The Regions of California:

Recommended
Grouping of the
Counties for
Regional Studies

CDSS
CALIFORNIA
DEPARTMENT OF
SOCIAL SERVICES

August 2002

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Recommended Grouping of the Counties for Regional Studies

August 2001

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Regional Definitions

There is considerable diversity among California's counties in population characteristics, economic patterns, and share of the state's program caseloads. The counties are often grouped into regions, based on shared characteristics, to facilitate understanding of complex data. However, the use of different definitions makes it difficult to compare reports and research findings across programs and departments.

The purpose of this project was to examine different regional definitions of California counties and make a recommendation about which is "best" for analytical needs of CDSS programs. To do this we selected county characteristics relevant to our programs and research. We then compared alternative definitions to determine which was able to group counties that were (a) homogeneous with respect to these characteristics, (b) contiguous, and (c) linked to the same labor market area.

Conclusion
The 6-region definition recommended by the Data Analysis and Publications Branch has been adopted as a Division standard. Of the five definitions we reviewed, it had the greatest homogeneity within the county groupings. It also met the other two criteria: contiguity and belonging to the same labor market area.

Methods and Results

A. Key Characteristics
The county characteristics that we used to form regional groupings were:
- Welfare dependency rate (2000, CalWORKs cases divided by the number of women 15 – 44 years of age)
- Annual unemployment rate (2000)
- Percent of population in poverty (2000)
- Percent of children reported to child welfare services (2000)
- Percent of the population identified as Hispanic (2000)
- Percent of the population participating in an SSI/SSP program (2000)

(See Table 1, attached)

B. Alternative Regional Groupings
We compared five alternative regional definitions. Four of them were definitions currently in use by research and governmental organizations concerned with labor, poverty, and social service populations. In addition, we performed a cluster analysis using SAS, based on the key characteristics, to determine the best formal definition of homogeneous regions.

The regional definitions currently in use were the following: the SPHERE Institute[1]; the California Technology, Trade and Commerce Agency[2]; the California Welfare Directors Association (CWDA)[3]; and the California Department of Social Services/Data Analysis and Publications Branch (CDSS/DAPB). They define California's regions by grouping counties as follows:

> CDSS/DAPB (6 regions):
>
> > **Bay Area:**
> > Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma
> >
> > **Southern California without Los Angeles:**
> > Orange, Riverside, San Bernardino, San Diego, Santa Barbara, Ventura

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[1] SPHERE, An Examination of Welfare Caseload Dynamics in California Using Administrative Data, March 2001.
[2] Economic Strategy Panel, Collaborating to Succeed in the New Economy: Factors Applied to Determine Economic Regions, May 2000.
[3] CWDA, Directors Regional Alignment, July 2001.

Los Angeles

Central/Southern Farm:
Fresno, Imperial, Kern, Kings, Madera, Merced, Monterey, San Benito, San Joaquin, San Lois Obispo, Stanislaus, Tulare

North and Mountain:
Alpine, Amador, Butte, Calaveras, Del Norte, Glenn, Humboldt, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity, Tuolumne

Central Valley:
Colusa, El Dorado, Placer, Sacramento, Sutter, Yolo, Yuba

SPHERE Institute (5 regions):

Bay Area:
Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo,
Santa Clara, Santa Cruz, Solano, Sonoma

Southern California without Los Angeles::
Orange, Riverside, San Bernardino, San Diego, Santa Barbara, Ventura

Los Angeles

Farm Belt:
Colusa, El Dorado, Fresno, Glenn, Imperial, Kern, Kings, Madera, Merced, Monterey, Placer, Sacramento, San Benito, San Joaquin, San Lois Obispo, Stanislaus, Sutter, Tulare, Yolo, Yuba

North and Mountain:
Alpine, Amador, Butte, Calaveras, Del Norte, Humboldt, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity, Tuolumne

California Technology, Trade & Commerce Agency (9 regions):

Northern California:
Del Norte, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Sierra, Siskiyou, Trinity

Northern Sacramento Valley:
Butte, Colusa, Glenn, Shasta, Tehama

Greater Sacramento:
El Dorado, Nevada, Placer, Sacramento, Sutter, Yolo, Yuba

Bay Area:
Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma

San Joaquin Valley:
Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare

Central Sierra:
Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, Tuolumne

Central Coast:
Monterey, San Benito, San Luis Obispo, Santa Barbara

Southern California:
Los Angeles, Orange, Riverside, San Bernardino, Ventura

San Diego-Border Region:
Imperial, San Diego

CWDA (5 regions)

