A STATE AND LOCAL CONSUMER PRICE INDEX
FOR THE UNITED STATES IN 1890

Michael R. Haines

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ABSTRACT

This paper estimates a cost of living index for 39 states of the United

States and the District of Columbia, as well as for 70 individual cities and

towns, for the year 1890. It gives an overall index in addition to seven

commodity subindices (food, clothing, housing, fuel and lighting, furniture,

liquor and tobacco, and other commodities). The cost of housing is only

provided for 21 of the states and 5 of the cities, however. Separate overall

indices are calculated with and without housing costs. The source is the

Aldrich Report for all the prices except housing. Housing costs were derived

from the 1889/90 U.S. Commissioner of Labor Survey and from the earlier work

of Albert Rees on real wages in American manufacturing. These price indices

constitute simple fixed-weight Lespeyres indices and are not "true" constant

utility cost of living indices.

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An essential part of many economic calculations is price information. The consumer price index and the implicit GNP deflator are widely used indices of inflation and changes in the cost of living. Although much of the interest in prices and price indices concerns change over time, there is often significant spatial variation in price. It has frequently been assumed, for example, that studies of consumer demand are only possible for time series data, since cross-sectional surveys of consumer expenditure within one country would not provide enough price variation to allow statistical estimation of the price parameters in a demand system. [For example, see Phlips, 1974, pp. 100-131.] The explanation given is that improved transport and communications, more complete market integration, more efficient institutions, and better consumer information will tend to equalize prices across regional markets. Recent work by Deaton and others, however, has shown that spatial price variation can be quite important, especially for nations that are not the most developed. [Deaton, 1986, 1987. Deaton, Ruiz-Castillo, and Thomas, 1985.]

Historical research for the United States by Coelho and Shepherd [1974, 1979] has demonstrated the existence of substantial regional price variation in the second half of the nineteenth century. This does make some sense, since market integration, transport and communications, institutions, and consumer information flows were less developed at that time. For more recent dates, a simple perusal of retail price data across cities, SMSA's, and regions for the contemporary United States indicates, however, that prices (and cost of living) still varied considerably across space. [U.S. Bureau of the Census, 1987, Section 15.]

The purpose of the present paper is to provide evidence on state and local price variation in the United States for the year 1890. It extends the work of Coelho and Shepherd [1979] to a more detailed level, and also adds some new

price subindices and commodities. In particular, it reports price indices for each of 39 states and the District of Columbia, as well as for 70 separate cities and towns across the United States. In addition to the overall price index, price indices are given for six different commodity groups (food, clothing, fuel and light, furniture, liquor and tobacco, and "other" commodities) as well as some partial results for housing. It is believed that this greater geographic detail can be of considerable value to researchers working with cross-sectional data and needing state and local price indices to, for example, deflate wages and incomes to make them comparable across regions.

The genesis of the present paper lay in an effort to estimate a complete demand system (with prices) from the data on the budgets of 6809 worker families in the United States from the 1889/90 U.S. Commissioner of Labor Survey. [U.S. Commissioner of Labor, 1890, 1891.] Since there are practical, theoretical, and statistical problems with using unit values (i.e., expenditures divided by physical quantities) instead of prices for such household budget surveys, a set of state-level retail or consumer price indices was sought.[1]

Coelho and Shepherd [1979] used the Aldrich Report [U.S. Congress, 1892] to construct regional cost of living and real wage indices for the United States for 1890. They calculated retail price indices for four commodity groups (food, clothing, fuel and light, and other goods) as well as an overall cost of living index for nine census regions (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific). The needs of the estimation of a demand system required a cost of living index with more commodity groups

(especially including housing) and for individual states.

The source of the present index is also the Aldrich Report. This was a report of the Subcommittee on Tariff of the Finance Committee of the U.S. Senate. Based on a Senate Resolution of March 3, 1891, the Senate Committee on Finance was instructed "to ascertain in every practicable way...the effect of the tariff laws upon the imports and exports, the growth, development, production, and prices of agricultural and manufactured articles, at home and abroad; and upon wages, domestic and foreign;..." [U.S. Congress, 1892, p. I.] The task was supervised by Carroll D. Wright, U.S. Commissioner of Labor, on behalf of the Subcommittee on Tariff, chaired by Senator Nelson W. Aldrich of Rhode Island. The Aldrich Report contains, among other things, retail price data for 215 commodities taken from a number of establishments in 70 towns and cities in 39 states and the District of Columbia over a period of 28 months from June, 1889 through September, 1891.[2]

A list of the cities and towns (by state) covered by the report, along with their populations in 1890, is given in Appendix Table I. There it can be seen that these urban areas varied greatly in size, from the two largest cities in the nation, New York (1,515,301 inhabitants at the census of 1890) and Chicago (1,099,850 population), down to towns of no more than a few thousand persons. The case of Iowa is quite curious, with three very small places (Centreville, Onawa, and Concord) having been selected. The overall geographic coverage was good, but it should be noted that the prices are largely representative of urban populations. Such towns as Centreville and Onawa, Iowa and Abingdon, VA might well have served local rural and farm constituencies, but most of the 70 places in the sample were relatively large urban centers.

