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Publication Date

2004-11-01



Over Four Million California Adults Age 45 and Older Have High Blood Pressure

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November 2004

Nearly 40% of California adults age 45 and older reported being diagnosed with high blood pressure, according to the 2001 California Health Interview Survey (CHIS 2001). High blood pressure, also called hypertension, is known as “the silent killer” because it often has no symptoms. If left unchecked and untreated, uncontrolled high blood pressure can lead to heart failure, kidney failure, heart attack and stroke. This policy brief provides data of diagnosed high blood pressure rates for California legislative districts and counties for adults age 45 and older. The first of its kind sub-county data in this policy brief are estimates created by a small-area methodology, based on rates from CHIS 2001 that are applied to population data from the 2000 Census and 2002 California Department of Finance.

High Blood Pressure in State Legislative Districts

In 2002, over four million California adults age 45 and older had high blood pressure that was diagnosed by a doctor at some time in their lives. Hypertension affects from 31 to 46% of people age 45 and over in California’s 80 Assembly districts and from 32 to 44% in the state’s 40 Senate districts. The majority of legislative districts had prevalence rates similar to or worse than the already high statewide average, and California adults with high blood pressure reside in all areas of the state. However, the legislative districts with the highest rates of diagnosed high blood pressure among adults 45 and older were located primarily in parts of Los Angeles County, and in Fresno and Tulare counties for Assembly districts (Exhibit 1) and in Fresno, Kern, Kings and Tulare counties for Senate districts (Exhibit 2). On the other hand, high blood pressure rates below the statewide average for adults were found in less than one-fifth of all state Assembly districts, which are primarily located in coastal areas and along the western interior regions of the state.

Rates for Congressional Districts

The 31 to 45% variation in hypertension rates among adults age 45 and older for Congressional districts (Exhibit 3) is similar to our findings on state legislative districts. The majority of California’s 58 Congressional districts had prevalence rates similar to or worse than the already high statewide average. Since Congressional districts cover larger geographic areas and represent bigger populations than either Assembly or Senate districts, the Congressional districts with higher rates of diagnosed hypertension among the adult 45 and older population include parts of Alameda, Madera, Merced, Riverside and San Bernardino counties, in addition to the counties already mentioned for Assembly and Senate districts. Lower hypertension rates are also more broadly distributed across the state. A little over one-fifth of all Congressional districts have rates lower than the statewide average, and the districts are located in the same counties as those mentioned for state legislative districts, as well as Solano County.

The Prevalence Rates of Diagnosed Hypertension Among Adults Age 45 and Older in California Counties

The rates of diagnosed hypertension ranged from 27 to 47% for California counties (Exhibit 4). Imperial, Lake/Mendocino and Merced counties had the highest rates of high blood pressure, where almost one in every two adults age 45 or older had been diagnosed with high blood pressure at some time in their lives. Other counties that had notably high rates of hypertension among this age group were located primarily in Tulare, Madera, Fresno and Solano counties.

Los Angeles Service Planning Areas

In 2002, over one million adults age 45 and older in Los Angeles County had diagnosed high blood pressure at some time in their lives (Exhibit 4).

Over Four Million California Adults Age 45 and Older Have High Blood Pressure

Exhibit 1:
Hypertension
Prevalence Rates by
Assembly District,
Age 45 and Older
Source: 2001 California
Health Interview Survey,
2000-2002 Current
Population Surveys,
and the 2000 Census.

