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TRENDS IN SOCIOECONOMIC DISPARITIES IN ORAL
HEALTH IN BRAZIL AND SWEDEN.



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Background

- Monitoring socioeconomic disparities in health is important because it is a way of guiding and evaluating public policies and social justice.
- Trends in absolute and relative disparities can lead to opposite conclusions and there is still no consensus on the best way to analyse such trends.

Background

- Phelan and Link (2005) have argued that, once prevention is available, the better-off will take it earlier than the poor.
- Victora's Inverse Equity Hypothesis (2000) explains socioeconomic trends in health using Rodgers Diffusion of Innovation Theory (1995).
- According to this hypothesis, higher socioeconomic groups, the early adopters, take new health behaviors and new medical technology and scientific knowledge earlier than the other socioeconomic groups.

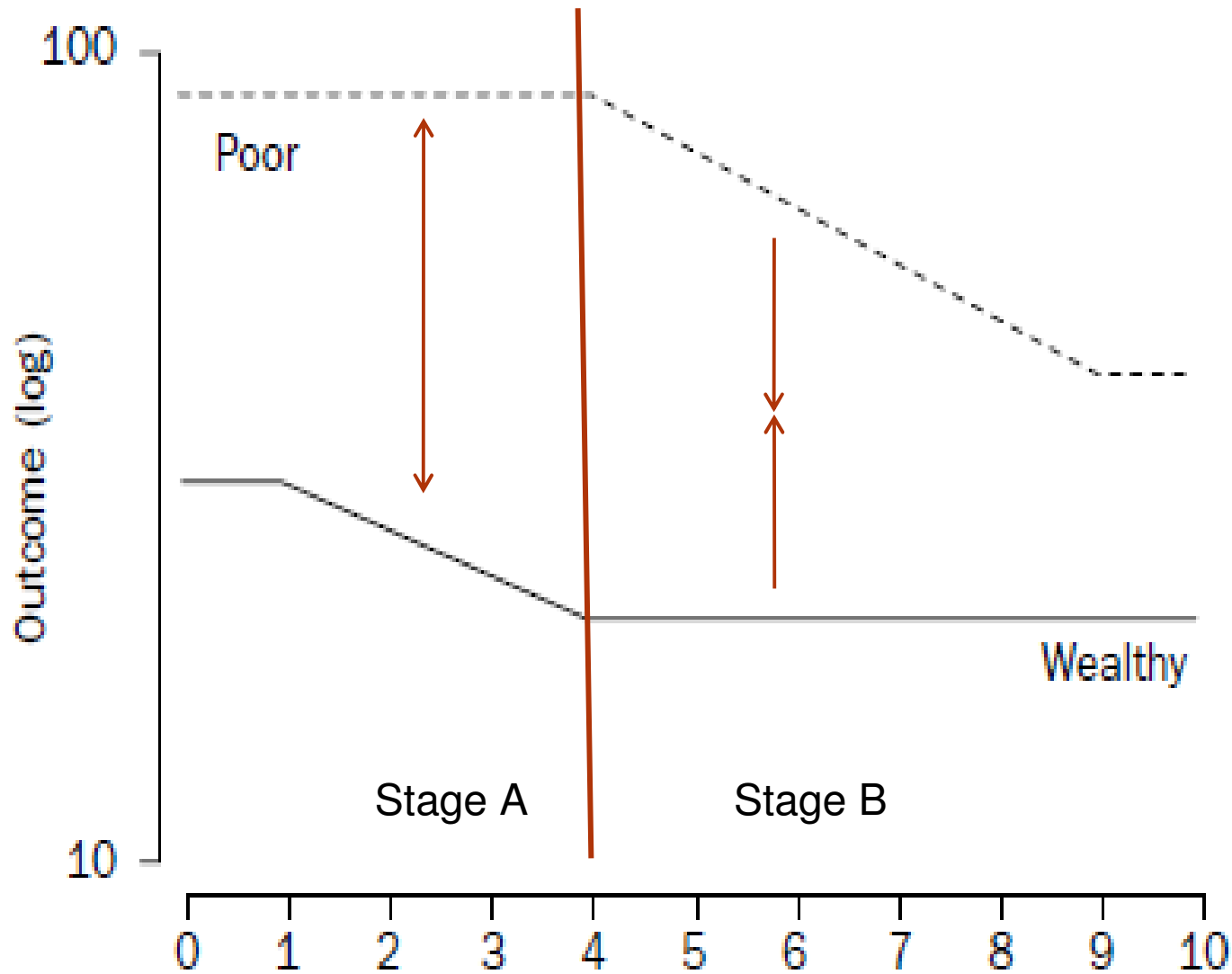


Figure 1 – Hypothetical trends of a disease (outcome) according to socioeconomic group after introduction of a public health intervention. Source: Victora *et al* (2000).

