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Does Lolland-Falster make people sick, or do sick people move to Lolland-Falster? An example of selective migration and mortality in Denmark, 1968-2017

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ABSTRACT

Introduction: Lolland-Falster is a rural area in south-eastern Denmark that scores unfavourable in health surveys and has the lowest life expectancy in the country. To determine the origin of poor health in Lolland-Falster, we investigated impact on mortality of long-term population movements.

Methods: We used data from the Danish Central Population Register 1968–2017 to track movements in and out of Lolland-Falster. This enabled us to calculate mortality based on tenure of residence. Poisson regression adjusted for sex, 5-year age-groups, and calendar year; separately for men and women; and ages <30, 30–64 and ≥ 65 years; was reported as mortality rate ratios (MRR) with 95% confidence intervals (95% CI).

Results: Until 1988, mortality in Lolland-Falster was fairly similar to that in the rest of Denmark. Hereafter, mortality rates drifted apart. In 2008–2017, MRR of the total Lolland-Falster population was 1.21 (95% CI: 1.19–1.23). In each 10-year calendar period, people recently in-migrating constituted about one fourth of the population. MRRs of the in-migrating population increased over time from 1.17 (95% CI: 1.08–1.26) in 1968–1977, to 1.82 (95% CI: 1.75–1.89) in 2008–2017. Persons aged 30–64 constituted the largest in-migrating group and had highest excess mortality, MRR 2.34 (95% CI: 2.19–2.50) in 2008–2017.

Conclusion: Long-term selective in-migration of vulnerable persons was behind the gradual build-up of the currently high mortality in Lolland-Falster compared to the rest of Denmark. In particular, people of working age in-migrating to Lolland-Falster contributed to this disparity.

1. Introduction

Rural areas undergo depopulation when young people move to urban areas leaving children and older people behind (Chan and Ren, 2018; Dijkstra et al., 2015; Johnson and Lichter, 2019; Pregi and Novotný, 2019; Viñas, 2019). Migration is mostly driven by pursuit of employment, education and better housing (Green, 2017), and in this respect migration from rural to urban areas may sometimes equal migration from less affluent to more affluent areas, although this is not always the case. While migration may have positive effects for migrating individuals and for economy as a whole, it can also lead to profound local socio-demographic changes. Summarizing observations from the Netherlands, Dijkstra et al. (2015) concluded that “people ... who

migrate are healthier than those who did not ... and persons moving into population declining regions are less healthy than persons moving out of declining regions”. From England, Darlington-Pollack and Norman (2020) concluded that “overall, selective sorting does contribute to widening deprivation-health gradients”. This selection in migration will thus potentially increase geographical inequalities in socioeconomic status and health.

Even though Denmark is a small country, there has been an ongoing urbanization where work-places and people are centralized in largest cities (Andersen et al., 2018). This has affected Lolland-Falster, the rural south-eastern part of Denmark. Here, the population decreased from 130,000 in 1968 to 100,000 in 2018, while the Danish population during the same period increased from 4.9 million to 5.8 million persons

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(Statistics Denmark, 1970, 2020a). As of 2015–2019, life expectancy in Lolland-Falster was 77.9 years and 79.1 years, respectively, in the two municipalities making up the area. At the same time, in Denmark, overall life expectancy was 80.9 years. The highest life expectancy was found in the affluent suburbs north of Copenhagen, Gentofte and Rudersdal municipalities, where the life expectancy in both places reached 83.3 years (Statistics Denmark, 2020b). In the routine national health survey from 2017, the population of Lolland-Falster scored unfavourably on numerous health indicators, e.g. 56–61% of the population in Lolland-Falster were overweight or obese in contrast to 51% in Denmark overall, the proportion of daily smokers was 21–23% in

Lolland-Falster and 17% in Denmark, and the prevalence of chronic illness was 41–43% in Lolland-Falster and 36% in Denmark (Danish Health Authority, 2017).

On this background, we addressed the question: Does Lolland-Falster make people sick, or do sick people move to Lolland-Falster? If the first part of the question is true, the high mortality in Lolland-Falster should derive from the stable population, while if the second part of the question is true, Lolland-Falster should have a net inflow of mortality-susceptible persons. To answer the question, we analysed mortality of people staying in, moving into and out of Lolland-Falster over the past 50 years.

