Designing Weighted Voting Games to Proportionality

In the analysis of weighted voting a scheme may be constructed which apportions at least one vote, per-representative units. The numbers of weighted votes are proportionally equated to fractions of a population mean, an interval classification, or what is generally termed a method of equal proportions. In the absence of a fixed number of votes, nor limits on the largest number of votes assigned, equating weighted votes to a formula or ratio apportions votes on a population basis. Any modifications of divisors to attain an integer set of votes introduces issues concerning divisor methods, and in the case of state legislative apportionment, subdistricting and fractional division of local jurisdictional boundaries to attain proportionality. Deviations from equity standards therefore weight votes disproportionally, generating decisive coalitions that have a majority of the structured votes, and not a voter preference majority. Under county unit rule, for instance, a decisive majority of counties could outvote a majority of the voting population by district, so that malapportioned weighted voting schemes can produce unequal vote power, by guaranteeing at least one vote, per-representative districts. This study finds the use of population ratios for apportioning a finite integer set of weighted votes to local jurisdictions is consistent with the method of majority rule. These results indicate substantive distributions of vote power, for a fixed size of the legislature, and by also using an inverse vote power rule, a method for determining the number of weighted votes required to guarantee at least one vote, for each representative district.

Concepts

- apportionment and redistricting game
- population basis for direct representation
- modifications for additional representation
- apportionment formula in the form of a population classification (of local jurisdictions)
- population ratios and ratio thresholds for assigning districts
- weighted voting schemes assigning one vote per local jurisdiction, additional representation, a multiplier formula, a finite integer set of votes, a fractional or integer set of votes based on determined from population ratios by the method of equal proportions and other divisor methods
- a fixed size of a local legislature
- the distribution and total number of votes under any weighted voting scheme
- guaranteeing at least one vote, per-representative districts
- any limitations on the range or concentration of weighted votes
- vote power of representative districts

The politics of legislative apportionment is structured by a sequence of reorganization of local government from a status quo, and the implementation of decisions considering district planning. The duration and sequence of decisions, reorganization of local jurisdiction, and changes to fix the sizes of delegations, memberships in legislatures, and numbers of local jurisdictions also matter to any deliberation of legislative apportionment and local jurisdictional division. In the western states, legislative apportionment decisions and district planning has a shorter duration in the history of decisions, and is directly related to the organization of county government from territorial status to statehood. The balance between legislative district planning and (re)organization of local jurisdiction continues to adjust from organic acts of formation based on districts and apportionment to counties.

Amongst The States, most of the western states had a guarantee of at least one state senate and assembly district per-county, as a status quo, prior to the implementation of the apportionment decisions and the district planning from 1960 Census onwards. The shorter duration in the history of district planning and common experience with larger county and district territory suggests the western states have similar effects in terms of state differences in the design of legislative districts. This study tests the fixed effect hypothesis that western states generally apportioned legislative districts on a {1,1} county basis. The results indicate significant differences from the fixed effects model providing evidence of a differential variance in legislative apportionment within and among the thirteen states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. The findings also explain some of the differentials in legislative apportionment based on differences in changes in district planning and structure of local jurisdiction.

This study analyzes legislative apportionment in the western states providing a model of district planning with the intent for designing to proportionality. As the results confirm, neither the fixed effects model, nor {1, 1} decision rules for apportionment on a county basis, fully explain or account for population variance and state differentials amongst these states. Instead, the findings suggest a fragmentation solution, in terms of the organization of local jurisdiction, with some commonalities and differences in state procedures in district planning. The results indicate not only are there state differences, but some of these differences are somewhat similar in terms of the structure of county organization.

The model of legislative apportionment tested consists of determining numbers of electoral districts, within generally fixed sizes to legislative chambers and numbers of local jurisdictions, such as county governments. The solutions from this model generate equilibria in legislative apportionment and division, and local jurisdictional fragmentation. The equilibria can be solved in numbers of districts, or district planning, size of the legislature, and numbers of local jurisdiction. Generally speaking, the fragmentation solution provides some indication of the decentralization of legislative apportionment and division within states, whereas the apportionment solutions and division by local jurisdiction generalize district planning. Any efforts at balancing jurisdictional fragmentation with designing district plans may require the pursuit of attaining proportionality in apportionment and reducing fragmentation in design. In summary, the state examples of district planning provide instances where design criteria influence the apportionment solution. These include examples of status quo apportionments for describing the evolution of apportionment under territorial status, county-based apportionment, and more recent decision rules involving local division and population proportionality.

District Planning by Designing to Proportionality

The model analysis and specification begins with a definition of proportionality, where:

Definition 1.1 delegation size = population share multiplied by the size of the legislature.

Definition 1.2 assuming a fixed size (n) of the legislative chamber (senate or house), population proportionality = share of state population * n.

Definition 1.3 assuming variable district magnitude, the number of districts $\equiv$ #d, $\delta = \{I\}$.

Theorem 1.0 (population proportionality in electoral district design) $P \equiv \delta * n$.
Proof. Assume a fixed size of a legislature, n. The population weight, δ, is determined by definition 1.1 in delegation size, from either a fixed delegation size, a fixed size of the legislature (definition 1.2), or both. Setting δ = share of the state population, $\sum \delta * n$ = the size of the legislature designed to proportionality. $P = \delta * n$.

Theorem 2.0 (District magnitude induced equilibrium) a district magnitude equilibrium exists for any range in delegation sizes.
Proof. Setting $\sigma = \{I\}$, the range in delegation sizes is equal to a finite integer set. This may be expressed as a minimum or maximum sized district magnitude. Assuming a fixed number of electoral districts $d = \{I\}$, the sum of the district magnitude equals the size of the legislature. Setting district magnitude equal to δ, the $\sum \delta * \#d = n$, so that the size of the legislature is equal to the summation of district magnitude times the number of electoral districts. For any fixed range in delegation size = σ, $\sigma * \sum \#d = \sum \delta * \#d = n$. Assuming a variable district magnitude and a fixed size of the legislature, $n = \sum \delta * \#d = \sigma * \sum \#d$.

Theorem 3.0 A legislative apportionment solution exists for any fixed range in delegation size.
Proof. For any range in delegation sizes $\equiv \sigma$, a fixed $\underline{\sigma}$ is defined equal to a finite integer set, $\sigma = \{I\}$. Given $\underline{\sigma}$ and $\sigma = \delta * n$, for any fixed n, $\underline{n} = \sum \delta * \#d$. By Theorem 2.0, $\sum \delta * \#d = n$ and $\underline{n} = \sum \delta * \#d = \underline{\sigma} * \sum \#d$. $\underline{\sigma} = \sum \delta = \underline{\delta} \equiv \{I\}$.

Lemma 1.0 A weighted voting equilibrium exists in district magnitude for any fixed number of electoral districts.
Proof. #d = SMD + MMD. $(p * SMD) + (\lambda * MMD) = n$.

Theorem 4.1 A weighted voting solution exists for any fixed size of the legislature.
Proof. n = (p * SMD) + (λ * MMD). λ = (n / MMD) - [(p * SMD) / MMD], MMD $\neq$ 0.

Theorem 4.2 A weighted voting solution exists for any fixed number of electoral districts.
Proof. #d = SMD + MMD. d = (p * SMD) + (λ * MMD). λ = (d / MMD) - [(p * SMD) / MMD], MMD $\neq$ 0.

Theorem 4.3 A weighted voting solution exists for any fixed number of local jurisdictions.
Proof. #d = SMD + MMD. J = (p * SMD) + (λ * MMD). λ = (J / MMD) - [(p * SMD) / MMD], MMD $\neq$ 0.

Theorem 5.1 (District Planning Theorem I) For any single member district plan, the proportion of single member districts is a weighted voting equilibrium.
Proof. p = (n / SMD) - [(λ * MMD) / SMD], given SMD $\neq$ 0.

Theorem 5.2 (District Planning Theorem II) For any district plan with some single member districts, the number of single member districts is a weighted voting equilibrium.
Proof. SMD = (n / p) - [(λ * MMD) / p], p $\neq$ 0.

Theorem 5.3 (District Planning Theorem III) For any multi-member district plan, the number of districts is a weighted voting equilibrium.
Proof. MMD = (n / λ) - [(p * SMD) / λ], λ $\neq$ 0.

Theorem 5.4 (District Planning Theorem IV) For any district plan, the number of districts is a weighted voting equilibrium.
Proof. Lemma 1.0. Theorems 5.1, 5.2, & 5.3. λ = (n / MMD) - [(p * SMD) / MMD], MMD $\neq$ 0.

Lemma 2.0 Additional representation is a local jurisdiction, fragmentation-induced equilibrium.
Proof. Defining additional representation $\equiv$ AR, and the number of local jurisdictions $\equiv$ J. AR = n - J. Assuming the number of single member districts, SMD, = J, n - J = AR = the number of multi-member districts, MMD. Given n - J = AR = MMD, $J = n - (p * SMD) - (\lambda * MMD)$.

Theorem 6.1 Additional representation is determined for any fixed size of the legislature.
Proof. Lemma 2.0. $n = J + (p * SMD) + (\lambda * MMD)$.

Theorem 6.2 Additional representation is determined for any fixed number of local jurisdictions.
Proof. Defining #j = J, the jurisdictional fragmentation solution is $J = n - (p * SMD) - (\lambda * MMD)$. Setting the number of jurisdictions equal to a constant, #j = J $\rightarrow$ jurisdictional fragmentation solution is stable. Given #j = $\underline{J}$, J = log(J) $\equiv$ an organizationally sclerotic structure, with J = log(#J) the rate of organizational sclerosis. $\underline{J}$ = log(#J) = $J = n - (p * SMD) - (\lambda * MMD)$.

Theorem 7.1 (District Plan I) The number of single member districts is determined by jurisdictional fragmentation and any fixed size of the legislature as a weighted voting equilibrium.
Proof. $SMD = (n / p) - (J / p) - [(\lambda * MMD) / p], p \neq 0$.

Theorem 7.2 (District Plan II) The number of multi-member districts is determined by jurisdictional fragmentation, for any fixed size of the legislature, as a weighted voting equilibrium.
Proof. $MMD = (n / \lambda) - (J / \lambda) - [(p * SMD) / \lambda], \lambda \neq 0$.

Theorem 7.3 (Single member district plan) The proportion of single member districts is both a fragmentation solution and weighted voting equilibrium.
Proof. $p = (n / SMD) - (J / SMD) - [(\lambda * MMD) / SMD], SMD \neq 0$.

Theorem 7.4 (Multi-member district plan) Additional representation is both a fragmentation solution and weighted voting equilibrium.
Proof. $\lambda = (n / MMD) - (J / MMD) - [(p * SMD) / MMD], MMD \neq 0$.

Theorem 8.1 (Mixed Integer district plan I) A range and density solution exists for any mixture of districts.
Proof. For any size of the legislature, $n = (\delta * SMD) + (\sigma * MMD)$. $\delta = (n / SMD) - [(\sigma * MMD) / SMD]$, $SMD \neq 0$. $\sigma = (n / MMD) - [(\delta * SMD) / MMD]$, $MMD \neq 0$.

Theorem 8.2 (Mixed Integer district plan II) A single member district plan exists as an apportionment solution in range and density.
Proof. For any, $n = (\delta * SMD) + (\sigma * MMD)$. $SMD = (n / \delta) - [(\sigma * MMD) / \delta]$, $\delta \neq 0$.

Theorem 8.3 (Mixed Integer district plan III) A multi-member district plan exists as an apportionment solution in range and density.
Proof. For any, $n = (\delta * SMD) + (\sigma * MMD)$. $MMD = (n / \sigma) - [(\delta * SMD) / \sigma]$, $\sigma \neq 0$.

Theorem 8.4 (Mixed Integer district plan IV) A range solution exists for any fixed size of the legislature.
Proof. For any n, $n = \sigma * d$, with $d = \#d \equiv$ the number of electoral districts. $d = n / \sigma$, $\sigma \neq 0$. $\sigma = n / d$, $d \neq 0$.

Lemma 3.1 A legislative apportionment solution exists for any finite integer range in delegation size.
Proof. For any $n = \sigma * d$. $\sigma = n / d$, $d \neq 0$.

Proposition 1.1 A legislative apportionment solution exists for any finite integer range in delegation size and for any number of electoral districts.
Proof. Theorem 8.4 $\Rightarrow$ a range solution exists for any fixed integer set of delegation sizes. Lemma 3.1 $\Rightarrow$ the range solution exists for any finite integer range of electoral districts.

Theorem 8.5 (Mixed Integer district plan V) A density solution exists for any fixed size of the legislature.
Proof. For any n, $n = \delta * J$, with $J = \#j \equiv$ the number of local jurisdictions. $J = n / \delta$, $\delta \neq 0$. $\delta = n / J$, $J \neq 0$.

Lemma 3.2 A local division exists for any finite integer range in jurisdictional fragmentation.
Proof. For any $n = \delta * J$. $\delta = n / J$, $J \neq 0$.

Proposition 1.2 A fragmentation solution exists for any apportionment to a finite range in local jurisdiction.

Proof. Theorem 8.5 ⇒ a density solution exists for any finite range in local jurisdiction. Lemma 3.2 ⇒ the density solution exists for any finite integer number of local jurisdictions.

Theorem 9.1 (Local jurisdictional fragmentation I) A local jurisdiction induced equilibrium exists as an apportionment solution for any fixed number of local jurisdictions.

Proof. For any J, $J = (\delta * SMD) + (\sigma * MMD)$. $\delta = (J / SMD) - [(\sigma * MMD) / SMD]$, $SMD \neq 0$. $\sigma = (J / MMD) - [(\delta * SMD) / MMD]$, $MMD \neq 0$. Theorem 8.1.

Lemma 3.3 A local jurisdiction division exists as a fragmentation solution for any finite integer set of local jurisdictions.

Proof. Define $J = \{I\} = \#j \equiv$ the number of local jurisdictions. For any $J = (\delta * SMD) + (\sigma * MMD)$. $SMD = (J / \delta) - [(\sigma * MMD) / \delta]$, $\delta \neq 0$. $MMD = (J / \sigma) - [(\delta * SMD) / \sigma]$, $\sigma \neq 0$.

Proposition 1.3 A local division exists for any apportionment to a fixed number of local jurisdictions.

Proof. Theorem 9.1 ⇒ a range and density solution exists for any apportionment to a fixed number of local jurisdictions. Lemma 3.3 ⇒ a fragmentation solution exists for any fixed number of local jurisdictions.

Theorem 9.2 (Local jurisdictional fragmentation II) A local jurisdiction division exists as a jurisdictionally induced equilibrium for any fixed number of local jurisdictions.

Proof. For any J, $J = (\delta * SMD) + (\sigma * MMD)$. $SMD = (J / \delta) - [(\sigma * MMD) / \delta]$, $\delta \neq 0$. $MMD = (J / \sigma) - [(\delta * SMD) / \sigma]$, $\sigma \neq 0$.

Theorem 9.3 (Local jurisdictional fragmentation III) A local jurisdiction induced equilibrium exists as a fragmentation solution for any finite range in local jurisdictions.

Proof. For any $J = \#j = \{I\}$. $J = SMD + (\sigma * MMD)$. $\sigma = (J / MMD) - (SMD / MMD)$, $MMD \neq 0$.

Lemma 3.4 A town and county division exists for any apportionment to a finite integer set of local jurisdictions.
Proof. Define $T = \#t = \{I\} \equiv$ number of towns formed. Define $C = \{I\} \equiv$ number of organized counties. Then, set $T = (\delta * SMD) + (\sigma * MMD)$ and $C = SMD + (\sigma * MMD)$. $\delta = (T / SMD) - [(\sigma * MMD) / SMD]$, $SMD \neq 0$. $\sigma = (T / MMD) - [(\delta * MMD) / MMD]$, $MMD \neq 0$. $\sigma = [C / MMD] - (SMD / MMD)$, $MMD \neq 0$.

Lemma 3.5 A home rule induced equilibrium exists for any apportionment to a finite integer set of local jurisdictions.
Proof. Either $T = (\delta * SMD) + (\sigma * MMD)$ or $C = SMD + (\sigma * MMD)$. Define $J = \#j = \{I\} = \{T\}$ or $\{C\}$. $SMD = (T / \delta) - [(\sigma * MMD) / \delta]$, $\delta \neq 0$. $MMD = (T / \sigma) - [(\delta * SMD) / \sigma]$, $\sigma \neq 0$. $SMD = C - (\sigma * MMD)$. $MMD = [C / \sigma] - (SMD / \sigma)$, $\sigma \neq 0$.

Theorem 9.4 (Local jurisdictional fragmentation IV) A local jurisdiction induced equilibrium exists for any fixed number of local jurisdictions.
Proof. For any $J = \#j = \{I\}$. $J = SMD + (\sigma * MMD)$. $SMD = (J / \delta) - [(\sigma * MMD) / \delta]$, $\delta \neq 0$. $MMD = (J / \sigma) - [(\delta * SMD) / \sigma]$, $\sigma \neq 0$.

Theorem 10.1 (Local division I) A local jurisdiction induced equilibrium exists for any district plan, for any fixed number of local jurisdictions.
Proof. Lemma 3.4.

Theorem 10.2 (Local division II) A local jurisdiction induced equilibrium exists for any district plan to local division.
Proof. Lemma 3.5.

Theorem 10.3 (Local division III) A local jurisdiction induced equilibrium exists for any district plan, for any finite range in local jurisdiction.
Proof. Theorem 9.4.

Theorem 11.0 A county-based solution exists for any finite range in local jurisdiction.
Proof. Define $SC \equiv$ a single county election district. $MC \equiv$ a multi-county electoral district, in pairings, multiples, or groupings of counties. Set $J = \delta * (SC + MC)$. $SC = (J / \delta) - MC$, $\delta \neq 0$. $MC = (J / \delta) - SC$, $\delta \neq 0$.

Theorem 12.0 (Proportionality of design) An apportionment solution exists for any local division in district plan proportionality.
Proof. $\delta * n = \sigma$. For any fixed size of the legislature, $n = \sigma / \delta$, $\delta \neq 0$. $\delta = \sigma / n$, $n \neq 0$, the density solution, for any population-based district magnitude classification. $\sigma = \delta * n$, the range solution for any finite delegation size.

Western State Panel Data and Analysis

The data in **TABLE 1.1** provides a summary of the district cases selected for analysis of legislative apportionment. Among the western state cases selected, there are some differences in the state sample sizes, and therefore each state's proportion of the total sample. The panel data base consists of a total of 22,827 county data points. Each county division is entered into the database only once per-district plan, so that the delegation size equals a composite apportionment. The data was collected by legislative district plan, district, and county with frequencies in county division and district constituencies reported in Appendices I & II by state.

The timing of the state time series varies, with the inclusion of territorial legislatures for several of the states. Some of the findings, such as those for California, describe all of the legislative apportionments with the exception of the current, post-2010, redistricting. Some of the other state times series extend further back in time, to incorporate the historical sequence of decisions through the reapportionment cases in the western states. The initial apportionment, for each state time series, is shown in **TABLE 1.1** as the status quo. Amongst these status quo district plans, some were derived from the organic act of territorial and county organization, whereas others were implemented by constitutional convention, for statehood in some instances, and still others, by legislation or constitutional initiative.

