International Journal of Population Data Science

Journal Website: www.ijpds.org

Using GIS to explore the impact of teenager's environments on this physical activity, fitness and motivation: a cross-sectional study using data from the ACTIVE Randomised Control Trial

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Background

Many teenagers are not meeting the recommended 60 minutes of moderate to vigorous physical activity (MVPA) a day. In Wales, research shows that only 11% of girls and 20% of boys are doing enough despite the psychological and physical benefits of an active lifestyle. Research has shown that a teenager's environment influences PA levels.

Main Aim

The ACTIVE Project explored how teenager's (aged 13 – 14) environments impact their physical activity, fitness and motivation.

Methods

Data scientists from Swansea University carried out a cross-sectional analysis of baseline data from the ACTIVE randomised control trial. This included 270 teenagers from 7 secondary schools in Wales' most deprived areas. Using QGIS 2.18 and open source data to create maps, teenager's homes, schools and environmental factors such as public transport, active travel routes and natural resources (e.g. green and blue spaces) were geocoded. The distance matrix and distance to nearest hub algorithms were used to create a database which was exported for analysis.

Results

Multivariate regression analysis showed the school environment plays a pivotal role in physical activity. Public transport and natural resources needed to be closer to schools to positively impact activity. More affluent pupils were more motivated to be active and higher motivation was associated with closer active travel and natural resource to schools. Fitness was not impacted by environmental factors. Interestingly ACTIVE found that, as PA improves, sedentary time increases.

Conclusion

The school environment plays a pivotal role in teenage physical activity and motivation. Namely, distance to natural resources, suggesting that access to green/blue space is important. There is some contradiction between increased MVPA and higher levels of sedentary behaviour. Improving physical activity opportunities for teenagers in deprived schools especially active transport and access to natural resource, would be beneficial to cardiovascular health.

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