Objectives

- To describe the dynamics of trends in socioeconomic gaps in oral health in Brazil and Sweden.

Methods:

- Brazilian data
 - Oral health surveys in 1986 and 2002-2003
 - 35-44 year-old group
 - 3,344 individuals in 1986 and 1,018 in 2002-2003.
 - 16 state capitals
- Outcomes
 - % of people having at least one missing tooth
 - % of edentulous people (all teeth missing)
- Income measure
 - Disposable household income in minimum wages (dichotomize in 2 MW)

Methods:

- Swedish data (Level of Living Surveys – LNU)
 - 5 cross-sectional 1968, 1974, 1981, 1991 and 2000.
 - 35-44 year-old group
 - \approx 1,000 individuals each year
 - Representative sample of swedish population
- Outcomes (self reported oral health)
 - % of people with whole of partial denture
 - % of people reporting own teeth in good condition
- Income measure
 - Cash margin question: "If a situation suddenly arose where you had to come up with _____kr, could you manage it? "

Main Results and Discussion

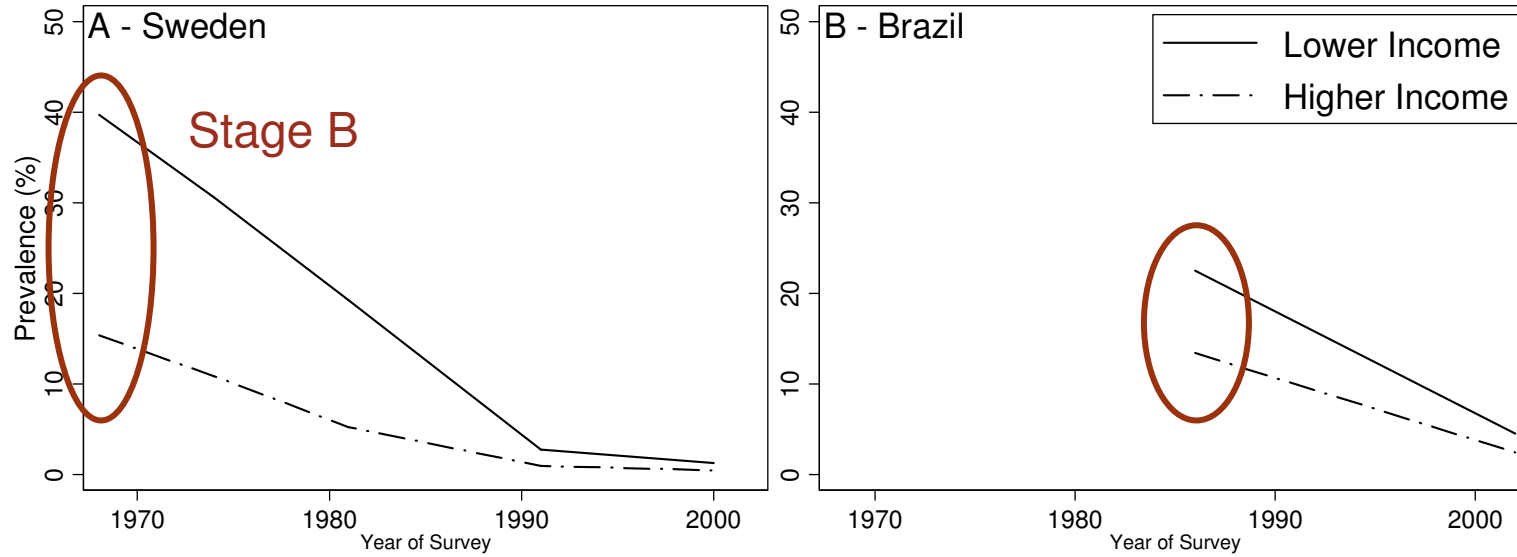
Table 1 – Trends in socioeconomic inequalities in complete or partial edentulism in Brazil and Sweden.

