

# Incidence of testicular cancer histologic subtypes over time according to neighborhood factors among Hispanics in California

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## Background

- Incidence of testicular cancer is increasing in the U.S. and increases are especially steep in the Hispanic population.
- It is unknown whether the incidence of testicular cancer or the observed increases in incidence differ according to neighborhood factors.

## Purpose

Examined incidence patterns and changes in incidence rates over time for testicular cancer histologic subtypes (i.e., seminoma and nonseminoma) according to neighborhood socioeconomic status (SES) among Hispanic and, for comparison, NH White men, and according to ethnic enclave among Hispanic men.

## Methods

- Population-based study with data from the California Cancer Registry.
- Study population of N=12,228 Hispanic (n=3759) and NH White (n=8469) men diagnosed with testicular cancer during three pericentral periods 1988-1992, 1998-2002, and 2008-2012.
- Neighborhood SES is a composite index developed with Census and American Community Survey data on education, housing, employment, occupation, income, and poverty. Hispanic enclave is a composite index of data on ethnic and immigrant composition and linguistic isolation. Tertiles determined according to the state distribution of index values in the state of California.
- Incidence rates and rate ratios were calculated to compare incidence rates across nSES and ethnic enclave and to examine changes in incidence rates over time.

## Results

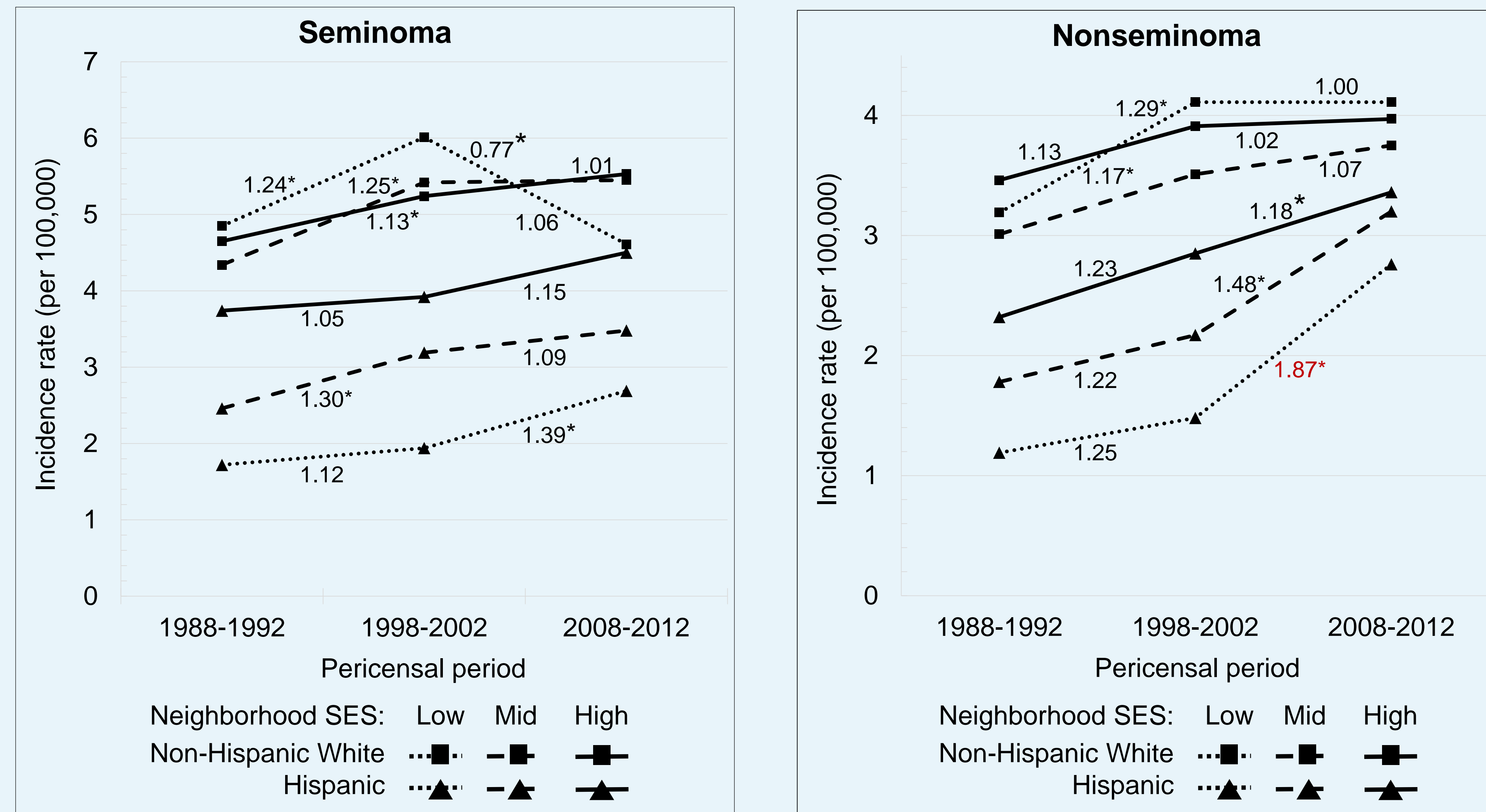
- Hispanic men of high SES or low enclave neighborhoods had greater incidence of both seminoma and nonseminoma testicular cancer across pericentral periods.
- Between the periods 1998-2002 and 2008-2012, Hispanic men residing in all neighborhoods had increased incidence of nonseminoma, but those in low SES or high enclave neighborhoods had the sharpest increases (87%, and 83%, respectively).

