

Migration and health

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April 9, 2018
Migration (SOCL 647)



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Outline

- Hispanic paradox
 - Markides, Eschbach 2005
- Selective migration and Hispanic paradox
 - Bostean 2013
- Review of Hispanic paradox
 - Teruya, Bazargan-Hejazi 2013
- Demographic and epidemiologic approaches
 - Palloni, Morenoff 2001
- Obesity among young children of immigrants (discussion)
 - Baker, Rendall, Weden 2015



Overview

- Migration may help reduce socioeconomic inequalities in population health (Markides, Coreil 1986; Markides, Eschbach 2005; Teruya, Bazargan-Hejazi 2013)
- There is evidence of migrants with healthy profiles even when they have low socioeconomic status
- However, acculturation appears to reduce immigrant health advantages
- Children of immigrants have emerged as uniquely susceptible to obesity, which is one of the most important population health issues currently facing the U.S.
(Baker, Rendall, Weden 2015; Hamilton, Teitler, Reichman 2011)



Hispanic paradox

- Hispanic paradox: Hispanics have favorable health and mortality profiles relative to non-Hispanic White
 - Advantages have been mostly confined to mortality
 - Advantage appears to be greater in old age
- This is a paradox because
 - Most Hispanics in the U.S. are socioeconomically disadvantaged, compared to non-Hispanic Whites
 - Literature shows consistent association between low socioeconomic status and poor health outcomes



1st study: epidemiologic paradox

- In the Southwestern United States (Markides, Coreil 1986)
 - Health status of Hispanics was more comparable with health status of non-Hispanic Whites
 - Than with health status of African Americans
 - Despite the fact that socioeconomically, Hispanics were more similar to African Americans than non-Hispanic Whites
- Data on
 - Infant mortality, overall life expectancy
 - Cardiovascular diseases, certain major cancers
 - Functional health
- Possible explanations
 - Certain cultural practices
 - Strong family supports
 - Selection: Immigrants have disproportionate good health
 - Salmon bias: Less healthy Hispanics return home where they die

– Data

Vital statistics (registered deaths) and 2000 Census population counts

– Problems with data

Hispanic identification on the death certificate is often made by a funeral director or other individual who may not know the decedent well

– Older ages

Black-White mortality crossover phenomenon

Table 1. Death Rates for African Americans, Non-Hispanic Whites, and Hispanics, United States, 2000, by Age and Sex (per 100,000)

	African American	Non-Hispanic White	Hispanic	Rate Ratio: Hispanic/Non-Hispanic White
Men				
Under 1 y	1,567.6	658.7	637.1	0.97
1–4 y	54.5	32.4	31.5	0.97
5–14 y	28.2	20.0	17.9	0.90
15–24 y	181.4	103.5	107.7	1.04
25–34 y	261.0	123.0	120.2	0.98
35–44 y	453.0	233.9	211.0	0.90
45–54 y	1,017.7	497.7	439.0	0.88
55–64 y	2,080.1	1,170.9	965.7	0.82
65–74 y	4,253.5	2,930.5	2,287.9	0.78
75–84 y	8,486.0	6,977.8	5,395.3	0.77
85 y and older	16,791.0	17,853.2	13,086.2	0.73
Age-adjusted rate	1,403.5	1,035.4	818.1	0.79
Women				
Under 1 y	1,279.8	530.9	553.6	1.04
1–4 y	45.3	24.4	27.5	1.13
5–14 y	20.0	13.0	13.4	1.03
15–24 y	58.3	42.6	31.7	0.74
25–34 y	121.8	56.8	43.4	0.76
35–44 y	271.9	128.1	100.5	0.78
45–54 y	588.3	285.0	223.8	0.79
55–64 y	1,227.2	742.1	548.4	0.74
65–74 y	2,689.6	1,891.0	1,423.2	0.75
75–84 y	5,696.5	4,819.3	3,624.5	0.75
85 y and older	13,941.3	14,971.7	11,202.8	0.75
Age-adjusted rate	927.6	721.5	546.0	0.76

Note: From National Center for Health Statistics (2003).

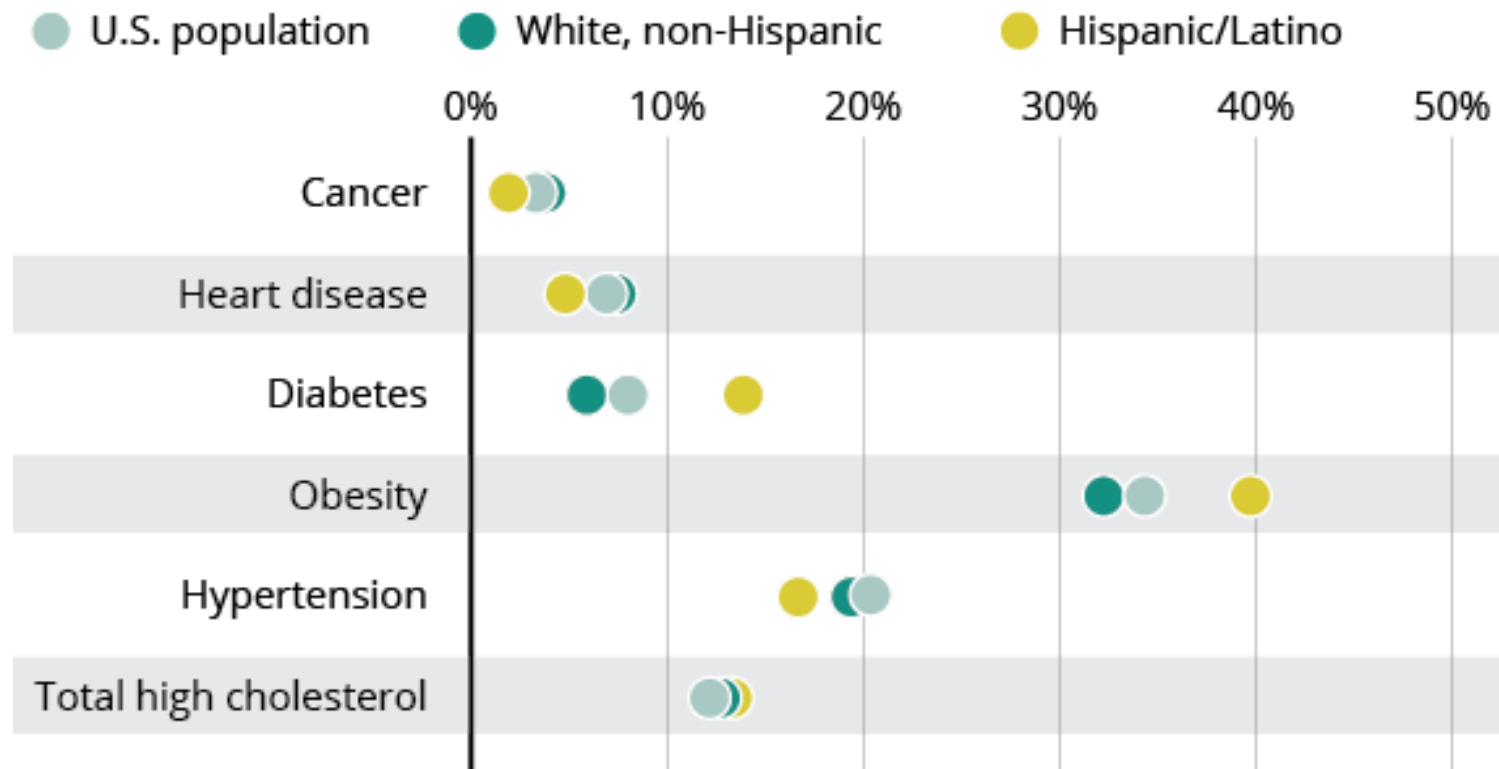


Databases and findings

- Vital statistics data
 - Greatest mortality advantage compared with non-Hispanic Whites for all Hispanics combined
 - The advantage is greatest among older people
- National Community Surveys & National Death Index
 - Narrowing of the advantage
 - Mexican origin mortality advantage can be attributed to selective return migration of less healthy immigrants to Mexico
 - Immigrant residential concentration & lower all-cause mortality. Selective immigration? Which are the cultural mechanisms?
- Medicare & Social Security Administration NUDIMENT file
 - Advantage in mortality among Hispanic elders
 - This advantage is considerably lower than is found using the vital statistics method

Latinos Are More Likely To Be Obese And Have Diabetes

Annualized, age-adjusted prevalence of selected diseases and risk factors among adults aged 18–64 years



Note: Persons of Hispanic/Latino ethnicity can be of any race or combination of races.

