

Immigration and low birthweight in the US: The role of time and timing

CPRC Mini-Conference on
Immigration/Migration Research at Columbia
February 19, 2010

Lisa M. Bates
Department of Epidemiology
Mailman School of Public Health

Julien Teitler
School of Social Work

Overview of literature focus and findings

- Foreign nativity protective
- Protective effect not sustained over time (duration) in the U.S.

'Duration' in the U.S. (time)

- Acculturation/negative assimilation
- Cumulative exposure to 'toxic' US environment
- Return migration
- Cohort/period effects
- Changing expectations/standards (SRH)
- Increasing access to health care (diagnoses)

Age at arrival (timing)

- Life course approach
- “Sensitive periods”

“Sensitive periods”

- Health behaviors

- **Smoking** (Elders et al, 1994; Kandel et al, 1998; Trinidad et al, 2004)
- **Obesity** (Serdula et al, 1993; Gillman, 2004; Lawlor & Chaturvedi, 2006)

Are immigrants exempt?

- Comparable age periods of initiation in sending countries (World Bank, 1999)
- NHSDA (1999-2002)
 - Median age of smoking initiation among FB:
18

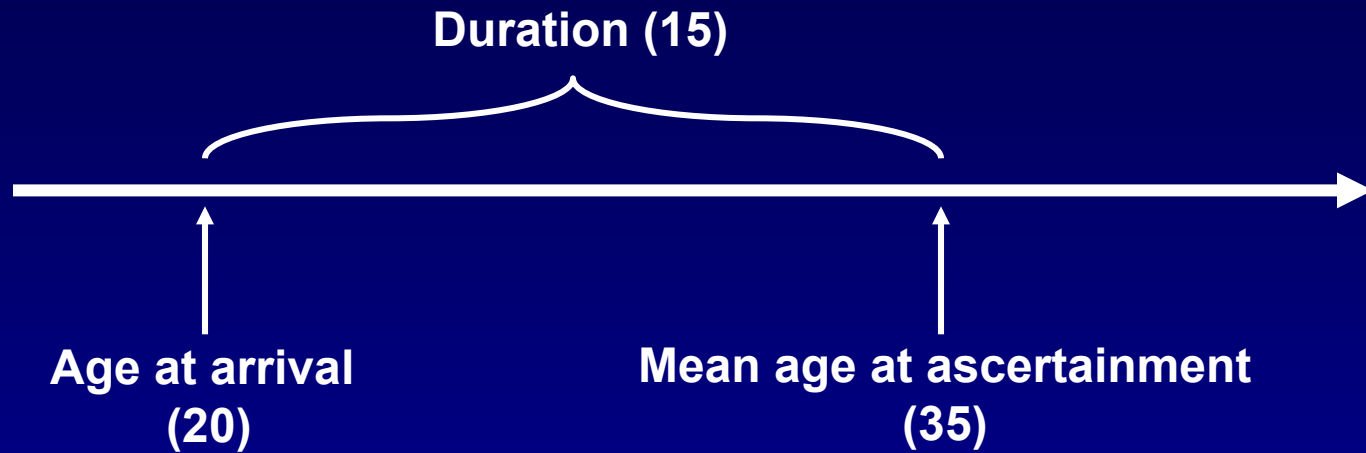
“Sensitive periods”

- Health behaviors
 - **Smoking** (Elders et al, 1994; Kandel et al, 1998; Trinidad et al, 2004)
 - **Obesity** (Serdula et al, 1993; Gillman, 2004; Lawlor & Chaturvedi, 2006)
- Acculturation/Assimilation
 - **Language acquisition** (Bleakley & Chin, 2003)
 - **Identity formation** (Waters, 1996; Herman, 2004)

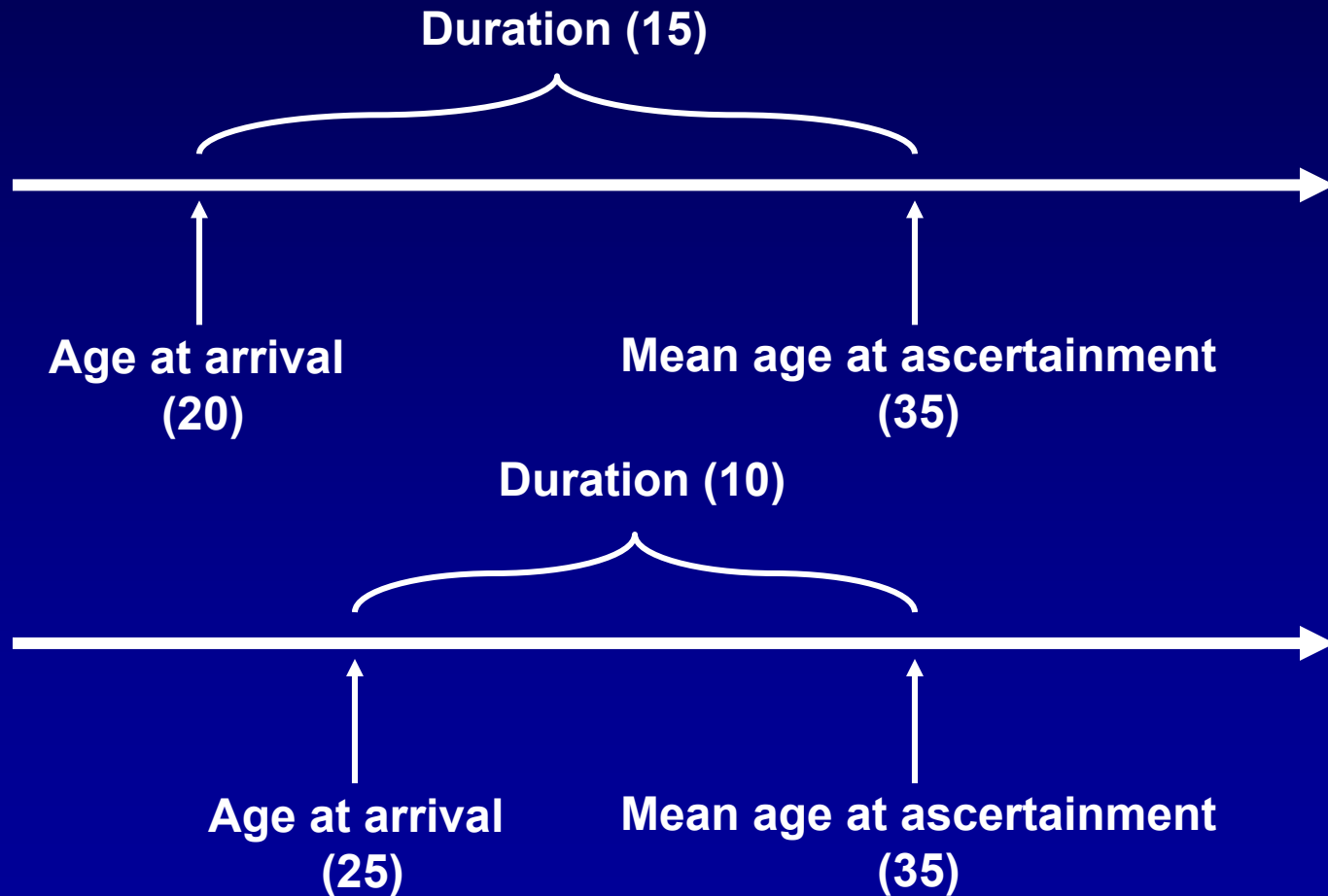
Recent studies of age at arrival

- Mental health among Black Caribbean immigrants (Williams et al, 2007)
- Mental health among English-speaking Mexican Immigrants (Breslau et al, 2007)
- Psychiatric disorders among Latino immigrants (Alegria et al, 2007)
- Prevalence of obesity among immigrant subgroups (Kaushal, 2008)
- Differences in self-reported experiences of racism among foreign-born Black women (Parker Dominguez et al 2009)

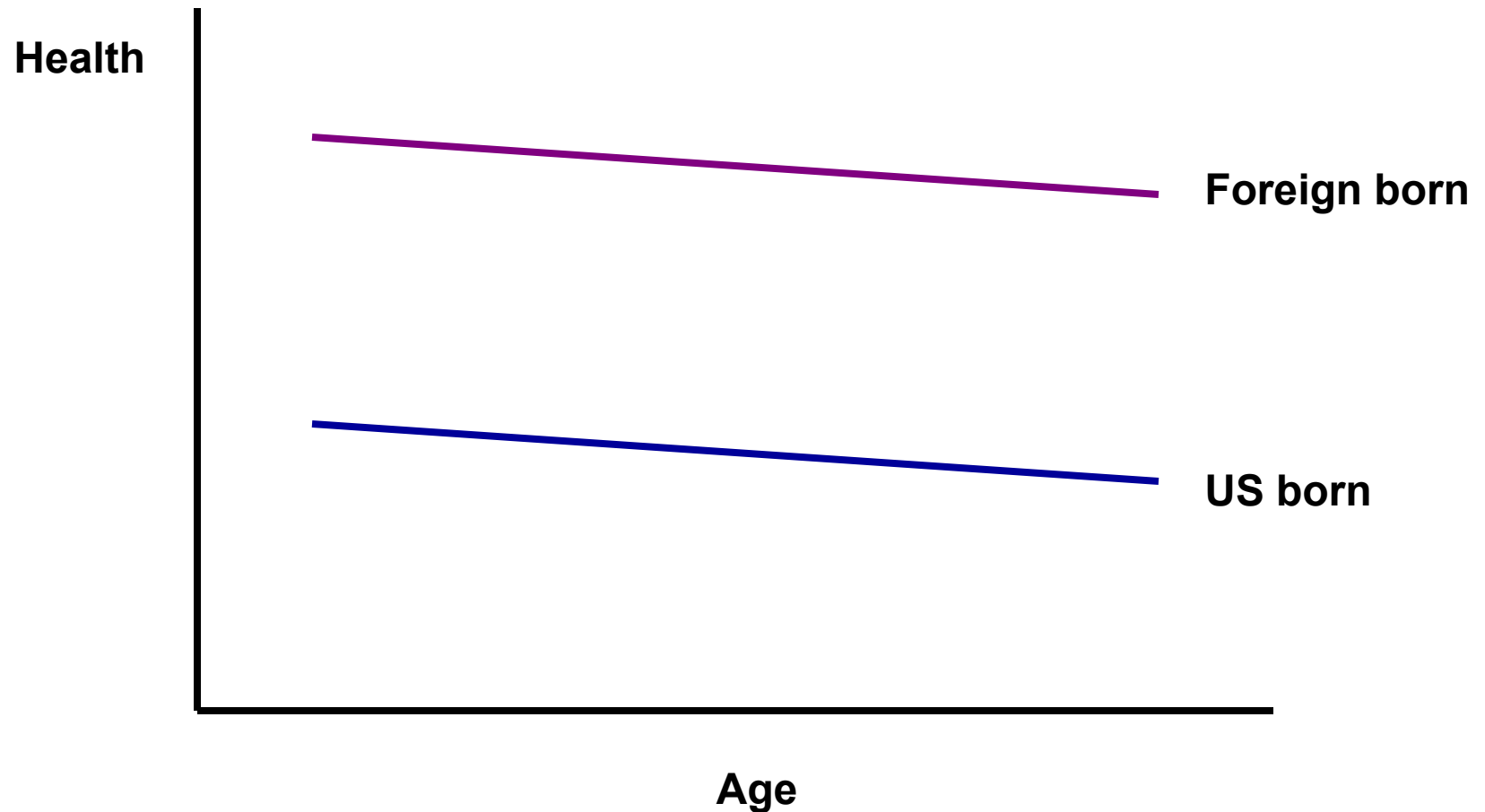
Cross-sectional, age restricted data



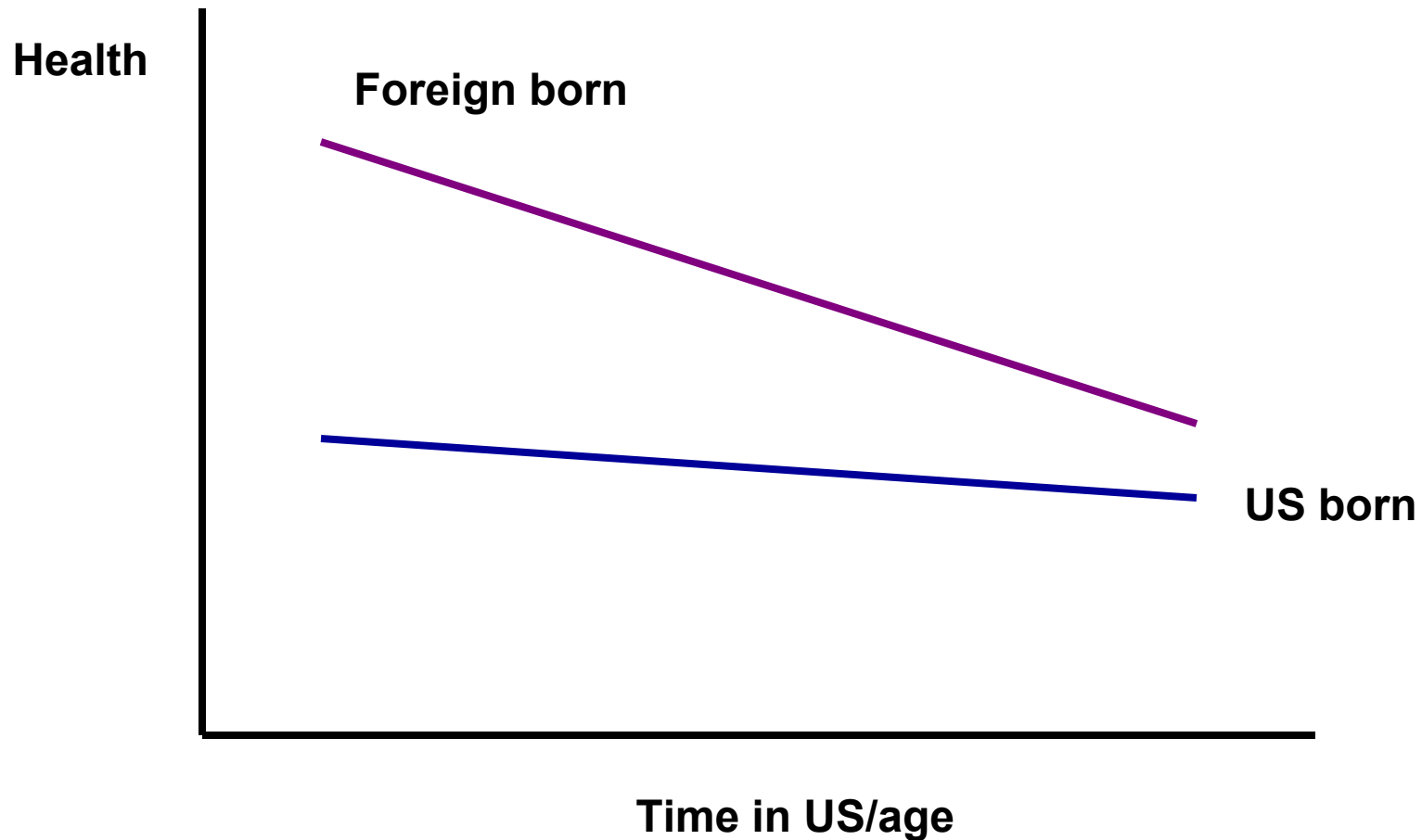
Cross-sectional, age restricted data



Selection only



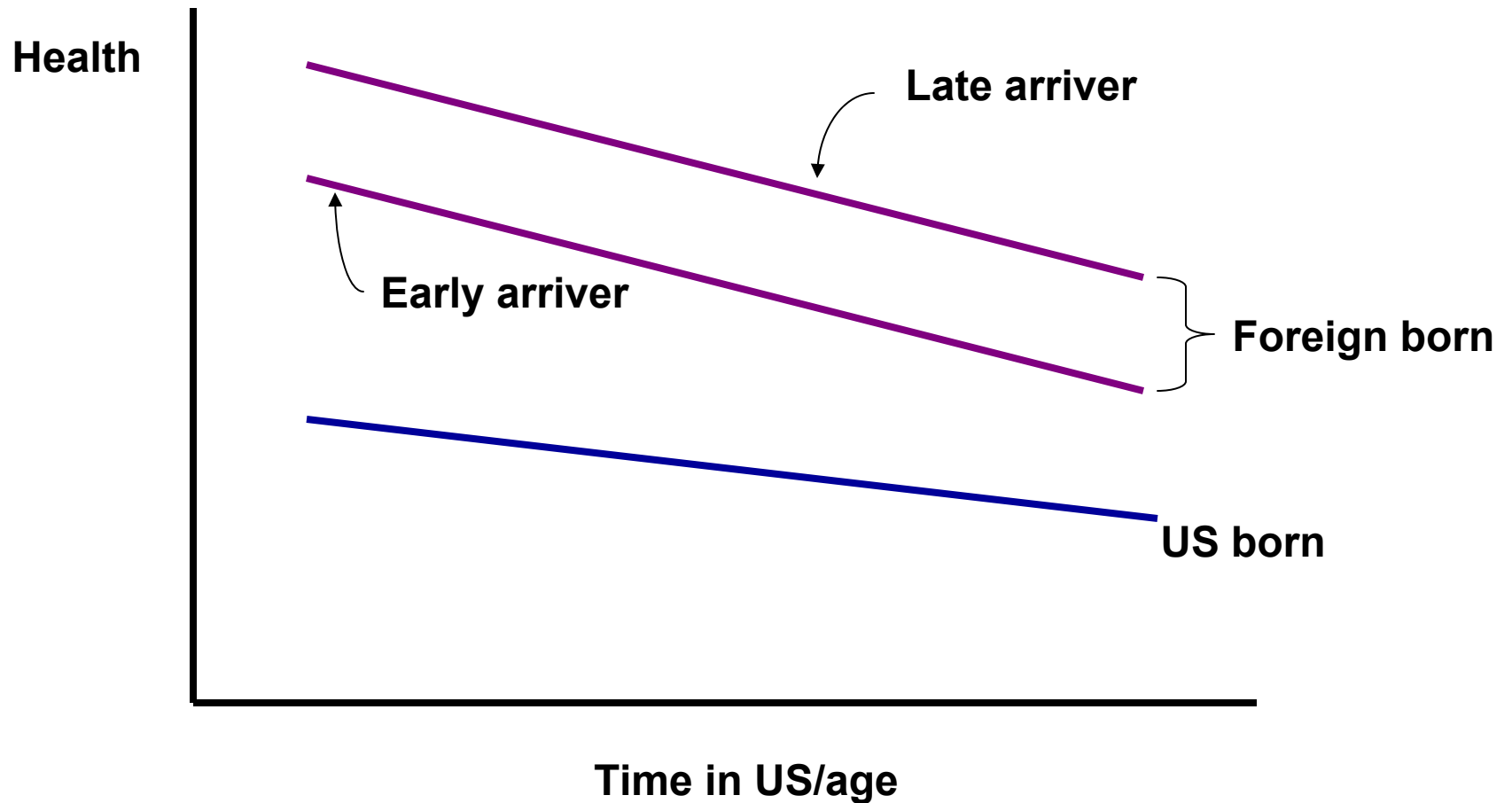
Selection + Duration



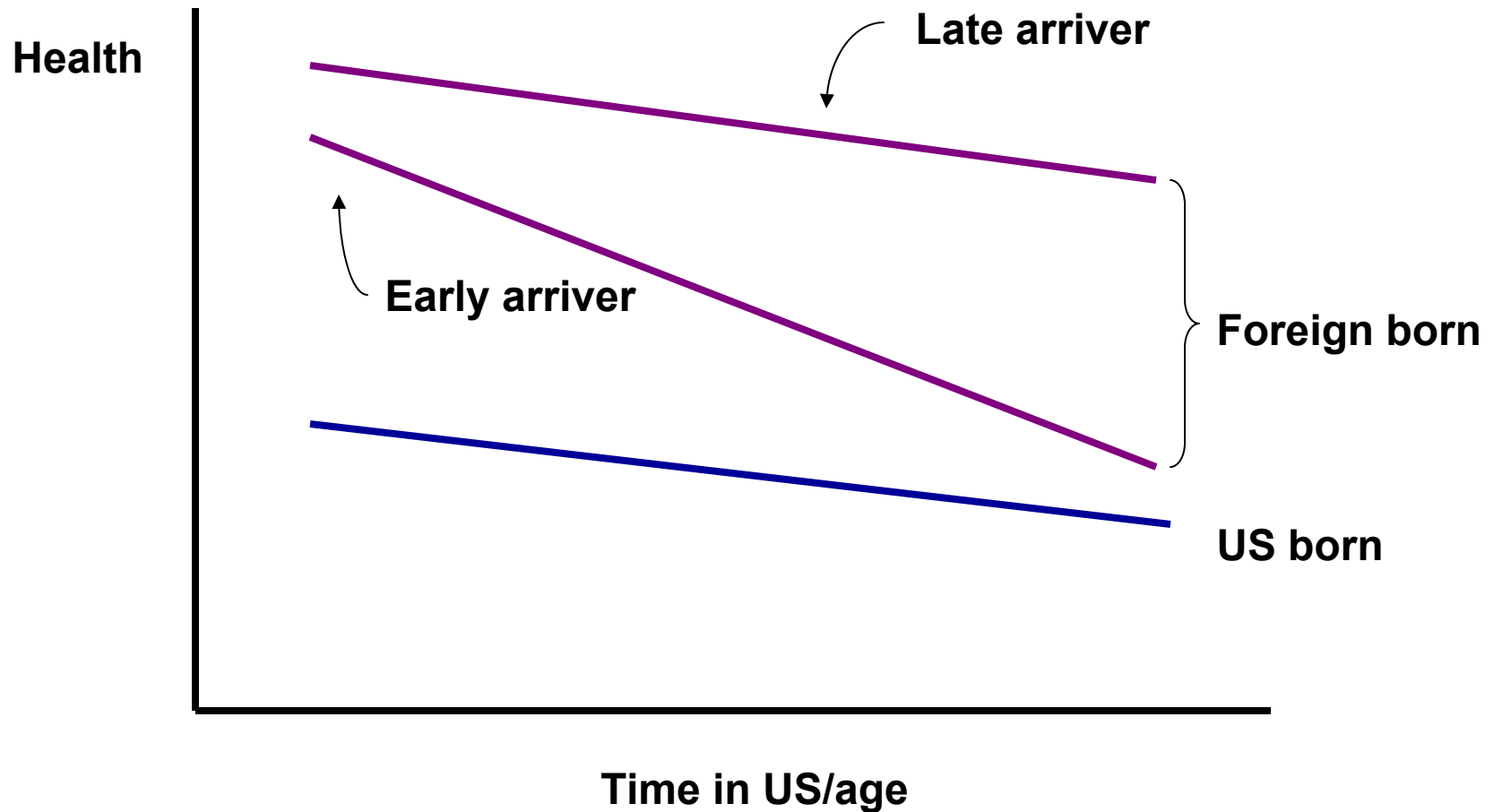
Selection + Age at arrival



Selection/AAA/duration



Selection/AAA/duration



Mechanisms of health deterioration

- Observed effects of *time* in the US (duration) → “weathering”
- Observed effects of *timing* in the US (age at arrival) → “acculturation”

Low birthweight

- Nativity/ethnicity effects – “paradoxes”
- Very limited examination of association with duration/age at arrival in US
- Behavioral risk factors (e.g., smoking, nutrition)

Data source

- Early Childhood Longitudinal Study-Birth Cohort (ECLS-B)

N = 7,512

Foreign Born: 20.1%

Low birthweight (<2500 grams): 5.9%

Sample characteristics

	<u>Mean (SD)/%</u>
Maternal age (14-50)	27.3 (6.3)
Foreign born	21.0
Years of residence	
0-4	35.5
5-9	23.9
10-14	18.0
15+	22.7
Age at arrival	
0-5	10.0
5-12	11.1
13-17	23.0
18-25	34.8
26+	21.2

Sample characteristics

	<u>%</u>
White	58.2
Black	14.1
Asian	3.4
Hispanic	22.5
Other	1.8
≤High School	48.9
< \$25,000	34.9
Married	67.4
First pregnancy	40.6
Smoked during pregnancy	12.8

Effect of foreign nativity by race

	<u>Adjusted ORs</u>	
White	1.01	
Black	0.68**	
Asian	1.65**	
Hispanic	0.86*	

Duration/AAA → LBW

	OR (95% CI)	OR (95% CI)
US born (ref)	1.00	1.00
Duration		
0-4	0.56 (0.36, 0.87) **	
5-9	0.65 (0.42, 0.99) *	
10-14	1.17 (0.72, 1.90)	
15+	1.10 (0.70, 1.72)	
Age at arrival		
0-5		1.25 (0.60, 2.60)
6-12		1.07 (0.54, 2.11)
13-17		0.77 (0.42, 0.88) **
18-25		0.78 (0.52, 0.86) **
26+		0.53 (0.30, 0.93) *

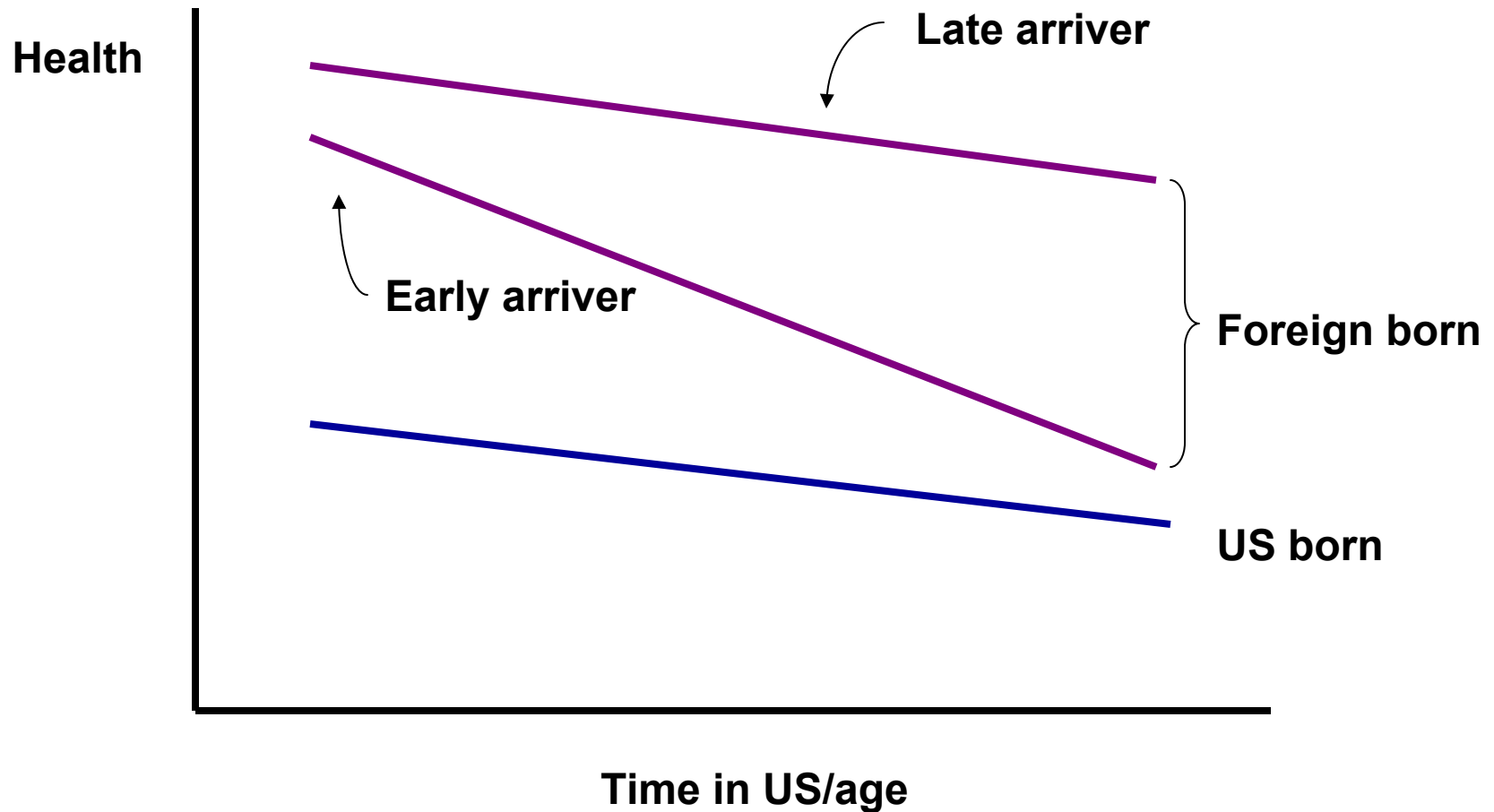
Restricted to Blacks and Hispanics (N=2690)

Duration/AAA → LBW

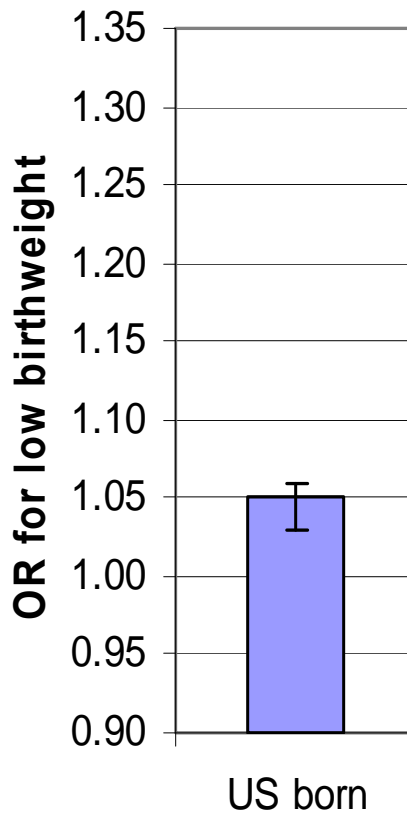
	OR (95% CI)	Maternal age	
		Mean	Range
Early arrival-short duration	0.98 (0.59, 2.08)	20.2	15-26
Early arrival-long duration	1.11 (0.41, 2.34)	26.5	16-34
Late arrival-short duration	0.72 (0.50, 1.05)	27.1	15-34
Late arrival-long duration	0.27 (0.08, 0.97)	31.7	28-34

