



# **Geographic Access to Safety-net Immunization Clinics and HPV Vaccine Uptake in Low-Income, Ethnic Minority Girls**

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# Cervical Cancer Disparities & HPV Vaccines

- Higher burden of cervical cancer in low-income, immigrant, minority populations
- Two prophylactic HPV vaccines available:
  - 1.) Quadrivalent vaccine (Gardasil®) -2006
  - 2.) Bivalent vaccine (Cervarix®) -2009
- ACIP Recommendations
  - Girls 11-12 years old (routine use)
  - Girls and young women 13-26 years old (catch-up)
- Vaccines for Children program

# Geographic Influences on Access to Care

- Spatial access to health care is linked to utilization of services
  - e.g. HIV testing, asthma management, breast cancer screening, and childhood immunizations
- Unequal geographic distributions of safety-net clinics across immigrant and ethnic enclaves

# Research Question

Does geographic access to safety-net clinics  
impact HPV vaccine initiation among  
low-income, minority girls in Los Angeles County?



# Individual Level Data: Hotline Sample

- Los Angeles County Office of Women's Health hotline

- Hotline population:

- Low-income (<200% FPL)
- Uninsured
- County safety-net system users



- Eligibility criteria:

Mothers/caregivers of girls (ages 9-18)

Languages: Spanish, Mandarin, Cantonese, Korean, English

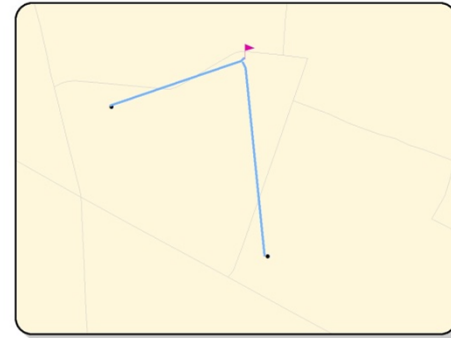
- Telephone interviews: Jan – Nov 2009

# Los Angeles County Safety-Net Immunization Clinics

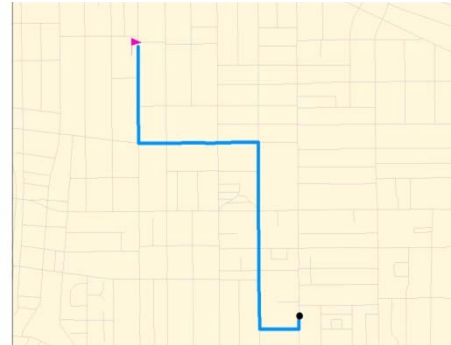
- 93 clinics affiliated with Los Angeles County Department of Health Services/Public Health
- All clinics provide low-cost or free vaccines via the Vaccines for Children Program:
  - Up to age 18
  - Medicaid/Other Public Insurance/Underinsured
  - Native American/Alaska Native

# Geographic Access Measures

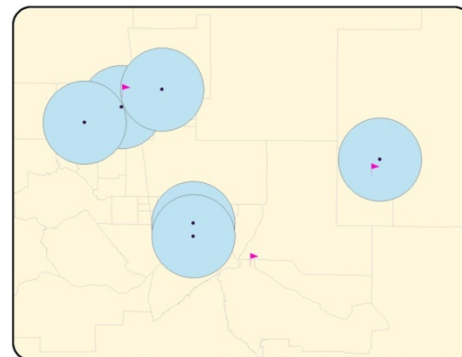
1. Straight-line Distance  
(continuous)



2. Road Distance  
(continuous)



3. Clinic within 3-mile radius  
(Dichotomous: yes/no)



# Results:

## Sample Characteristics

- **Daughter's Race/Ethnicity**

<u>Total</u>	100%	(479)
Latina	53%	(243)
Chinese	19%	(87)
Korean	13%	(60)
African Am.	8%	(38)
Other	7%	(30)

