Geographical and Economic Factors Influencing Mortality due to Infectious Diseases in the Scanian villages, 1850-1910

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Aim

The purpose of the project is to assess the impact of a geographical and economic factors on mortality due to infectious diseases in the Scanian parishes in the years 1850-1910.

Hypothesis

People living close to the main roads and to the railways as well as to wetlands are more vulnerable to be exposed to epidemics of infectious diseases than those livning far from them.

People with higher SES are less vulnerable to be exposed to epidemics of infectious diseases than those from lower SES.

Data and Methods

Individual information on causes of deaths due to infectious diseases were derived from parish death registers of 5 Scanian parishes. The total number of population under study was 219,305.

The distance between the property units and roads and railway networks was calculated from Arc GIS layers. Data on road network is for 1860 and 1910, while data on railway network is for 1910.

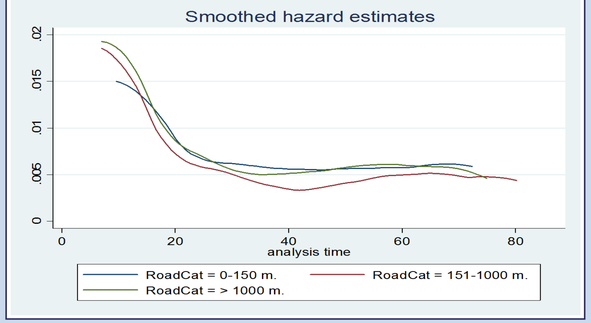
Information on the SES measured by the occupational status was derived from SEDD.

Results

Cox regression

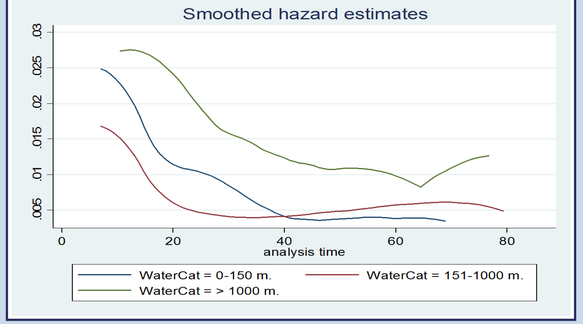
Roads

_t	Haz. Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
_IRoadCat_1	1.198692	.1214288	1.79	**0.074**	.9828332	1.461959
_IRoadCat_3	1.283106	.1033979	3.09	**0.002**	1.095643	1.502643
_IParishNo_2	2.019662	.2674697	5.31	0.000	1.557943	2.618218
_IParishNo_3	.2990228	.0455447	-7.93	0.000	.2218484	.4030439
_IParishNo_4	.4093351	.0573509	-6.38	0.000	.3110421	.5386897
_IParishNo_5	.7101043	.0833306	-2.92	0.004	.564201	.8937385
_Ises_1	.8002553	.1282991	-1.39	0.165	.5844691	1.09571
_Ises_3	.4188669	.0498617	-7.31	0.000	.3317031	.5289353
_Ises_4	.5071402	.0619274	-5.56	0.000	.3991967	.6442718
_Ises_5	.5466031	.0735319	-4.49	0.000	.4199175	.7115086
_Ises_6	.6975027	.0971297	-2.59	0.010	.5309005	.9163865
_IPeriod_2	.7768014	.0591901	-3.31	0.001	.6690381	.9019223



