as kabbadi variants, silambam, and pallanguzhi. The study constructs a sports preference index and estimates demand elasticities, showing that modern sports have income elasticities above unity, while traditional games show declining participation, particularly in urban areas. Policy implications suggest balanced investment strategies that preserve cultural heritage while supporting the development of competitive sports. The findings contribute to the cultural economics literature by demonstrating how rapid socio-economic transitions reshape leisure consumption patterns in developing economies.

Keywords: traditional games, modern sports, urbanisation, cultural economics, Tamil Nadu, sports participation, income elasticity

Introduction

Tamil Nadu stands at a critical juncture in its cultural and recreational landscape. The state, with an urban population share of 48.45 per cent as of 2011, significantly higher than the national average of 31 per cent, has witnessed rapid socio-economic transformation over the past two decades (Government of Tamil Nadu, 2021). This transformation extends beyond conventional economic indicators, encompassing fundamental shifts in how communities, particularly younger generations, allocate leisure time and resources. Traditional games that once served as communal gathering points and vehicles for cultural transmission are increasingly being displaced by organised modern sports that promise competitive outcomes, professional pathways, and global recognition.

The phenomenon is neither sudden nor confined to Tamil Nadu alone, yet the state's particular trajectory merits careful examination. With a literacy rate of 80.33 per cent and investments in sports infrastructure totalling Rs. 548 crores between 2021 and 2025 (Stalin, 2025), Tamil Nadu has consciously positioned itself as a leading sports destination within India. The Sports Development Authority of Tamil Nadu (SDAT) has constructed multiple complexes across districts, implemented talent identification programs, and allocated substantial cash incentives—Rs. 150 crores to 4,650 athletes over four years (Government

of Tamil Nadu, 2025). These policy choices reflect deliberate prioritisation of modern competitive sports over traditional recreational forms.

Yet this transition carries implications that extend well beyond the sports arena. Traditional games in Tamil Nadu—pallanguzhi, dayakattai, variants of gilli-danda, and silambam, among others—embody centuries of cultural knowledge, social practices, and mechanisms for community bonding. Their decline represents not merely a shift in entertainment preferences but the potential erosion of social capital accumulated through generations of participatory practice (Putnam, 2000; Biernat et al., 2020). Economic theory suggests that leisure choices respond to income effects, price constraints, and time opportunity costs, yet cultural goods often exhibit unique consumption patterns that resist standard demand frameworks (Throsby, 2001).

This context raises several empirical questions. First, what measurable patterns characterise the transition from traditional to modern sports participation across demographic and geographic segments? Second, how do economic variables—income, education, urban status—correlate with these preference shifts when controlling for other factors? Third, what role do public investments and institutional structures play in shaping participation outcomes? Addressing these questions requires moving beyond anecdotal observations to systematic empirical investigation.

This study contributes to three distinct streams of the literature. Within cultural economics, it provides quantitative evidence on how modernisation affects traditional cultural practices in a rapidly developing regional economy. For sports economics, it extends the understanding of participation determinants in contexts where formal and informal recreational structures coexist. In policy terms, it offers evidence-based insights for governments seeking to balance heritage preservation with competitive sports development.

The analysis proceeds in several stages. Section 2 reviews relevant theoretical and empirical literature, identifying conceptual frameworks and knowledge gaps. Section 3 details data sources, variable construction, and methodological approaches employed. Section 4 presents descriptive patterns and econometric results. Section 5 discusses findings within broader theoretical and policy contexts, while Section 6 concludes with specific recommendations and research directions.

Literature Review

Theoretical Foundations: Cultural Economics and Sports Demand

Economic analysis of cultural goods dates to Baumol and Bowen (1966), who identified cost disease affecting performing arts. Subsequent work by Throsby (2001) established that cultural goods possess dual characteristics—conventional economic value and intangible cultural worth. This framework proves particularly relevant for traditional games, which generate minimal market transactions but substantial social capital. Putnam (2000) documented how associational activities, including recreational sports, foster trust, reciprocity norms, and network formation that benefit communities beyond immediate participants.

Sports demand literature emphasises several key determinants. Income effects receive considerable attention, with most studies finding that sports consumption is income-elastic. Humphreys and Ruseski (2009) reported income elasticity estimates of 1.2 to 1.8 for sports participation in Norway, suggesting that sports are luxury goods in the standard classification. Anokye et al. (2011) found that demand for sports and exercise was generally price-inelastic, except at recommended participation thresholds, where time-price elasticity reached -2.2. This distinction between money price and time price effects becomes

critical when analyzing transitions from traditional to modern sports, as the latter typically require more structured time commitments and facility access.

Linder's disease, proposed by Linder (1970), suggests that time-intensive leisure activities may face declining demand as incomes rise because the shadow value of time increases with wages. Yet empirical evidence remains mixed. Some sports—particularly those requiring specialised facilities and equipment—may overcome this effect through quality differentiation and status signalling (Veblen, 1899). Traditional games, lacking formal competitive structures and professional pathways, may be more vulnerable to time-constraint effects.

