

## ***The Health-Risk Transition in Thailand***

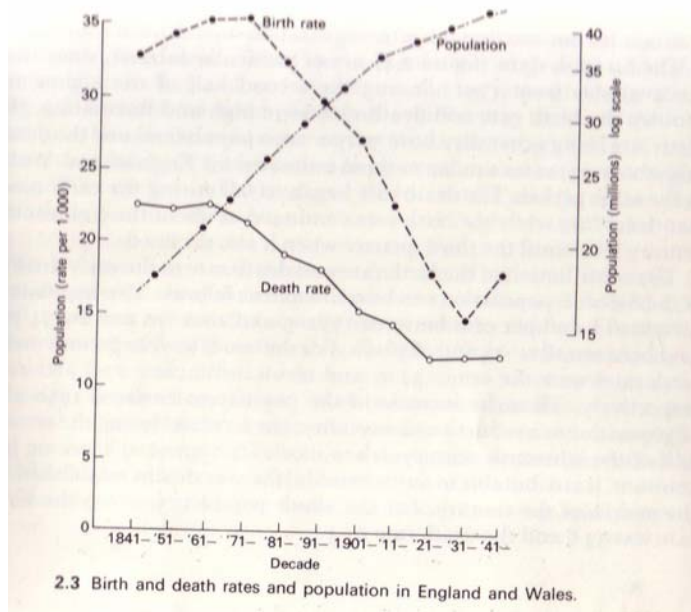
***Adrian Sleigh***

Over the last month we have published two introductory articles related to our study of the Thai Health-Risk Transition. The first mentioned food, nutrition and our health. The second described a few early results of our study of STOU students and the problems of overweight and obesity now emerging in Thailand. Last year our big questionnaire reached nearly 88,000 STOU students, about half of those enrolled, and we are very appreciative of such participation. We will return to that study in many future articles. For the next four articles we are going to introduce our health-risk research and describe some of the extraordinary transitions affecting Thais and many others all over the world.

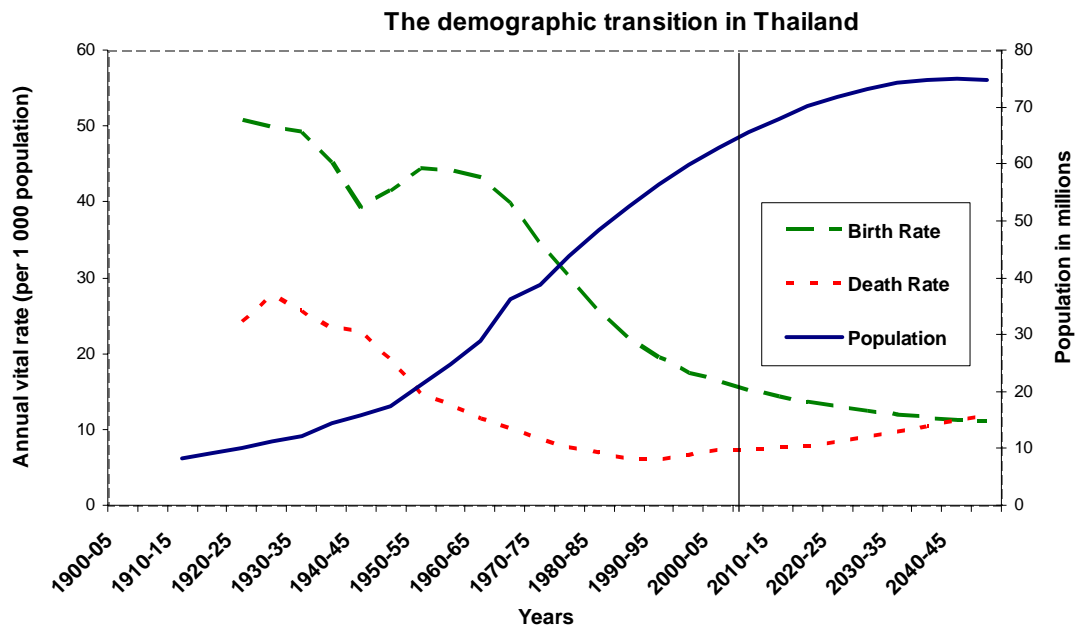
First, the fundamentals - births and deaths – for which transitions in Thailand over the 65 years since 1940 have been remarkably like those in Europe for the century before that. But there were big differences in timing and speed of changes. Mortality fell in England over an 80-year period and births fell over the last 70 of those years, starting well after England's industrial revolution began. In Thailand big changes did not begin until 1940 but then deaths and births fell faster and further compared to the earlier pattern in Europe, and started to fall here before industrialization really began. Thailand compressed into the second half of the 20<sup>th</sup> century what Europe had experienced for a century before that.