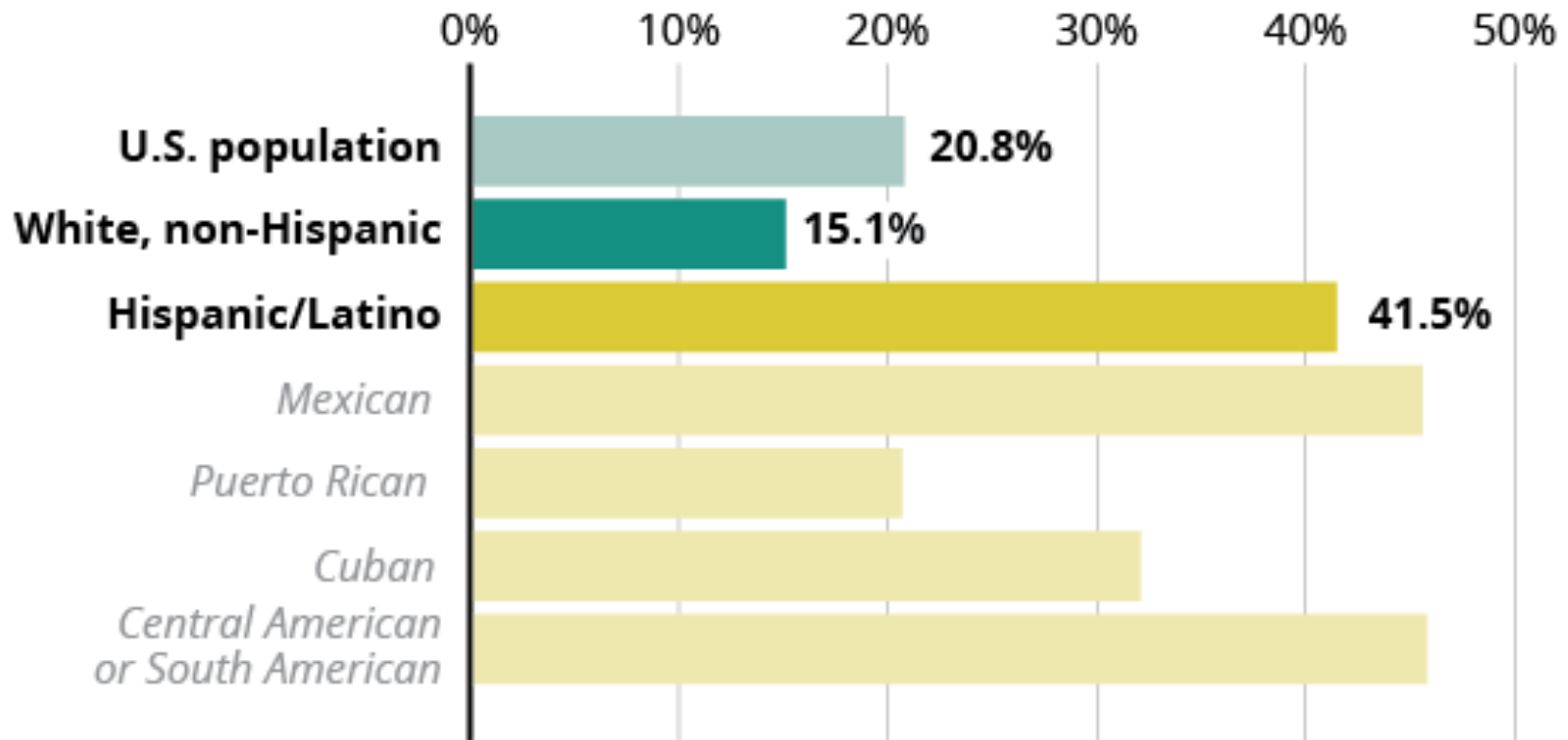
Source: CDC

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Latinos Are Less Likely To Have Health Insurance

Percent uninsured (18–64 yrs, 2011–2013)



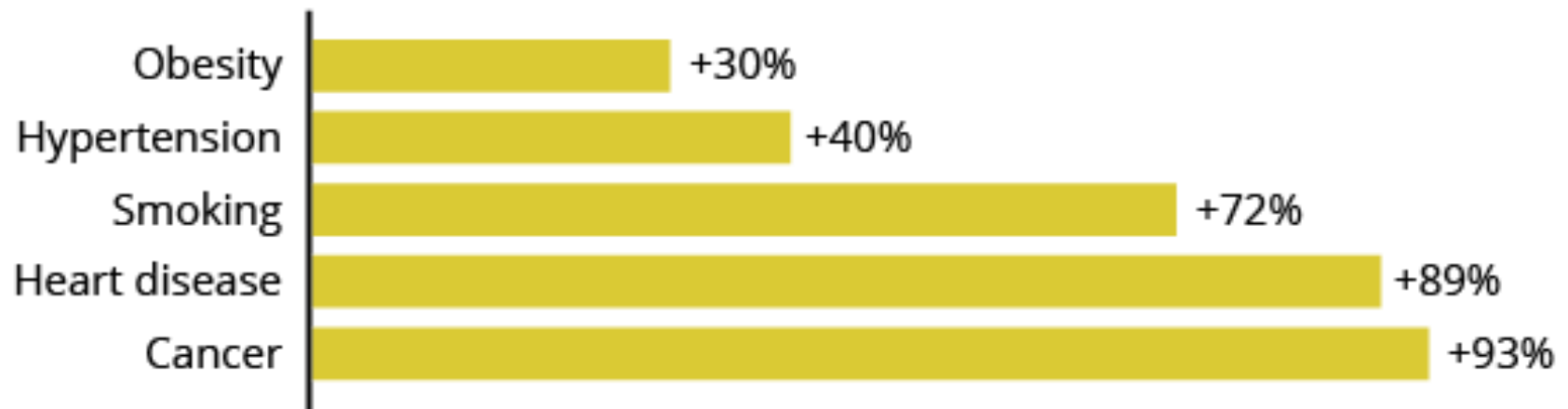
Note: Persons of Hispanic/Latino ethnicity can be of any race or combination of races.

Source: CDC

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Foreign-Born Latinos Are Healthier

Percent of increased prevalence of selected diseases and risk factors of U.S.-born Latinos compared to Latino immigrants



Note: Persons of Hispanic/Latino ethnicity can be of any race or combination of races.

Source: CDC

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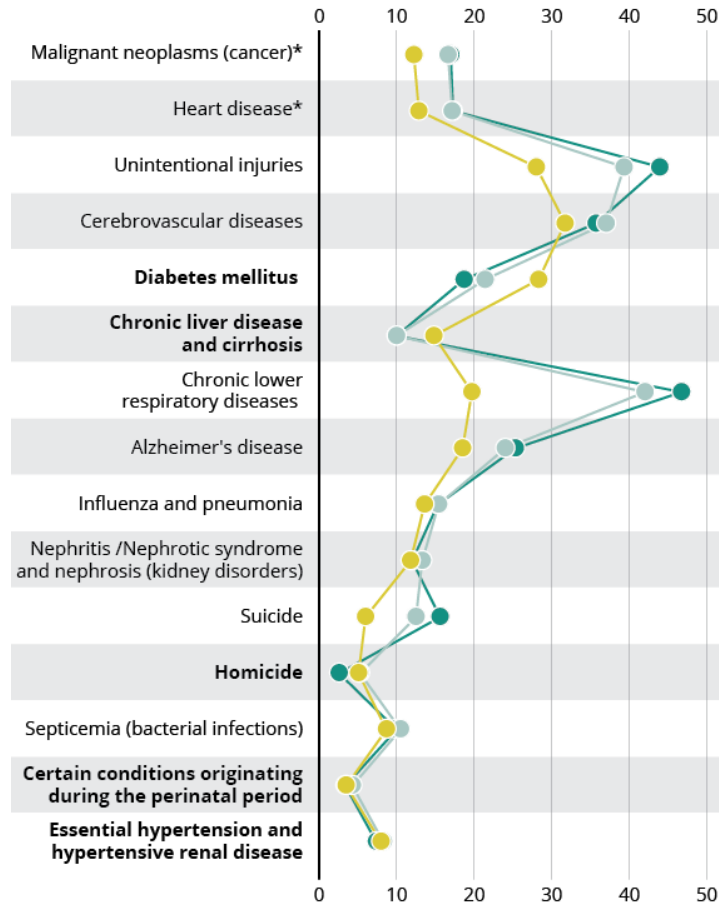


Latinos Have Lower Death Rates Than Whites For Most Leading Causes Of Death In The U.S.

