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Volume Title: City Expenditures in the United States

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Volume Publisher: NBER

Volume ISBN: 0-87014-380-8

Volume URL: <http://www.nber.org/books/braz59-1>

Publication Date: 1959

Chapter Title: Appendix C, Correlation between the Independent Variables and between the Expenditure Categories and the Independent Variables

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Chapter URL: <http://www.nber.org/chapters/c9206>

Chapter pages in book: (p. 75 - 80)

TABLE C-2

Coefficients of Simple Correlation, Selected Independent Variables and Expenditure Categories, 35 California Cities

| <i>Independent Variable or Expenditure Category</i> | <i>Population in 1950</i> | <i>Density of Population in 1950</i> | <i>Rate of Growth of Population 1940-1950</i> | <i>Median Family Income in 1949</i> | <i>Employment per 100 of Population in Manufacturing (1947), Trade and Services (1948)</i> | <i>Intergovernmental Revenue per Capita, 1951</i> |
|-----------------------------------------------------|---------------------------|--------------------------------------|-----------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------|
| Density | 0.158 | | | | | |
| Rate of growth | -0.141 | -0.041 | | | | |
| Income | -0.141 | 0.123 | -0.107 | | | |
| Employment | 0.139 | 0.295 | -0.381 | 0.268 | | |
| Intergovernmental revenue | 0.319 | 0.605 | -0.081 | -0.163 | 0.139 | |
| Total general operating | 0.219 | 0.259 | -0.466 | 0.222 | 0.466 | 0.505 |
| Common functions | 0.121 | 0.019 | -0.505 | 0.300 | 0.464 | 0.210 |
| Police | 0.317 | 0.124 | -0.423 | 0.173 | 0.585 | 0.239 |
| Fire | 0.111 | 0.156 | -0.393 | 0.185 | 0.398 | 0.360 |
| Highways | -0.234 | -0.523 | -0.260 | 0.023 | -0.042 | -0.264 |
| Recreation | 0.058 | 0.023 | -0.328 | 0.313 | 0.316 | 0.090 |
| General control | 0.065 | 0.303 | -0.263 | 0.093 | 0.160 | 0.511 |
| Sanitation | -0.055 | -0.153 | -0.351 | 0.473 | 0.268 | -0.302 |

TABLE C-3

Coefficients of Simple Correlation, Selected Independent Variables and Expenditure Categories, 30 Massachusetts Cities

| <i>Independent Variable or Expenditure Category</i> | <i>Population in 1950</i> | <i>Density of Population in 1950</i> | <i>Rate of Growth of Population 1940-1950</i> | <i>Median Family Income in 1949</i> | <i>Employment per 100 of Population in Manufacturing (1947), Trade and Services (1948)</i> | <i>Intergovernmental Revenue per Capita, 1951</i> |
|-----------------------------------------------------|---------------------------|--------------------------------------|-----------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------|
| Density | 0.344 | | | | | |
| Rate of growth | -0.110 | -0.290 | | | | |
| Income | -0.076 | -0.004 | 0.460 | | | |
| Employment | 0.147 | -0.086 | -0.240 | -0.490 | | |
| Intergovernmental revenue | 0.369 | 0.248 | -0.490 | -0.334 | 0.307 | |
| Total general operating | 0.616 | 0.289 | -0.216 | 0.164 | -0.118 | 0.372 |
| Common functions | 0.432 | 0.145 | 0.120 | 0.447 | -0.252 | -0.102 |
| Police | 0.783 | 0.465 | -0.203 | 0.005 | 0.071 | 0.197 |
| Fire | 0.472 | 0.330 | -0.304 | 0.032 | -0.022 | 0.102 |
| Highways | -0.178 | -0.418 | 0.408 | 0.348 | -0.285 | -0.494 |
| Recreation | 0.378 | 0.421 | -0.065 | 0.561 | -0.151 | 0.088 |
| General control | 0.456 | 0.127 | 0.153 | -0.008 | -0.322 | -0.193 |
| Sanitation | 0.194 | 0.092 | 0.194 | 0.602 | -0.238 | -0.010 |

