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Featured graphic. The declining impacts of Danwei on commuting? Visualization of journeys to work from Danwei and adjacent areas in Xi'an, China

Jobs–housing balance describes the relationship of housing stocks and jobs within different subdivisions of a city or within a reasonable commuting distance/time from points of interest (Cervero, 1989; Giuliano, 1991). Many advocate for jobs–housing balance to reduce commuting distance, car dependence, and associated congestion and air emissions.

According to the planning doctrine in the Socialist era, the working-unit, or Danwei, is a good way to realize jobs–housing balance. Recent case studies indicate that Danwei's impacts on the jobs–housing relationship and commuting may still persist (Wang and Chai, 2009; Zhao et al, 2011). At the city or regional levels, however, there have rarely been geocoding and visualizations of Danwei and associated commuting flows.

Using the commuting data from the 2011 Xi'an Household Travel Survey ($N = 59\,967$), we made two maps, which show all 109 Danwei compounds in the city and commuting flows associated with these compounds and their adjacent areas (figures 1 and 2). The maps shed new light on Danwei and commuting in post-Socialism cities. First and above all, we see that for the most Danwei compounds, the top destinations (workplaces) are no longer within or even around the same compounds (figure 1).

Second, many workers residing in the non-Danwei areas surrounding Danwei commute to the suburbs (figure 2). Interestingly, these workers share several common workplaces as their counterparts living in adjacent Danwei compounds.

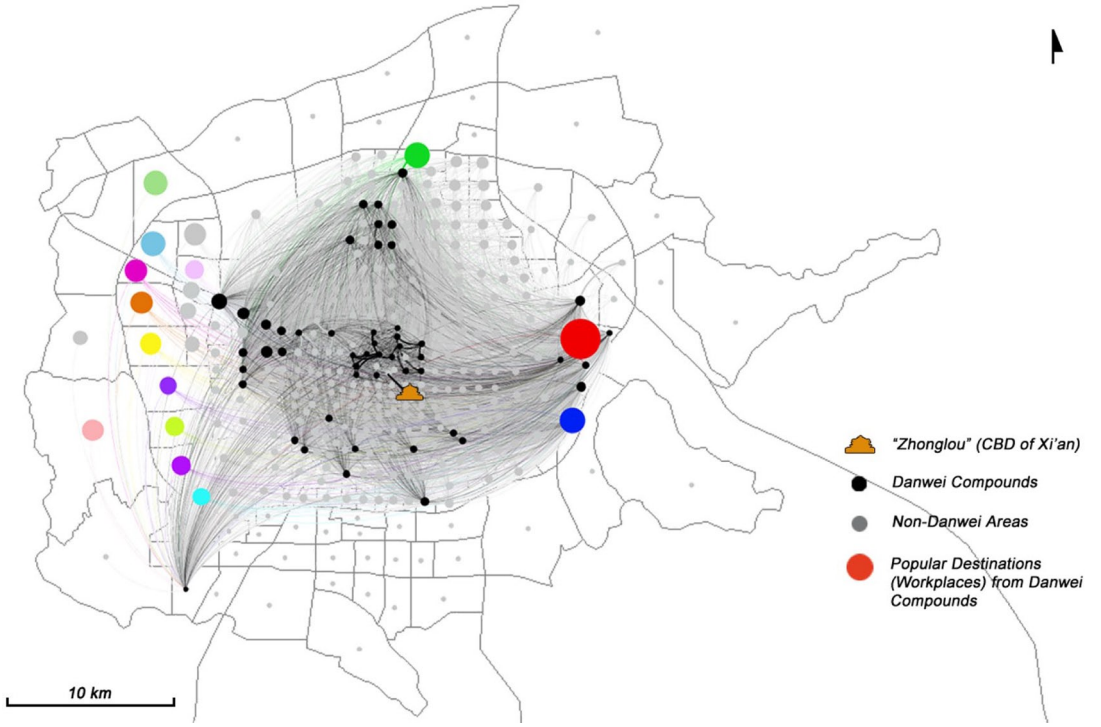

Figure 1. [In colour online.] Journeys to work from Danwei compounds.

