

# **Auto Insurance Reform: The South Carolina Story**

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**Auto Insurance Reform: Salvation in South Carolina**  
**Abstract**

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Auto insurance has been a controversial problem in a number of states. Some jurisdictions have responded to rising costs by tightening regulation, which has worsened rather than improved their situations and contributed to an escalating cycle of regulatory actions, higher prices, and diminishing availability of coverage. But there are some points of light, as certain states have avoided or mitigated auto insurance problems by implementing substantive regulatory reforms. This paper reviews South Carolina's experience in regulating auto insurance; a story that offers hope to other states. Over the last three decades, South Carolina intensively regulated auto insurance, engendering severe market distortions and considerable public dissatisfaction. In 1999, it substantially revamped its regulatory system and the early indications suggest that its reforms are having positive effects for both consumers and insurers. We examine the evolution of South Carolina's regulatory system and auto insurance market and the forces that led to their transformation. This examination reveals important lessons for other jurisdictions that wish to avoid or fix the kinds of problems that South Carolina encountered. At the same time, some possible cost drivers may have not been fully addressed by its recent reforms and will require further attention.

## A. Introduction

Each state has a story to tell about its regulation of private passenger automobile insurance. While many common factors affect auto insurance, their particular mix varies among states leading to different regulatory policies and market outcomes. Auto insurance is a highly salient issue among consumers and voters. Unfortunately, the collision of economic forces and politics has caused troublesome problems in some state auto insurance markets. At the same time, certain states have avoided or mitigated these problems with regulatory and market reforms. Hence, there are valuable lessons to learn in examining the regulatory experience in specific states.

This paper tells South Carolina's story of auto insurance problems and subsequent reforms that offers hope to other states. High speeds on its rural highways, frequent accidents and a litigious environment combined to escalate auto insurance costs. The government responded with intensive regulation in an attempt to stem rising premiums and address concerns about unfair treatment of certain drivers. In addition to tight limits on rates and underwriting, South Carolina employed a reinsurance residual market facility that imposed a large subsidy from low-risk and "bad-risk" drivers to medium-risk drivers.<sup>1</sup> Its design and other regulatory factors caused the Facility to balloon to 43 percent of the state's insured vehicles and generate huge deficits borne disproportionately by drivers across the state.

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<sup>1</sup> These terms have specific meanings in the South Carolina system. Low-risk drivers have characteristics that are associated with fewer accidents. Correspondingly, medium-risk and high-risk drivers have characteristics associated with more frequent accidents. These labels are distinguished from "clean" drivers with no driving violation or accidents and "bad-risk" drivers with multiple driving violations and/or accidents. In other words, a high-risk driver could also be a "clean" driver and a low-risk driver could be labeled a "bad-risk". Under South Carolina's previous system, "bad-risk" drivers were hit with very high surcharges that were excessive in relation to the risk they posed and their actual claim experience.

Growing consumer and political dissatisfaction with this situation eventually prompted the South Carolina legislature to revamp its regulatory system in legislation (Senate Bill 254) that was enacted in 1997 (1997 S.C. Acts 154). Related legislation in 1999 (Senate Bill 399) helped to implement the reform program. Restrictions on rates and underwriting have been eased and the Facility and its subsidy are being phased out.

With most of the reforms becoming effective in 1999, it is too soon to determine their ultimate outcome, but the early prognosis is positive.<sup>2</sup> The number of insurers writing auto insurance has doubled with the implementation of the reforms. Some of the new insurers also are selling homeowners insurance because of the economies of scope involved in marketing multiple personal lines insurance products. This is a helpful side effect in South Carolina where hurricane risk is high. Many insurers also have lowered their overall rate levels for auto insurance, reflecting declining claim costs and the easing of restrictions on risk-based pricing. Most importantly, the Facility is depopulating rapidly.

Several aspects of South Carolina's experience deserve exploration. One is how the previous regulatory system came to be and its impact on the auto insurance market and the interests of different stakeholders. It is also interesting to examine how market problems and political forces combined to motivate regulatory changes. What was the thinking behind the reform legislation and its particular design? The comprehensive scope of the legislation is important as it addressed several interrelated aspects of regulation. Third, there is a natural curiosity about the early indications of the potential success of the reforms. At the same time, it is important to identify possible potential

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<sup>2</sup> We refer to these changes as the "1999 reforms", reflecting their effective date.

issues that may persist despite the regulatory reforms and require appropriate attention to preserve public support for a market-oriented system for auto insurance.

Our paper begins with a review of the system for auto insurance regulation in South Carolina and its historical antecedents. We then examine the structure of the market over the last decade, before and after reform. This is followed by a detailed historical analysis of market conduct and performance that looks at a number of variables, including prices, profits, availability, and claim costs. Our analysis includes an initial review of cost drivers that reveal some interesting patterns that warrant further investigation. We conclude by distilling the principal insights from South Carolina's experience and its implications for other states contemplating regulatory reforms, as well as identifying areas for further research.