Of the 215 commodities listed in the Aldrich Report, some were not really relevant to a consumer price index. These included a number of prices for tools, implements, lumber, and building materials (47 items). Of the remaining 168 items, 100 were chosen for the present index. They are described in more detail in Appendix Table II. The starting point for the selection was the list of 80 commodities chosen by Coelho and Shepherd [1979, unpublished Appendix B] as representative. To this list were added two food items, thirteen clothing items, three furniture items, and two additional "other" items. It was deemed that sampling all the commodities was simply not worth the resources involved, especially given that many were quite similar and thus close substitutes. Of the 168 relevant commodities in the Aldrich Report, 43 of the 61 food items were sampled, along with 29 of the 60 clothing items, 4 of the 6 fuel and lighting items, 5 of the 6 furniture items, 3 of the 4 liquor and tobacco items, and 16 of the 31 "other" commodities.

The original report provided a great deal of detail for individual commodities -- prices for some or all of the 28 months from June, 1889 to September, 1891, often for multiple retail establishments within the same city or town. To simplify this, it was decided to take the median price across all establishments for the twelve months of 1890 for each commodity within each city or town. Occasionally, some interpolation was necessary. For a number of processed or manufactured commodities (e.g., canned goods, clothing, furniture, housewares, medicines), there was little price variation over time and between establishments within a city or town. This can be taken as an indication of either very efficient competition along with fairly constant supply conditions, or else some degree of imperfect competition and ability to maintain price. Many fresh food commodities (e.g., fresh meat, milk, butter,

eggs, grains and flour, bread) and fuels exhibited substantial price variation within the course of a year. This is as one might expect as supply and demand conditions both experienced seasonal variation. Such circumstantial evidence lends greater credibility to the original data.

As mentioned, the median price for 1890 across all establishments was taken for each urban place. Within a state represented by more than one city or town, a simple arithmetic average of the city or town prices was taken to get the state average price. If an individual commodity was unavailable for a particular urban place, the general rule was to substitute a price, first, from the other urban area(s) in the state. If there was more than one urban area in the state, an arithmetic average of the prices for the other areas was used. Second, however, if there was only one urban area in that state or if no prices were available for any of the urban areas of the state, then a price quote was taken for a nearby city or state. So, for example, missing prices for Charleston, West Virginia were taken from Pittsburgh, Pennsylvania, missing prices for Louisville, Kentucky were taken either from Danville, Kentucky or, that lacking, from Cincinnati, Ohio, etc. Fortunately, only a limited number of instances of this were necessary.[3] The effect of the present correction for missing values is to reduce variation a small amount.

Seven commodity groups were chosen to aggregate the individual commodities: food (43 items), clothing (29 items), fuel and lighting (4 items), furniture (5 items), liquor and tobacco (3 items), "other" (16 items), and housing. (See Appendix Table II.) The choice was somewhat arbitrary, but it accords well with the groupings used by a number of modern studies. [See, for example, Deaton and Muellbauer, 1980, ch.3.] Notably, Albert Rees [1961] also used the same seven categories for the cost of living deflator in his

study of real wages in American manufacturing for the period 1890 to 1914.
The category of furniture was taken to represent consumer durables, while
liquor and tobacco were quintessential adult goods. The category "other" is
essentially a residual.

Housing costs present special problems. Coelho and Shepherd did not
provide a price index for housing for 1890 [1979, especially unpublished
Appendix C]. They felt that the data available to them were insufficient.
The present paper does provide a housing price index for a limited selection
of states and for a few cities, by using data from the 1889/90 U.S.
Commissioner of Labor Survey and also information provided in Albert Rees'
[1961] work on real wages in American manufacturing. This 1889/90
Commissioner of Labor survey gives housing expenditures and number of rooms
for a relatively large number of renters, permitting the calculation of rent
per room for the 21 of the 24 states covered by that survey.[4] This is an
exception to the caveat against using unit values, although the use of average
area prices does avoid some of the statistical problems with unit values for
micro-level analysis. [Deaton, 1986, 1987.] Nonetheless, these estimated
rents do not cover all of the states in the Aldrich Report and also probably
embody quality differences. It is not possible to obtain additional
information on the housing characteristics to estimate hedonic prices. [Rosen,
1974. Goodman, 1988.] Because of the nature and limited coverage of the
housing data, the overall price index in Table 1 for states is given both
including housing (Index B) and excluding housing (Index A) for the 21 states
with adequate rental information. For all of the remaining states and the
District of Columbia, only Index A is calculated.

The price indices for cities in Table 2 include housing components only

for the cities of Boston, Chicago, New York, St. Louis, and Philadelphia.
These rental data are based on samples taken by Rees [1961] from newspaper
advertisements in these cities. As in Table 1, two price indices are given in
Table 2, Index A excluding housing and Index B including housing. As a
general matter, one concludes that housing costs are one of the more difficult
components of cost of living to obtain.[5]

To estimate a price index, it is obviously necessary to combine the prices
with some set of weights. The weights used here are presented in Appendix
Table II. Basically, each price within each of the seven commodity groups was
assigned a weight, with the sum of the weights for each group summing to one.
These weights were taken, in part, from the earlier work of Coelho and
Shepherd [1979, p. 72 and unpublished Appendix B]. The underlying sources
were the published results of budgets for 2,562 "normal" families taken from
the 1889/90 U.S. Commissioner of Labor Survey and also a special sample of
budgets for 232 families in eleven cities taken for the Aldrich Report. [U.S.
Commissioner of Labor, 1891, pp. 863-865. U.S. Congress, 1892, pp. XLI-XLIX
and Tables VI-VII, pp. 2040-2097.][6] When a new commodity was added in the
present case, the weight for that commodity was calculated by redistributing
the existing weights within the commodity group or subgroup. (Subgroups were
used for food (cereals & bakery products; meats, fish, & poultry; dairy
products; vegetables; fruits; vinegar, pickles, & condiments; and other foods)
and for clothing (coats, vests, overcoats, trousers; dresses, cloaks, shawls;
boots & shoes; underwear; amd miscellaneous).) The seven commodity group
indices were then weighted by budget shares derived from the 1889/90
Commissioner of Labor survey to obtain the overall indices in Tables 1 and 2
(i.e., Index A and Index B).[7] Index A does not include housing costs, and

hence the weights to combine the commodity groups were recalculated to sum to unity excluding housing.

The result is a set of fixed weight Lespeyres indices of prices, where the base weights are national "average" weights. It turns out that the choice of any reasonable set of weights at this level makes relatively little difference to the final outcome. [Coelho and Shepherd, 1979, p. 72; 1974, pp. 563-565.] More formally, a price index for commodity i in commodity group j in city or state k may be seen as:

$$PINDEX_{ijk} = \sum_i (P_{ijk}/P_{iju}) * W_{iju}$$

where P = commodity prices

W = weights; for example, $W_{iju} = (P_{iju}*Q_{iju})/(\sum_i P_{iju}*Q_{iju})$

Q = quantities for individual commodities

i = individual commodities within commodity groups

j = commodity groups (i.e., food, clothing, etc.)

k = state or city

u = national U.S. average value for P_{ij} or W_{ij}

This may be seen as equivalent to:

$$PINDEX_{ijk} = \sum_i (P_{ijk}*Q_{iju})/(\sum_i P_{iju}*Q_{iju})$$

which is a Lespeyres fixed-weight price index.

One problem with such a price index is that it is not "true" cost of living index. That is, it does not take into account substitution effects. One example may be seen in Table 1. The price index for California for fuel and light was 95 percent higher than the national average. This was because of the relatively high price for coal and firewood in California in 1890, presumably due, in turn, to the costs of transporting these bulky and heavy fuels. One would expect that California residents would have had economized

on the use of expensive fuel and probably would have had different budget
shares. The fixed national weights do not take into account these
substitution effects and hence will exaggerate the correction to income that
would have to be made to compensate a person or a family (in terms of their
level of utility) for the higher price. It turns out, however, that the
differences between Lespeyres fixed-weight cost of living indices and constant
utility "true" cost of living indices is small. [See, for example, Phlips,
1974, ch V.]

The results in Tables 1 and 2 do indeed reveal substantial variation in
prices across states and individual cities. And even within one state, the
cost of living varied significantly from city to city. So, for example, the
retail price index (without housing) was .915 in Syracuse, New York and 1.142
in New York City, already a high cost urban center in 1890. Similarly,
Philadelphia had a retail price index (without housing) of 1.103 while
Pittsburgh was at .952. As one might expect, bulky, heavy commodities with a
low value to weight ratio, like coal and firewood, would show larger regional
price variation than commodities like clothing with a higher value to weight
ratio. Also, things like housing rents might be expected to show more local
variation since these prices cannot be arbitraged by shipping the commodities
from lower to higher priced markets. Table 3 presents coefficients of
variation calculated from the state and local prices in Tables 1 and 2. Food
and clothing prices showed much less variation across regions than did prices
for fuel and lighting or for furniture. Interestingly, liquor and tobacco
prices also exhibited a good deal of spatial variation. This reflects, in
part, the inclusion of beer, a relatively bulky and heavy commodity, as the
price for liquor, and also possibly differences in state and local taxes on

both liquor and tobacco.

Overall, the Pacific and Mountain Region states covered in the sample (California, Oregon, Washington, Montana, Colorado) were high cost of living areas on all dimensions.[8] These states and the constituent cities were at or above average for all six commodity groups covered. Fuel and lighting costs were particularly high in the West. The New England area tended to have higher costs for food, fuel and lighting, and liquor & tobacco. It was less expensive, however, for manufactured goods in the clothing and furniture categories. The South Atlantic Region was a higher cost of living area for food, as was the Middle Atlantic area. Overall, the northeastern portion of the nation (New England and Middle Atlantic states) had above average cost of living (excluding housing), as did the West (Mountain and Pacific states). The Midwest and the South had below average cost of living (without housing). These results are very much dominated by food costs, although the above average food and liquor and tobacco costs of the South Atlantic states were offset by below average costs in fuel and "other" commodities. Food costs tended to be lower in the richer agricultural midsection of the nation and higher on the east and west coasts.

There is thus ample evidence of a good deal of spatial variation in retail prices in the United States around 1890. And that variation was uneven by type of commodity, although cost of living indices were dominated by food costs. For a number of questions, such as comparison of state, city, or regional incomes or wages or standards of living [Easterlin, 1960; Lebergott, 1964; Williamson and Lindert, 1980], estimation of demand systems [Haines, 1987], or comparisons of real levels of government spending [Legler, Sylla, and Wallis, 1987], it is important to take these regional differences in cost

of living into account. The evidence presented here will hopefully be useful

in that direction.

FOOTNOTES

1. What is essentially needed is a set of prices of standard commodities "exogenous" to the consumer, upon which consumption decisions are based. Unit values (expenditures divided by physical quantities) run into theoretical difficulties because they may contain quality differences and hence do not represent standard commodities. Statistical and econometric problems result from the fact that, for individuals, unit values are derived from the expenditures that are to be "explained" by the unit values. This problem may be overcome, in part, by the use of average unit values for geographic areas to represent average prices. [Deaton, 1986, 1987.] This has been done here for housing prices. The practical difficulty in using unit values arises from the fact that a number of commodity groups in the survey did not provide information on physical quantities. Even when questions about physical quantities were asked, the survey respondents often did not provide that information.