TABLE C-4

Coefficients of Simple Correlation, Selected Independent Variables and Expenditure Categories, 32 Ohio Cities

| <i>Independent Variable or Expenditure Category</i> | <i>Population in 1950</i> | <i>Density of Population in 1950</i> | <i>Rate of Growth of Population 1940-1950</i> | <i>Median Family Income in 1949</i> | <i>Employment per 100 of Population in Manufacturing (1947), Trade and Services (1948)</i> | <i>Intergovernmental Revenue per Capita, 1951</i> |
|-----------------------------------------------------|---------------------------|--------------------------------------|-----------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------|
| Density | 0.443 | | | | | |
| Rate of growth | -0.118 | -0.306 | | | | |
| Income | -0.123 | 0.010 | 0.198 | | | |
| Employment | 0.094 | -0.164 | 0.179 | -0.552 | | |
| Intergovernmental revenue | 0.647 | 0.095 | -0.113 | -0.116 | 0.304 | |
| Total general operating | 0.611 | 0.303 | -0.163 | 0.245 | -0.103 | 0.617 |
| Common functions | 0.410 | 0.239 | 0.057 | 0.678 | -0.238 | 0.262 |
| Police | 0.562 | 0.329 | 0.400 | 0.385 | 0.007 | 0.374 |
| Fire | 0.223 | -0.041 | 0.003 | 0.694 | -0.208 | 0.204 |
| Highways | -0.127 | -0.245 | 0.083 | 0.432 | 0.073 | 0.018 |
| Recreation | 0.452 | 0.230 | -0.183 | 0.433 | -0.300 | 0.325 |
| General control | 0.112 | 0.145 | -0.091 | 0.369 | -0.200 | 0.044 |
| Sanitation | 0.358 | 0.430 | -0.043 | 0.661 | -0.348 | 0.167 |

TABLE C-5

Coefficients of Simple Correlation, Selected Independent Variables and Expenditure Categories, 40 Large Cities and Their Overlying Units of Local Government

| <i>Independent Variable or Expenditure Category</i> | <i>Population in 1950</i> | <i>Density of Population in 1950</i> | <i>Rate of Growth of Population 1940-1950</i> | <i>Ratio of City Population to Metropolitan Area Population in 1950</i> | <i>Median Family Income in 1949</i> |
|-----------------------------------------------------|---------------------------|--------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------|-------------------------------------|
| Density | 0.559 | | | | |
| Rate of growth | -0.199 | -0.603 | | | |
| Ratio city to met. area pop. | 0.059 | -0.426 | 0.225 | | |
| Income | 0.157 | 0.185 | -0.115 | -0.156 | |
| Employment | 0.021 | 0.287 | -0.724 | 0.071 | 0.152 |
| Av. daily att. | -0.226 | -0.604 | 0.614 | 0.050 | -0.142 |
| State direct exp. on welfare | -0.098 | -0.287 | 0.075 | 0.321 | -0.267 |
| Intergovernmental revenue | 0.074 | -0.113 | 0.299 | -0.093 | 0.419 |
| Intergovernmental revenue for ed. | -0.014 | -0.409 | 0.667 | 0.017 | -0.151 |
| Intergovernmental rev. other than ed. | 0.098 | 0.064 | 0.035 | -0.122 | 0.437 |
| Total general operating | 0.154 | 0.374 | -0.115 | -0.582 | 0.342 |
| Common functions | 0.085 | 0.276 | -0.138 | -0.466 | 0.383 |
| Education | -0.029 | -0.058 | 0.113 | -0.320 | 0.317 |
| Police | 0.242 | 0.680 | -0.379 | -0.617 | 0.278 |
| Fire | -0.021 | 0.461 | -0.233 | -0.611 | 0.156 |
| Highways | -0.093 | -0.322 | 0.026 | 0.183 | 0.120 |
| Recreation | 0.126 | 0.221 | 0.011 | -0.375 | 0.415 |
| Sanitation | 0.191 | 0.359 | -0.312 | 0.067 | 0.055 |
| Welfare | 0.119 | 0.114 | 0.060 | -0.333 | 0.342 |