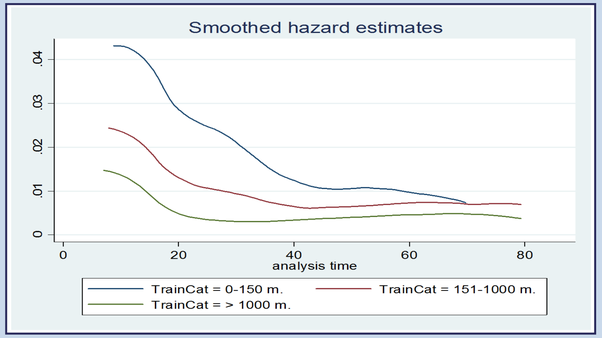
Wetlands

_t	Haz. Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
_IWaterCat_1	1.023143	.0886318	0.26	**0.792**	.8633744	1.212476
_IWaterCat_3	1.428802	.242052	2.11	**0.035**	1.025111	1.991468
_IParishNo_2	2.125726	.2962102	5.41	0.000	1.617693	2.793304
_IParishNo_3	.3463792	.0547409	-6.71	0.000	.2541149	.4721429
_IParishNo_4	.4489138	.0665011	-5.41	0.000	.33579	.6001477
_IParishNo_5	.8108514	.1003089	-1.69	0.090	.6362689	1.033337
_Ises_1	.8187892	.131199	-1.25	0.212	.5981077	1.120894
_Ises_3	.4140305	.0487831	-7.48	0.000	.3286545	.521585
_Ises_4	.5131035	.0623717	-5.49	0.000	.404329	.6511411
_Ises_5	.5517018	.0736919	-4.45	0.000	.4246272	.7168051
_Ises_6	.7098616	.0984588	-2.47	0.013	.5408924	.9316151
_IPeriod_2	.7576418	.0570689	-3.68	0.000	.6536536	.8781733



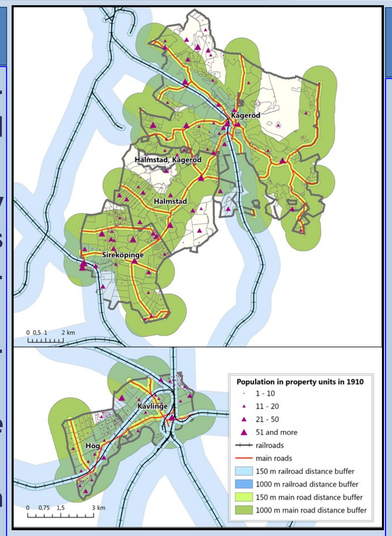
Railways

_t Haz. Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]	
_ITrainCat_1	1.619742	.1936454	4.03	**0.000**	1.281392	2.047433
_ITrainCat_3	.8973268	.0846686	-1.15	**0.251**	.7458204	1.07961
_IParishNo_2	1.959512	.2656763	4.96	0.000	1.502241	2.555973
_IParishNo_3	.3918347	.0641293	-5.72	0.000	.2843097	.5400252
_IParishNo_4	.4794236	.0701588	-5.02	0.000	.3598775	.6386813
_IParishNo_5	.8764105	.1077996	-1.07	0.283	.6886661	1.115338
_Ises_1	.7989335	.1279256	-1.40	0.161	.5837352	1.093466
_Ises_3	.4396801	.05198	-6.95	0.000	.3487433	.5543293
_Ises_4	.5243193	.0638939	-5.30	0.000	.4129218	.6657694
_Ises_5	.5566583	.0744423	-4.38	0.000	.4283087	.72347
_Ises_6	.7072275	.0978494	-2.50	0.012	.5392498	.9275307
_IPeriod_2	.7281671	.0556131	-4.15	0.000	.6269332	.8457477



Conclusions

1. **The mortality figures due to infectious diseases in the Scanian parishes were influenced by broaden understood geographical and economic factors.**
2. **Such factors as a distance to main roads and distance to railway shape mortality figures: the smaller distance from the rail road was noted, the greater susceptibility to infectious diseases was observed. With regard to the main roads a reverse trend was observed.**
3. **A distance to wetlands did not influence the mortality due to infectious diseases.**
4. **The mortality figures due to infectious diseases were shaped by the SES: higher SES = lower mortality rates.**
5. **The locality to railways was important with relation to children aged 0-5 and adults.**



Distances to main roads and railways in 1910

Discussion

- **The research project encountered difficulties having an adequate number of individuals died due to infectious diseases to test correctly our hypothesis, especially concerning the distances to main roads.**
- **The climatic conditions, terrains and agrarian policy were different in the other regions/countries, therefore settlements were different. It could be interesting to verify the same hypothesis in the other contexts.**
- **The proximity to Wetlands was not important in our regression, but the closeness to other water sources could be significant.**