



CONGENITAL ANOMALIES IN LOS ANGELES COUNTY: WHY PLACE MATTERS

Radhika D. Rible MD MS | Assistant Clinical Professor
Dept. of Obstetrics and Gynecology | UCLA David Geffen School of Medicine

Background

Does where you live impact your risk of having a poor birth outcome?

Environment varies



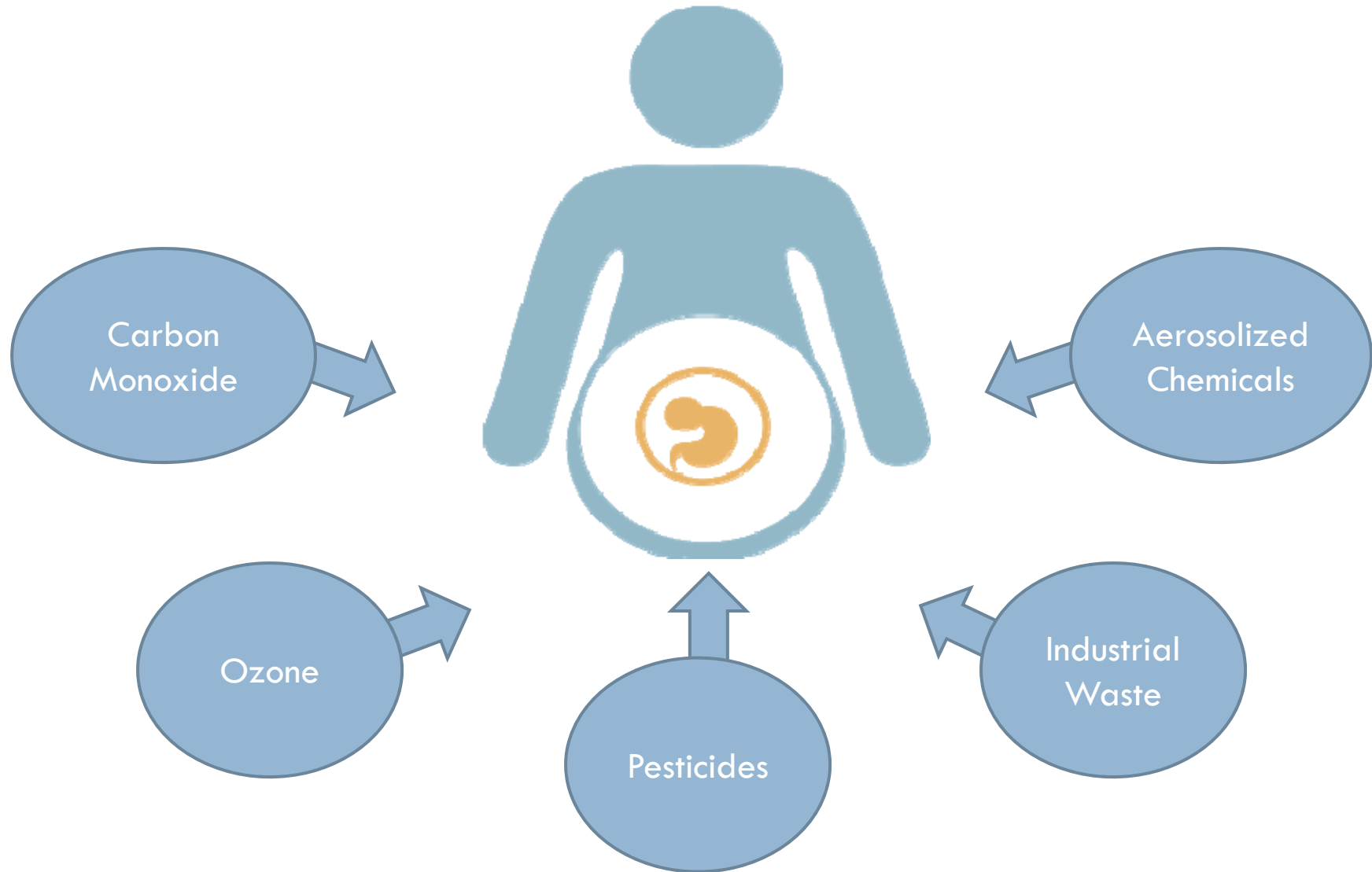
- Encompass the places and situations/circumstances that have an effect on an individual
 - Social
 - Spatial
 - Genetic/epigenetic