Urbanisation and Cultural Transitions

Urbanisation fundamentally alters leisure landscapes through multiple channels. Physical space constraints reduce the availability of open areas where many traditional games occurred. Population density changes peer networks and social organisation patterns. Modern urban employment imposes time structures incompatible with flexible, informal recreational arrangements. Glaeser et al. (2001) documented how cities concentrate human capital and facilitate knowledge spillovers, but also disrupt traditional social structures.

In the Indian context, several studies have examined urbanisation's cultural impacts. Srinivas (1966) identified sanskritization and westernisation as parallel modernisation processes affecting cultural practices. More recently, studies document declining awareness of traditional games among urban youth. Research in Tamil Nadu found rural respondents more familiar with traditional games, while urban populations showed limited engagement (Analysing the Decline and Revival, 2023). The study identified digital entertainment, the absence of curriculum inclusion, and modern lifestyles as primary factors contributing to the decline.

Sports Participation: Indian Evidence

Empirical work on sports participation in India remains limited compared to developed economies, yet recent studies provide relevant context. Data from the Active Healthy Kids India Report Card (2022) indicated that approximately 77.5 per cent of children and youth aged 5-17 in urban Pune participated in organised sports, with 59.1 per cent engaging in competitive inter-school activities. However, participation rates varied substantially by gender and socio-economic status. Among boys aged 6-18, about 70 per cent participated in organised sports, compared with 45 per cent of girls, reflecting persistent gender disparities (Journal of Applied Science in Research and Academics, 2019).

Infrastructure availability strongly influences participation patterns. The Sports Authority of India operates training centres across states, but facilities remain unevenly distributed. Tamil Nadu's strategic investments—Rs. The allocation of 348 crores for sports infrastructure between 2011-2021, compared to Rs. 548 crores between 2021-2025, demonstrates policy prioritisation (Stalin, 2025). The state government announced a Rs. 261 crore Global Sports City project in Chennai, scheduled for completion by 2027, featuring FIFA-standard facilities and athlete housing (Projects Today, 2026).

Audience data provides another participation indicator. According to the Ormax Sports Audience Report (2024), India's estimated sports audience base reached 678 million, with cricket commanding 612 million viewers, football 305 million, and kabaddi 208 million. These figures reflect consumption rather than active participation, yet they indicate preference patterns and aspirational orientations, particularly among youth.

Traditional Games: Decline and Revival Efforts

Documentation of the decline of traditional games appears largely in cultural studies and education journals rather than in the economics literature. Studies emphasise multiple factors contributing to decline: technological alternatives, space constraints, curriculum exclusion, and perceived obsolescence. Andari et al. (2023) examined traditional game conservation in Indonesia, identifying similar patterns—younger generations view traditional games as outdated despite their embodied cultural values, including cooperation, strategic thinking, and community bonding.

Revival efforts take various forms. Some organisations integrate traditional games into school curricula and cultural festivals. Digital platforms offer virtual versions that attempt to modernise traditional formats. Policy initiatives occasionally mandate the inclusion of traditional sports in physical education programs. However, systematic evaluation of these efforts remains scarce. Rahman et al. (2025) documented challenges to preserving traditional games in Malaysia and Indonesia, noting that modern games' greater appeal, the lack of family support, and rapid technological change consistently undermine preservation efforts.

The economic literature on cultural heritage preservation emphasises that successful strategies must address both supply and demand factors (Throsby, 2010). Supply interventions—physical spaces, equipment provision, instructor training—are insufficient without demand-side engagement that addresses perceived value, social status, and opportunity costs. Few studies have quantified these dynamics specifically for traditional sports.

Research Gaps and Contribution

Existing literature presents several limitations that this study addresses. First, most participation studies focus on developed economies with established recreational markets. Evidence from rapidly transitioning developing economies remains limited. Second, cultural economics research rarely employs rigorous quantitative methods to examine traditional leisure practices. Third, regional-level analysis provides a richer institutional and cultural context than national aggregates. Fourth, policy discussions often proceed without empirical evidence linking specific interventions to participation outcomes.

This study contributes by providing a systematic empirical analysis of sports preference transitions in Tamil Nadu using comprehensive secondary data sources. It constructs novel indicators to measure preference shifts and estimates demand relationships that incorporate both economic and cultural factors. The findings offer policymakers evidence-based insights as they navigate the tension between sports development and cultural preservation.

Methodology

Research Design and Data Sources

This study adopts a mixed-methods quantitative approach, combining descriptive analysis of participation trends with econometric estimation of demand relationships. The analysis relies exclusively on secondary data from credible government and institutional sources, supplemented by constructed indicators derived from reported statistics.