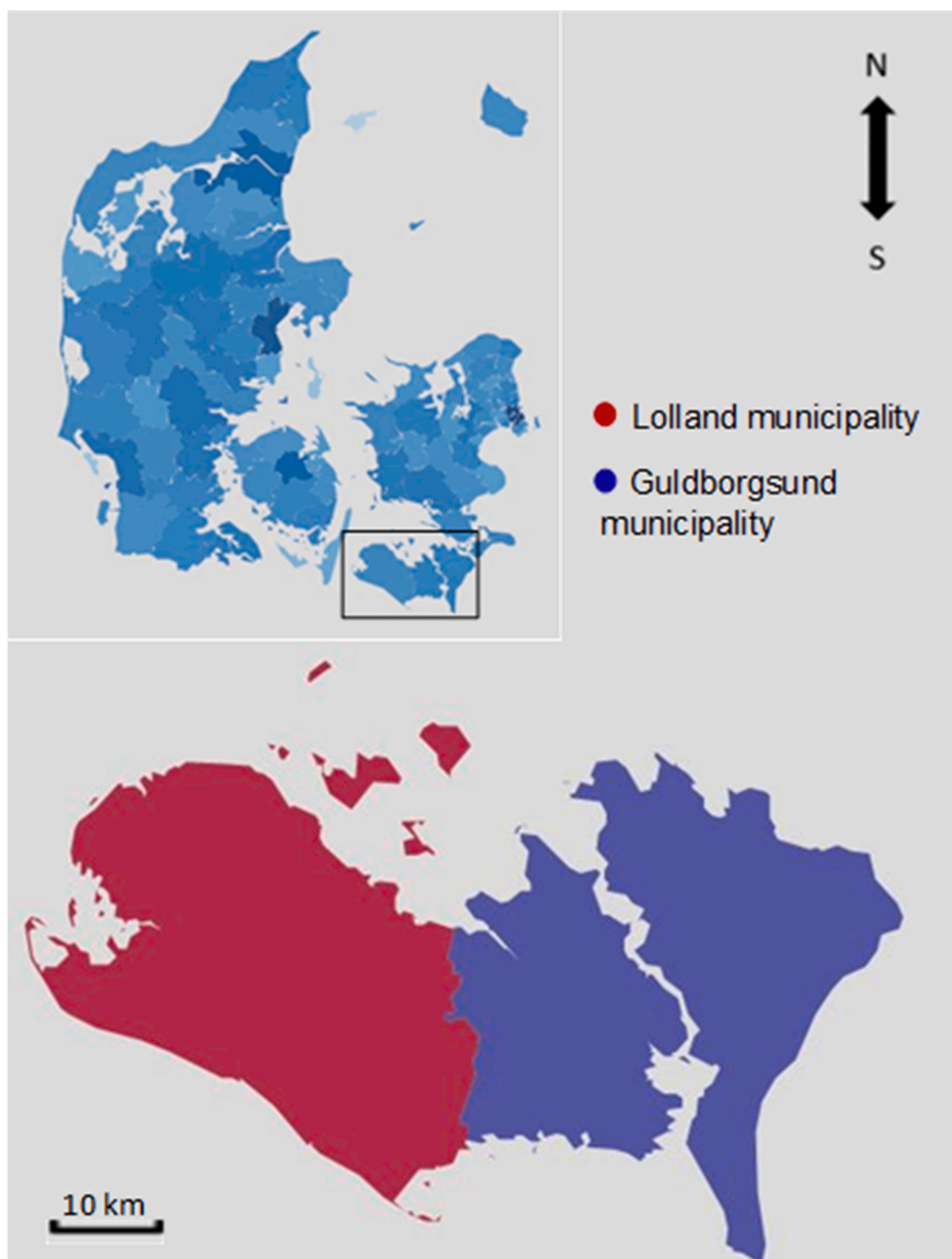


Fig. 1. Map of Denmark with Lolland-Falster marked with black square. Lolland municipality in red and Guldborgsund municipality in blue. Lolland is the island located to the west with Lolland municipality covering the western part. Falster is the island to the east with Guldborgsund municipality covering all of Falster and eastern Lolland. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

2. Material and methods

2.1. Study population

Denmark today is administratively divided into 98 municipalities with the area of Lolland-Falster divided into Lolland and Guldborgsund municipalities (Statistics Denmark, 2020c) (Fig. 1). Previous smaller administrative units can be aggregated into the present two municipalities.

The study population included the entire Danish population using data from the Central Population Register (CPR) from April 2, 1968 to December 31, 2017. For each person, data included sex, dates of birth, death, emigrations/immigrations/missing status, and movements between municipalities. Complete CPR-data from January 1, 1971 to December 3, 2017 were available and retrieved from the Danish Health Data Agency. Data from 1968 to 1970 were retrieved from the Danish National Archives as annual cross-sectional datasets, and mid-days between datasets were used as dates of movements (Appendix).