### **B. Auto Insurance Regulation in South Carolina**

Like most other states, South Carolina utilized a prior approval regulatory system for auto insurance after the enactment of the McCarran-Ferguson Act in 1945. The states' imposition of uniform "bureau rates" for the principal property-casualty lines in the post-war years is well documented (Joskow, 1973; Hanson, Dineen, and Johnson, 1974). The constraints on price competition gradually eroded over time as insurers gained increasing flexibility to deviate from uniform prices. Some states eventually removed prior approval requirements for auto insurance rates to allow market forces to operate more freely. Other states, including South Carolina, retained prior approval requirements and tightened price limits when costs escalated.

The 1960s and 1970s were active in terms of intensifying auto insurance regulation and South Carolina was no exception. This was a time when there was greater public

mistrust of business institutions, rising allegations of unfair discrimination against low-income and minority groups, and a strong belief in the ability of government to remedy perceived economic and social problems. In 1975, legislation took effect in South Carolina that included a number of regulatory provisions that were popular in the more activist states. These provisions included:

- Compulsory liability insurance;
- Mandatory service requirements for auto insurers;
- Establishment of the Reinsurance Facility;
- Implementation of a mandatory, uniform merit rating plan; and
- A limited number of agents were allowed to sell insurance directly through the Facility.

However, these regulatory provisions proved to be problematic in the years ahead. Subsequent legislative and regulatory tinkering failed to solve the problems, leading to the comprehensive restructuring in 1999.

Below we review the most important elements of South Carolina's regulatory system and how they were modified in comparison with other jurisdictions. These elements include the regulation of overall rate levels as well as the rate structure for different risk classes. We also examine the residual market Facility in South Carolina and other significant regulatory policies that constrained insurers. It is important to understand how these different policies interact to affect market incentives and outcomes. An escalating cycle of regulatory actions and market reactions can worsen problems and increase consumer dissatisfaction until politicians feel compelled to reform the system. Figure B.1 provides a historical timeline of key developments in South Carolina auto insurance regulation.

## 1. Regulation of Price Levels

South Carolina required the prior approval of private passenger auto insurance rates until 1999. At first glance, the pre-1999 South Carolina system might appear similar to that of other prior approval states (see Box 1). Its prior approval requirements generally followed the NAIC model law. The South Carolina law contained the standard prohibitions against excessive, inadequate and unfair rates. Insurers also were prohibited from employing socially unacceptable criteria in pricing and underwriting, such as race and religion. Insurers were required to file and receive regulatory approval of their auto insurance rates before they could be put into effect. Advisory organizations also played their typical role in submitting advisory loss costs for regulatory approval (full rates prior to 1991), which insurers could reference in their individual rate filings.

Box 1 Key Auto Insurance Regulatory Provisions in South Carolina		
Provision	Pre-Reform	Post-Reform
Rates		
Filing/Approval	Prior-Approval	Flex-Rating
Risk Classification	Restricted	Increased Flexibility
Public Rate Hearings	Yes	No
Limits on Underwriting	Highly Restricted	Eased
Agent Rebates	Disallowed	Allowed
Residual Market		
Mechanism	Reinsurance Facility	JUA Assigned Risk
Subsidized	Yes	No
Compulsory Insurance	Yes	No

However, there were some additional restrictions in South Carolina that were shared only with the most “activist” prior approval states (summarized in Box 1 and discussed further below). It also is necessary to look beyond statutes and regulations to the policies,



procedures and actions that enforced them. A number of observers have noted that regulatory stringency can vary greatly among states with similar systems (Klein, 1986). In this respect, it appears that South Carolina enforced tighter price ceilings than the average prior approval state. This is reflected in the disposition of advisory loss cost filings.

In Figure B.2 and Table B.1, we see that regulators reduced advisory loss cost increases for Bodily Injury Liability (BIL) coverage to a greater degree in South Carolina than in other states. In 1991, the Insurance Services Office (ISO) filed for a 33.9 percent increase in advisory loss costs that regulators reduced to 23 percent. ISO filed for an 8.9 percent increase in 1994 and a 2.4 percent increase in 1995. South Carolina regulators reduced these increases to 4 percent and 1.1 percent respectively. Claim costs then began to decline and, in 1996, ISO began filing loss cost decreases that were approved by regulators. It is reasonable to surmise that regulators responded similarly to individual insurer rate filings. We should note that the recent decline in South Carolina's auto insurance costs was consistent with a national trend and likely prompted by factors shared with many other states.