2. The retail prices and some wage data were published in three volumes in 1892. [U.S. Congress, 1892]. A large number of wholesale prices (some going back to 1840) and more wages were published in an additional four volumes in 1893. [U.S. Congress, 1893.]

3. Of the 7000 cells in the original data matrix (i.e., 100 commodities time 70 urban places), only 542 or 7.7 percent were empty. A substantial number of these were concentrated in a few commodities. For example, Holland shades and oleomargarine alone accounted for 78 of the missing observations. The procedure used here to compensate for missing price observations differs from that of Coelho and Shepherd in that they distributed the weight of the missing commodity among the remaining commodities in a particular commodity group in proportion to the weights of the remaining commodities. [Coelho and Shepherd, 1974, p. 567.]

4. Of the 6809 families in the American portion of the Commissioner of Labor Survey, 5610 were identified as renters. Of these, 5207 families provided data on both rent expenditures and number of rooms in the dwelling. This survey, unfortunately, furnished no information on owner-occupied housing costs, so only renters could be considered. For three states in the Commissioner of Labor Survey, Kentucky, Missouri, and Louisiana, the number of cases for this subsample was so small (less than 10 in each case) that each state was not assigned any rental value in Table 1.

5. Coelho and Shepherd [1974] did provide a housing price index from the Weeks Report for the period 1851-1880. They did not for 1890, largely because of a lack of adequate data [1979, unpublished Appendix C]. Paul Douglas' study of real wages in the United States for 1890 to 1926 did not include any housing price component in its cost of living deflator. [Douglas, 1930.] As mentioned in the text, Albert Rees' work on real wages in manufacturing for 1890-1914 made a substantial effort to estimate rental prices by sampling newspapers in six cities (New York, Chicago, Philadelphia, Boston, Cincinnati, and St. Louis) in April and September of each year between 1890 and 1914 [Rees, 1961, pp. 96-105]. Rental data for only five cities is given in Table 2 because Rees did not report them for Cincinnati until 1895. The number of cases used to generate Rees' estimates was relatively large: for 1890, New

York (620 price quotes), Chicago (217), Philadelphia (179), Boston (142), and St. Louis (199).

Some additional unit values for housing are available in a special sample of 232 family budgets taken with the Aldrich Report. Unfortunately, the number of usable cases is so small for most of the cities as to preclude its usefulness. The only sample of significant size was for Philadelphia, which was already covered in the Rees data.

6. The 2,562 "normal" families from the 1889/90 survey had both a husband and a wife; not more than five children, no one of whom was over 14 years of age; no dependents or boarders; did not own its own dwelling place; and had expenditures for rent, fuel, lighting, clothing, and food. The families were selected from all nine of the industries in the American portion of the sample. [U.S. Bureau of the Census, 1975, p. 309.]

7. The weights to combine the six (for Index A) or seven (for Index B) commodity groups were taken from a machine-readable data set which included micro data for all the families from the original reports. The weights were calculated for the 5351 renter families with both husband and wife present in the United States portion of the 1889/90 U.S. Commissioner of Labor Survey. (No information on housing costs was given for homeowners, so they were not used for the computation of expenditure weights.) The weights are the unweighted arithmetic means of the budget shares for these commodity groups for the 5351 individual families. For Index B, the weights are: food (.442); housing (.137); clothing (.162); fuel and lighting (.059); liquor and tobacco (.033); furniture (.032); and other commodities (.135). For Index A, the weights are: food (.512); clothing (.188); fuel and lighting (.068); liquor and tobacco (.038); furniture (.037); and other commodities (.157).

8. The states were organized into census regions as follows: New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut); Middle Atlantic (New York, New Jersey, Pennsylvania); East North Central (Ohio, Indiana, Michigan, Illinois, Wisconsin); West North Central (Minnesota, North Dakota, Iowa, Nebraska, Missouri, Kansas); South Atlantic (Delaware, Maryland, West Virginia, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida); East South Central (Kentucky, Tennessee, Alabama, Mississippi); West South Central (Louisiana, Texas); Mountain (Montana, Colorado); and Pacific (Washington, Oregon, California).

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TABLE 1. STATE PRICE INDICES FOR COMMODITY GROUPS. UNITED STATES, 1890.