Assembly Districts

CALIFORNIA RESIDENTS 45+ DIAGNOSED WITH HYPERTENSION			
	Rate*	95% Range**	County Location of Assembly District
CALIFORNIA	38%	(37-39)	
District 01	42%	(39-44)	Del Norte, Humboldt, Lake, Mendocino, Sonoma, Trinity
District 02	40%	(38-42)	Butte, Colusa, Glenn, Modoc, Shasta, Siskiyou, Sutter, Tehama, Yolo
District 03	38%	(35-40)	Butte, Lassen, Nevada, Placer, Plumas, Sierra, Yuba
District 04	38%	(35-41)	Alpine, El Dorado, Placer, Sacramento
District 05	39%	(35-42)	Placer, Sacramento
District 06	31%	(27-34)	Marin, Sonoma
District 07	41%	(38-44)	Napa, Solano, Sonoma
District 08	39%	(37-42)	Solano, Yolo
District 09	42%	(38-46)	Sacramento
District 10	38%	(36-41)	Amador, El Dorado, Sacramento, San Joaquin
District 11	35%	(31-38)	Contra Costa
District 12	39%	(36-42)	San Francisco, San Mateo
District 13	38%	(35-42)	San Francisco
District 14	34%	(32-37)	Alameda, Contra Costa
District 15	33%	(30-35)	Alameda, Contra Costa, Sacramento, San Joaquin
District 16	44%	(40-48)	Alameda
District 17	44%	(41-48)	Merced, San Joaquin, Stanislaus
District 18	42%	(38-46)	Alameda
District 19	39%	(35-43)	San Mateo
District 20	37%	(34-40)	Alameda, Santa Clara
District 21	35%	(32-37)	San Mateo, Santa Clara
District 22	34%	(31-37)	Santa Clara
District 23	38%	(34-41)	Santa Clara
District 24	37%	(34-40)	Santa Clara
District 25	39%	(36-42)	Calaveras, Madera, Mariposa, Mono, Stanislaus, Tuolumne
District 26	41%	(38-44)	San Joaquin, Stanislaus
District 27	34%	(32-37)	Monterey, Santa Clara, Santa Cruz
District 28	37%	(34-40)	Monterey, San Benito, Santa Clara, Santa Cruz
District 29	43%	(40-47)	Fresno, Madera, Tulare
District 30	42%	(39-44)	Fresno, Kern, Kings, Tulare
District 31	46%	(42-49)	Fresno, Tulare
District 32	41%	(37-45)	Kern, San Bernardino
District 33	38%	(35-41)	San Luis Obispo, Santa Barbara
District 34	45%	(41-48)	Inyo, Kern, San Bernardino, Tulare
District 35	36%	(33-39)	Santa Barbara, Ventura
District 36	45%	(40-49)	Los Angeles, San Bernardino
District 37	36%	(32-39)	Los Angeles, Ventura
District 38	36%	(33-38)	Los Angeles, Ventura
District 39	36%	(33-39)	Los Angeles
District 40	36%	(34-39)	Los Angeles

* The numbers presented here are the midpoint of the "95% range."

**The "95% range" (commonly called a confidence interval) provides a more reliable estimate of the hypertension prevalence rate for persons in the population group.

(Continued)

The rates of high blood pressure ranged from 30 to 48% in Los Angeles Service Planning Areas (LA SPAs). Half of the LA SPAs were at or above the statewide average, with the highest rate in LA SPA South that includes South Los Angeles and the cities of Compton, Lynwood and Paramount. However, the numbers of adults with diagnosed high blood pressure in 2002 were striking even in

LA SPAs with lower rates than the statewide average. For example, over 400,000 adults age 45 and older in the San Fernando and San Gabriel Valleys combined had diagnosed high blood pressure at some time in their lives.

