

Community Differences in Supportive Environments for Co-curricular Physical Activity in North Carolina Middle Schools

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Presentation to the Active Living Research Annual Conference 2010
San Diego, California

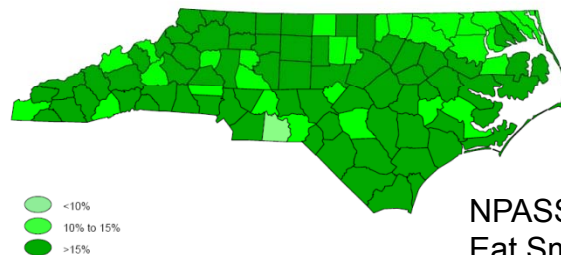
*Research funding
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Study Background



- Rural youth (especially in the South) at **greater risk** for obesity and physical inactivity
 - Yousefian et al. (2009); Martin et al. (2005)
- **Importance of school settings** in rural communities
 - Barley & Beesley (2007) Flora, Flora, & Fey (2007)
- **North Carolina**
 - 19% of North Carolina's children overweight
 - Ranked 5th in the country in 2006
 - DeNoon (2007); Trust for America's Health (2008)



NPASS (2008)
Eat Smart Move More NC



Study Background



- Supportive Environments for LTPA
 - Increase opportunities for participation in LTPA by providing **adequate facilities**, promoting a **broad range of physical activities**, and are **inclusive** to meet the needs and interests of many individuals
 - Young et al. (2007)
- Co-curricular activities
 - Past research largely focused on compulsory physical education



Conceptual Framework



- Deprivation amplification
 - Quantity and quality of accessible public resources that promote healthy lifestyles are lower within areas populated by socially and economically disadvantaged groups
 - Macintyre (2000; 2007)



Study Purpose

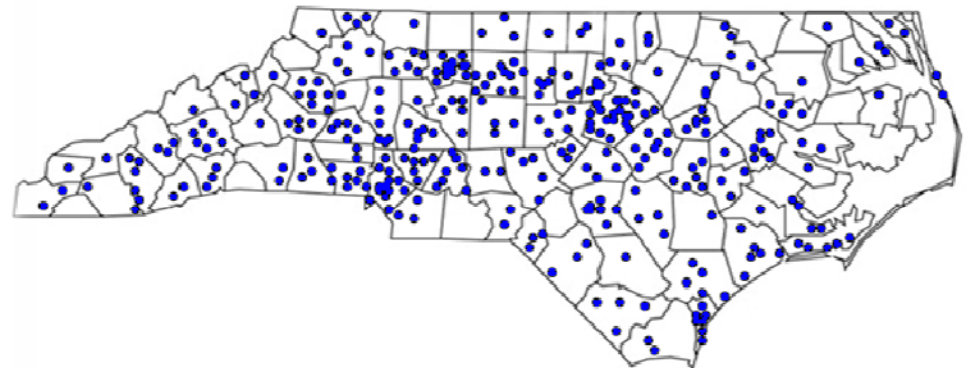


- Objectives of this study were:
 - To determine whether differences existed in access to supportive environments for co-curricular physical activity for middle-school aged adolescents in North Carolina based on community type
 - **H1: Schools located in rural communities will have less supportive environments than schools located in more urban communities.**
 - Examine how school composition, contextual financial resources, and community social systems influenced levels of support
 - **H2: Contextual economic resources will explain the largest geographical variance in environmental support for extracurricular sport and physical activity.**

Methods



- On-line survey distributed to a representative sample of 437 middle schools
 - Adapted from the School Health Policies and Program Study 2006 (SHPPS): School-Level Questionnaire Modules 1 and 2
 - Matched with community and school data
- Response Rate of 75% on 325 surveys
 - 62.5% of all NC middle schools



Methods



- **Dependent Variable: Environmental Support**
 - **Items**
 - Number of interscholastic sports offered
 - Number of intramural sports offered
 - Number of non-competitive physical activities offered
 - Open gym or free play available before or after school
 - Variety of indoor facilities
 - Variety of outdoor facilities
 - Special transportation offered to students who participate in co-curricular activities
 - Co-curricular programs accessible to students with disabilities
 - Facilities open for use to community during out-of-school times
 - Partnership with community organizations to promote and organized physical activities
 - Items were standardized and aggregated into a single numerical **Environmental Support Index (ES)**