2.2. Statistical analysis

Data were analysed in two ways. First, for five 10-year calendar periods, 2 April 1968–31 December 1977, 1 January 1978–31 December 1987, 1 January 1988–31 December 1997, 1 January 1998–31 December 2007, and 1 January 2008–31 December 2017, data were analysed as national cohorts truncated into 10-year periods. As address history was not available before April 2, 1968, all people in the period 1968–1977 were categorised according to first registered address. Within a cohort, person-years were divided into three mutually exclusive, broad residency groups:

1. *Denmark*: People living in/born in Denmark outside Lolland-Falster during the previous 10-year period, and living in Denmark outside Lolland-Falster at start of the current 10-year period.
2. *Stable population*: People living continuously in/born in Lolland-Falster during the previous 10-year period, and living in Lolland-Falster at start of the current 10-year period.
3. *In-migrating population*: People moving into Lolland-Falster during the previous or current 10-year period.

As living in Lolland-Falster during the previous 10 years was required for the stable population, and as this time is by definition immortal time, we required also persons in the other groups to be living/born in Denmark during the previous 10-year period. Within a cohort, a person would contribute person-years from the start of a 10-year period until they died/emigrated/went missing or until the end of that 10-year period, whichever came first. Persons moving out of Lolland-Falster was not specified as a separate group, because they were mostly young and the number of deaths was therefore low for this group.

In order to be able also to map the mortality of persons moving out of Lolland-Falster, we made a more detailed analysis where we used longer time intervals to aggregate sufficient number of deaths in young age-groups. Four overlapping 20-year calendar periods were studied: 2 April 1968–31 December 1987, 1 January 1978–31 December 1997, 1 January 1988–31 December 2007, 1 January 1998–31 December 2017. As specified in Table 1, within a cohort, person-years were divided into seven mutually exclusive, detailed residency groups:

1. *Denmark*: People living in/born in Denmark outside Lolland-Falster during the previous 10-year period, and living in Denmark outside Lolland-Falster at start of the current 20-year period (reference group).
2. *Stayers*: People living continuously in/born in Lolland-Falster during the previous 10-year period, and living in Lolland-Falster at start of the current 20-year period.

Table 1

Illustration of detailed residency groups by residence status at different points in time.

	Previous 10 years		Current 20 years	
	Start	End	Start	End
Denmark	Not LF	Not LF	Not LF	Not LF
Stayer	LF	LF	LF	LF
New stayer	Not LF	LF	LF	LF
Moved in	Not LF	Not LF	Not LF	LF
Moved out/in	LF	Not LF	Not LF	LF
	LF	LF	LF → Not LF	LF
	LF → Not LF	LF	LF	LF
Moved out	LF	LF	LF	Not LF
Moved in/out	Not LF	LF	LF	Not LF
	Not LF	Not LF	Not LF → LF	Not LF
	Not LF → LF	Not LF	Not LF	Not LF

3. *New stayers*: People moving to Lolland-Falster during the previous 10-year period and living in Lolland-Falster at start of the current 20-year period.
4. *Moved in*: People living continuously in/born in Denmark outside Lolland-Falster during the previous 10-year period, moving to Lolland-Falster during the current 20-year period.
5. *Moved out/in*: People moving away from Lolland-Falster during the previous 10-year period or the current 20-year period and subsequently moving to Lolland-Falster during the previous 10-year period or the current 20-year period.
6. *Moved out*: People living continuously in/born in Lolland-Falster during the previous 10-year period and moving away from Lolland-Falster during the current 20-year period.
7. *Moved in/out*: People moving to Lolland-Falster during the previous 10-year period or the current 20-year period and subsequently moving away from Lolland-Falster during the previous 10-year period or the current 20-year period.

Mortality rate ratios (MRR) were calculated using Poisson regression. Person-years were used as offset and events were number of deaths. MRRs were calculated for each period and subgroup using group 1 (people living in Denmark outside Lolland-Falster) as the reference group and adjusting for sex, current age, and calendar year. To have a sufficiently large number of deaths in subgroups defined by sex, age, calendar period, and migration-group, the analyses were conducted also separately by sex and age-groups 0–29, 30–64, and +65 years. As the MRRs were estimated from the entire dataset, MRRs are comparable across subgroups.

Proportionality of age-specific mortality for the seven residency groups used in the second analysis was checked by testing for interaction between age and residence group with a likelihood ratio test and by plotting the log-transformed age-specific mortality rates. As the truncation of follow-up time was not independent of mover-status, a sensitivity analysis was conducted, where all people were allowed a follow-up time of 10 years from the first date a person entered one of the following residency groups; moved in, moved out/in, moved out, or moved in/out. SAS 9.4 was used for analysis, and R 4.0.0 for graphics.

