Regional context of the Berlin Aging Study II

Between 1945 and 1989, Berlin has been divided into a communist and a capitalist part, the latter being an enclave in former communist East Germany. The two parts of the city evolved differently. Similarly, the German reunification and the following surge in construction activities differed in their impact on neighborhoods within the city, mostly affecting districts along the former Berlin wall. In consequence, there is a large degree of heterogeneity across neighborhoods in Berlin. In the following section, we provide a short description of the regional context of this study and compare it to New York City, one of the major cities in the US.

As of 2014, Berlin has about 3.6 million inhabitants [A1], which is considerably less than other major cities in Europe or the US (e.g. New York City was estimated to have 8.4 million inhabitants in 2013 [A2]). 19.2% of the Berlin population is above 65 years old [A1], which implies that Berlin is an "older city" than New York City with 12.1% of the population aged 65 or above [A2]. About 71% of Berlin's inhabitants are native Germans [A1].

Regarding the environment, Berlin is a very "green city". About 15% of the city's area is made up of public green spaces (e.g. parks), with an additional 18% consisting of forests. The river Spree runs through Berlin, in addition there are two larger lakes (Müggelsee in the east and Wannsee in the west) as well as a number of smaller ones. All in all, around 7% of the city's area is made up of water [A3]. In comparison, about 20% of New York City is public park land [A4]. Public transportation is of similar importance in both cities. While in New York City the number of rides per weekday is estimated to be around 8.7 million in 2013 [A5], the number in Berlin is slightly higher at 3.62 million rides per day (including weekends) taking into account the difference in the population size. There are 2,900 public transport stops in Berlin [A6].

Last but not least, Berlin has comparably few violent crimes. In 2012, the number of murders per 100,000 inhabitants was 1.8, whereas New York City witnessed 5.6 murders per 100,000 inhabitants [A7].

**Associations between distances to amenities and health and well-being**

The previous analyses in this study suggested that self-reported access to amenities is associated with considerably better health and well-being. However, since access to these services might depend on other factors including health, the resulting estimates could be biased by this reverse causality. Using the actual distances to amenities allowed us to address this concern and investigate possible nonlinearities in the effects. We used the distances to create categories for individuals living within 100 m, 100-200 m, 200-300 m etc. of the closest public transport stop. Given the larger distances to physicians and hospitals, we divided those distances into categories of 1000 meters. We aggregated all individuals living more than 700 m (for public transport) or more than 7 km (for physicians and hospitals) into one category, since there are only very few observations living this far away. Then, we included dummy variables for these categories in our regression models to estimate the effect of living within a certain distance of the respective service. Since our sample is relatively small, we only include these distance dummies for one service at a time while controlling for self-reported access to the other services. Figure A.1 shows the estimated effects of distance to public transport, physicians and hospitals on life satisfaction. Please note that the effects are expressed relative to the omitted baseline category, i.e. living within 100 m (1000 m) of the closest public transport stop (physician/hospital). Figure A.1 shows that living farther away from public transportation is associated with worse health and well-being. However, there are interesting nonlinearities, e.g. individuals living within 300-400 m of the nearest public transport stop show higher well-being than both the reference group and individuals living farther away. This effect is even more pronounced for physical health. This could indicate that these individuals benefit from the increased mobility through nearby public transportation, and in addition their physical health increases through routine walks to the stop. However, it should be noted that most individuals in the sample live within 400 m of a public transport stop, and while some of the effects for larger distances are significant, they are identified by very few observations.

The results for the distance to the nearest physician also indicate that living closer to a physician is associated with better health and well-being, whereas the estimated effects for the distance to the closest hospital are very small and show no particular pattern. All in all, these results confirm our findings that close access to amenities (in particular public transport) is associated with higher health and well-being.
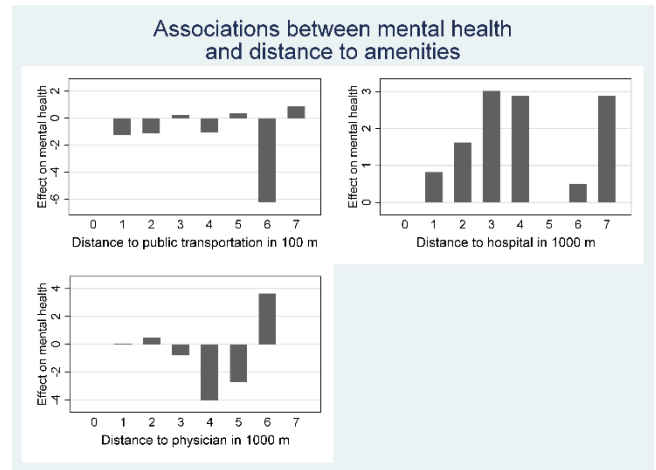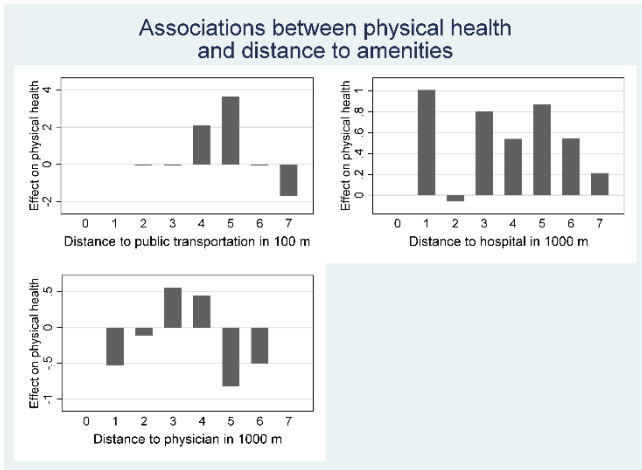
Figure A.1