Early arrival = < age 13; short duration = < 15 years

Selection/AAA/duration

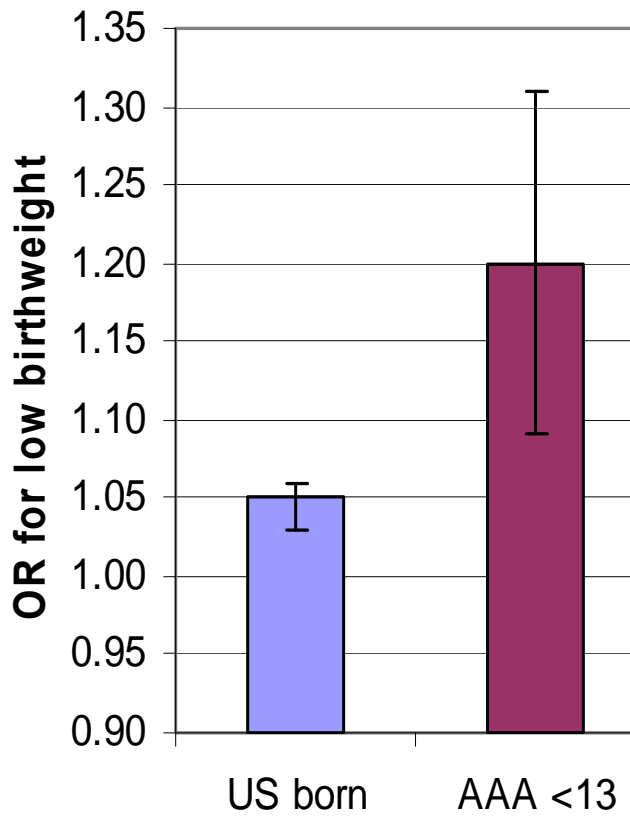


Maternal age → LBW*



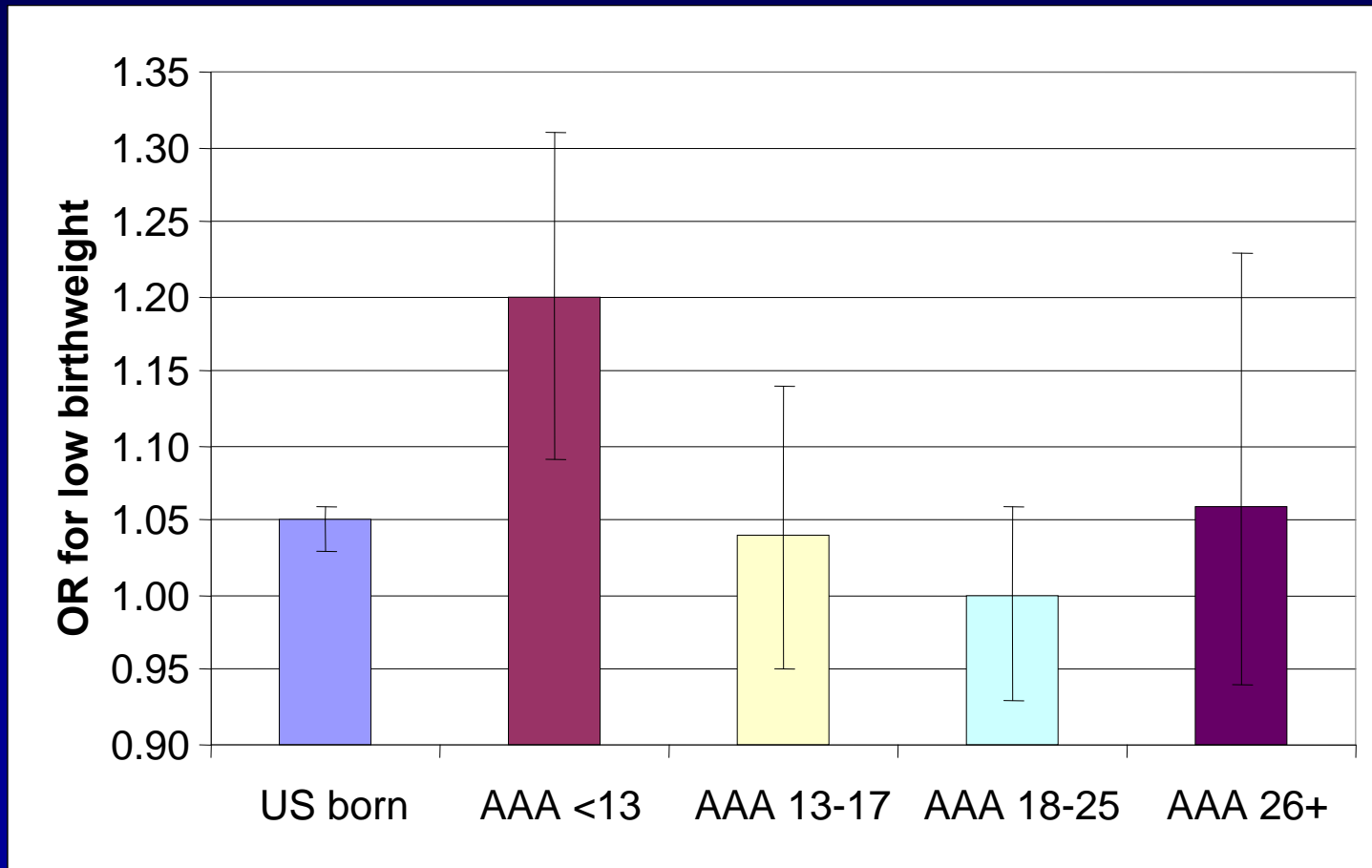
*Restricted to women age 20-34 at birth

Maternal age → LBW*



*Restricted to women age 20-34 at birth

Maternal age → LBW*



*Restricted to women age 20-34 at birth

Duration/AAA → Smoking

	<u>OR (95% CI)</u>	<u>Maternal age</u>	
		Mean	Range
Early arrival-short duration	0.35 (0.14, 0.81)	20.4	15-26
Early arrival-long duration	0.44 (0.26, 0.74)	27.7	16-45
Late arrival-short duration	0.07 (0.04, 0.11)	28.9	16-48
Late arrival-long duration	0.04 (0.01, 0.30)	35.4	28-46

Early arrival = < age 13; short duration = < 15 years

Limitations

- Sample sizes
- Subgroup aggregation
- Interpretability

Conclusions

- (Early) age at arrival (*timing*) matters
- Effects of *time* conditional?
- Multiple pathways likely
- Implications for data interpretation and intervention