Mean death rates per 100,000* for selected populations and the leading causes of death in the U.S., 2013

● U.S. population ● White, non-Hispanic ● Hispanic/Latino

Bold indicates Latinos have a higher death rate than whites



*Rates are per 10,000 for malignant neoplasms and heart disease.

Note: Persons of Hispanic/Latino ethnicity can be of any race or combination of races.

Source: CDC

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Source: Almendrala 2017.

Palloni and Arias (2004)

- These authors offer partial tests of four primary classes of explanations
 - **Poor data** quality with respect to ethnic classification, age report, or mortality ascertainment
 - Hypotheses that aspects of **Hispanic culture** (e.g., increased social support or superior health-related behaviors) reduce mortality risks
 - Health selective in-migration: **healthy migrant effect**
 - Health selective return migration: **salmon bias hypothesis**
- They find little support for
 - Data quality: irrelevant given data source (ethnic classification)
 - Cultural hypothesis: ethnic isolation does not improve health
 - Healthy migrant effect: does not attenuate with residence duration
- They find evidence that the salmon bias hypothesis may explain the Mexican American advantage

Main results

- Some studies have begun to question whether all Hispanic groups enjoy a mortality advantage
- However, majority of the evidence continues to support the Hispanic paradox
 - At least among people of Mexican origin
 - Especially in old age, at least among men
- Support for a selective return migration
 - Salmon bias effect
 - Need to explore existence of selective return migration effect
 - Need to expand data for various Hispanic origins

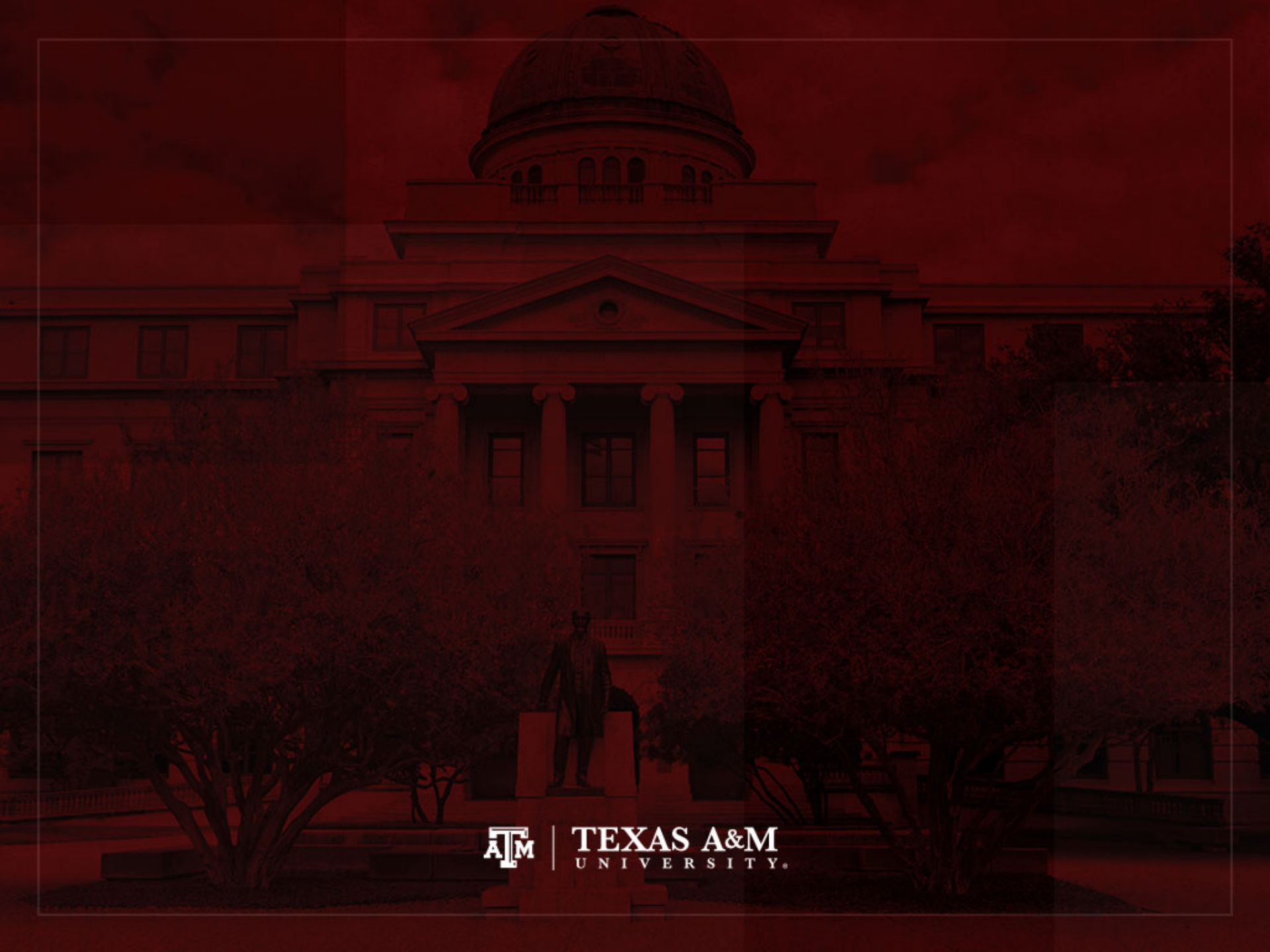


Need further explorations

- Studies of self-reports of health status do not support health advantage for Hispanics
 - Older Mexican Americans have been found to report their health as poorer than non-Hispanic Whites
- Older Mexican Americans might live longer than older non-Hispanic Whites
 - But do so with more disability and in poorer health
- High disability rates in older Mexican Americans is associated with
 - High rates of obesity and diabetes
 - Low rates of physical activity

Controversies

- Comparisons should not be between Hispanics and non-Hispanic Whites
- Hispanics should be compared to African Americans
 - Different mortality outcomes
 - Similar socioeconomic status
- If Hispanics are perceived as advantaged in health, they may receive diminished attention from policymakers
 - Hispanics experience disparities in health care access
 - They have higher rates of infectious diseases, diabetes, and disability
 - It is important to understand Hispanic paradox, as well as address health disparities concerning Hispanics



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Selective migration

- Cultural theories have been used to explain the Hispanic paradox
- This study addresses health selectivity in activity limitation, self-rated health, and chronic conditions
 - Data from Mexico and U.S.
 - Mexican immigrants, 18+
- The analysis tested healthy migrant and salmon bias effect
 - Comparison of health of Mexican immigrants in the U.S. to non-migrants in Mexico, and to return migrants in Mexico