2.3. Ethics

The study was approved by the Danish Data Protection Agency via Region Zealand. According to Danish legislation this serves as ethical approval of register-based studies.

3. Results

3.1. Characteristics of study population

The study population included 9,403,302 individuals and 2,830,785

deaths; of whom 315,130 had lived in Lolland-Falster, and 84,815 died while residing in Lolland-Falster (Table 2). Considering the 10-year periods, the stable population was by definition large in the first 10-year period, 1968–1977. However, in the subsequent four 10-year periods, the stable population contributed 73–76% of the person-years; meaning that over time about one fourth of the person-years in Lolland-Falster derived from people recently moving to the area (Appendix Table 1). Considering the 20-year periods, 33–37% of the person-years for people moving into Lolland-Falster came from people moving out again. Persons moving out from the stable population contributed with 6% of the person-years, but these persons were overwhelmingly young and consequently contributed only with 3% of the deaths (Appendix Table 3). These data show that behind the overall decrease in the size of the Lolland-Falster population from 130,000 in 1968 to 100,000 in 2018 there was a considerable population turn-over with people moving both in and out.

In 1998–2017, stayers in Lolland-Falster had an age-distribution similar to that of people in the rest of Denmark apart from a deficit in ages 20–49 years, while mobile persons accumulated most person-years in this age-group (Fig. 2).

3.2. Mortality rate ratio of broad residency groups

Up until 1988, people in Lolland-Falster had approximately the same mortality as people in the rest of Denmark; MRR 0.99 (95% CI: 0.98–1.01) for 1968–1977, and 1.03 (95% CI: 1.01–1.04) for 1978–1987 (Fig. 3, Appendix Table 1 and Appendix Fig. 1). However, after this point in time, Lolland-Falster experienced increasing excess mortality, which reached an MRR of 1.21 (95% CI: 1.19–1.23) in 2008–2017. The stable population constantly had MRRs below that of the total Lolland-Falster population, starting at 0.98 (95% CI: 0.97–1.00) in 1968–1977 and reaching 1.14 (95% CI: 1.12–1.16) in 2008–2017. In each 10-year period, the MRR of the stable population equalled the MRR of the total population in the previous 10-year period. This pattern indicated that the gradual build-up of an excess mortality in the stable population of Lolland-Falster as compared with people living in the rest of Denmark derived from an inflow of a considerable group of in-migrating persons susceptible to high mortality. In this respect, the driver for the increasing excess mortality for the Lolland-Falster population came from the in-migrating population. In 1968–1977, their MRR was 1.17 (95% CI: 1.08–1.26), and by 2008–2017 their MRR had reached 1.82 (95% CI: 1.75–1.89). These patterns remained in the sensitivity analysis where each person was allowed 10 years of follow-up from date of moving (Appendix Table 5).

3.3. Mortality rate ratio of detailed residency groups

In the 20-year periods, the stable population was split between stayers and moved out. Before 1988, the mortality of both subgroups was similar to that of people in the rest of Denmark (Fig. 4 and Appendix Table 3). Over time, the moved out group developed an excess mortality, which by 1998–2017 reached an MRR of 1.27 (95% CI: 1.19–1.35). In the 20-year periods, the in-migrating population was divided into four

Table 2

Number of persons, person-years and deaths, for people residing in Lolland-Falster and Denmark, 1968–2017.

Area	Total	Men	Women
Lolland-Falster			
- Persons	315,130	162,837	152,293
- Person-years	5,663,468	2,814,727	2,848,741
- Deaths	84,815	45,140	39,675
Denmark			
- Persons	9,403,302	4,745,784	4,657,518
- Person-years	260,001,907	128,583,970	131,417,937
- Deaths	2,830,785	1,452,45	1,378,740

subgroups. The excess mortality seen in the 10-year period analysis for the in-migrating population was shared by all four subgroups. In 1998–2017, the MRR was 1.57 (95% CI: 1.52–1.63) for new stayers, 1.80 (95% CI: 1.73–1.87) for moved in, 1.69 (95% CI: 1.55–1.86) for moved out/in persons, and 1.69 (95% CI: 1.62–1.77) for moved in/out persons.

The fact that the excess mortality in people moving out came primarily from people who earlier moved in illustrates the complexity of the migration pattern. A comparison between people moving in and people moving out during a given time period would not capture this complexity.

3.4. Mortality rate ratio by age

The likelihood ratio test showed a statistically significant interaction between age and residency group (p -value < 0.0001). In the log-transformed age-specific mortality curves, distances between residency groups were larger in the age-groups below 60 years than in older age, and there was some crossover between residency groups, e.g. for people moving out with a deficit mortality at young age and an excess at older age (Appendix Fig. 2).