		BRAZIL							Annual Linear Trend				
		1986			2002								
Prevalence (%) in the Lower Income Group	>30 missing teeth - 95% CI			22.6			4.5			-1.1			
		17.4	27.7			2.9	6.2			-1.3 -1.0			
		SWEDEN							Annual Linear Trend				
		1968		1974		1981		1991		2000		Annual Linear Trend	
Complete or partial edentulism - 95% CI		39.7		30.6		19.3		2.8		1.3		-1.1	
		31.6	47.8	22.1	39.2	11.9	26.7	0.9	8.5	0.3	5.1	-1.2	-0.9
		BRAZIL							Annual Linear Trend*				
		1986			2002								
Absolute Difference (%) in Prevalence Lower-Higher income	>30 missing teeth - 95% CI			-9.2			-2.1			-0.4			
		-15.2	-3.2			-4.3	0.2			-0.2	-0.7		
		SWEDEN							Annual Linear Trend*				
		1968		1974		1981		1991		2000		Annual Linear Trend*	
Complete or partial edentulism - 95% CI		-24.3		-19.8		-14.0		-1.80		-0.8		-0.7	
		-32.8	-15.9	-28.6	-10.9	-21.6	-6.5	-5.0	1.3	-2.6	1.0	-0.9	-0.5
		BRAZIL							Annual Linear Trend**				
		1986			2002								
Relative Difference in Prevalence Lower/Higher income	>30 missing teeth - 95% CI			1.69			1.85			1.01			
		1.23	2.32			0.88	3.87			0.94	1.05		
		SWEDEN							Annual Linear Trend**				
		1968		1974		1981		1991		2000		Annual Linear Trend**	
Complete or partial edentulism - 95% CI		2.58		2.82		3.68		2.89		2.70		1.01	
		1.99	3.35	2.00	3.98	2.30	5.87	0.79	10.53	0.50	14.6	0.99	1.03

Table 1 – Trends in socioeconomic inequalities in prevalence of none/few missing teeth in Brazil and Sweden.

		BRAZIL										Annual Linear Trend	
		1986					2002						
Prevalence (%) in the Lower Income Group	No missing teeth - 95% CI	3.5					3.9					0.02	
		2.5		4.6			2.4		5.4			-0.09 0.13	
		SWEDEN										Annual Linear Trend	
		1968		1974		1981		1991		2000			
Teeth in good condition - 95% CI		18.4		23.4		21.1		38.0		41.7		0.7	
		12.0	24.8	15.5	31.3	13.4	28.8	28.8	47.1	33.9	49.4	0.5	1.0
		BRAZIL										Annual Linear Trend*	
		1986					2002						
Absolute Difference (%) in Prevalence Lower-Higher income	No missing teeth - 95% CI	3.0					11.6					0.5	
		0.8		5.3			7.6		15.6			0.3 0.8	
		SWEDEN										Annual Linear Trend*	
		1968		1974		1981		1991		2000			
Teeth in good condition - 95% CI		20.8		13.4		16.7		9.20		9.6		-0.3	
		13.6	28.1	4.9	22.0	8.5	25.0	-0.5	18.9	1.1	18.0	-0.6	0.02
		BRAZIL										Annual Linear Trend**	
		1986					2002						
Relative Difference in Prevalence Higher/Lower income	No missing teeth - 95% CI	1.86					4.00					1.05	
		1.27		2.74			2.53		6.33			1.01 1.09	
		SWEDEN										Annual Linear Trend**	
		1968		1974		1981		1991		2000			
Teeth in good condition - 95% CI		2.13		1.57		1.79		1.24		1.23		0.98	
		1.49	3.05	1.11	2.23	1.24	2.60	0.97	1.60	1.01	1.5	0.97	0.99

