Differences in migrant mortality:
For a multilevel approach of spatial inequalities using a fine granularity.
An application to Switzerland, 1990-2008.

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Context:

• In many Western countries, the mortality force is lower for migrants than for the natives (figure 1).
• This feature is often called *the migrant paradox* because of the migrants' lower socioeconomic status (Abraido-Lanza et al. 1999). Thus, the socioeconomic variables usually used to explain the mortality differentials are not suitable for migrants.

Issues:

• Some studies have shown a low spatial heterogeneity among Swiss cantons (Wanner et al. 1997). Can we observe the same pattern for migrants living in Switzerland?

• Should we use the environmental dimension to have a better understanding of the migrant mortality differentials?

•Is there an intra-regional varaibility which has to be taken into account?

Figure 1: Life expectancy by nationality in the resident population living in Switzerland, men (left) and women (right), 2000.

1. Data and methods:

• The data come from the Swiss National Cohort (Bopp et al. 2009), a longitudinal research platform based on the probabilistic linkage of death records (1990-2008) to censuses (1990 and 2000).
• Two Quasipoisson generalized linear models were used to estimate the mortality force by area:

1. Controlling for age and sex only.
2. Add of demographic and socioeconomic variables.

• Estimation of a standardized mortality ratio (SMR): the ratio between observed and expected deaths according to our models.
• Because of the low nomber of events in some regions (especially for small area), we used bayesian models with a spatial autocorrelation parameter to optimize the SMR (Lawson 2009).

2. From a low spatial gradient…

• As shown by figure 2, the geographic heterogeneity of mortality is relatively low among the 26 Swiss cantons.
• The variability drops when controlled by socioeconomic factors.
• Regional differentials are still more important for the migrant population.

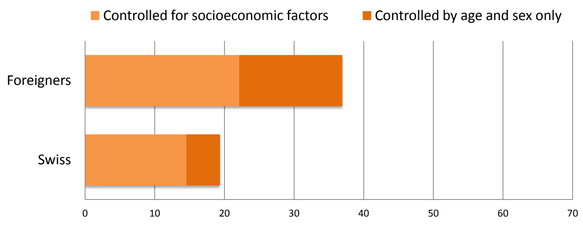

Figure 2: Variance of the SMR

… to an important variability

• When weighted by population size, the heterogeneity among regions changes completely (figure 3).
• The natives have homogeneous spatial regimes of mortality.
• An important differential appears for migrants. The environmental dimension has to be taken into account.

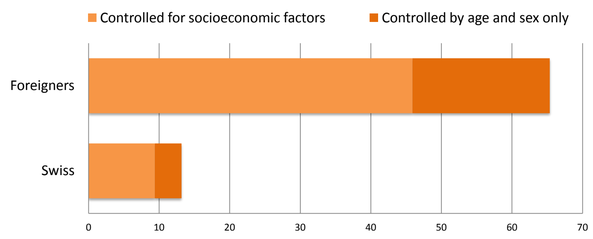

Figure 3: Weighted variance of the SMR

3. A large intra-regional heterogeneity

• There is an important variability at a fine granularity (here the 2896 communes of Switzerland).
• As shown by figure 4, the standardized mortality ratio for small areas differs from the estimation at a regional level.
• The local environment seems to be a major issue in migrant mortality.

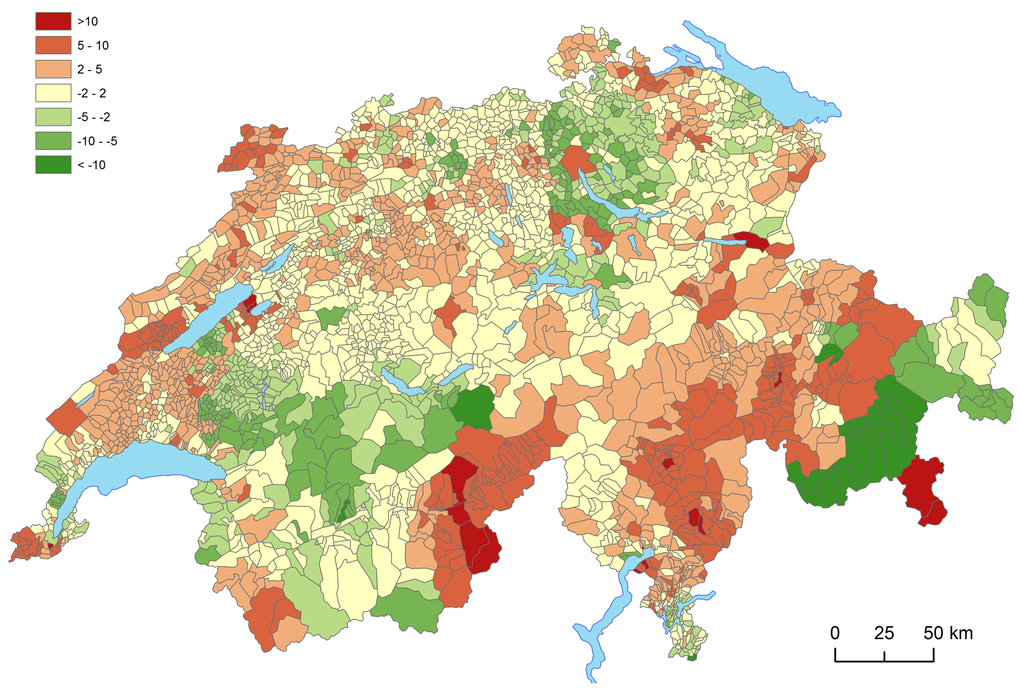

Figure 4: SMR differences between the canton and the commune levels.

4. Conclusion

•Spatial inequalities on mortality are important for the migrant population but minor for the Swiss.

• The heterogeneity intra-regions is high, so, there are significant local dynamics influencing mortality.

• A multilevel approach on migrant mortality using a fine granularity with environmental and sociocultural factors at a local scale should therfore allow a better understanding of the migrant mortality.

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