Table 1 Socio-demographic characteristics of sample adults ages 18+, Mexico

	Unweighted percentage				Weighted percentage			
	Whole sample	Non-migrant Mexican	Return migrant Mexican	<i>p</i> value	Whole sample	Non-migrant Mexican	Return migrant Mexican	<i>p</i> value
Age ^a	40.2 (39.9–40.39)	40.2 (39.9–40.4)	39.5 (37.9–41.1)		39.6 (39.3–39.9)	39.6 (39.3–39.9)	39.6 (37.6–41.5)	
Female	55.9	56.5	27.6	***	56.7	57.2	27.1	***
Marital status				*				*
Married/cohab	67.6	67.5	73.9		67.0	66.9	74.8	
Never married	22.1	22.2	16.4		22.7	22.9	15.5	
Div./sep./widowed ^b	10.4	10.4	9.7		10.3	10.3	9.7	
Education								*
Never attended/ kindergarten	9.8	9.8	7.3		9.5	9.5	7.3	
Elementary/junior high school	68.0	67.9	73.9		64.7	64.5	75.0	
High school or equivalent	13.0	13.0	10.9		14.2	14.3	8.8	
College+	9.3	9.3	7.9		11.7	11.7	9.0	
Employment status (last week)				***				***
Working for pay	52.5	52.2	65.5		54.1	53.8	67.4	
n	17,523	17,193	330					

Source: Mexican Family Life Survey 2002

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ (two-tailed test), *p* value obtained from design-based *F* statistic from Pearson's χ^2 test

^a Mean (95 % confidence intervals in parentheses). ^b Divorced, separated or widowed

Table 2 Socio-demographic characteristics of sample adults ages 18+, U.S.

	Whole sample	Mexican immigrant, <5 years.	Mexican immigrant, 5+ years	U.S.-born Mexican	U.S.-born White	<i>p</i> value
<i>Unweighted percentage</i>						
Age ^a	44.8 (44.7–44.8)	29.2 (28.7–29.5)	39.6 (39.3–39.8)	38.5 (38.1–38.7)	47.1 (46.9–47.2)	***
Female	53.0	46.1	49.8	52.9	52.3	***
Marital status						***
Married/cohab	64.2	62.6	75.9	56.1	67.7	
Never married	19.2	31.9	13.6	28.5	15.6	
Div./sep./widowed ^b	16.9	5.5	10.5	15.3	16.7	
Education						***
Never attended/kindergarten	0.7	3.3	3.9	1.2	0.2	
Elementary/junior high school	7.9	43.8	42.8	9.5	3.1	
High school or equivalent	42.0	43.5	39.5	52.8	40.9	
College+	49.4	9.3	13.9	36.5	55.8	
Employment status (last week)						***
Working for pay	61.6	62.2	62.9	62.9	61.7	
Language of Interview						***
English only	87.8	13.8	32.1	80.6	97.4	
Spanish or combination	9.0	83.6	65.6	15.6	0.1	
n	197,158	2,486	11,080	11,082	118,094	
<i>Weighted percentage</i>						
Age ^a	45.1 (44.8–45.2)	29.2 (28.7–29.6)	39.3 (38.9–39.7)	38.6 (38.1–39.0)	46.7 (46.3–46.8)	***
Female	52.0	44.8	47.8	51.9	51.7	***
Marital status						***
Married/cohab	64.3	61.5	76.9	56.8	66.9	
Never married	19.4	32.9	13.8	27.8	16.7	
Div./sep./widowed ^b	16.3	5.8	10.2	14.7	16.3	
Education						***
Never attended/kinder	0.5	3.2	3.9	1.0	0.2	
Elementary/junior high school	5.8	42.9	41.1	8.7	3.1	
High school or equivalent	41.1	44.1	40.2	51.1	40.7	
College+	52.7	9.9	14.9	39.2	56.1	
Employment status (last week)						***
Working for pay	61.8	63.3	64.2	63.9	61.8	
Language of Interview						***
English only	92.26	15.5	34.5	83.1	97.5	
Spanish or combination	4.7	82.2	63.4	13.4	0.1	

Source: National Health Interview Survey 2001–2003

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ (two-tailed test), p value obtained from design-based F statistic from Pearson's χ^2 test. May not sum due to rounding error

^a Mean (95 % confidence intervals in parentheses). ^b Divorced, separated or widowed



Table 3 Age-standardized prevalence rates of chronic conditions and poor/fair self-rated health, U.S. and Mexico

	Mexico	United States			
	Whole population	Mexican immigrants, <5 years in U.S.	Mexican immigrants, ≥5 years in U.S.	U.S.-born Mexicans	U.S.-born Whites
Chronic conditions ^a					
Rate (95 % confidence interval)	15.76 (15.02–16.50)	14.89 (11.56–18.22)	20.32 (19.21–21.43)	26.33 (25.03–27.63)	26.03 (25.59–26.47)
Poor/fair self-rated health ^b					
Rate (95 % confidence interval)	4.82 (4.41–5.22)	13.04 (10.64–15.44)	12.74 (11.98–13.51)	12.87 (12.17–13.57)	7.70 (7.46–7.95)

Source: Author's calculations based on 2002 Mexican Family Life Survey, 2001–2003 National Health Interview Survey, and Mexican Census 2000. Crude rates estimated using weighted 2002 Mexican Family Life Survey (for Mexican sample) and 2001–2003 National Health Interview Survey (for U.S. sample). Age distribution data were obtained from Mexican Census 2000 (Censo General de Poblacion y Vivienda, 2000). Notes: Rates are per 100 and age-adjusted to the 2000 Mexican standard population. The Mexican population is not disaggregated because there were too few return migrants to standardize by age

^a Diagnosed chronic conditions: have been told you have at least one of the following: diabetes, hypertension, cancer, and heart disease

^b Ranking of own health as 4 or 5 on a scale of 1–5, where 1 is best health and 5 is worst health



Table 4 Selected health conditions: logistic regression odds ratios

	Activity limitation ^a	Poor self-rated health ^b	Chronic conditions ^c
<i>Sample</i>			
Non-migrant Mexican—MxFLS	Ref.	Ref.	Ref.
Return migrant—MxFLS	0.951 (0.232)	0.748 (0.217)	0.825 (0.149)
U.S. Mexican imm, <5 years—NHIS	0.110*** (0.048)	2.635*** (0.228)	1.072 (0.125)
U.S. Mexican imm, 5+ years—NHIS	0.372*** (0.028)	3.795*** (0.175)	1.450*** (0.068)
U.S.-born Mexican—NHIS	0.598*** (0.045)	6.149*** (0.306)	2.371*** (0.119)
U.S.-born White—NHIS	0.687*** (0.037)	4.366*** (0.192)	2.439*** (0.093)
<i>Socio-demographic controls</i>			
Age	1.026*** (0.001)	1.023*** (0.001)	1.056*** (0.001)
Sex			
Male	Ref.	Ref.	Ref.
Female	1.440*** (0.035)	0.857*** (0.015)	1.036* (0.018)
Marital status			
Married/cohab	Ref.	Ref.	Ref.
Divorced/separated/widowed	1.183*** (0.030)	1.329*** (0.028)	1.016 (0.021)
Never married	1.193*** (0.059)	0.933* (0.028)	0.817*** (0.021)
Education			
Never attended/kindergarten	Ref.	Ref.	Ref.
Elementary/junior high school	0.702*** (0.048)	0.678*** (0.038)	1.726*** (0.102)
High school	0.489*** (0.039)	0.343*** (0.020)	1.526*** (0.099)
College+	0.390*** (0.031)	0.179*** (0.011)	1.356*** (0.088)
Employment status last week			
Not working for pay	Ref.	Ref.	Ref.
Worked for pay	0.418*** (0.011)	0.318*** (0.006)	0.673*** (0.012)
n	33,977	160,085	84,109