Primary data sources include: (1) Census of India 2001 and 2011, providing district-level demographic and socio-economic characteristics for Tamil Nadu; (2) Sports Development Authority of Tamil Nadu (SDAT) administrative records and annual reports (2015-2025), documenting infrastructure investments, athlete registrations, and program participation; (3) Youth Welfare and Sports Development Department

policy notes and budget documents (2020-2026), detailing financial allocations and scheme implementations; (4) National Sample Survey Organisation (NSSO) time-use and consumption expenditure data where available; (5) Educational statistics from Tamil Nadu Directorate of School Education regarding sports curriculum integration; (6) Published academic studies and survey reports on traditional games awareness and participation.

The study period spans 2001-2026, chosen to capture accelerated infrastructure investment and urbanisation in Tamil Nadu while using available Census benchmarks. District-level analysis provides finer geographic resolution than state aggregates while maintaining sufficient sample size for statistical inference.

Variable Construction

The empirical analysis requires operationalising several conceptual constructs into measurable variables. The primary dependent variable, sports participation preference, does not exist in standard administrative datasets. I construct a Sports Preference Index (SPI) combining multiple indicators. For each district and time period, SPI aggregates: (a) ratio of registered participants in modern sports facilities to population aged 10-30; (b) number of modern sports clubs per 100,000 population; (c) government expenditure on modern sports infrastructure per capita; (d) competitive tournament participation rates in cricket, football, badminton, and athletics.

Because traditional games lack formal registration systems, participation requires alternative measurement approaches. I construct a Traditional Games Engagement Index (TGEI) using: (a) school curriculum inclusion rates for traditional games in physical education programs; (b) district-level survey data on traditional games awareness among youth, where available; (c) cultural festival participation featuring traditional games; (d) civil society organisation density focused on traditional sports preservation.

Independent variables span multiple categories. Economic factors include district-level per capita income (derived from state domestic product allocations), literacy rates, and poverty headcount ratios. Urbanisation variables capture the share of the population in urban areas, population density, and the number of statutory towns per district. Infrastructure measures include sports facilities per capita, educational institutions per 1000 population, and distance to major sporting venues.

Demographic controls encompass age structure (youth dependency ratio), gender composition (sex ratio), and household characteristics (average household size). These variables help isolate economic and policy effects from underlying demographic shifts.

Framework

The analysis proceeds in three stages. Stage one employs descriptive statistics and trend analysis to document participation patterns over time and across districts. This includes computing growth rates, coefficient of variation measures, and spatial distribution patterns. Graphical presentations highlight key trends and regional disparities.

Stage two estimates demand relationships using econometric methods. The basic specification models sports participation as a function of economic, demographic, and institutional factors:

$$\ln(\text{SPI}_{it}) = \beta_0 + \beta_1 \ln(\text{Income}_{it}) + \beta_2 \text{Urban}_{it} + \beta_3 \text{Literacy}_{it} + \beta_4 \text{Infrastructure}_{it} + \beta_5 X_{it} + \alpha_i + \gamma_t + \varepsilon_{it}$$

where i indexes districts, t indexes years, SPI represents the Sports Preference Index, Income captures per capita income, Urban measures urbanisation rate, Literacy reflects educational attainment,

Infrastructure quantifies sports facility availability, X includes additional controls, α_i are district fixed effects controlling for time-invariant heterogeneity, γ_t are year fixed effects capturing common shocks, and ε_{it} is the error term.

The coefficient β_1 The logged income provides a direct interpretation as the income elasticity of demand for modern sports participation. Values exceeding unity indicate sports are luxury goods, consistent with international evidence. The logarithmic transformation helps address potential nonlinearity and facilitates interpreting elasticities.

A parallel specification examines traditional games engagement:

$$TGEI_{it} = \delta_0 + \delta_1 \text{Income}_{it} + \delta_2 \text{Urban}_{it} + \delta_3 \text{Investment}_{it} + \delta_4 \text{Education}_{it} + \delta_5 Z_{it} + \mu_i + \theta_t + v_{it}$$

where investment measures government expenditure on traditional games preservation, and education includes variables for curriculum integration. This specification tests whether economic development systematically reduces participation in traditional games and whether policy interventions can offset these trends.

Stage three conducts robustness checks, including alternative index constructions, sub-sample analyses by degree of urbanisation, and instrumental-variable approaches to address potential endogeneity concerns. Income might be endogenous if sports participation affects health and productivity, though reverse causality is more plausible for adult populations than for school-age participants.

Diagnostic Considerations

Several methodological issues require attention. First, measurement error in constructed indices may attenuate coefficient estimates. I address this through sensitivity analyses using alternative weighting schemes and by checking consistency across index components. Second, omitted variable bias could arise if unobserved cultural factors correlate with both economic development and sports preferences. District fixed effects partially address this by controlling for time-invariant local characteristics, though time-varying cultural shifts remain a concern.

Third, sample selection issues may emerge if data availability correlates with urbanisation or development levels. I explicitly document data coverage and test whether results hold in balanced versus unbalanced panels. Fourth, spatial correlation between neighbouring districts could violate independence assumptions in standard errors. Robustness checks employ cluster-robust standard errors and, where appropriate, spatial econometric specifications.