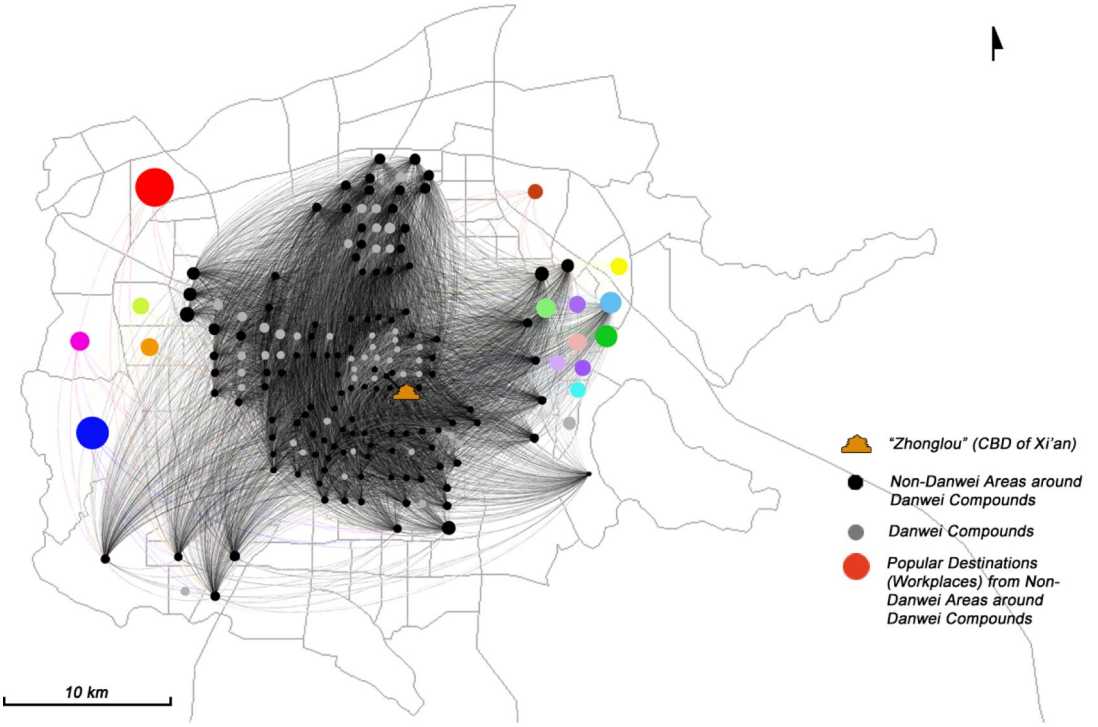

Figure 2. [In colour online.] Journeys to work from non-Danwei areas around Danwei compounds.

Third, the top fifteen workplaces that attract the most workers for both Danwei compounds and adjacent areas are all located in the suburb, where there are several new master-planned industrial, development, or high-tech zones of Xi'an.

Fourth, compared with the existing Danwei compounds, the top fifteen workplaces are more dispersed, indicating that the suburbanization of employment has emerged while the workers as a whole would still prefer a residence in the older built-up area.

Overall, our two maps indicate that the impacts of Danwei compounds on commuting are no longer as significant as they used to be. Suburbanization of jobs, urban expansion, and workers' preference (or personal constraints) tend to influence commuting more.

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Software: TransCAD 5.0; ArcGIS 10.2; Gephi 0.8.2-beta (http://www.caliper.com/TransCAD/GeographicAnalysis.htm#.UtBR55L2Z8E; http://www.esri.com/software/arcgis/arcgis-for-desktop/whats-coming/features; https://gephi.org/).