The MRRs for the in-migrating population were consistently higher than those for the stable population in all age-groups and over time. In 2008–2017, the MRR of the in-migrating population was highest at age 30–64 years, 2.34 (95% CI: 2.19–2.50), while the MRR of the stable population in this age-group was 1.34 (95% CI: 1.28–1.40) (Appendix Table 2). For persons above age 65 years, the MRR was 1.63 (95% CI: 1.55–1.71) for the in-migrating population and 1.11 (95% CI: 1.09–1.13) for the stable population in 2008–2017. For persons below age 30 years, the MRR of the in-migrating population was 1.44 (95% CI: 1.06–1.95) in 2008–2017, while it was 1.35 (95% CI: 1.04–1.75) for the stable population.

The mortality in people below age 30 years was overall low in Denmark. Nevertheless, among the detailed groups, both stayers, moved in, and moved out/in had a statistically significantly excess mortality in 1998–2017 as compared with people in the rest of Denmark (Appendix Table 4). For the moved out group, the MRR changed over age. In 1998–2017 the MRR was 0.75 (95% CI: 0.49–1.15) below age 30 years and 1.31 (95% CI: 1.22–1.41) above age 65 years (Appendix Table 4), probably reflecting outmigration for higher education in the young group and for nursing home close to adult children in the old group.

4. Discussion

4.1. Main findings

During the past 50 years, mortality in Lolland-Falster changed from being at the level of the rest of Denmark to an excess of 21%. Our study showed that Lolland-Falster had a highly fluctuating population, where over time one fourth of the inhabitants had moved to the area recently. This mobility affected the mortality in Lolland-Falster. For each 10-year period, the excess mortality of people moving to Lolland-Falster increased, reaching 82% in 2008–2017. In each successive 10-year period, the mortality of the stable Lolland-Falster population as compared with the rest of Denmark equalled the average of the stable and the in-migrating populations from the previous 10-year period. This resulted in a gradual build-up of the excess mortality for the stable population and for the area as a whole. All age-groups contributed to this pattern, but many people of working age moved to Lolland-Falster, and their mortality was more than the double of people in this age in the rest of Denmark.

On this basis, our results indicated that Lolland-Falster does not make people sick, but selective in-migration of vulnerable people has resulted in a gradual build-up of the present relatively high mortality and low life expectancy in Lolland-Falster.

