

The Importance of Region of Birth & Early Life vs. Current Residence to Health and Mortality¹

Scott M. Lynch, Princeton University
J. Scott Brown, Miami University
Miles G. Taylor, Florida State University

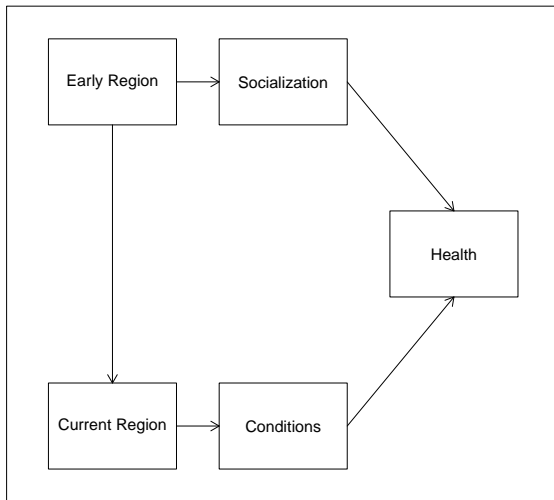
REVES 2013

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Introduction

- ▶ Everyone includes region as a control variable
 - ▶ Usually an indicator for “South”
 - ▶ Usually no interpretation/consideration of meaning
- ▶ But, should consider meaning of region
 - ▶ Why should region impact health?
 - ▶ Does it matter (more) where one lives now or earlier in life?
- ▶ Can give us interesting leverage
 - ▶ Not much direct literature (public health/single disease)
 - ▶ Early life effects on later life health
 - ▶ Neighborhood effects literature (region better measure than neighborhood in many cases)

Conceptual Schema for Influence of Region



Data

- ▶ HRS 1998-2008
- ▶ Only folks age 50+ and interviewed in 1998
- ▶ Only folks born and raised in the US
- ▶ Only cases with complete data (n=15,150/ 15% missing)
- ▶ Key variables:
 - ▶ Birth region (9 category)
 - ▶ Region at beginning of adolescence (10-12)
 - ▶ Region at each wave of study
 - ▶ Sex (male/female); race (nonwhite/white)
 - ▶ SRH (E, VG, G vs. F, P) in '98-'08

Methods

- ▶ Descriptive: Do people move?
- ▶ OLS regression of '98 SRH on Region (3 models)
- ▶ Bayesian multistate life tables for HLE/ULE/TLE/PLE
 - ▶ bivariate hazard model predicting death and health w/ covariates
 - ▶ simulate parameters using Gibbs sampling
 - ▶ generate transition probability matrices for each Gibbs sample applied to covariate profile
 - ▶ generate life tables from transition matrices
 - ▶ produce interval estimates via sorting lo-to-hi and take empirical 2.5% and 97.5% values
 - ▶ able to control on sex and race while examining regional differences

Selected Descriptive Statistics

Variable	Mean(sd)[percent]		
Age	67.2(10.5)		
Male	43%		
Nonwhite	15%		
Married in '98	67%		
School Years	12.1(3.2)		
<u>Self-Rated Health in '98</u>	<u>Mean(s.e.)</u>		
	Birth	Adolescence	Region in '98
Northeast	2.21(.02)	2.20(.02)	2.11(.02)
Midwest	2.21(.02)	2.19(.02)	2.13(.02)
South	1.84(.02)	1.84(.02)	1.96(.02)
West	2.25(.03)	2.24(.03)	2.21(.02)