Defining birth outcomes

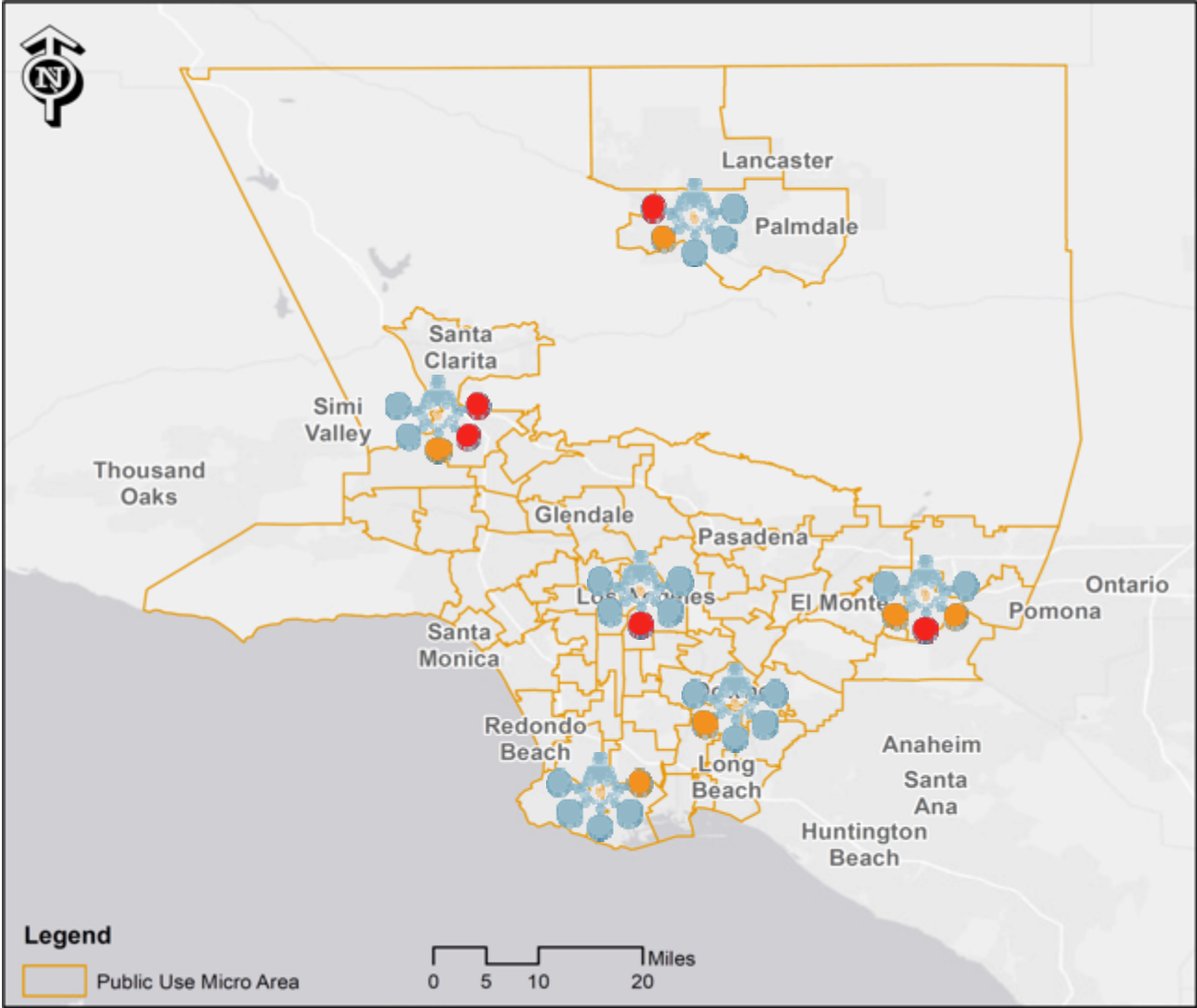


- Traditionally limited to gestational age and birth weight
- Birth defects and congenital anomalies
- Surveillance efforts limited
 - Example: California Birth Defects Monitoring Database
- Causation is hard to prove

Mothers are exposed to many things in the environment



So, does where you live impact your risk of having a poor birth outcome?





Assessing the Effects of Environmental Exposures on Birth Outcomes