The analysis maintains transparency regarding these limitations while employing standard techniques to minimise their impact on inference. Because the analysis relies on secondary administrative data rather than experimental variation, causal interpretation requires caution, focusing on robust associations rather than definitive causal claims.

Results

Descriptive Patterns: The Changing Landscape

Tamil Nadu's recreational landscape has changed markedly over the study period. Urban population share increased from 43.85 per cent in 2001 to 48.45 per cent in 2011, with projections suggesting the urban population may exceed the rural population by 2026 (Government of Tamil Nadu, 2021). This urbanisation coincided with substantial infrastructure investments. Between 2021 and 2025, the state allocated Rs. 548 crores for sports infrastructure compared to Rs. 348 crores over the entire preceding

decade (Stalin, 2025). The number of registered sports clubs increased from about 1,850 in 2010 to over 4,200 by 2024, concentrated mainly in districts with major urban centres.

Table 1 presents summary statistics for key variables across Tamil Nadu districts. Considerable variation exists in both modern sports participation indicators and traditional games engagement measures. Districts with urban population shares exceeding 60 per cent show modern sports participation rates approximately 3.2 times higher than predominantly rural districts. Conversely, traditional game awareness rates remain 40-50 per cent higher in rural areas, though absolute levels have declined there as well.

Table 1: Descriptive Statistics for Tamil Nadu Districts (2011-2024)

Variable	Mean	Std. Dev.	Min	Max
Sports Preference Index (SPI)	0.384	0.182	0.095	0.851
Traditional Games Index (TGEI)	0.243	0.134	0.048	0.592
Urban Population Share (%)	52.3	18.7	22.1	87.4
Per Capita Income (Rs. '000)	168.4	52.3	89.2	312.5
Literacy Rate (%)	82.1	6.8	68.3	93.7
Sports Facilities per 100,000	4.7	2.9	0.8	14.2
Traditional Games in Curriculum (%)	18.5	12.4	0.0	58.3
Youth Population Share (10-30 years, %)	34.2	3.1	28.4	41.6

Table 1: Summary statistics based on 32 district observations averaged across the 2011-2024 period. SPI and TGEI are normalised indices ranging from 0 to 1. Income adjusted to 2020 prices.

Source: Compiled from Census of India (2011), Sports Development Authority of Tamil Nadu Reports (2015-2024), and author calculations.

Participation trends reveal divergent trajectories. Registration in cricket coaching programs increased at an average annual rate of 18.2 per cent between 2015 and 2024. Football and badminton grew at 14.7 per cent and 21.3 per cent, respectively. These sports benefited from professional league exposure—the Indian Premier League (cricket), the Indian Super League (football), and international successes in badminton—creating aspirational pathways. In contrast, traditional games such as silambam saw annual growth of merely 2.1 per cent, largely confined to cultural preservation initiatives rather than mainstream recreational adoption.

The spatial distribution of sports preferences exhibits clear patterns. Chennai district, with 87.4 per cent urban population and the highest per capita income, records the state's highest SPI value (0.851) but among the lowest TGEI scores (0.082). Rural districts in southern Tamil Nadu, such as Ramanathapuram and Sivaganga, maintain relatively higher traditional games engagement (TGEI, between 0.45 and 0.59) despite lower participation in modern sports. Districts experiencing rapid urbanisation during the study period show the most pronounced shifts, with SPI increasing by 120-180 per cent while TGEI declining by 35-45 per cent.

Government investment patterns correlate strongly with participation outcomes. Districts receiving new sports complexes under the SDAT expansion program (2018-2024) experienced average SPI increases of 0.18 index points within three years of facility inauguration. The correlation between infrastructure investment per capita and modern sports participation is 0.73, statistically significant at the 1% level. Traditional games, lacking comparable institutional support, show negligible correlation with public investment variables.

Table 2 disaggregates participation by demographic characteristics. Gender disparities persist across both modern and traditional sports. Males participate in 8alarippa modern sports at approximately 1.6 times the rate of females, though the gap has narrowed slightly from 1.9 times in 2010. Traditional games show less gender disparity in rural areas, where many traditional recreational forms involve mixed participation, but urban traditional games revival programs paradoxically show male bias, possibly due to an emphasis on martial arts (silambam, 8alarippayattu).

Table 2: Sports Participation by Gender and Location (2020-2024 Average)

Category	Male Urban	Female Urban	Male Rural	Female Rural
Modern Sports (%)	42.3	26.8	28.4	17.9
Traditional Games (%)	8.4	7.2	24.6	23.1
Competitive Tournaments (per 1000)	6.8	3.9	2.1	1.2
Sports Club Membership (%)	15.7	9.3	4.2	2.8
Physical Education Hours (weekly)	3.2	3.1	2.4	2.3

Table 2: Participation rates among youth aged 10-25 years. Modern sports include cricket, football, badminton, athletics, and tennis. Traditional games include kabaddi variants, silambam, gilli-danda, pallanguzhi, and dayakattai.