After being stable for thousands of years why did births and deaths fall, and why was Thailand different? Europe's life expectancy is now more than 80 years, with Thailand closing fast with a life expectancy already above 70 years. Will Thais follow Europeans becoming equal in health, disease and longevity? Why did the changes occur, and why in Thailand were they delayed for 100 years and then much faster? Europe's changes are historical questions but in Thailand the transition is still happening. Many young Thais, such as STOU students in their 20s, have reached post-transition health states but their parents and older STOU students were part of the transition itself. Can we unravel the socio-cultural and environmental drivers of these trends, make predictions, and suggest ways to improve our human ecology? We hope our STOU study will help to do that.

## Birth and death rates and population in England and Wales



Source: McKeown T. The Modern Rise of Populations, Edward Arnold, London, 1976.



Source: Thai Health-Risk Transition research project, STOU-ANU, 2005

## ***What Drives the Thai Health-Risk Transition?***

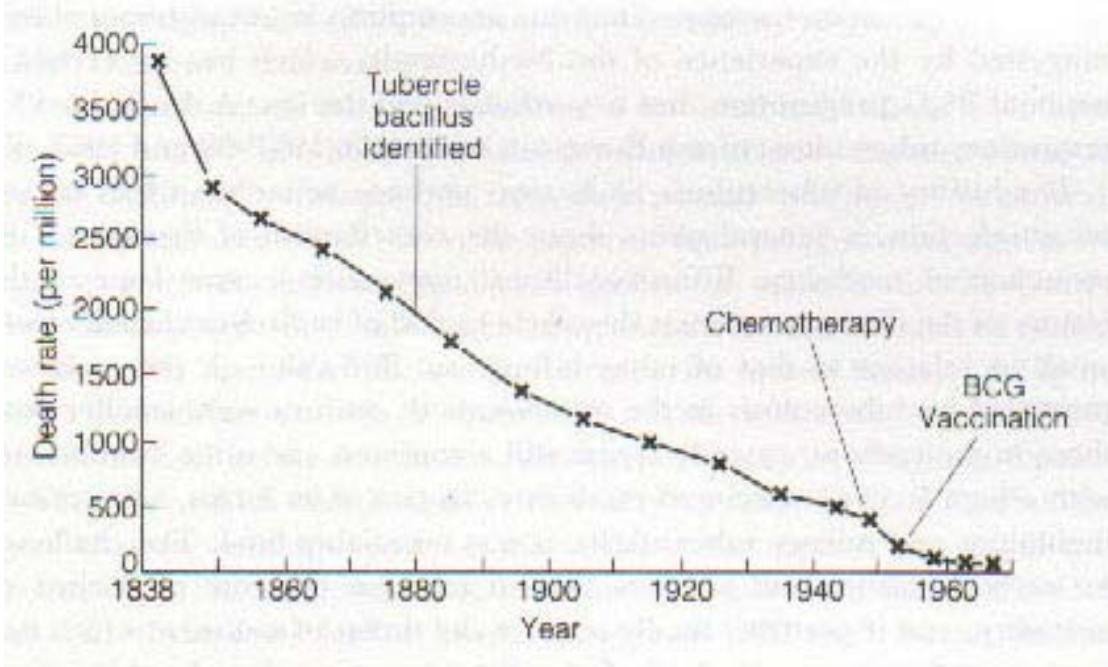
***Adrian Sleigh***

In the last article we described the remarkable decline of birth and death rates over almost a century in Europe (1860-1940), and over the next 65 years in Thailand (1940-2005). The causes have been studied historically in Europe and our STOU-based study in Thailand is examining the situation unfolding here. Many explanations have been put forward for Europe. Warren Thompson (1929) and Frank Notestein (1945) suggested the fall in mortality caused the fall in fertility, a “Demographic Transition”, as parents concluded their children would survive. But infant mortality actually did not fall much until after 1900, once the germ theory of infectious diseases, nutrition and child welfare were taught to mothers. From this point childhood infections, especially diarrhoea, were at last prevented. It seemed that public health measures and community knowledge of disease risks were the keys to mortality decline. But as the 20<sup>th</sup> century unfolded medical research yielded many curative advances and by 1960 the emphasis on prevention faded.