An epidemiological survey using spatial statistics to assess patterns of congenital anomalies in Los Angeles County

Congenital Anomalies

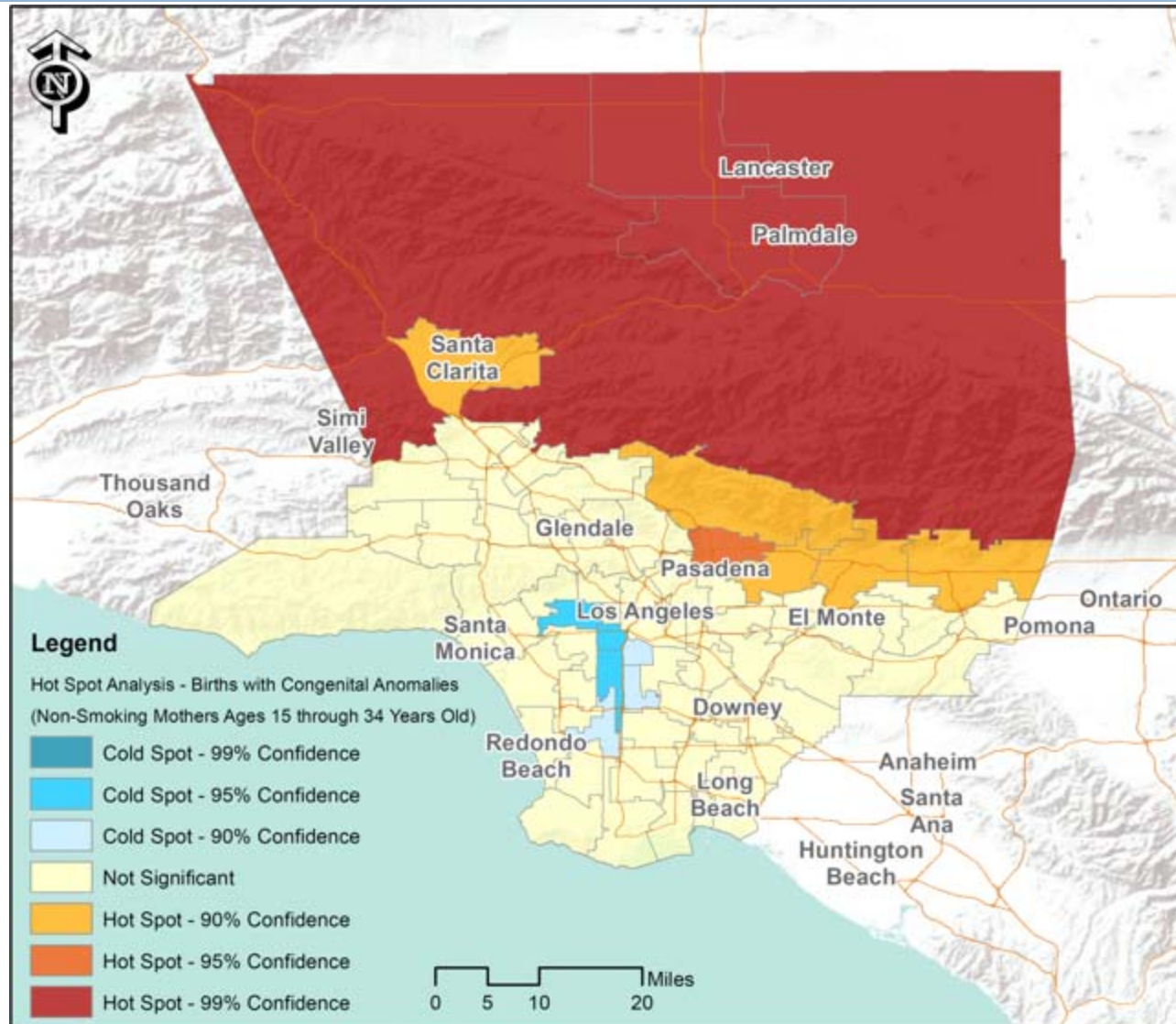
- Anencephaly
- Meningomyelocele/Spina bifida
- Cyanotic congenital heart disease
- Congenital diaphragmatic hernia
- Omphalocele
- Gastroschisis
- Limb reduction defect
- Cleft palate and cleft lip
- Down's syndrome
- Suspected chromosomal disorder
- Hypospadias
- Aortic stenosis
- Pulmonary Stenosis
- Atresia
- Additional and unspecified congenital anomalies not listed