- **Daughter's age (mean)**

13.9 years

- **Daughter has usual source of care**

Yes	66%
No	35%

- **Daughter's insurance type**

Private	11%
Public	57%
Uninsured	32%

- **Mother's age (mean)**

43.9 years

- **Mother's nativity**

Foreign-born	88%
U.S.- born	12%

- **Mother's Education**

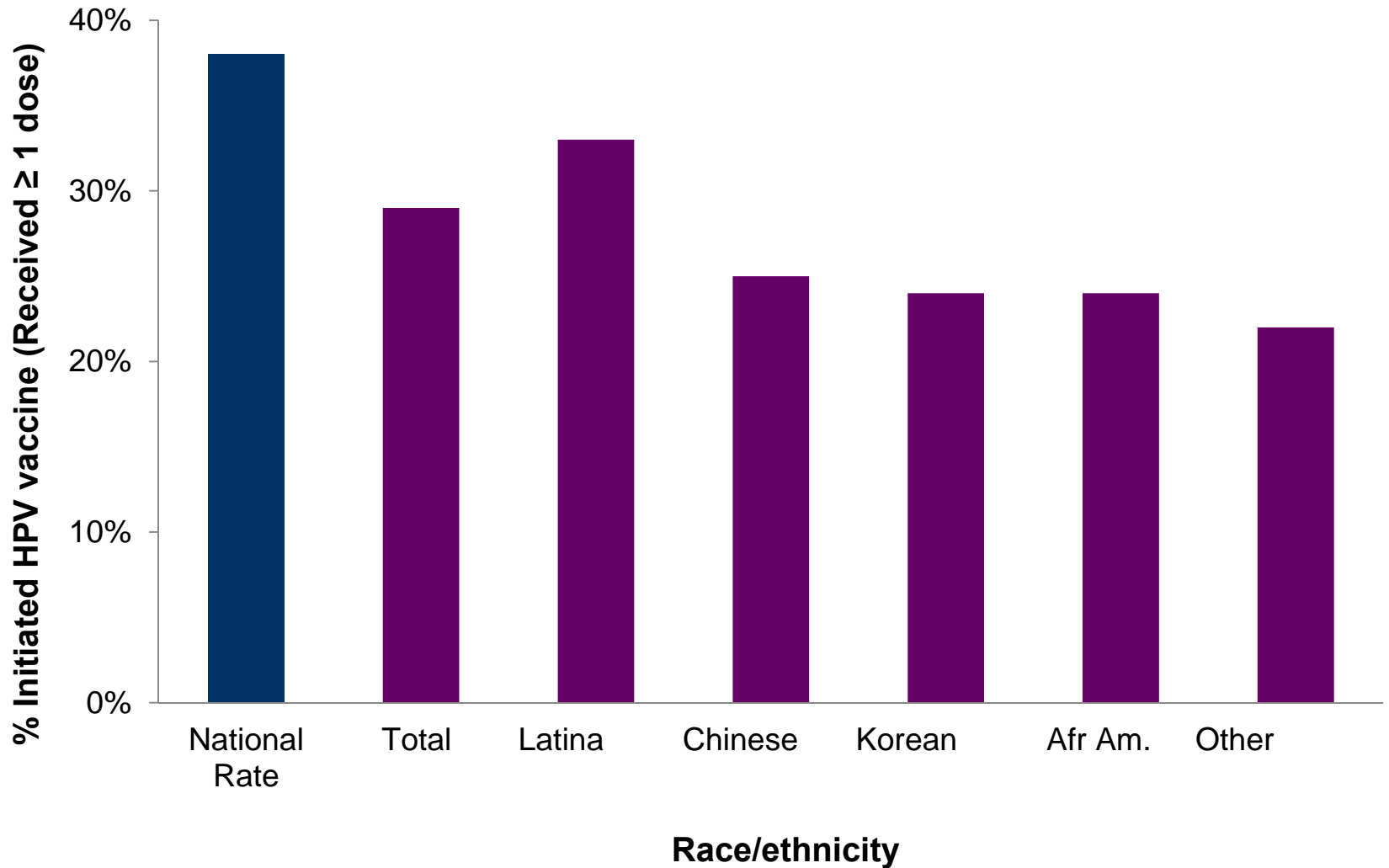
Less than high school	51%
HS diploma or more	49%