Over Four Million California Adults Age 45 and Older Have High Blood Pressure

CALIFORNIA RESIDENTS 45+ DIAGNOSED WITH HYPERTENSION			
	Rate*	95% Range**	County Location of Assembly District
CALIFORNIA	38%	(37-39)	
District 41	32%	(30-34)	Los Angeles, Ventura
District 42	32%	(30-34)	Los Angeles
District 43	36%	(33-38)	Los Angeles
District 44	36%	(34-38)	Los Angeles
District 45	35%	(31-39)	Los Angeles
District 46	37%	(34-40)	Los Angeles
District 47	41%	(39-44)	Los Angeles
District 48	45%	(42-48)	Los Angeles
District 49	37%	(34-40)	Los Angeles
District 50	37%	(33-40)	Los Angeles
District 51	43%	(40-45)	Los Angeles
District 52	46%	(42-50)	Los Angeles
District 53	33%	(30-35)	Los Angeles
District 54	36%	(34-39)	Los Angeles
District 55	40%	(38-43)	Los Angeles
District 56	38%	(35-41)	Los Angeles, Orange
District 57	37%	(34-40)	Los Angeles
District 58	39%	(36-42)	Los Angeles
District 59	39%	(37-42)	Los Angeles, San Bernardino
District 60	35%	(33-36)	Los Angeles, Orange, San Bernardino
District 61	39%	(37-42)	Los Angeles, San Bernardino
District 62	43%	(39-46)	San Bernardino
District 63	40%	(36-43)	Riverside, San Diego
District 64	39%	(36-43)	Orange
District 65	45%	(42-48)	Orange
District 66	38%	(36-41)	Orange
District 67	36%	(33-38)	Orange
District 68	36%	(33-39)	Orange
District 69	34%	(30-37)	Orange
District 70	33%	(30-35)	Orange
District 71	34%	(32-37)	Orange, Riverside
District 72	36%	(33-38)	Orange
District 73	36%	(34-38)	Orange, San Diego
District 74	36%	(33-38)	San Diego
District 75	33%	(30-35)	San Diego
District 76	37%	(34-39)	San Diego
District 77	38%	(35-41)	San Diego
District 78	39%	(36-41)	San Diego
District 79	39%	(36-42)	San Diego
District 80	42%	(39-45)	Imperial, Riverside

* The numbers presented here are the midpoint of the “95% range.”

**The “95% range” (commonly called a confidence interval) provides a more reliable estimate of the hypertension prevalence rate for persons in the population group.

*Exhibit 1 (continued):
Hypertension
Prevalence Rates by
Assembly District,
Age 45 and Older*
Source: 2001 California
Health Interview Survey,
2000-2002 Current
Population Surveys,
and the 2000 Census.

*Assembly
Districts*

Geographic Areas with High Hypertension Rates Have Large Proportions of Elderly or Ethnic Minorities

Fresno and Tulare counties had uniformly high hypertension prevalence rates for adults age 45 and older for both legislative and Congressional districts. However, Imperial, Lake/Mendocino and Merced counties had the highest prevalence rates of the state’s 58 counties, even though no single

legislative or Congressional district had a distinctly high hypertension prevalence rate. One reason for high hypertension prevalence rates in these counties may be the demographic profile of the population in these areas. Although hypertension occurs more often in African Americans, hypertension is more common among people age 65 and older. For example, about 16% of the population in the Mendocino/Lake county

group is age 65 or older, and about 87% of older adults in this county group are non-Latino white. In Merced County, 73% of the older adult population is non-Latino white. In Imperial County, older adults comprise 11% of the county's population, and almost half of the county's older residents are non-Latino white.

Conclusion

This policy brief highlights the problem of hypertension among the adult population in California. More than two-fifths of all California adults age 45 and older are living with high blood pressure. Hypertension is more common among people age 65 and older, but the condition is on the rise among people at younger ages. Since high blood pressure rates increase rapidly with age, differences in hypertension rates between legislative districts may be partly due to different numbers of older residents in each district. Nonetheless, districts with large numbers of residents with high blood pressure—no matter what the age—face a major public health challenge. To reduce hypertension, the National High Blood Pressure Education Program¹ recommends that individuals quit smoking, maintain a normal body weight, reduce salt consumption, exercise regularly, limit alcohol consumption and follow a diet that is rich in fruits and vegetables. Education can improve these health behaviors; however, for education and prevention awareness to be effective, they must be culturally and linguistically appropriate.

Even then, education and healthy behaviors are only part of the solution. Population-based strategies are critical to a comprehensive approach in reducing hypertension. These strategies include lowering the sodium content and caloric density in the food supply and providing attractive, safe and convenient opportunities for exercise (parks, walking trails and bike paths). Environmental conditions that foster exercise, including reducing crime in public spaces and improving air quality, are necessary components of a population strategy. Even a small decrease in the average high blood pressure for residents in a community is likely to result in a substantial reduction in the burden of blood pressure-related illness in that community.

Another essential population-based strategy is providing all residents equitable access to early detection and treatment, specifically screening, medications and follow-up care. It is sometimes necessary to add a regimen of blood pressure medications when lifestyle changes alone are not enough to control the condition; however, not everyone with hypertension has the health insurance coverage necessary to receive proper medical care for the condition. For example, about only 30% of uninsured adults (ages 18–64) with high blood pressure take medication for the condition compared to 53% of their counterparts who have job-based health insurance.²

The data presented in this policy brief give policy makers, advocates and medical providers useful information on the burden of hypertension throughout California and within local communities. Communities face a serious challenge to provide adequate access to the medical care needed to control high blood pressure and the health problems that can result from poor management. Equitable access to early detection, treatment and educational programs can improve the health of the millions of California adults who suffer from this insidious condition that can lead to heart disease and stroke—the first and third leading causes of death in California.

Data Sources and Methods

This policy brief is based on findings from the 2001 California Health Interview Survey (CHIS 2001), 2000–2002 Current Population Surveys (CPS), 2000 Census, 2002 Department of Finance population projections, and the California State Senate Office of Demographics' file of legislative districts. The estimates of high blood pressure prevalence were created using a small-area methodology of the multiple data sources listed here. A detailed description of the methodology used in this study is available from the authors.

Author Information

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(Continued on page 8)

1 PK Whelton, J He, LJ Appel, JA Cutler, S Havas, TA Kotchen, EJ Roccella, R Stout, C Vallbona, MC Winston, J Karimbakas. Primary prevention of hypertension: clinical and public health advisory from The National High Blood Pressure Education Program. JAMA 2002 Oct 16;288(15):1882–8.

2 ER Brown, N Ponce, T Rice, SA Lavarreda. *The State of Health Insurance in California: Findings from the 2001 California Health Interview Survey*. Los Angeles, CA: UCLA Center for Health Policy Research, 2002.

Over Four Million California Adults Age 45 and Older Have High Blood Pressure

CALIFORNIA RESIDENTS 45+ DIAGNOSED WITH HYPERTENSION			
	Rate*	95% Range**	County Location of Senate District
CALIFORNIA	38%	(37-39)	
District 01	37%	(35-38)	Alpine, Amador, Calaveras, El Dorado, Lassen, Modoc, Mono Nevada, Placer, Plumas, Sacramento, Sierra
District 02	41%	(39-43)	Humboldt, Lake, Mendocino, Napa, Solano, Sonoma
District 03	34%	(32-37)	Marin, San Francisco, Sonoma
District 04	39%	(37-41)	Butte, Colusa, Del Norte, Glenn, Nevada, Placer, Shasta, Siskiyou, Sutter, Tehama, Trinity, Yuba
District 05	41%	(38-43)	Sacramento, San Joaquin, Solano, Yolo
District 06	41%	(38-45)	Sacramento
District 07	32%	(29-36)	Contra Costa
District 08	39%	(36-42)	San Francisco, San Mateo
District 09	41%	(38-45)	Alameda, Contra Costa
District 10	39%	(36-42)	Alameda, Contra Costa
District 11	35%	(33-38)	San Mateo, Santa Clara, Santa Cruz
District 12	41%	(39-44)	Madera, Merced, Monterey, San Benito, Stanislaus
District 13	37%	(33-40)	Santa Clara
District 14	42%	(39-44)	Fresno, Madera, Mariposa, San Joaquin, Stanislaus, Tuolumne
District 15	36%	(34-38)	Monterey, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz
District 16	44%	(41-46)	Fresno, Kern, Kings, Tulare
District 17	41%	(39-44)	Los Angeles, San Bernardino, Ventura
District 18	43%	(40-45)	Inyo, Kern, San Bernardino, Tulare
District 19	36%	(33-38)	Los Angeles, Santa Barbara, Ventura
District 20	36%	(33-39)	Los Angeles
District 21	36%	(34-38)	Los Angeles
District 22	36%	(33-38)	Los Angeles
District 23	33%	(31-34)	Los Angeles, Ventura
District 24	37%	(34-40)	Los Angeles
District 25	43%	(40-45)	Los Angeles
District 26	42%	(39-45)	Los Angeles
District 27	38%	(36-41)	Los Angeles
District 28	35%	(32-37)	Los Angeles
District 29	35%	(34-37)	Los Angeles, Orange, San Bernardino
District 30	38%	(35-42)	Los Angeles
District 31	40%	(37-42)	Riverside, San Bernardino
District 32	41%	(38-44)	Los Angeles, San Bernardino
District 33	34%	(32-37)	Orange
District 34	36%	(33-39)	Orange
District 35	33%	(31-36)	Orange
District 36	37%	(35-40)	Riverside, San Diego
District 37	42%	(38-45)	Riverside
District 38	36%	(34-38)	Orange, San Diego
District 39	37%	(34-39)	San Diego
District 40	40%	(38-42)	Imperial, Riverside, San Diego

Exhibit 2: Hypertension Prevalence Rates by Senate District, Age 45 and Older

Source: 2001 California Health Interview Survey, 2000-2002 Current Population Surveys, and the 2000 Census.