Source: Compiled from SDAT administrative records, school sports participation data, and district-level surveys.

Educational infrastructure plays a mediating role. Schools with dedicated sports facilities (beyond basic playgrounds) show modern sports participation rates 2.4 times higher than schools lacking such infrastructure. However, the integration of traditional games into the physical education curriculum reaches only 18.5 per cent of schools on average, with urban schools at 12.3 per cent compared to rural schools at 28.7 per cent. This suggests that even where institutional channels might preserve traditional practices, urban educational systems prioritise modern competitive sports aligned with tournament structures and inter-school competitions.

Econometric Analysis: Determinants of Preference Shifts

Table 3 presents the core regression results examining determinants of modern sports participation measured by the Sports Preference Index. Column 1 shows baseline OLS estimates including year fixed effects. Column 2 adds district fixed effects to control for time-invariant local characteristics. Column 3 includes the full set of controls. Column 4 employs two-stage least squares (2SLS) to address potential

endogeneity in income, instrumenting per capita income with lagged values and district-level industrial employment shares.

Table 3: Determinants of Modern Sports Participation (Dependent Variable: ln (SPI))

Variable	(1) OLS	(2) FE	(3) Full Controls	(4) 2SLS
ln(Per Capita Income)	1.342***	1.186***	1.224***	1.381***
	(0.148)	(0.172)	(0.165)	(0.241)
Urban Population Share	0.018***	0.012***	0.011***	0.017***
	(0.003)	(0.004)	(0.004)	(0.005)
Literacy Rate	0.024***	0.016**	0.014**	0.023***
	(0.006)	(0.007)	(0.006)	(0.008)
Sports Facilities per 100k	0.082***	0.068***	0.071***	0.079***
	(0.012)	(0.015)	(0.014)	(0.018)
Youth Population Share	-	-	0.028*	0.032**
			(0.015)	(0.016)
Sex Ratio	-	-	-0.002	-0.001
			(0.003)	(0.004)
Infrastructure Investment (log)	-	-	0.094***	0.091***
			(0.021)	(0.024)
District Fixed Effects	No	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	384	384	384	352
R-squared	0.682	0.741	0.768	0.734

Table 3: Robust standard errors clustered at the district level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. All monetary values in 2020 constant prices. Instruments in column 4: lagged income, industrial employment share, and commercial bank branches per capita.

Source: Author calculations based on compiled dataset.

The income elasticity estimates, ranging from 1.186 to 1.381 across specifications, consistently exceed unity, indicating that modern sports participation responds more than proportionately to income increases. A 10 per cent increase in per capita income is associated with approximately a 12.2 to 13.8 per cent increase in the Sports Preference Index. These magnitudes align with international evidence from

developed economies and confirm that modern sports function as luxury goods in Tamil Nadu's development context. The 2SLS estimate is slightly higher than the OLS estimate, suggesting that, if anything, simultaneity bias attenuates the true income effect.

Urbanisation exerts significant positive effects even after controlling for income and infrastructure. Each percentage-point increase in urban population share is associated with 1.1 to 1.8 per cent higher participation in modern sports. This effect likely operates through multiple channels: peer networks, media exposure to professional sports, the concentration of coaching services, and cultural norms that emphasise competitive achievement. The literacy rate coefficient, although smaller in magnitude, is statistically significant, suggesting that educational attainment influences sports participation independently of income effects.

Infrastructure availability shows robust positive associations. Each additional sports facility per 100,000 population increases SPI by approximately 7%. Given the state's recent infrastructure push, this coefficient implies substantial participation gains from facility expansion. The infrastructure investment variable, measured as logged per capita government expenditure on sports facilities, exhibits an elasticity of 0.09, indicating diminishing returns. Initial investments generate larger participation gains than subsequent additions.

Table 4 presents a parallel analysis of traditional game engagement. The contrast with modern sports proves striking. Income effects appear negative, though not always statistically significant, across specifications. The point estimates suggest that a 10 per cent increase in income is associated with approximately a 3 to 5 per cent decline in traditional game engagement. Urbanisation effects emerge strongly negative and highly significant. Each percentage-point increase in the urban share correlates with approximately a 2 per cent reduction in TGEI.

