

A geographically-explicit ecological momentary assessment approach (GEMA) on the association between mental wellbeing and micro urban spaces along daily mobility path.

Monday, July 15, 2024 4:40 PM (20 minutes)

Most of the literature examining associations between urban environments and mental health relies only on residential neighbourhoods to define exposure contexts, leaving aside the effects of non-residential environments such as the effects of landscapes along daily mobility paths. Our work offers an innovative geographically-explicit ecological momentary assessment approach (GEMA) to study associations between mental wellbeing and the micro urban spaces along daily mobility path.

Multiple devices and sensors (smartphones, GPS, geographic information systems) were used to collect individual-level spatiotemporal location data, repeated measures of momentary depressive symptomatology and mobility data. This allowed to measure accurate environmental exposures (within a street network sausage buffer of 25 meters of each GPS point) and to investigate whether individuals' momentary depressive symptomatology was related to the exposure to micro-urban spaces along the daily mobility paths within the two previous hours. More than one million GPS points and 4830 EMA depression questionnaires were analyzed for 216 older adults living in the Ile-de-France. Bayesian mixed effect models with random intercepts at the individual and day levels, and time autocorrelation were fitted.

Main results showed a better momentary mental health when participants performed leisure activities or were involved in active mobility and when they exposed to walkable areas (pedestrian dedicated paths, open spaces, parks and green areas), water elements, and commerce, leisure and cultural attractors over the previous two hours. These relationships were stronger when exposures were defined based only on outdoor location points rather than all location points, and when we considered within-individual differences.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis