

# 2012

## California Adolescent Sexual Health Needs Index

### September 2014



Prepared by the Epidemiology, Assessment and Program Development Branch of the California Department of Public Health Maternal, Child, and Adolescent Health Division.

Recommended Citation:  
2012 California Adolescent Sexual Needs Health Index (CASHNI). Sacramento: California Department of Public Health, Maternal, Child and Adolescent Health Program; 2014.

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We offer special thanks to Michael Samuel, DrPH, Joan Chow, MPH, DrPH and Denise Gilson at the California STD Control Branch for providing technical expertise and MSSA level gonorrhea data.



## 2012 California Adolescent Sexual Health Needs Index (CASHNI)

### **Introduction**

Every youth deserves access to high-quality sexual and reproductive health information and support services. California has a long and successful history of providing such supports to adolescents.<sup>1</sup> Over the past 20 years, these efforts have been reflected in steadily declining birth rates among California females ages 15 – 19.<sup>2</sup> Despite these successes, the number of youth, families, and communities impacted by early childbearing remains high. Moreover, in California, racial, ethnic, and geographical disparities in adolescent sexual and reproductive health access and outcomes persist. In recognition of these variations across the State, CDPH/MCAH developed the California Adolescent Sexual Health Needs Index (CASHNI). This index will allow CDPH/MCAH to target available resources for primary and secondary adolescent pregnancy prevention programs to areas across the State with the greatest need for sexual and reproductive health services and supports.

### **A Focus on Social Determinants of Health**

Sexual health is defined by the World Health Organization as “a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity.”<sup>3</sup> Supporting sexual health in adolescents requires acknowledgement that sexuality is a normative part of development and that adolescents are active agents in their sexual and reproductive choices. Not all adolescents benefit from the same choices, however. There are a number of social determinants of health that limit individual choices, including systemic racial and income inequalities and healthcare and educational access and quality differences.<sup>4</sup> These disparities and the related sexual and reproductive health outcomes can have profound impacts on adolescent’s health throughout life.

### **Small Area Geographical Targeting**

Geography is a key predictor of health disparities and outcomes. A common geography for health outcome data is the county.<sup>5</sup> However, there is substantial variation within California counties in the number and rate of adolescent births that is masked when looking at overall county rates.<sup>6</sup> To address this within county variation, the CASHNI was developed at the Medical Service Study Area (MSSA) level. MSSAs are clusters of census tracts that do not cross county boundaries and were developed to identify areas of unmet priority for health care coverage.<sup>7</sup> MSSAs are recognized by the U.S. Health Resources and Services Administration, Bureau of Health Professions' Office of Shortage Designation as rational service areas for purposes of designating Health Professional Shortage Areas, Medically Underserved Areas and Medically Underserved Populations. MSSAs are revised, as needed, with community input



following each decadal census. Thus, MSSAs are a stable, locally meaningful sub-county geography that can be used for program targeting.

### **Rationale and Description of Indicators**

CASHNI indicators were chosen from available youth data in California<sup>8</sup> related to one of two broad CDPH/MCAH adolescent sexual health goals: (1) increase access to high-quality sexual health programs; and, (2) reduce the total number of adolescent births. In total, eight indicators were selected for the CASHNI; a summary of inclusion rationale is provided below (see technical notes for more information). All data is from 2012, the most recent year of birth data available.

- The average number of annual live births (NLB) to females ages 15 – 19<sup>9</sup> is included as the base population of expectant and parenting youth and the minimum adolescent population in need of sexual and reproductive health services in an MSSA. If efforts to reduce total adolescent births across the state are to be successful, they must be directed towards areas with the greatest number of births.
- The adolescent birth rate (ABR)<sup>10</sup> is the relative risk of adolescent births across geographies with different population sizes. The ABR is included in the calculation of overall community risk because adolescents in areas with higher ABRs have a greater likelihood of giving birth than those in areas with lower ABRs.
- The percentage of repeat births (PRB)<sup>11</sup> is the proportion of live births to adolescents who have multiple children. Repeat adolescent births are frequently correlated with short birth intervals, increasing the risk of negative health outcomes for mother and infant.<sup>12</sup> These youth may require additional resources in access to reproductive health care, academic and employment success, and in transitioning to a healthy and successful adult.
- The gonorrhea incidence rate (GIR)<sup>13</sup> is an indicator of adolescent sexual health outcomes beyond pregnancy prevention. We have included gonorrhea rather than Chlamydia because Gonorrhea is less likely to be asymptomatic in both males and females, requires more resources per case to treat and evinces greater racial and ethnicity disparities.<sup>14</sup>
- The percentage of youth living in areas of concentrated poverty (PYP)<sup>15</sup> is included to reflect the severely limited resources and greater needs among populations living in concentrated areas of low income. Consistent with the social determinants of health framework, we have included this area-based indicator rather than an individual measure of income to capture systemic influences.