Birth to Adolescence Regional Transitions

Birth ↓	Adolescence										Total
	Northeast		Midwest		South			West			
	NE	NA	ENC	WNC	SA	ESC	WSC	M	P		
NE	679 (91%)	24 (3%)	13 (2%)	2 (0%)	10 (1%)	1 (0%)	4 (1%)	1 (0%)	13 (2%)	747	
NA	36 (1%)	2216 (92%)	44 (2%)	6 (0%)	76 (3%)	3 (0%)	4 (0%)	3 (0%)	19 (1%)	2407	
NoE.	2944(94%)		65(2%)		98(3%)			36(1%)			
ENC	4 (0%)	29 (1%)	2700 (92%)	51 (2%)	43 (1%)	26 (1%)	18 (1%)	13 (0%)	46 (2%)	2930	
WNC	6 (0%)	8 (0%)	69 (4%)	1537 (85%)	11 (1%)	8 (0%)	18 (1%)	47 (3%)	100 (6%)	1804	
MidW.	47(1%)		4357(92%)		124(3%)			206(4%)			
SA	10 (0%)	82 (3%)	64 (2%)	9 (0%)	2457 (92%)	27 (1%)	10 (0%)	1 (0%)	24 (1%)	2684	
ESC	5 (0%)	11 (1%)	108 (8%)	18 (1%)	66 (5%)	1178 (82%)	30 (2%)	1 (0%)	17 (1%)	1434	
WSC	1 (0%)	3 (0%)	25 (1%)	27 (2%)	15 (1%)	23 (1%)	1582 (89%)	26 (1%)	76 (4%)	1778	
South	112(2%)		251(4%)		5388(91%)			145(2%)			
M	5 (1%)	7 (1%)	20 (4%)	19 (3%)	2 (0%)	0 (0%)	16 (0%)	382 (70%)	92 (17%)	543	
P	1 (0%)	4 (0%)	10 (1%)	19 (2%)	6 (1%)	1 (0%)	14 (2%)	22 (3%)	746 (91%)	823	
West	17(1%)		68(5%)		39(3%)			1242(91%)			
	747 (5%)	2384 (16%)	3053 (20%)	1688 (11%)	2686 (18%)	1267 (8%)	1696 (11%)	496 (3%)	1133 (7%)	15150	

Summary

- ▶ 89% do not move between 9-category regions
- ▶ 92% do not move between 4-category regions
- ▶ No need to differentiate Birth from Adolescent region

Adolescence to 1998 Regional Transitions

Adolescence ↓	Region in 1998									
	Northeast		Midwest		South			West		Total
	NE	NA	ENC	WNC	SA	ESC	WSC	M	P	
NE	494 (66%)	24 (3%)	17 (2%)	6 (1%)	130 (17%)	5 (1%)	14 (2%)	15 (2%)	42 (6%)	747
NA	49 (2%)	1424 (60%)	94 (4%)	20 (1%)	611 (26%)	15 (1%)	22 (1%)	42 (2%)	107 (5%)	2384
NoE.	1991(64%)		137(4%)		797(26%)			206(7%)		
ENC	13 (0%)	38 (1%)	2129 (70%)	93 (3%)	395 (13%)	45 (2%)	59 (2%)	127 (4%)	154 (5%)	3053
WNC	4 (0%)	14 (1%)	67 (4%)	1186 (70%)	56 (3%)	18 (1%)	47 (3%)	122 (7%)	174 (10%)	1688
MidW.	69(2%)		3475(73%)		620(13%)			577(12%)		
SA	28 (1%)	155 (6%)	89 (3%)	10 (0%)	2269 (85%)	71 (3%)	23 (1%)	13 (1%)	28 (1%)	2686
ESC	5 (0%)	17 (1%)	200 (16%)	21 (2%)	206 (16%)	731 (58%)	40 (3%)	16 (1%)	31 (2%)	1267
WSC	4 (0%)	12 (1%)	67 (4%)	54 (3%)	63 (4%)	16 (1%)	1315 (78%)	38 (2%)	127 (8%)	1696
South	221(4%)		441(8%)		4734(84%)			253(4%)		
M	0 (0%)	2 (0%)	4 (1%)	14 (3%)	13 (3%)	2 (0%)	20 (4%)	336 (68%)	105 (21%)	496
P	7 (1%)	5 (0%)	12 (1%)	19 (2%)	47 (4%)	5 (0%)	24 (2%)	47 (4%)	967 (85%)	1133
West	14(1%)		49(3%)		111(7%)			1455(89%)		
	604 (4%)	1691 (11%)	2679 (18%)	1423 (9%)	3790 (25%)	908 (6%)	1564 (10%)	756 (5%)	1735 (12%)	15150

