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Religious participation and income

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Abstract

The relationship between religion and income has been explored in several studies. In this paper, we extend this inquiry by arguing that religious participation, through its effects on preferences and net earnings potential, reduces participants' incomes. Similarly, we argue that high incomes discourage religious participation by encouraging individuals to substitute market work for religious activities. In an empirical model, we *simultaneously* estimate the effects of religious participation on income and income on religious participation, using US state data on per capita personal income and church membership. The results strongly support our hypotheses.

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1. Introduction

The economics of religion is a growing field of study.¹ Some of this research has analyzed the effects of religion on the allocation of resources between productive and redistributive or protective uses. In studies using a variety of different samples and control variables, [Bainbridge \(1989\)](#), [Lipford et al. \(1993\)](#), [Hull and Bold \(1995\)](#), and [Evans et al. \(1995\)](#) find that church membership or religious activities reduce crime and various social pathology rates. Lipford, McCormick, and Tollison also find that church membership reduces per capita state expenditures on police. In a similar vein, [Lipford and Yandle \(1997\)](#) present a simultaneous estimation of state crime rates and police expenditures. Their results corroborate earlier findings that church membership is linked to crime rates, but do not support an

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¹ For a review of the literature on the economics of religion, see [Iannaccone \(1998\)](#).

inverse relation between church membership and police expenditures. Lipford and Yandle find, however, that church membership is negatively associated with litigiousness, indicating that religion may deter some rent-seeking activity.²

Heath et al. (1995) analyze the effects of religion on the *level* of income using US state data. Their arguments stress the influence of religion on public and private institutions. In particular, they argue that fundamentalist protestants may discourage economic development of specific industries, such as alcohol, gambling, and tourism, as well as capital investment by firms that may prefer not to locate in an “unprogressive” area. On the other hand, they also recognize that by discouraging behaviors that may impede economic progress, such as drug use and illegitimacy, and by encouraging personal responsibility and family stability, religion may improve economic performance. To test these hypotheses, they regress per capita state income against the shares of state population categorized as Jewish, Catholic, liberal and fundamentalist protestant. They find that Jewish membership is positively correlated with state per capita income; liberal protestantism is uncorrelated with state per capita income; and Catholicism and fundamentalist protestantism are inversely correlated with state per capita income.

In an exhaustive cross-section, time-series study of the determinants of state income growth that does not differentiate among sub-categories of faith, Crain and Lee (1999) find that church membership is negatively but insignificantly correlated with per capita income growth. Because their analysis attempts only to identify significant determinants of state income growth and quantify these effects, Crain and Lee offer no theoretical ideas about what the effect of religion on income should be.

By modeling income as a function of religion, these papers assume the opposite causality of Azzi and Ehrenberg (1975), who model religious membership as a function of economic and demographic factors. Their research, which began the resurgent interest in the economics of religion, found that high wage rates reduce church membership, implying that individuals substitute time in market activity in place of religious activity when the opportunity cost of the latter is higher.

In this paper, we reconsider the link between religion and income using a slightly different sample and set of control variables than previous studies. Of greater importance, we expand the analysis beyond previous work by making a simultaneous estimate of the effects of religion on income and income on religion. Our results support the hypotheses that the link between religion and income is bicausal so that simultaneous estimation is appropriate. Our basic findings are that religious participation mildly decreases income and that higher income mildly deters religious participation. Thus, while religion may lessen the need for police expenditures along a given production possibilities frontier, it also reduces the level of income, or the position of the production possibilities frontier.

The following section discusses theoretical arguments for a bicausal link between religion and income. The third section of the paper presents our simultaneous estimates and discusses results. Some final thoughts are offered in the conclusion.

² One way to think about these results is that they show that religion is a substitute for police expenditures. Religion, in other words, represents a different way to combat crime and other social pathologies. Thus, religion moves society along a given production possibilities frontier. A separate question is how religion affects a society’s level of income (i.e. the position of its production possibilities frontier), which is addressed in this paper in a simultaneous causation framework.