- **Mother's Awareness of HPV**

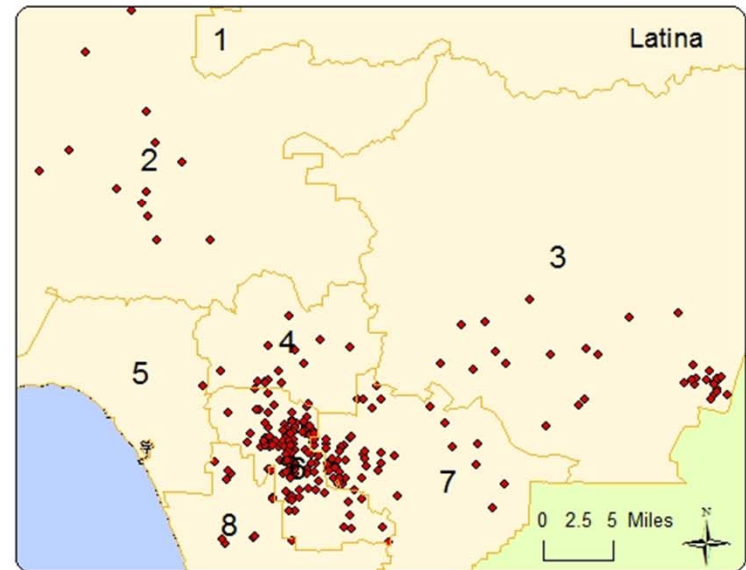
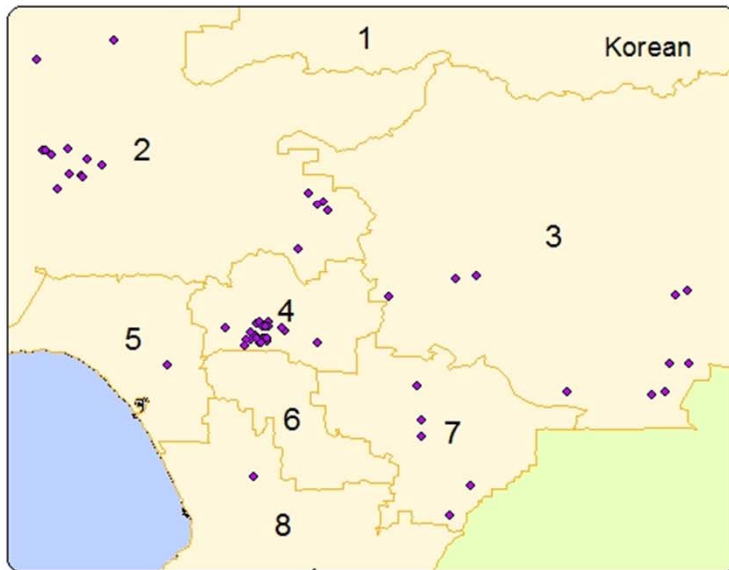
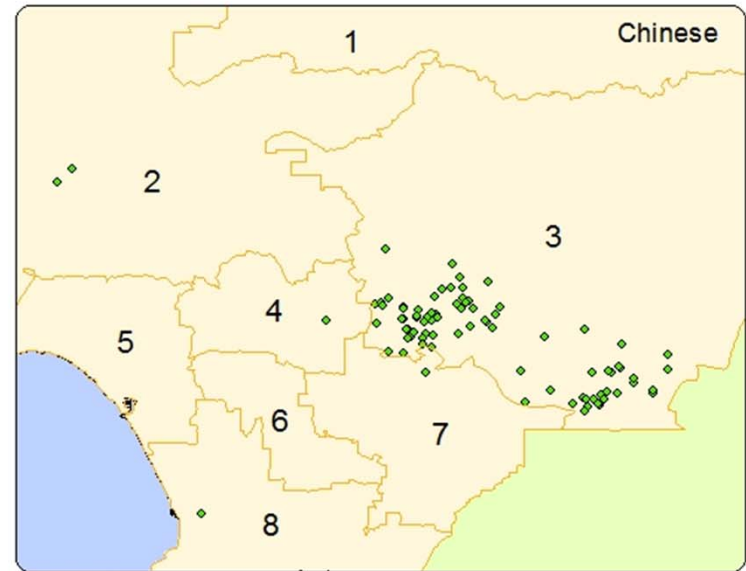
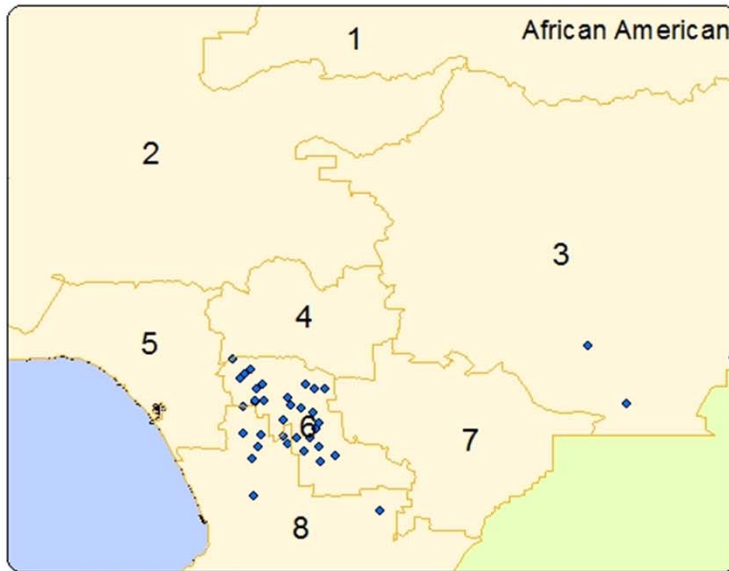
Heard of HPV	62%
Has not heard of HPV	38%