Complete of Parcial Edentulism



Good/No Missing Teeth

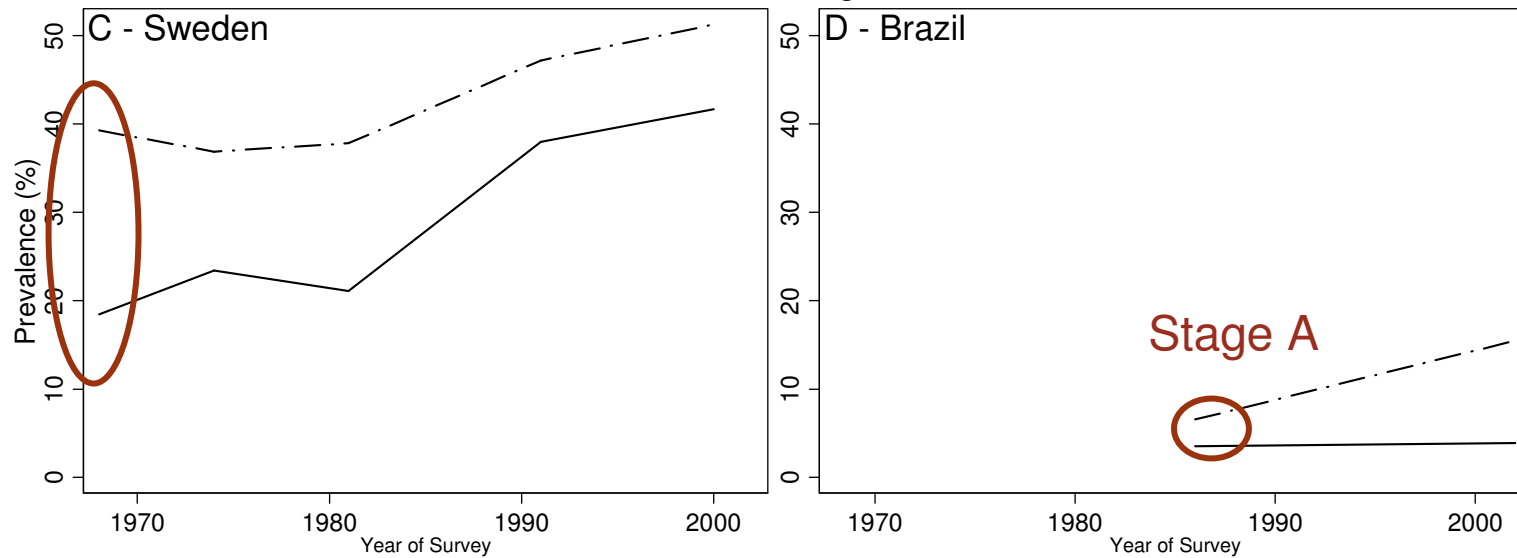
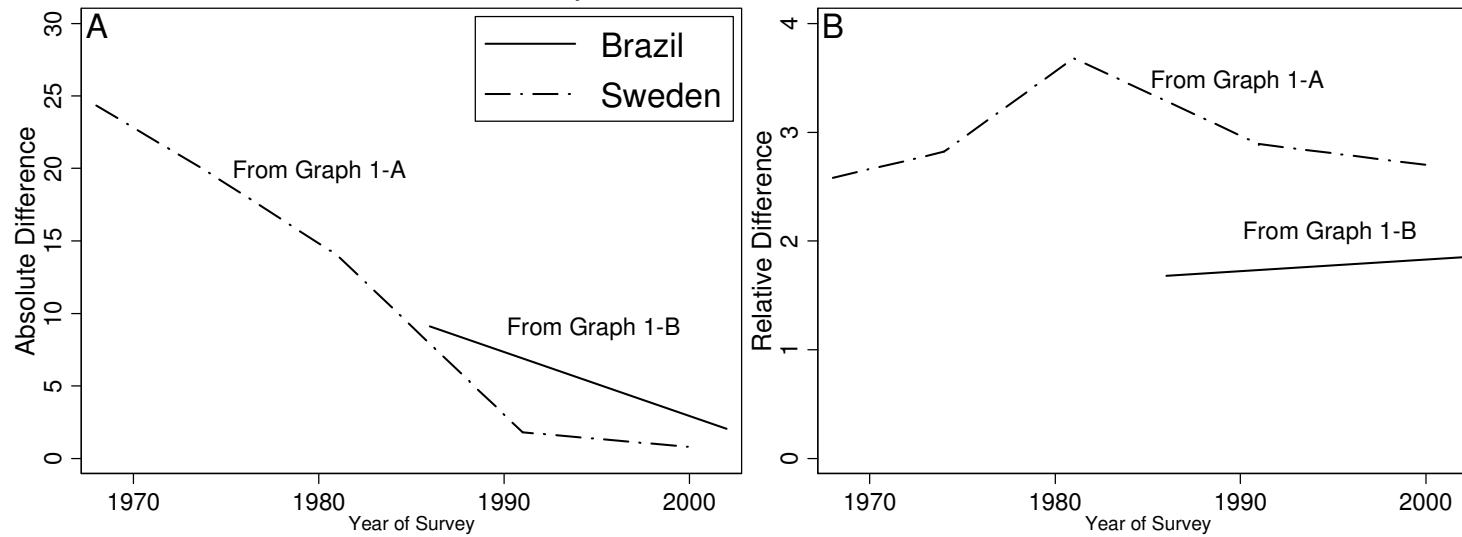