Northern Region:
Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, Sutter, Tehama, Trinity, Yuba

Coastal Region:
Alameda, Contra Costa, Marin, Mendocino, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma

Mother Lode Mountain Region:
Alpine, Amador, Calaveras, El Dorado, Inyo, Mono, Nevada, Placer, Sacramento, Sierra, Tuolumne, Yolo

Central Region:
Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, San Luis Obispo, Santa Barbara, Stanislaus, Tulare, Ventura

Southern Region:
Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego

In addition, we performed a cluster analysis using the six key characteristics. Selecting the level of clustering that yielded six groups we arrived at the following definition:

SAS Cluster Analysis (6 regions)

Northern Region:
Del Norte, Humboldt, Mendocino, Lake, Siskiyou, Trinity, Shasta, Tehema, Butte, Yuba, Sacramento, Modoc, Lassen

Coastal Region plus Tahoe Area:
Sonoma, Marin, Solano, Napa, Yolo, Contra Costa, Alameda, San Mateo, Santa Clara, Santa Cruz, San Benito, Monterey, San Luis Obispo, Santa Barbara, Ventura, Orange, San Diego, Riverside;
Plus: Sierra, Nevada, Placer, Eldorado, Amador, Mono

Mother Lode Mountain Region:
Alpine, Calaveras, Tuolumne, Mariposa, Inyo

Farm Region:
Glenn, Colusa, Sutter, San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, Kern, Los Angeles, San Bernardino

San Francisco

Imperial

C. Evaluation of the Alternative Definitions
We used three criteria for defining the "best" definition:
- Homogeneity of key characteristics within the region
- Contiguity of counties included in the region
- Known labor market areas

Homogeneity
The goal was to identify regions in which the counties were as similar as possible, with respect to the key characteristics. To measure the degree of homogeneity, we calculated the amount of variation (coefficient of variation, CV) for each of the six key characteristics, within each region. Based on the CV for each characteristic, we then calculated the average across all six characteristics, for each of the definitions we studied. We selected the definition with the lowest overall CV.

The regional definition with the lowest average CV was CDSS/DAPB (25.1), followed by the SAS Clusters (26.8). For the other three, the average CV was higher: 35.3 for the SPHERE definition, 35.7 for the Commerce and Trade definition, and 42.9 for the CWDA definition (See Table 2, attached).

Contiguity
The counties within the defined regions are contiguous for all the definitions we studied except the SAS Clusters and the CDSS grouping.

We revised the SAS clusters slightly to form contiguous groupings. This caused the average CV to increase to 28.2, making it less useful. For the CDSS grouping there is one county (Imperial) that is not contiguous with its region. We grouped it with the agricultural/Central Valley region. There is no other logical option for this county.

Labor Market Area
Labor market areas are defined by clustering of employment and commute patterns. The CDSS/DAPB groupings are consistent with the main labor market areas and commute patterns in California. This was also true for the SPHERE and Trade and Commerce definitions, but not for the CWDA and SAS Clusters.

Summary
Thus, we arrived at the conclusion that the CDSS/DAPB definition was the best choice because it met the three criteria best. It maximized homogeneity within the regions, identified contiguous groupings (except Imperial County), and was consistent with known travel and labor market areas.

Supporting Materials

1. Figure 1. California map with the CDSS/DAPB regions
2. Table 1. Regional definitions and the key characteristics, by county.
3. Table 2. Analysis of regional homogeneity.