Senate Districts

* The numbers presented here are the midpoint of the "95% range."

**The "95% range" (commonly called a confidence interval) provides a more reliable estimate of the hypertension prevalence rate for persons in the population group.

Over Four Million California Adults Age 45 and Older Have High Blood Pressure

Exhibit 3:
Hypertension
Prevalence Rates by
Congressional District,
Age 45 and Older
Source: 2001 California
Health Interview Survey,
2000-2002 Current
Population Surveys,
and the 2000 Census.

Congressional Districts

CALIFORNIA RESIDENTS 45+ DIAGNOSED WITH HYPERTENSION			
	Rate*	95% Range**	County Location of Congressional District
CALIFORNIA	38%	(37-39)	
District 01	41%	(39-43)	Del Norte, Humboldt, Lake, Mendocino, Napa, Sonoma, Yolo
District 02	39%	(37-41)	Butte, Colusa, Glenn, Shasta, Siskiyou, Sutter, Tehama, Trinity, Yolo, Yuba
District 03	38%	(35-41)	Alpine, Amador, Calaveras, Sacramento, Solano
District 04	37%	(35-39)	Butte, El Dorado, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Sierra
District 05	42%	(38-45)	Sacramento
District 06	33%	(29-36)	Marin, Sonoma
District 07	39%	(37-42)	Contra Costa, Solano
District 08	39%	(36-42)	San Francisco
District 09	43%	(39-46)	Alameda
District 10	34%	(32-37)	Alameda, Contra Costa, Sacramento, Solano
District 11	37%	(35-40)	Alameda, Contra Costa, San Joaquin, Santa Clara
District 12	39%	(36-42)	San Francisco, San Mateo
District 13	40%	(36-43)	Alameda
District 14	34%	(32-37)	San Mateo, Santa Clara, Santa Cruz
District 15	36%	(32-39)	Santa Clara
District 16	37%	(34-40)	Santa Clara
District 17	36%	(32-39)	Monterey, San Benito, Santa Cruz
District 18	43%	(41-46)	Fresno, Madera, Merced, San Joaquin, Stanislaus
District 19	41%	(39-44)	Fresno, Madera, Mariposa, Stanislaus, Tuolumne
District 20	43%	(41-46)	Fresno, Kern, Kings
District 21	45%	(42-48)	Fresno, Tulare
District 22	41%	(38-44)	Kern, Los Angeles, San Luis Obispo
District 23	37%	(34-39)	San Luis Obispo, Santa Barbara, Ventura
District 24	36%	(33-40)	Santa Barbara, Ventura
District 25	41%	(38-44)	Inyo, Los Angeles, Mono, San Bernardino
District 26	37%	(35-39)	Los Angeles, San Bernardino
District 27	36%	(34-39)	Los Angeles
District 28	35%	(32-37)	Los Angeles
District 29	37%	(34-39)	Los Angeles
District 30	31%	(29-34)	Los Angeles
District 31	35%	(31-38)	Los Angeles
District 32	37%	(34-40)	Los Angeles
District 33	42%	(40-45)	Los Angeles
District 34	38%	(35-41)	Los Angeles
District 35	45%	(42-47)	Los Angeles
District 36	34%	(32-37)	Los Angeles
District 37	43%	(40-45)	Los Angeles
District 38	38%	(36-41)	Los Angeles
District 39	38%	(35-41)	Los Angeles
District 40	36%	(33-39)	Orange
District 41	43%	(40-45)	Riverside, San Bernardino
District 42	35%	(33-36)	Los Angeles, Orange, San Bernardino
District 43	42%	(38-45)	San Bernardino
District 44	38%	(35-41)	Orange, Riverside
District 45	41%	(37-44)	Riverside
District 46	35%	(33-37)	Los Angeles, Orange
District 47	35%	(32-38)	Orange
District 48	33%	(30-35)	Orange
District 49	40%	(38-42)	Riverside, San Diego
District 50	34%	(32-37)	San Diego
District 51	41%	(38-43)	Imperial, San Diego
District 52	37%	(34-39)	San Diego
District 53	37%	(35-39)	San Diego

*The numbers presented here are the midpoint of the "95% range."