The apparent greater stringency of South Carolina regulation is also reflected in the Conning & Company rankings of states in terms of their insurance regulatory environments (see Figure B.2). Conning polled insurers on the ease of conducting personal lines business in the various states. Insurers scored states on a scale from 1-10, 10 being the most favorable or least restrictive environment. Conning computed mean scores for each state and ranked the states according to their score. In periodic surveys conducted from 1984-1991, South Carolina's score declined from 3.2 to 2.4 and it ranked

45<sup>th</sup> among 51 jurisdictions, indicating that insurers had a very negative view of its regulatory climate.<sup>3</sup> In the 1994 survey, South Carolina's score improved to 4.5 and its rank rose to 41<sup>st</sup> – better, but nothing to boast of.

On March 1, 1999, a “flex rating” system went into effect in South Carolina as one of its regulatory reforms. Under the new system, insurers do not need prior approval to implement rate changes (increases or decreases) that are less than or equal to seven percent. Rate filings for more than a seven percent change must still receive prior approval. Also, insurers are limited to one “flex” rate change (not requiring prior approval) during any 12-month period.

The move to flex rating is viewed positively by insurers, although it is more constraining than typical competitive rating systems (e.g., file-use, use-file, and no-file). South Carolina's flex bands also are tighter than those in most of the other flex rating states (NAIC, 2000). This may not be an issue in periods when costs are rising slowly, or are decreasing, as is the case now. It could be a problem if costs were escalating rapidly, recognizing that one of the objectives of flex rating is to allow insurers to raise rates gradually rather than in large spurts. Further, it should be noted that the easing of other regulations in South Carolina makes the flex system more acceptable to insurers.

## **2. Restrictions on Rate Structures**

Another issue with South Carolina's previous regulatory system was its constraints on risk classification and rating. While it is not uncommon for prior approval states to place

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<sup>3</sup> Conning surveys in 1984, 1986, 1991, and 1994 use a relatively consistent approach in evaluating states' overall regulatory environment. The 1994 survey asked respondents to score states on a scale from 1-5; we doubled these scores in Figure B.2 to provide a consistent comparison with earlier surveys. Prior and subsequent surveys use different methods and are not comparable.

some limits on insurers' rate differentials between risk classifications and geographic areas, South Carolina went further. Importantly, prior to Act 154, South Carolina statutes authorized the Director of Insurance to promulgate uniform classification systems, merit-rating plans, and rating territories, and to require insurers to grant safe driver discounts of no less than 20 percent. Rate differentials between territories also were capped. Furthermore, merit rating was limited to a three-year experience period.<sup>4</sup> An analysis by the National Association of Independent Insurers (NAII) indicated that, in 1989, South Carolina was one of 14 states with some form of explicit restriction on class or territorial rates for auto insurance (see Lee, 1989).

Some evidence on South Carolina's limits on risk-based pricing structures is provided in Tables B.2(a) and B.2(b) and Figure B.4. Table B.2(a) shows the advisory base loss costs filed by the Insurance Services Office (ISO) for BIL that became effective in 1996. Three sets of territorial loss cost values are shown: 1) the actual loss costs incurred by ISO-reporting insurers for the prior three years; 2) the filed loss costs that were effective in 1995; and 3) the new filed loss costs that became effective in 1996. The ratio of each territorial loss cost to the first territorial loss cost (for Territories 83 and 91) also is calculated. We see that the filed 1996 base territorial loss costs ranged from 91 to 135 percent of the base loss cost for Territories 83 and 91.

The expansion of the number of standard rating territories and relaxation of constraints on territorial rate differentials are reflected in the greater range of advisory base loss costs filed by ISO for 1999, shown in Table B.2(b). The reforms enabled ISO to

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<sup>4</sup> While it appears that most insurers choose to use a three-year period for merit rating, some might elect to use a longer period if given the option. For example, InsWeb's on-line form for auto insurance quotations requires users to indicate if they have had accidents or driving violations within the last five years.

expand the number of rating territorial loss costs from 8 to 13. The resulting territorial loss costs ranged from 83 to 166 percent of the base loss cost for Territory 1.

Figure B.4 also reveals a direct relationship between average loss costs and loss ratios by county (BIL experience combined for 1993-1998), i.e., premiums increase less than proportionately with average loss costs. This pattern is consistent with rate compression, although not conclusive.<sup>5</sup>

The constraints on pricing and underwriting caused several problems. It limited insurers' flexibility in tailoring their pricing structures so that they might charge premiums corresponding to a driver's relative risk and expected losses. In practice, this tended to prevent insurers from charging adequate rates to higher-risk drivers. This contributed to the state's large residual market, despite a mandatory service, i.e. "take-all-comers", requirement.<sup>6</sup> It also diminished incentives for higher-risk insureds to improve their safety and, hence, would be expected to contribute to higher loss costs and exacerbate market and political pressures. Finally, there was a perceived inequity in how the system's costs were allocated among different groups of drivers.