	FOOD	CLOTHING	FUEL & LIGHT	FURNITURE	LIQUOR & TOB.	OTHER	HOUSING	INDEX A	INDEX B
ALABAMA	1.028	0.954	0.962	0.954	0.973	0.881	1.339	0.982	1.031
CALIFORNIA	1.095	1.050	1.951	1.181	1.000	1.188		1.159	
COLORADO	1.109	1.046	1.168	1.041	1.070	1.225		1.115	
CONNECTICUT	1.127	0.944	1.255	0.983	0.938	1.093	0.582	1.083	1.015
DELAWARE	0.912	0.969	0.936	1.126	1.203	0.921	0.565	0.944	0.892
DC	1.106	1.013	0.893	1.014	0.888	0.989		1.044	
FLORIDA	1.135	1.055	0.927	0.935	0.998	0.940		1.063	
GEORGIA	1.098	0.997	0.970	0.938	1.127	0.928	0.981	1.039	1.031
ILLINOIS	0.974	0.950	0.851	0.831	0.915	0.991	1.182	0.956	0.987
INDIANA	0.959	0.877	0.798	1.157	0.793	0.980	1.308	0.937	0.988
IOWA	0.841	1.065	0.731	0.974	0.877	1.054		0.915	
KANSAS	0.944	1.290	1.142	0.956	0.841	0.976		1.024	
KENTUCKY	0.880	0.948	0.759	0.775	0.889	0.917		0.887	
LOUISIANA	0.968	1.029	1.053	1.094	1.085	0.903		0.984	
MAINE	1.002	0.976	1.031	0.850	1.262	1.043	0.852	1.010	0.988
MARYLAND	0.935	0.992	0.841	0.846	0.888	0.835	0.806	0.919	0.903
MASSACHUSETTS	1.069	0.950	1.012	1.101	1.026	1.068	0.960	1.042	1.031
MICHIGAN	0.914	1.019	0.852	0.799	0.863	1.015		0.939	
MINNESOTA	0.889	0.897	0.960	0.799	0.926	0.982		0.908	
MISSISSIPPI	0.989	0.876	0.864	0.839	1.046	0.851	0.910	0.934	0.931
MISSOURI	0.915	0.905	0.905	0.967	0.691	1.030		0.924	
MONTANA	1.197	1.151	1.445	1.134	1.107	1.442		1.238	
NEBRASKA	0.925	0.949	1.188	0.997	0.882	0.986		0.958	
NEW HAMPSHIRE	0.998	0.867	1.134	0.819	1.225	1.083	0.866	0.998	0.980
NEW JERSEY	1.041	0.997	1.043	0.925	1.077	1.050	0.886	1.031	1.012
NEW YORK	1.038	0.980	0.997	1.001	0.985	0.941	0.954	1.006	0.999
NORTH CAROLINA	1.044	0.977	0.851	1.412	1.298	0.893	0.827	1.018	0.992
NORTH DAKOTA	0.967	1.046	1.244	1.124	1.057	1.284		1.060	
OHIO	0.997	0.925	0.662	1.041	0.864	1.007	1.104	0.959	0.978
OREGON	1.017	1.068	1.560	1.303	1.014	1.201		1.103	
PENNSYLVANIA	1.043	0.979	0.939	1.084	0.879	1.006	1.048	1.013	1.018
RHODE ISLAND	1.136	0.910	1.094	1.193	0.927	0.973	0.816	1.059	1.026
SOUTH CAROLINA	0.996	1.006	0.758	0.880	1.253	0.819	0.619	0.959	0.913
TENNESSEE	1.001	1.018	0.823	0.904	1.022	0.915	1.265	0.976	1.015
TEXAS	1.034	1.017	1.180	1.029	1.081	0.979		1.034	
VERMONT	1.059	0.918	1.190	1.010	2.068	0.978		1.065	
VIRGINIA	1.116	1.056	0.683	0.813	1.363	0.941	1.031	1.046	1.044
WASHINGTON	1.172	1.053	1.389	1.373	1.035	1.174		1.167	
WEST VIRGINIA	0.942	1.064	0.591	0.914	0.973	0.832	1.168	0.924	0.957
WISCONSIN	0.945	1.026	0.894	1.079	0.882	0.998		0.968	
UNITED STATES	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

SOURCE: Prices from the Aldrich Report (U.S. Senate [1892]). Housing prices
are rents per room from U.S. Commissioner of Labor [1890, 1891]. For
methods, see text. Index A combines all commodity groups except housing.
Index B combines all commodity groups. Commodity groups were combined with
weights from U.S. Commissioner of Labor [1890, 1891].

TABLE 2. CITY PRICE INDICES FOR COMMODITY GROUPS. UNITED STATES, 1890.