- The percentage of youth living in racially isolated areas (RIS)<sup>16</sup> is included as a direct measure of racial inequality across MSSAs. Racially isolated areas of people of color tend to have fewer neighborhood resources, employment opportunities and lower quality schools all of which negatively affect health.<sup>17</sup>
- The high school dropout rate (HDO)<sup>18</sup> is reflective of both community opportunities for positive future outcomes and populations of youth who are unlikely to receive sexual health information and services through mandated education.
- Rural and urban status (RUS)<sup>19</sup> addresses resources needed in an MSSA to deliver sexual and reproductive health programming. Rural healthcare disparities are well documented, and rural populations face less healthcare access at all levels (e.g., preventative, specialty, emergency).<sup>20</sup> In addition, rural youth face additional challenges in accessing reproductive health care due to increased confidentiality concerns in small close-knit communities, limited public transportation and the need to travel long distances to a pharmacy or family planning clinic.<sup>21</sup>

### **Calculation of CASHNI Scores**

The MSSA level CASHNI Score was calculated as follows:

- a. The ABR, PRB, GIR, PYP, RIS, HDO were standardized to the normal distribution and summed to form an index of overall community risk.<sup>22</sup>
- b. Overall community risk was ranked from 1 to 5 based on the distribution of sums and rankings were multiplied by 2 for rural MSSAs.<sup>23</sup>
- c. Resulting values (range 1 – 10) were multiplied by the NLB.

### **What the CASHNI Score Means**

CASHNI scores range from 1 to 2728 across California's 542 MSSAs (see Table 1 for a list of CASHNI scores for each MSSA organized by county). Higher scores indicate a greater community need for adolescent sexual and reproductive health services.<sup>24</sup>