| <i>Employment per 100 of Population in Manu- facturing (1947), Trade and Services (1948)</i> | <i>Students in Aver- age Daily Attendance per 1,000 of 1950 Population</i> | <i>State Di- rect Ex- penditures on Welfare per Capita, 1953</i> | <i>Intergovern- mental Rev- enue per Capita, 1953</i> | <i>Intergovern- mental Rev- enue per Capita, for Education, 1953</i> | <i>Intergovern- mental Rev- enue per Capita, for Other Than Education, 1953</i> |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| -0.343 | | | | | |
| -0.049 | n.c. | | | | |
| -0.262 | 0.239 | -0.392 | | | |
| -0.549 | 0.445 | n.c. | n.c. | | |
| -0.049 | n.c. | -0.484 | n.c. | n.c. | |
| -0.007 | n.c. | n.c. | 0.639 | n.c. | 0.706 |
| 0.167 | n.c. | n.c. | 0.502 | n.c. | 0.524 |
| -0.009 | 0.359 | n.c. | 0.464 | 0.361 | n.c. |
| 0.123 | n.c. | n.c. | 0.216 | n.c. | 0.324 |
| 0.024 | n.c. | n.c. | 0.219 | n.c. | 0.327 |
| 0.262 | n.c. | n.c. | 0.253 | n.c. | 0.233 |
| -0.052 | n.c. | n.c. | 0.504 | n.c. | 0.474 |
| 0.404 | n.c. | n.c. | 0.046 | n.c. | 0.173 |
| -0.128 | n.c. | -0.653 | 0.794 | n.c. | 0.846 |

n.c. = not computed.

APPENDIX D

COMPONENTS OF VARIATION IN MEAN EXPENDITURES
PER CAPITA OF 462 CITIES GROUPED
BY TYPE OF CITY, 1951

TABLE D-1

Components of Variation in Mean Expenditures per Capita,
462 Cities Grouped by Type, 1951

| Expenditure Category | Sums of Squares of Deviations from the Mean | | Variance | | F Value ^e ($F_{.99} = 2.8$) |
|----------------------------|---------------------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|------------------------------------------------|
| | Between ^a Groups (1) | Within ^b Groups (2) | Between ^c Groups (3) | Within ^d Groups (4) | |
| Total general operating | 21,645 | 347,547 | 3,607.49 | 763.84 | 4.7 |
| Common functions | 7,117 | 33,972 | 1,186.13 | 74.66 | 15.9 |
| Police | 587 | 2,066 | 97.87 | 4.54 | 21.6 |
| Fire | 223 | 2,285 | 37.22 | 5.02 | 7.4 |
| Highways | 232 | 2,004 | 38.70 | 4.40 | 8.8 |
| Recreation | 310 | 998 | 51.63 | 2.19 | 23.6 |
| General control | 119 | 1,292 | 19.89 | 2.84 | 7.0 |
| Sanitation | 262 | 2,322 | 43.69 | 5.10 | 8.6 |

^aSum of the squared deviations of the group means from the mean for 462 cities, weighted by the number of cities in each group.

^bSum of the sums of the squared deviations of the per capita expenditures for each city from the mean.

^cColumn 1 divided by 6, the number of degrees of freedom between groups.

^dColumn 2 divided by 455, the number of degrees of freedom within groups.

^eF is the ratio of variance between groups to variance within groups.

Note: Additional tables are available in mimeographed form and may be requested from the author or from the National Bureau. These are:

TABLE E-1. Differences between the Observed and Computed Values of per Capita Expenditures for 462 Cities, 1951.

TABLE E-2. Differences between the Observed and Computed Values of per Capita Expenditures for 40 Large Cities and Their Overlying Units of Local Government, 1953.