**The "95% range" (commonly called a confidence interval) provides a more reliable estimate of the hypertension prevalence rate for persons in the population group.

Over Four Million California Adults Age 45 and Older Have High Blood Pressure

CALIFORNIA RESIDENTS 45+ DIAGNOSED WITH HYPERTENSION		
	Rate*	95% Range**
CALIFORNIA	38%	(37-39)
Alameda	41%	(37-44)
Alpine, Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono	35%	(31-40)
Butte	39%	(35-43)
Colusa, Glenn, Tehama	41%	(37-45)
Contra Costa	33%	(30-37)
Del Norte, Humboldt	41%	(37-46)
El Dorado	35%	(30-40)
Fresno	44%	(41-48)
Imperial	47%	(42-52)
Kern	41%	(37-45)
Kings	42%	(37-46)
LA SPA Antelope Valley	45%	(38-52)
LA SPA East	38%	(35-42)
LA SPA Metro	35%	(32-39)
LA SPA San Fernando	35%	(33-38)
LA SPA San Gabriel	36%	(34-39)
LA SPA South	48%	(44-53)
LA SPA South Bay	38%	(36-41)
LA SPA West	30%	(27-34)
Lake, Mendocino	47%	(42-51)
Lassen, Modoc, Siskiyou, Trinity	38%	(34-42)
Madera	44%	(40-49)
Marin	27%	(23-31)
Merced	46%	(42-51)
Monterey, San Benito	37%	(32-41)
Napa	42%	(37-47)
Nevada, Plumas, Sierra	36%	(31-40)
Orange	34%	(32-37)
Placer	38%	(33-42)
Riverside	41%	(37-44)
Sacramento	40%	(36-44)
San Bernardino	41%	(38-45)
San Diego	37%	(35-39)
San Francisco	39%	(35-42)
San Joaquin	42%	(38-46)
San Luis Obispo	37%	(32-41)
San Mateo	39%	(35-43)
Santa Barbara	37%	(33-40)
Santa Clara	36%	(32-39)
Santa Cruz	33%	(28-37)
Shasta	41%	(37-45)
Solano	43%	(40-46)
Sonoma	37%	(32-42)
Stanislaus	40%	(35-46)
Sutter/Yuba	38%	(34-42)
Tulare	45%	(41-50)
Ventura	36%	(32-40)
Yolo	35%	(30-40)

* The numbers presented here are the midpoint of the "95% range."

** The "95% range" (commonly called a confidence interval) provides a more reliable estimate of the hypertension prevalence rate for persons in the population group.

Exhibit 4:
Hypertension
Prevalence Rates by
County, County-Group
or Los Angeles Service
Planning Area (SPA),
Age 45 and Older
 Source: 2001 California
 Health Interview Survey,
 2000-2002 Current
 Population Surveys,
 and the 2000 Census.

County,
County-Group
or Los Angeles
Service
Planning Area

Over Four Million California Adults Age 45 and Older Have High Blood Pressure

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Acknowledgements

The authors appreciate the valuable contributions of reviewers Sylvia Beanes, Lily A. Chaput and Ellen Wu.

Citation

CA Mendez-Luck, H Yu, YY Meng, M Jhavar and SP Wallace. *Over Four Million California Adults Age 45 and Older Have High Blood Pressure*. Los Angeles: UCLA Center for Health Policy Research, 2004.

Funder



The California Endowment funded the research and development of this policy brief.

The views expressed in this report are those of the authors and do not necessarily represent the UCLA Center for Health Policy Research, the Regents of the University of California, The California Endowment, or other funding agencies.

PB2004-7

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