A. Life satisfaction

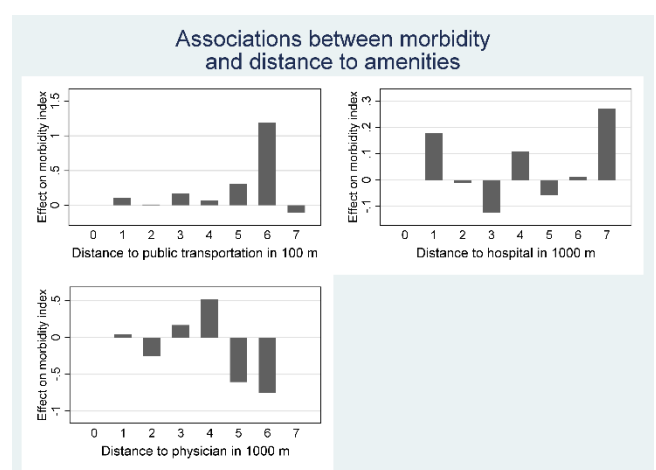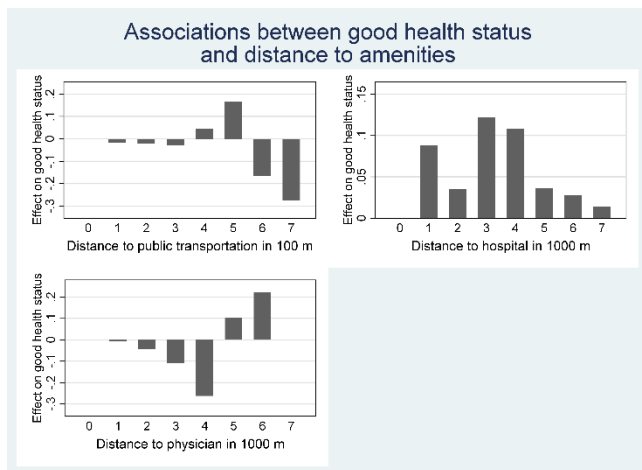### B. Health satisfaction
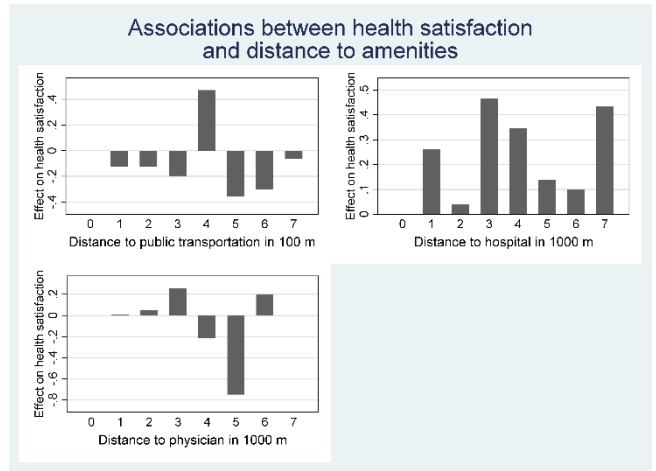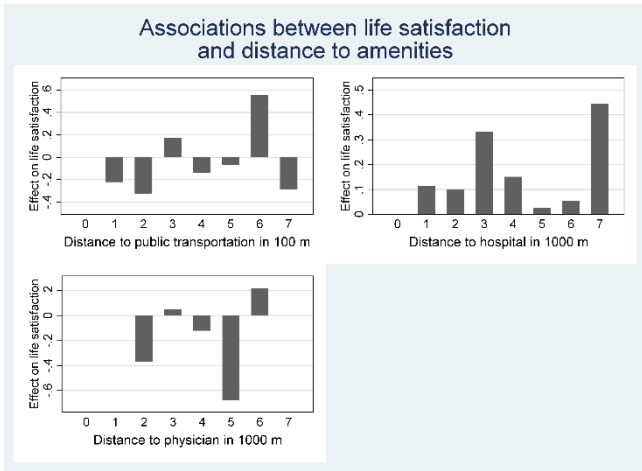
C. Physical health

D. Mental health

E. Good health status

F. Morbidity Index

Sources: SOEP-BASE, OpenStreetMap, own calculations. Notes: Figure A.1 shows the results from linear regressions on the outcome using distance categories. The bars mark the magnitude of the association relative to the baseline category. All models included control variables for sex, a quadratic age trend, marital status, years of education, number of children under 14 in the household, and log of equivalized net monthly household income as well as all other neighborhood covariates.

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