Figure 1 - Trends in Prevalence of oral health in two economic groups in Brazil and Sweden from 1968 to 2002.



Complete of Parcial Edentulism



Good/No Missing Teeth

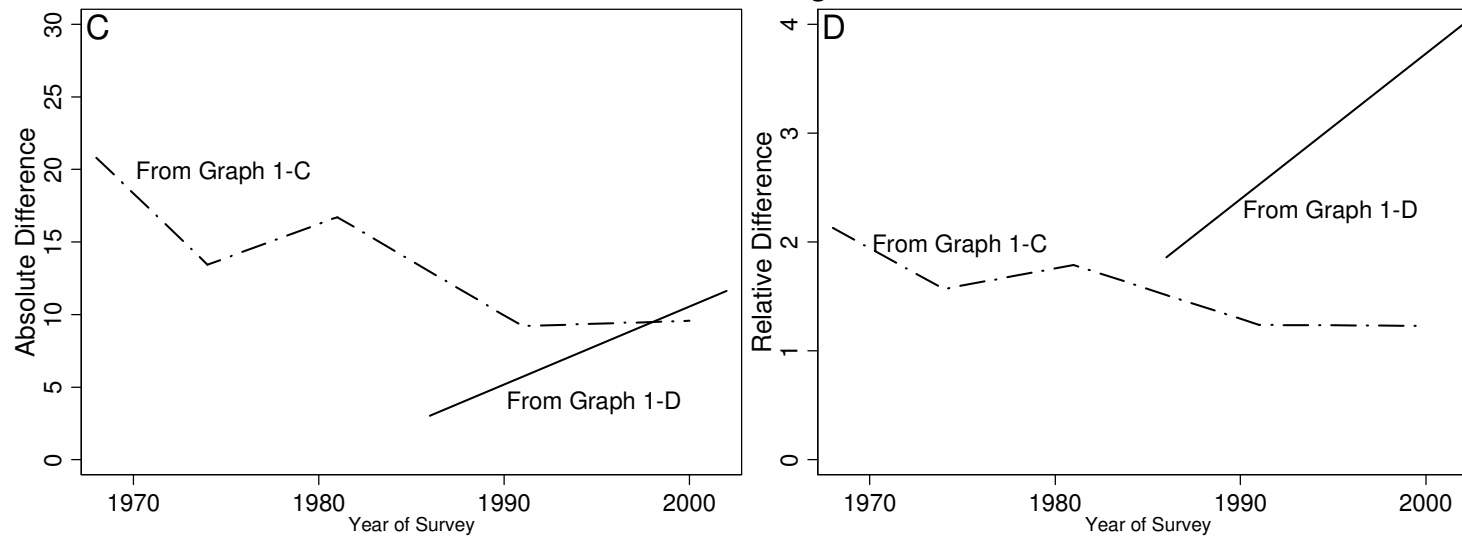


Figure 1 - Trends in the difference of oral health between two economic groups in Brazil and Sweden from 1968 to 2002.

Discussion

- Strengths:
 - Possibility to assess jointly the trends in two distinct countries.
 - In Sweden, the sample was nationally representative with 5 points in time.
 - In Brazil, objective clinical data outcome was used.
 - In both countries, the income measure has been adjusted for inflation, so comparisons across time are possible.
- Limitations
 - The quality of the data is not the same in both countries. Although the Brazilian sample is not representative, it seems comparable across time.
 - Comparisons between countries were made, in spite of different outcomes. However, self-reported oral health has been validated (Unell, 1997).
 - We were not able to investigate potential explanations for any specific upwards and downwards of the gap.