Thomas McKeown, an English physician, thought biomedicine should not ignore social forces shaping health and disease. He studied the historical changes, with tuberculosis mortality as his prime exhibit: most of the huge decrease preceded knowledge of the cause, vaccine or treatment. He concluded that mortality fell due to socio-economic improvement and better nutrition, not public health or biomedicine. Others pointed to the power of modern prevention and cure and insisted that governments provide primary health care while acknowledging that social factors, like income, nutrition and knowledge also played a critical role. WHO and UNICEF advocated public health and biomedical interventions, such as vaccines, antibiotics and modern infectious disease control. By the 1990s a leading demographer from The Australian National University, John Caldwell, had moved on to describe a comprehensive “Health Transition”: better outcomes (less sickness) due to complex socio-environmental, cultural and behavioural interactions (eg income, education, food, water, sanitation, modern ideas on disease and health services). How did such factors produce Thailand’s transition? Our study of health-risks among STOU students,

representing diverse Thais, should help us understand better what happened here, what might happen next, and what we can do to optimize our transition.

**Respiratory tuberculosis in England and Wales: mean annual death rates standardised to the 1901 population.**



Source: McKeown T. The Modern Rise of Populations, Edward Arnold, London, 1976

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## ***Understanding Falling Mortality and Fertility***

***Adrian Sleigh***

In an earlier article we began to consider the mortality and fertility transition in light of the collaborative work of John Caldwell and many others in the 1980s and 1990s. Much of this research was summarized in articles published over several years in *Health Transition Review* (<http://htc.anu.edu.au/>). The journal explored both sides of the transition – the timing and structure of falling rates (the health outcomes) and the socio-environmental determinants which had been thought too complex to be studied (the causes or risks). Research from many parts of the world showed that improved child survival, the main driver of mortality decline, was most strongly related to maternal education and to the practice of family planning. The latter reflected availability of contraception and increased investment in fewer children. Another strong associate of child survival was ethnicity, reflecting diverse cultural beliefs and practices, some detrimental and some advantageous to child health. But there was much variation for transitions in different social and cultural settings. Sometimes paternal income or occupation were important but this varied by the location and era being studied.

The original declines in child mortality in 19<sup>th</sup> century England would not have been a result of curative medical care because it had little efficacy at that time. So the mortality must have fallen due to some combination of better prevention at home, reflecting better physical facilities (especially water and sanitation), better nutrition (higher incomes and more food), and finally better hygiene when information on the source and avoidance of germs became well known (by about 1920). All the new health science information was generated within a western cultural set of beliefs and thus was relatively easy to absorb for western parents. This was quite different to non-western countries that had to import the scientific knowledge and then spread it to sceptical populations. Only formal education could make non-western communities receptive to such exotic ideas and perhaps this difficulty accounts for much of the delay in Thailand's transition. But its faster speed after it began is surely a reflection of the power of modern medicine by the middle of the 20<sup>th</sup> century to actually stop sick people from dying, and the preparatory work done in Thailand to develop nursing, medicine and hospitals and at the start of the 20<sup>th</sup> century.

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## ***Health and Risk Transition in Thailand***

***Adrian Sleigh***

In earlier articles we noted that remarkable demographic and health transitions over just two generations have lowered birth and death rates in Thailand, lengthened lives and transformed the pattern of disease now afflicting us. Driving these health trends were great changes in education, income and the socio-environmental conditions, all affecting most of the population almost simultaneously. These changes had a mass effect on our health risks, the factors that lead to sickness and death. Ancient and deadly old problems like obstructed birthing and childhood malnutrition and infection have retreated and new diseases affecting older people have appeared. We attribute this to the ‘Risk Transition’.