As suggested by the data in **TABLE 1.1**, the duration of district planning time horizons varies substantially among the western states, allowing for differentials in the evolution of district planning. Given the importance of county organization, any variance in the duration of state time series includes the effect of county organizational sclerosis, or more succinctly, the stability of organizing of counties to the present boundaries and number of counties.

TABLE 1.1 Analysis of Western States Legislative Apportionment

State	Sample Frequency	Percent	Average Year District Plan	Status Quo	Range	Largest County
Alaska	2335	10.2	1970	1913	2009	Anchorage
Arizona	1450	6.4	1947	1864	2012	Maricopa
California	3380	14.8	1923	1849	2001	Los Angeles
Colorado	1148	5.0	1982	1885	2011	Denver
Hawaii	116	.5	1942	1840	2012	Honolulu
Idaho	1140	5.0	1931	1890	1965	Ada
Montana	1938	8.5	1918	1889	1965	Silver Bow
Nevada	1260	5.5	1916	1861	2001	Clark
New Mexico	2772	12.1	1880	1847	1965	Bernalillo
Oregon	3404	14.9	1941	1887	1991	Multnomah
Utah	464	2.0	1928	1894	1966	Salt Lake
Washington	2316	10.1	1947	1889	2002	King
Wyoming	1104	4.8	1936	1890	1992	Laramie
Panel	22827	100.0	1933	1840	2012	Maricopa

The relevance of the largest counties varies somewhat among The States with differentials in the rate of growth, and therefore evolution in population size to those largest counties in **TABLE 1.1** by state. In most of The States, regulations established limits on the largest counties' delegations, in terms of a maximum delegation size, criteria for additional representation, and any guarantees for a minimum delegation size apportioned to counties. Other regulations provided for reductions in county division, elimination of jurisdictional fragmentation, and maximum or minimum numbers of local jurisdictions consolidated for the purposes of district planning. In some states, the pairings in number and adjacency established multi-county electoral districts, whereas in others, the largest counties subdivided delegation sizes into single and multi-member county district plans. The existence of subdistricting varied by states and counties, with generally only the largest counties permitting subdivision.

The panel data averages 1933 for a typical district plan, with a time horizon from 1840 to 2012, for this study. As reported in **TABLE 1.1**, the district plans for four states, Idaho, Montana, New Mexico, and Utah describe the period of time incorporating the research contained in the *Impact of Reapportionment on the Thirteen Western States*. The data on Colorado districts is more recent, similar to the coverage of at least one of the post 1990 Census reapportionments in eight of the other states. Because the number of local jurisdictions varies significantly among these thirteen states, the data summary in **TABLE 1.1** provides only some indication of the comprehensiveness of the state time series in district plans. The panel design suggests not only further collection of data on district plans, yet also indicates the population of the number of district plans that may be considered comprehensive legislative apportionments as distinct from a sequence of decisions involving adjustments to only a few districts.

TABLE 1.2 Delegation Size or District Magnitude by County Unit

State	N	μ	σ_μ	σ	sk	κ	min	max
Alaska	1279	1.823	.0518	1.851	4.29	23.60	1	16.0
Arizona	733	3.092	.1882	5.095	4.24	20.68	0	41.0
California	2401	1.154	.0451	2.210	7.88	84.61	0	32.0
Colorado	1148	.527	.0141	.477	3.36	33.95	0	7.0
Hawaii	116	7.922	.8498	9.153	2.36	4.77	1	39.0
Idaho	990	1.221	.0237	.746	3.91	21.76	0	9.0
Montana	1285	1.684	.0487	1.745	3.72	16.96	0	15.0
Nevada	1034	1.958	.0796	2.560	4.95	34.33	0	29.0
New Mexico	1180	1.544	.0386	1.326	4.21	41.56	0	18.0
Oregon	1862	1.299	.0443	1.911	4.70	28.32	0	17.0
Utah	449	1.550	.1566	3.316	5.34	34.46	0	30.0
Washington	1411	1.529	.0727	2.730	5.26	38.66	0	32.0
Wyoming	914	2.072	.0660	1.995	2.10	5.12	0	12.0
Panel	14802	1.573	.0206	2.506	6.81	68.12	0	41.0

The summary statistics for the average county division are reported by states in **TABLE 1.2**. These findings present a measurement of delegation size, as formally modeled and analyzed by this study. These basic findings confirm state differences in district planning, legislative apportionment, and county division.

As a summary of delegation size, the findings in **TABLE 1.2** reveal a history of significant differences from a single county, single member districting. The existence of single county, single member apportionment varies amongst these states by state, duration, and to some extent, timing of the data. The district plans in several of the states, such as Arizona, California (1926-1965), Idaho, Montana, Nevada, and Wyoming emphasized single county districts. Even so, all thirteen states have had multi-county legislative districts, with the inclusion of a single exception of a canoe district, attaching Kauai to part of Maui County, that was overturned during the redistricting process in Hawaii. With population growth, the evolution of district planning is toward extensive county subdivision in the most populated counties and multi-county districts throughout of the rest of the states territory. Because of the long-run separation into county division and subdivision districts, there are very few single county, single member districts in these state time series.

By far, the largest single county delegations were located in Maricopa for the Arizona House comprising approximately eighty positions. Under the old redistricting planning, Maricopa held half-the positions, with a County Board responsible for subdistricting. The other large delegations include those apportioned to Los Angeles, Honolulu, Clark, Salt Lake, and King counties. The use of SMDs was historically extensive in Los Angeles, Clark, Salt Lake, King, with MMDs in Honolulu, Anchorage, Bernalillo, and Multnomah counties.

The findings on delegation sizes, reported in **TABLE 1.2**, provide strong indications describing differences in *state distributions of county division*. These differences strongly indicate differences in district plans by state. Any similarity among the largest counties, and the allocation of districts, may be explained by the formal procedures for apportionment and division, the stability in the numbers of local-county jurisdictions, and any regulations limiting delegation sizes. Nonetheless, the evolution of county division into a bifurcated system of multi-county districts and county subdivision (of the largest counties) is indicated by the large standard deviation reported in **TABLE 1.2** for most of the states. These findings indicate a substantial variance in delegation size relative to the average size of the delegations' per-county. Any measure of the standard deviation, standard error of the mean, combined with the estimated average delegation size, revealed a large amount of covariation in each of these states. This finding describes the distribution of delegation sizes, for all thirteen states, in the panel data, suggesting that legislative apportionment has consisted of district planning for a few counties with large delegations, with the rest of the counties merged into consolidated, multi-county electoral districts.

Among the states, the importance of the largest counties is summarized by the skewness coefficients reported in **TABLE 1.2**. Additionally, the relatively small delegations to the rest of the counties are indicated by the very large kurtosis coefficients estimated and shown **TABLE 1.2**. These findings indicate that not only were the delegation sizes not normally distributed, but the largest counties varied only somewhat in their importance in the estimation average delegation sizes.

The fact that these average delegation sizes are not equal to one, the single county, single member district hypothesis, also reveals similarities in state decision rules for both apportioning to the largest counties and district plans for limited consolidation of more rural counties. Given the panel design, the distribution for each of the states is generally similar to the combined panel distribution, yet each state distribution also exhibits some differentials in the district plans and apportionment of delegation sizes. In summary the findings demonstrate these thirteen states did not have identical distributions of legislative apportionment and district plans, yet the pattern of county division and subdivision generalizes in delegation sizes given the variations in the state histories of district planning.

The results in **TABLE 1.2** may be interpreted in terms of (apportionment of) delegation sizes, the state distributions of county division, or as a measure of district magnitude. These results indicate that at most one state, California, approximated a single county, single member district plan. The average panel differences in delegation size are generally describing apportionments involving between two or three positions, instead of adjustments of a single member district in five states, Alaska, California, Montana, Oregon, and Wyoming with almost three seat differences in Nevada, Utah, Washington. Only New Mexico, Idaho, and perhaps Colorado, appears to have approximated a pattern of shifting a single district or county among districts, so that at least ten of these thirteen states provided for relatively uneven delegation sizes. Given the sample sizes of the state time series, all thirteen of the states exhibit average delegation sizes significantly different from a {1, 1} legislative apportionment. This finding describes the district plans in twelve of the thirteen states, and therefore generalizes these apportionment and division results to the panel data.

TABLE 1.3 Fragmentation Solutions by County Division & Subdivision

State	N	μ	σ_μ	σ	sk	κ	min	max
Alaska							1	1
Arizona	893	1.35	.033	.99	3.22	10.95	0	7
California	2028	1.66	.030	1.35	4.01	23.08	0	15
Colorado	577	2.01	.091	2.18	2.86	9.42	1	16
Hawaii	116	1.00	.000	.00			1	1
Idaho	990	1.00	.000	.00			1	1
Montana	1248	1.03	.007	.24	9.34	96.97	1	4
Nevada	925	1.15	.024	.73	6.01	41.31	1	8
New Mexico	1013	1.20	.022	.70	3.74	20.91	0	8
Oregon	2423	1.40	.018	.91	3.03	11.01	0	8
Utah	92	1.16	.068	.65	4.47	20.39	1	5
Washington	1621	1.37	.025	1.00	1.83	3.90	0	6
Wyoming	899	1.01	.008	.24	7.77	126.74	0	5
Panel	12825	1.33	.009	1.00	4.74	34.00	0	16

The summary distributions of delegation sizes provide some indications of state variations in legislative apportionment and district planning. The results in **TABLE 1.3** describe some of the state differences in local jurisdictional fragmentation by county division. Similar to the county division results estimated by delegation size, these findings describe state district plans in of numbers of local jurisdiction, jurisdictionally structure induced equilibrium, and more generally, as a fragmentation solution in terms of county division. Unlike the delegation size results, reported in **TABLE 1.2**, that emphasize the larger delegations with some use of county subdivision districts, these findings pertain to county division in terms of the formation of single and multi-county election districts. The use of county subdivision, with single member districts, is far more extensive in district plans consistent with the interpretation there are presently a large number of single county districts. Any district's plans containing a large number of single counties, subdivision districts, are therefore more consistent with a single county, fragmentation, solution. As the numbers of single county subdivision districts increase, in the more populated counties, the jurisdictionally induced equilibrium is for a reduction in fragmentation by county division.

The findings in **TABLE 1.3** estimate the average amount of county fragmentation to be equal to 1.33 counties, suggesting legislative districts are generally divided within a single county and attached to some portion of a second county. These findings strongly indicate multi-county districts are more important in three to six states, California, Colorado, Oregon, Washington, and to a lessor extent, Nevada and New Mexico. In the absence of counties in Alaska, most of the districts in fully ten of the other twelve states apportioned districts containing between one and two counties' per-district, by averaging a portion above a single county district.

The findings also reveal the gradual evolution toward the formation of legislative districts with a very large number of counties. These districts are shown by the results in **TABLE 1.3** to be exceptional cases from the more general pattern of single counties (subdivision) districts and some limited form of county division (with districts comprising portions of two counties). Even though these district findings generalize from the state distributions of county division, the use of multi-county districts is also increasingly important in state district planning. Among these states, the existence of fifteen county districts in northern California, the so named sixteen county donut district around the boundaries of the State of Colorado, and the adoption of four through eight county districts in Arizona, Montana, Nevada, New Mexico, Utah, Washington, and Wyoming provide the most extreme examples of county division into consolidated districts outside of the largest counties. This result confirms many district plans allocated fewer districts per-county, with apportionment of the larger counties having a greater delegation size and a large number of subdistricts.

Most of these states have provided for multi-county legislative districts in less populated counties. However, the numbers of multi-county districts have increased in almost zero-sum competition with those allocated to the larger counties for the purposes of subdivision. These findings also indicate an increase in the number of counties consolidated into the most rural districts, with these county division districts frequently containing three or more counties, with districts that would not have been formed as apportionment solutions when there were limits on county division and subdivision. *Besides districts averaging portions of two counties, the basic finding in **TABLE 1.3** demonstrates the increasing bifurcation into large county, subdivision districts and multi-county division districts containing three or more counties*.

As demonstrated by the basic results in **TABLES 1.2 & 1.3**, any district magnitude or jurisdictional fragmentation-induced equilibrium varies by states in delegation sizes and county division. The apportionment solutions exhibit some similarities in delegation size, even though these states vary by size of the legislature and number of local jurisdictions. The apportionment solutions also appear to be gradually evolving toward district plans involving counties with either a large number of districts or district consolidating portions of at least two, if not the formation of larger multi-county districts. As a consequence, the separation of county division into counties with large delegation sizes and districts with large number of counties has produced changes in district planning in all thirteen of the states. Even so, the county unit is still important in terms of reducing any fragmentation solution in district plans because district allocations require substituting for even larger delegations. In some recent district plans the transfer of districts has resulted in even more counties combined into a single district, and reductions in the delegation size of the largest counties as new county division districts are formed that contain portions of two counties. Additional efforts to reduce jurisdictional fragmentation have also produced reductions in the number of county division districts, with these findings indicating keeping at least one of the two counties intact and then attaching only a portion of a second county. Lastly, as the concentration of population in the largest counties is reduced, as a proportion of the state's population, these district plans reduce the number of single county, county subdivision districts, with most of the adjustments of newer districts involving multi-county districts and county division districts with some consolidation of local jurisdiction. The largest counties remain important, with apportionment of the largest, single county, delegation sizes, whereas the smaller counties are increasingly consolidated into regional, multi-county districts.

Analysis of State Variance: the Fixed Effects Model

The basic findings suggest the importance of not only local jurisdiction, but state differentials in legislative apportionment and division. These findings also suggest transitions in delegation size and number of local jurisdictions' per-district. As county units become somewhat less important, beyond any effort to reduce jurisdictional fragmentation, state district plans for a county division and subdivision better describe the redistricting politics surrounding the formation of greater numbers of subdivision districts, regional districts with more than four counties, and division districts with portions of at least two counties. These district plans suggest that state differentials not only exist, but district allocations may also exhibit greater similarities in general patterns of distribution at the same time significant state differentials exist.

The hypothesis that state differentials exist is tested, in **TABLES 2.1.1 & 2.1.2**, in size of delegations and number of counties per-districts. The basic finding indicates significant state differentials in county division by size of delegation and number of counties divided by district plan. These findings are twofold, demonstrating the existence of both significant inter and intrastate differentials in delegation size and local jurisdictional fragmentation.

The findings also suggest some differences between apportionment and fragmentation solutions, with district magnitude induced equilibrium exhibiting almost the same amount of state differentials in inter and intrastate variance in delegation sizes. The results for local jurisdictionally induced equilibrium indicates far greater importance of intrastate differentials in district fragmentation in numbers of local jurisdictions. These findings also suggest a lessor impact of state differentials in the number of counties, for explaining state differences in district plans.

TABLE 2.1.1 Analysis of Variance in Size of Delegations

County District	Sum of Squares	d. f.	Mean Square	F-statistic	P(F) <	Eta	Eta-squared
Between States	8786.51	12	732.21	128.66	.001	.307	.095
Within States	84163.02	14789	5.69	Levene Statistic	P(F) <		
Total	92949.53	14801		128.07	.001		

TABLE 2.1.2 Analysis of Variance in Number of Counties per-District

County District	Sum of Squares	d. f.	Mean Square	F-statistic	P(F) <	Eta	Eta-squared
Between States	870.44	11	79.13	83.92	.001	.259	.067
Within States	12081.63	12813	.94	Levene Statistic	P(F) <		
Total	12952.06	12824		268.79	.001		

The analysis in **TABLE 2.1.1 & 2.1.2** reveals a significant variance in county division and numbers of counties per-district that is explained by state differentials. To better compare interstate differentials, the results of Scheffe-tests are presented in **TABLES 2.2.1 & 2.2.2**. The Scheffe-tests are constructed to test for significant state variances in the panel data. The existence of state differentials in average delegation size and numbers of counties per-district is examined by these results.

The hypothesis of no significant state variance implies only minor differences in the average delegation sizes and numbers of counties per-district. Any state differentials would then be considered only to reveal minor adjustments in district plans and slight differences in county division and subdivision. In the absence of significant state differentials, such as those indicated in the previous **TABLES 2.1.1 and 2.1.2**, this comparison of states with the panel design would reveal only minor state differentials in district planning.

Instead, the findings suggest at most six categories in delegation size, among the thirteen states in this panel study. Similarities in the distribution of delegation sizes are revealed for states such as California, Idaho, and Oregon, in comparison with those for Washington, New Mexico, Utah, and Montana. These findings describe between four to eight states closer to single counties, single member districts, testing the previously noted {1, 1} hypothesis. The findings also reveal five states have had district plans implementing delegation sizes approximating multi-member district plans. In these five states, Alaska, Nevada, Wyoming, Arizona, and Hawaii, district plans sometimes included multi-member districts in the largest counties, with additional representation and at-large election in some of the other counties.

TABLE 2.2.1 Analysis of Post Hoc State Categories Using Scheffe Tests: State Comparisons by Delegation Size

State	N	1	2	3	4	5	6
Colorado	1148	**.527**					
California	2401		**1.154**				
Idaho	990		**1.221**	1.221			
Oregon	1862		**1.299**	1.299			
Washington	1411		1.529	**1.529**	1.529		
New Mexico	1180		1.544	**1.544**	1.544		
Utah	449		1.550	**1.550**	1.550		
Montana	1285		1.684	**1.684**	1.684		
Alaska	1279			1.823	**1.823**		
Nevada	1034				**1.958**		
Wyoming	914				**2.072**		
Arizona	733					**3.092**	
Hawaii	116						**7.922**
P(F) <		1.000	.199	.059	.163	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Uses Harmonic Mean Sample Size = 642.79.
The group sizes are unequal. The harmonic mean of the group sizes is used.