# Results:

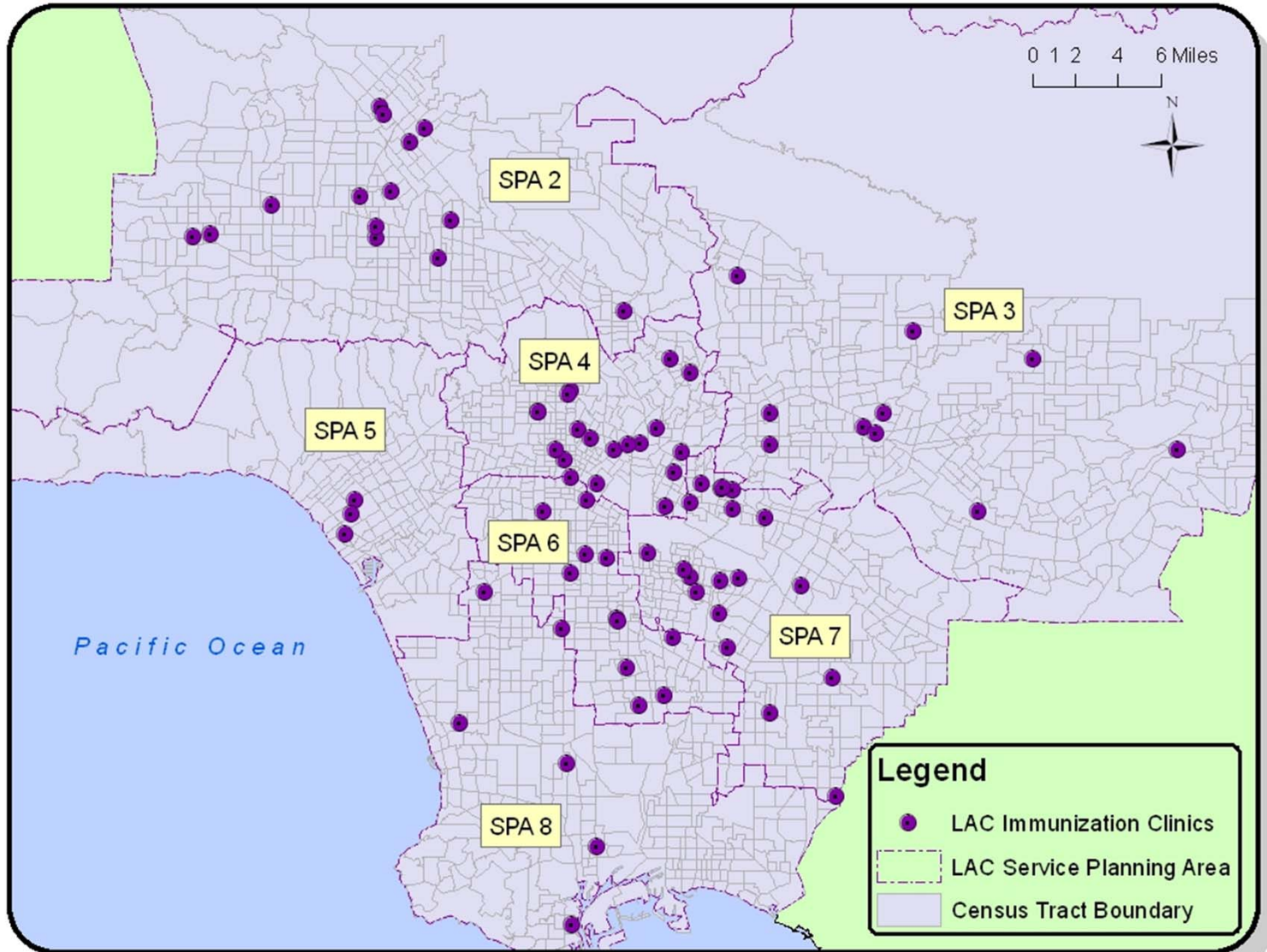
## HPV Vaccine Initiation Rates



