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DEVELOPMENT OF CYCLING INFRASTRUCTURE IN EGYPT

The rates of travelers who bicycled to work was highly linked with the density of route infrastructure, and to a lesser extent, off-road infra-structure, in univariable analyses. The relative rate change in travelers bicycling prevalence through 9 Meret Basha, Ismailia, Qasr El Nil, Cairo Governorate 4272101, Egypt 11 . were investigated.

Every km/km² increase in on road bike lanes was linked with a 37.6% relative increase in the number of travelers who cycled after adjusting for distance to the center and socioeconomic status. A 40% relative increase in commuting cyclists was correlated with each km/km² raise in off-road bike pathways. Both before correction, there was no indication of a difference in the size of the connection with on-road vs off-road infrastructure. The number of calm roads did not appear to be associated to the proportion of travelers who cycled, either before correcting for confounding factor. Results were comparable for both sexes, with a non-significant trend showing somewhat greater relationships between female cycling involvement and infrastructure density. Additionally, this study demonstrates that commuter bicycling was less common in the areas with the greatest socioeconomic advantages. In adjusted analyses, bicycling prevalence in the top two socioeconomic groups was, respectively, lower than in the reference group. Again, both males and females had comparable outcomes (ElSerafi et al. 2023).

To our knowledge, this is the first study to show a connection between growing commuter modal share in Cairo, Egypt, and growing on- and off-road infrastructure density. Even though these findings are in line with prior ecological research, their replication in a different geographic setting increases the generalizability of this phenomenon. This replication also points to the applicability of our strategy, which considers the local density of bicycle infrastructure as a valuable foundation for analyzing socioeconomic factors that influence bicycling participation. Contrary to prior studies that suggested cyclists preferred off-road cycling infrastructure, our research revealed no indication that on-road and off-road infrastructure differed in their apparent efficacy in facilitating bicycling to work. Although stated preference design and selection bias were problems in other research (Padeiro et al., 2012; Deenihan et al., 2012), context-specific variables unique to Cairo may potentially be able to account for 12 this result.

On-road infrastructure may typically give a straighter route than off-road trails, which frequently meander or are in parks, due to the grid-like arrangement of most of Cairo. Additionally, several important backstreets in Cairo's north, like Tahrir Square and the vast Egyptian Museum, with significant concentrations of on-road infrastructure have junction barriers that only allow access for bicyclists and pedestrians, thereby turning them into cycle highways. Although this issue is unique to Cairo, additional research is needed to determine the conditions in which on-road vs. off-road cycling lanes have the greatest impact because there may be financial and safety repercussions. It may seem odd at first to learn that there is no correlation between the predominance of cycling and calm roads.

So, although some regions with quiet roads may indeed have had low-levels of motorized traffic, other areas with low amounts of official cycling infrastructure may simply have been such areas.

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