## References and Technical Notes

1. CDPH (2014). *CDPH 2012 teen birth rate (TBR) press release frequently asked questions*. Retrieved from <http://www.cdph.ca.gov/programs/mcah/Documents/MO-MCAH-2012TBR-FAQPressRelease.pdf>
2. CDPH (2014). *California teen births: 2000 to 2012*. Retrieved from <http://www.cdph.ca.gov/programs/mcah/Documents/MO-MCAH-2012TBR-DataSlides.pdf>
3. The World Health Organization. (2006). *Defining sexual health: Report of a technical consultation on sexual health*, 28-31 January 2002, Geneva. Retrieved from [http://www.who.int/reproductivehealth/publications/sexual\\_health/defining\\_sexual\\_health.pdf](http://www.who.int/reproductivehealth/publications/sexual_health/defining_sexual_health.pdf)
4. Centers for Disease Control and Prevention (October, 2010). *Establishing a holistic framework to reduce inequities in HIV, viral hepatitis, STDs, and tuberculosis in the United States*. Atlanta (GA): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved from <http://www.cdc.gov/socialdeterminants/docs/SDH-White-Paper-2010.pdf>
5. University of Wisconsin Population Health Institute (2014). *County Health Rankings 2014*. Retrieved from [http://www.countyhealthrankings.org/sites/default/files/state/downloads/CHR2014\\_CA\\_v2.pdf](http://www.countyhealthrankings.org/sites/default/files/state/downloads/CHR2014_CA_v2.pdf)
6. Takahashi ER, Florez CJ, Biggs MA, Ahmad S, Brindis CD (2008). *Teen Births in California: A Resource for Planning and Policy*. Sacramento, CA: California Department of Public Health, Maternal, Child and Adolescent Health Division and Office of Family Planning, and the University of California, San Francisco
7. California's Office of Statewide Health Planning and Development, Medical Service Study Areas, retrieved from <http://www.oshpd.ca.gov/hwdd/MSSA/index.html>.
8. Selection of indicators was limited to available data. Although CDPH/MCAH understands adolescent sexual health is larger than pregnancy prevention (e.g., Sisson, 2012<sup>25</sup>), there is currently no statewide data on California adolescents reflective of the holistic sexual health model (e.g., relationship information, pregnancy intentions). Data available at the MSSA level is further limited.
9. The number of adolescent births in an MSSA was determined by geocoding mothers' addresses from the *Birth Statistical Master File* (California Department of Public Health, Center for Health Statistics and Informatics) using a 3-step process. 1) Raw address data was submitted to ERSI ArcGIS software for geocoding; 2) Uncoded addresses were matched to an MSSA by zip code (where there was 1:1 relation between a zip code and MSSA); 3) remaining uncoded addresses were manually cleaned (e.g., fixing misspelling, removing apartment numbers) and resubmitted for geocoding. This process resulted in 99.05% of the 116,376 adolescent births in 2010-2012 being successfully geocoded.
10. The adolescent birth rate (ABR) is the number of live births to females ages 15-19 divided by the female population ages 15-19, multiplied by 1,000. Aggregated birth data for years 2010-2012 were used to produce stable rates. MSSA population was calculated by applying the 2010 racial and ethnic distribution of the female population ages 15-19 from the census tract aggregated to MSSA to the California Department of Finance county population data for 2010-2012 using California, Department of Finance, Report P-3: State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010-2060. Sacramento, California, January 2013 and U.S. Census Bureau; 2010 population by census tract; using American FactFinder; <http://factfinder2.census.gov>.
11. Percentage of repeat births (PRB) is the number of live births to females with a previous live birth divided by the total number of live births among females ages 15-19, multiplied by 100; excludes births where birth order is unknown or the number of previous live births is greater than 6 (less than 1% of births excluded).
12. Conde-Agudelo, A., Rosas-Bermúdez, A., & Kafury-Goeta, A.C. (2006). Birth spacing and risk of adverse perinatal outcomes: A meta-analysis. *JAMA*, 295(15):1809-1823.
13. The gonorrhea rate (GIR) is the number of reported gonorrhea cases to youth ages 15 – 19 divided by the youth population ages 15-19, multiplied by 100,000. 2010 – 2012 incidence and population data were aggregated to produce stable rates. Counts of Gonorrhea were geocoded and provided by the California Department of Public Health, STD Control Branch. Youth population data from U.S. Census Bureau; 2010 population by census tract; using American FactFinder; <http://factfinder2.census.gov>.
14. Guidance on selection of STI indicator for adolescent population provided by California Department of Public Health, STD Control Branch, July 2014.