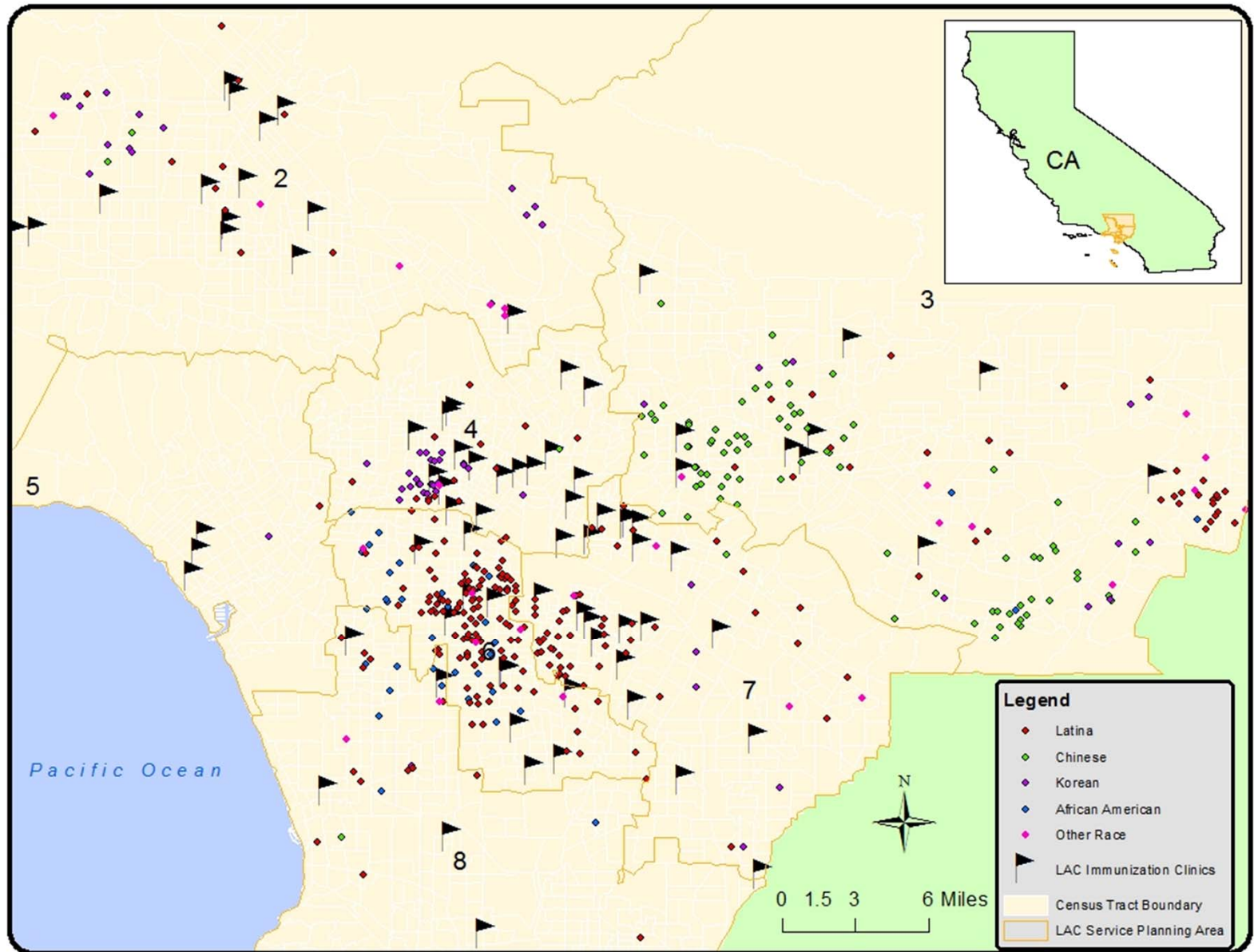
# Geographic Distribution of Adolescent Girls