FIGURE 1.1

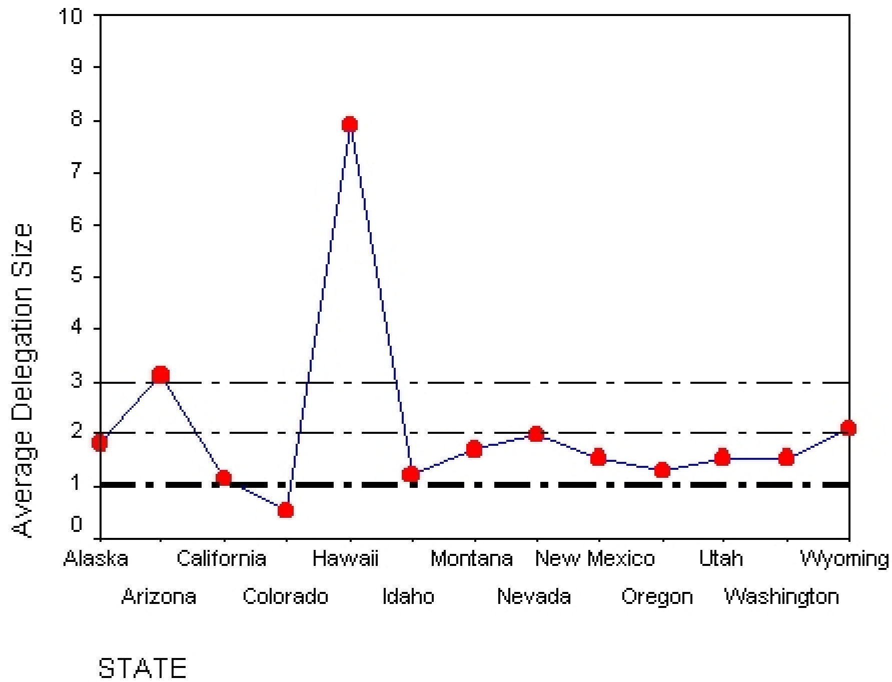


FIGURE 1.2

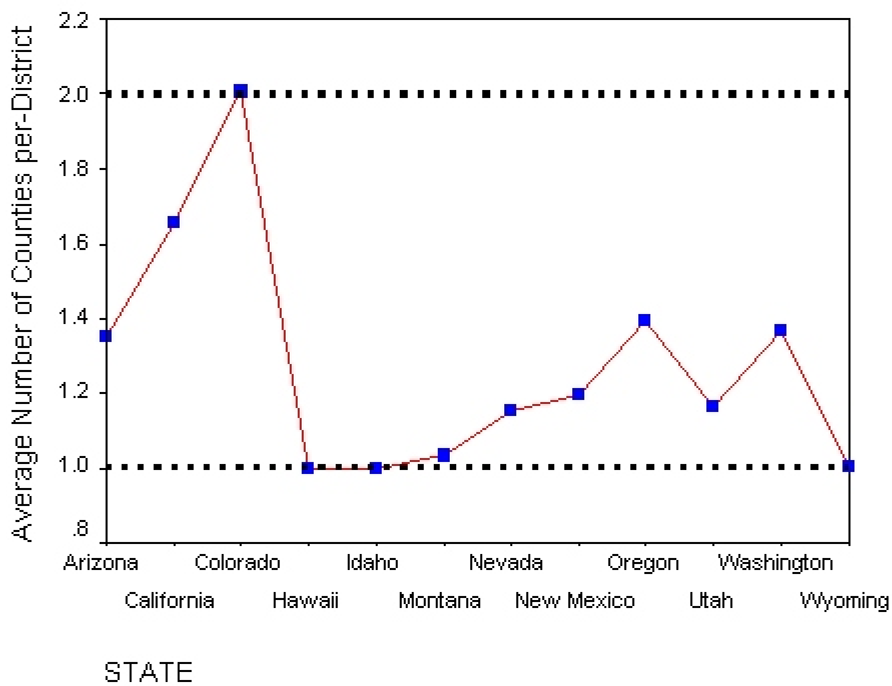


TABLE 2.2.2 Analysis of Post Hoc State Categories Using Scheffe Tests: State Comparisons by Number of Counties per-District

State	N	1	2	3	4
Hawaii	116	**1.00**			
Idaho	990	**1.00**			
Wyoming	899	**1.01**			
Montana	1248	**1.03**			
Nevada	925	1.15	**1.15**		
Utah	92	1.16	**1.16**		
New Mexico	1013	1.20	**1.20**		
Arizona	893		**1.35**		
Washington	1621		1.37	**1.37**	
Oregon	2423		1.40	**1.40**	
California	2028			**1.66**	
Colorado	577				**2.01**
P(F) <		.643	.274	.079	1.000

Means for groups in homogeneous subsets are displayed.
Uses Harmonic Mean Sample Size = 415.83.
The group sizes are unequal. The harmonic mean of the group sizes is used.

The findings, in **TABLE 2.2.1**, estimated from delegation sizes reveal the potential for multi-county, multi-member districts, where district allocations sometimes involved apportioning multiples to pairings of counties. For example, allocating three positions to two local jurisdictions, describes those seven to eight states in the middle categories, with Washington, New Mexico, Utah, Montana comparable with multi-county, multi member districts equivalent to apportioning three positions for two counties. Secondly, the results for California, Idaho, and Oregon are consistent with single county, single member districts. Third, the results for Alaska, Nevada, Wyoming are approximately equal to apportionments of two positions per-county. Forth, Arizona approximates an apportionment of three positions per-county. In Hawaii, the larger delegation sizes were subdistricted into multi-member districts, so that instead of an allocation averaging eight positions per-county, those positions were subdivided into varying numbers of multi-member districts within counties.

In comparison, the findings on county division in **TABLE 2.2.2** are estimated in terms of jurisdictional fragmentation. The Scheffe test compares the degree of jurisdictional fragmentation for any fragmentation solution in state district plans. The results indicate four states with single county division, Hawaii, Idaho, Wyoming, and Montana. Three additional states, Nevada, Utah, and New Mexico may also be considered states with either single county division, or limited county division. The seven states in the middle two categories, in **TABLE 2.2.2**, adopted district plans with multi-county districts, and some county division. The estimates for Colorado, in both tables, and California reported in **TABLE 2.2.2**, are consistent with the formation of two county, consolidated, districts. Lastly, the results for Colorado indicate two-county pairings, even though there were multiple, single county, subdivision districts.

Dynamic Regression Analysis of Legislative Apportionment and Division

The fixed effect model implies state differentials in not only a fixed number of local jurisdictions, but stability in the primary units of local jurisdiction. The existence of a local jurisdictional induced equilibrium in apportionment and division, impacts both delegation size, the size of the legislature, and any bicameral equilibrium in numbers of senatorial or assembly districts. As shown by the previous findings, the existence of state differentials suggests both the imposition of district plans and the evolution of district planning in fixed numbers of delegation size, size of the legislature, and local jurisdictions. Any stability in the number of counties is therefore directly related to the existence of a local jurisdictional-induced equilibrium in fixed numbers of local jurisdictions. More generally, this implies any fragmentation solution in division implies a convergence to a fixed number of local jurisdictions. The stability of any equilibrium solution, is therefore a distinct problem from the existence of a voting majority for a district plan and therefore an equilibrium in fragmentation, size of the legislature and bicameral legislative apportionment, delegation size, county division, or district magnitude.

A bicameral equilibrium in a district plan is related to both the size of each chamber, the delegation sizes in local jurisdictional division, and any fixed ratio between numbers of upper and lower chamber districts. In the district plans enacted before 1965, these included limits on delegation sizes and a local jurisdiction induced equilibrium in the numbers of counties' per-district, given the fixed number of counties in existence at the time of the apportionment. Any convergence to a fixed number of local jurisdictions has had the potential to change both the number of counties' per-district and any delegation sizes in county division, and therefore county reorganization produced adjustments in county division, subdivision, and numbers of counties.

Besides state efforts to reorganize local jurisdiction, there have been numerous state level changes in the size of the legislature. These include efforts to regulate bicameral differences, and some cases, to allocate upper and lower chambers in fixed ratios. Where the existence of bicameral differences drifted from fixed ratios, there are examples of district plans to reorganize the legislature to restore 2:1 or 3:1 ratios. In some of these cases, the district plans required assembly districts to be contained in senatorial districts. In many instances, the district plans proposed a fragmentation solution in county division and subdivision, with local jurisdictional boundaries crossed in order to provide for additional representation in the largest counties and more populated adjacent counties. In other cases, the lack of organized minor local jurisdictions results in multi-member district plans for a larger area of subdivision. These efforts produced bicameral differences in numbers of electoral districts and district boundaries contained within county division and subunit boundaries. In the absence of a fixed ratio, this produced unequal numbers of senate and house districts, and therefore reduced the overlap in upper and lower chamber district plans.

By allowing for bicameral differences, the enactment of separate senatorial and assembly districts resulted in changes in the size of the legislature, and therefore bicameral differences in the numbers of counties per-district and the size of delegations apportioned by county division and subdivision districts. Instead of a fixed size of the legislature determining the number of districts, subdistricting and multi-member district plans produced both bicameral differences and therefore state differentials in district plans. These adjustments in reorganized local jurisdictional equilibrium and district magnitude are examined with the difference of means test results presented in **TABLE 3.1**.

TABLE 3.1 Analysis of Differences-in-Means Test of the Structure-Induced Equilibrium and Jurisdictional Fragmentation Hypotheses

	Chamber	N	μ	σ	σ_{μ}
Delegation					
	Senate	7174	1.025	1.413	.0167
	House	7534	2.086	3.118	.0359
Counties					
	Senate	5568	1.40	1.17	.0157
	House	7217	1.27	.85	.0100

	F-test	P(F) <	t-test	d. f.	P(t) <	Mean difference	Std. Error Difference
Delegation	794.70	.001	-26.77	10616	.001	-1.06	.0396
Counties	219.55	.001	7.11	9794	.001	.13	.0186

Equal variances not assumed.
**F-test is significant .001 level

The difference of means test results indicates a bicameral equilibrium that is structured induced in district plans. The structure induced equilibrium describes significant differences in delegation size and number of counties per-district by legislative chamber. The structure induced equilibrium consists of a district magnitude solution in bicameral equilibrium. This district magnitude induced equilibrium is also a fragmentation solution in local jurisdiction.

In **TABLE 3.1** the findings indicate delegation {1, 2} sizes by legislative chamber. The district plans for this panel data indicate single member, senatorial districts. These findings also indicate two position, assembly districts, with the differences in the senate and house delegation sizes confirming the existence of additional representation. In some district plans, this apportionment solution involved multi-member districts, in others, these suggest a fixed ratio between the number of senatorial and assembly districts in terms of the sizes of the upper and lower chambers.

These findings demonstrate the amount of variation in district magnitude as evidenced by the standard deviations estimated within the senatorial and assembly or house district plans. These results indicate the existence of some multi-member senatorial districts and a range, from a single member to five member house districts. Given the amount of variability in the assembly district magnitudes, these results strongly indicate a bicameral equilibrium with significant differences in senatorial and assembly district plans. The local jurisdiction findings also strongly indicate a bicameral equilibrium with significant differences in senatorial and assembly district plans. *The numbers of local jurisdictions confirm the existence of multi-county districts in both the senate and house district plans*. This bicameral equilibrium in multi-county districts includes single county subdivision and division districts.

According to the panel data, the senatorial district plans average 1.40 counties with a standard deviation estimated equal to 1.17 counties. This finding confirms the existence of multi-county senatorial districts, consisting of two counties, consolidated in a single district, a single county combined with portions of a second county, portions of two counties, and consolidations of three or more counties. The standard deviation estimated suggests the largest number of counties per-district ranges, in this panel data, between one and two counties. These findings indicate district plans consisting of single and multi-county districts, with the multi-county districts involving either additional representation (i.e., a consolidation of two counties into a single district) or a county division district. These results indicate a MC equilibrium in the senate districts with a fragmentation solution consisting of from one to four counties.

The house district plans appear too more closely approximate a single county equilibrium in the lower chambers. Even so, these findings also indicate a MC equilibrium in assembly districts. Given the somewhat lessor standard deviation, the fragmentation solution consists of from one to three counties per-assembly districts.

These results indicate a multi-county equilibrium in both senatorial and assembly districts with bicameral differences strongly indicating greater consolidation of local jurisdiction in senatorial districts. This finding describes a senatorial district plan, involving a consolidation solution reducing the number of electoral districts by single county apportionment and division. The adoption of a consolidated senatorial plan provides for a mixed proportion of single and multi-county districts. The findings from this panel data indicate a district plan mixture of a majority of single county, senatorial districts with slightly less than one-half of the other senatorial districts, two-county districts.

By demonstrating a multi-county equilibrium, these results suggest the problems of extending district plans to the less populated counties in each of these states. In some instances, state differentials in district plans explain this as a significant fixed effect, in state district plans. These differences are clearly indicated by the significant differences in state averages in delegation size and numbers of counties per-district reported earlier in this study. On this basis, the findings confirm that each state handled any complications in apportionment and division, and local jurisdiction, by enacting separate district plans. Any similarities in these district plans suggest the range of apportionment and fragmentation solution available, given varying sizes of the legislatures, numbers of local jurisdictions, and therefore numbers of electoral districts.

Even so, the existence of MC equilibrium with significant bicameral differences describes state differentials in district planning. The panel data results are generally consistent with regard to apportionment and fragmentation solutions, with state variances explaining only some of the differences in the mixtures of single and multi-county districts. The fact that delegation sizes and sizes of the legislature varied also suggest substantive differences in forms of county division and subdivision allowed or permitted by local jurisdiction.

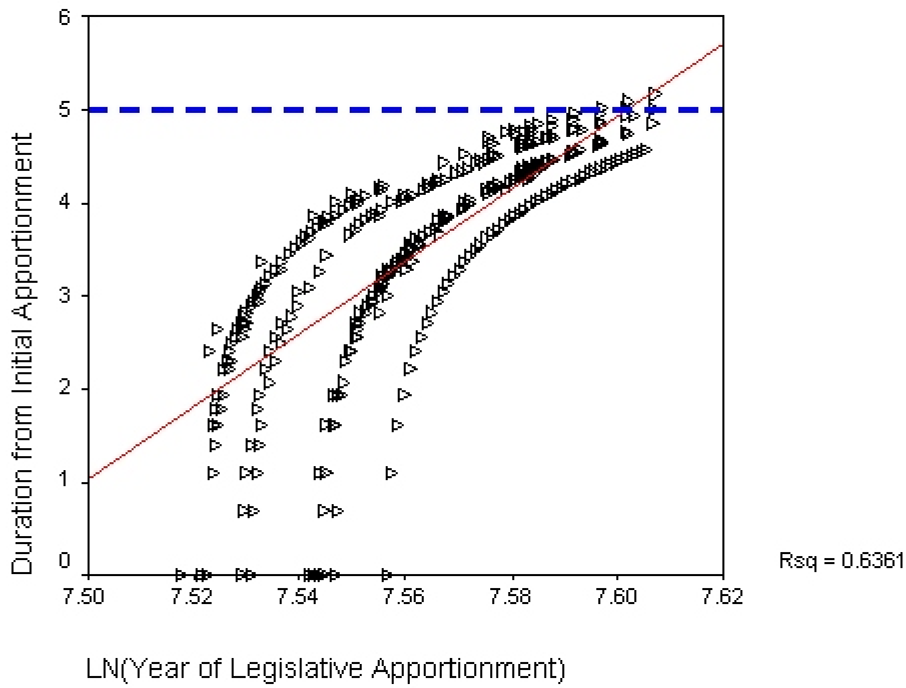
The stability of the bicameral equilibrium, as reported in **TABLE 3.1**, describes SMD, MC senatorial districts and MMD, MC assembly districts. Given the bifurcation of assembly districts by fragmentation of the largest counties, the MC assembly districts involve district local options on a population basis. The district plans for assembly districts describe a range of single county, county subdivision districts, two-county, county division districts, and multi-county consolidation greater than or equal to three or more counties per-district. As a result, bicameral differences between senatorial and assembly districts imply substantive differences in districts.

The stability of the bicameral equilibrium in legislative district plans is related to the duration of apportionment. Given the existence of state differentials, the time horizons for district plans varied in the panel data. By analyzing state differences in duration of apportionment solutions, the next set of regression results confirms the importance of sequences of decisions in the stability of district plans.

The durational hypotheses involve at least two distinguishable paths in state differentials: the timing or year on an apportionment and the number of apportionments or district plans in each state time series. Fortunately, these state differentials are functionally related, and may be combined in a product space shown in **FIGURE 3.0**. In this product space, state differentials converge to a status quo apportionment equal to the multiplication of the number of apportionments times the (log of the) duration of apportionment. The purpose for this is to measure any convergence in the number of local jurisdictions to a fixed number of counties.

As the organization of counties become sclerotic, or constant, in each of these states, the durational hypothesis is that district planning converges to a stable bicameral equilibrium in size of the legislature, district magnitude, and fragmentation of local jurisdiction by county division and county subdivision. The separability of large county, subdivided districts and large numbers of small counties into consolidated, county division districts are therefore only a part of the mixture of districts imposed by each district plan. Because the time horizons vary in duration of each district plan, the state time series vary significantly in number of apportionments and the duration of each of the district plans. The collection of district plans generates an unbalanced panel design, with state differentials in the mixture of single and multi-county division, and the district plans for the subdivision of the largest and division of the most rural counties.

FIGURE 2.0



6
5
4
3
2
1
0
Duration from Initial Apportionment
7.50
7.52
7.54
7.56
7.58
7.60
7.62
Rsq = 0.6361
LN(Year of Legislative Apportionment)

The dynamic analysis of the panel design is reported in **TABLES 3.2 & 3.3**. The first set of findings describes the fragmentation solution attained in numbers of counties per district by chamber and organizational sclerosis in numbers of counties. The second set of results explains the variation in delegation sizes by chamber and duration, and therefore trends and sequence of the numbers of state apportionments.

The history of the district plans provides evidence of decision rules, such that one position per-county in the senate, and two positions per county in the house apportionments. These findings imply fixed apportionment solution and division that can best be understood in terms of the averages, and other statistical summaries of the distributions of delegation sizes and numbers of counties per-district. However, the existence of state differentials and local options in the district plans generates many examples of varying mixtures of county division and subdivision districts in each plan.

These findings suggest an ESS, or pursuit of an evolutionary strategy in division and subdivision changing throughout the sequence of apportionments. Any local option strategy would therefore influence both the delegation sizes of county subdivision districts and the form of the county division amongst the mixture of districts with varying numbers counties' per-district. This pattern of increasing and diffusing the number of county subdivision districts explains the increase in delegation sizes in the panel data. A similar increase in the numbers of multi-county districts, with county division, also explains the increasing numbers of counties' per-district and the concentration of the number of rural or smaller counties into an increasingly smaller number of districts with four or more counties consolidated into a single district. The sequences of district plans suggest divergence from a unified county {1, 1} or {1, 2} division.

The history of local jurisdictions suggests apportionment solutions and division on a county basis. The sequences of adjustments in local jurisdiction involve state differentials in decisions concerning the organic act of statehood, organizing counties, and any county reorganization permitting the formation of new counties. These adjustments in local jurisdiction include the organizational status of counties, the extension to subunits, and the organization of counties to a fixed number of counties. Additional adjustments to county boundaries and any subunits within counties also have implications for convergence to a fixed number of counties. The extension of county governments by reorganization of local jurisdictions exhibits state differentials in either any fixed total number of counties or the numbers of adjustments in the numbers of counties. Since the numbers of reorganizations tend to be relatively small, the division of states into local jurisdiction remains relatively constant, and therefore the numbers of counties are a very stable number. The rate of convergence to these numbers of counties varies by state and therefore the sclerosis of local division varies by state time series. The pattern of organizational sclerosis modeled in **FIGURE 2.0** provides an analysis of the convergence of county organization within these states based on an evolution of county reorganization from a status quo of the original counties.