15. Percentage of youth living in areas of concentrated poverty (PYP) is the number of children under 18 years of age living in a census tract where 20% or more of the total population is under the federal poverty level divided by the total number of children under 18 years of age in that census tract, aggregated across census tracts in an MSSA. Data from U.S. Census Bureau; 2012 American Community Survey 5-year estimates; using American FactFinder; <<http://factfinder2.census.gov>>.
16. Methodology to calculate racial isolation (RIS) adapted from The Furman Center for Real Estate and Urban Policy([http://furmancenter.org/files/sotc/The\\_Changing\\_Racial\\_and\\_Ethnic\\_Makeup\\_of\\_New\\_York\\_City\\_Neighborhoods\\_11.pdf](http://furmancenter.org/files/sotc/The_Changing_Racial_and_Ethnic_Makeup_of_New_York_City_Neighborhoods_11.pdf)) where census tracts were defined as racially isolated if greater than 50% of the population was African American, Hispanic or American Indian/Native American and less than 20% of the population was White. Percentage of youth living in racially isolated areas of African Americans, Hispanics and American Indians/Native Americans is the number of children under 18 years of age living in racially isolated census tracts aggregated across census tracts in an MSSA divided by the total number of children under 18 years of age in that MSSA. Data from U.S. Census Bureau; 2012 American Community Survey 5-year estimates; using American FactFinder; <<http://factfinder2.census.gov>>.
17. Williams, D. R., & Collins, C. (2001). Racial residential segregation: A fundamental cause of racial disparities in health. *Public health reports*, 116(5), 404. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1497358/pdf/12042604.pdf>
18. High school dropout rate (HDO) is the 2012 percentage of youth in all school cohorts that dropout of school divided by the adjusted number of youth in all school cohorts. Because school catchment boundaries and districts cross multiple levels of California geography (census tracts, MSSAs, counties) HDOs are CDE published county rates applied across MSSAs in that county. Although this data is at the county rather than MSSA, educational opportunities and outcomes are too important for adolescent well-being to exclude from the index. Data retrieved from California Department of Education, DataQuest <http://dq.cde.ca.gov/dataquest/>
19. Rural and Urban Status (RUS) is defined by the State of California's Office of Statewide Health Planning and Development using population size and density. Frontier MSSAs are included in the rural category. For more information on MSSA development and uses, see <http://www.oshpd.ca.gov/hwdd/MSSA/index.html>.
20. California State Office of Rural Health (2012). Rural Health Report 2012. Retrieved from: <http://www.dhcs.ca.gov/services/rural/Documents/CSRHAPresentationNov132012.pdf>
21. Garside, R., Ayres, R., Owen, M., Pearson, V., & Roizen, J. (2002). Anonymity and confidentiality: Rural teenagers' concerns when accessing sexual health services. *The Journal of Family Planning and Reproductive Health Care*, 28, 22-36.
22. Z-scores calculated for each indicator separately based on the mean and standard deviation across all 542 MSSAs. MSSAs with 0 births (n = 3) and/or 0 reported cases of gonorrhea (n = 173) were given a rate of 0. Z-scores greater than 3 were truncated to a value of 3 before summing the six indicators of community risk.
23. Summed z-scores were sorted by MSSA and assigned a value based on their relative distribution. MSSAs in the bottom 0 – 39% of the distribution were ranked as lowest risk with a value of 1; MSSAs 40 – 59% = 2; MSSAs 60-79% = 3; MSSAs 80-89% = 4; and, MSSAs >90% were ranked highest with a value of 5. Conceptualizing this is akin to saying that MSSAs with the greatest level of risk have 5 times greater need than those with the lowest level of risk. Similarly, by multiplying risk by 2 for rural (and frontier) MSSAs we are acknowledging that irrespective of total risk, the cost of providing services in rural MSSAs is at least twice as much as the cost of delivering services in urban MSSAs.
24. CASHNI scores less than 6 are noted with an asterisk to prevent constructive identification of births.
25. Sisson, G. (2012). Finding a way to offer something more: Reframing teen pregnancy prevention. *Sexuality Research and Social Policy*, 9, 57-69.

**Table 1. List of California MSSAs and California Adolescent Sexual Health Needs Index (CASHNI) Scores, sorted by CASHNI Score within County**

MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI
<b>Alameda</b>		<b>Contra Costa</b>		<b>Humboldt</b>		<b>Lassen</b>		<b>Los Angeles</b>	
2d	1182	18f	708	38	56	75	27	78.2zzz	414
2h	511	18b	133	40	22	74	9	78.2www	391
2c	413	18e	93	44	9	73	*	78.2ww	373
2n	374	18a	34	<b>Imperial</b>		<b>Los Angeles</b>		78.2hhhh	364
2f	126	17	34	48	954	78.2fff	2000	78.2v	357
2j	97	18c	34	49	933	78.2ooo	1720	78.2hhh	349
2m	90	18g	31	50	619	78.2ggg	1682	78.2bb	347
2g	60	18j	9	47	163	78.2bbb	1413	78.2zz	344
2a	52	18h	8	46	1-5	78.2ss	1337	78.2cc	341
1.1	32	18i	6	<b>Inyo</b>		77.1c	1325	78.2vv	326
2l	28	<b>Del Norte</b>		53	84	78.2jjj	1317	78.2kk	313
1.2	27	19	181	55	12	78.2mmm	1245	78.2lll	235
2i	21	<b>El Dorado</b>		54	7	78.2b	1233	78.2qq	235
2e	19	23.3	51	<b>Kern</b>		78.2s	1148	78.2qqq	226
2k	19	24	43	66b	2728	78.2h	1143	78.2q	225
2b	12	23.2	21	61	1367	78.2ccc	1078	77.3	220
<b>Alpine</b>		23.1	17	66a	888	78.2d	1005	77.2	216
3	*	22	9	60	875	78.2oo	955	78.2iiii	208
<b>Amador</b>		<b>Fresno</b>		66c	795	78.2iii	887	78.2ff	202
4	26	30	2100	58.2	793	78.2l	868	77.1b	202
5	7	35d	1647	58.1	707	78.2ll	847	78.2eee	195
6	*	35e	1378	57.2	501	78.2ddd	842	78.2aaaa	169
<b>Butte</b>		32	1243	65	442	78.2c	803	76.1b	150
10	440	35c	1200	64	282	78.2nnn	782	78.2n	143
7.1	134	31	803	66d	180	78.2p	751	78.2uu	133
9	64	25	630	63	78	77.1a	729	78.2pp	107
8	61	35f	476	62	55	78.2i	699	78.2eeee	101
11	26	35b	380	59	50	78.2ppp	692	78.2kkk	99
7.4	8	29	342	57.1	10	78.2uuu	692	78.2xxx	89
7.2	*	28	263	<b>Kings</b>		78.2r	672	78.2a	86
7.3	*	27	248	69	549	78.2yyy	667	78.2cccc	81
<b>Calaveras</b>		26	190	68	520	78.2ffff	640	78.2ii	79
12	50	35a	64	67	290	78.2k	565	77.5	75
<b>Colusa</b>		<b>Glenn</b>		<b>Lake</b>		78.2sss	533	78.2x	66
16.3	44	36.1	126	71.1	272	78.2g	509	78.2z	59
16.1	37	37	86	70.2	80	78.2m	508	78.2gggg	45
15	28	36.2	34	70.1	55	78.2gg	477	78.2tt	45
16.2	*	<b>Humboldt</b>		71.2	19	78.2e	467	78.2rrr	41
<b>Contra Costa</b>		39	209	71.3	9	78.2bbbb	440	78.2dd	34
18d	713	42	121	72	97	78.2jjjj	440	78.2dddd	32

MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI
<b>Los Angeles</b>		<b>Mendocino</b>		<b>Orange</b>		<b>Riverside</b>		<b>San Bernardino</b>	
78.2vvv	30	93.4	9	116r	428	135d	521	151c	907
78.2nn	29	93.5	8	116c	313	133.3	373	149	678
78.2ttt	28	88	*	116q	287	135g	372	145.1b	513
76.1a	26	93.3	*	116f	172	134	348	144.2	308
78.2o	24	90	*	116k	166	126	244	144.3	308
78.2t	21	<b>Merced</b>		116a	155	135c	229	151l	287
76.2	20	<b>97.2</b>	<b>803</b>	116p	147	129.2	223	151e	285
78.2y	20	94	636	116h	123	135e	156	151b	202
78.2j	19	96	562	116s	101	131a	139	151i	187
78.2rr	19	97.1	387	115.1	63	133.2	77	151j	128
78.2hh	19	95	384	116n	55	131b	73	150	126
78.2mm	18	97.3	141	115.2a	40	135f	69	144.1	82
78.2ee	18	<b>Modoc</b>		116m	36	129.1	57	151a	73
78.2xx	14	98	23	116e	33	131c	43	147	67
78.2kkkk	14	99	12	115.2b	28	129.3	37	146	48
78.2jj	12	100	2	115.2d	27	127	32	151d	37
78.2u	9	<b>Mono</b>		115.2c	21	130	14	142	35
78.2f	8	103	21	116o	19	<b>Sacramento</b>		143	16
77.4	7	102	9	116j	15	139j	1198	148	15
78.1	6	<b>Monterey</b>		116u	15	139f	1098	145.3	*
78.2w	6	109.2	1455	116t	13	139k	1020	<b>San Diego</b>	
78.2yy	*	107	1220	116d	10	139c	406	161j	931
78.2aa	*	109.1	392	116v	9	139g	327	161c	867
<b>Madera</b>		105	347	<b>Placer</b>		139a	321	161g	780
80	1893	108	229	121.1	54	139h	233	156e	699
79.2	190	110	56	119	42	139d	154	161d	687
79.1	28	106	*	121.2	27	136	113	161k	601
<b>Marin</b>		104	*	118	23	139l	113	156d	401
83b	54	<b>Napa</b>		117	12	139b	106	161h	340
83a	8	112.1	58	120	*	139i	57	156a	289
82	*	112.2	37	<b>Plumas</b>		139m	40	161s	245
81	*	111.2	14	122	29	139e	28	161l	189
<b>Mariposa</b>		112.3	12	123.1	11	137	19	160	187
85	26	111.1	*	124	11	138	9	161i	151
86	*	111.3	*	125	*	<b>San Benito</b>		161a	107
<b>Mendocino</b>		<b>Nevada</b>		123.2	*	140	100	161e	96
93.1	256	113	144	<b>Riverside</b>		<b>San Bernardino</b>		159	72
91	56	114	66	128	1302	151g	1887	161t	70
92	53	<b>Orange</b>		132	725	151h	1525	161b	64
89	37	116b	1448	133.1	690	151k	1485	161u	63
87.1	34	116l	781	135b	573	151f	1239	161f	55
93.2	19	116g	654	129.4	552	145.1a	1013	156f	54
87.2	12	116i	466	135a	526	145.2	979	156b	53



MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI	MSSA ID	CASHNI
<b>San Diego</b>		<b>San Luis Obispo</b>		<b>Santa Clara</b>		<b>Sonoma</b>		<b>Tulare</b>	
158.1	46	171	98	183m	15	210.1	311	227.1	315
155	36	174	29	183a	*	209.1	75	228.1	301
161m	35	172	29	183f	*	208	37	227.2	258
153.1	29	170	24	<b>Santa Cruz</b>		205.2	23	232	35
161v	28	<b>San Mateo</b>		184	564	205.1	19	229	11
161o	26	176b	420	185.5	124	206	18	<b>Tuolumne</b>	
156c	26	176f	45	185.1	46	207	13	234.2	23
153.2	24	176a	41	185.3	7	209.2	8	236	23
161q	21	176d	36	185.4	7	210.2	7	234.1	*
161p	18	175.1	25	185.2	*	<b>Stanislaus</b>		235	*
161n	16	176c	19	<b>Shasta</b>		215c	1063	<b>Ventura</b>	
157	13	175.3	10	189.2	187	213	348	241b	1381
154	11	176e	9	186	151	214	273	241a	536
152	10	176g	6	189.3	116	212.3	238	237	364
161r	*	175.2	*	190	16	211	212	241c	58
158.2	*	<b>Santa Barbara</b>		187	12	212.1	191	239	49
<b>San Francisco</b>		180.1	1235	188.2	11	215b	182	240c	39
162f	388	179	536	188.1	7	215a	170	240b	36
162a	141	180.2	122	189.1	*	212.2	138	238	25
162c	122	181a	77	<b>Sierra</b>		<b>Sutter</b>		240a	23
162d	79	177	29	191	*	216	372	<b>Yolo</b>	
162g	32	181b	28	<b>Siskiyou</b>		218	32	245	117
162b	10	178.1	10	195	75	217	*	246.1	72
162h	6	178.2	9	193	28	<b>Tehama</b>		243	24
162e	*	<b>Santa Clara</b>		197	16	221	282	242	14
<b>San Joaquin</b>		183e	872	198	12	222	160	244	11
169b	1690	182	471	196	8	219	28	246.2	6
169a	744	183h	432	200	8	220	8	<b>Yuba</b>	
169c	287	183d	294	194	6	<b>Trinity</b>		249	618
166	265	183j	208	199	*	225	24	247	37
164.1	164	183b	147	<b>Solano</b>		224	12	248	13
163	157	183l	61	204	408	223	7		
167	109	183n	54	202b	371	226	*		
164.2	56	183k	47	202a	115	<b>Tulare</b>			
168	33	183i	41	201	34	231	2195		
165	*	183g	41	203.1	27	230	1443		
<b>San Luis Obispo</b>		183o	41	203.2	7	233	844		
173	120	183c	25			228.2	789		

\*CASHNI score less than 6.