# Los Angeles County Safety-Net Immunization Clinics



# Safety-Net Immunization Clinics & Residence of Adolescent Girls



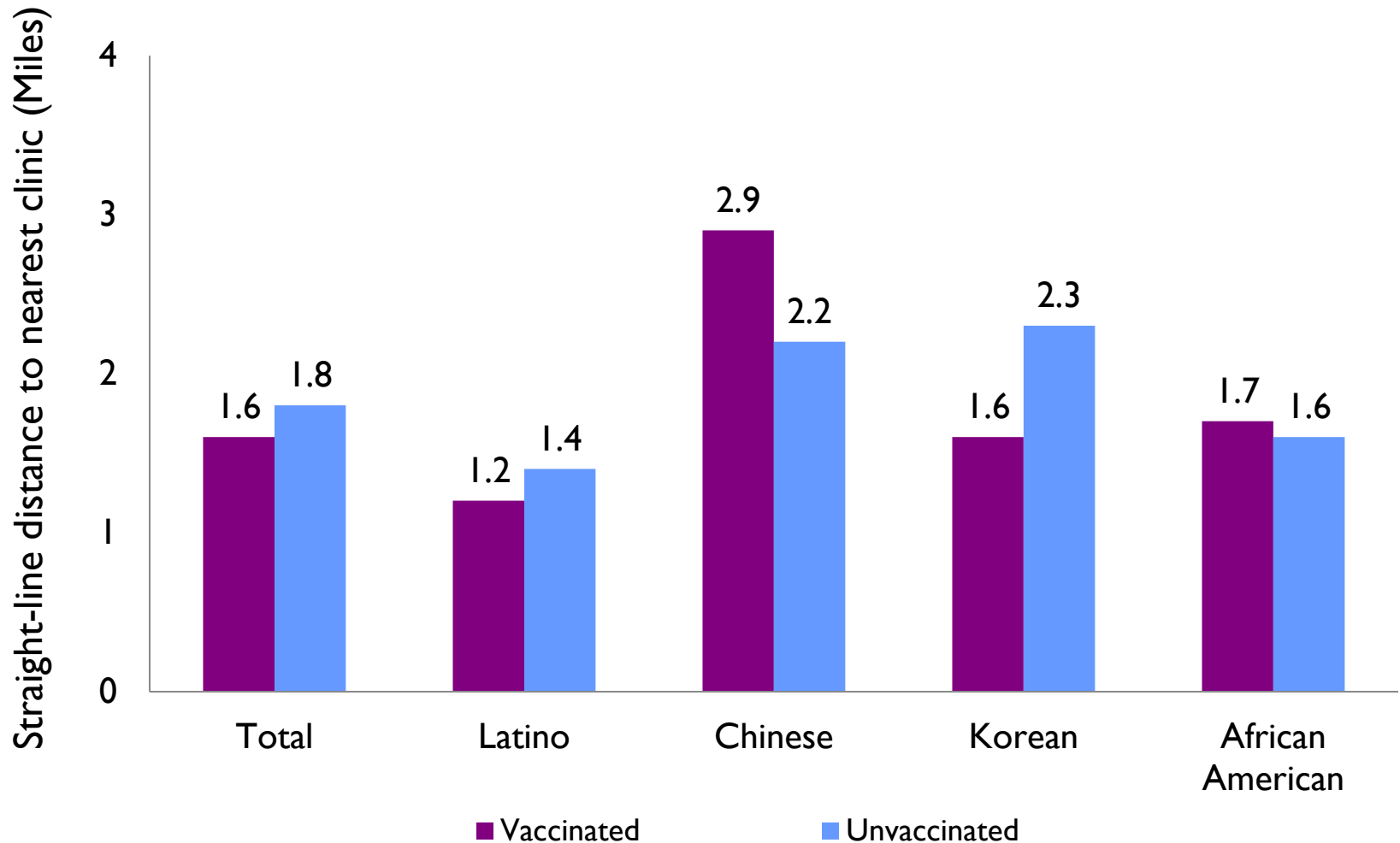
# Geographic Access by Race/ethnicity

	<b>All (n=479)</b>	<b>Latino (n=243)</b>	<b>Chinese (n=87)</b>	<b>Korean (n=60)</b>	<b>African American (n=38)</b>	
Distance to Nearest Clinic (mean miles)						p-value <sup>^</sup>
<b>Straight-line</b>	1.7	1.4	2.4	2.2	1.6	<0.001
<b>Road</b>	2.7	2.2	3.5	3.2	3.3	<0.001
Having Clinic within 3 miles, % (n)						p-value*
<b>3 miles</b>	83.3	92.2	67.8	70.0	65.8	<0.001