## Conclusions

While Hispanic men residing in neighborhoods with higher SES and lower enclave status have greater incidence of both seminoma and nonseminoma testicular cancer, recent increases in incidence are driven by Hispanic men residing in lower SES neighborhoods, particularly for the nonseminoma histologic subtype.

# Hispanic men residing in low SES neighborhoods had an 87% increase in incidence of nonseminoma testicular cancer between 1998-2002 and 2008-2012.

**Figure 1.** Testicular cancer incidence rates for pericentral period of analysis (according to race/ethnicity and tertile of neighborhood SES) for seminomas and nonseminomas diagnosed in California 1988-1992, 1998-2002, 2008-2012. Statistics accompanying lines connecting periods are the incidence rate ratio for middle/early period and late/middle period.



**Table 1.** Frequency distribution of race/ethnicity and tumor histology among men diagnosed with testicular cancer according to tertiles of neighborhood SES

Neighborhood SES	1988-1992			1998-2002			2008-2012		
	Low	Mid	High	Low	Mid	High	Low	Mid	High
<b>Total</b>	957	1318	1381	1059	1465	1494	1390	1627	1537
<b>Race/ethnicity</b>									
NH White	627	1085	1248	544	1063	1297	421	958	1226
Hispanic	330	233	133	515	402	197	969	669	311
<b>Histology</b>									
Seminoma	535	748	803	592	876	902	665	884	911
Nonseminoma	422	570	578	467	589	592	725	743	626

**Table 2.** Frequency distribution of histology among Hispanic men diagnosed with testicular cancer according to Hispanic neighborhood ethnic enclave status

Ethnic enclave status	1988-1992		1998-2002		2008-2012	
	Low	High	Low	High	Low	High
<b>Total</b>	386	310	621	493	1084	865
<b>Histology</b>						
Seminoma	224	143	347	249	559	377
Nonseminoma	162	167	274	244	525	488

**Table 3.** Testicular cancer incidence rate ratios for tertile of neighborhood SES according to race/ethnicity, histology, and pericentral period

nSES	1988-1992		1998-2002		2008-2012	
	IRR	(95% CI)	IRR	(95% CI)	IRR	(95% CI)
<b>Non-Hispanic White</b>						
Seminoma						
Low nSES	1.00	reference	1.00	reference	1.00	reference
Middle nSES	0.89	(0.78, 1.03)	0.90	(0.79, 1.03)	<b>1.18</b>	<b>(1.01, 1.39)</b>
High nSES	0.96	(0.84, 1.10)	0.87	(0.76, 0.99)	<b>1.20</b>	<b>(1.03, 1.41)</b>
Nonseminoma						
Low nSES	1.00	reference	1.00	reference	1.00	reference
Middle nSES	0.94	(0.81, 1.11)	0.85	(0.72, 1.01)	0.91	(0.77, 1.09)
High nSES	1.09	(0.93, 1.27)	0.95	(0.81, 1.12)	0.97	(0.82, 1.15)
<b>Hispanic</b>						
Seminoma						
Low nSES	1.00	reference	1.00	reference	1.00	reference
Middle nSES	<b>1.43</b>	<b>(1.08, 1.90)</b>	<b>1.65</b>	<b>(1.34, 2.02)</b>	<b>1.30</b>	<b>(1.11, 1.51)</b>
High nSES	<b>2.17</b>	<b>(1.56, 3.03)</b>	<b>2.02</b>	<b>(1.58, 2.60)</b>	<b>1.67</b>	<b>(1.38, 2.02)</b>
Nonseminoma						
Low nSES	1.00	reference	1.00	reference	1.00	reference
Middle nSES	<b>1.50</b>	<b>(1.12, 2.03)</b>	<b>1.46</b>	<b>(1.18, 1.82)</b>	<b>1.16</b>	<b>(1.00, 1.34)</b>
High nSES	<b>1.96</b>	<b>(1.37, 2.84)</b>	<b>1.93</b>	<b>(1.47, 2.53)</b>	<b>1.22</b>	<b>(1.00, 1.48)</b>

**Figure 1.** Testicular cancer incidence rates for pericentral period of analysis (according to race/ethnicity and tertile of neighborhood SES for seminomas and nonseminomas diagnosed in California 1988-1992, 1998-2002, 2008-2012.