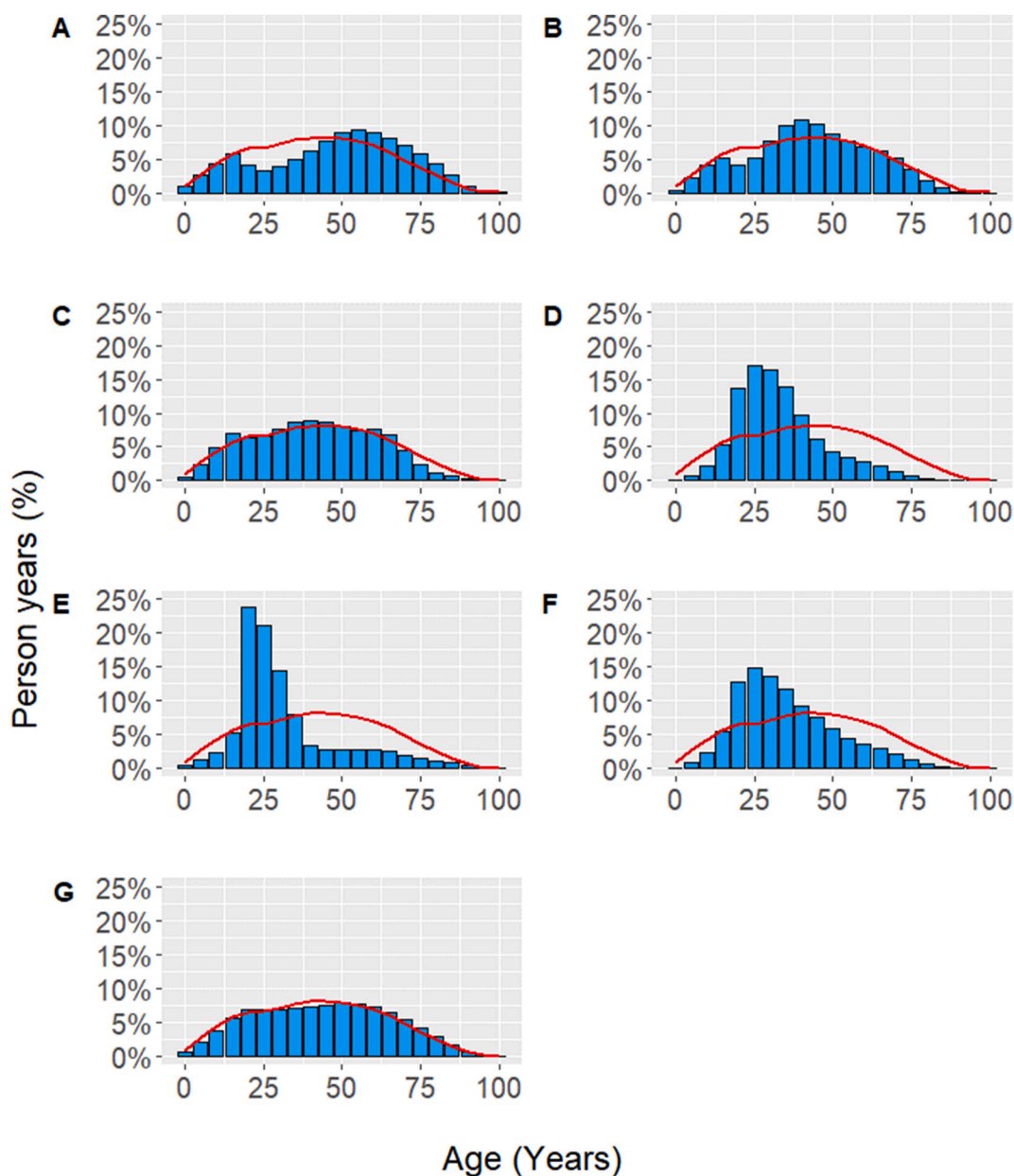


Fig. 2. Age-distribution of person-years for Lolland-Falster 1998–2017: stayers (A), new stayers (B), moved in (C), moved out/in (D), moved out (E), moved in/out (F), all groups combined (G). Red line age-distribution of person-years in rest of Denmark. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

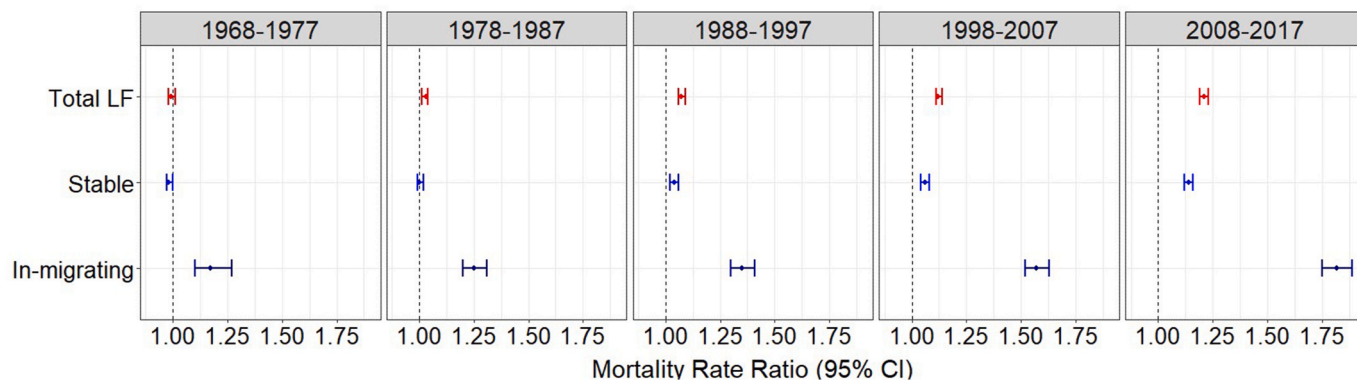


Fig. 3. Mortality rate ratio for broad residency groups in Lolland-Falster compared with rest of Denmark by 10-year periods adjusted for age, year and sex.