Figure 1. CDSS/DAPB Regions
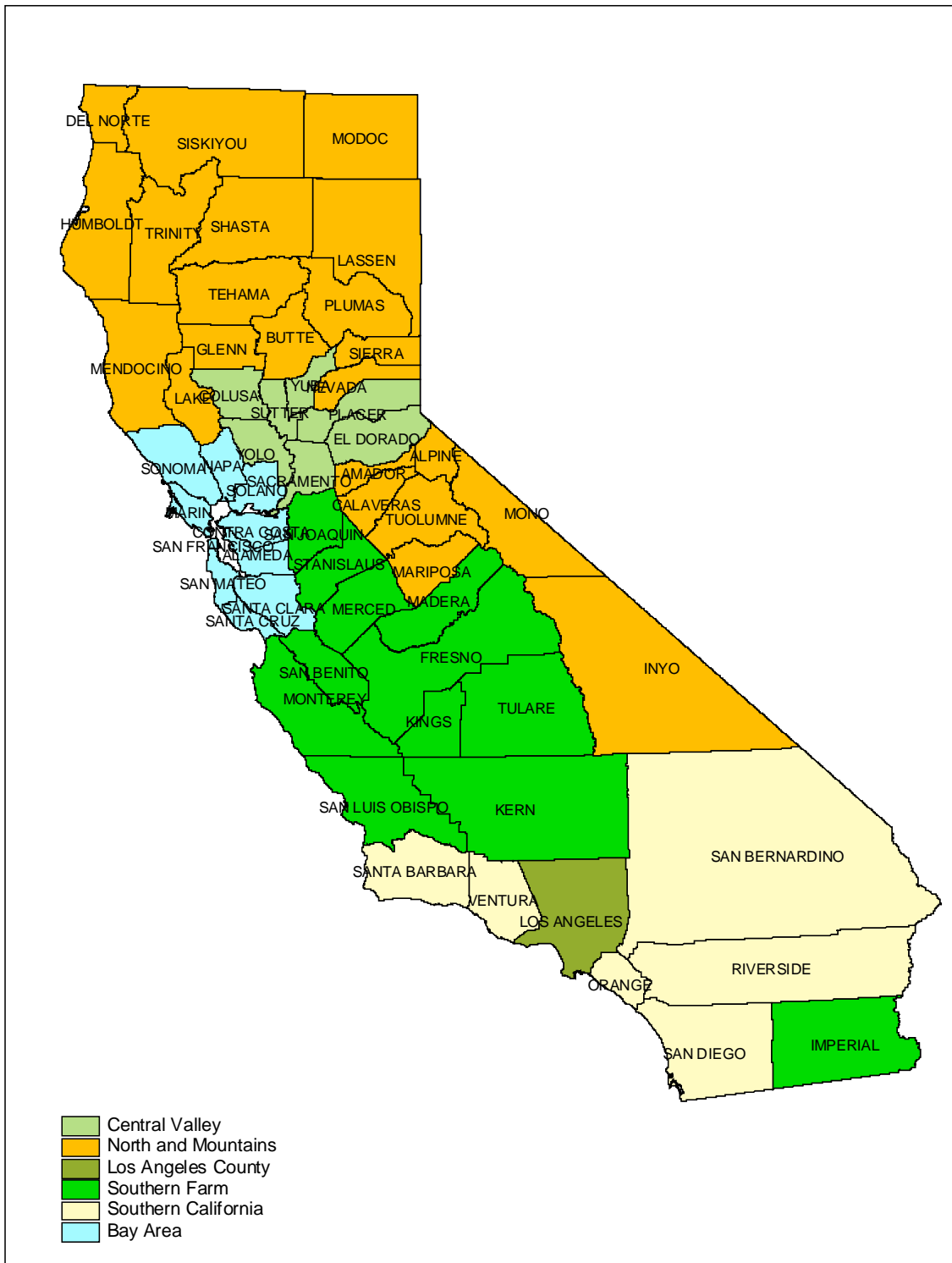
Table 1. Regional definitions and Key Characteristics, by County

