

Using Pedestrian Counts to Assess Community-Wide Interventions to Increase Physical Activity in Rural Cuba, NM



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Abstract

Rural residents are often less active than urban and suburban residents. Reasons cited in the literature include certain environmental barriers such as lack of sidewalks, bike lanes, and affordable exercise facilities. The VIVA-Step Into Cuba project aims to address these barriers in Cuba, NM, by implementing community-wide interventions to increase physical activity. The aim of this study was to determine whether the implemented interventions resulted in an increase in walking over time. The data were collected according to methods established by the National Bicycle and Pedestrian Project. These methods included field observations performed by trained researchers and community members on three days of the week (Tuesday, Thursday, and Saturday) during two time intervals (12 noon-2 pm and 5 pm-7 pm). The total sample included counts of pedestrians, bicyclists, and other non-motorized traffic obtained in the month of May from 2010-2015 and totaled 1,772 observations in three established locations. Data were characterized by type of traffic, location, gender, age, and year. Analysis showed a decline in travels over the study period, with an average decrease of 9.08 people per year. There was an increase of about 5.2 pedestrians per year among individuals under the age of 18. Weather may have accounted for the decline, as rain was documented on observation dates for the last three years, while the first three were indicated as sunny or mild weather. These results will be used by the VIVA project to tailor further interventions to increase physical activity in rural communities in New Mexico.

Introduction

Problem At Hand

- Obesity has become a major health disparity in rural communities¹
- Factors contributing to obesity include poor nutrition, lack of physical activity, and other underlying health conditions

Solution

- VIVA-Step Into Cuba: A community-based intervention hosted by The Nacimiento Foundation in collaboration with the Prevention Research Center at UNM, whose goal is "to reduce chronic disease and improve health and health-related quality of life by increasing physical activity and access to natural environments"² in Cuba, NM
- Pedestrian Counts: a tool of measurement following guidelines from the National Bicycle and Documentation Project that will document change in non-motorized traffic following implementations to make sidewalks safer and more attractive for pedestrians³



Cuba, NM (left) and Count Locations (right)

Methods

Systematic Literature Review

- Purpose:** To examine the cited barriers to physical activity, types of interventions being applied in rural communities, and further strategies to overcome these obstacles (n=13 articles)
- Key words:** "rural health," "physical activity," "walking interventions"
- Limited search from 2012-present

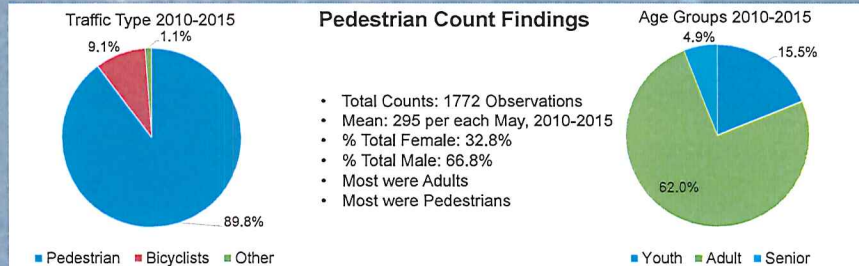
Pedestrian Count Data Analysis

- Purpose:** To assess the quantitative data from pedestrian counts taken annually in the month of May from 2010-2015
- Three days of selected week during two-hour time intervals
- Three locations, 6 screen lines
- Characterization by gender, age group, and type of traffic

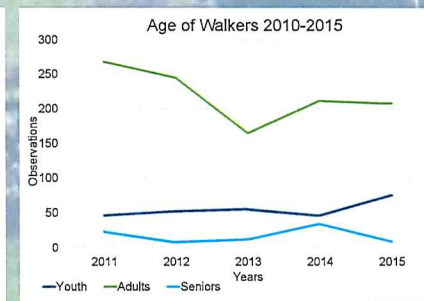
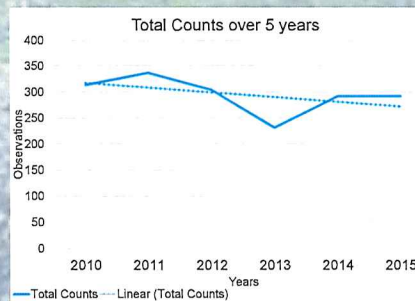
Results

Systematic Literature Review

- Most cited environmental barriers: lack of sidewalks, exercise facilities, trails, bike lanes
- Other barriers mentioned: time, family commitment, lack of influence at state-level due to small population⁴
- Popular interventions/strategies: sidewalk enhancement, activities that involve entire family, building onto what exists already,⁴ and developing a broad-based partnership⁴



Regression Analysis Results				
Characteristics	Trend Line	Coefficient	95% Confidence Interval	P-Value
Total	-9.08		-32.0 – 13.8	0.33
Youth	5.20		-4.9 – 15.3	0.19
Adults	-15.3		-51.2 – 20.6	0.27
Seniors	-0.2		-13.1 – 12.7	0.96



Weather Patterns in Cuba, NM, during May 2010-2015						
	2010	2011	2012	2013	2014	2015
Number of Observations						
Rain	0	0	0	3	2	3
Wind	2	2	1	0	3	6
Extreme Temperature*	0	0	0	3	1	0
Total Inclement Weather	2	2	1	6	6	9

*Range of Temperatures $\leq 50^{\circ}\text{F}$ or 90°F

Conclusion

The implemented interventions in Cuba, NM, have not significantly changed walking habits as assessed by the pedestrian counts

- There was an overall negative association between amount of travels and the implemented interventions over the five year period
- Youth was the only positive association
- Weather may have accounted for the overall negative trend as inclement weather was more prevalent the past three years of observations

The results of this study will be added to the VIVA-Step Into Cuba Project's total database of pedestrian counts, and will help in planning further efforts to increase physical activity in Cuba, NM.

Limitations

Pedestrian Counts:

- Only analyzed one out of the three months counts were taken
- Small sample size
- High variation in data (wide confidence intervals)
- Not inclusive of other common places to walk, such as numerous local trails

Future Directions

- Further testing into factors accounting for youth positive trend
- Staggering days over month to minimize effect of weather
- Analyzing of TraFX data, which measures trail activity, in comparison with pedestrian counts

References

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Acknowledgments