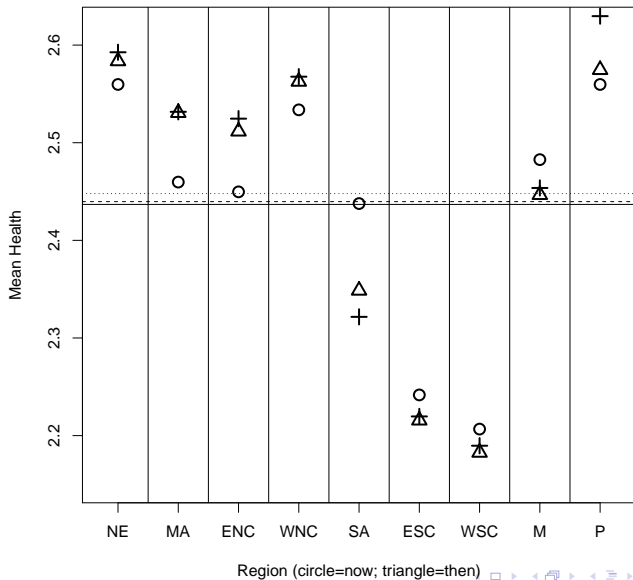
Summary

- ▶ 72% do not move between 9-category regions
- ▶ 77% do not move between 4-category regions
- ▶ Substantial movement between adolescence and '98

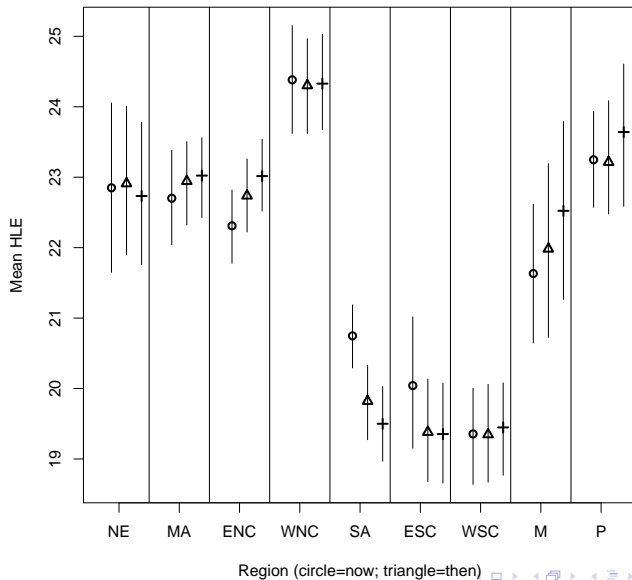
Most Common Regional Patterns

Life Course Regional Pattern	# of Cases	% of Sample	Cumulative %
Life-long Southerner ($\bar{3}$)	4493 (36% died)	29.7%	29.7%
Life-long Midwesterner ($\bar{2}$)	3122 (33% died)	20.6%	50.3%
Life-long Northeasterner ($\bar{1}$)	1796 (34% died)	11.9%	62.1%
Life-long Westerner ($\bar{4}$)	1125 (29% died)	7.4%	69.5%
11333333	420	2.8%	72.3%
22333333	319	2.1%	74.4%
22444444	307	2.0%	76.4%
33222222	225	1.5%	77.9%
33444444	135	0.9%	78.8%
24444444	119	0.8%	79.6%
32222222	115	0.8%	80.4%
11444444	101	0.7%	81.0%

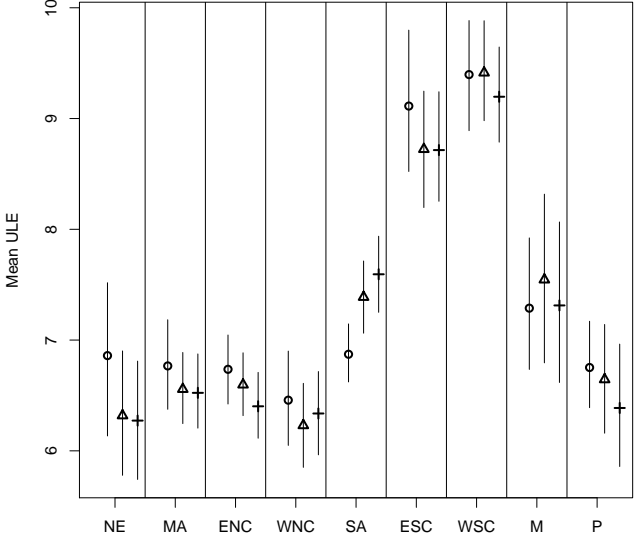
Results of OLS Regressions of 1998 SRH on Region