Table 4: Determinants of Traditional Games Engagement (Dependent Variable: TGEI)

Variable	(1) OLS	(2) FE	(3) Full Controls	(4) Policy
Per Capita Income (log)	-0.342**	-0.298*	-0.314*	-0.287*
	(0.142)	(0.158)	(0.163)	(0.156)
Urban Population Share	-0.021***	-0.019***	-0.018***	-0.017***
	(0.004)	(0.005)	(0.005)	(0.005)
Literacy Rate	-0.008	-0.006	-0.005	-0.004
	(0.007)	(0.008)	(0.008)	(0.008)
Traditional Curriculum (%)	-	-	0.012***	0.011***
			(0.003)	(0.003)
Cultural Preservation Orgs	-	-	0.024**	0.023**
			(0.011)	(0.010)
Preservation Investment (log)	-	-	-	0.048*

				(0.026)
Youth Population Share	0.014	0.011	0.013	0.012
	(0.018)	(0.019)	(0.018)	(0.018)
District Fixed Effects	No	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	384	384	384	352
R-squared	0.524	0.587	0.634	0.651

Table 4: Robust standard errors clustered at the district level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The traditional curriculum measures the percentage of schools that include traditional games in their physical education programs. Cultural preservation organisations per 100,000 population. Preservation investment: government and NGO expenditure on traditional sports programs.

Source: Author calculations based on compiled dataset.

Policy interventions show some promise in offsetting decline trends. Curriculum integration exhibits positive, significant effects; each 10 percentage-point increase in schools that include traditional games is associated with roughly 11-12 per cent higher TGEI scores. Cultural preservation organisations demonstrate similar positive associations. Column 4 includes explicit preservation investment and shows elasticity near 0.05. While positive and marginally significant, this effect appears modest relative to the negative pressures from income growth and urbanisation. A rough calculation suggests that offsetting urbanisation's negative impact would require preservation investments approximately 3-4 times current levels.

The literacy rate coefficient, though negative, is not statistically significant. This may reflect competing effects: education could reduce participation in traditional games through opportunity-cost mechanisms while simultaneously fostering cultural appreciation. The net effect appears close to zero in the data.

Sub-sample Analysis and Robustness

Table 5 presents a sub-sample analysis that divides districts by urbanisation levels. The income elasticity of modern sports participation is 1.52 in highly urbanised districts (urban share above 60 per cent), compared with 0.94 in predominantly rural districts (urban share below 40 per cent). This suggests that urban infrastructure, competitive structures, and peer effects amplify income's impact on the adoption of modern sports. Rural areas face constraints such as limited facility availability, limited access to coaching, and transportation challenges to venues, which limit participation even as incomes rise.

Table 5: Sub-sample Analysis by Urbanisation Level

Dependent Variable: $\ln(\text{SPI})$	High Urban	Medium Urban	Low Urban
$\ln(\text{Per Capita Income})$	1.524***	1.186***	0.943**
	(0.248)	(0.192)	(0.374)
Sports Facilities per 100k	0.058***	0.074***	0.096***

	(0.018)	(0.021)	(0.031)
Infrastructure Investment (log)	0.082***	0.098***	0.124***
	(0.026)	(0.028)	(0.042)
District Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	128	154	102
R-squared	0.784	0.752	0.691

Table 5: High urban: urban share >60%; Medium: 40-60%; Low: <40%. All specifications include full controls as listed in Table 3. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$.

Source: Author calculations.

Facility availability shows an interesting inverse pattern. The infrastructure coefficient is largest in low-urbanisation districts (0.124) and smallest in high-urbanisation areas (0.058). This implies that marginal facility additions generate larger participation gains where baseline availability is limited. For policy, this suggests efficiency gains from prioritising infrastructure investment in underserved rural and peri-urban areas rather than further enhancing already well-equipped urban centres.

Robustness checks employing alternative index constructions yield consistent results. When SPI uses only competitive tournament participation rates excluding facility membership, income elasticity estimates range from 1.15 to 1.29. When the traditional games index relies solely on curriculum-integration data, urbanisation's negative effects intensify. These variations confirm that the core findings do not depend critically on specific index-construction choices.

Temporal analysis reveals that income elasticity for modern sports has increased over time. In 2011-2015, estimated elasticity averaged 1.08, rising to 1.34 in 2016-2020 and reaching 1.42 in 2021-2024. This suggests that sports are becoming more income-sensitive, possibly reflecting increased commercialisation, higher equipment costs, and greater quality differentiation in coaching services. Traditional games show stable negative income associations throughout, indicating a persistent structural decline that is not driven by temporal factors.

Discussion

Interpreting the Transition

The empirical findings document a clear, quantifiable shift from traditional recreational forms toward modern competitive sports in Tamil Nadu. This transition neither represents irrational abandonment of cultural heritage nor simple mimicry of Western practices. Instead, results suggest rational economic responses to changing opportunity structures, combined with policy choices that systematically favour modern sports infrastructure.

Income elasticity exceeding unity for modern sports aligns with theoretical expectations for luxury goods. As households move beyond subsistence constraints, they allocate discretionary resources to activities that offer perceived quality, status signalling, and opportunities for competitive achievement. Modern sports, embedded in formal institutional structures with clear performance metrics and professional pathways,

satisfy these preferences more effectively than informal traditional games. Cricket coaching programs promise potential selection for district teams, state squads, and ultimately professional leagues. Parents view sports facility fees as human capital investments comparable to academic tutoring.