| NAME | | | Regions | | | | | | | | |
	CDSS	CTTCA	CWDA	SPHERE	SAS Cluster	CW Rate	U Rate	Percent Poverty	CWS Rate	Percent Hispanic	Percent SSI/SSP
ALAMEDA	1	4	2	1	2	62.8	3.5%	11.8%	5.2%	18.5%	3.2%
CONTRA COSTA	1	4	2	1	2	49.1	3.1%	8.7%	6.5%	14.1%	2.3%
MARIN	1	4	2	1	2	13.5	2.0%	7.0%	5.0%	12.2%	1.4%
NAPA	1	4	2	1	2	19.2	3.6%	8.8%	2.7%	19.3%	1.5%
SAN MATEO	1	4	2	1	2	11.5	1.9%	6.6%	2.6%	23.7%	1.7%
SANTA CLARA	1	4	2	1	2	31.2	2.2%	9.0%	3.7%	24.4%	2.3%
SANTA CRUZ	1	4	2	1	2	35.4	4.3%	13.1%	6.7%	24.9%	2.0%
SOLANO	1	4	2	1	2	56.7	4.7%	11.3%	4.2%	15.4%	2.5%
SONOMA	1	4	2	1	2	27.6	3.1%	9.1%	3.5%	13.6%	2.0%
SAN FRANCISCO	1	4	2	1	5	33.2	3.3%	12.6%	4.0%	16.5%	5.8%
SAN BERNARDINO	2	8	5	3	1	96.9	5.7%	17.9%	8.6%	33.5%	3.0%
ORANGE	2	8	5	3	2	33.5	3.0%	11.0%	3.0%	30.3%	2.0%
RIVERSIDE	2	8	5	3	2	62.7	7.1%	15.0%	8.2%	30.8%	2.5%
SAN DIEGO	2	9	5	3	2	45.6	3.6%	14.2%	8.8%	25.4%	2.6%
SANTA BARBARA	2	7	4	3	2	40.6	3.4%	14.6%	6.8%	33.4%	2.2%
VENTURA	2	8	4	3	2	36.0	5.8%	10.3%	6.1%	31.3%	1.8%
LOS ANGELES	3	8	5	2	1	101.4	6.0%	20.5%	5.1%	46.1%	3.6%
FRESNO	4	5	4	4	1	128.9	13.9%	25.6%	7.7%	39.6%	4.4%
KERN	4	5	4	4	1	119.1	11.2%	21.0%	9.6%	33.7%	3.7%
KINGS	4	5	4	4	1	90.3	12.9%	23.6%	11.2%	38.7%	3.0%
MADERA	4	5	4	4	1	105.7	12.0%	22.8%	10.5%	38.2%	3.2%
MERCED	4	5	4	4	1	137.1	13.9%	25.4%	10.3%	36.8%	4.1%
SAN JOAQUIN	4	5	4	4	1	112.0	8.9%	18.8%	7.4%	26.0%	4.2%
STANISLAUS	4	5	4	4	1	90.1	10.2%	18.4%	8.9%	25.7%	4.0%
TULARE	4	5	4	4	1	138.7	15.6%	27.9%	10.6%	45.3%	4.1%
MONTEREY	4	7	2	4	2	56.7	6.9%	15.4%	4.6%	42.2%	2.1%
SAN BENITO	4	7	2	4	2	48.6	6.6%	11.4%	6.8%	42.4%	1.5%
SAN LUIS OBISP	4	7	4	4	2	30.1	3.2%	12.9%	11.2%	14.7%	2.0%
IMPERIAL	4	9	5	4	6	124.6	33.9%	30.3%	8.3%	72.2%	5.1%
GLENN	5	2	1	4	1	87.5	13.1%	19.9%	15.6%	27.1%	3.0%
AMADOR	5	6	3	5	2	46.0	4.3%	11.4%	6.9%	9.0%	1.4%
MONO	5	6	3	5	2	24.5	6.9%	11.2%	6.2%	16.3%	0.9%
NEVADA	5	3	3	5	2	30.7	3.9%	9.6%	8.6%	5.0%	1.6%
SIERRA	5	1	3	5	2	48.6	5.8%	11.6%	4.0%	5.9%	2.2%
BUTTE	5	2	1	5	3	111.8	8.0%	20.9%	16.2%	9.1%	4.3%
DEL NORTE	5	1	1	5	3	127.4	9.1%	22.9%	14.9%	12.1%	5.0%
HUMBOLDT	5	1	1	5	3	97.5	6.5%	18.5%	15.9%	5.6%	4.5%
LAKE	5	1	1	5	3	170.4	7.9%	20.1%	13.9%	8.5%	5.5%
LASSEN	5	1	1	5	3	89.1	5.4%	19.4%	12.7%	15.8%	2.5%
MENDOCINO	5	1	2	5	3	100.4	6.0%	18.1%	18.3%	14.7%	3.9%
MODOC	5	1	1	5	3	108.6	6.6%	21.1%	12.8%	10.9%	3.3%
SHASTA	5	2	1	5	3	111.0	7.1%	18.1%	9.2%	4.7%	4.5%
SISKIYOU	5	1	1	5	3	101.4	8.0%	19.0%	11.3%	7.7%	4.9%
TEHAMA	5	2	1	5	3	110.2	7.7%	20.0%	20.7%	14.2%	4.2%
TRINITY	5	1	1	5	3	103.1	11.0%	19.4%	17.1%	3.7%	4.1%
ALPINE	5	6	3	5	4	83.6	11.4%	17.5%	5.4%	7.3%	1.8%
CALAVERAS	5	6	3	5	4	64.2	6.6%	13.0%	9.8%	7.2%	2.2%
INYO	5	6	3	5	4	68.1	5.8%	14.0%	19.7%	11.8%	2.5%
MARIPOSA	5	6	4	5	4	63.8	5.9%	15.3%	16.3%	5.5%	1.8%
PLUMAS	5	1	1	5	4	53.3	5.6%	13.1%	13.3%	6.3%	3.2%
TUOLUMNE	5	6	3	5	4	76.6	5.3%	14.8%	13.1%	8.0%	2.7%
COLUSA	6	2	1	4	1	43.9	13.0%	18.1%	7.1%	44.7%	2.4%
SUTTER	6	3	1	4	1	69.0	11.3%	17.2%	7.1%	18.8%	3.6%
EL DORADO	6	3	3	4	2	28.1	4.2%	8.8%	5.0%	8.4%	1.5%
PLACER	6	3	3	4	2	26.5	3.4%	7.7%	10.0%	8.6%	1.6%
YOLO	6	3	3	4	2	55.3	4.0%	15.8%	6.5%	22.9%	2.8%
SACRAMENTO	6	3	3	4	3	117.8	4.9%	17.2%	11.6%	13.5%	4.1%
YUBA	6	3	1	4	3	143.4	12.1%	25.5%	12.8%	13.9%	5.4%