Methods



- **Explanatory Variables**
 - **Community Type**
 - Urban, suburban, rural fringe, rural
 - NCES classifications
 - **School composition**
 - School size, % economically disadvantaged, elementary school structure
 - **Contextual economic resources**
 - Local per pupil expenditure, median household income
 - **Community social structure**
 - Income inequality (Gini), Racial heterogeneity (Thiel's H)
- **Estimated multi-level regression models**
 - Schools (Level 1) clustered in school districts (Level 2)
 - Random intercepts model using maximum likelihood estimation in SAS Proc Mixed
 - Level 1 N = 325; Level 2 N = 97

Results



Selected school characteristics

	Mean	SD	Min.	Max.
Enrollment	612.14	317.31	27	1502
Pct. economically disadvantaged	.47	.17	.00	.88
Elementary school	16.9%	--	--	--
Local per pupil expenditure	1,782.17	600.50	779.02	3,700.00
Median household income	38,781	11,757	16,616	76,250
Income inequality (Gini)	.425	.023	.380	.500
Racial heterogeneity (Thiel's H)	.726	.222	.120	1.20

Results



Programs offered	% Of Schools	Mean activities
Interscholastic sports	98.8%	10.94
Intramural sports	38.8%	4.69
Non-competitive physical activities	39.1%	3.13

Facilities
 Mean indoor facilities: 1.84
 Mean outdoor facilities: 4.87

67% of schools had joint use agreements for recreational youth sports leagues

Access to facilities by community (other than youth sports) was allowed at 25% of schools

34.7% of schools offered “open gym” to students

24.1% offered special programs for students with physical and mental disabilities



43% of schools offered special transportation for some co-curricular activities
 (Only 19% of schools that offered intramurals or non-competitive activities provided any transportation)

Results



Mean *ES* scores by community type

	N	Pct. of sample	Mean ES	SD
Rural	121	37.2	3.10	1.35
Rural Fringe	96	29.5	3.75	1.24
Suburban	43	13.2	3.55	1.13
Urban	65	20.0	3.85	1.38

Rural schools offered fewer interscholastic sports and were less likely to offer intramural sports, physical activity clubs, programs for students with disabilities, and special transportation than other community types

Rural schools were less likely to partner with other community organizations

Rural schools had fewer indoor and outdoor facilities

Model Estimates



Fixed Effects	Model 1	Model 2	Model 3
Intercept	3.43 (.096)***	3.73 (.189)***	2.71 (1.43)
Community Type			
1. Rural		-.563 (.224)*	-.413 (.222)
2. Rural Fringe		-.043 (.212)	-.117 (.207)
3. Suburban		-.303 (.247)	-.511 (.247)*
4. Urban		(Reference)	(Reference)
Elementary school			-.576 (.214)**
Local PPE (in \$1,000)			.484 (.133)***
MHI (in \$1,000)			.019 (.007)*
Racial heterogeneity			-1.62 (.366)***
Variance components			
L2 – District level (τ_{00})	.355 (.120)***	.272 (.109)**	.105 (.064)
L1 – School level (σ^2)	1.39 (.125)***	1.38 (.125)***	1.31 (.113)***

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Only statistically significant explanatory variables shown

Discussion



- **Economic resources**
 - Differences across all communities
 - Lower PPE in rural school districts
 - Lower MHI for rural school communities
- **Social structure**
 - Differences across rural schools
 - Racial heterogeneity and social capital
 - Culture
- **School structure**
 - K-8 schools concentrated in rural areas



Limitations



- Narrow focus of environmental factors
- Assumes more supportive environments will lead to increased participation and higher levels of LTPA
- Improved measures needed
 - Measures of quality
 - More environmental support characteristics
 - School-level measures
- More depth of information
- Sample

Significance



- Support for deprivation amplification framework
 - Contextual deficits may be contributory
 - Regional approach
 - Role of school districts in policy process
- Emergence of place disparities
 - Beyond descriptive
 - Underlying conditions
 - Not exclusively related to economic resources
- Defining community locales
 - Rural fringe and suburbs



Recommendations for research

- Improve conceptualization of supportive environments and relationship to LTPA
- Further investigation into rural communities
- Broader scan of community environments
- Further investigation of role of racial heterogeneity in influencing environmental support
- Investigation into suburban deficits



Recommendations for policy and practice

- Funding mechanisms for co-curricular activities from higher levels of government
 - Particularly staffing and programs for intramurals and non-competitive activities
- Collaboration and partnerships, particularly in rural areas, to offset economic deficits
- Position co-curricular activities in youth development – particularly health and wellness

Conclusions



- North Carolina middle schools overall were highly focused on interscholastic sports
- Schools in rural areas were less likely to provide supportive environments and policies for co-curricular physical activities
- Across all communities, deficits in supportive environments were related to lack of contextual economic resources
- Across rural communities, racial heterogeneity was most influential in predicting level of environmental support

Questions & Comments



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