The easing of these pricing constraints was one of the important reforms that became effective in 1999. Act 154 repealed the statutes for uniform classifications, merit rating, rating territories and the safe driver discount, although it also added a requirement that insurers provide an "appropriate" premium reduction for drivers 55 years and older who

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<sup>5</sup> As losses tend to fluctuate relative to premiums, we would expect loss ratios to be positively associated with loss costs.

<sup>6</sup> Insurers were required to accept insurance applications from any licensed driver, rather than exercising underwriting guidelines or discretion that might result in the rejection of applications from certain drivers who failed to meet an insurer's preferred underwriting standards. At the same time, an insurer could fully reinsure drivers through the Facility that it did not want to underwrite.

complete an approved driver training course.<sup>7</sup> Still, insurers are now allowed to file their own rating plans and ISO also is allowed to file its regular classification system. This should allow insurers to charge higher and more adequate rates for higher-risk drivers, and possibly lower rates for low-risk drivers. In turn, this should allow the market to function more freely and efficiently and improve incentives for safety. We examine evidence on this in Section D.

The new law did contain a “bill of rights” for consumers to help allay concerns that some might be subject to unfair treatment. Its provisions included:

- Insurers cannot refuse to provide coverage based on race, creed, national origin, age, gender, location of residence, income level, or marital status.
- Insurers cannot refuse to provide coverage solely because the applicant has been rejected by another company, because of the driver's occupation, or the age of the vehicle.
- When renewing a policy, insurers cannot refuse to provide coverage solely for having one accident or more in the past three years or two or less non-fault accidents in three years.
- Consumers must receive a written notice of refusal to renew. They can appeal in writing to the state insurance director.

Time will tell how consumers exercise these “rights” and their impact on the market.

### **3. Approach to Residual Market**

South Carolina's residual market Facility played a pivotal role in motivating regulatory changes. South Carolina's Facility is somewhat unusual (in auto insurance) in that it utilizes a reinsurance approach, a type of mechanism that is used by only two other states for auto insurance (New Hampshire and North Carolina). The policies of residual

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<sup>7</sup> Also, while insurers may file their own territorial plans, a rating territory may not be smaller than a county.

market insureds are serviced by voluntary market insurers who cede all premiums and losses to the Facility and are compensated for servicing the policies.

There is a problem with this approach. Servicing carriers bear the full cost of any loss control expenditures on Facility insureds but any decrease in claims payments resulting from these expenditures are spread across the entire market. By the same token, additional loss costs caused by scrimping on loss control expenditures are also spread across the market. This diminishes servicing carriers' incentives to optimize loss control expenditures for Facility insureds, i.e., they will be induced to under-invest in loss control measures. This constitutes a significant moral hazard problem and leads to higher loss costs, as discussed by Harrington and Pritchett (1990) and documented in studies of reinsurance residual market mechanisms in workers' compensation (Klein, Nordman, and Fritz, 1993; Danzon and Harrington, 1998). These mechanisms are not like private reinsurance arrangements in which reinsurers utilize measures to control moral hazard.<sup>8</sup> Hence, it is likely that South Carolina's reinsurance mechanism contributed to higher costs and larger deficits in its residual market.

It also is apparent that the Facility rates, determined by regulators, were severely inadequate to cover its costs. There was a desire to maintain Facility rates that were "comparable" to voluntary market rates, but this becomes untenable when the Facility is subject to severe adverse selection. At least a couple of factors would have contributed to adverse selection in the Facility. First, limits on Facility rates and relatively lax eligibility requirements would lead to higher-risk drivers choosing the Facility over the voluntary market when they had that option.

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<sup>8</sup> State reinsurance mechanisms can utilize performance monitoring and incentives but their quasi-governmental nature preclude more effective controls used by private reinsurers.

Second, Harrington and Pritchett (1990) explain how insurers were induced to pass drivers to the Facility because of the limits on risk classification in the voluntary market. The territorial and driver-class plan mandated by the state did not allow companies to price insureds according to their relative risk as indicated by their characteristics. This, coupled with suppression of overall rate levels, meant that insurers could identify insureds who would be expected to have greater claim costs than those contemplated in the regulated rate for a given class. Hence, insurers would be encouraged to reinsure these insureds through the Facility, where losses are spread across the entire market, rather than retain the risk on their “own paper”.<sup>9</sup>

Because of these factors, the Facility grew rapidly and incurred large deficits that were assessed back against the voluntary market. Figure B.5 tracks the relative size of the Facility over time. The proportion of vehicles insured through the Facility increased from 20 percent in 1980 to 43 percent in 1992, and then decreased to 31 percent by 1998. The Facility’s deficit and burden on the voluntary market moved in a similar pattern. Annual operating losses (before recoupment fees) rose above \$200 million in 1995, and then began to decline. The cumulative deficit incurred by Facility through 1999 was \$2.4 billion.

