Green Space, Depression, and Physical Activity:
Comparing Maryland County Green Space to Student Responses on the 2016 Youth Risk Behavior Survey

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Background

- Depression is a leading mental health issue affecting approximately 322 million people worldwide.[1]
- Globally, the prevalence of depressive disorders in youth aged 15-19 is approximately 4.4% for females and 3.1% for males.[1]
- In the U.S. the prevalence of adolescent depression on one national survey increased from 8.7% in 2005 to 11.3% in 2014, but utilization of mental health services did not increase proportionally.[2]
- Several studies have shown that increased exposure to green space is correlated with positive impacts on people's mental health and wellbeing.
- These studies have primarily examined the effects of green space in young children and adults, and there is less research on the effect of green space on adolescent populations.
- Greening initiatives may provide a way to impact depression for youths who are not accessing mental health services.

Purpose

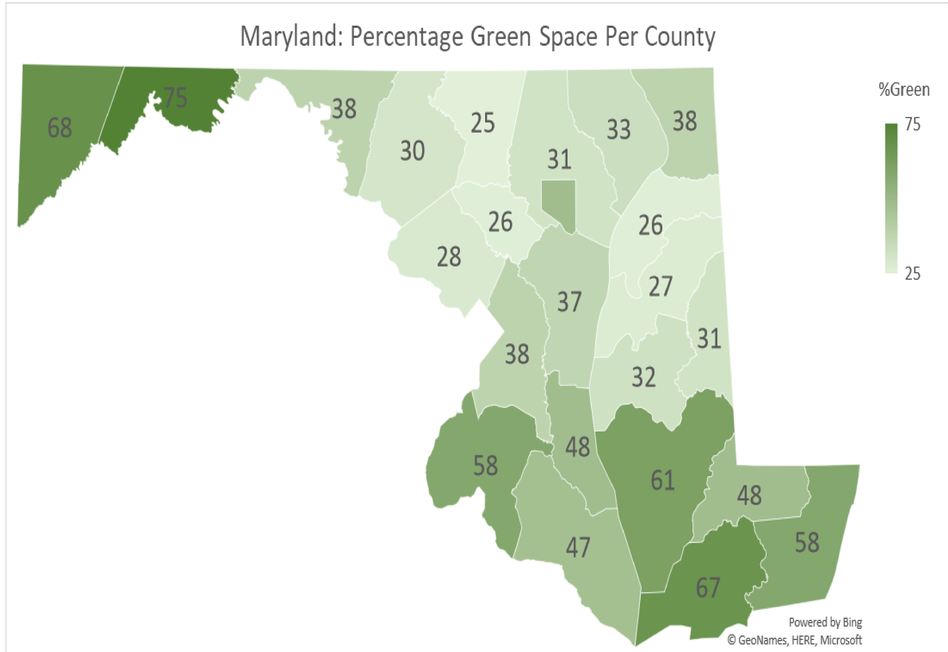
- To address gaps in existing green space research by examining correlations between green space, physical activity in a high school population. depression, and

Methods

- This was an ecological, cross-sectional, secondary data analysis comparing county-level student responses on the 2016 Maryland Youth Risk Behavior Survey to Maryland (MD) county land use data.*
- The sample included 50,695 students grades 9-12 from 23 counties.†
- Spearman's correlation for non-parametric data was used to compare the following variables:
  - Green space per county: (forest + wetland divided by total acreage x 100)
  - Students who reported feeling sad/hopeless in the previous year nearly every day for >2 weeks so that they did not participate in their usual activities
  - Students who were physically active at least 60 minutes per day on 5 or more days in the previous week
  - Students who were physically active at least 60 minutes per day on all 7 days in the previous week

*All data represent county-level aggregates and percentages were used for calculations.
†Data for the county of Baltimore City were not available for analysis.

Percentage Green Space Per MD County



Spearman's Correlation Data

Variables	Correlation Coefficient (r_s)	df	*p* value
Green Space & Sad/Hopeless	0.348	21	0.104
Green Space & Physically Active 5 days	-0.161	21	0.463
Green Space & Physically Active 7 days	-0.050	21	0.819
Sad/Hopeless & Physically Active 5 days	-0.438	21	0.036*
Sad/Hopeless & Physically Active 7 days	-0.327	21	0.128

References

1. World Health Organization. (2017). *Depression and other common mental disorders: Global health estimates.* Retrieved from http://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf

2. Motjabai, R., Olfson, M., & Han, B. (2016). National trends in the prevalence and treatment of depression in adolescents and young adults. *Pediatrics 128*(6), 1-10. doi:10.1542/peds.2016-1878

Results

- There was a significant, negative correlation between the percentage of students who were physically active at least 5 days and the percentage of students who reported they were sad or hopeless ($r_s(21) = -0.438$, $p = 0.04$). Counties with more physically active students had fewer sad/hopeless students.
- There was a positive, non-significant correlation ($r_s(21) = 0.348$, $p > 0.05$) between the percentage of green space per county and the percentage of students per county reporting they were sad or hopeless. Counties with more green space had higher percentages of sad/hopeless students.
- There was a negative, non-significant correlation between the percentage of students who were physically active 7 days per week and the percentage of sad/hopeless students ($r_s(21) = -0.327$, $p > 0.05$).
- There was a non-significant correlation between county green space and county-reported physical activity levels among Maryland students ($r_s(21) = -0.161$, $p > 0.05$).

Discussion

- This study does not support prior research that found associations between increased green space and lower levels of depression.
- This study does support findings that physical activity is correlated with decreased levels of depression.
- A strength of this study is that it examined green space in an adolescent population. Adolescents have been understudied in the green space literature to date.
- Limitations of this study include its cross-sectional nature and the county-level aggregate data that were used. This makes it impossible to determine causality or make inferences about the individual.
- Future research would benefit from quantifying individual exposure to green space and using more nuanced measures to quantify depression.

Conclusion

- The results of this study suggest that public health initiatives aimed at decreasing adolescent depression may wish to focus on promoting physical activity, rather than greening programs.