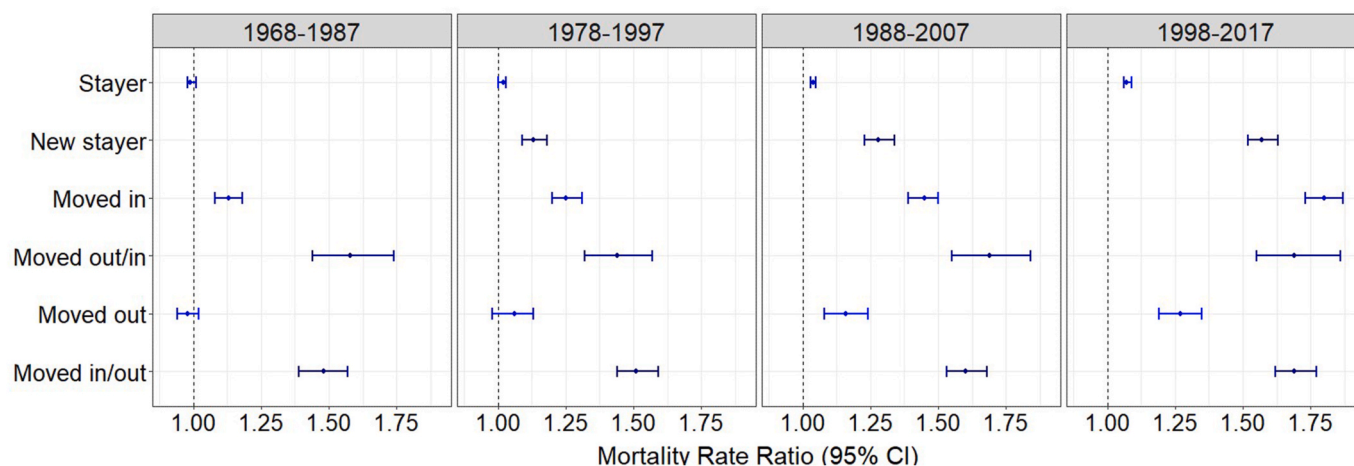


Fig. 4. Mortality rate ratio of detailed residency groups in Lolland-Falster compared with rest of Denmark by 20-year periods adjusted for age, year and sex.

4.2. Previous studies

Health selective migration between rural and urban areas has been observed in England in 1981–2005. For people aged ≥ 65 years, moving to rural areas and long-term rural residency were associated with lower mortality than long-term urban residency, and for people aged 20–64 years moving from rural to urban areas was associated with a lower mortality than long-term urban residency (Riva et al., 2011). In the Netherlands, moving between urban and rural areas as compared with stable residency was associated with more health complaints for people aged ≥ 55 years, but with better perceived health for people aged 20–29 years (Verheij et al., 1998). In England and Wales in 1991–2001, a difference of 17% in mortality was found between areas with highest and lowest deprivation scores. Selective migration of people below age 75 accounted for approximately half of this difference, while selective migration of older people to some extent narrowed the gap (Connolly et al., 2007). Another study in England and Wales found that selective migration accounted for a large part of the increasing inequality in long-term illness and mortality between the most and the least deprived areas between 1971 and 1991 (Norman et al., 2005).

To investigate whether moving to an area with poor health made people sick or whether people moving there were less healthy, an English study from 2006 to 2008 compared people who moved with people who did not move using a matched design and found no post-moving difference (Green et al., 2015). Thus, the study supported the hypothesis that poor health in specific areas is caused by a health-selection in migration rather than by an area-effect on individual health.

In Sweden, mortality according to migration/re-migration status between Northern and Southern Sweden was studied for 1990–2007. At age 16–53, people born in Northern Sweden and moving to Southern Sweden had the same mortality as people born in and living in Southern Sweden. However, people born in Northern Sweden and returning there after having lived in Southern Sweden had an excess mortality (Andersson and Drefahl, 2017). This was in accordance with the present study, where stayers moving out aged ≤ 64 had a mortality similar to that of the rest of Denmark, while people moving out/in had an increased mortality.

Several studies have examined potential health selection in internal migration without finding indication of this, e.g. in Finland (Saarela and Finnäs, 2008), Scotland (Popham et al., 2011), and Wales (Gartner et al., 2018). Additionally, another Swedish study investigated the south-western province of Halland, which in 1980–1990 had the highest life expectancy in Sweden, and found that selective migration could not explain the pattern (Baigi and Holmen, 2018).

A Danish study identified a group of rural islands, including Lolland, as a longevity hot spot, as persons born there had a 37% higher chance of

reaching 100 years than people born elsewhere in Denmark. Conversely, hotspots of longevity at age 71 were located in Northern Zealand and Mid-Jutland, suggesting a selective migration of healthy people born in the rural islands that later moved to Northern Zealand and Mid-Jutland (Hansen et al., 2018).

4.3. Strengths and limitations

The present study was the first to analyse impact of internal migration on health in Denmark. A strength of our study was the high quality Danish register data with exact dates of birth, death and changes of address over a long time period. We were able to calculate exact number of days a person had spent in each residency group, though dates of movements had to be set to mid-days of data collection for 1968–1970. For the first time period starting in 1968, previous address history was not available, and everyone residing in Lolland-Falster in 1968 was categorised as stayers.