	FOOD	CLOTHING	FUEL & LIGHT	FURNITURE	LIQUOR & TOB.	OTHER	HOUSING	INDEX A	INDEX B
Los Angeles, CA	1.079	1.061	1.999	1.232	1.006	1.173		1.156	
San Francisco, CA	1.110	1.040	1.904	1.129	0.994	1.203		1.162	
Denver, CO	1.109	1.046	1.168	1.041	1.070	1.225		1.115	
Hartford, CT	1.127	0.944	1.255	0.983	0.938	1.093		1.083	
Dover, DE	0.912	0.969	0.936	1.126	1.203	0.921		0.944	
Dist. of Columbia	1.106	1.013	0.893	1.014	0.888	0.989		1.044	
Jacksonville, FL	1.135	1.055	0.927	0.935	0.998	0.940		1.063	
Atlanta, GA	1.106	0.957	0.944	0.916	1.130	0.925		1.032	
Savannah, GA	1.090	1.038	0.995	0.961	1.124	0.930		1.045	
Cairo, IL	0.946	0.919	0.695	0.868	0.916	0.944		0.920	
Chicago, IL	1.001	0.980	1.007	0.793	0.913	1.038	0.982	0.992	0.991
Indianapolis, IN	0.959	0.877	0.798	1.157	0.793	0.980		0.937	
Centreville, IA	0.882	1.066	0.582	0.995	0.883	1.004		0.920	
Concord, IA	0.816	1.083	0.737	0.974	0.888	1.136		0.920	
Dubuque, IA	0.864	1.006	0.843	0.896	0.877	0.971		0.908	
Onawa, IA	0.802	1.104	0.761	1.030	0.859	1.107		0.915	
Emporia, KS	0.946	1.459	1.141	0.974	0.841	0.983		1.058	
Wichita, KS	0.942	1.121	1.143	0.937	0.841	0.968		0.989	
Danville, KY	0.933	0.937	0.797	0.922	0.913	1.019		0.937	
Louisville, KY	0.827	0.960	0.720	0.628	0.866	0.815		0.837	
New Orleans, LA	0.945	0.965	1.033	0.834	1.051	0.879		0.945	
Shreveport, LA	0.990	1.093	1.074	1.354	1.120	0.927		1.023	
Bangor, ME	1.000	0.958	1.041	0.849	1.262	1.036		1.005	
Lewiston, ME	1.004	0.994	1.020	0.852	1.262	1.051		1.015	
Baltimore, MD	0.935	0.992	0.841	0.846	0.888	0.835		0.919	
Boston, MA	1.058	0.911	1.123	1.064	0.902	1.076	1.056	1.032	1.036
Fall River, MA	1.063	0.907	0.915	1.220	0.973	1.029		1.021	
Greenfield, MA	1.086	1.033	0.997	1.018	1.203	1.097		1.074	
Detroit, MI	0.879	0.974	0.822	0.640	0.842	0.964		0.896	
Negaunee, MI	0.950	1.115	0.954	1.042	0.948	1.161		1.018	
Saginaw, MI	0.914	0.969	0.781	0.716	0.799	0.920		0.905	
Minneapolis, MN	0.889	0.897	0.960	0.799	0.926	0.982		0.908	
Jackson, MS	0.989	0.876	0.864	0.839	1.046	0.851		0.934	
Kansas City, MO	0.988	0.943	0.917	0.875	0.866	1.138		0.989	
St. Louis, MO	0.843	0.867	0.893	1.060	0.516	0.921	0.955	0.859	0.872
Helena, MT	1.197	1.151	1.445	1.134	1.107	1.442		1.238	
Lincoln, NE	0.895	0.990	1.150	1.024	0.876	0.954		0.943	
Omaha, NE	0.956	0.908	1.226	0.969	0.888	1.017		0.973	
Manchester, NH	0.998	0.867	1.134	0.819	1.225	1.083		0.998	
Glassboro, NJ	0.995	0.950	1.045	0.925	1.060	1.109		1.008	
Newark, NJ	1.088	1.043	1.040	0.925	1.093	0.991		1.055	
Jamestown, NY	1.023	1.044	0.562	0.860	0.964	0.936		0.973	
New York, NY	1.180	1.063	1.511	1.133	1.105	0.966	1.200	1.142	1.150
Syracuse, NY	0.931	0.884	0.949	0.930	0.879	0.892		0.915	
Watertown, NY	1.019	0.930	0.968	1.081	0.992	0.969		0.992	
Raleigh, NC	1.044	0.977	0.851	1.412	1.298	0.893		1.018	
Bismarck, ND	0.967	1.046	1.244	1.124	1.057	1.284		1.060	
Cincinnati, OH	1.008	0.909	0.671	0.973	0.877	1.041		0.965	
Cleveland, OH	1.043	0.950	0.661	1.277	0.864	0.976		0.991	
Youngstown, OH	0.939	0.916	0.654	0.871	0.852	1.002		0.919	
Portland, OR	1.017	1.068	1.560	1.303	1.014	1.201		1.103	
Altoona, PA	1.036	0.997	0.738	0.898	0.913	1.005		0.994	
Philadelphia, PA	1.093	1.040	1.403	1.460	0.873	1.050	0.808	1.103	1.062
Pittsburgh, PA	0.986	0.875	0.940	0.851	0.863	0.985		0.952	
Scranton, PA	1.055	1.005	0.677	1.127	0.866	0.984		1.004	

TABLE 2.   CITY PRICE INDICES FOR COMMODITY GROUPS.   UNITED STATES, 1890.

	FOOD	CLOTHING	FUEL & LIGHT	FURNITURE	LIQUOR & TOB.	OTHER	HOUSING	INDEX A	INDEX B
Providence, RI	1.136	0.910	1.094	1.193	0.927	0.973		1.059	
Columbia, SC	0.996	1.006	0.758	0.880	1.253	0.819		0.959	
Chattanooga, TN	0.986	1.015	0.792	1.130	1.022	0.984		0.985	
Memphis, TN	1.016	1.021	0.854	0.677	1.022	0.846		0.967	
Ft. Worth, TX	1.016	1.000	1.266	1.100	1.069	1.029		1.037	
Galveston, TX	1.051	1.035	1.094	0.957	1.093	0.929		1.030	
Burlington, VT	1.059	0.918	1.190	1.010	2.068	0.978		1.065	
Abingdon, VA	1.170	1.098	0.696	0.813	1.358	0.943		1.083	
Norfolk, VA	1.061	1.013	0.670	0.813	1.369	0.938		1.009	
Seattle, WA	1.172	1.053	1.389	1.373	1.035	1.174		1.167	
Charleston, WV	0.942	1.064	0.591	0.914	0.973	0.832		0.924	
Milwaukee, WI	0.985	0.927	0.914	1.093	0.895	0.985		0.970	
Oshkosh, WI	0.905	1.124	0.875	1.064	0.870	1.011		0.966	

SOURCE: See Table 1 and text.   Housing rents from Rees [1961].

TABLE 3. COEFFICIENTS OF VARIATION FOR STATE AND LOCAL PRICE INDICES.
          UNITED STATES, 1890.