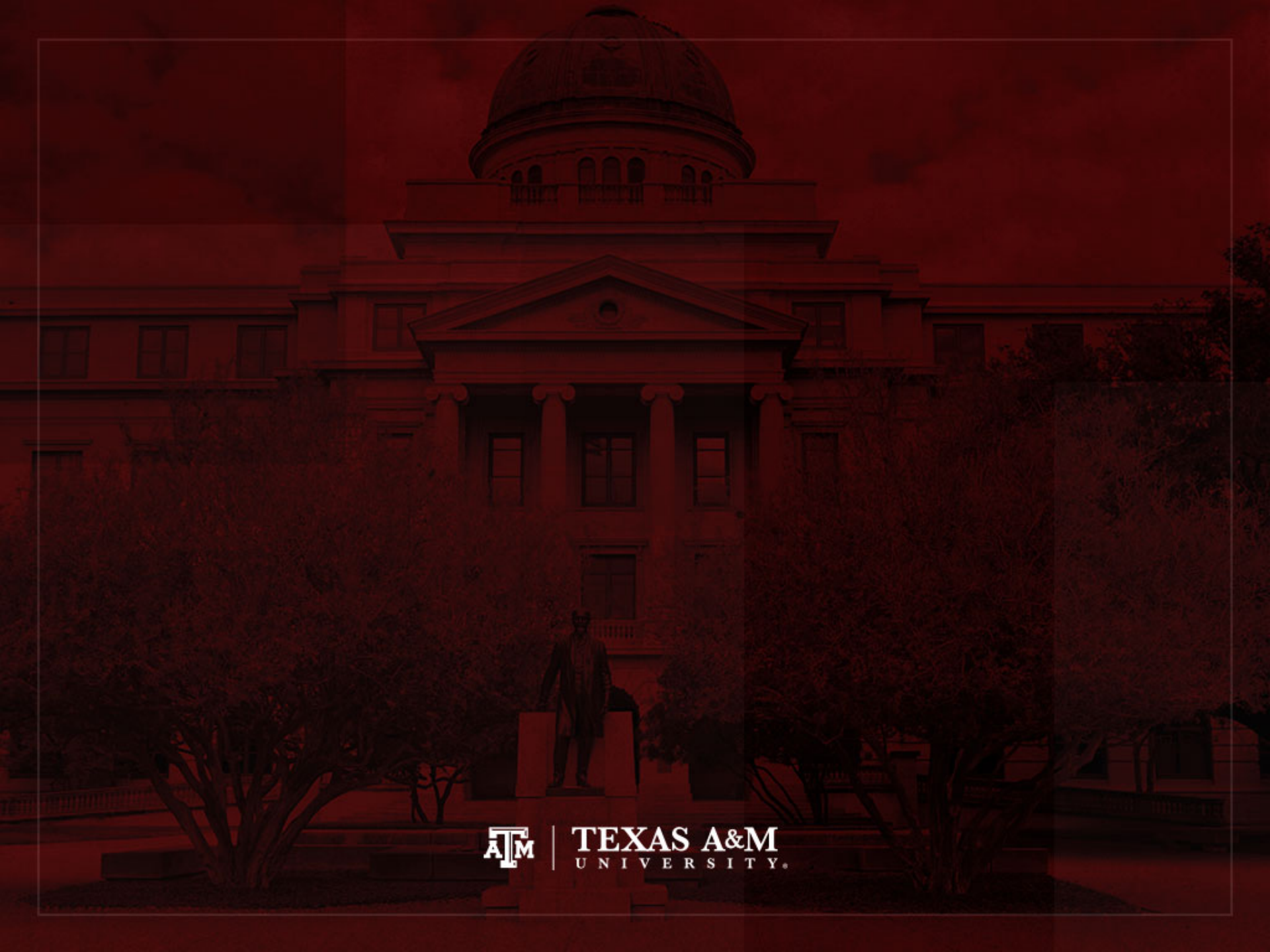
Source: Combined NHIS 2001–2003 and MxFLS 2002
 *** $p < 0.001$, ** $p < 0.01$,
 * $p < 0.05$ (two-tailed test).
 Standard errors in parentheses
^a Activity limitation analysis restricted to those age 50+ (see text for detail). ^b Poor/fair self-rated health (coded 1 if respondent rated health as 4 or 5 on scale of 1–5). ^c Chronic conditions is coded 1 if the respondent has been told by health professional that he/she has at least one of the following: diabetes, heart disease, hypertension, cancer



Main findings

- Healthy migrant and salmon-bias effects in activity limitation, but not other health aspects
- Immigrants are negatively selected on self-rated health
- Future studies should
 - Investigate complexities of migrants' health profiles
 - Examine selection mechanisms, as well as other factors such as acculturation





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Review of Hispanic paradox

- Results about immigrant paradox and Hispanic paradox are inconsistent
- Issues pointed by the literature
 - Healthy migrant hypothesis indicates that studies are considering only healthy groups (self-selection)
 - Underreporting of deaths
 - Data usually investigated do not have important variables
 - Paradox is not generalizable across races, ethnicities, age groups and genders
- Factors predicting beneficial effects
 - Acculturation, health behaviors and diet, ethnicity, acculturative stress, adolescence, undocumented and uninsured status, age of arrival in the U.S., length of exposure, gender, age

Table I. Factors and Commonalities in the Immigrant and Hispanic Paradoxes.

	Commonalities		Differing factors and effects		
Immigrant paradox	Research methodology and epidemiological concerns, e. g. migrant health selectivity, underreporting of undocumented immigrant deaths, and the absence of legal status, ethnicity, in commonly used data sets appear to be significant factors/limitations in assessing true effect of both Paradoxes	Protection against drug use appears limited to adult immigrants	Not generalizable across all races and ethnicities	Beneficial effects uneven across races and ethnicities, with possible exception of protection against mental and substance disorders	Age, gender, and stress-inducing factors in acculturation are possible predictors of advantages or decline in beneficial effects
Hispanic paradox			Not generalizable across all "Hispanic," or Latino ethnicities	Mental and substance abuse protection appear limited to Mexican immigrants, not to Cubans, Puerto Ricans et al	Acculturation as a proxy for time spent in the United States appears especially significant for Mexican immigrants



Table 2. References Which Support and Do Not Support the Immigrant and Hispanic Paradox Construct.

	Number and CCF of references which report statistical advantages	Number and CCF of studies which report specific negative mental and physical health outcomes in adults	Number and CCF of studies which express methodological concerns in data collection and approaches
Immigrant paradox	$n = 8$; CCF = 26	$n = 9$; CCF = 2.2	$n = 6$; CCF = 13
Hispanic paradox	$n = 4$; CCF = 21.8	$n = 9$; CCF = 4	

