The Relationship Between After School Employment and Physical Activity among High School Students

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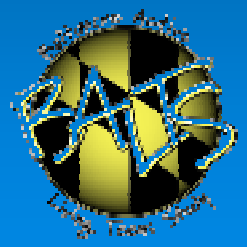


Background

- Rising obesity and declining physical activity are of concern because of the associated health risks
- Starting in middle school, the level of moderate to vigorous physical activity declines in both boys and girls
- By their senior year in high school over 80% of students are employed in the work force

Purpose

- To examine the relationship between after school employment and the level of moderate to vigorous physical activity among urban high school students

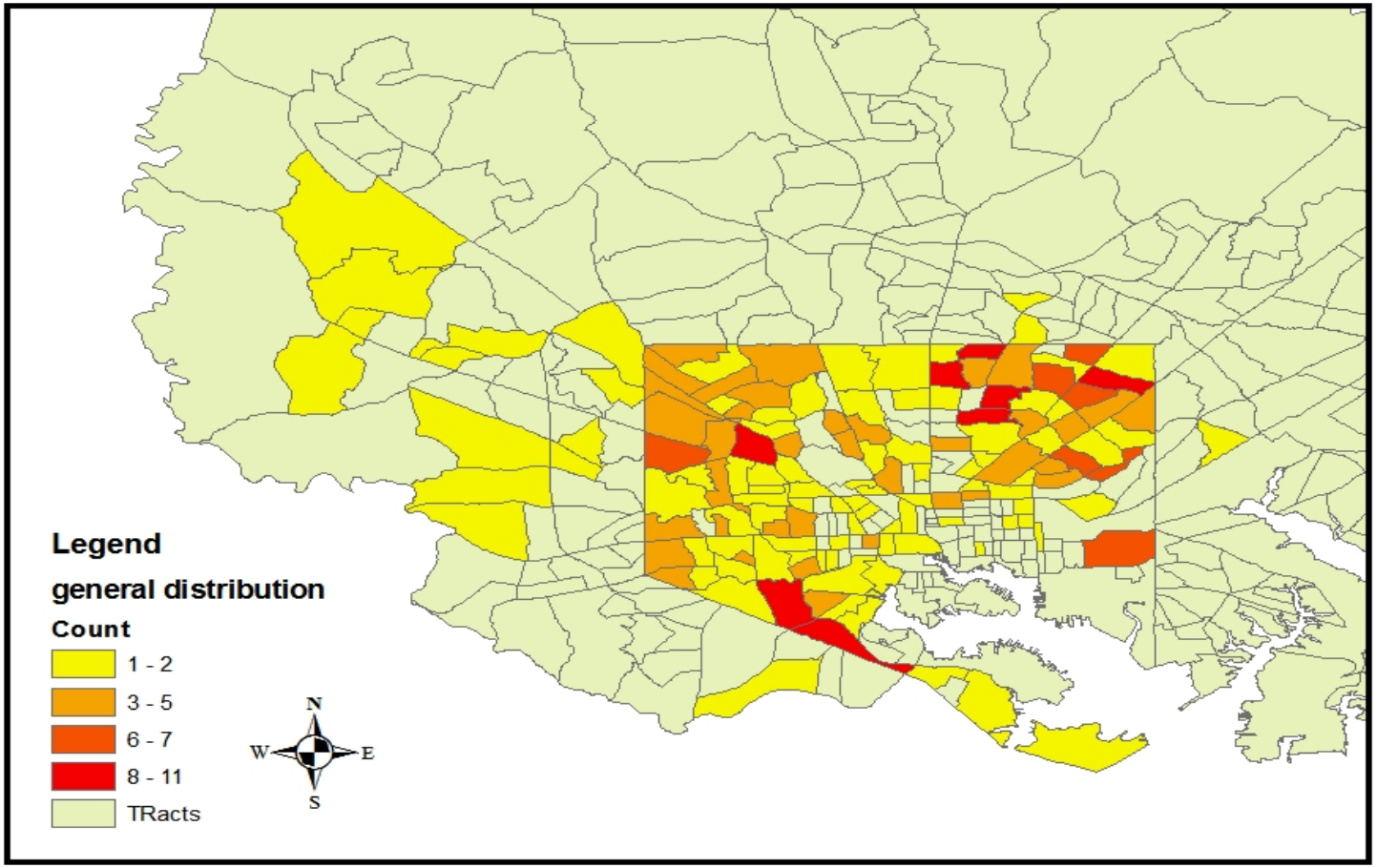
Methods

Baltimore Active Living Teen Study

- A geographically diverse sample of 350 students was selected from 2 adjacent magnet high schools in the fall of 2005
- Recruitment was done through selected classrooms and was balanced by gender, grade and geographic location of residence
- Measurements were taken during the winter and spring of 2006

Background- Participant distribution

Student distribution in Census Track



Data source: US Census Bureau, 2000

Methods

Information was collected using:

- **Accelerometers for six-day objectively measured physical activity**
- **Three-day recall for self-reported physical activity**
- **On-line survey for socio-demographic and psychosocial measures**
- **Self reported travel diary**

Methods

- Two questions were asked regarding after school employment
  - Do you usually take care of younger children?
    - How many hours per school week?
    - How many hours per weekend?
  - Do you have a job or do any volunteer work?
    - How many hours per school week?
    - How many hours per weekend?
- A composite variable of hours worked was created by combining school week and weekend time as well as child care, work and volunteer activities.

Analysis

Dependent Variable

- Minutes of moderate to vigorous physical activity per week

Independent Variable

- Total number of hours worked after school including; child care, job and volunteer work

Covariates

- Gender
- Parental education level