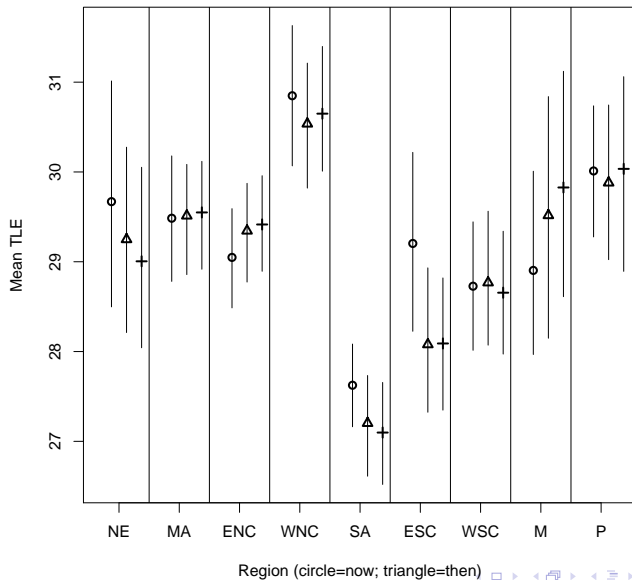
HLE at 50 by Teen and Current Region



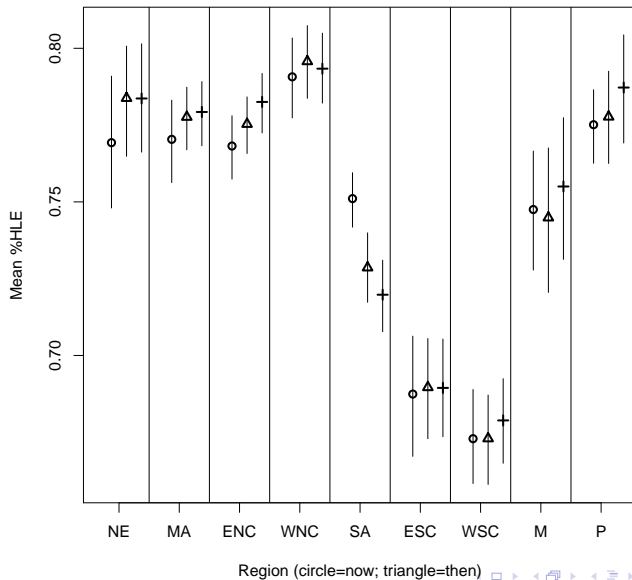
ULE at 50 by Teen and Current Region



TLE at 50 by Teen and Current Region



PLE at 50 by Teen and Current Region



Summary of Life Table Results

- ▶ General pattern is that effect of region is “diluted” as we use more recent measures of region (probably selective migration)
- ▶ Of 144 possible regional comparisons ($4 \times C(9, 2)$), 69/144 sig. if use current, 78/144 sig. if use birth or adolescent.
- ▶ *Within* region: probability of different estimates of HLE, ULE, TLE, PLE under different region measures.

Region	HLE 5%(10%)	ULE 5%(10%)	TLE 5%(10%)	PLE 5%(10%)
NE	25(2)	72(47)	24(1)	8(0)
MA	5(0)	42(11)	1(0)	0(0)
ENC	15(0)	53(12)	1(0)	0(0)
WNC	4(0)	38(9)	2(0)	0(0)
SA	72(6)	91(43)	4(0)	31(0)
ESC	38(5)	52(20)	36(1)	3(0)
WSC	8(0)	32(3)	2(0)	1(0)
M	41(6)	51(19)	27(1)	4(0)
P	16(0)	58(29)	5(0)	1(0)

Conclusions

- ▶ Choice of region measure matters
- ▶ Current region effects weaker than early life region effects: supports socialization argument—no matter where you go, there you are
- ▶ Evidence suggests southerners are worse off than usually thought: healthy in-migration makes south look better
- ▶ Future work: focus on movers only
 - ▶ most do not move, making current region a proxy for early region
 - ▶ consider endogeneity of health and movement: current region captures factors relevant to health; early life region “less endogenous.”