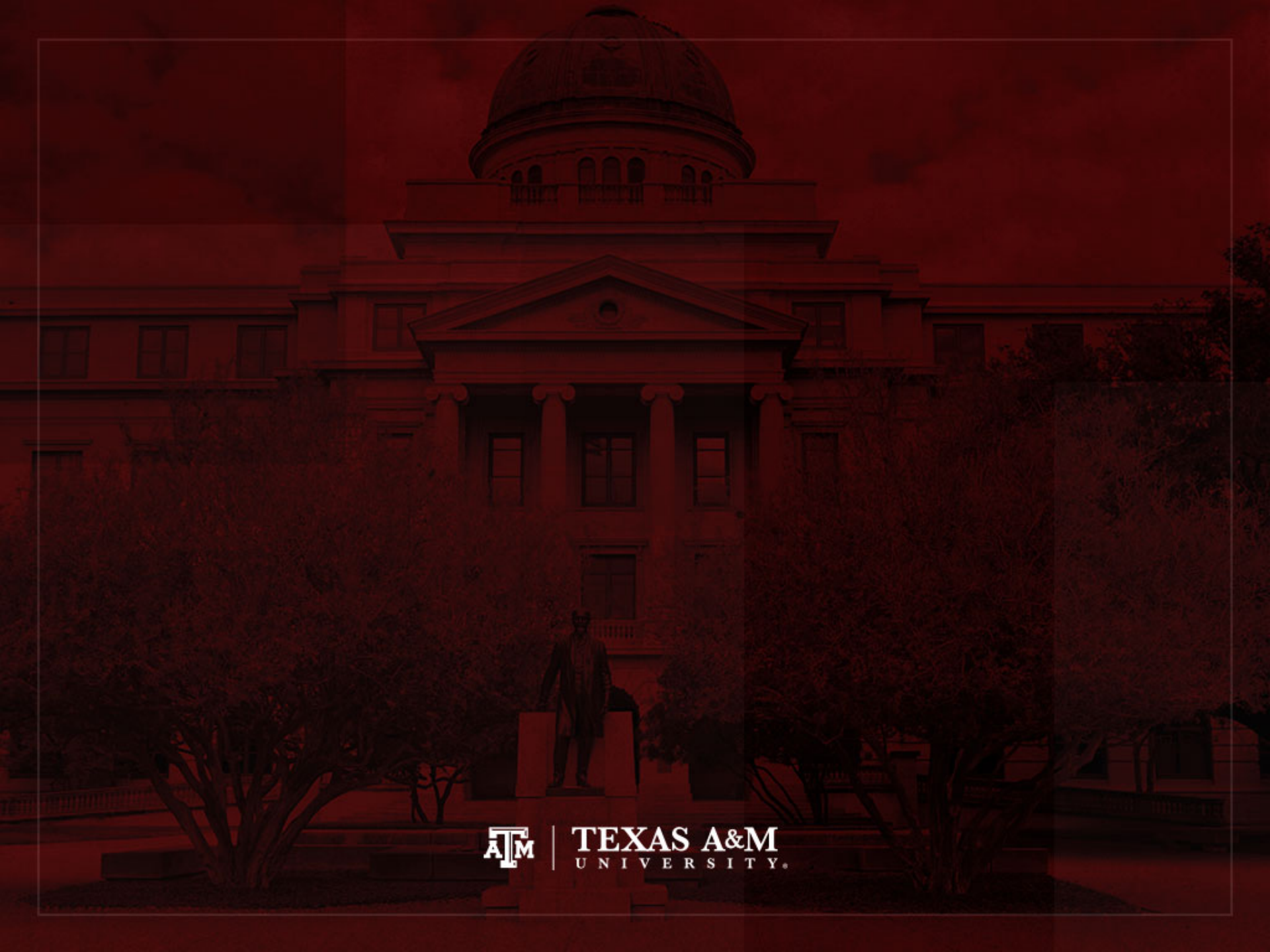
Note. CCF = cumulative citation factor.



Table 3. Factors in the Protective Effects of the Paradoxes, and in Their Erosion.

Factors in protective effects in immigrant and Hispanic paradoxes	Number of references and CCF	Rank (number of articles)	Rank (CCF)
“Acculturation”	$n = 10$; CCF = 10.4	1	2
Health behaviors and diet (Hispanic paradox)	$n = 6$; CCF = 22.5	2	1
Variations based on ethnicity (Hispanic paradox)	$n = 5$; CCF = 8.8	3	4
Acculturative stress	$n = 5$; CCF = 10.2	3	3
Adolescence	$n = 5$; CCF = 5.6	3	5
Undocumented and uninsured status (Hispanic paradox)	$n = 4$; CCF = 5	4	6
Age of arrival in the U.S. (Hispanic paradox)	$n = 4$; CCF = 3	4	7
Gender	$n = 3$; CCF = 5	5	6
Age	$n = 2$; CCF = 2.5	6	8

Note. CCF = cumulative citation factor.



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Demography & Epidemiology

- The Hispanic Paradox is composed of three dimensions
- Outcome of interest
 - Infant and child mortality
 - Adult mortality
 - Birthweight
 - Adult health status
- Target population
 - Mexican-origin population (born in Mexico) but residing in the U.S.
 - Hispanic-origin population (born in Mexico and other countries in South and Central America) and residing in the U.S.
 - Spanish surname population residing in the U.S.
- Population used as a standard to compare outcomes
 - Non-Hispanic white population and others
 - Non-Hispanic black population
 - Puerto Ricans born in the U.S. or abroad are not included



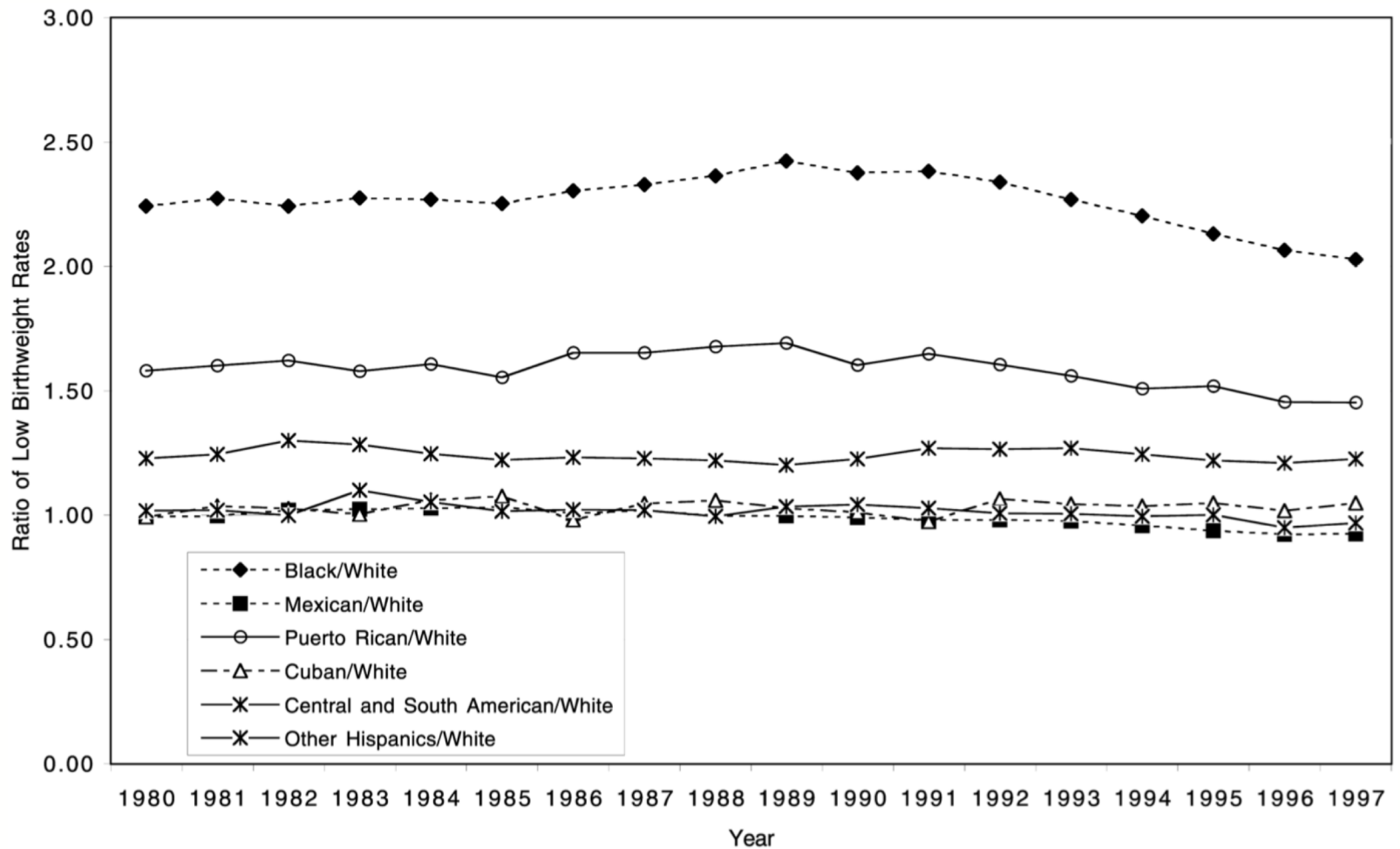


FIGURE 1. Race and ethnic birthweight disparity ratios: 1980–1997 (National Vital Statistics System).