2. The bicausal relationship between income and religion

As indicated above, the impact of religion on human behavior may be significant. For example, additional studies show that religion affects not only criminal activity, but also rates of suicide, divorce, drug and alcohol use, and premarital sex.³ If religious teachings influence these behaviors, then we hypothesize that religious teachings concerning the acquisition of material wealth will also influence behavior. One common theme of the Christian faith is the emphasis on “treasures in heaven” as opposed to “treasures on earth.” If religious participants truly believe in a trade-off between present consumption and “afterlife consumption,” their preference sets (utility functions) will differ from those of individuals who do not participate in religious activities, and these preferences will be reflected in substitutions at the margin between present and “afterlife consumption”. These substitutions will be especially great, if religious participants also have relatively low personal discount rates so that they favor afterlife income over present income. Simply put, we argue that religious participants place a relatively lower valuation on market earnings.⁴

Moreover, the pursuit of heavenly treasures requires an earthly opportunity cost. Time spent in religious activities, such as church services, mission trips, and committee meetings, reduces time available for pecuniary pursuits. Similarly, religious objectives can only be achieved with financial support. Although tithing is generally not practised by church members, religious giving accounts for over US\$ 60 billion per year.⁵ The 1999 issue of the Yearbook of American and Canadian Churches reports giving statistics on 58 US denominations with almost 45 million full or confirmed members. These denominations reported just under US\$ 30 billion in total giving, or approximately US\$ 557 per full or confirmed member.⁶ To the extent that religious participants give their money as well as their time, their “after-tax, after-tithe” wage rate is reduced, encouraging a further substitution away from market work in favor of religious participation. In effect, their constraint sets differ from those of individuals who do not participate in religious activities by reducing the relative return to market work, thereby deterring income-generating activity.⁷

In the spirit of Azzi and Ehrenberg, we also argue that individuals with higher opportunity costs of time, as measured by market earnings, will find religious activities costly relative to those with lower earnings. These individuals will, in turn, substitute market work in favor of religious activities. Again, the constraint set facing individuals matters: those individuals with high earnings will find the relative cost of religious participation to be high.

³ See Iannaccone at pp. 1475–1476 for a summary of these studies.

⁴ Our argument contrasts sharply with Max Weber’s thesis that the protestant work ethic leads to greater wealth and prosperity. Though popular, Weber’s thesis is not supported empirically. See Iannaccone at pp. 1474–1475.

⁵ A tithing rule implies an income elasticity of giving with respect to income of one. Iannaccone (at pp. 1469–1470) summarizes studies which indicate income elasticities in the 0.4–0.6 range.

⁶ See table titled “Summary Statistics of Church Finance,” in Lindner (1999) at pp. 360–361.

⁷ We recognize that contributions to churches are voluntary, just like the purchase of any other good, and that money given to churches may be thought of as the price paid for religious goods. Nevertheless, we argue the purchase of religious goods differs from that of other goods because the suggested price paid is often a function of income (e.g. consider a tithing rule). People who buy luxury cars, e.g. may also have lower “after-tax, after-car” incomes, but unlike the purchase of religious goods, the seller suggests no link between the price paid for the car and the buyer’s income. The critical point is that church members have less income after taxes and contributions.

3. Empirical model and results

To test the joint effects of economics and religion, we estimated equations for income and church membership, using US state-level data from 1971, 1980, and 1990.⁸ The income equation is given below:

$$\begin{aligned} \text{INCOME} = & \alpha_0 + \alpha_1 H + \alpha_2 \text{GOVT} + \alpha_3 \text{EMPLOY} + \alpha_4 \text{EDUC} \\ & + \alpha_5 \text{SMSA} + \alpha_6 \text{CHURCH} + \varepsilon \end{aligned} \quad (1)$$

where INCOME designates per capita personal income, H a Herfindahl index measuring religious concentration (measured using denominational shares of total church membership), GOVT designates the state and local government spending per thousand dollars of state personal income, EMPLOY designates the share of population employed, EDUC designates the share of population with a bachelors' degree or higher, SMSA designates the share of population residing in standard metropolitan statistical areas, and CHURCH designates the share of state population holding membership in some church body.⁹

The church membership equation is:

$$\begin{aligned} \text{CHURCH} = & \alpha_0 + \alpha_1 H + \alpha_2 \text{GOVT} + \alpha_3 \text{PCT65} + \alpha_4 \text{FEMALE} \\ & + \alpha_5 \text{INCOME} + \varepsilon \end{aligned} \quad (2)$$

where PCT65 designates the share of population aged 65 or over and FEMALE designates the share of population that is female.