	FOOD	CLOTHING	FUEL & LIGHT	FURNITURE	LIQUOR & TOB.	OTHER	HOUSING	INDEX A	INDEX B
STATES									
Mean	1.0139	0.9953	1.0132	1.0048	1.0322	1.0077	0.9557	1.0097	0.9872
Stan. Dev.	0.0843	0.0781	0.2585	0.1525	0.2193	0.1268	0.2171	0.0764	0.0433
Coef. of Var.	0.0831	0.0785	0.2551	0.1518	0.2125	0.1258	0.2272	0.0757	0.0439
CITIES									
Mean	1.0035	0.9976	0.9860	0.9934	1.0015	1.0031	1.0002	1.0007	1.0221
Stan. Dev.	0.0893	0.0896	0.2762	0.1725	0.1961	0.1136	0.1283	0.0765	0.0915
Coef. of Var.	0.0890	0.0898	0.2801	0.1736	0.1958	0.1133	0.1283	0.0765	0.0895

SOURCE: Tables 1 and 2. The coefficient of variation is the standard devation
divided by the mean.

APPENDIX I. Cities and States Covered for Retail Price Data in the Aldrich Report. (Population figures for 1890 in parentheses.)

ALABAMA
  Birmingham (26,178)
  Montgomery (21,883)

CALIFORNIA
  Los Angeles (50,395)
  San Francisco (298,997)

COLORADO
  Denver (106,713)

CONNECTICUT
  Hartford (53,230)

DELAWARE
  Dover (3,061)

DISTRICT OF COLUMBIA (230,392)

FLORIDA
  Jacksonville (17,201)

GEORGIA
  Atlanta (65,533)
  Savannah (43,189)

ILLINOIS
  Cairo (10,324)
  Chicago (1,099,850)

INDIANA
  Indianapolis (105,436)

IOWA
  Centreville (3,668)
  Concord (n.a.)
  Dubuque (30,311)
  Onawa (1,358)

KANSAS
  Emporia (7,551)
  Wichita (23,853)

KENTUCKY
  Danville (3,766)
  Louisville (161,129)

LOUISIANA
  New Orleans (242,039)
  Shreveport (11,979)

MAINE
  Bangor (19,103)
  Lewiston (21,701)

MARYLAND
  Baltimore (434,439)

MASSACHUSETTS
  Boston (448,477)
  Fall River (74,398)
  Greenfield (5,252)

MICHIGAN
  Detroit (205,876)
  Negaunee (6,078)
  Saginaw (46,322)

MINNESOTA
  Minneapolis (164,738)

MISSISSIPPI
  Jackson (5,920)

MISSOURI
  Kansas City (132,716)
  St. Louis (451,770)

MONTANA
  Helena (13,834)

NEBRASKA
  Lincoln (55,154)
  Omaha (140,452)

NEW HAMPSHIRE
  Manchester (44,126)

NEW JERSEY
  Glassboro (2,642)
  Newark (181,830)

NEW YORK
  Jamestown (16,038)
  New York (1,515,301)
  Syracuse (88,143)
  Watertown (14,725)

NORTH CAROLINA
  Raleigh (12,678)

NORTH DAKOTA
  Bismarck (2,186)

OHIO
    Cincinnati (296,908)
    Cleveland (261,353)
    Youngstown (33,220)

OREGON
    Portland (46,385)

PENNSYLVANIA
    Altoona (30,337)
    Philadelphia (1,046,964)
    Pittsburgh (238,617)
    Scranton (75,215)

RHODE ISLAND
    Providence (132,146)

SOUTH CAROLINA
    Columbia (15,353)

TENNESSEE
    Chattanooga (29,100)
    Memphis (64,495)

TEXAS
    Fort Worth (23,076)
    Galveston (29,084)

VERMONT
    Burlington (14,590)

VIRGINIA
    Abingdon (1,674)
    Norfolk (34,871)

WASHINGTON
    Seattle (42,837)

WEST VIRGINIA
    Charleston (6,742)

WISCONSIN
    Milwaukee (204,468)
    Oshkosh (22,836)

APPENDIX TABLE II. Commodities and Weights in the Price Index.

COMMODITIES	WEIGHTS
FOOD	1.0000
CEREALS & BAKERY PRODUCTS	0.1600
Wheat flour, best Minnesota, or similar grade, per barrel	0.0516
Rye flour, per pound	0.0098
Cornmeal, per pound	0.0270
Oatmeal, per pound	0.0098
Bread, best quality of bakers', per pound	0.0555
Rice, Carolina prime, or similar grade, per pound	0.0063
MEATS, FISH, & POULTRY	0.3272
Beef, fresh, roasting cuts, per pound	0.1675
Beef, canned, corned, No. 2 size	0.0186
Bacon, per pound	0.0276
Ham, per pound	0.0276
Salt pork, clear, per pound	0.0276
Mutton, shoulders, per pound	0.0229
Fowl, domestic, dressed, per pound	0.0122
Turkey, dressed, per pound	0.0061
Cod, cured, per pound	0.0057
Mackerel, salt, No. 1, per pound	0.0057
Salmon, canned, Columbia River, No. 1 size, per can	0.0057
DAIRY PRODUCTS	0.1762
Milk, fresh, per quart	0.0597
Butter, best dairy, excluding fancy grades, per lb	0.1059
Cheese, best factory, per pound	0.0106
VEGETABLES	0.0851
Potatoes, fresh, the quality of white domestic most in use, per bushel	0.0501
Beans, Boston baked, canned, No. 3 size, per can	0.0070
Beans, white medium, best, per pound	0.0070
Corn, canned, standard, No. 2 size, per can	0.0070
Peas, canned, standard, No. 2 size, per can	0.0070
Tomatoes, canned, standard, No. 3 size, per can	0.0070
FRUITS	0.0370
Apples, dried, good quality, evaporated, per pound	0.0124
Peaches, canned, standard, No. 3 size, per can	0.0123
Raisins, California medium quality, per pound	0.0123
VINEGAR, PICKLES, & CONDIMENTS	0.0099
Mustard, best domestic, per pound	0.0025
Pepper, whole, Singapore, per pound	0.0025
Salt, domestic, common fine, per pound	0.0025
Vinegar, best cider, per gallon	0.0024