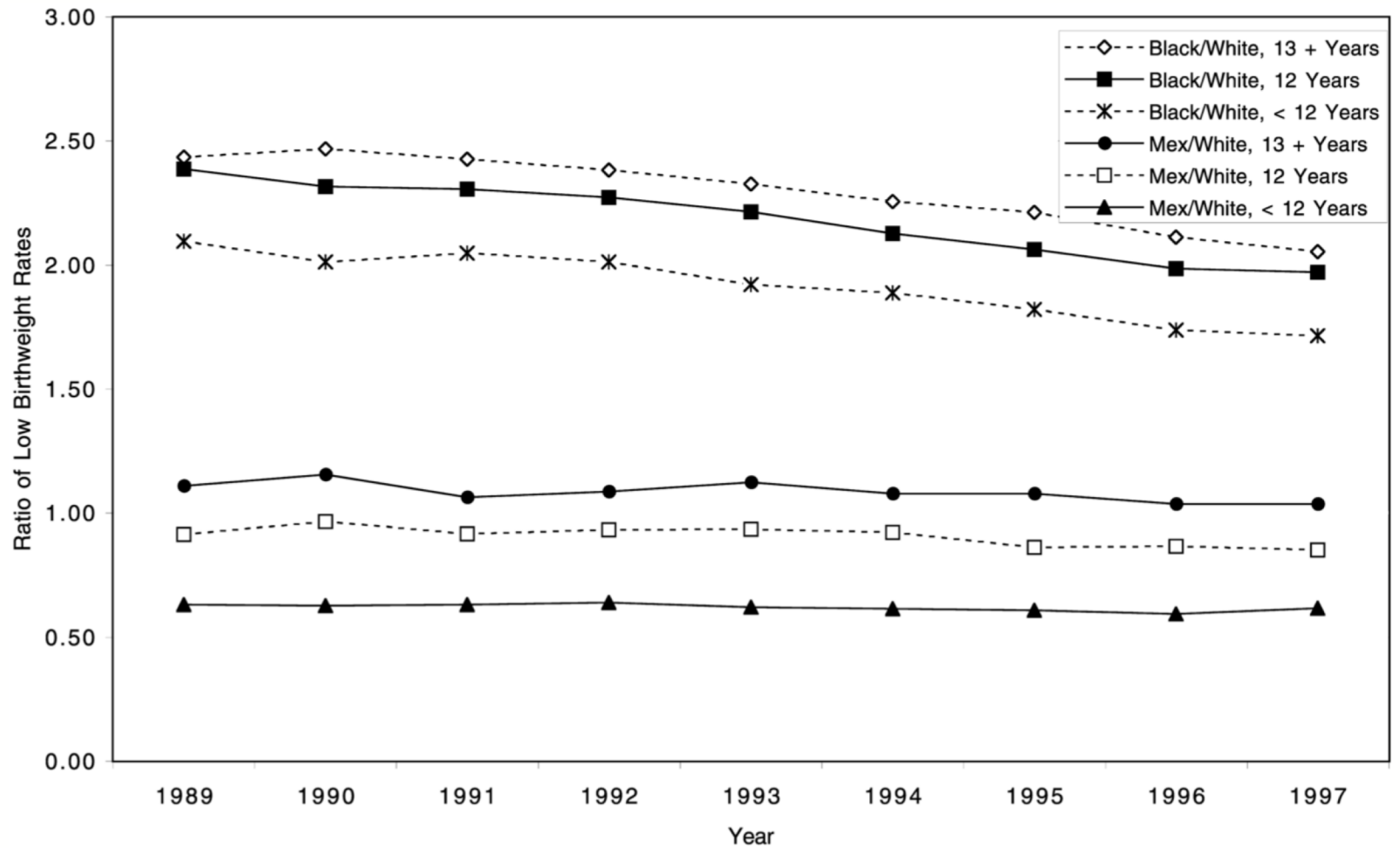
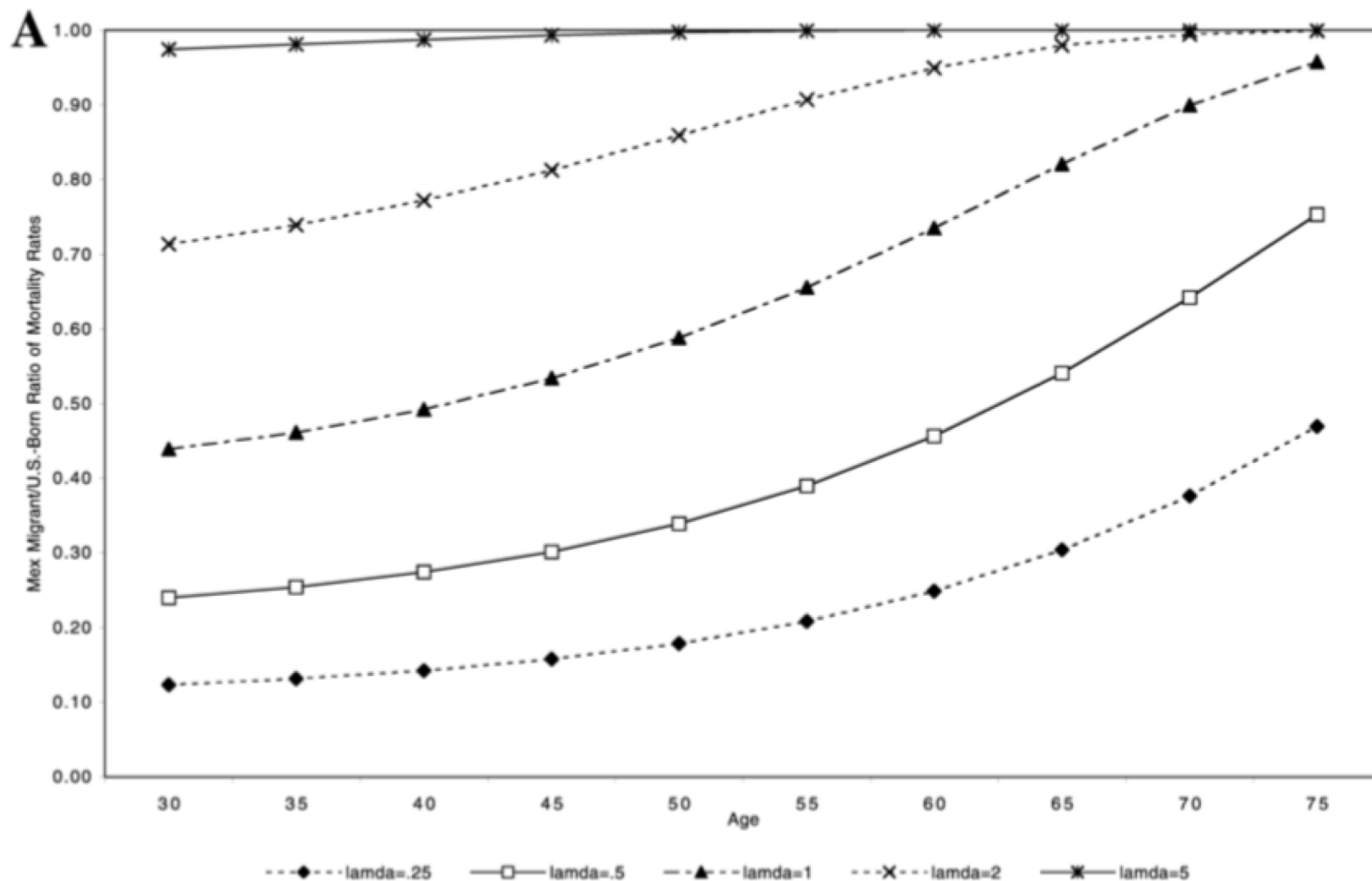