Traditional games, conversely, lack these institutional linkages. No professional pathways exist for pallanguzhi expertise or dayakattai mastery. Without competitive structures generating status and potential economic returns, these activities become pure consumption goods valued primarily for immediate enjoyment and cultural significance. As the opportunity costs of time rise with development, activities lacking investment characteristics are displaced.

The urbanisation effect operates through multiple mechanisms beyond income. Physical space constraints in urban areas reduce the availability of open gathering places where traditional games occurred spontaneously. Population density and anonymity weaken community bonds that traditionally sustained collective recreational practices. Urban peer networks expose youth to global cultural influences through media, education, and consumption patterns. These social learning effects amplify preferences for globally recognised sports over local cultural forms.

Yet the analysis reveals that policy choices substantially shape outcomes. Government investment in modern sports infrastructure is strongly associated with participation rates. Tamil Nadu's conscious strategy—evidenced by 58 per cent budget increases and flagship projects such as the Global Sports City—actively constructs opportunity structures that favour modern sports. Infrastructure creates not only physical facilities but institutional ecosystems: coaching programs, tournament structures, talent identification pathways, and performance incentives. Traditional games receive negligible comparable investment.

The curriculum integration finding offers important insights. Schools that include traditional games in physical education programs show significantly higher community engagement in these activities. This suggests institutional channels can preserve cultural practices if deployed systematically. Currently, only 18.5 per cent of schools integrate traditional games, and urban schools lag behind their rural counterparts. Expanding integration to, say, 60-70 per cent of schools could substantially slow the decline, though probably not reverse it, given opposing economic forces.

Cultural Economics Perspectives

The findings contribute to the cultural economics literature by demonstrating how standard demand mechanisms operate even for culturally embedded goods, while also revealing unique dynamics. Throsby's (2001) framework, which distinguishes between economic and cultural value, is relevant—traditional games generate minimal market transactions but embody substantial cultural capital. However, cultural value alone appears insufficient to sustain practices without institutional support or market mechanisms. Social capital theory predicts that the decline of traditional games reduces opportunities for community bonding and mechanisms for trust formation (Putnam, 2000). While this study does not directly measure social capital outcomes, the participation patterns suggest declining opportunities for the specific forms of associational life that traditional games provided. Modern sports clubs may generate alternative forms of social capital, but with different characteristics—more formal, competitive, and exclusive rather than informal, participatory, and inclusive.

The spatial patterns revealing urban-rural divides echo international evidence on transitions in cultural practice. Globally, urbanisation is associated with cultural homogenization and the displacement of local practices by globalised forms (Glaeser et al., 2001). Tamil Nadu's experience reflects these broader

patterns while showing specific features—the traditional games at risk, the modern sports gaining prominence (cricket's dominance reflecting colonial legacies and contemporary media power), and policy contexts shaped by India's federal structure and Tamil Nadu's particular political economy.

Policy Implications

The analysis yields several policy-relevant insights for governments seeking to balance sports development with cultural preservation. First, current resource allocation patterns strongly favour modern sports, creating self-reinforcing dynamics. Infrastructure investments increase participation, which justifies further investments, while traditional games' resource scarcity accelerates decline. Breaking this cycle requires conscious reallocation.

Second, preservation efforts appear most effective when embedded in institutional structures comparable to modern sports. Curriculum integration, formal coaching programs, and competitive tournaments for traditional games could create analogous opportunity structures. Several states have experimented with traditional games leagues and inter-district competitions. Tamil Nadu could expand such initiatives, potentially leveraging the same SDAT infrastructure used for modern sports.

Third, rural-urban disparities suggest targeting strategies. Rural areas maintain higher engagement in traditional games and face greater constraints in accessing modern sports facilities. Policies might emphasise modern sports infrastructure in rural areas (addressing equity concerns) while simultaneously preserving traditional games (building on existing engagement). Urban areas require different approaches, deliberate cultural programming, school curriculum mandates, and public awareness campaigns to counter market forces and spatial constraints.

Fourth, the cost-benefit calculus merits examination. Preservation investments show positive but modest effects. Achieving participation levels comparable to those in modern sports would require expenditures that could exceed the benefits if measured solely by participation numbers. However, cultural preservation generates externalities, maintaining linguistic diversity, historical continuity, and cultural identity that standard cost-benefit analysis may undervalue. Policy debates should acknowledge these broader considerations beyond participation metrics.

Consider a concrete scenario. Tamil Nadu announces a new sports complex for a mid-sized district town. Standard practice allocates resources primarily to cricket grounds, football fields, and badminton courts. An alternative approach might dedicate 30-40 per cent of the space and budget to traditional games facilities, silambam training areas, kabaddi courts, and spaces for pallanguzhi and dayakattai, staffed by qualified instructors. Initial participation might lag modern sports, but institutional presence could catalyse revival. Tournament structures and modest prize money might attract youth participation. School partnerships could channel students to programs. Over 5-10 years, such sustained institutional support might demonstrate feasibility at scale.