Discussion

- The trends seems consistent with Victora's Inverse Equity Hypothesis if we fit trends in the “right” stage.
- Trends in absolute levels of disparities may be a better fit than the relative trends. Ideally, the trends should be evaluated separately.

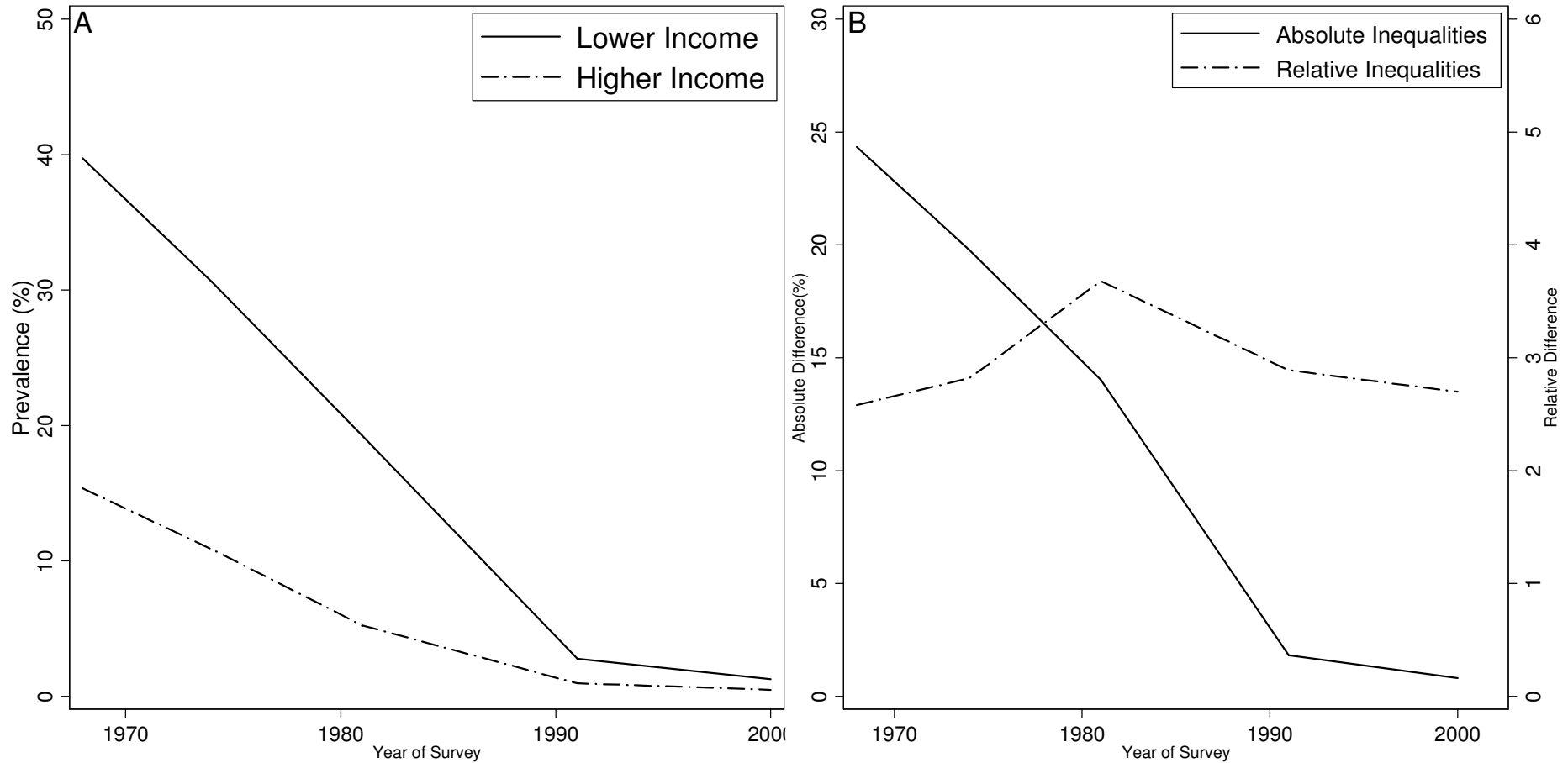


Figure 2 – Trends in self reported oral health by socioeconomic group (A) and trends in absolute and relative disparities (B) in Sweden from 1968 to 2000.