Table 2. Analysis of Homogeneity

Region	Welfare Rate	Unemployment	% in Poverty	CWS Rate	% Hispanic	% on SSI/SSP	Average CV
CDSS/DAPB							
1	51.5	29.3	23.2	32.3	25.9	52.6	35.8
2	45.8	34.8	20.2	31.7	9.6	18.9	26.8
3							
4	36.8	61.6	28.0	22.9	36.6	31.7	36.3
5	39.9	31.9	22.9	36.5	54.6	41.4	37.9
6	65.2	57.2	38.2	33.4	67.3	46.7	51.4
Average	28.4	30.1	17.8	18.6	31.7	24.0	25.1
CTTCA							
1	34.6	25.0	18.8	29.5	44.9	28.1	30.2
2	31.5	30.7	6.4	40.2	81.1	25.8	36.0
3	69.3	60.0	43.5	31.9	48.3	51.2	50.7
4	51.5	29.3	23.2	32.3	25.9	52.6	35.8
5	16.7	17.8	14.7	14.9	19.1	12.8	16.0
6	32.7	34.6	16.1	49.6	39.1	32.4	34.1
7	25.8	39.7	13.2	37.9	39.2	14.8	28.4
8	48.9	27.3	29.3	37.2	19.4	28.9	31.8
9	65.7	114.3	51.2	4.4	67.8	47.2	58.4
Average	41.8	42.1	24.0	30.9	42.7	32.6	35.7
CWDA							
1	31.7	29.8	14.0	27.7	78.2	24.9	34.4
2	57.8	42.5	30.0	71.3	46.5	49.7	49.6
3	50.3	38.8	25.3	49.2	49.4	40.3	42.2
4	43.6	43.8	28.3	28.1	36.7	31.5	35.3
5	46.0	120.2	37.4	34.1	43.7	35.9	52.9
Average	45.9	55.0	27.0	42.1	50.9	36.4	42.9
SPHERE							
1	51.5	29.3	23.2	32.3	25.9	52.6	35.8
2							
3	45.8	34.8	20.2	31.7	9.6	18.9	26.8
4	45.7	62.8	32.3	29.6	51.4	35.7	42.9
5	41.0	27.7	23.3	37.5	42.5	42.2	35.7
Average	46.0	38.6	24.8	32.8	32.3	37.4	35.3
SAS_Cluster							
1	26.5	26.4	16.2	28.3	24.4	16.9	23.1
2	38.7	36.9	23.9	38.5	52.1	26.3	36.1
3	18.9	26.8	11.1	22.1	39.6	19.0	22.9
4	15.6	34.3	11.5	38.5	28.5	23.0	25.2
5							
6							
Average	24.9	31.1	15.7	31.8	36.1	21.3	26.8

State of California
Gray Davis, Governor

Health and Human Services Agency
Grantland Johnson, Secretary

California Department of Social Services
Rita Saenz, Director