For the income equation, we expect that a higher share of state population employed (EMPLOY) and a more educated population (EDUC) will be positively correlated with income. Similarly, we expect that more extensive infrastructure resources and opportunities for division of labor will raise incomes in metropolitan areas (SMSA). The signs of the Herfindahl index (H) and government spending (GOVT) are ambiguous. The measure of market concentration seeks to ascertain the impact of concentration in the market for religion on income. In other words, do concentrated religious markets provoke income-creating or -dissipating results (Anderson and Tollison, 1992)? Government spending has been found to reduce income, perhaps because state-sponsored income redistribution discourages work

⁸ Data on church membership are taken from Johnson et al. (1974) for 1971, Quinn et al. (1982) for 1980, and Bradley et al. (1992) for 1990. These church membership surveys have been taken only for the years listed, so our empirical analysis is restricted to those years.

⁹ The Glenmary Research Center admits its 1971 and 1980 church membership surveys significantly undercount black church membership. To correct for this problem, we made the following adjustment. We assumed that whites and blacks are members of churches in the same proportion in any single state. Let C_j be the reported share of the population in state j that is a member of some church. Let B_j be the share of population that is non-white. Then, the corrected church membership for state j , C'_j , is $C_j + B_j C_j$. Basically, we assume the reported level of church membership is all white, and then compute black membership by multiplying the white membership proportion by the share of black population. This procedure is nearly identical to that used by Stark (1987), except that Stark makes an allowance for an estimated 10 percent of black church members who belong to predominantly white denominations. The simple correlation coefficient between our measure of church membership and his measure is 0.953 for 1971 and 0.958 for 1980. We note the 1990 data are not similarly adjusted because of a much more accurate survey of black church membership.

effort by recipients and taxpayers alike.¹⁰ On the other hand, much government spending at the state and local level arguably raises income, e.g. higher expenditures on education and public infrastructure may yield more productive workers.

In the church membership equation, the sign on the Herfindahl index (H) could be positive or negative. The standard theoretical argument, dating back to Adam Smith, is that established churches, because of their protected status, will lack the motivation to evangelize and maintain members' fervor so that over time religious participation and belief will decline in markets with an established church. Iannaccone reviews this argument and cites empirical evidence showing that highly concentrated religious markets result in lower levels of religious participation.¹¹

Nevertheless, there are competing theoretical arguments and empirical findings. Anderson and Tollison argue that concentrated religious markets impart stronger incentives for individuals to adhere to religious practices than do competitive religious markets, where individuals can select religious constraints with impunity and adapt them to their own behavior, so that concentration leads to greater religious participation. Hull and Bold (1998) acknowledge Smith's arguments and related empirical work, but then call both into question. They argue that competition between an established, state-protected church and non-established churches is not comparable to competition among non-established churches, even if concentration is high in a market of non-established churches. Hence, findings that concentration leads to reduced religious participation using European (particularly Scandinavian) data do not apply to the US. Further, even the empirical findings supporting an inverse relation between concentration and religious participation using US data are suspect because, upon close examination, these findings hold only when Catholics are omitted from empirical estimates or when Catholic samples are estimated separately from protestant samples. That is, the findings only hold among relatively similar protestant denominations.

Hull and Bold (1998) appeal to the literature on product variety and argue that while an increase in product variety increases market penetration in ordinary markets,¹² this conclusion need not follow in religious markets where greater product variety may raise uncertainty about which doctrines are correct, increase commitment costs because the decision may have eternal consequences, increase search and information costs which may delay or inhibit participation, and reduce gains from large membership association. So, while product variety yields great benefits in most markets, it may also raise the costs of participation in religious markets. The question of whether the benefits of product variety are greater or less than their associated costs in religious markets is open. Yet, the available empirical work on the question, using US county-level data, finds that concentration increases US religious membership.¹³

The sign on government spending (GOVT) is again ambiguous. To the extent that government spending displaces private charity, it may crowd out church membership. Nevertheless, among the sample of denominations reporting giving statistics to the Yearbook of American and Canadian Churches, only 15 percent of total giving goes to benevolent

¹⁰ See Crain and Lee.

¹¹ See Iannaccone at pp. 1485–1488.

¹² See Lancaster (1975).

¹³ See Hull and Bold (1998) at pp. 10–13.

purposes,¹⁴ suggesting that most churches are more like clubs than charitable organizations and that any crowding out effect is likely to be minimal. Further, a large, intrusive state may galvanize members who oppose state activities such as lotteries, the repeal of blue laws, or the expansion of the “welfare state.” The elderly (PCT65) and women (FEMALE) are known to have higher rates of church membership and activity than the young and men.¹⁵ We expect both variables to be positively correlated with church membership. Finally, if our hypotheses are correct, we expect the model’s endogenous variables, per capita personal income (INCOME) and church membership as a share of population (CHURCH) to have negative signs.