Initially, insurers were allowed to recoup some of their residual market assessments through rate increases for their voluntary insureds but these increases proved inadequate. Hence, the burden of residual market assessments was born both by voluntary market

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<sup>9</sup> When we say that residual market losses were “spread across the market”, we need to distinguish who bore these losses. Prior to 1987, insurers were assessed to cover residual market operating losses and may not have been able to fully pass these costs to voluntary market insureds. In 1987, South Carolina instituted a recoupment fee to cover Facility deficits. The recoupment fee was charged to voluntary and Facility insured as a distinct surcharge on their policies. This probably eased the direct financial burden on insurers, although they may still have suffered indirect costs.

insureds as well as insurers. Further, insureds did not know whether they were retained or reinsured, or whether they were paying or receiving a subsidy (Harrington and Pritchett, 1990).

Suppression of both voluntary and Facility rates prompted some insurers to exit or retrench from the South Carolina auto insurance market in the 1980s. It also retarded the development of a viable non-standard auto insurance market that could have covered high-risk drivers. These forces contributed to rapid growth in the Facility as the voluntary market shrunk and the number of agents allowed to write coverage directly through the Facility increased.

In 1988, the system was changed to allow insurers to cover all Facility losses through a direct surcharge to all policyholders known as the “recoupment fee.”<sup>10</sup> The basic fee in 1988-89 for all coverages was \$73 per vehicle; \$40 for Liability, \$11 for Personal Injury Protection, \$18 for Collision, and \$4 for Comprehensive coverages (Harrington and Pritchett, 1990). Drivers who accumulated points for driving violations were required to pay specified multiples of the basic recoupment fee, which were increased in subsequent revisions of the fee schedule. For example, in 1998-1999, a driver with no points paid a \$44.32 recoupment fee. A driver with two points paid \$830.20 and a driver with 5 points paid \$2,075.50. A driver with a DUI conviction paid \$4,151.

One important advantage of the change to the recoupment fee was that it made the subsidy to the Facility visible to drivers. Reinsured drivers also were required to pay this fee, which decreased the subsidy to Facility insureds. In essence, the direct burden of covering residual market deficits was moved from insurers to insureds. This ultimately helped to catalyze the political support necessary for regulatory reforms. However, a

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<sup>10</sup> Prior to the 1999 reforms, the recoupment fee was based on an insured’s driving violations.



given driver still did not know whether he was reinsured through the Facility. Also, Harrington and Pritchett argue that many drivers who paid the recoupment fee still received a subsidy. In essence, the basic structural problems that plagued the Facility were not fixed. Its size and deficits continued to grow, as did the recoupment fee paid by all insureds, particularly for insureds with driving violations.

Consequently, changing the residual market mechanism became a focal point of the reform legislation. Under the new law, the reinsurance Facility is being phased out over a three-year period that began March 1, 1999. Insurers are allowed to refuse to renew any policy that they had previously ceded to the Facility and are not allowed to cede any new policies to the Facility. Additionally, beginning October 1, 1999, insurers were no longer allowed to cede any renewal business to the Facility. Designated agents may renew business in the Facility for three years, but may not place new business in the Facility for three years.

Facility rate levels for liability coverages will gradually be allowed to reach adequate levels, with annual rate increases limited to 10 percent. Also, the loss costs used in calculating Facility rates must be based upon Facility experience. The recoupment fee was changed to a percentage of an insured's liability premium, capped at 10 percent until February 28, 2002. After this date, only drivers with driving violations will be subject to recoupment charges. The recoupment surcharge will be phased out over the transition period as the residual market deficit declines. The recoupment fee also is no longer shown as a separate charge on insureds' premium statements.

The Reinsurance Facility is being temporarily replaced by a Joint Underwriting Association (JUA) and will ultimately be replaced by an Assigned Risk Plan (ARP).

Eligibility for the JUA has been tightened and procedures implemented to channel as many drivers as possible to the voluntary market. The intent is to avoid the combination of lax screens, subsidized rates and perverse incentives that cause residual markets to balloon. Only drivers who have been rejected by at least one insurer, agent, or broker will be eligible for participation in this JUA. Regulators may review JUA applications and share them with insurers who may elect to insure some applicants voluntarily. Regulators also may take action against agents that place an excessive number of drivers in the JUA who could be insured in the voluntary market. Very importantly, the rates used in the JUA are required to move towards adequate levels. The prohibition against subsidies should further discourage applications to the JUA.