- Method of transportation to and from school and work

Prevalence of students who work or take care of younger children

Students who take care of younger children during the week

	Frequency	Percent
No	182	53.7
Yes	162	46.3
Total	350	100

Students who work or have a volunteer job during the week

	Frequency	Percent
No	190	54.3
Yes	160	45.7
Total	350	100

Mean hours students either work or take care of younger children

child care or work/volunteer	Mean	Std Dev	Minimum	Maximum
weekday childcare	8.31	10.99	0	80
weekend childcare	8.93	11.00	0	72
weekday work/volunteer	8.38	8.13	0	40
weekend work/volunteer	8.60	7.11	0	40

Participant Demographics by Hours Worked

N (%)	0 hour	0.5 ~ 10 hours	> 10 hours
Total	102 (29.1)	81 (23.14)	167 (47.7)
Sex *			
Girls	46 (22.55)	50 (24.51)	108 (52.94)
Boys	56 (38.36)	31 (21.23)	59 (40.41)
Grade **			
9th	41 (35.96)	33 (28.95)	40 (35.09)
10th	32 (39.02)	23 (28.05)	27 (32.93)
11th	7 (15.22)	12 (26.08)	27 (58.70)
12th	22 (20.37)	13 (12.03)	73 (67.59)

Significance was determined by Chi square test for pairs of categorical variables.
*: p<.05 **: P<.01 NS: not significant

Participant Demographics by Hours Worked

Total N =350	0 hour	0.5 ~ 10 hours	> 10 hours
Total	102 (29.1)	81 (23.14)	167 (47.7)
Father's Highest Education [ns]			
High school	33 (25.19)	22 (16.79)	76 (58.02)
College	36 (31.03)	28 (24.13)	52 (44.83)
Advanced degree	11 (40.74)	7 (25.92)	9 (33.33)
Mother's Highest Education [ns]			
High school	27 (26.47)	18 (17.64)	57 (55.88)
College	51 (27.72)	45 (24.45)	88 (47.83)
Advanced degree	14 (36.84)	11 (28.94)	13 (34.21)

Significance was determined by Chi square test for pairs of categorical variables.
*: p<.05 **: P<.01 NS: not significant

Number of hours worked by minutes of moderate and vigorous physical activity

Number of hours worked per week	Mean minutes of moderate PA per week (std deviation)	Mean minutes of vigorous PA per week (std deviation)	Number of students N (%) (Total=328*)
O	47.6 (19.95)	2.5 (4.76)	96 (29.26)
0.5~10	49.1 (20.96)	2.8 (4.50)	77 (23.47)
>10	45.6 (18.32)	1.6 (2.50)	155 (47.25)

*Some answers to how many hours worked were uncodable, which resulted in missing responses.

