Hot and Cold Spots of Youth Lacrosse: How Utilizing GIS Can Identify Opportunities and Barriers to Participation

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INTRODUCTION. Despite the overall decline in youth sport participation rates in the United States, participation in youth lacrosse has continued to increase (Aspen Institute, 2019). However, with an overrepresentation of adolescent males comprising the participation base, even a “growing” sport like lacrosse faces questions about equity and access. Researchers have identified many barriers to sport participation, but are typically limited to individual factors, such as age and gender. Likewise, infrastructural barriers (e.g. access to facilities) disproportionally affect children from families of lower socioeconomic status. Given the inconsistent results with targeted individual- and environmental-level interventions (Pearson et al., 2015), other approaches are needed. Interpreting participation through a macro-level lens can offer substantial insight for determining variations in interest and accessibility. In order to develop effective strategies to reduce barriers to participation, it is crucial to further our understanding of the relationship between geospatial patterns and the cultural environment. The potential of utilizing Geographic Information Systems to gain a better understanding of geographic variation and how interest in participation changes in relation to the dynamic changes in society is in its infancy, particularly within the realm of sport management and policy development.

PURPOSE. The purpose of this study is to use an innovative methodological approach to allow for rapid evaluation of spatiotemporal trends in lacrosse participation and provide empirical evidence to support decisions in determining how to best allocate efforts to increase overall participation, diversity, and accessibility. This study has potential to be a significant contributor to the development of a more comprehensive macro-level youth sports lens that inventories various factors impacting participation.

METHODS. We propose to apply spatiotemporal methodology by creating a geospatial database constructed from existing national governing body membership database between 2006 and 2017 for lacrosse participants under the age of 15. Participant data (N= 4,275,012) will be indexed by registration year and participation density. Annual participation density will be normalized by the ratio of registered participants to the total number of children under the age of 15 of the corresponding zip codes. Participation density will be further stratified by age groups and sex (e.g. females ages 5-9, males ages 10-14). Emerging hot spot analysis will identify statistically significant spatiotemporal trends of lacrosse participation (Ord & Getis, 1995).

HYPOTHESIS. Lacrosse participation is not randomly distributed throughout the US and local spatial association will be observed and fluctuate over time. Sociodemographic factors will be associated with participation.

SIGNIFICANCE. Lacrosse has the potential for continued growth through further geographic expansion and increasing diversity and accessibility through the implementation of practical efforts. We propose to apply spatiotemporal methodology, adapted from other fields, as an innovative approach to further our understanding of the characteristics of local culture and trends related to the adoption of lacrosse. Our findings will provide empirical evidence to inform policymakers about participation trends, insights about potential trajectories and location of change, and to identify potential areas to allocate resources for a greater chance of future growth. This investigation may reveal promising application for further research questions and management decisions.