

## 論文の内容の要旨

論文題目 **The Impact of Potted Street Gardens on Neighborhood Perception, Human Behavior, and Human Health. Case of Tangier, Morocco.**

(街路の鉢植えが住民意識や人間の振る舞い、健康に与える影響 - モロッコ・タンジールを例に)

氏 名 アブデッラー アフラド

The objective of our research was to investigate whether urban green space (UGS) shortage in dense disadvantaged neighborhoods, can be addressed using potted street gardens (PSGs), given its established ability to increase neighborhood perceived greenery significantly. We argued that the benefits of UGS on all aspects of urban life made its unequal distribution across urban communities an environmental injustice that affects more and more city dwellers, as urban populations continue to grow, especially in developing countries.

Therefore, we investigated the potential association between PSGs ownership and neighborhood perception, and human health and behavior in one side, and between PSGs presence on neighborhood streets and outsiders' perception of neighborhood physical and social characteristics. We choose the Beni-Makada district in Tangier, Morocco, as a study area because of its low per capita green space (0.27) and the high abundance of PSGs. The study area also represents an interesting case study as more than two-thirds of survey participants started their PSGs after a governmental program encouraged PSGs ownership in the district's dense neighborhoods. We hypothesized that PSGs ability to increase neighborhood greenery perception significantly might allow it to have effects that extend beyond merely greening the landscape, to affect neighborhood perception and local's health and behavior as formal UGS does. Therefore, we used a cross-sectional study and a promenade experiment to verify this hypothesis.

The cross-sectional study aimed to investigate PSGs ownership direct association and moderation effects on neighborhood perception, human behavior, and health, while the experiment's

objective was to examine outsiders' understanding of neighborhood social and physical characteristics and compare it with locals' perception. Results of the survey data analysis showed that PSGs ownership had a far more mixed and complex relationship with our variables than we anticipated; some associations were in line with previous researches, while others contradicted it. PSGs ownership had a mainly positive association (direct or by moderation) with neighborhood perception variables as it correlated significantly with increased life satisfaction, neighborhood perceived cleanliness, and decreased noise annoyance levels. In contrast, its association with perceived safety was mixed, with a negative direct association, as PSGs owners were 56% less likely to feel safe/very safe in their neighborhoods, and a positive moderation effect on its association with life satisfaction.

PSGs related variables were also generally positively associated with neighborhood perception; out of eight, only two variables are negatively associated with neighborhood perception.

On the other hand, PSGs presence on the street had only positive associations with neighborhood perception, as participants were 3 times more likely to feel safer, at least 2.5 times more likely to perceive locals' relationships and neighborhood belonging pride as better, and 5 times more likely to enjoy their promenades on the street with PSGs compared to the street with no PSGs. These results suggest that encouraging PSGs ownership might be a useful tool in the destigmatization of disadvantaged communities in dense neighborhoods.

PSGs ownership negative association with locals' perceived safety might be related to its nature as private property, permanently present on unsafe public grounds, inducing insecurity feeling for owners. In contrast, its positive association with outsiders' feeling of safety might come from its nature as a green element.

PSGs ownership significant association with prosocial behavior was generally positive, as it was associated (directly or by moderation effect) with increased responsibility to clean the neighborhood, and a higher diffusion of areas to clean.

PSGs ownership' association with areas to protect was mixed, with a buffering effect on its association with life satisfaction and an enhancing effect on its association with perceived safety. PSGs related variables were mainly negatively associated with neighborhood attachment and prosocial behaviors, as out of five significant correlations, only two were positive. These results suggest that PSGs might provide a venue for socializing activities important enough to induce altruistic and prosocial behaviors, which might explain the apparent cleanliness of front yards with PSGs compared with those without PSGs. However, this association didn't extend to behaviors that may represent a significant risk for their safety, like protection from potential offenders, as PSGs owners felt responsible for protecting more areas only when safety was assured. Curiously, PSGs ownership was not associated with neighborhood attachment. These results suggest that PSGs ownership might be a useful tool to improve neighborhood cleanliness.

Concerning health variables, analysis results revealed a negative association, direct and moderated between PSGs ownership on one side and physical activity and Depression level on the other side. These findings cannot be explained by PSGs nature as a green element as both necessary (cleaning watering), and recreational activities (chatting, eating, etc.) undergone next to PSGs were associated with better mental health and more physical activity. PSGs nature as a private property might be the cause behind its negative association with health, which suggests exerting caution before encouraging PSGs ownership in dense disadvantaged neighborhoods as it might be amplifying the impact of negative neighborhood characteristics on owners.

Therefore, further research is needed to ascertain these results and study PSGs association with health, but in light of these last results, experimental designs would not be ethically appropriate. The negative associations between PSGs ownership on one side and perceived safety and health variables, on the other hand, deserves special attention and need to be investigated to assess its validity thoroughly. These results suggest that encouraging PSGs ownership in dense disadvantaged neighborhoods might have both positive and negative effects on local populations. In contrast, its impact on outsider's neighborhood perception reveals promising applications. Therefore, it is imperative to conduct more cross-sectional studies with bigger sample sizes to deeply investigate PSGs ownership association with mental and physical health before encouraging PSGs ownership as an alternative to UGS in dense neighborhoods.

This research produced interesting results, and its limitations present new opportunities for research. Until now, the vast majority of PSGs related research was conducted mainly in Japan and available mostly in Japanese. We recommend more similar studies in developing countries where UGS shortage will represent a significant challenge in the near future.

Furthermore, it would be interesting to conduct experiments assessing locals and outsider's perception of a defined neighborhood before and after the introduction of PSGs and collect longitudinal data using larger sample size and to follow the progressive change in neighborhood cleanliness, safety, noise annoyance, social relations between neighbors and mental and physical health.