Fifth, digital technologies offer underexplored opportunities. Several organisations have created digital versions of traditional games, attempting to leverage the youth's digital engagement for cultural preservation. Effectiveness remains uncertain; virtual pallanguzhi may lack the social interaction and physical skill development of in-person play. However, hybrid approaches combining digital awareness-building with physical programming might prove promising. Research evaluating these innovations could inform scaled implementation.

Limitations and Caveats

Several limitations warrant acknowledgement. First, constructed indices rely on available data sources, which may incompletely capture the realities of participation. Traditional games, especially informal and unregistered ones, challenge quantification. Measurement error likely understates true engagement levels, though directional trends should remain valid. Second, causal identification faces challenges common to observational studies. While fixed effects and instrumental variables address some endogeneity concerns, unobserved time-varying factors could confound estimates.

Third, the study focuses on the quantitative rather than the qualitative dimensions of participation. Traditional games might provide unique developmental benefits—specific cognitive skills, cultural knowledge, community integration—that modern sports cannot replicate. Pure participation misses these qualitative aspects. Fourth, long-term impacts remain uncertain. Current youth growing up without exposure to traditional games may fail to pass these practices on to subsequent generations, accelerating their decline. Conversely, cultural revivals sometimes emerge unpredictably; niche traditional practices occasionally gain mainstream appeal through recontextualization.

Fifth, the analysis treats "traditional games" and "modern sports" as discrete categories, but reality presents more complexity. Kabaddi exemplifies a traditional game that has achieved modern competitive structures through the Pro Kabaddi League, combining cultural authenticity with contemporary presentation. Such hybrid forms suggest richer possibilities than binary traditional-modern framing accommodates. Future research might examine factors that enable certain traditional practices to modernise successfully while others decline.

Conclusion

This study has examined the transition from traditional games to modern sports in Tamil Nadu through systematic empirical analysis of secondary data spanning 2001-2026. The evidence documents substantial shifts in preferences, characterised by rapid growth in participation in cricket, football, and badminton, alongside declining engagement with traditional recreational forms such as pallanguzhi, silambam, and indigenous kabaddi variants.

Econometric analysis reveals that income growth, urbanisation, and infrastructure investments systematically drive participation in modern sports. Income elasticity estimates consistently exceed unity, confirming that modern sports function as luxury goods in this developing economy. Urbanisation has independent positive effects on modern sports while negatively affecting traditional games, even after controlling for income. Infrastructure availability shows strong positive associations with participation, and government investment patterns demonstrably shape recreational landscapes.

Traditional games face opposing forces. Economic development correlates with declining participation, mediated by income effects, urbanisation, and opportunity costs. Policy interventions, including curriculum integration and preservation investments, show positive but modest effects insufficient to offset structural decline trends at current implementation scales. Rural areas maintain higher engagement with traditional games, but even these bastions show erosion over time.

The findings carry several policy implications. Current resource allocation patterns favour modern sports, creating path dependencies that accelerate the decline of traditional games. Preserving cultural heritage while developing competitive sports capabilities requires a conscious strategy rather than market-driven outcomes. Effective preservation demands institutional infrastructure comparable to modern sports: formal programs, competition structures, trained instructors, and dedicated facilities. Rural-urban

disparities suggest geographic targeting, with modern infrastructure emphasised in underserved rural areas while urban areas receive cultural preservation programming.

From a research perspective, the study demonstrates how cultural economics frameworks illuminate transitions in developing economies. Traditional cultural practices respond to economic incentives while exhibiting unique dynamics reflecting their non-market characteristics and social capital dimensions. The Tamil Nadu case offers broader lessons for regions globally experiencing rapid development and cultural change.

Several research directions merit pursuit. First, detailed ethnographic work could complement quantitative analysis, documenting how communities experience and interpret these transitions. Second, experimental evaluations of preservation interventions would strengthen causal inference regarding policy effectiveness. Third, tracking cohorts over time could reveal whether current youth's limited exposure to traditional games perpetuates intergenerational decline. Fourth, comparative analysis across Indian states could identify factors enabling successful cultural preservation in some regions but not others.

The broader question remains whether development necessarily entails cultural homogenization or whether deliberate policies can sustain diversity. Tamil Nadu's trajectory suggests that, absent conscious intervention, market forces and policy choices systematically favour globally competitive sports over local cultural forms. Yet the modest but positive effects of preservation efforts indicate that institutional support can slow, if not reverse, decline. The ultimate outcome likely depends on collective choices regarding cultural priorities, resource allocation, and institutional design.

As Tamil Nadu pursues its ambition to become a national sports powerhouse—by constructing world-class facilities, attracting major tournaments, and developing elite athletes—it confronts the question of which cultural practices to preserve, transform, or abandon in that pursuit. The evidence presented here documents the stakes and trade-offs, offering empirical grounding for policy debates that must ultimately balance competing values: competitive achievement and cultural continuity, global integration and local identity, economic development and heritage preservation.

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