Even in The Western States, with more recent county entry, organizational sclerosis has taken place in the number of counties. The existence of a stable fragmentation solution is consistent with the ESS increase in the number of counties per-district. This finding is also consistent with the greater numbers of multi-county districts and the wider variety of county division districts. As these county division districts impact a larger number of counties, there is more frequent division of counties and districts with portions of two counties.

TABLE 3.2 Regression Analysis of the Number of Counties per-State Legislative District by Bicameral Chamber & Convergence to Status Quo County Organization

Counties	β	$\sigma(\beta)$	$\beta / \sigma(\beta)$	$P(\beta = 0)<$	B	$\beta - Z\cdot\sigma(\beta)$	$\beta + Z\cdot\sigma(\beta)$
β_0	1.268	.012	22.33	.001		1.245	
Chamber	.135	.018	7.64	.001	.067	.100	.170
β_0	.680	.041	-7.80	.001		.600	.760
Chamber	.146	.018	8.31	.001	.073	.111	.180
ConvSQ	.114	.008	15.07	.001	.132	.099	.129

$(\beta_0 - 1) / \sigma(\beta_0)$ = t-test for one-per county decision rule
$\beta \equiv$ unstandardized slope coefficient
$\sigma(\beta) \equiv$ standard error
$\beta / \sigma(\beta) \equiv$ t-distribution, N = 12823
$P(\beta = 0) < \equiv$ Significance level
B $\equiv$ beta or standard slope coefficient
$\beta - Z\cdot\sigma(\beta) \equiv$ 95% lower bound of the slope coefficient
$\beta + Z\cdot\sigma(\beta) \equiv$ 95% upper bound of the slope coefficient

Model Goodness of Fit Statistics

Model	R	F-test	P(F=0)<	∇R^2	∇F-test	d.f.	d.f.	P(∇F=0)<	S_{CE}
1	.067	58.42	.001	.005	58.42	1	12823	.001	1.005
2	.148	143.21	.001	.017	226.96	1	12822	.001	.988

**F-test is significant .001 level

TABLE 3.3 Regression Analysis of Delegation Size by Bicameral Chamber, Number of Counties, &Duration from Year of Initial Legislative Apportionment

Delegation Size	β	$\sigma(\beta)$	$\beta / \sigma(\beta)$	$P(\beta = 0)<$	B	$\beta - Z\bullet\sigma(\beta)$	$\beta + Z\bullet\sigma(\beta)$
β_0	2.419	.036	39.417 11.639	.001 .001		2.347	2.490
Chamber	-1.203	.053	-22.52	.001	-.222	-1.307	-1.098
β_0	2.867	.048	38.896 18.063	.001 .001		2.722	2.961
Chamber	-1.154	.053	-21.784	.001	-.213	-1.258	-1.050
Counties	-.347	.025	-14.010	.001	-.137	-.395	-.298
β_0	2.527	.093	16.419 5.667	.001 .001		2.344	2.710
Chamber	-1.139	.053	-21.470	.001	-.210	-1.243	-1.035
Counties	-.366	.025	-14.559	.001	-.144	-.415	-.317
Log(Duration of Apportionment)	.102	.024	4.256	.001	.042	.055	.149

$(\beta_0 - 1) / \sigma(\beta_0)$ = t-test for one-per county decision rule
$(\beta_0 - 2) / \sigma(\beta_0)$ = t-test for two-seater decision rule
β ≡ unstandardized slope coefficient
$\sigma(\beta)$ ≡ standard error
$\beta / \sigma(\beta)$ ≡ t-distribution, N = 9830
$P(\beta = 0) <$ ≡ Significance level
B ≡ beta or standard slope coefficient
$\beta - Z\bullet\sigma(\beta)$ ≡ 95% lower bound of the slope coefficient
$\beta + Z\bullet\sigma(\beta)$ ≡ 95% upper bound of the slope coefficient

Model Goodness of Fit Statistics

Model	R	F-test	P(F=0)<	∇R^2	∇F-test	d.f.	d.f.	P(∇F=0)<	S_{CE}
1	.222	507.30	.001	.049	507.30	1	9830	.001	2.681
2	.260	356.84	.001	.019	196.29	1	9829	.001	2.655
3	.263	244.34	.001	.002	18.11	1	9828	.001	2.652

**F-test is significant .001 level

The findings reported in **TABLE 3.2** indicate significant bicameral differences and provide an estimate of the exact MC (multi-county) equilibrium in upper versus lower chambers. These results reject the hypothesis of any decision rule consisting of one position per-county as an apportionment solution. Instead of a single county, SMD apportionment solution, the findings strongly indicate a mixture of single and multi-county districts among both senatorial and assembly or house districts. Even though there were instances of one per-county apportionment solutions, for some of the legislative chambers in the panel data, these findings are consistent with decision rules allocating *at least one position per-county, apportioning a mixture of single county subdivision and multi-county division districts*.

The results reveal organizational sclerosis has twice the impact of bicameral differences in explaining the number of counties per-district. The strength of this fragmentation solution establishes convergence to a stable number of counties in each of the state time series. Even given minor adjustments, through boundary changes, new counties formed, and other charter-based reorganization, these findings are consistent with generally a fixed number of counties. As a result, the stability of the fixed number of local jurisdictions, produces organizational sclerosis and therefore stability in any local jurisdiction-induced equilibrium.

Given the fragmentation solution estimated in **TABLE 3.2**, the dynamic analysis in **TABLE 3.3** reveals several changes in state differentials, or what could be termed, the paths in state differences in average delegation sizes by county division. The interpretation of the fixed effects model suggests dynamics in what remain as significant differentials in state variance. The dynamics of this state variance indicates not only significant interstate differences, but significant comparable paths in states differentials in district planning.

In some of the states, the most populated counties were regulated by a maximum number of delegates or limited to a proportion of the legislature. The rates of accumulating additional representation therefore varied in each of the states, by legislative chamber. The most populated counties also varied in rates of county subdivision, with some of the larger counties maintaining either reduced delegation sizes or some form of at-large election for a longer time horizon. Additionally, the declining concentration of state population in the largest counties has also resulted in the extension of county subdivision districts into counties adjacent to the largest counties. In each instance, the changes to district plans involve varying rates of adjustment based on state differentials in district plans.

The ESS in delegation size, reported in **TABLE 3.3**, suggests a senate consistently less than a house or assembly district apportionment. These findings strongly indicate a {1, 2} status quo model in MC equilibrium. As the number of counties increases, through reorganization, this has produced smaller delegation sizes and fixed numbers of counties. Any convergence to a fixed size of the legislature is therefore related to the stability in fixed numbers of counties and a diffusion of {1, 2} delegation sizes to a wider range of counties. As a result, any stability in the fixed size of the legislature determines convergence to the fixed size of each of the legislative chambers. Additionally, the significant bicameral differences, estimated in **TABLE 3.3**, provide evidence of convergence to fixed sizes of each legislative chamber, and therefore a fixed size of the legislature, as a district magnitude-induced equilibrium in terms of average delegation size in county division. As the apportionment solutions impose more extensive division, this converges to organizational sclerosis in the number of counties and stability in the size of the legislature and numbers of senatorial and assembly districts.

The dynamics indicate the longer the time horizon of the district plan, the larger the average delegation size. Given the varying shares of state populations in the largest counties, the greater the concentration of delegation sizes the slower of the diffusion of additional representation in the form of a second position by county division. As the concentration of delegation sizes is reduced, this produces state differential (rates of) an increase from a single county position to additional representation. In the absence of more counties, any reduction in local jurisdictional fragmentation along with extension of subdivision districts into adjacent counties maintains delegation sizes in the larger counties. Because there are still a few single counties with large delegation sizes, the drift in average delegation sizes results in a slower transition to greater division by local jurisdictional fragmentation.

This pattern of reinforcing the largest counties, delegation sizes, also involves district plans imposing a few, multi-county districts, with a large number of counties (> 4, >10). In some states, these district plans have led to the emergence of the regional district (E-W, N-S, C), comprising contiguous groupings or sets of counties for planning purposes. The existence of these East/West, North/South, or Central districts are identified by regional designation to indicate the consolidation of state territory, by combining local jurisdiction in what is usually a senatorial district plan.

In contrast, the status quo in apportionment indicates a single county (SC) equilibrium {1S, 2H} with one senate district and two assembly districts. This bicameral equilibrium is also a district magnitude-induced equilibrium where district plans regulated the size of delegations and any county division. When combined with a fragmentation solution, both the size of the legislature and the numbers of districts are local jurisdiction-induced equilibrium.

The findings in **TABLE 3.3** indicate the fragmentation solution diminishes delegation size by one third of a position for each additional county. On a county basis, the panel data estimates apportionment and fragmentation solutions in numbers of counties, varying by state and year, exhibiting both significant inter and intrastate differentials. As the state differentials converge in a structure of organization, any changes, or reorganizations have only a small impact on the stability of either district plans or the number of counties. More generally, any county reorganization involves only minor adjustments to the number of counties, as a consequence of minor boundary changes, intra-county changes, county separation, independent city status, or city and county consolidation. The findings reveal changes in the number of counties reduces the average delegation size between 1/3 and 2/5 < ½ of a position apportioned by county division. These findings also reveal minor increases in the number of local jurisdictions reduce the size of delegations.

Lastly, the district planning time horizons vary by states and individual apportionment and division, duration from a status quo, length of the state time series, number of apportionments, and district plans. The findings reveal the longer the duration of apportionments, the larger the delegation size. In the sequence of decisions concerning the adoption of district plans, this has produced an increase in average delegation sizes as more counties attain additional representation. The results provide evidence for rejecting both the one-seater and two-seater hypotheses, and the {1S, 2H} hypothesis, in bicameral equilibrium. Quite simply, the delegation sizes averaged significantly greater numbers by county division than indicated by a constant or fixed district magnitude equal to U[1, 2], a local jurisdiction fragmentation solution equal to {1SC, 1SMD}, or a bicameral equilibrium equal to {1S, 2H}.

Delegation Sizes, Local Jurisdiction, & Proportionality of District Plans

Inasmuch state differentials exist the fixed effects of interstate competition and intrastate organization have significant implications for understanding legislative apportionment and district planning. The results of this study imply an ESS in state differentials, with the duration hypothesis a change in district plans from a status quo apportionment of {1S, 2H} converging to a reform alternative consisting of a {1S, 3H} fragmentation solution in county division. This study also finds significant adjustments from the original counties to the current state of organizational sclerosis in legislative departments of state government and the fixed and stable numbers of counties. As demonstrated by these results, this study suggests the importance of district planning time horizons based on sequences of district planning decisions, and any state differentials in rates of convergence to fixed numbers of local jurisdictions and sizes of the legislature.

Additionally, district planning time horizons have a twofold effect through the imposition on an apportionment solution and the consistency of county division. This study argues for apportionment solutions related to the existing fragmentation solutions in local jurisdiction. By doing so, this establishes the formal explanation for the equilibrium relationships amongst district magnitude, local jurisdiction, and any mixed integer model and solution for fixed sizes of delegations, the legislature, individual legislative chambers, and the numbers of local jurisdictions. This analysis suggests any division in local jurisdiction can be examined by county division as a fragmentation solution, so that any equilibrium is both a district magnitude induced-equilibrium and solution in district plans. These results can be attained by maximum and minimum limits on delegation size, fixed delegation size, or a size of the legislature.

After almost one hundred years of research on maximum and minimal limits to the size of The State Legislatures, these results derive local jurisdiction fragmentation solutions and legislative apportionment solutions. With regard to the latter, the apportionment solutions involve bicameral differences, adjustments to the size of the legislature, trends in delegation sizes, district magnitude solutions, any changes from hypothesized decision rules or linear programming goals established for determining solutions in legislative apportionment and division. Given the state differentials in bicameral equilibrium, any fixed size of the legislature has implications for the stability of the numbers of senatorial and assembly districts.

The substantive changes in district plans cannot easily be generalized by evidence as an apportionment and fragmentation solution. Even so, the sequence of district plans analyzed with panel data on the western states, strongly indicate a status quo apportionment with origins in the counties and an ESS in apportionment and division by electoral districts. Based on the organic act of statehood, and duration of territorial status, legislative apportionment is to local jurisdiction, given local jurisdictional division. The existence of local jurisdiction-induced equilibrium has implications for district plans, the fragmentation of local jurisdiction may not remain stable in district plans for county division, subdivision, and any extension or consolidation of local jurisdiction through district planning. Furthermore, any reorganization of existing fragmentation solutions may also produce only minor adjustments in local jurisdiction and legislative district plans. By implication, the formal relationships can be established between numbers of local jurisdictions, fixed numbers of local jurisdiction, and the stability in the number of local jurisdictions. These may be useful for constructing mixed integer models of district plans and any description of district magnitude, delegation sizes, and county division.

Apportionment on a county basis is consistent with an ESS in single county subdivision and multi-county division districts. As indicated by this study, the mixture of single and multi-county districts exhibits state differentials and significant rates of adjustment in district plans. These district plans incorporate largest counties with the maximum sized delegations and subdivided into a single county, single member, subdivision district. District plans also include county division districts consisting of portions of two counties, a single unified county plus a portion of a second county, and multi-county districts. The numbers of counties in MC districts are increasing indicating more recent districts plans contain more two-county districts and MC districts with significantly more than one or two counties per-district. The design of regional districts has occurred in several of the western states with MC districts containing four or more counties, with an areal designation separate from suburban counties adjacent to the largest or most populated counties.

In the status quo apportionments, district plans ranged by local jurisdiction from unified to consolidated district encompassing fixed numbers of organized counties. As a fragmentation solution, these sometimes established apportionment decision rules to a single whole or unified county, with county division and subdivision limited to consolidation of no more than two or three counties. Most of the district plans apportioned to a mixture of single counties, to two county districts with additional representation, and some multi-county districts. The actual range in district magnitude solutions can be described as 1) a single whole county, 2) a single whole or unified county to two counties with a floterial district, 3) two counties combined with additional representation–two counties with three positions, 4) three or more counties with floterial districts, and 5) multi-county districts with three or more counties.

The adjustments in district plans frequently involved apportionments of additional representation and floterial districts. These minor adjustments generally exhibited stability in the district plans, so that the descriptions of district plans remained stable over lengthy time horizons in the panel data. On this basis, redistricting could be described as reapportionment of additional representation, floterial districts, remainders, partial representation, proportionate representation, and generally a rotation of positions from either a multi-member district or multi-county district.

The transition from the status quo apportionment to the more recent politics of redistricting suggests a mixed integer classification of district plans form

- single county districts, whole county, unified district, one position
- single county, unified district, additional representation, two positions
- single county, unified district, multiple positions
- single county, fragmented districts, multiple positions, multi-member districts
- single county, fragmented districts, variable numbers of positions, multi-member districts
- single county, fragmented districts, one position, single member districts and subdistricting at the county level
- county division districts, two whole counties
- single whole county plus a portion of a second county, minor local jurisdiction
- county division, portions of two counties
- county division and subdivision districts on the basis of minor local jurisdictions in subunits of two or more counties.

The fact that more recent district plans place greater priority on minor local jurisdictions has increased the importance of the organization local jurisdictional subunits. In the absence of minor local jurisdictions, the use of multiple subunits in district planning has produced excessive subdivision and consolidation from the status quo in apportionment. As a result, this study finds extensive and significant state differentials in the apportionment and division of local jurisdiction.

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Appendix I *County Division*

STATE = Alaska

COUNTY	Frequency	Percent
Akiak	3	.1
Alakanuk	1	.0
Aleutian Islands	1	.0
Anchor Point	1	.0
Anchorage-Cordova	1	.0
Anchorage-Palmer	1	.0
Anchorage	635	27.2
Angoon	7	.3
Aniak	3	.1
Barrow-Kobuk	2	.1
Barrow-Kobuk & Nome	2	.1
Barrow	11	.5
Beaver	3	.1
Bethel	41	1.8
Bethel & Wade-Hampton	2	.1
Bristol Bay-Bethel	1	.0
Bristol Bay	1	.0
Bristol Bay & Yukon-Kuskokwim	2	.1
Candle	7	.3
Central	1	.0
Chatanika	1	.0
Chicken	3	.1
Chitina	1	.0
Chudiak	1	.0
Chugiak	16	.7
Clear	2	.1
College	5	.2
Cooper Landing	1	.0
Cordova-Valdez	2	.1
Cordova-Valdez & Palmer-Wasilla	2	.1
Cordova	22	.9
Council	2	.1
Craig	9	.4
Deering	2	.1
Delta Junction	5	.2
Dillingham	14	.6
Douglas	9	.4
Eagle	2	.1
Eagle River	40	1.7
Emmonak	4	.2
Ester	1	.0
Ester Creek-Fairbanks	1	.0
Ester Creek	1	.0
Fairbanks	322	13.8
Flat-Iditarod	1	.0
Flat	1	.0
Fort Richardson	1	.0
Fort Yukon	9	.4
Fox	3	.1

Galena	5	.2
Girdwood	4	.2
Haines	14	.6
Halibut Cove	5	.2
Haycock	4	.2
Healy Forks	1	.0
Homer	21	.9
Hoonah	2	.1
Hope	4	.2
Hot Springs	1	.0
Hyder	3	.1
Iditarod	1	.0
Juneau-Yakutat	1	.0
Juneau	157	6.7
Juneau & Lynn Canal	2	.1
Kake	5	.2
Kasilof	7	.3
Katalia	1	.0
Kenai	23	1.0
Kennecott	1	.0
Ketchikan	94	4.0
King Cove	1	.0
Klawock	12	.5
Knik	2	.1
Kobuk	1	.0
Kodiak-Aleutians	1	.0
Kodiak	52	2.2
Kodiak & Aleutian Islands	2	.1
Kotzebue	41	1.8
Kwethluk	4	.2
Kwiguk	1	.0
Larsen Bay	1	.0
Livengood	3	.1
Lynn Canal-Icy Straits	1	.0
McCarthy	6	.3
McGrath	2	.1
McKinley Park	1	.0
Mountain View	1	.0
Naknek	9	.4
Nenana	16	.7
Nikiski	5	.2
Nikolski	1	.0
Nikolski Village	1	.0
Ninilchik	4	.2
Nome-Wade Hampton	1	.0
Nome	166	7.1
Noorvik	1	.0
North Pole	35	1.5
Northwestern	1	.0
Palmer-Wasilla	1	.0
Palmer	47	2.0
Pedro Bay	3	.1
Pelican	1	.0
Petersburg	17	.7