Data are from 1971, 1980, and 1990 for all 50 states plus the District of Columbia, yielding a sample size of 153. Income data are corrected for inflation by deflating with the consumer price index. [Table 1](#) reports summary statistics for each variable by year. A list of data sources is provided in the [Appendix A](#).

Results of our empirical estimates are shown in [Table 2](#). Initially, we report the results of single-equation estimates, followed by two- and three-stage simultaneous equation estimates. The explanatory power and fit of the estimates are high, and the coefficient values and significance levels are comparable, regardless of the estimation method used.¹⁶ The income estimates explain in excess of 75 percent of the variation in per capita personal income, and though the church estimates have less overall explanatory power, they explain at least 30 percent of the variance in states’ shares of population that are church members.

Turning first to the income estimate, we find that a large government sector is weakly correlated with higher incomes, providing some support for the hypotheses that state and local governments provide some public goods (e.g. infrastructure) that increase economic performance. As expected, a higher share of employed population, a more educated population, and a largely metropolitan population also raise per capita income. The variable of primary interest, CHURCH, is inversely correlated with income, supporting our hypotheses that church membership is a deterrent to the pursuit of material wealth. We note, however, that though significant, the effect of church membership on per capita income is small: a one percentage point increase in state share of population that is a member of some church reduces per capita income by only US\$ 56, as measured in the simultaneous estimates.¹⁷ Concentration of church membership plays no role in income formation.

The church membership equation provides strong evidence that concentrated religious markets are associated with higher proportions of church membership, a finding supporting the hypotheses of Anderson and Tollison and Hull and Bold. Apparently in the US where competition among non-established churches has long been the norm, the costs of greater

¹⁴ Again, see the table titled “Summary Statistics of Church Finances,” in [Lindner \(1999\)](#) at pp. 360–361.

¹⁵ We acknowledge these empirical regularities (e.g. as found in [Azzi and Ehrenberg’s](#) work) without offering formal explanations for their observance. [Azzi and Ehrenberg](#) suggest that the elderly are more likely to be church members because the approach of death raises the present value of after-life consumption, and that women are more likely to be church members because they have flatter age-earning profiles than men.

¹⁶ For ease of interpretation, we report simple linear estimates. When the equations are estimated in log–linear or log–log form, the results are comparable to those reported in [Table 2](#).

¹⁷ This difference will, of course, be compounded over time.

Table 1
Summary Statistics

Variable	Mean	S.D.	Minimum	Maximum
Year = 1971				
INCOME	US\$ 9787	US\$ 1547	US\$ 6884	US\$ 14494
CHURCH	56.1	11.3	33.3	83.0
<i>H</i>	31.9	15.8	11.5	79.9
GOVT	US\$ 190	US\$ 35	US\$ 142	US\$ 324
EMPLOY	39.9	2.94	33.5	45.6
EDUC	10.7	2.35	6.6	17.7
SMSA	54	27	1	100
PCT65	9.7	2.03	2.3	14.6
FEMALE	51	1.12	45.7	53.5
Year = 1980				
INCOME	US\$ 11107	US\$ 1691	US\$ 7490	US\$ 15522
CHURCH	58.4	13.2	33.2	84.8
<i>H</i>	29.2	15.9	10.5	80.8
GOVT	US\$ 205	US\$ 56	US\$ 148	US\$ 549
EMPLOY	46.3	3.41	39.4	52.0
EDUC	16.3	3.43	9.7	28.1
SMSA	64	23	18	100
PCT65	11.0	2.16	2.7	17.3
FEMALE	51.1	1.07	47.0	53.8
Year = 1990				
INCOME	US\$ 13997	US\$ 2411	US\$ 9731	US\$ 20281
CHURCH	54.7	12.7	32.1	79.8
<i>H</i>	26	14.7	9.4	81.2
GOVT	US\$ 204	US\$ 48	US\$ 146	US\$ 465
EMPLOY	50.1	2.80	42.8	55.1
EDUC	20.0	4.16	12.3	33.3
SMSA	65	22	20	100
PCT65	12.4	2.08	4.1	18
FEMALE	51.2	0.96	47.3	53.4

product variety enumerated by Hull and Bold exceed the benefits.¹⁸ Government expenditures are also associated with higher proportions of church membership, yielding some support to the hypotheses that a large and intrusive state may spend on priorities, and perhaps authorize legislation, that many religious denominations find objectionable, thereby encouraging rather than crowding out church membership. An elderly population is weakly associated with a higher share of church membership, and a higher share of population that is female significantly raises church membership.