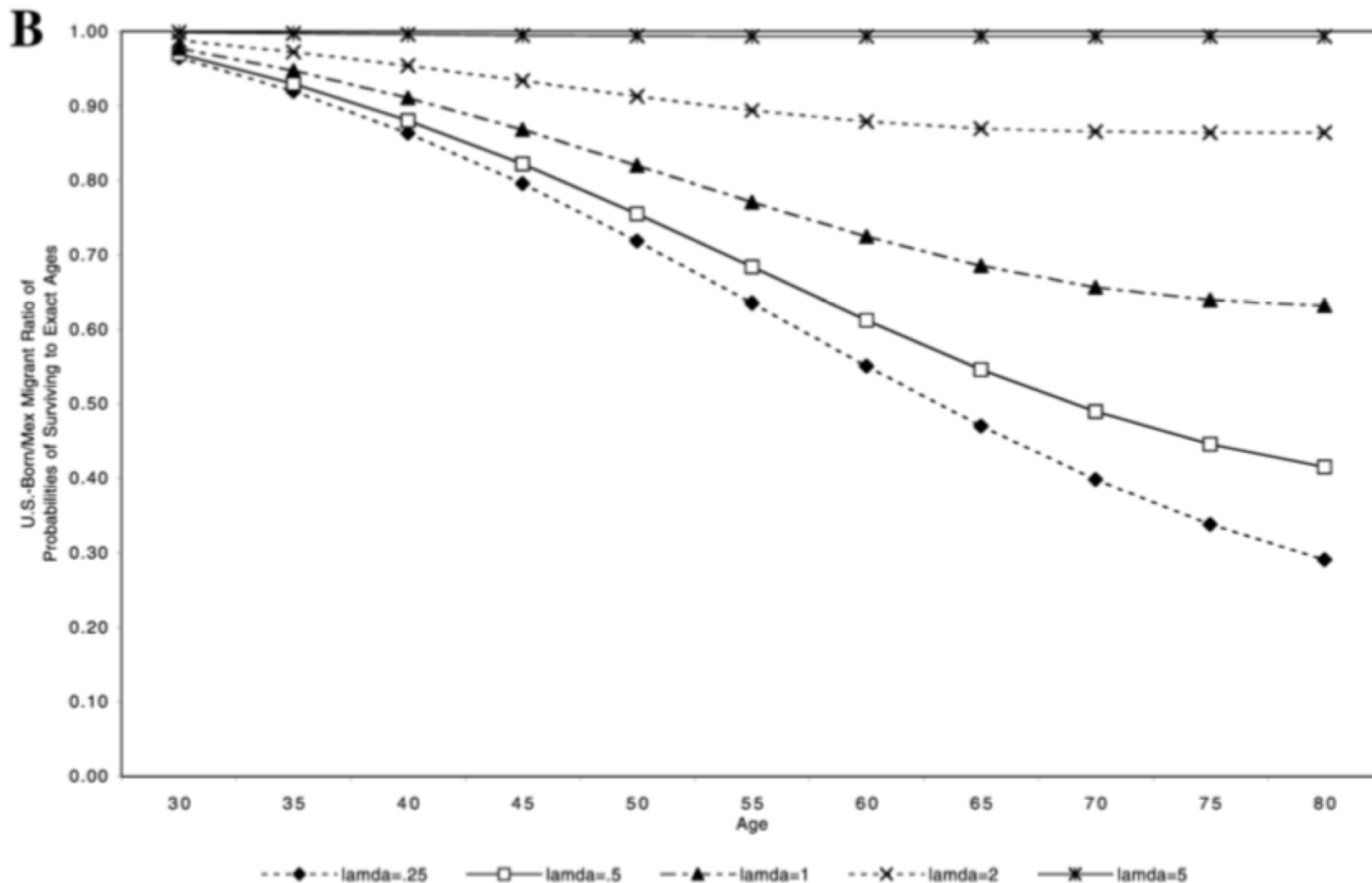
FIGURE 2. Race and ethnic birthweight disparity ratios by maternal education: 1980–1997 (National Vital Statistics System).

FIGURE 5. Effect of selection due to migration on estimated ethnic group differences in mortality: (A) mortality rates and (B) survival functions.



– When lambda is very small, selection is relatively minor

FIGURE 5. Effect of selection due to migration on estimated ethnic group differences in mortality: (A) mortality rates and (B) survival functions.



– When lambda is very small, selection is relatively minor

Main results of simulations

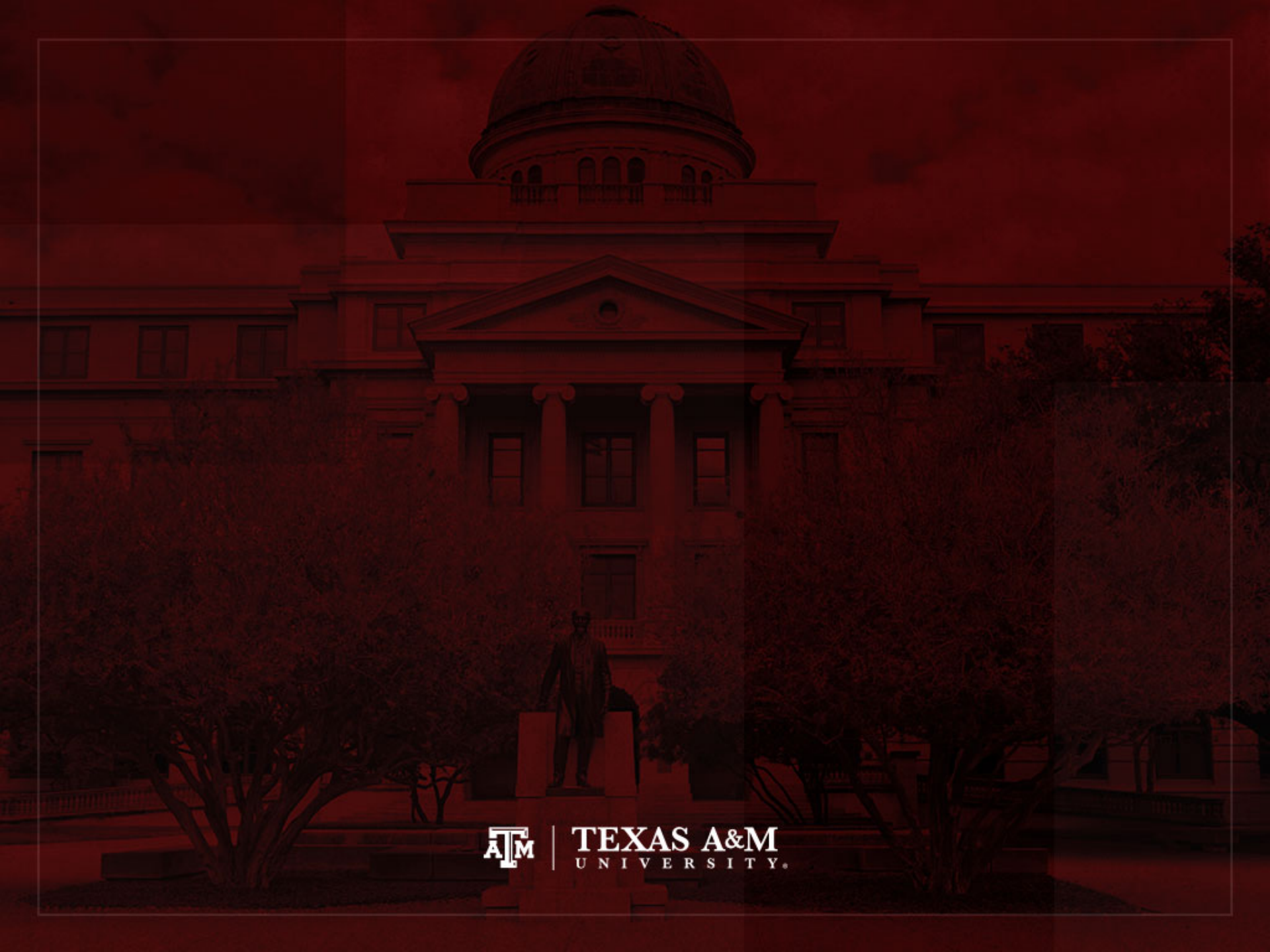
- Mild distortions due to selection combined with mild reporting errors may produce the appearance of a Hispanic paradox when there is none
- Further studies need to
 - Integrate conditions affecting migration to the U.S. and conditions that regulate and constrain the lives of migrants who reside in the U.S.
 - Undertake historical approaches: longitudinal or retrospective
 - Understand sending populations and returning migrants, not only migrant population in the U.S.
 - Investigate interactions between behaviors of groups and social contexts (geographical locations)



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