OTHER FOODS   0.2046
Coffee, Rio, fair, not roasted, per pound   0.0527
Eggs, domestic, not limed & from the vicinity of   0.0322
    the place of quotation, per dozen
Lard, pure leaf, per pound   0.0232
Molasses, New Orleans, centrifugal, per gallon   0.0037
Molasses, Porto Rico, per gallon   0.0037
Oleomargarine, per pound   0.0054
Sugar, standard, granulated, per pound   0.0615
Syrup, extra table, per gallon   0.0037
Tea, Japan, medium grade, per pound   0.0093
Tea, Oolong, medium grade, per pound   0.0092

CLOTHING   1.0000

COATS, VESTS, OVERCOATS, TROUSERS   0.2151
Jumpers, 9oz. blue denim, each   0.1075
Overalls, 9oz blue denim, per pair   0.1076

DRESSES, CLOAKS, SHAWLS   0.1581
Calico, American indigo blue prints, per yard   0.0226
Women's dress goods, Pacific or Hamilton,   0.0226
    3-4 cashmere, per yard
Women's dress goods, Pacific brocade or diagonal,   0.0226
    per yard
Women's dress goods, cotton warp cahsmere, F or   0.0226
    similar grade, per yard
Women's dress goods, cotton warp cashmere, FF or   0.0226
    similar grade, per yard
Women's dress goods, all wool cashmere, 10-11   0.0226
    twill, Atlantic Mills, J or similar grade,
    per yard
Women's dress goods, all wool cashmere or   0.0225
    Henrietta, 17-18 twill, per yard

BOOTS & SHOES   0.1705

Men's wax brogans, leather, per pair   0.0341
Men's split boots, leather, per pair   0.0341
Women's grain shoes, leather, per pair   0.0341
Heavy rubber boots, per pair   0.0341
Heavy Arctics, per pair   0.0341

UNDERWEAR   0.0878
Cotton shirts, Balbriggan, 34 gauge, each   0.0055
Cotton drawers, Balbriggan, 34 gauge, per pair   0.0055
Cotton shirts, mixtures, 34 gauge, each   0.0055
Cotton drawers, mixtures, 34 gauge, per pair   0.0055
Men's undershirts, 14-16 gauge, scarlet, all wool,   0.0055
    10.5 pounds per dozen, 40-inch, plain finish,
    each
Men's drawers, 14-16 gauge, scarlet, all wool,   0.0055
    10.5 pounds per dozen, per pair
Men's merino shirts, half wool, 16-18 gauge, 10.5   0.0055
    pounds per dozen, 40-inch, plain finish, each
Men's merino drawers, half wool, 16-18 gauge,   0.0053
    10.5 pounds per dozen, per pair
Shirtings, bleached, 4-4, Fruit of the Loom,   0.0440
    per yard

MISCELLANEOUS	0.3685
Men's cotton socks, 108 needles, seamless, mixed, 28 oz. to the dozen, per pair	0.0500
Women's cotton stockings, black, cut feet, 26 gauge, 24 oz. to the dozen, per pair	0.0500
Cotton thread, best 6 cord, 200 yards, per spool	0.0300
Linen goods, glass cloth or checked toweling, 18-inch medium grade, per yard	0.0795
Sheetings, brown, standard (as Atlantic A or Indian Head), per yard	0.0795
Sheetings, bleached, 10-4 Pepperell, per yard	0.0795
FUEL & LIGHT	1.0000
Coal, anthracite, stove, per ton	0.2119
Coal, bituminous, per ton	0.2119
Wood, hickory, oak, or other hardwood, per cord	0.4237
Light, oil, kerosene, 150 degree test, per gallon	0.1525
FURNITURE	1.0000
Chairs, kitchen, plain maple, per dozen	0.2000
Tables, kitchen, plain wood, 4 ft., each	0.2000
Chairs, bedroom, cane seat, each	0.2000
Tables, dining, plain oak, extension, each	0.2000
Bedroom set, ash or elm, 3 pieces, bedstead, bureau, & washstand, per set	0.2000
LIQUOR & TOBACCO	1.0000
Liquor, beer, per keg of 8 gallons	0.7780
Tobacco, plug, bright navy, medium grade, per lb.	0.1110
Tobacco, smoking, granulated, medium grade, per lb	0.1110
OTHER	1.0000
Ammonia, household, per pint	0.0592
Blankets, per pair	0.0592
Carpets, ingrain, standard, per yard	0.0592
Coffee pots, tin, 2 qts., each	0.0592
Dinner pails, tin, 2-quart, plain, each	0.0592
Earthenware, breakfast plates, white granite, trade size no. 7, per dozen	0.0592
Earthenware, tea cups, white granite, with handles, per dozen	0.0592
Glassware, goblets, common pressed, per dozen	0.0592
Knives and forks, table, iron handles, per set	0.0592
Lamp chimneys, A Sun, each	0.0592
Milk pans, tin, 6 quarts, each	0.0592
Shades, Holland, ordinary size, each	0.0592
Soap, best family, per pound	0.0592
Starch, ordinary laundry, per pound	0.0592
Castor oil, per fluid ounce	0.0856
Quinine, per ounce	0.0856

SOURCE: Aldrich Report. For weights, see text.