Figure 1. Map of CASHNI Scores Across California MSSAs

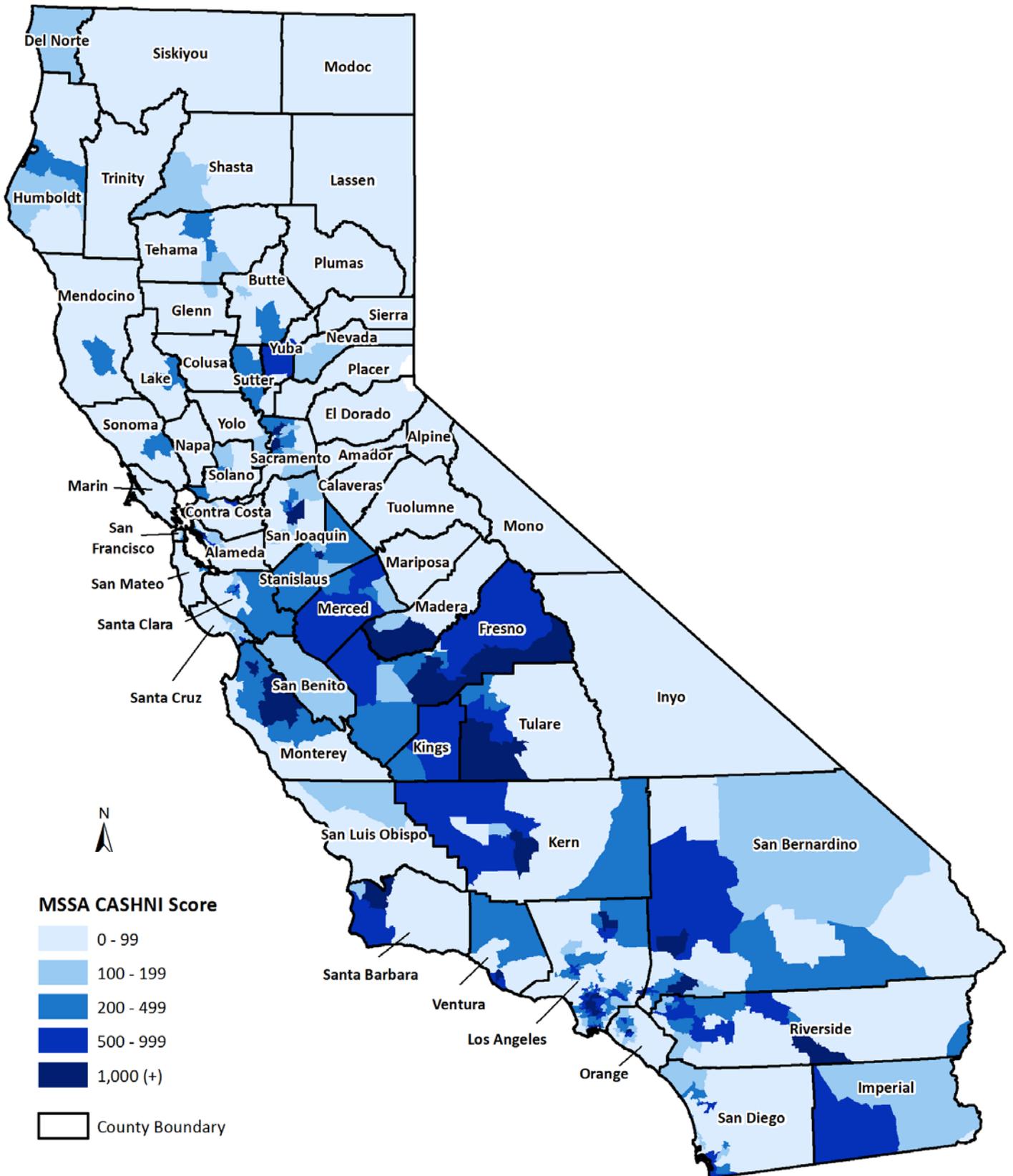


Figure 2. Map of CASHNI Scores Across California MSSAs – Bay Area Detail