Hours worked by moderate physical activity

Moderate Physical Activity			
	Difference Between Means	Simultaneous 95% Confidence Limits	
0.5~10h compared to 0h	1.446	-5.558	8.449
0.5~10h compared to >10h	3.492	-2.890	9.875
0h - compared to >10h	2.047	-3.899	7.992

Comparisons significant at the 0.05 level are indicated by *.**

Hours worked by vigorous physical activity

Vigorous Physical Activity			
	Difference Between Means	Simultaneous 95% Confidence Limits	
0.5~10h compared to 0h	0.3037	-1.0585	1.6658
0.5~10h compared to >10h	1.2454	0.0040	2.4869 ***
0h - compared to >10h	0.9418	-0.2147	2.0982

Comparisons significant at the 0.05 level are indicated by *.**

Results

- Students who spent up to 10 hours a week taking care of younger children or working engaged in more minutes of vigorous physical activity than students who worked more than 10 hours a week.

  ($p = 0.004$)

Student activity level while caring for younger children

Take care of younger children		Amount Active			
		Rare/Never N (%)	Occasional N (%)	Often N (%)	Total N (%)
yes	Boys	11 (22.0)	15 (30.0)	24 (48.0)	50 (30.9)
	Girls	12 (10.7)	42 (37.5)	58 (51.8)	112 (69.1)
Total		23 (14.2)	57 (35.2)	82 (50.6)	162 (100)

Results

- Of youth who take care of younger children, they are more likely to report that they are often active while providing child care

Methods of transportation of High School Students

	To school N (%)	From school N (%)	To job after school N (%)	From job after school N (%)
Public transportation	176 (50.29)	201 (57.43)	66 (33.50)	33 (16.84)
Get ride with family	103 (29.43)	76 (21.71)	37 (18.78)	71 (36.22)
Get ride with friend	42 (12)	40 (11.43)	13 (6.60)	14 (7.14)
drive	21 (6)	23 (6.57)	32 (16.24)	35 (17.86)
Walk	4 (1.14)	6 (1.71)	28 (14.21)	24 (12.24)
Bicycle	3 (0.86)	3 (0.86)	1 (0.51)	1 (0.51)
other	1 (0.29	1 (0.29)	20 (10.15)	18 (9.18)
Total N	**350**	**350**	**197**	**196**

Results

- Between 12% and 14% of students who worked walked to and from their jobs.
- Less than 2% of students walked to and from school.
- Over 95% of students took public transportation or rode to and from school.
- Around 75% of students took public transportation or rode to and from their jobs.

Discussion

- Students who work between 0.5 and 10 hours a week appear to make the most effective use of their time in terms of balancing work and physical activity. This is consistent with the literature.
- Above 10 hours of work per week appears to be detrimental to engaging in vigorous physical activity
- Childcare appears to allow students some opportunity for physical activity

Limitations

- We did not distinguish between work and volunteer work, which may be of importance. It may be that the kind of work a student chooses to do has relevance as to how else they use their time.
- Because students could enter a free response to the question of how many hours a week they worked, this made coding difficult and resulted in some uncodable responses.
- Due to time constraints we were not able to look at the association between physical activity and hours worked while adjusting for other factors that could confound this association.

Implications

- High school students spend a significant amount of their time in taking care of younger children and/or working
- Consideration should be given when choosing a job to what the impact will be on the physical activity level of the student
- Building physical activity opportunities into the work may be possible through actively commuting to the job, as well as being active while on the job, such as while taking care of younger children