Hot Spot Analysis



- Vital Statistics Birth Master File 2006-2010
- Geocoded by maternal home address
- Aggregated to Public Use Micro Areas (PUMA)
 - ▣ 100K – 500K residents each
- Non Smoking Mothers
- 15-34 years

Hot Spot Analysis – Births with congenital anomalies for non-smoking mothers (15 through 34)



Relative Risk for Births with Congenital Anomalies within Hot Spots

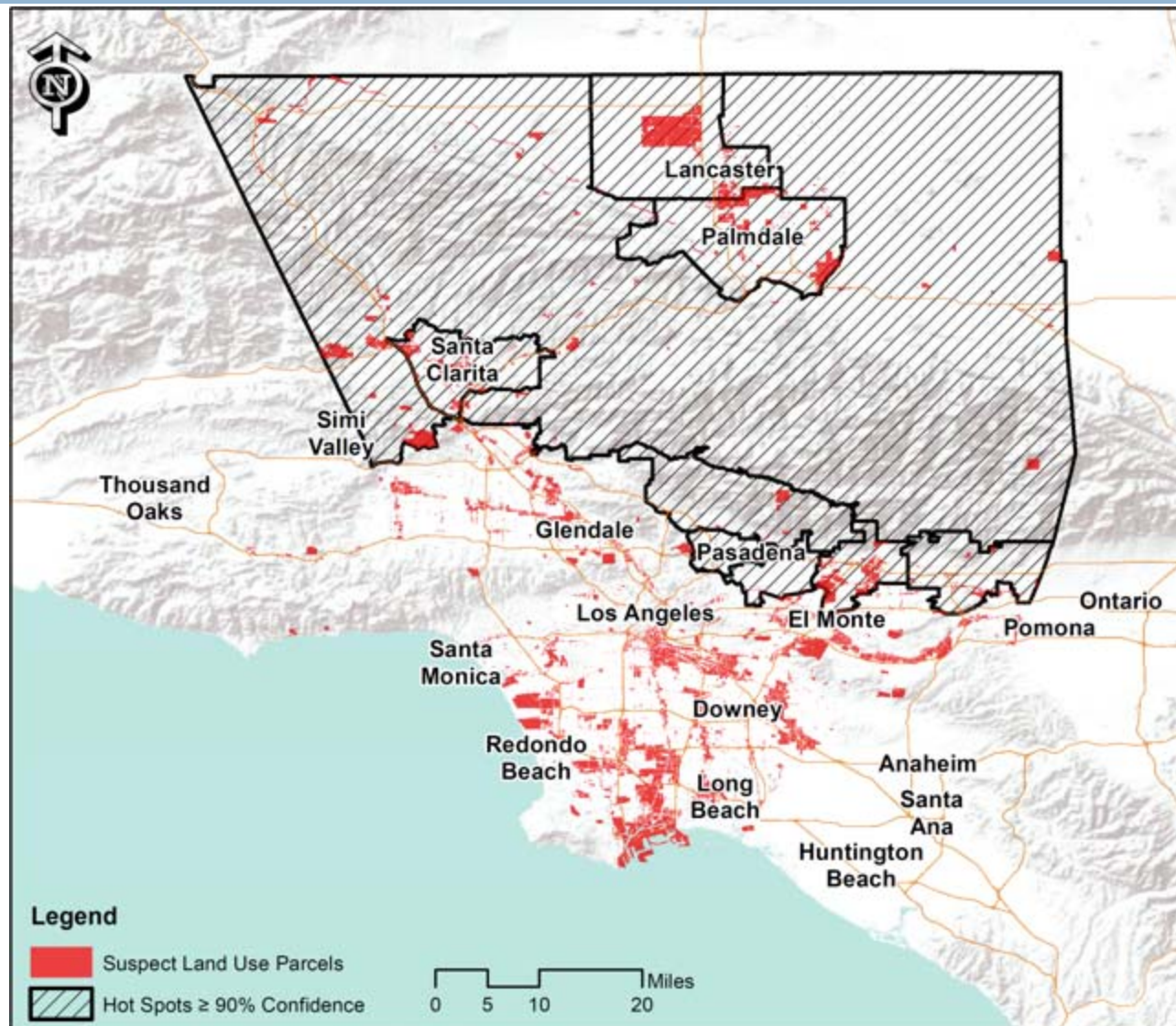


	Los Angeles County		Hot Spots		OR	Ratios	Significance Level	Increased Risk
	Births	Rates	Births	Rates				
All Races and Ethnicities	583,992	0.93	67,654	2.26		2.98	P < 0.0001	197.88%