The effect of migration on mortality in an area might occur only after several years; e.g. moving in middle age could affect mortality in older age, as suggested by Brown et al. (2012), and we therefore defined stayers as persons who had lived for at least 10 years in Lolland-Falster. We separated people moving in and out of Lolland-Falster according to their residence during the preceding 10 years. Thus, the number of person-years among the age groups 0–9 years was artificially low as it included only people born during the previous 10 years. To avoid small numbers of deaths in the residency groups, we applied 20 years overlapping time periods in the analysis of detailed residency groups.

Our study aimed to answer the question as to whether Lolland-Falster makes people sick or sick people move to Lolland-Falster? We operationalized sickness as all-cause mortality. This is a limitation, as this measure does not encompass health-deteriorating, non-lethal conditions. Thus, we were not able to investigate whether people were sick prior to moving or whether their health deteriorate after moving, and our results did not indicate a deterioration of health in the stable population during the same time. Furthermore, all-cause mortality is an indicator of overall health and most likely a reflection of genetic make-up and life-long experiences. Consequently, all-cause mortality was considered a valid measure of health status. Previous studies have also used all-cause mortality to investigate selective migration and health (Andersson and Drefahl, 2017; Connolly et al., 2007; Riva et al., 2011).

4.4. Interpretation

Denmark is a welfare state with comparatively low income inequality, generous universal benefits and services, including high quality health care. Nevertheless, at present considerable regional

differences in health and mortality are seen between the less than 6 million Danes. Lolland-Falster stands out with the lowest life expectancy. On this background, we asked: Does Lolland-Falster make people sick, or do sick people move to Lolland-Falster? Our analysis showed that the presently poor health status in Lolland-Falster is a result of 50 years of selective in-migration, where increasingly disadvantaged people, in terms of their mortality, have moved to the area, and where this has been the case in particular for people of working age.

When comparing our results with those from other countries it became clear that a similar pattern was seen in some, but not in all, studied settings. Local conditions therefore have to be taken into account in efforts to understand the observed pattern.

Historically, Lolland-Falster was characterized by farming of sugar beets and production of sugar (Bjørn, 2002; Nordic Sugar A/S, 2018). However, the availability of monogerm sugar beet seeds from 1969 eliminated the labour intensive singling of plants, manual harvesting was replaced by increasingly improved mechanic harvesters, and better capacity for transportation of sugar beets reduced the need for local processing facilities (Christensen, 2007). In Nakskov, the far western town of Lolland-Falster, a shipyard was established in 1916. The production boomed in the 1960s with more than 2000 workers employed, but the shipyard was shut down in 1986 (Olesen, 2012). Many young Danish people move from rural and fringe areas to large cities to pursue higher education (Sørensen and Holm, 2019). In a Danish administrative reform in 2007, several public service institutions with a well educated labour force were moved away from Lolland-Falster (Lyck, 2014), reducing employment possibilities especially for persons with higher education. In combination, these changes created an economic vacuum. The population decreased (Statistics Denmark, 1970, 2020a), accompanied by a reduction in housing prices (Andersen et al., 2018). This opened up for selective in-migration, as the area offered housing possibilities affordable for persons on social benefits. During 1990–2015 there was a tendency for people of working age, where unemployed persons and people on early pension moved away from the capital area to marginalised areas as Lolland-Falster (Juul and Blicher, 2017). As the presence of an illness is a prerequisite for obtaining early pension, it is obvious that these pensioners have an increased susceptibility to mortality.

Our analysis showed that the mortality of people who lived in Lolland-Falster for a long time was at the level of people living elsewhere in Denmark. In a public health perspective, it is therefore necessary to consider the poor health status of the current population in Lolland-Falster as a local manifestation of general societal processes. Economically and health disadvantaged people throughout Denmark have been sorted out of other areas to seek an affordable life in for instance Lolland-Falster.

5. Conclusion

The mortality of the Lolland-Falster population was fairly similar to that of people in the rest of Denmark in 1968–1987. Since then, the levels of mortality have drifted apart. In 2008–2017, the overall mortality in Lolland-Falster was 21% above that of the rest of Denmark. Over time, one fourth of the population in Lolland-Falster had moved to the area recently, and the mortality of these new-comers was constantly and increasingly above the mortality level in the rest of Denmark. In 2008–2017, this excess mortality had reached 82%, and especially new-comers in working age contributed with an excess mortality of 134%. The currently high mortality of the Lolland-Falster population was thus found to be a result of a long-term, selective migration, where in particular vulnerable people of working age moved from other parts of Denmark to Lolland-Falster.

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Credit author statement

TLFH and EL came up with the idea and design for the study. SNL and LHM contributed with analytical advice. TLFH did the data analysis. All authors discussed and interpreted the results. First draft was made by TLFH. All authors read and approved the final draft.

Declaration of competing interest

The authors declare that they have no conflicts of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2021.113893>.

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