¹⁸ In additional, unreported empirical work, we tested for a non-linear relationship between membership and concentration by including a squared Herfindahl term in the regressions. We thought that, over some range, higher concentration might raise membership (the benefits of greater product variety may exceed the costs), but that beyond some threshold value, higher concentration might reduce membership (the costs of greater product variety may exceed the benefits). In our estimates, however, the squared Herfindahl term is insignificant. These results may be obtained from the authors upon request.

Table 2
Empirical Results

Variable Name	Single-equation OLS estimates (coefficient/ <i>t</i> -statistic)		2SLS estimates (coefficient/ <i>t</i> -statistic)		3SLS estimates (coefficient/ <i>t</i> -statistic)	
	Income equation	Church equation	Income equation	Church equation	Income equation	Church equation
Constant	399 (0.286)	−153 (−2.720)*	1331 (0.820)	−156 (−2.758)*	2142 (1.395)	−175 (−3.191)*
<i>H</i>	−5 (−0.670)	0.310 (5.462)*	5 (0.443)	0.309 (5.441)*	3.5 (0.318)	0.300 (5.359)*
GOVT	4 (1.674)	0.051 (2.342)*	4 (1.603)	0.049 (2.221)*	4 (1.548)	0.046 (2.117)*
EMPLOY	144 (4.567)*		159 (4.574)*		136 (4.245)*	
EDUC	233 (6.445)*		215 (5.352)*		231 (6.226)*	
SMSA	31 (6.140)*		31 (5.800)*		32 (6.497)*	
CHURCH	−28 (−3.085)*		−56 (−2.277)*		−56 (−2.340)*	
PCT65		0.708 (1.455)		0.643 (1.304)		0.251 (0.546)
FEMALE		3.848 (3.437)*		3.883 (3.463)*		4.350 (4.012)*
INCOME		−0.001 (−3.407)*		−0.001 (−2.561)*		−0.001 (−2.444)*
Adj. <i>R</i> ²	0.78	0.3	0.76	0.3	0.77	0.32
<i>F</i> -statistic	89.3	13.9				
<i>N</i>	153	153	153	153	153	153

* Significant at the 5 percent level or better for a two-tail test.

Again, we find support for our hypotheses since per capita income is inversely correlated with the share of state population that is a member of a church. We find that this effect, though significant, is small. A US\$ 1000 increase in per capita income reduces the share of state population that is a member of a church by only one percentage point.

To summarize, simultaneous-equation estimation provides strong support for a bicausal relationship between religion and income. Membership in religious bodies is negatively and significantly correlated with per capita income, and per capita income is negatively and significantly correlated with religious membership. These findings support hypotheses that religious membership is in part determined by economic factors, primarily the opportunity cost associated with high earnings potential, and that economic welfare is in part determined by religious membership, which may discourage the accumulation of material wealth and also require commitments of time and money that directly inhibit the pursuit of material wealth.

Finally, since our data come from three cross-sections, each approximately 10 years apart, we tested for structural stability across the sample. For the church membership equation, the hypotheses of structural stability cannot be rejected,¹⁹ however, for the income equation, the hypotheses of structural stability is rejected.²⁰

In additional work, we re-estimated the income equation with dummy variables for the years 1980 and 1990, and with the year dummies and interaction terms for the slope coefficients. When the year dummies are added to the model, the dummy for 1980 is negative and significant (coefficient value = –US\$ 1441, *t*-statistic = –4.845). This finding is consistent with the economy's recession of that year. The 1990 dummy variable is insignificant, and other variables retain coefficient values and significance levels comparable to those reported in Table 2.