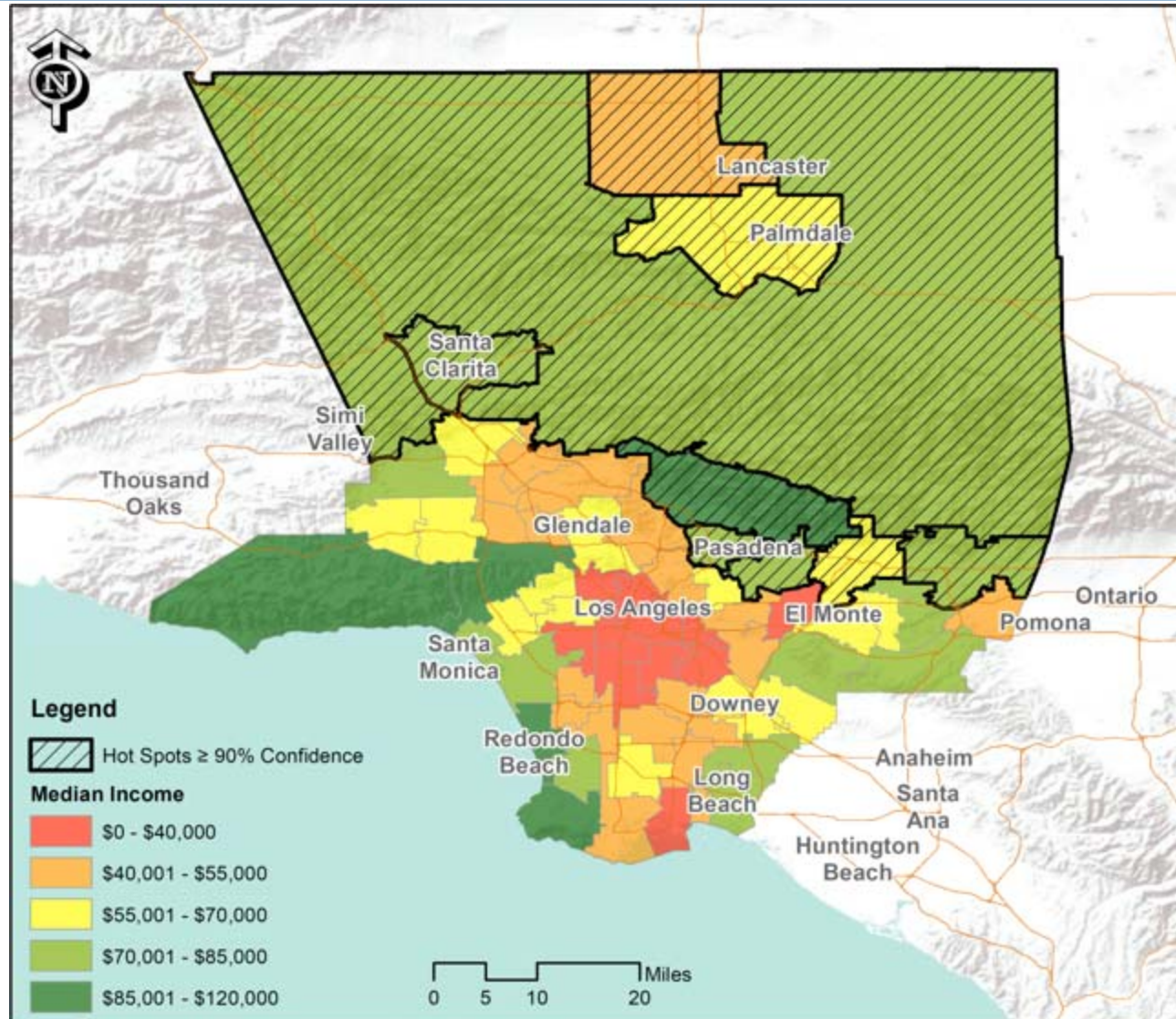
Relative Risk by Race/Ethnic Groups for Births with Congenital Anomalies within Hot Spots

	Los Angeles County		Hot Spots			Ratios	Significance Level	Increased Risk
	Births	Rates	Births	Rates				
All Races and Ethnicities	583,992	0.93	67,654	2.26	OR	2.98	P < 0.0001	197.88%
					RR	2.98	P < 0.0001	
Hispanic	412,299	0.94	41,086	2.36	OR	3.03	P < 0.0001	202.21%
					RR	3.02	P < 0.0001	
White	71,194	1.17	14,907	2.15	OR	2.37	P = 0.0001	136.92%
					RR	2.37	P = 0.0001	
Black	34,962	0.66	4,656	2.79	OR	8.48	P < 0.0001	746.17%
					RR	8.46	P < 0.0001	
Asian	48,447	0.74	4,419	2.04	OR	3.33	P = 0.0018	232.11%
					RR	3.32	P = 0.0018	
Other or Not Stated	17,090	0.94	2,586	0.77	OR	0.80	P = 0.7693	-19.88%
					RR	0.80	P = 0.7693	