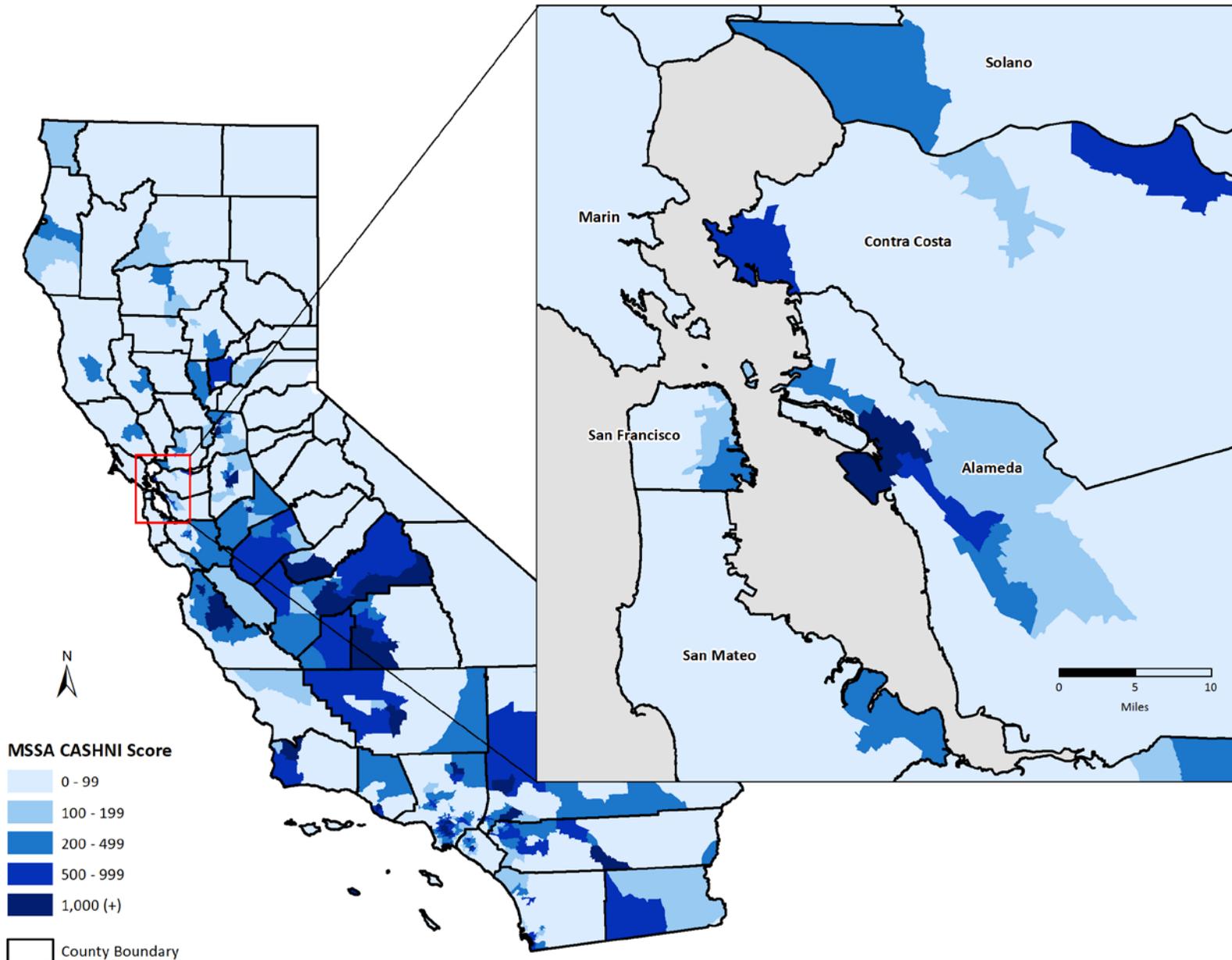


Figure 3. Map of CASHNI Scores Across California MSSAs – Los Angeles County Area Detail