Discussion

- Driving forces?????? (only speculation!)
 - Oral Health care – different in both countries
 - Sugar consumption – there is no reliable data to check this
 - Water fluoridation – it is present in Brazil but not in Sweden
 - Fluoridated toothpaste – almost 100% of the market in both countries since 70's in Sweden and since 1989 in Brazil.

Conclusions

- Edentulism
 - Disparity among adults are decreasing in absolute measures (stable in relative) in both countries and they are statistically non significant in Sweden since 1991 and in Brazil since 2002.
- Teeth in good condition/no missing tooth
 - Disparities among adults are decreasing in Sweden, where a gap was already established in 1968 (20 percentage points). Nonetheless, in Brazil, where the gap was very small (3 percentage points), it has been increasing.

Tack så mycket! - Muito Obrigado!



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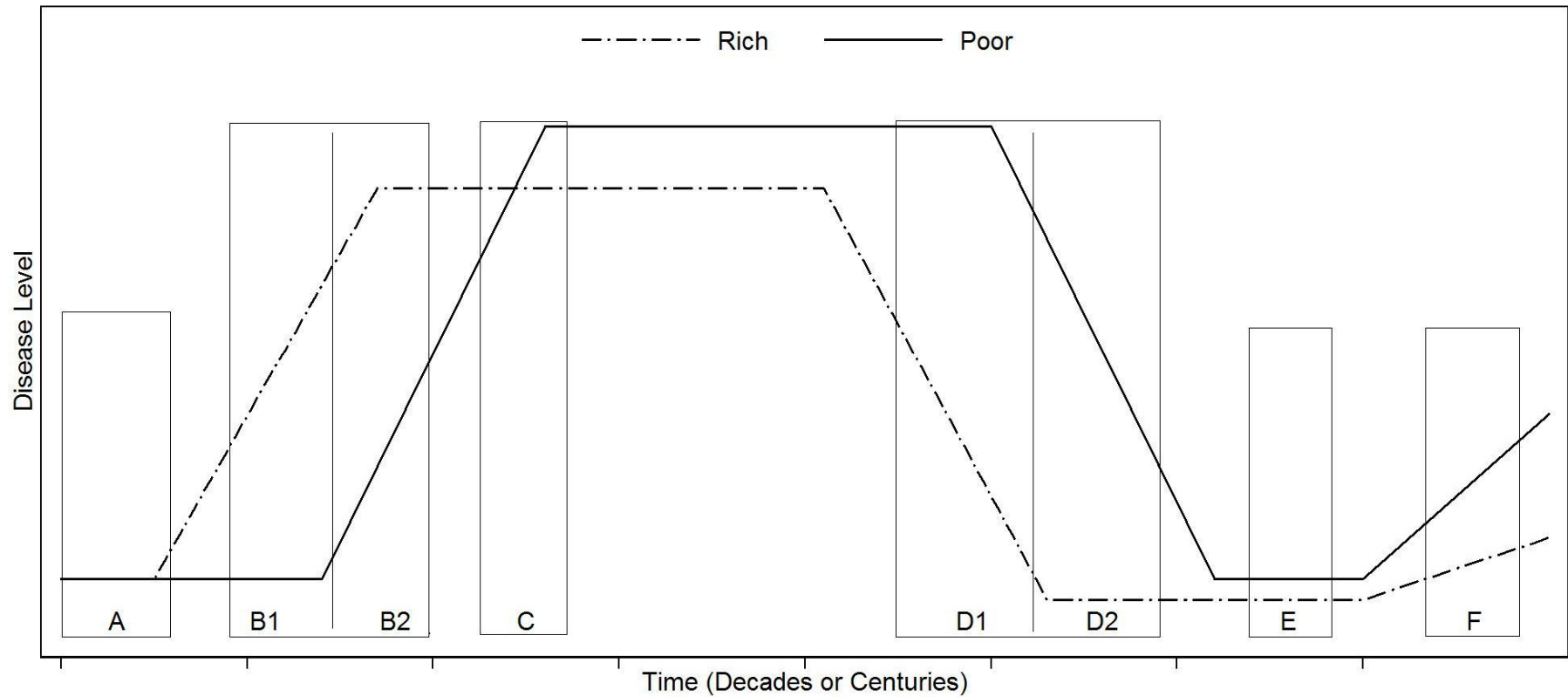


Figure 5 - Stages of inequality between the rich and the poor according to disease levels and time.

