Supplementary Material
Memory Matters for Cities

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MATHEMATICAL PROOFS

Average Age within the Memory Kernel

We consider the active population over the whole region as working population. The generation speed of population is $N^*\beta_2 + k\beta_1$. Thus the population is refreshing, leading to a constant expected age of

$$N^*/\beta'$$

for $\beta' := (N^*\beta_2 + k\beta_1)/N^* + k$