On March 1, 2003, the JUA will be converted into an Assigned Risk Plan, the auto residual market mechanism most commonly used by other states. Certified agents will be able to bind an insurance policy through the Plan electronically. Insurers will be able to participate in the Plan by either taking direct assignments or by participating in a pooling mechanism. The ARP will increase insurers' incentives to control the losses of these insureds, and if they are allowed to charge adequate rates, the burden on insurers should be minimal.<sup>11</sup>

#### **4. Other Regulatory Changes**

There are several other features of South Carolina's previous regulatory system and associated reforms that deserve notice. Under its old law, insurers were required to accept

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<sup>11</sup> In an assigned risk plan, an insurer bears the full costs of drivers assigned to it, along with receiving the premiums paid by these drivers. This increases insurers' incentives to control the losses of assigned drivers. At the same time, regulators must allow adequate rates to be charged to assigned drivers to avoid subjecting insurers to significant losses.

and renew all insurance applicants meeting relatively lenient standards. From 1975-1988, insurers were to accept every applicant with a valid driver's license and sell any coverage desired by the applicant. In 1988, this requirement was eased a bit. Insurers were allowed to reject applications of or renewals for physical damage coverages to applicants who failed an "objective standards" test based on their driving record. Applicants who failed the test received a 25 percent surcharge.

Under the new law, insurers may reject or non-renew drivers who fail to meet their underwriting guidelines, subject to certain anti-discrimination provisions, as in other states.<sup>12</sup> It is apparent that the law still places a strong emphasis on using driving violations and at-fault accidents as factors to distinguish what the Insurance Department labels as "bad-risk" drivers, although these drivers will not be subject to the heavy surcharges that existed under the old system. They are distinguished from "high-risk" drivers, i.e. drivers with characteristics that are statistically correlated with a higher frequency and/or severity of accidents.

Insurers are required to record the applicants they reject and furnish this information to regulators on request. Insurers are also allowed to cancel new insureds without cause during the first 90 days of a policy. After 90 days, insurers can only cancel policies for nonpayment of premiums or the suspension or revocation of the insured's driver's license.

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<sup>12</sup> Under South Carolina law, insurers and agents may not refuse to issue or renew an auto insurance policy on the basis of an individual's race, color, creed, national origin, ancestry, marital status, income level, age, sex, or location of residence in the state. While these prohibitions are perhaps more detailed than those typically contained in other states' laws, they may not be a significant problem for insurers if interpreted literally. In other words, if insurers are allowed to use other standard underwriting and pricing criteria that are correlated with the prohibited factors (e.g., age, marital status, sex, and location), insurers may still be allowed to charge risk-based prices and avoid high-risk drivers. For example, insurers may use the number of years of driving experience, rather than age, as an underwriting or pricing factor.

The easing of constraints on underwriting facilitates risk-based pricing. It allows insurers to reconcile their pricing structures and portfolios of risks. In a competitive market with adequate consumer information, low-risk drivers should gravitate to preferred companies with the most stringent underwriting standards and lowest price structures. As higher-risk drivers will tend to be rejected by “preferred” companies, these drivers will be compelled to buy coverage from “standard” and “non-standard” companies with less stringent underwriting standards and higher price structures, consistent with the higher risk of their portfolios of exposures. The residual market should be confined to drivers who are unacceptable to any insurer on a voluntary basis, but still meet some minimal conditions of insurability.

Another change in South Carolina viewed favorably by the industry is the repeal of compulsory insurance. The concern about compulsory insurance is that it places an unfair burden on some drivers and increases political pressure for regulatory restrictions on insurers. From 1975-1997, bodily injury liability, property damage liability, and uninsured motorist coverage were compulsory in South Carolina.

Under the new law, drivers meeting certain requirements may opt not to purchase insurance for a \$550 fee.<sup>13</sup> If such person is involved in any at-fault accident, he must satisfy any civil judgment that may be placed against him, pay a \$300 reinstatement fee, and show proof of financial responsibility for three years. If a person opts for purchasing insurance, she must buy the minimum liability coverage with limits of 15/30/10 and uninsured motorists coverage. This represents an increase in the previous \$5,000

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<sup>13</sup> Drivers convicted of certain moving traffic violations within a 36-month period do not qualify to register uninsured vehicles. Such violations include disobedience of any official traffic device, leaving the scene of an accident, and driving under the influence.

minimum limit for property damage liability. Underinsured motorists coverage is optional.

Associated with the repeal of compulsory insurance is the establishment of an uninsured motorist funds. Most (\$500) of the fee for uninsured drivers is collected by the state and placed in this fund, which is administered by the Director of Insurance. Part of the fund is to be used for consumer education and Department of Insurance administrative expenses. A percentage of the fund will be returned to insurers based on the volume of their uninsured motorists writings to reduce consumers' costs of uninsured coverage. Additionally, insurers may subrogate against the uninsured motorist fund to recover payments made under uninsured motorist coverage.