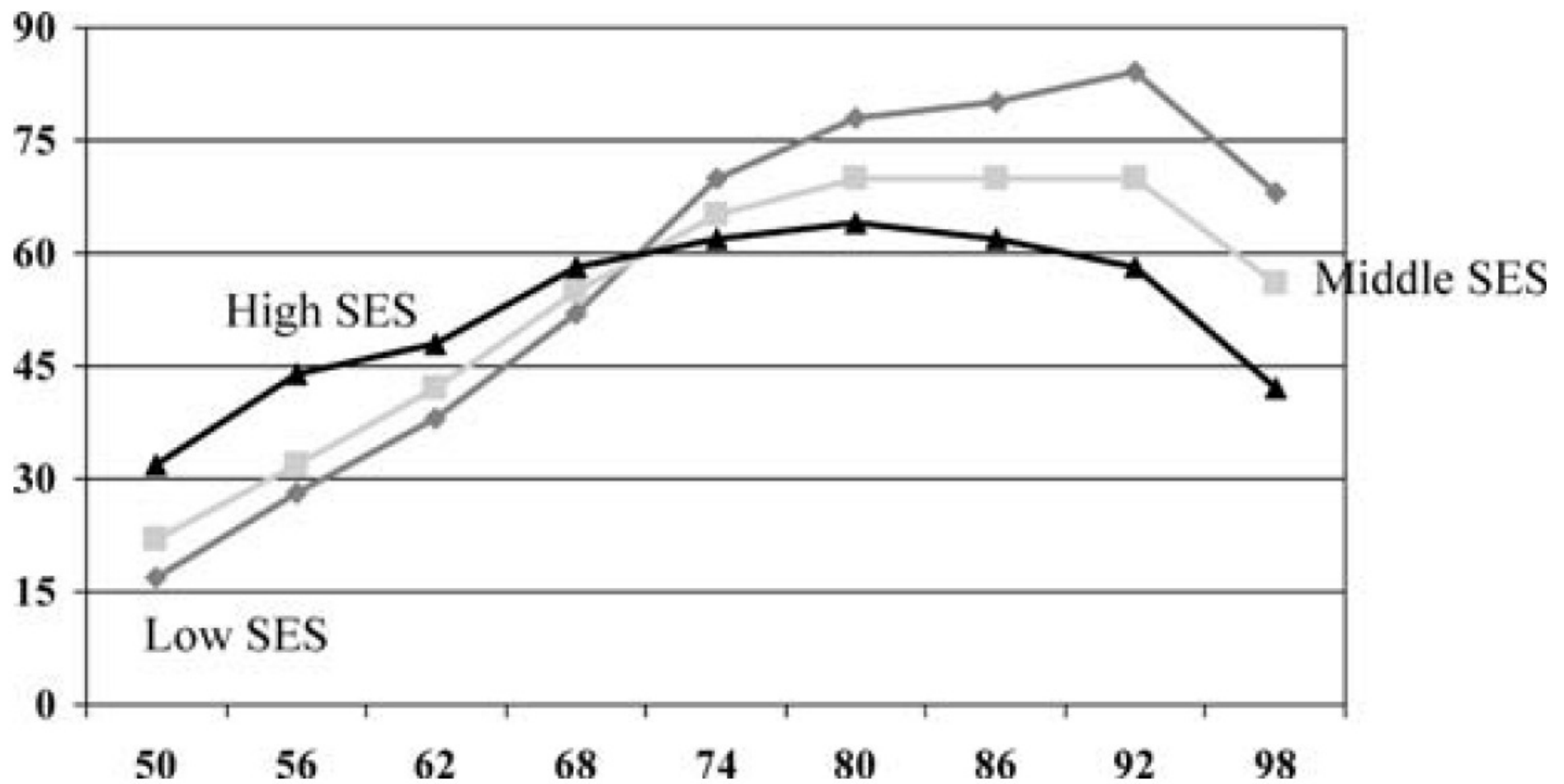


Figure 4 - Age adjusted lung cancer mortality rates per 100,000 (men aged 24-65 years), 1950 to 1998, by socioeconomic status of county of residence in USA.²⁷