<sup>^</sup> P value for one-way ANOVA F-test for differences in distance by race/ethnicity

\* P value for Fisher's exact test for differences in proportion of girls with at least 1 clinic by race/ethnicity

# Geographic Access by HPV Vaccine Initiation and Race/ethnicity



# Bivariate & Multivariate Results

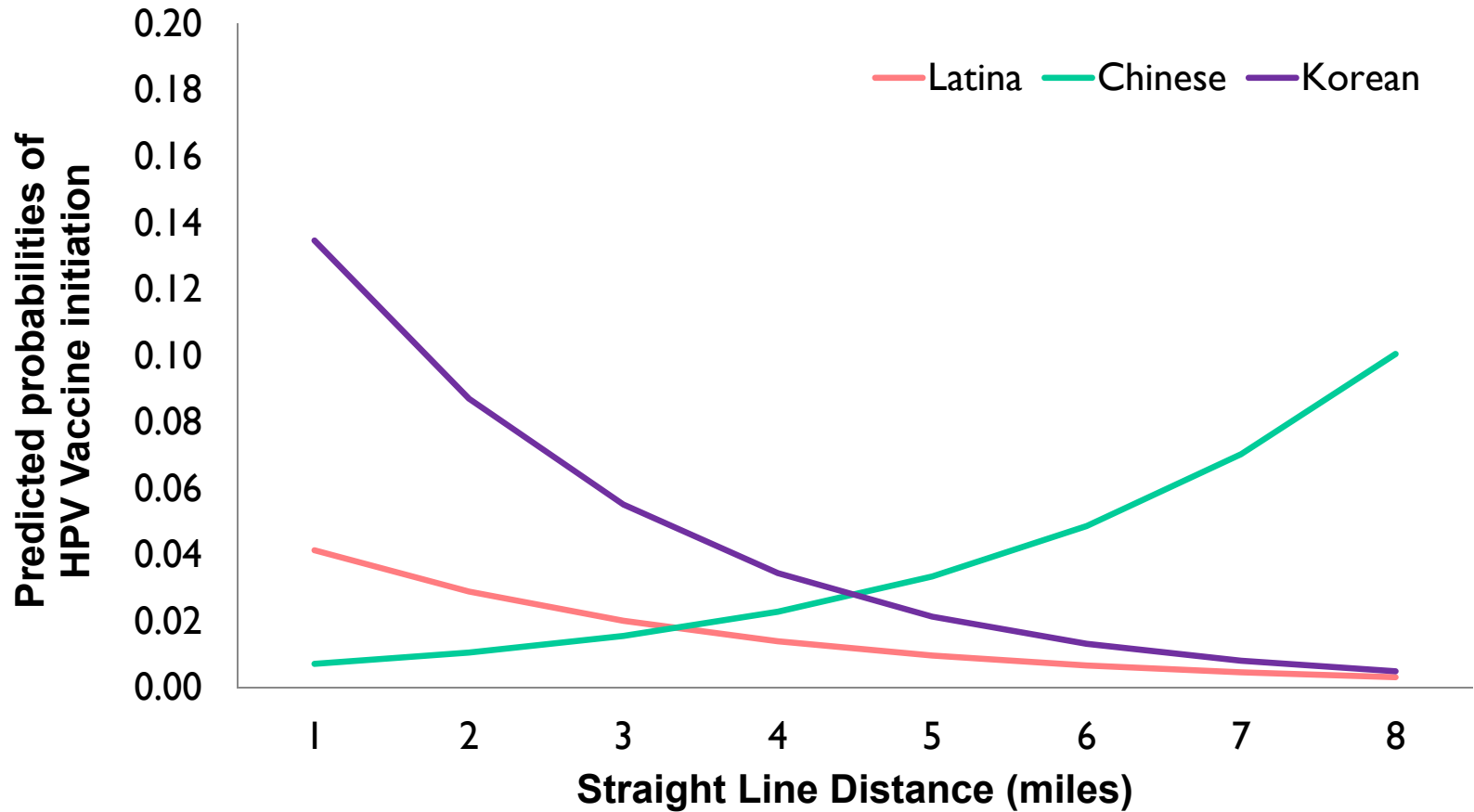
	Bivariate	Multivariate
Geographic Access	OR (95% CI)	aOR (95% CI)
Straight-line Distance	0.9 (0.8-1.1)	0.9 (0.8-1.2)
Road Distance	0.9 (0.8-1.0)	--
Clinic within 3 miles	1.0 (0.6-1.8)	--
Mother/Caregiver		
Race/ethnicity		
Latina	1.6 (1.1-2.4)	REF
Chinese	0.9 (0.5-1.5)	0.8 (0.3-1.7)
Korean	0.7 (0.4-1.4)	1.5 (0.6-3.9)
African American	0.7 (0.3-1.6)	0.9 (0.2-2.4)
English Interview (Ref: Non-English)	1.1 (0.7-1.8)	1.1 (0.4-2.9)
HS Diploma or more (Ref: no HS diploma)	0.8 (0.5-1.1)	0.6 (0.4-1.2)
Born in U.S. (Ref: Foreign-born)	0.7 (0.4-1.4)	0.6 (0.2-1.7)
Age	1.0 (0.9-1.0)	1.0 (0.9-1.0)
Heard of HPV (Ref: No)	11.9 (6.2-22.8)	11.1 (5.6-22.2)
Adolescent Girl		
Age 11-18 (Ref: 9-10)	7.3 (2.6-20.4)	12.5 (3.7-42.6)
Insurance status		
Uninsured	0.5 (0.3-0.8)	REF
Public	2.1 (1.4-3.3)	1.9 (0.8-3.2)
Private	0.8 (0.4-1.5)	1.2 (0.5-3.5)
Usual Source of Care (Ref: No USOC)	2.2 (1.4-3.5)	1.1 (0.8-2.8)