Also, the Department of Public Safety receives some funds to administer an enforcement program to ensure that drivers either carry insurance or have paid the uninsured driver fee. The enforcement program includes sending letters to a sample of randomly selected vehicle owners to document their compliance with the law. The new law requires insurers to provide insureds with documented verification of their insurance and drivers are required to provide proof of insurance when requested by a law enforcement officer. In the first six months of 1999, the Department of Safety suspended the licenses for approximately 12,000 vehicles whose owners failed to document their compliance with the law in response to a written request.<sup>14</sup>

Finally, the prohibition against the rebate of agents' commissions for auto insurance was repealed. Licensed agents are allowed to write insurance at the request of other licensed producers and share one-half of the commissions received. Anti-rebate laws tend

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<sup>14</sup> Dietrich, R. Kevin, 1999, "Demands for Proof of Insurance Uncover 12,000 License Suspensions," *The State*, August 19, 1999.

to be viewed as anti-competitive devices supported by agents, although some regulators have expressed concerns that rebates may result in unfair discrimination against certain groups of insureds.<sup>15</sup>

The Insurance Department has complemented the regulatory changes with strong public information activities to advise consumers about the new law and the importance of shopping for the best price and insurance policy. One component of these efforts is the dissemination of premium comparisons for a hypothetical policy and insured in the various counties in the state to make consumers aware of the price differences among insurers.

## **5. The Road to Reform**

The road to insurance regulatory reform is rarely smooth and South Carolina is no exception. In addition to consumers, the interests of many other stakeholders are affected including government officials, insurers, agents, and providers of medical, legal and automotive repair services. A state may see several reform initiatives fail before the right formula brings success. The 1997 South Carolina legislation was not the first attempt to fix its auto insurance system. A comprehensive reform program proposed by Governor Jim Carroll in 1989 was quashed, despite a mandatory 40 percent reduction in bodily injury liability rate levels tied to a no-fault system and other changes (Harrington and Pritchett, 1990).

A combination of earlier reform attempts and worsening market problems can help set the stage for a successful legislative push. Even with the backdrop of strong

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<sup>15</sup> See Varian (1980). The statement on some regulators' views towards eliminating anti-rebate laws is based on one of the author's discussions of this issue with a number of insurance commissioners when he was employed by the National Association of Insurance Commissioners.

consumer/voter support for change, however, legislators must still broker viable legislation with various interest groups seeking to influence the process. Hence, some changes can be hotly contested and compromises are made in order to enact a bill.

The environment is most conducive to legislative action when there is strong popular discontent with the status quo. In South Carolina, this discontent continued to grow with the Reinsurance Facility and the considerable surcharges or recoupment fees that all consumers were forced to pay to cover its deficit; fees that were especially high for drivers with driving violations. Economic and political theories of regulation imply that a significant hindrance to coalescing broad public support for reform is voters' lack of awareness of how their interests are being harmed by the existing system (Stigler, 1971; Peltzman, 1976; Meier, 1998). In 1988, Governor Carroll was successful in getting the recoupment fee to be explicitly printed on insureds' premium statements.<sup>16</sup> This proved to be a savvy move to foster public awareness and help establish a climate for reform, albeit almost a decade later.

The evolution of public views and their legislative recognition is multifaceted. There is the grass roots element as vocal consumers contact their legislative representatives and write letters to newspapers. Legislators are motivated to respond to the complaints they receive, especially as they see opportunities to garner favorable public attention by holding public hearings and championing remedial legislation. A critical audit of the Reinsurance Facility, issued in February 1997, also provided impetus to South Carolina's legislative action. Naturally, the media began to report on the emerging story. These

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<sup>16</sup> Davenport, Jim, 1996, "Difficult Choices: There's No Quick Fix for S.C. Auto Insurance Problems" *The State*, January 21, 1996.

activities become mutually reinforcing, like a snowball gaining size and momentum as it rolls down a hill.

A South Carolina newspaper, *The State*, conducted an annual survey of its readers on political issues. This survey demonstrated the saliency of the auto insurance issue.<sup>17</sup> The 1998 survey results ranked auto insurance as the fourth-highest priority for the newspaper's readers. Seventy-five percent of its readers listed it as the top priority. Interestingly, many readers were not aware of the reform legislation that had passed. However, this would not necessarily diminish politicians' motivation to support reform as they could inform their constituents about their accomplishments, particularly when seeking reelection. It also should be noted that some South Carolina legislators, like part-time legislators in other states, worked in the insurance industry and, hence, had a special awareness of market problems and interest in regulatory reform.

Interest groups seek to direct the path of legislation and regulation but they cannot unilaterally control an issue that has a high degree of public visibility. Consumer groups in South Carolina strongly opposed removing mandatory service and prior approval requirements. Insurers preferred no cap on recoupment fees and full competitive rating. None of these preferences were realized in the enacted legislation, although they influenced the compromises that were made.