Point Barrow	1	.0
Port Moller	1	.0
Rampart	7	.3
Ruby	17	.7
Sand Point	3	.1
Saxman	6	.3
Seldovia	1	.0
Seward-Kenai	1	.0
Seward	26	1.1
Seward & Kenai	2	.1
Shungnak	1	.0
Sitka	53	2.3
Skagway	6	.3
Sleetmute	3	.1
Soldotna	20	.9
Solomon	1	.0
South Central	1	.0
Southeastern	1	.0
Spenard	7	.3
St. Mary's	2	.1
Sulzer	2	.1
Tanana	3	.1
Teller	5	.2
Tok	5	.2
Uganik Bay	4	.2
Unalakleet	4	.2
Unalaska	11	.5
Valdez	47	2.0
Wade Hampton	1	.0
Wales	3	.1
Wasilla	34	1.5
Willow	5	.2
Wrangell-Petersburg	2	.1
Wrangell-Petersburg & Sitka	2	.1
Wrangell	39	1.7
Yukon-Kuskokwim	2	.1
Total	2335	100.0

a STATE = Alaska

STATE = Arizona

COUNTY	Frequency	Percent
1 SE 114 Gila	2	.1
2 W 114	2	.1
3 NE 114 Gila	2	.1
Apache	75	5.2
Cochise	75	5.2
Coconino	81	5.6
Gila	86	5.9
Graham	75	5.2
Greenlee	69	4.8
La Paz	25	1.7
La Paz (Pah-Ute)	32	2.2
Maricopa	277	19.1
Mohave	85	5.9
Navajo	85	5.9
Pima	139	9.6
Pinal	109	7.5
Santa Cruz	75	5.2
Yavapai	85	5.9
Yuma	71	4.9
Total	1450	100.0

a STATE = Arizona

STATE = California

COUNTY	Frequency	Percent
Alameda	119	3.5
Alpine	28	.8
Amador	40	1.2
Butte	54	1.6
Calaveras	48	1.4
Colusa	48	1.4
Contra Costa	63	1.9
Del Norte	36	1.1
Dropped in 1853	14	.4
El Dorado	49	1.4
Fresno	58	1.7
Glenn	22	.7
Humboldt	46	1.4
Imperial	20	.6
Inyo	28	.8
Kern	44	1.3
Kings	23	.7
Klamath	20	.6
Lake	32	.9
Lassen	28	.8
Los Angeles	389	11.5
Madera	27	.8
Marin	48	1.4
Mariposa	48	1.4
Mendocino	48	1.4
Merced	41	1.2
Modoc	26	.8
Mono	32	.9
Monterey	56	1.7
Napa	48	1.4
Nevada	48	1.4
none	8	.2
Orange	69	2.0
Placer	50	1.5
Plumas	40	1.2
Riverside	42	1.2
Sacramento	84	2.5
San Benito	26	.8
San Bernardino	77	2.3
San Diego	105	3.1
San Francisco	190	5.6
San Joaquin	67	2.0
San Luis Obispo	51	1.5
San Mateo	52	1.5
Santa Barbara	59	1.7
Santa Clara	95	2.8
Santa Cruz	52	1.5
Shasta	48	1.4
Sierra	44	1.3
Siskiyou	44	1.3
Solano	55	1.6
Sonoma	70	2.1

Stanislaus	46	1.4
Sutter	48	1.4
Tehama	37	1.1
Trinity	48	1.4
Tulare	55	1.6
Tuolumne	48	1.4
Ventura	39	1.2
Yolo	52	1.5
Yuba	48	1.4
Total	3380	100.0

a STATE = California

STATE = Colorado

COUNTY	Frequency	Percent
Adams	49	4.3
Alamosa	11	1.0
Arapahoe	65	5.7
Archuleta	11	1.0
Baca	11	1.0
Bent	12	1.0
Boulder	39	3.4
Broomfield	4	.3
Chaffee	11	1.0
Cheyenne	11	1.0
Clear Creek	13	1.1
Conejos	14	1.2
Costilla	14	1.2
Crowley	11	1.0
Custer	11	1.0
Delores	1	.1
Delta	15	1.3
Denver	106	9.2
Dolores	10	.9
Douglas	21	1.8
Eagle	12	1.0
El Paso	59	5.1
Elbert	12	1.0
Fremont	16	1.4
Garfield	14	1.2
Gilpin	14	1.2
Grand	12	1.0
Gunnison	12	1.0
Hinsdale	13	1.1
Huerfano	14	1.2
Jackson	11	1.0
Jefferson	66	5.7
Kiowa	11	1.0
Kit Carson	11	1.0
La Plata	14	1.2
Lake	12	1.0
Larimer	28	2.4
Las Animas	14	1.2
Lincoln	11	1.0
Logan	11	1.0
Mesa	16	1.4
Mineral	11	1.0
Moffat	11	1.0
Montezuma	14	1.2
Montrose	12	1.0
Morgan	11	1.0
Otero	11	1.0
Ouray	11	1.0
Park	13	1.1
Phillips	11	1.0
Pitkin	12	1.0
Prowers	11	1.0

Pueblo	34	3.0
Rio Blanco	9	.8
Rio Grande	15	1.3
Routt	11	1.0
Saguache	11	1.0
San Juan	13	1.1
San Miguel	11	1.0
Sedgewick	11	1.0
Seguache	2	.2
Summit	13	1.1
Teller	12	1.0
Washington	11	1.0
Weld	33	2.9
Yuma	11	1.0
Total	1148	100.0

a STATE = Colorado

STATE = Hawaii

COUNTY	Frequency	Percent
Hawaii	29	25.0
Honolulu	29	25.0
Kauai	29	25.0
Maui	29	25.0
Total	116	100.0

a STATE = Hawaii

STATE = Idaho

COUNTY	Frequency	Percent
Ada	26	2.3
Adams	24	2.1
Alturas	26	2.3
Bannock	24	2.1
Bear Lake	26	2.3
Benewah	24	2.1
Bingham	26	2.3
Blaine	24	2.1
Boise	26	2.3
Bonner	24	2.1
Bonneville	24	2.1
Boundary	24	2.1
Butte	24	2.1
Camas	24	2.1
Canyon	24	2.1
Caribou	24	2.1
Cassia	26	2.3
Clark	24	2.1
Clearwater	24	2.1
Custer	26	2.3
Elmore	26	2.3
Franklin	24	2.1
Fremont	24	2.1
Gem	24	2.1
Gooding	24	2.1
Idaho	26	2.3
Jefferson	24	2.1
Jerome	24	2.1
Kootenai	26	2.3
Latah	26	2.3
Lemhi	26	2.3
Lewis	24	2.1
Lincoln	24	2.1
Logan	26	2.3
Madison	24	2.1
Minidoka	24	2.1
Nez Perce	26	2.3
Oneida	26	2.3
Owyee	2	.2
Owyhee	24	2.1
Payette	24	2.1
Power	24	2.1
Shoshone	26	2.3
Teton	24	2.1
Twin Falls	24	2.1
Valley	24	2.1
Washington	26	2.3
Total	1140	100.0

a STATE = Idaho

STATE = Montana

COUNTY	Frequency	Percent
Beaverhead	34	1.8
Big Horn	34	1.8
Blaine	34	1.8
Broadwater	34	1.8
Carbon	34	1.8
Carter	34	1.8
Cascade	34	1.8
Chouteau	34	1.8
Custer	34	1.8
Daniels	34	1.8
Dawson	34	1.8
Deer Lodge	34	1.8
Fallon	34	1.8
Fergus	34	1.8
Flathead	34	1.8
Gallatin	34	1.8
Garfield	34	1.8
Glacier	34	1.8
Golden Valley	34	1.8
Granite	34	1.8
Hill	34	1.8
Jefferson	34	1.8
Judith Basin	34	1.8
Lake	34	1.8
Lewis and Clark	34	1.8
Liberty	34	1.8
Lincoln	34	1.8
Madison	34	1.8
McCone	34	1.8
Meagher	34	1.8
Mineral	34	1.8
Missoula	34	1.8
Musselshell	34	1.8
Park	34	1.8
Petroleum	34	1.8
Phillips	34	1.8
Pondera	34	1.8
Powder	2	.1
Powder River	32	1.7
Powell	34	1.8
Prairie	34	1.8
Ravalli	34	1.8
Richland	34	1.8
River	2	.1
Roosevelt	34	1.8
Rosebud	34	1.8
Sanders	34	1.8
Sheridan	34	1.8
Silver Bow	34	1.8
Stillwater	34	1.8
Sweet Grass	34	1.8
Teton	34	1.8

Toole	34	1.8
Treasure	34	1.8
Valley	34	1.8
Wheatland	34	1.8
Wibaux	34	1.8
Yellowstone	34	1.8
Yellowstone National Park	32	1.7
Total	1938	100.0

a STATE = Montana

STATE = Nevada

COUNTY	Frequency	Percent
Churchill	70	5.6
Clark	70	5.6
Douglas	70	5.6
Elko	70	5.6
Esmeralda	70	5.6
Eureka	70	5.6
Humboldt	70	5.6
Lander	70	5.6
Lincoln	70	5.6
Lyon	70	5.6
Mineral	70	5.6
Nye	70	5.6
Ormsby	70	5.6
Pershing	70	5.6
Roop (Lake)	70	5.6
Storey	70	5.6
Washoe	70	5.6
White Pine	70	5.6
Total	1260	100.0

a STATE = Nevada

STATE = New Mexico

COUNTY	Frequency	Percent
Bernalillo	82	3.0
Catron	82	3.0
Chaves	82	3.0
Cibola	74	2.7
Colfax	82	3.0
Curry	82	3.0
De Baca	82	3.0
Dona Ana	82	3.0
Eddy	82	3.0
Grant	82	3.0
Guadalupe	82	3.0
Harding	82	3.0
Hidalgo	8	.3
Hildalgo	74	2.7
Lea	82	3.0
Lincoln	82	3.0
Los Alamos	82	3.0
Luna	82	3.0
McKinley	82	3.0
Mora	82	3.0
Otero	82	3.0
Quay	82	3.0
Rio Arriba	82	3.0
Roosevelt	82	3.0
San Juan	82	3.0
San Miguel	82	3.0
Sandoval	82	3.0
Santa Ana	74	2.7
Santa Fe	82	3.0
Sierra	82	3.0
Socorro	82	3.0
Taos	82	3.0
Torrance	82	3.0
Union	82	3.0
Valencia	82	3.0
Total	2772	100.0

a STATE = New Mexico

STATE = Oregon

COUNTY	Frequency	Percent
Baker	53	1.6
Benton	83	2.4
Clackamas	174	5.1
Clatsop	68	2.0
Columbia	65	1.9
Coos	79	2.3
Crook	64	1.9
Curry	52	1.5
Deschutes	51	1.5
Douglas	107	3.1
Gilliam	71	2.1
Grant	61	1.8
Harney	50	1.5
Hood River	45	1.3
Jackson	105	3.1
Jefferson	41	1.2
Josephine	62	1.8
Klamath	83	2.4
Lake	59	1.7
Lane	187	5.5
Lincoln	47	1.4
Linn	118	3.5
Malheur	52	1.5
Marion	191	5.6
Morrow	56	1.6
Multnomah	553	16.2
Polk	86	2.5
Sherman	66	1.9
Sherman, Wasco	4	.1
Tillamook	53	1.6
Umatilla	104	3.1
Union	77	2.3
vacancy	4	.1
Wallowa	52	1.5
Wasco	72	2.1
Washington	151	4.4
Wheeler	60	1.8
Yamhill	98	2.9
Total	3404	100.0

a STATE = Oregon

STATE = Utah

COUNTY	Frequency	Percent
Beaver	16	3.4
Box Elder	16	3.4
Cache	16	3.4
Carbon	16	3.4
Daggett	16	3.4
Davis	16	3.4
Duchesne	16	3.4
Emery	16	3.4
Garfield	16	3.4
Grand	16	3.4
Iron	16	3.4
Juab	16	3.4
Kane	16	3.4
Millard	16	3.4
Morgan	16	3.4
Piute	16	3.4
Rich	16	3.4
Salt Lake	16	3.4
San Juan	16	3.4
Sanpete	16	3.4
Sevier	16	3.4
Summit	16	3.4
Tooele	16	3.4
Uintah	16	3.4
Utah	16	3.4
Wasatch	16	3.4
Washington	16	3.4
Wayne	16	3.4
Weber	16	3.4
Total	464	100.0

a STATE = Utah

STATE = Washington

COUNTY	Frequency	Percent
Adams	35	1.5
Asotin	35	1.5
Benton	39	1.7
Chehalis	16	.7
Chelan	25	1.1
Clallam	32	1.4
Clark	59	2.5
Columbia	33	1.4
Cowlitz	43	1.9
Douglas	34	1.5
Ferry	27	1.2
Franklin	39	1.7
Garfield	33	1.4
Grant	33	1.4
Grays Harbor	48	2.1
Island	34	1.5
Jefferson	32	1.4
King	386	16.7
Kitsap	52	2.2
Kittitas	35	1.5
Klickitat	31	1.3
Lewis	38	1.6
Lincoln	31	1.3
Mason	30	1.3
no district	131	5.7
Okanogan	44	1.9
Pacific	37	1.6
Pend Oreille	20	.9
Pierce	185	8.0
San Juan	30	1.3
Skagit	38	1.6
Skamania	32	1.4
Snohomish	100	4.3
Spokane	156	6.7
Stevens	21	.9
Thurston	62	2.7
Wahkiakum	34	1.5
Walla Walla	44	1.9
Whatcom	59	2.5
Whitman	52	2.2
Yakima	71	3.1
Total	2316	100.0

a STATE = Washington

STATE = Wyoming

COUNTY	Frequency	Percent
Albany	46	4.2
Big Horn	46	4.2
Campbell	46	4.2
Carbon	46	4.2
Converse	46	4.2
Crook	46	4.2
Fremont	46	4.2
Goshen	46	4.2
Hot Springs	46	4.2
Johnson	46	4.2
Laramie	46	4.2
Lincoln	46	4.2
Natrona	46	4.2
Niobrara	46	4.2
Park	46	4.2
Platte	46	4.2
Sheridan	46	4.2
Sublette	46	4.2
Sweetwater	46	4.2
Teton	46	4.2
Uinta	46	4.2
Washakie	46	4.2
Weston	46	4.2
Yellowstone National Park	46	4.2
Total	1104	100.0

a STATE = Wyoming

Appendix II State District Plans

STATE = Alaska

DISTRICT	Frequency	Percent
Akiak	3	.1
Alakanuk	1	.0
Aleutian Islands	1	.0
Anchor Point	1	.0
Anchorage-Cordova	1	.0
Anchorage-Palmer	1	.0
Anchorage	635	27.2
Angoon	7	.3
Aniak	3	.1
Barrow-Kobuk	2	.1
Barrow-Kobuk & Nome	2	.1
Barrow	11	.5
Beaver	3	.1
Bethel	41	1.8
Bethel & Wade-Hampton	2	.1
Bristol Bay-Bethel	1	.0
Bristol Bay	1	.0
Bristol Bay & Yukon-Kuskokwim	2	.1
Candle	7	.3
Central	1	.0
Chatanika	1	.0
Chicken	3	.1
Chitina	1	.0
Chudiak	1	.0
Chugiak	16	.7
Clear	2	.1
College	5	.2
Cooper Landing	1	.0
Cordova-Valdez	2	.1
Cordova-Valdez & Palmer-Wasilla	2	.1
Cordova	22	.9
Council	2	.1
Craig	9	.4
Deering	2	.1
Delta Junction	5	.2
Dillingham	14	.6
Douglas	9	.4
Eagle	2	.1
Eagle River	40	1.7
Emmonak	4	.2
Ester	1	.0
Ester Creek-Fairbanks	1	.0
Ester Creek	1	.0
Fairbanks	322	13.8
Flat-Iditarod	1	.0
Flat	1	.0
Fort Richardson	1	.0

Fort Yukon	9	.4
Fox	3	.1
Galena	5	.2
Girdwood	4	.2
Haines	14	.6
Halibut Cove	5	.2
Haycock	4	.2
Healy Forks	1	.0
Homer	21	.9
Hoonah	2	.1
Hope	4	.2
Hot Springs	1	.0
Hyder	3	.1
Iditarod	1	.0
Juneau-Yakutat	1	.0
Juneau	157	6.7
Juneau & Lynn Canal	2	.1
Kake	5	.2
Kasilof	7	.3
Katalia	1	.0
Kenai	23	1.0
Kennecott	1	.0
Ketchikan	94	4.0
King Cove	1	.0
Klawock	12	.5
Knik	2	.1
Kobuk	1	.0
Kodiak-Aleutians	1	.0
Kodiak	52	2.2
Kodiak & Aleutian Islands	2	.1
Kotzebue	41	1.8
Kwethluk	4	.2
Kwiguk	1	.0
Larsen Bay	1	.0
Livengood	3	.1
Lynn Canal-Icy Straits	1	.0
McCarthy	6	.3
McGrath	2	.1
McKinley Park	1	.0
Mountain View	1	.0
Naknek	9	.4
Nenana	16	.7
Nikiski	5	.2
Nikolski	1	.0
Nikolski Village	1	.0
Ninilchik	4	.2
Nome-Wade Hampton	1	.0
Nome	166	7.1
Noorvik	1	.0
North Pole	35	1.5
Northwestern	1	.0
Palmer-Wasilla	1	.0
Palmer	47	2.0
Pedro Bay	3	.1

Pelican	1	.0
Petersburg	17	.7
Point Barrow	1	.0
Port Moller	1	.0
Rampart	7	.3
Ruby	17	.7
Sand Point	3	.1
Saxman	6	.3
Seldovia	1	.0
Seward-Kenai	1	.0
Seward	26	1.1
Seward & Kenai	2	.1
Shungnak	1	.0
Sitka	53	2.3
Skagway	6	.3
Sleetmute	3	.1
Soldotna	20	.9
Solomon	1	.0
South Central	1	.0
Southeastern	1	.0
Spenard	7	.3
St. Mary's	2	.1
Sulzer	2	.1
Tanana	3	.1
Teller	5	.2
Tok	5	.2
Uganik Bay	4	.2
Unalakleet	4	.2
Unalaska	11	.5
Valdez	47	2.0
Wade Hampton	1	.0
Wales	3	.1
Wasilla	34	1.5
Willow	5	.2
Wrangell-Petersburg	2	.1
Wrangell-Petersburg & Sitka	2	.1
Wrangell	39	1.7
Yukon-Kuskokwim	2	.1
Total	2335	100.0

a STATE = Alaska

STATE = Arizona

DISTRICT	Frequency	Percent
1 SE 114 Gila	2	.2
2 W 114	2	.2
3 NE 114 Gila	2	.2
Apache	40	4.1
Apache, Coconino, Gila, Graham, Mohave, Navajo, Pinal	2	.2
Apache, Coconino, Gila, Graham, Navajo, Pinal	2	.2
Apache, Coconino, Mohave, Navajo	6	.6
Apache, Coconino, Mohave, Navajo, Yavapai	2	.2
Apache, Gila, Graham, Greenlee, Maricopa, Navajo, Pinal	2	.2
Apache, Gila, Graham, Greenlee, Navajo, Pinal	4	.4
Apache, Navajo, Greenlee, Graham, Gila, Pinal	2	.2
Cochise-Graham-Santa Cruz	2	.2
Cochise	40	4.1
Cochise, Graham, Greenlee	4	.4
Cochise, Graham, Greenlee, Pima	2	.2
Cochise, Graham, Greenlee, Santa Cruz	2	.2
Cochise, Maricopa, Pima, Pinal, Santa Cruz	2	.2
Cochise, Pima, Pinal	2	.2
Cochise, Pima, Santa Cruz	5	.5
Cochise, Santa Cruz, Pima	2	.2
Cochsie, Pima, Santa Cruz	1	.1
Coconino	42	4.3
Coconino, Gila, Mohave, Navajo, Yavapai	6	.6
Coconino, Gila, Navajo, Yavapai	2	.2
Coconino, La Paz, Mohave	2	.2
Coconino, Yavapai	2	.2
Gila	40	4.1
Gila, Maricopa, Pinal	4	.4
Gila, Pima, Pinal, Santa Cruz	4	.4
Gila, Pinal	2	.2
Graham	40	4.1
Graham, Greenlee, Cochise	2	.2
Greenlee	40	4.1
La Paz (Pah-Ute)	34	3.5
La Paz, Mohave	2	.2
La Paz, Mohave, Yavapai, Yuma	2	.2
La Paz, Yuma	4	.4
Maricopa	224	23.0
Maricopa, Pima, Pinal	6	.6
Maricopa, Pima, Pinal, Santa Cruz	2	.2
Maricopa, Pima, Pinal, Yuma	2	.2
Maricopa, Pinal	10	1.0
Maricopa, Yavapai	6	.6
Maricopa, Yavapai, Yuma	2	.2
Mohave-Yavapai	2	.2
Mohave	40	4.1
Mohave, Yavapai	6	.6
Mohave, Yavapai, Cononino, Gila, Maricopa, Navajo	2	.2
Mohave, Yuma, Yavapai	2	.2
Navajo-Apache	2	.2

