

Active Living Research

Full Proposal Narrative

For proposals requesting less than \$150,000

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Organization/Institution: University of California Davis

Proposal Title: Cul-de-sacs and Street Play:

Implications for the Physical Activity of Children

CFP Topic Number: 1

Background

A growing number of communities throughout the U.S. are adopting ordinances that discourage or prohibit cul-de-sacs in the interest of enhancing street connectivity. The impact of such policies on physical activity levels in children has not been considered. Studies show that time spent outdoors is associated with higher levels of overall physical activity, that streets have traditionally been an important site of outdoor play for children, and that lower levels of traffic are associated with more street play. Residential cul-de-sacs, designed to minimize traffic, are thus especially conducive to street play and may thus increase overall levels of physical activity in children.

Specific Aims

The primary aim of this study is to test the hypothesis that cul-de-sacs are associated with higher levels of street play in children.

Secondary aims include:

- S1. Examine the association between levels of street play and overall levels of physical activity.
- S2. Compare the relationship between perceived and actual safety on cul-de-sacs and through streets.
- S3. Compare perceptions of the street environment for households with children and those without.
- S4. Explore the importance of the social environment on the use of the cul-de-sac for play.
- S5. Determine the importance of cul-de-sacs relative to other factors in the choice of residences for families.
- S6. Examine differences across SES groups and racial/ethnic groups with respect to the level and nature of street play and the role of cul-de-sacs in encouraging street play.

Methods (Study Design, Measures, Analysis)

The study will make cross-sectional comparisons of children living on cul-de-sacs (a "treatment" group) and children living on nearby through streets (a "control" group). A matched-pairs approach will be used, with cul-de-sacs matched to nearby through streets.

The study will use cross-sectional measures of factors at four levels: individual, interpersonal, social environment, and physical environments. As much as possible, existing measures previously tested for validity and reliability will be used. Original measures of street play will be developed and tested and may include frequency of street play, total duration of street play, and participation in a list of possible street play activities. Overall levels of physical activity will also be measured using existing self-report methods.

The proposed study uses four interrelated approaches to measurement: household survey, existing data sources, field observations, and in-depth interviews. The first three approaches will provide quantitative data for testing the hypothesis. In-depth interviews will be used to complement and validate the results of the quantitative analysis and to explore in more depth issues that are difficult to reduce to questions on a survey.

Survey data will be analyzed using analysis of covariance (ANCOVA) models to compare levels of street play and physical activity for children living on cul-de-sacs and children living on through-streets while controlling for other factors. The unit of analysis will be the child. Measures of the physical environment from existing data and observations will be incorporated into these models. In-depth interviews will be analyzed using qualitative coding techniques.

Policy Implications

Results will speak directly to current efforts in a growing number of cities in the U.S. to adopt street connectivity standards and limit cul-de-sacs. Evidence of higher street play on cul-de-sacs should be weighed against evidence suggesting that cul-de-sacs are associated with lower levels of walking and bicycling in adults.