# Interaction Effects : Race/ethnicity x Geographic Access

	Model 1: Straight-line Distance	Model 2: Road Distance	Model 3: 3-mile Coverage
	Beta-coefficients	Beta-coefficients	Beta-coefficients
Intercept	<b>-7.5</b>	<b>-7.6</b>	<b>-8.3</b>
Geographic Access	<b>*-0.4</b>	-0.04	0.7
<b>Mother/Caregiver</b>			
Race/ethnicity			
Latina	0	0	0
Chinese	<b>** -1.8</b>	-0.2	0.8
Korean	0.8	0.1	-0.1
Interaction of race/ethnicity and geographic access			
Chinese x Geo-access	<b>**0.8</b>	-0.02	-1.5
Korean x Geo-access	-0.1	0.01	0.6
Heard of HPV	<b>*** 2.7</b>	<b>*** 2.6</b>	<b>*** 2.7</b>
<b>Adolescent Girl</b>			
Age 11-18 (Ref: 9-10)	<b>***2.5</b>	<b>*** 2.4</b>	<b>*** 2.4</b>

Models also controlled for interview language, education, nativity, daughter's usual source of care, & daughter's insurance type. These covariates were NS at  $p < 0.05$

# Interaction Effects : Race/ethnicity x Geographic Access



# Summary

- Low HPV vaccine initiation rates in our sample
- Majority (>80%) have geographic access to clinics
  - Differences across racial/ethnic groups
- Geographic access not associated with HPV vaccine initiation
  - Exploratory analyses of interaction terms – distance may vary by geography and race/ethnicity
- Strong predictors: mother's awareness of HPV and age of adolescent girl

# Limitations

- Did not account for all places to access HPV vaccine (i.e. private physician offices)
- Potential low variability within study sample
- Motivated sample of low-income mothers
- Cross-sectional data

# Conclusions & Implications

- In resource limited environments, improving clinic outreach and other operational factors may be more important than expanding number of clinics
- Factors aside from geographic access (e.g. language, racial/ethnic concordance, hours of operation), may influence vaccine uptake and warrant further investigation
- Future research should explore whether geographic access is a barrier for other low-income (& less motivated) groups

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