When interaction terms are included with the year dummies, the adjusted R^2 rises to 0.85, but the significance of the exogenous variables is greatly reduced, indicating multicollinearity problems.²¹ The share of state population employed, the share of state population with an education level of at least a bachelors' degree, and the share of state population residing in metropolitan areas retain significance at the 5 percent level or better. Government expenditures as a fraction of state personal income are no longer significant, and church membership as a share of state population remains negative and significant, though at the 10 percent level for a one-tail test. Neither year dummy is significant, and the only significant interaction terms are for education in 1980 and for the share of state population residing in metropolitan areas in 1980 and 1990. These coefficients suggest that educational attainment did not raise income by as much in 1980 as in 1970 and 1990, perhaps indicating that the 1980 recession was harder on highly educated individuals and that the benefits to working in a metropolitan area are rising with time, a finding consistent with the hypotheses that as metropolitan areas grow, their residents are able to raise their marginal productivity by

¹⁹ The *F*-statistic for the test of overall stability is 1.146; the critical value for $F_{0.01}(12, 150) = 2.30$.

²⁰ The *F*-statistic for the test of overall stability is 15.877; the critical value for $F_{0.01}(14, 150) = 2.20$. Additional tests indicate that the lack of structural stability across the years of the sample results from changes in intercept and slope terms. The *F*-statistic for the test of common intercepts is 26.765 (critical value for $F_{0.01}(2, 150) = 4.75$), and the *F*-statistic for the test of common slope terms is 2.497 (critical value for $F_{0.01}(12, 150) = 2.30$).

²¹ Including the intercept, the income equation has 21 exogenous variables when year dummies and interaction terms are included.

availing themselves of a more extensive infrastructure and an ever increasing division of labor.²²

4. Conclusion

The economics of religion has contributed much to economists' understanding of human behavior. In this paper, we have argued that religion can have an important effect on the level of income of its adherents by altering their preferences towards afterlife consumption and by requiring time and monetary commitments that discourage the acquisition of material wealth. This approach is unique because it focuses on familiar microeconomic principles of utility and constraints. Further, we have argued that income deters religious participation by inducing a substitution between market-earnings and religious activities. Simultaneous estimation of these hypotheses offers strong confirmation. By better understanding religion's role in its participants' lives, economists can further advance their understanding of human behavior. This paper has made a small contribution towards that end.

Appendix A. Data sources

All data are taken or calculated from the sources listed below:

Church Membership:

- 1971: Churches and Church Membership in the United States 1971, Table 2, pp. 3–14.
- 1980: Churches and Church Membership in the United States 1980, Table 3, pp. 10–27.
- 1990: Churches and Church Membership in the United States 1990, Table 3, pp. 12–36.

Per capita personal income:

- 1971: Statistical Abstract of the United States, 1973, Table 528, p. 326.
- 1980: Statistical Abstract of the United States, 1982–1983, Table 733, p. 444.
- 1990: Statistical Abstract of the United States, 1998, Table 727, p. 460.

Herfindahl index of denomination concentration:

See Church Membership

Government expenditures as a share of state personal income:

- 1970: The Book of The States, 1972–1973, Table 6, p. 212.
- 1980: The Book of The States, 1982–1983, Table 9, p. 367.
- 1990: Facts and Figures on Government Finance, 1993, Table D-12, p. 173.

Employed persons as a share of state population:

- 1970: Statistical Abstract of the United States, 1972, Table 353, p. 222.
- 1980: Statistical Abstract of the United States, 1981, Table 638, p. 382.
- 1990: Statistical Abstract of the United States, 1991, Table 636, p. 387.

²² These results may be obtained from the authors upon request.

Appendix A (Continued)

Educated persons with bachelors' degree or higher as a share of state population:

1970: Statistical Abstract of the United States, 1975, Table 197, p. 121.

1980: Statistical Abstract of the United States, 1982–1983, Table 227, p. 144.

1990: Statistical Abstract of the United States, 1994, Table 236, p. 159.

SMSA population as a share of state population:

1970: Statistical Abstract of the United States, 1972, Table 18, p. 18.

1980: Statistical Abstract of the United States, 1992, Table 33, p. 29.

1990: Statistical Abstract of the United States, 1992, Table 33, p. 29.

Population aged 65 or higher as a share of state population:

1970: Statistical Abstract of the United States, 1972, Table 36, p. 31.

1980: Statistical Abstract of the United States, 1982–1983, Table 32, pp. 28–29.

1990: Statistical Abstract of the United States, 1991, Table 28, p. 23.

Female population as a share of state population:

1970: Statistical, Abstract of the United States, 1972, Table 25, p. 25.

1980: Statistical Abstract of the United States, 1981, Table 9, pp. 10–11.

1990: Gale State Rankings Reporter, 1994, Table 123, p. 70.

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