Navajo	40	4.1
Navajo, Apache, Coconino	2	.2
Pima	90	9.2
Pima, Pinal	6	.6
Pima, Pinal, Santa Cruz, Gila	2	.2
Pima, Santa Cruz	2	.2
Pinal-Gila	2	.2
Pinal	40	4.1
Pinal, Maricopa	2	.2
Santa Cruz	40	4.1
Yavapai	40	4.1
Yuma	46	4.7
Yuma, Maricopa	2	.2
Total	976	100.0

a STATE = Arizona

STATE = California

DISTRICT	Frequency	Percent
Alameda	89	4.4
Alameda, Contra Costa	10	.5
Alameda, Contra Costa, Sacramento, San Joaquin	1	.0
Alameda, Santa Clara	16	.8
Alameda, Santa Clara, San Benito	1	.0
Alameda, Santa Cruz	1	.0
Alpine, Amador	2	.1
Alpine, Amador, Butte, Calaveras, El Dorado, Lassen, Modoc, Mono, Nevada, Placer, Plumas, Sierra, Yuba	1	.0
Alpine, Amador, Calaveras, El Dorado, Lassen, Modoc, Mono, Nevada, Placer, Plumas, Sacramento, Sierra	1	.0
Alpine, Amador, Calaveras, El Dorado, Mono, Placer	1	.0
Alpine, Amador, Calaveras, El Dorado, Mono, Placer, Sacramento, Tuolumne	1	.0
Alpine, Amador, Calaveras, Mono	1	.0
Alpine, Amador, Calaveras, Mono, Sacramento, San Joaquin, Tuolumne, Yolo	1	.0
Alpine, Amador, El Dorado	1	.0
Alpine, El Dorado	2	.1
Alpine, El Dorado, Amador	1	.0
Alpine, El Dorado, Amador, Calaveras	1	.0
Alpine, El Dorado, Placer, Sacramento	1	.0
Alpine, Fresno, Mariposa, Mono	1	.0
Alpine, Inyo, Mono	2	.1
Alpine, Mono, Amador, Calaveras	1	.0
Alpine, Mono, El Dorado, Amador, Calaveras	1	.0
Alpine, Mono, Inyo	1	.0
Alpine, Mono, Mariposa, Amador, Calaveras, Inyo, Tuolumne, El Dorado, Nevada, Placer	1	.0
Alpine, Mono, Mariposa, Amador, Calaveras, Inyo, Tuolumne, Nevada	1	.0
Alpine, Mono, Mariposa, Calaveras, Inyo, El Dorado, Amador, Tuolumne, Nevada, Placer	1	.0
Alpine, Mono, Mariposa, Inyo, Calaveras, Amador, Tuolumne, El Dorado, Nevada, Placer	1	.0
Alpine, Mono, Mariposa, Madera, Calaveras, Tuolumne, Merced, Stanislaus	1	.0
Alpine, Sierra, Modoc, Amador, Calaveras, Plumas, Lassen, Tuolumne, Nevada, El Dorado, Placer, Stanislaus	1	.0
Amador	6	.3
Amador, Calaveras	9	.4
Amador, El Dorado	1	.0
Amador, El Dorado, Sacramento, San Joaquin	1	.0
Amador, San Joaquin	3	.1
Butte	15	.7
Butte, Colusa, Del Norte, Glenn, Nevada, Placer, Shasta, Siskiyou, Sutter, Tehama, Trinity, Yuba	1	.0
Butte, Colusa, Glenn, Lake, Napa, Shasta, Sonoma, Tehama	1	.0
Butte, Colusa, Glenn, Modoc, Shasta, Siskiyou, Sutter, Tehama, Yolo	1	.0

Butte, Colusa, Glenn, Sacramento, Shasta, Siskiyou, Solano, Sutter, Tehama, Trinity, Yolo	1	.0
Butte, Colusa, Glenn, Shasta, Siskiyou, Sutter, Tehama, Trinity, Yolo	1	.0
Butte, Colusa, Nevada, Sierra, Sutter, Yuba	1	.0
Butte, Glenn, Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity	1	.0
Butte, Lassen, Modoc, Nevada, Plumas, Sierra, Yuba	1	.0
Butte, Lassen, Nevada, Placer, Plumas, Sierra, Yuba	1	.0
Butte, Lassen, Plumas	4	.2
Butte, Plumas	12	.6
Butte, Shasta	2	.1
Butte, Sierra, Colusa, Nevada, Sutter, Yuba, Placer	1	.0
Butte, Tehama	1	.0
Calaveras	16	.8
Calaveras, Madera, Mariposa, Mono, Stanislaus, Tuolumne	1	.0
Calaveras, Tuolumne	2	.1
Colusa	1	.0
Colusa, Glenn, Lake	1	.0
Colusa, Glenn, Mendocino	1	.0
Colusa, Glenn, Tehama	3	.1
Colusa, Glenn, Tehama, Sutter, Yuba, Shasta, Yolo, Butte, Solano	1	.0
Colusa, Glenn, Tehama, Yolo	2	.1
Colusa, Lake, Glenn, Sutter, Yolo, Butte	1	.0
Colusa, Marin, Mendocino, Napa, Solano, Sonoma, Trinity, Yolo	2	.1
Colusa, Shasta	4	.2
Colusa, Shasta, Tehama	6	.3
Colusa, Tehama	9	.4
Colusa, Yolo	4	.2
Contra Costa	21	1.0
Contra Costa, Alameda	1	.0
Contra Costa, Marin	10	.5
Contra Costa, Sacramento, San Joaquin	1	.0
Contra Costa, San Joaquin	10	.5
Contra Costa, Santa Clara	7	.3
Del Norte, Humboldt	2	.1
Del Norte, Humboldt, Klamath	6	.3
Del Norte, Humboldt, Lake, Mendocino, Napa, Solano, Sonoma	1	.0
Del Norte, Humboldt, Lake, Mendocino, Sonoma	1	.0
Del Norte, Humboldt, Lake, Mendocino, Sonoma, Trinity	1	.0
Del Norte, Humboldt, Mendocino	2	.1
Del Norte, Humboldt, Mendocino, Sonoma	1	.0
Del Norte, Klamath, Siskiyou	4	.2
Del Norte, Lake, Mendocino, Humboldt, Sonoma	1	.0
Del Norte, Lake, Mendocino, Humboldt, Sonoma, Marin	1	.0
Del Norte, Mendocino, Humboldt	3	.1
Del Norte, Siskiyou	6	.3
Del Norte, Trinity, Siskiyou	1	.0
Del Norte, Trinity, Tehama, Humboldt	2	.1
Dropped in 1853	14	.7
El Dorado	25	1.2

El Dorado, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Sierra, Siskiyou, Sutter, Trinity, Yolo, Yuba	1	.0
El Dorado, Placer	3	.1
Fresno	21	1.0
Fresno, Inyo, Kern, Mono, Tulare	2	.1
Fresno, Kern, Kings, Madera	1	.0
Fresno, Kern, Kings, Madera, Tulare	2	.1
Fresno, Kern, Kings, Tulare	2	.1
Fresno, Kern, Tulare	3	.1
Fresno, Kings, Madera, Merced	1	.0
Fresno, Kings, Tulare, Kern	1	.0
Fresno, Madera	3	.1
Fresno, Madera, Mariposa, Merced, Monterey, San Luis Obispo, Santa Barbara	1	.0
Fresno, Madera, Mariposa, San Joaquin, Stanislaus, Tuolumne	1	.0
Fresno, Madera, Mariposa, Tulare	1	.0
Fresno, Mariposa, Merced, Tulare	6	.3
Fresno, Tulare	9	.4
Glenn, Colusa, Tehama	1	.0
Glenn, Lake, Colusa	1	.0
Glenn, Lake, Colusa, Mendocino	1	.0
Humboldt	10	.5
Humboldt, Klamath, Siskiyou, Trinity	6	.3
Humboldt, Lake, Mendocino, Napa, Solano, Sonoma	1	.0
Humboldt, Mendocino, Sonoma	1	.0
Humboldt, Trinity	4	.2
Imperial	7	.3
Imperial, Orange, Riverside	1	.0
Imperial, Orange, Riverside, San Diego	1	.0
Imperial, Riverside	2	.1
Imperial, Riverside, San Diego	2	.1
Imperial, San Diego	2	.1
Inyo, Kern, Los Angeles	1	.0
Inyo, Kern, Los Angeles, San Bernardino	1	.0
Inyo, Kern, San Bernardino	1	.0
Inyo, Kern, San Bernardino, Tulare	2	.1
Inyo, Kern, Tulare	1	.0
Inyo, Kings, Tulare	1	.0
Inyo, Los Angeles, San Bernardino	1	.0
Inyo, Mono, Tuolumne	2	.1
Inyo, San Bernardino	2	.1
Inyo, Tulare	1	.0
Kern	12	.6
Kern, Inyo, San Bernardino, Los Angeles	2	.1
Kern, Kings, Los Angeles, San Bernardino	1	.0
Kern, Los Angeles, San Bernardino, Ventura	1	.0
Kern, Los Angeles, Ventura	1	.0
Kern, San Bernardino	1	.0
Kern, San Luis Obispo	1	.0
Kern, Tulare	2	.1
Kern, Tulare, San Luis Obispo	1	.0
Kern, Ventura	1	.0
Kings	5	.2

Kings, Kern	1	.0
Kings, Kern, Tulare	1	.0
Kings, Tulare	5	.2
Kings, Tulare, Kern	1	.0
Klamath, Trinity	4	.2
Lake	1	.0
Lake, Colusa, Glenn, Tehama, Yolo	1	.0
Lake, Glenn, Colusa, Mendocino	1	.0
Lake, Mendocino	4	.2
Lake, Mendocino, Napa	6	.3
Lake, Napa	2	.1
Lake, Napa, Solano	2	.1
Lake, Napa, Sonoma	2	.1
Lake, Napa, Sonoma, Yolo	1	.0
Lassen	1	.0
Lassen, Modoc	1	.0
Lassen, Modoc, Plumas, Sierra	1	.0
Lassen, Modoc, Shasta	1	.0
Lassen, Modoc, Shasta, Siskiyou, Trinity	1	.0
Lassen, Modoc, Siskiyou, Shasta	2	.1
Lassen, Plumas, Sierra	1	.0
Los Angeles	340	16.7
Los Angeles, Orange	6	.3
Los Angeles, Orange, San Bernardino	2	.1
Los Angeles, San Bernardino	11	.5
Los Angeles, San Bernardino, San Diego	10	.5
Los Angeles, San Diego	1	.0
Los Angeles, Santa Barbara, Ventura	4	.2
Los Angeles, Ventura	7	.3
Madera, Mariposa, Merced, San Joaquin, Stanislaus, Tuolumne	1	.0
Madera, Mariposa, Stanislaus, Tuolumne	1	.0
Madera, Merced	7	.3
Madera, Merced, Monterey, San Benito, Stanislaus	1	.0
Madera, Merced, Stanislaus	1	.0
Marin	7	.3
Marin, Contra Costa	2	.1
Marin, Mendocino, Sonoma	14	.7
Marin, San Francisco	1	.0
Marin, San Francisco, Sonoma	2	.1
Marin, Sonoma	6	.3
Mariposa	4	.2
Mariposa, Calaveras, Tuolumne	3	.1
Mariposa, Madera, Merced, Stanislaus, Tuolumne	1	.0
Mariposa, Merced	1	.0
Mariposa, Merced, Stanislaus	8	.4
Mariposa, Merced, Stanislaus, Tuolumne	1	.0
Mariposa, Tulare	6	.3
Mariposa, Tuolumne	2	.1
Mendocino	4	.2
Merced, Mariposa, Madera, Fresno	1	.0
Merced, Monterey, San Benito, Santa Clara	1	.0
Merced, San Joaquin, Stanislaus	2	.1
Merced, Stanislaus	2	.1

Merced, Stanislaus, Tuolumne	1	.0
Modoc, Plumas, Lassen	2	.1
Modoc, Shasta	1	.0
Modoc, Shasta, Siskiyou, Trinity	2	.1
Modoc, Trinity, Plumas, Lassen, Glenn, Tehama, Siskiyou, Shasta, Butte	1	.0
Mono, Inyo	2	.1
Mono, Mariposa, Inyo, Madera, Merced, Tulare, Fresno	1	.0
Mono, Mariposa, Inyo, Tuolumne	1	.0
Mono, Tuolumne	4	.2
Monterey	8	.4
Monterey, San Benito	2	.1
Monterey, San Benito, Santa Clara, Santa Cruz	4	.2
Monterey, San Benito, Santa Cruz	2	.1
Monterey, San Luis Obispo, Santa Barbara	2	.1
Monterey, Santa Clara, Santa Cruz	1	.0
Monterey, Santa Cruz	24	1.2
Napa	3	.1
Napa, Solano	8	.4
Napa, Solano, Sonoma	2	.1
Napa, Solano, Yolo	10	.5
Napa, Yolo	2	.1
Nevada	25	1.2
Nevada, Placer	1	.0
Nevada, Plumas, Sierra	1	.0
Nevada, Sierra	2	.1
none	8	.4
Orange	49	2.4
Orange, Riverside	1	.0
Orange, Riverside, San Bernardino	1	.0
Orange, San Diego	6	.3
Placer	25	1.2
Placer, Sacramento	2	.1
Plumas, Modoc, Lassen	1	.0
Plumas, Sierra	1	.0
Riverside	17	.8
Riverside, Imperial	1	.0
Riverside, Orange	1	.0
Riverside, San Bernardino	5	.2
Riverside, San Diego	5	.2
Riverside, San Diego, Imperial	2	.1
Sacramento	63	3.1
Sacramento, Alpine, Mono, Amador, Calaveras, Tuolumne, El Dorado, San Joaquin	1	.0
Sacramento, Alpine, Mono, Amador, Calaveras, Tuolumne, El Dorado, Stanislaus, San Joaquin	1	.0
Sacramento, San Joaquin	3	.1
Sacramento, San Joaquin, Solano	1	.0
Sacramento, Solano, Yolo	1	.0
Sacramento, Sonoma, Napa, Yolo, Solano	1	.0
Sacramento, Yolo	1	.0
San Benito	4	.2
San Benito, Monterey	3	.1
San Benito, San Luis Obispo, Monterey	1	.0

San Benito, San Luis Obispo, Santa Cruz, Monterey	1	.0
San Benito, Santa Cruz	4	.2
San Benito, Santa Cruz, Merced	1	.0
San Bernardino	23	1.1
San Bernardino, Orange	1	.0
San Bernardino, Riverside	3	.1
San Bernardino, San Diego	9	.4
San Diego	65	3.2
San Diego, Imperial	2	.1
San Francisco	166	8.2
San Francisco, San Mateo	21	1.0
San Joaquin	37	1.8
San Joaquin, Stanislaus	3	.1
San Luis Obispo	7	.3
San Luis Obispo, Monterey	3	.1
San Luis Obispo, Santa Barbara	28	1.4
San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz	1	.0
San Luis Obispo, Santa Barbara, Ventura	4	.2
San Luis Obispo, Santa Cruz, Monterey, Santa Barbara	1	.0
San Mateo	19	.9
San Mateo, Santa Clara	7	.3
San Mateo, Santa Clara, Santa Cruz	1	.0
San Mateo, Santa Cruz	3	.1
Santa Barbara	10	.5
Santa Barbara, Ventura	6	.3
Santa Clara	54	2.7
Santa Clara, San Benito	1	.0
Santa Clara, Stanislaus	1	.0
Santa Cruz	6	.3
Santa Cruz, Monterey	1	.0
Santa Cruz, San Mateo	1	.0
Shasta	2	.1
Shasta, Siskiyou	2	.1
Shasta, Siskiyou, Trinity	1	.0
Shasta, Trinity	7	.3
Sierra	16	.8
Sierra, Lassen, Plumas, Modoc	1	.0
Sierra, Modoc, Trinity, Plumas, Colusa, Lassen, Glenn, Nevada, Tehama, Siskiyou, Sutter, Yuba, Placer, Shasta, Butte	1	.0
Sierra, Modoc, Trinity, Plumas, Lassen, Del Norte, Tehama, Siskiyou, Shasta, Humboldt	1	.0
Sierra, Nevada, Placer	3	.1
Sierra, Plumas, El Dorado, Nevada, Placer	1	.0
Sierra, Plumas, Placer, Nevada	1	.0
Sierra, Plumas, Tehama	1	.0
Sierra, Trinity, Modoc, Plumas, Lassen, Siskiyou, Shasta	2	.1
Sierra, Trinity, Plumas, Modoc, Lassen, Shasta, Siskiyou	1	.0
Sierra, Yuba	2	.1
Siskiyou	6	.3
Solano	11	.5
Solano, Napa, Marin	1	.0
Solano, Sonoma, Napa	1	.0
Solano, Yolo	9	.4