Aware of these changes affecting so many of the world’s population, and the potential to find ways to improve the outcomes, the World Health Organization carried out intensive research on global patterns of risks and health leading to the remarkable *World Health Report 2002* ([www.who.int/whr](http://www.who.int/whr)). For the world overall, in 2000 a few potentially avoidable risks, just ten, produced over 40% of the global burden of healthy life lost. By that year Thailand already had moved beyond the world average to a more advanced transitional pattern. For Thais today unsafe sex and injury account for over 40% of the years of potential life lost and the new chronic diseases like stroke, diabetes, heart disease and cancer are becoming more prominent. With just a few risks accounting for common diseases, we need to identify the risks, and the causes of change, noting any potential to improve the situation. So we are studying the ‘Thai Health-Risk Transition’ among STOU students in Thailand. They cover all adult ages and live in diverse settings; we can learn how they experience and manage the risks, and anticipate the forces of change.

### World and Thailand - Ranking of Risks, Disease and Deaths\*

<i>World Average, 2000</i>			<i>Thailand, 2000</i>	
<b>Rank</b>	<b>Health Risks</b>	<b>Disease Burden (%)</b>	<b>Health Problem</b>	<b>Death Burden (%)</b>
1	Underweight	9.5	HIV/AIDS	23.9
2	Unsafe sex	6.3	Road trauma	9.6
3	Blood pressure	4.4	Paralysis	4.7
4	Tobacco	4.1	Liver cancer	4.5
5	Alcohol	4.0	Suicides	3.4
6	Unsafe water & hygiene	3.7	Assaulted	3.3
7	Cholesterol	2.8	Non-respiratory infections	3.1
8	Indoor smoke – solid fuels	2.6	Diabetes	3.0
9	Iron deficiency	2.4	Drowning	2.6
10	Overweight	2.3	Coronary heart disease	2.6
	<i>Per cent of Total</i>	<i>42.1</i>	<i>Per cent of Total</i>	<i>60.7</i>

\* *World Health Report 2002 (WHO) and Thailand Health Profile, 1999-2000 (MOPH)*

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## ***Studying the Health-Risk Transition in STOU Students***

***Adrian Sleigh***

In the last 2 articles we explored some theories put forward to explain the dramatic fall in mortality and fertility that took almost a century in Europe and then just 60 years in Thailand. Illness patterns were transformed by the transition and most deaths and disease no longer arise from child infections or problems of childbirth. The health problems moved to older people, now more numerous than ever before. These new diseases are often chronic and non-communicable although it must be said that a growing number, like gastric ulcer and cancer of the cervix, turn out to be due to hidden infections acquired many years before. The emerging diseases include arthritis, stroke, high blood pressure, coronary heart disease, diabetes, renal failure, dementia and traffic injuries. Mental health problems also appear in large numbers of people now living alone or in small nuclear families with modern urban lifestyles. And the new risk factors include lack of exercise, smoking, drinking, overweight, high fat diets and stress.

When Western countries first encountered these new disease problems in large numbers they modified methods first used to study causes of infections (epidemiology). The best way to discover chronic disease causes was to follow a large group of people through time, measuring their risks (like bad diets) and seeing who eventually becomes ill, or not. Such a 'cohort study' is time consuming because the same people must be studied on multiple occasions as they age, and this requires contact and motivation. Of course the best motive is seeing how discovery of causes of disease can benefit whole populations.

The quest to prevent chronic non-communicable disease has not been smooth sailing. Too often risks are multiple, each with small, unstable effects, and study utility collapses. Some epidemiologists thought the problem was too much emphasis on immediate causes operating on individuals and not enough attention on the causes of causes affecting whole groups, neighbourhoods or regions - environmental, social, political, economic and cultural factors. They developed methods for 'multi-level' causal studies. Our cohort study of nearly 90,000 STOU students owes its design to these new methods and we are investigating the multi-level causes of the health-risk transition in Thailand.

# Health-Risks at Multiple Levels

<b>Systemic</b>	<b>Upstream Level</b>	
	Population genome	Environment, Social organisation
	↓	
<b>Societal</b>	<b>Midstream Level</b>	
	Level of wealth	Occupational structure
	Social stratification	Redistribution mechanisms
	↓	
<b>Institutional/Household</b>	<b>Downstream Level</b>	
	Working-living conditions, lifestyles, health care system	
	↓	
<b>Individual</b>	<b>Health Status</b>	