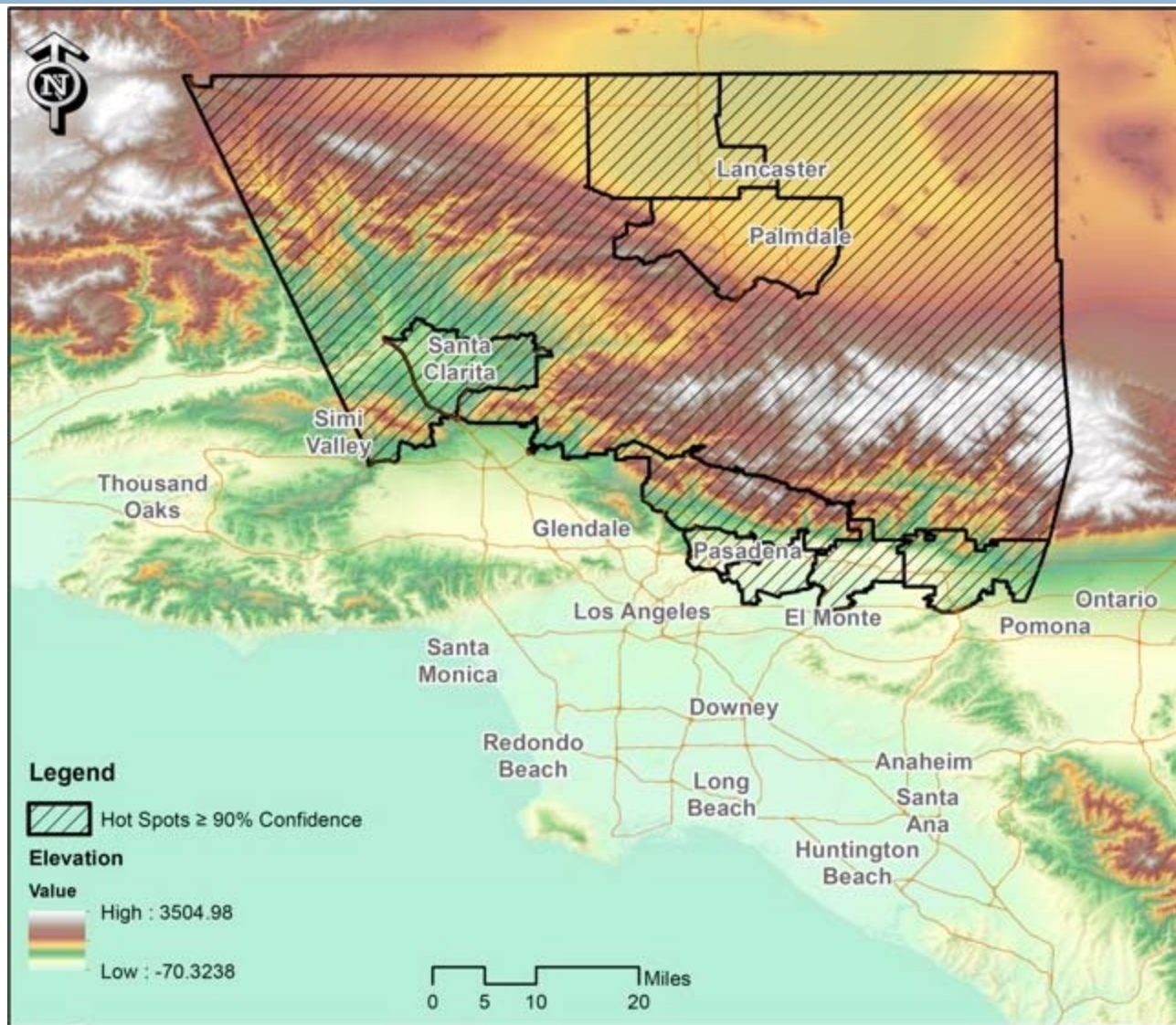
Hot Spots – Births with congenital anomalies for non-smoking mothers (15-34) with Land Use



Hot Spots – Births with congenital anomalies for non-smoking mothers (15-34) with Median Income



Hot Spots – Births with congenital anomalies for non-smoking mothers (15-34y) with Elevation



Place matters



- Congenital anomalies cluster in LA county
- Possible explanation – topography
- Limitations
 - ▣ Birth certificate data
- Next steps
 - ▣ look further out in southland (Inland Empire, San Bernadino)
 - ▣ Public health and policy implications

Thank you

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- Josh Bader
- Karen Singh
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- Lucille Packard Foundation