Solano, Yuba	1	.0
Sonoma	26	1.3
Sonoma, Del Norte, Humboldt, Mendocino, Solano	1	.0
Sonoma, Marin	2	.1
Stanislaus	8	.4
Stanislaus, Mariposa, Madera, Merced, Fresno	1	.0
Stanislaus, Merced	1	.0
Stanislaus, Tuolumne	8	.4
Sutter	4	.2
Sutter, Yolo, Yuba	1	.0
Sutter, Yuba	24	1.2
Sutter, Yuba, Yolo	1	.0
Sutter, Yuba, Yolo, Butte	2	.1
Tehama	1	.0
Trinity	1	.0
Trinity, Lake, Del Norte, Siskiyou, Mendocino, Humboldt, Sonoma	1	.0
Trinity, Shasta	4	.2
Tulare	6	.3
Tulare, Kings, Kern	1	.0
Tuolumne	9	.4
Ventura	13	.6
Ventura, Santa Barbara	2	.1
Yolo	3	.1
Yolo, Napa	2	.1
Yolo, Solano, Sacramento	1	.0
Yuba	3	.1
Yuba, Sutter	3	.1
Yuba, Sutter, Butte	3	.1
Total	2032	100.0

a STATE = California

STATE = Colorado

DISTRICT	Frequency	Percent
Adams	36	6.1
Adams, Arapahoe	2	.3
Adams, Boulder	2	.3
Adams, Boulder, Broomfield, Weld	1	.2
Adams, Broomfield, Weld	1	.2
Adams, Cheyenne, Crowley, Kiowa, Kit Carson, Lincoln, Morgan, Washington, Yuma	1	.2
Adams, Denver	5	.9
Alamosa, Baca, Bent, Conejos, Costilla, Crowley, Custer, Huerfano, Kiowa, Las Animas, Mineral, Otero, Prowers, Pueblo, Rio Grande, Saguache	1	.2
Alamosa, Chaffee, Clear Creek, Custer, Fremont, Gilpin, Park, Seguache, Teller	1	.2
Alamosa, Chaffee, Conejos, Costilla, Delta, Gunnison, Hinsdale, Mineral, Pitkin, Rio Grande, Saguache	1	.2
Alamosa, Conejos, Costilla, Custer, Huerfano, Las Animas, Mineral, Pueblo, Rio Grande, Saguache	1	.2
Alamosa, Conejos, Costilla, Huefano, Las Animas, Mineral, Rio Grande, Saguache	1	.2
Alamosa, Conejos, Costilla, Huerfano, Mineral, Pueblo, Rio Grande, Saguache	2	.3
Alamosa, Huerfano, Pueblo	1	.2
Alamosa, Huerfano, Saguache	1	.2
Arapahoe	43	7.3
Arapahoe, Cheyenne, Elbert, Kiowa, Kit Carson, Lincoln, Prowers, Yuma	1	.2
Arapahoe, Denver	12	2.0
Arapahoe, Denver, Jefferson	1	.2
Arapahoe, Douglas, Elbert, Jefferson	1	.2
Arapahoe, Elbert	1	.2
Arapahoe, Jefferson	4	.7
Archuleta, Conejos, La Plata, Mineral, Rio Grande, Montezuma	1	.2
Archuleta, Conejos, Mineral, Rio Grande, La Plata	1	.2
Archuleta, Delta, Dolores, La Plata, Montezuma, Montrose, Ouray, San Juan, San Miguel	1	.2
Archuleta, Dolores, La Plata, Montezuma, Montrose, Ouray, San Juan, San Miguel	1	.2
Archuleta, Dolores, La Plata, Montezuma, Montrose, Ouray, San Juan, San MIguel	1	.2
Archuleta, Gunnison, Hinsdale, La Plata, Ouray, San Juan	1	.2
Archuleta, La Plata, Montezuma, San Juan	2	.3
Baca, Bent, Cheyenne, Crowley, El Paso, Kiowa, Kit Carson, Lincoln, Otero, Prowers	1	.2
Baca, Bent, Crowley, Custer, Fremont, Huerfano, Las Animas, Otero, Pueblo	1	.2
Baca, Bent, Crowley, Elbert, Kiowa, Las Animas, Lincoln, Prowers, Washington	1	.2
Baca, Bent, Crowley, Las Animas, Otero, Pueblo	1	.2
Baca, Bent, Huerfano, Las Animas, Otero, Prowers	1	.2

Baca, Bent, Otero, Prowers	1	.2
Baca, Bent, Prowers	1	.2
Bent	1	.2
Bent, Prowers, Baca	2	.3
Boulder	28	4.8
Boulder, Broomfield	1	.2
Boulder, Clear Creek, Gilpin	1	.2
Boulder, Clear Creek, Gilpin, Grand, Jackson	1	.2
Boulder, Clear Creek, Gilpin, Grand, Jefferson, Summit	1	.2
Boulder, Clear Creek, Gilpin, Jefferson, Summit	1	.2
Boulder, Denver, Gilpin, Jefferson	1	.2
Boulder, Weld	2	.3
Broomfield, Larimer, Weld	1	.2
Chaffe, Douglas, Elbert, Lake, Park, Teller	1	.2
Chaffee, Custer, Fremont, Park	1	.2
Chaffee, Custer, Fremont, Park, Pueblo, Saguache	1	.2
Chaffee, Delta, Eagle, Gunnison, Hinsdale, Lake, Pitkin	1	.2
Chaffee, Delta, Fremont, Gunnison, HInsdale, Lake, Park, Pitkin	1	.2
Chaffee, Gunnison, Hinsdale, Lake, Park, Pitkin, Teller	1	.2
Chaffee, Park, Gilpin, Clear Creek, Douglas, Teller	1	.2
Cheyenne, Crowley, Douglas, Elbert, Kiowa, Kit Carson, Lincoln, Phillips, Sedgewick, Yuma	1	.2
Cheyenne, Elbert, Kiowa, Kit Carson, Lincoln, Logan, Morgan, Phillips, Prowers, Sedgewick, Washington, Yuma	1	.2
Cheyenne, Elbert, Kit Carson, Lincoln, Logan, Morgan, Phillips, Sedgewick, Washington, Weld, Yuma	1	.2
Cheyenne, Kiowa, Kit Carson, Lincoln, Yuma	1	.2
Cheyenne, Kit Carson, Logan, Morgan, Phillips, Sedgewick, Yuma	1	.2
Clear Creek	2	.3
Clear Creek, El Paso, Fremont, Park, Teller	1	.2
Clear Creek, Gilpin, Grand, Jackson, Moffat, Routt, Summit	1	.2
Clear Creek, Gilpin, Jefferson, Summit	1	.2
Conejos	2	.3
Conejos, Archuleta, Mineral, La Plata, San Juan, Delores, Montezuma	1	.2
Conejos, Rio Grande, Mineral, Archuleta	1	.2
Costilla	2	.3
Costilla, Conejos	1	.2
Costilla, Huerfano, Las Animas	1	.2
Costilla, Las Animas	1	.2
Crowley, Otero	1	.2
Custer, Fremont Pueblo, Teller	1	.2
Custer, Fremont, Saguache	1	.2
Delta, Dolores, Gunnison, Hinsdale, Montrose, Ouray, San Juan, San Miguel, Montezuma	1	.2
Delta, Dolores, Montezuma, Montrose, Ouray San Miguel	1	.2
Delta, Dolores, Montezuma, Montrose, Ouray, San Miguel	1	.2
Delta, Gunnison, Hinsdale	2	.3
Delta, Gunnison, Hinsdale, Ouray, San Juan, Montrose	1	.2
Delta, Gunnison, Lake, Pitkin, Summit	1	.2
Delta, Mesa	3	.5
Denver	84	14.3

Denver, Jefferson	3	.5
Dolores, Montezuma, Montrose, San Miguel	1	.2
Dolores, San Miguel, Montrose	1	.2
Douglas	11	1.9
Douglas, El Paso	1	.2
Douglas, El Paso, Lake, Park, Teller	1	.2
Douglas, Teller	2	.3
Eagle, Garfield, Grand, Jackson, Lake, Moffat, Pitkin, Rio Blanco, Routt, Summit	1	.2
Eagle, Garfield, Gunnison, Hinsdale, Pitkin	1	.2
Eagle, Garfield, Jackson, Grand, Route	1	.2
Eagle, Garfield, Jackson, Moffat, Rio Blanco, Routt	2	.3
Eagle, Garfield, Pitkin, Rio Blanco	1	.2
Eagle, Lake, Summit	1	.2
Eagle, Routt	1	.2
El Paso	53	9.0
El Paso, Fremont	1	.2
El Paso, Teller	1	.2
Elbert	1	.2
Elbert, Bent	1	.2
Fremont	2	.3
Fremont, Custer	2	.3
Fremont, Otero, Pueblo	1	.2
Fremont, Pueblo	1	.2
Garfield, Eagle, Pitkin, Rio Blanco	1	.2
Garfield, Grand, Jackson, Moffat, Rio Blanco, Routt	1	.2
Garfield, Grand, Jackson, Moffat, Rio Blanco, Routt, Summit	1	.2
Garfield, Mesa	1	.2
Garfield, Moffat, Pitkin, Rio Blanco	1	.2
Garfield, Moffat, Rio Blanco	1	.2
Garfield, Summit, Eagle, Lake, Pitkin	1	.2
Gilpin	2	.3
Gilpin, Clear Creek, Douglas, Park, Teller, Chaffee, Fremont, Custer, Seguache	1	.2
Gilpin, Summit, Grand	1	.2
Grand	1	.2
Gunnison, Hinsdale, Ouray, San Miguel, Montrose, Delta	1	.2
Hinsdale	1	.2
Huerfano	2	.3
Huerfano, Costilla, Alamosa	1	.2
Jefferson	52	8.9
Jefferson, Adams	1	.2
Kit Carson, Cheyenne, Lincoln, Kiowa, Elbert	1	.2
La Plata	1	.2
La Plata, Montezuma	2	.3
Lake	1	.2
Lake, Saguache	1	.2
Larimer	24	4.1
Larimer, Weld	3	.5
Las Animas	3	.5
Las Animas, Costilla	1	.2
Las Animas, Huerfano, Costilla, Alamosa, Rio Grande	1	.2
Lincoln, Kit Carson, Elbert, Cheyenne, Kiowa	1	.2
Logan	1	.2

Logan, Morgan, Phillips, Sedgewick, Washington	1	.2
Logan, Morgan, Phillips, Sedgewick, Washington, Weld, Yuma	1	.2
Logan, Morgan, Washington	1	.2
Logan, Phillips, Sedgewick, Weld	1	.2
Logan, Phillips, Sedgwick	1	.2
Logan, Sedgwick, Phillips	1	.2
Mesa	12	2.0
Moffat, Routt, Jackson, Grand, Summit, Eagle, Lake, Pitkin, Garfield, Rio Blanco	1	.2
Montrose, Ouray, San Miguel, Dolores	1	.2
Montrose, Ouray, San Miguel, Dolores, San Juan	1	.2
Morgan	1	.2
Morgan, Logan, Washington	1	.2
Morgan, Washington	1	.2
Otero, Crowley	2	.3
Park	2	.3
Park, Teller, Douglas, Chaffee, Lake	1	.2
Prowers, Bent, Baca, Otero	1	.2
Pueblo	23	3.9
Rio Blanco, Moffat, Routt, Jackson, Grand	1	.2
Rio Grande	1	.2
Rio Grande, Hinsdale, La Plata, San Juan	1	.2
Saguache	1	.2
Saguache, Mineral, Rio Grande, Conejos	1	.2
San Juan	1	.2
San Juan, Montezuma, La Plata, Archuleta	1	.2
Sedgewick, Phillips, Yuma, Kit Carson, Cheyenne, Kiowa, Crowley, Lincoln, Elbert	1	.2
Summit	1	.2
Summit, Moffat, Routt, Jackson, Grand, Clear Creek, Gilpin	1	.2
Weld	22	3.8
Yuma, Phillips, Sedgwick, Washington	1	.2
Yuma, Washington, Morgan	1	.2
Total	586	100.0

a STATE = Colorado

STATE = Hawaii

DISTRICT	Frequency	Percent
Hawaii	29	25.0
Honolulu	29	25.0
Kauai	29	25.0
Maui	29	25.0
Total	116	100.0

a STATE = Hawaii

STATE = Montana

DISTRICT	Frequency	Percent
Beaverhead	12	1.9
Big Horn	10	1.5
Big Horn, Powder, River	2	.3
Blaine	12	1.9
Broadwater	10	1.5
Carbon	10	1.5
Carbon, Stillwater	2	.3
Carter	10	1.5
Carter, Fallon, Wibaux, Prairie	2	.3
Cascade	12	1.9
Chouteau	10	1.5
Chouteau, Judith Basin	2	.3
Custer	12	1.9
Daniels	10	1.5
Dawson	12	1.9
Deer Lodge	10	1.5
Deer Lodge, Granite	2	.3
Fallon	10	1.5
Fergus	12	1.9
Flathead	12	1.9
Gallatin	12	1.9
Garfield	10	1.5
Glacier	12	1.9
Golden Valley	10	1.5
Granite	10	1.5
Hill	10	1.5
Hill, Liberty	2	.3
Jefferson	10	1.5
Jefferson, Broadwater, Meagher	2	.3
Judith Basin	10	1.5
Lake	12	1.9
Lewis and Clark	12	1.9
Liberty	10	1.5
Lincoln	12	1.9
Madison	12	1.9
McCone	10	1.5
Meagher	10	1.5
Mineral	10	1.5
Missoula	12	1.9
Musselshell	10	1.5
Musselshell, Golden Valley	2	.3
Park	12	1.9
Petroleum	10	1.5
Phillips	12	1.9
Pondera	12	1.9
Powder River	10	1.5
Powell	12	1.9
Prairie	10	1.5
Ravalli	12	1.9
Richland	10	1.5

Richland, McCone	2	.3
Roosevelt	12	1.9
Rosebud	10	1.5
Rosebud, Treasure, Garfield, Petrol	1	.2
Rosebud, Treasure, Garfield, Petroleum	1	.2
Sanders	10	1.5
Sanders, Mineral	2	.3
Sheridan	12	1.9
Silver Bow	12	1.9
Stillwater	10	1.5
Sweet Grass	10	1.5
Teton	12	1.9
Toole	12	1.9
Treasure	10	1.5
Valley	10	1.5
Valley, Daniels	2	.3
Wheatland	10	1.5
Wheatland, Sweet Grass	2	.3
Wibaux	10	1.5
Yellowstone	12	1.9
Yellowstone National Park	10	1.5
Total	646	100.0

a STATE = Montana

STATE = Nevada

DISTRICT	Frequency	Percent
	1	.1
Carson City	4	.3
Carson City, Douglas, Lyon, Storey	1	.1
Carson City, Storey, Lyon	1	.1
Carson City, Washoe	4	.3
Churchill	60	5.2
Churchill, Esmeralda, Lincoln, Mineral, Nye, White Pine, Eureka, Lander	1	.1
Churchill, Esmeralda, Mineral, Clark, Douglas, Lyon, Nye	1	.1
Churchill, Lyon	1	.1
Churchill, Lyon, Pershing	1	.1
Churchill, Lyon, Storey, Carson City	1	.1
Churchill, Pershing	1	.1
Churchill, White Pine, Lander, Eureka	1	.1
Clark	70	6.1
Douglas	59	5.2
Douglas, Carson City	5	.4
Douglas, Carson City, Lyon, Washoe	1	.1
Douglas, Carson City, Washoe	1	.1
Douglas, Lyon, Storey, Churchill	1	.1
Douglas, Ormsby	3	.3
Elko	63	5.5
Elko, Eureka	1	.1
Elko, Eureka, Humboldt, Lander	1	.1
Elko, Eureka, Humboldt, Lander, Lincoln, Pershing, White Pine, Nye	1	.1
Elko, Eureka, Humboldt, Lander, Pershing	1	.1
Elko, Humboldt	1	.1
Elko, Humboldt, Pershing, Eureka, Lander	1	.1
Elko, Humboldt, Pershing, Eureka, Washoe	1	.1
Esmeralda	58	5.1
Esmeralda, Lincoln, Mineral, Nye	2	.2
Esmeralda, Lincoln, Mineral, Nye, Churchill	1	.1
Esmeralda, Lincoln, Mineral, Nye, White Pine	2	.2
Esmeralda, Lincoln, Mineral, Nye, White, Churchill, Eureka	1	.1
Esmeralda, Mineral, Nye	3	.3
Esmeralda, Nye, Mineral	1	.1
Eureka	58	5.1
Eureka, Humboldt, Lander, Elko	1	.1
Eureka, Humboldt, Lander, Pershing	2	.2
Eureka, Lander, Pershing	1	.1
Eureka, Pershing, White Pine, Churchill, Humboldt, Lander, Washoe	1	.1
Humboldt	59	5.2
Humboldt, Lander, Washoe	1	.1
Humboldt, Pershing, Elko, Eureka, Lander	1	.1
Humboldt, Pershing, Lander, Washoe	1	.1
Lander	58	5.1
Lincoln	58	5.1
Lincoln, White Pine	4	.3

Lyon	59	5.2
Lyon, Storey, Carson City	2	.2
Lyon, Storey, Churchill	1	.1
Lyon, Storey, Churchill, Carson City	1	.1
Lyon, Storey, Churchill, Douglas	1	.1
Mineral	59	5.2
Nye	58	5.1
Ormsby	58	5.1
Pershing	58	5.1
Roop (Lake)	58	5.1
Storey	58	5.1
Storey, Washoe	2	.2
Washoe	68	5.9
White Pine	59	5.2
White Pine, Lander, Churchill, Eureka	1	.1
Total	1144	100.0

a STATE = Nevada

STATE = New Mexico

DISTRICT	Frequency	Percent
	4	.5
Arizona	3	.4
Bernalillo	61	7.8
Bernalillo, McKinley	1	.1
Bernalillo, San Juan, Sandoval	1	.1
Bernalillo, Sandoval, McKinley	1	.1
Bernalillo, Santa Ana	2	.3
Bernalillo, Valencia	1	.1
Chaves	2	.3
Colfax	20	2.6
Colfax, Mora	11	1.4
Colfax, Mora, Union	4	.5
Colfax, Union, Mora	1	.1
Curry	2	.3
Dona Ana	30	3.8
Dona Ana, Arizona	5	.6
Dona Ana, Grant	8	1.0
Dona Ana, Grant, Lincoln	2	.3
Dona Ana, Grant, Lincoln, Chavez, Eddy, Otero, Luna, Roosevelt	1	.1
Dona Ana, Grant, Lincoln, Luna, Chaves, Eddy, Otero	1	.1
Dona Ana, Grant, Luna, Otero	3	.4
Dona Ana, Grant, Otero	2	.3
Dona Ana, Grant, Sierra	2	.3
Dona Ana, Lincoln	3	.4
Dona Ana, Lincoln, Grant	9	1.2
Dona Ana, Lincoln, Grant, Sierra	2	.3
Dona Ana, Otero	3	.4
Eddy	2	.3
Grant	10	1.3
Grant, Dona Ana	4	.5
Grant, Dona Ana, Lincoln, Chaves, Eddy	4	.5
Grant, Dona Ana, Lincoln, Chaves, Eddy, Otero	1	.1
Grant, Dona Ana, Otero	1	.1
Grant, Luna	2	.3
Grant, Sierra	2	.3
Guadalupe	1	.1
Guadalupe, San Miguel	1	.1
Lincoln	3	.4
Lincoln, Chaves, Eddy	8	1.0
Lincoln, Chavez, Eddy, Roosevelt	1	.1
Lincoln, Otero, Socorro	1	.1
Luna	1	.1
McKinley	2	.3
Mora	40	5.1
Mora, Colfax	3	.4
Otero	1	.1
Otero, Lincoln	1	.1
Quay	2	.3
Rio Arriba	65	8.3

Rio Arriba, San Juan	2	.3
Rio Arriba, Sandoval	2	.3
Roosevelt	2	.3
San Juan	3	.4
San Miguel	57	7.3
San Miguel del Bado	1	.1
San Miguel, Guadalupe	12	1.5
San Miguel, Gualalupe	1	.1
San Miguel, Leonard Wood, Quay	2	.3
San Miguel, Mora	1	.1
Sandoval	1	.1
Santa Ana	27	3.5
Santa Ana, Bernalillo	9	1.2
Santa Ana, Santa Fe	1	.1
Santa Fe	71	9.1
Santa Fe, San Miguel	1	.1
Santa Fe, San Miguel del Bado, Santa Ana	1	.1
Santa Fe, Santa Ana	3	.4
Sierra	1	.1
Sierra, Grant, Luna, Socorro	1	.1
Socorro	57	7.3
Socorro, Lincoln	2	.3
Socorro, Sierra	13	1.7
Taos	67	8.6
Taos, Rio Arriba	2	.3
Taos, Rio Arriba, San Juan	14	1.8
Torrance	1	.1
Torrance, Otero, Lincoln, Socorro	1	.1
Torrance, Santa Fe, Guadalupe	1	.1
Union	7	.9
Union, Colfax	1	.1
Valencia	71	9.1
Valencia, Socorro	1	.1
Valencia, Torrance	2	.3
Total	780	100.0

a STATE = New Mexico

STATE = Oregon

DISTRICT	Frequency	Percent
Baker	35	1.4
Baker, Crook, Grant, Harney, Lake, Malheur, Morrow	1	.0
Baker, Crook, Grant, Lake, Harney, Morrow, Malheur	1	.0
Baker, Grant	3	.1
Baker, Grant, Crook, Wheeler, Malheur	2	.1
Baker, Grant, Harney, Malheur	5	.2
Baker, Grant, Morrow, Crook	1	.0
Baker, Harney, Malheur	1	.0
Baker, Malheur	1	.0
Baker, Malheur, Harney	1	.0
Baker, Union, Wallowa	1	.0
Benton	43	1.7
Benton, Lane	5	.2
Benton, Lane, Lincoln	1	.0
Benton, Linn	2	.1
Benton, Polk	22	.9
Clackamas	129	5.1
Clackamas, Columbia, Multnomah	5	.2
Clackamas, Marion	7	.3
Clackamas, Multnomah	14	.6
Clackamas, Multnomah, Columbia	3	.1
Clackamas, Tillamook, Columbia	1	.0
Clackamas, Washington	3	.1
Clatsop	50	2.0
Clatsop, Columbia	13	.5
Clatsop, Columbia, Washington	4	.2
Clatsop, Tillamook, Columbia	1	.0
Clatsop, Washington, Columbia	1	.0
Columbia	27	1.1
Columbia, Clackamas, Multnomah	1	.0
Columbia, Multnomah, Clackamas	1	.0
Columbia, Multnomah, Washington	1	.0
Columbia, Washington	4	.2
Columbia, Washington, Tillamook	1	.0
Coos	30	1.2
Coos, Curry	41	1.6
Coos, Curry, Douglas	2	.1
Coos, Curry, Josephine	3	.1
Crook	6	.2
Crook, Baker, Grant, Morrow	1	.0
Crook, Deschutes	1	.0
Crook, Deschutes, Grant, Jefferson, Klamath, Lake	2	.1
Crook, Deschutes, Jefferson	6	.2
Crook, Deschutes, Jefferson, Klamath	1	.0
Crook, Deschutes, Jefferson, Klamath, Lake	12	.5
Crook, Deschutes, Jefferson, Lake	5	.2
Crook, Deschutes, Klamath, Lake	1	.0
Crook, Gilliam, Wasco	1	.0
Crook, Grant, Klamath, Lake	3	.1
Crook, Jefferson	7	.3

Crook, Klamath	1	.0
Crook, Klamath, Lake	5	.2
Crook, Klamath, Lake, Wasco	4	.2
Crook, Klamath, Lake, Wasco, Baker	1	.0
Curry	5	.2
Curry, Coos	4	.2
Deschutes	11	.4
Deschutes, Klamath	3	.1
Deschutes, Lake	4	.2
Deschutes, Lane	1	.0
Descutes	1	.0
Douglas	83	3.3
Douglas, Coos	2	.1
Douglas, Jackson	5	.2
Douglas, Jackson, Josephine	2	.1
Douglas, Josephine	3	.1
Douglas, Josephine, Jackson	1	.0
Douglas, Lane	3	.1
Douglas, Lane, Josephine	2	.1
Gilliam	7	.3
Gilliam, Grant, Sherman, Wasco	1	.0
Gilliam, Grant, Sherman, Wasco, Wheeler	5	.2
Gilliam, Hood River	1	.0
Gilliam, Hood River, Jefferson, Sherman, Wasco, Wheeler, Deschutes	1	.0
Gilliam, Hood River, Morrow, Sherman, Wasco, Jefferson	1	.0
Gilliam, Hood River, Morrow, Sherman, Wasco, Wheeler	3	.1
Gilliam, Hood River, Morrow, Wasco, Jefferson, Marion, Linn, Clackamas	1	.0
Gilliam, Hood River, Wheeler, Sherman, Wasco, Jefferson, Deschutes	1	.0
Gilliam, Jefferson, Morrow, Sherman, Clackamas, Linn, Marion, Wasco	1	.0
Gilliam, Morrow, Hood River, Sherman, Wasco, Wheeler	2	.1
Gilliam, Morrow, Sherman, Umatilla, Wheeler	4	.2
Gilliam, Morrow, Sherman, Wheeler	13	.5
Gilliam, Morrow, Wheeler, Sherman, Umatilla	1	.0
Gilliam, Sherman, Wasco	1	.0
Gilliam, Sherman, Wheeler	21	.8
Gilliam, Wasco, Hood River, Sherman, Wheeler	2	.1
Grant	8	.3
Grant, Baker	1	.0
Grant, Harney	10	.4
Grant, Harney, Lake	1	.0
Grant, Harney, Malheur	12	.5
Grant, Harney, Morrow	2	.1
Harney	3	.1
Harney, Lake, Malheur	3	.1
Harney, Malheur	9	.4
Harney, Malheur, Gilliam	1	.0
Harney, Malheur, Lake, Crook, Wheeler, Grant, Baker	2	.1
Hood River	13	.5
Hood River, Clackamas, Wasco	1	.0
Hood River, Wasco	20	.8

Hood River, Wasco, Clackamas	1	.0
Jackson	90	3.6
Jackson, Douglas	1	.0
Jackson, Josephine	3	.1
Jackson, Klamath	3	.1
Jefferson	3	.1
Jefferson, Deschutes	2	.1
Josephine	48	1.9
Josephine, Jackson	3	.1
Klamath	33	1.3
Klamath, Deschutes	4	.2
Klamath, Lake	7	.3
Klamath, Lake, Wasco	2	.1
Lake	4	.2
Lake, Harney, Malheur	1	.0
Lake, Klamath	2	.1
Lane	151	6.0
Lane, Clackamas, Linn, Marion	1	.0
Lane, Douglas	6	.2
Lane, Line	1	.0
Lane, Linn	10	.4
Lane, Linn, Marion, Clackamas	2	.1
Lincoln	15	.6
Lincoln, Benton, Lane	1	.0
Lincoln, Lane, Benton	2	.1
Lincoln, Polk	7	.3
Lincoln, Polk, Yamhill	1	.0
Lincoln, Tillamook	10	.4
Lincoln, Tillamook, Benton, Lane, Polk, Washington, Yamhill	1	.0
Lincoln, Tillamook, Washington, Yamhill	6	.2
Lincoln, Tillamook, Washington, Yamhill, Polk, Benton, Lane	1	.0
Lincoln, Tillamook, Yamhill, Polk	1	.0
Linn	93	3.7
Linn, Benton	5	.2
Linn, Marion	2	.1
Malheur	15	.6
Marion	162	6.4
Marion, Linn	2	.1
Marion, Polk	8	.3
Marion, Polk, Linn	1	.0
Marion, Yamhill	1	.0
Morrow	8	.3
Morrow, Crook, Umatilla	1	.0
Morrow, Gilliam, Sherman, Jefferson, Wasco, Clackamas, Marion, Linn	1	.0
Morrow, Umatilla	6	.2
Morrow, Umatilla, Union	7	.3
Multnomah	526	20.8
Multnomah, Clackamas	2	.1
Multnomah, Washington	1	.0
Multnomah, Washington, Union, Columbia	1	.0
Polk	38	1.5
Polk, Benton	2	.1
Polk, Marion	1	.0

Sherman	3	.1
Sherman, Wasco	7	.3
Sherman, Wasco, Gilliam, Grant	1	.0
Sherman, Wasco, Gilliam, Grant, Wheeler	1	.0
Tillamook	18	.7
Tillamook, Clatsop, Columbia	1	.0
Tillamook, Lincoln	1	.0
Tillamook, Lincoln, Polk, Washington, Yamhill	1	.0
Tillamook, Lincoln, Washington, Yamhill, Polk, Benton, Lane	1	.0
Tillamook, Polk, Washington, Yamhill	1	.0
Tillamook, Yamhill	6	.2
Tillamook, Yamhill, Washington, Polk	1	.0
Tilliamook, Lincoln, Washington, Yamhill, Polk	1	.0
Umatilla	67	2.6
Umatilla, Morrow	1	.0
Umatilla, Union	3	.1
Umatilla, Union, Morrow	3	.1
Umatilla, Union, Wallowa	9	.4
Umatilla, Wallowa	1	.0
Union	25	1.0
Union, Wallowa	22	.9
Union, Wallowa, Umatilla	4	.2
vacancy	4	.2
Wallowa	13	.5
Wallowa, Union	5	.2
Wasco	16	.6
Wasco, Crook, Gilliam	1	.0
Wasco, Crook, Klamath, Lane, Gilliam	1	.0
Wasco, Gilliam, Sherman	1	.0
Wasco, Hood River	1	.0
Washington	113	4.5
Washington, Clackamas	1	.0
Washington, Clatsop, Columbia	1	.0
Washington, Columbia, Tillamook	2	.1
Washington, Multnomah	1	.0
Washington, Yamhill	3	.1
Wheeler	3	.1
Yamhill	65	2.6
Yamhill, Clackamas	1	.0
Yamhill, Clackamas, Marion	1	.0
Yamhill, Marion	4	.2
Yamhill, Tillamook	1	.0
Yamhill, Washington	4	.2
Total	2532	100.0

a STATE = Oregon

STATE = Utah

DISTRICT	Frequency	Percent
Beaver	2	3.0
Beaver, Iron, Kane, Washington	1	1.5
Box Elder	2	3.0
Box Elder, Tooele	1	1.5
Cache	3	4.5
Carbon	2	3.0
Carbon, Emery, Grand, San Juan, Uintah	1	1.5
Davis	2	3.0
Davis, Morgan, Rich	1	1.5
Emery	2	3.0
Garfield	2	3.0
Garfield, Piute, Sevier, Wayne	1	1.5
Grand	2	3.0
Iron	2	3.0
Juab	2	3.0
Juab, Millard	1	1.5
Kane	2	3.0
Millard	2	3.0
Morgan	2	3.0
Piute	2	3.0
Rich	2	3.0
Salt Lake	3	4.5
San Juan	2	3.0
Sanpete	3	4.5
Sevier	2	3.0
Summit	2	3.0
Summit, Wasatch	1	1.5
Tooele	2	3.0
Uintah	2	3.0
Utah	3	4.5
Wasatch	2	3.0
Washington	2	3.0
Wayne	2	3.0
Weber	3	4.5
Total	66	100.0

a STATE = Utah

STATE = Washington

DISTRICT	Frequency	Percent
Adams	5	.3
Adams, Asotin, Garfield, Columbia, Grant, Whitman	4	.2
Adams, Asotin, Garfield, Whitman, Franklin, Spokane	2	.1
Adams, Ferry, Lincoln	4	.2
Adams, Franklin, Lincoln, Okanogan	1	.1
Adams, Franklin, Walla Walla	8	.5
Adams, Grant, Kittitas, Yakima	2	.1
Adams, Whitman, Asotin, Spokane	2	.1
Asotin	5	.3
Asotin, Columbia, Garfield	6	.4
Asotin, Columbia, Garfield, Walla Walla	2	.1
Asotin, Columbia, Garfield, Whitman, Adams, Franklin	2	.1
Asotin, Garfield	1	.1
Asotin, Garfield, Columbia, Whitman	1	.1
Benton	8	.5
Benton, Franklin	5	.3
Benton, Franklin, Klickitat, Skamania	3	.2
Benton, Yakima	6	.4
Chehalis	13	.8
Chelan	7	.4
Chelan, Douglas	2	.1
Chelan, Douglas, Grant, Kittitas, Okanogan	2	.1
Chelan, Douglas, Grant, Okanogan	8	.5
Chelan, Kittitas	5	.3
Clallam	5	.3
Clallam, Jefferson	2	.1
Clallam, Jefferson, Grays Harbor	8	.5
Clallam, Jefferson, Mason	7	.4
Clallam, Jefferson, Mason, Thurston	4	.2
Clallam, Jefferson, San Juan	6	.4
Clark	31	1.9
Clark, Cowlitz	2	.1
Clark, Cowlitz, Lewis	2	.1
Clark, Skamania	5	.3
Columbia	4	.2
Columbia, Asotin, Garfield	5	.3
Columbia, Asotin, Garfield, Whitman	1	.1
Columbia, Franklin, Garfield, Walla Walla, Asotin	2	.1
Columbia, Walla Walla	2	.1
Columbia, Walla Walla, Benton, Franklin	2	.1
Cowlitz	11	.7
Cowlitz, Clark	6	.4
Cowlitz, Pacific, Wahkiakum	3	.2
Cowlitz, Wahkiakum	10	.6
Douglas	5	.3
Douglas, Ferry, Grant, Okanogan	2	.1
Douglas, Ferry, Okanogan	3	.2
Douglas, Kittitas	3	.2
Douglas, Okanogan	7	.4
Douglas, Yakima	1	.1

Ferry, Lincoln, Pend Oreille, Okanogan, Spokane	10	.6
Ferry, Okanogan, Stevens, Pend Oreille	1	.1
Ferry, Stevens, Pend Oreille	2	.1
Franklin	5	.3
Franklin, Benton	2	.1
Franklin, Benton, Yakima	3	.2
Franklin, Walla Walla, Columbia	2	.1
Garfield	5	.3
Grant, Kittitas	7	.4
Grays Harbor	8	.5
Grays Harbor, Chehalis	3	.2
Grays Harbor, Lewis	1	.1
Grays Harbor, Pacific	4	.2
Island	3	.2
Island, Kitsap	2	.1
Island, Kitsap, Mason	8	.5
Island, Skagit, Snohomish	6	.4
Island, Snohomish	4	.2
Jefferson	5	.3
King	349	21.5
King, Pierce	14	.9
King, Skagit, Snohomish, Whatcom	2	.1
King, Snohomish	21	1.3
Kitsap	24	1.5
Kitsap, Mason	1	.1
Kittitas	6	.4
Kittitas, Benton, Grant, Yakima	2	.1
Kittitas, Grant, Yakima	6	.4
Klickitat	5	.3
Klickitat, Benton, Skamania, Yakima	2	.1
Klickitat, Skamania	6	.4
Klickitat, Skamania, Clark	4	.2
Klickitat, Skamania, Clark, Yakima	2	.1
Klickitat, Yakima	3	.2
Lewis	24	1.5
Lewis, Grays Harbor	1	.1
Lewis, Pierce, Thurston	2	.1
Lewis, Thurston	4	.2
Lewis, Wahkiakum, Cowlitz, Pacific, Thurston	4	.2
Lincoln	8	.5
Lincoln, Adams, Ferry	3	.2
Lincoln, Okanogan	2	.1
Lincoln, Okanogan, Chelan	1	.1
Mason	2	.1
Mason, Grays Harbor, Kitsap	2	.1
Mason, Grays Harbor, Kitsap, Thurston	6	.4
no district	131	8.1
Okanogan	6	.4
Pacific	5	.3
Pacific, Cowlitz, Grays Harbor, Wahkiakum	1	.1
Pacific, Grays Harbor	9	.6
Pacific, Grays Harbor, Wahkiakum	1	.1
Pacific, Wahkiakum	6	.4
Pacific, Wahkiakum, Cowlitz, Grays Harbor	4	.2

Pend Oreille, Stevens	4	.2
Pend Oreille, Stevens, Ferry, Okanogan	1	.1
Pierce	151	9.3
Pierce, Kitsap	9	.6
Pierce, Thurston	9	.6
San Juan	3	.2
San Juan, Skagit	11	.7
San Juan, Skagit, Whatcom	10	.6
Skagit	8	.5
Skagit, Island	1	.1
Skamania	3	.2
Skamania, Clark	1	.1
Skamania, Klickitat, Clark	6	.4
Snohomish	57	3.5
Snohomish, Island	10	.6
Spokane	134	8.3
Spokane, Ferry	1	.1
Spokane, Stevens	3	.2
Spokane, Whitman	4	.2
Stevens	9	.6
Stevens, Pend Oreille	2	.1
Thurston	33	2.0
Wahkiakum	5	.3
Walla Walla	24	1.5
Walla Walla, Benton, Franklin	2	.1
Whatcom	47	2.9
Whitman	32	2.0
Whitman, Garfield, Asotin	2	.1
Whitman, Lincoln, Adams	2	.1
Yakima	38	2.3
Yakima, Benton	4	.2
Yakima, Kittitas	2	.1
Total	1621	100.0

a STATE = Washington

STATE = Wyoming

DISTRICT	Frequency	Percent
Albany	8	4.0
Albany, Park, Sheridan, Sweetwater	1	.5
Big Horn	8	4.0
Big Horn, Carbon, Goshen, Platte, Washakie	1	.5
Campbell	8	4.0
Campbell, Johnson	1	.5
Carbon	8	4.0
Converse	7	3.5
Converse, Niobara	1	.5
Converse, Niobrara	1	.5
Crook	7	3.5
Crook, Weston	1	.5
Fremont	8	4.0
Fremont, Hot Springs	1	.5
Goshen	8	4.0
Hot Springs	7	3.5
Hot Springs, Washakie	1	.5
Johnson	8	4.0
Laramie	9	4.5
Lincoln	9	4.5
Natrona	9	4.5
Niobrara	7	3.5
Park	8	4.0
Platte	8	4.0
Sheridan	8	4.0
Sublette	7	3.5
Sublette, Teton	1	.5
Sublette, Teton, Lincoln	1	.5
Sweetwater	8	4.0
Teton	7	3.5
Uinta	8	4.0
Uinta, Lincoln	1	.5
Washakie	7	3.5
Weston	7	3.5
Weston, Crook	1	.5
Yellowstone National Park	7	3.5
Total	198	100.0

a STATE = Wyoming