While the public focused its attention on the recoupment fee and the subsidy, South Carolina policymakers recognized that various aspects of regulation needed to be addressed to improve the market as well as reduce and eventually eliminate the subsidy to some drivers. Indeed, legislators and others involved in the legislative process warned the

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<sup>17</sup> Davenport, Jim, 1998, "Car-Insurance Reform: Mission Not Yet Accomplished?" *The State*, January 11, 1998.



public that the reforms would not necessarily lower premiums for many drivers, particularly in the short term, unless claim costs also dropped. Some analyses predicted that the lowest and highest risk drivers would likely see their premiums decrease marginally, while medium-risk drivers could experience large premium increases.<sup>18</sup>

Still, public distaste for the recoupment fee appeared to maintain the necessary momentum to enact the reforms. Legislators also felt compelled to “do something” because of consumer dissatisfaction and complaints about the existing system, even with uncertainty about the ultimate outcome. Reform supporters enviously pointed to Virginia and its more competitive and efficient auto insurance market as an indicator of the ultimate benefits that consumers might reap in South Carolina.

The final legislation reflected several compromises between the House and the Senate.<sup>19</sup> The recoupment fee was capped at 10 percent to mitigate the overall premium increases to Facility insureds that also would result from raising Facility rates. Compulsory insurance requirements were eliminated in order to obtain support for eliminating mandatory service requirements. A JUA was established as an interim transition vehicle between the Facility and the Assigned Risk Plan. Furthermore, the effective date for most of the changes was extended to March 1999, six months after the 1998 legislative elections.

However, the enactment of the 1997 legislation did not quell all disputes. It is not uncommon for certain parties to continue to challenge enacted regulatory reforms, or at

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<sup>18</sup> See Davenport, Jim, 1997, “Safe Drivers Might Lose Under Plan; Worst Motorists to Gain Most if Bill Becomes Law,” *The State*, June 15, 1997. This prediction stemmed from data that showed that medium-risk drivers (as indicated by characteristics other than driving violations) with no traffic violations were under priced due to a mandatory “safe-driver” discount that was eliminated by the reform legislation, and that drivers with driving violations were overpriced because the recoupment fee schedule sharply escalated with the number of violations.

<sup>19</sup> Davenport, Jim, 1997, “House, Senate Still Differ on Auto Insurance Reform,” *The State*, May 29, 1997.

least influence how they are interpreted and implemented. In South Carolina, the Department of Insurance and the Department of Consumer Affairs (DCA) clashed over the meaning of the new legislation in the state's Supreme Court. The DCA challenged the Insurance Department's interpretation that rate filings were not subject to public notice until insurers implemented them. The Court sided with the DCA, prompting the General Assembly to enact further legislation in 1999 (SB 399) to clarify that public notices were not required.

One lesson gleaned from the annals of insurance political economy is that there is no permanence. As the public hearing dispute demonstrates, groups unhappy with regulatory changes may seek to counter them in the legislature, the courts or through popular referendum. Furthermore, unresolved issues or new problems may test public confidence in a market-based system. Hence, there is a need to continue to monitor and evaluate market performance and respond to issues that may arise. In Section D, we discuss possible cost drivers in South Carolina that may require further attention.

## **C. Market Structure Trends in South Carolina**

### **1. Driving in South Carolina**

It is helpful to have some understanding of the demographics, economics, and traffic conditions of South Carolina and consider how they may affect auto insurance.<sup>20</sup> Table C.1 summarizes pertinent statistics over the period 1970-1998 (Census Bureau, Statistical Abstract of the United States, 1999). While much of the state remains rural, its metropolitan areas have grown. Over the last four decades, South Carolina's population increased from 2.6 million to 3.9 million, maintaining its 26<sup>th</sup> ranking among the states.

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<sup>20</sup> See Lamberty (1995) for a discussion of how various factors affect urban and non-urban insurance costs.

However, almost 70 percent of South Carolinians now live in metropolitan areas (ranking 26<sup>th</sup>), compared to 58 percent in 1970 (ranking 31<sup>st</sup>). Auto accidents tend to more frequent but less severe in areas with greater traffic density – we will examine these trends in depth in Section D.

South Carolina's population has aged relative to other states. This may be due, in part, to its attraction to retirees, as well as declining birth rates. The proportion of the population over age 65 has increased from 7.4 percent (ranking 46<sup>th</sup>) to 12.2 percent (ranking 35<sup>th</sup>). Young people under 18 have decreased from 36.9 percent (ranking 7<sup>th</sup>) to 25 percent (ranking 35<sup>th</sup>). Both very young drivers and very old drivers tend to have higher accident rates, so it is difficult to say how these trends may have affected auto insurance costs.

Wages, income and unemployment affect the cost of injuries from auto accidents and incentives to litigate claims. Wages and income have remained relatively low in South Carolina, although they have improved. The average annual pay in the state was \$25,000 in 1998, ranking it 37<sup>th</sup>, a considerable improvement from its 48<sup>th</sup> ranking in 1970. On the one hand, low wages would be expected to decrease the lost income component of bodily injury claims. On the other hand, lower-wage accident victims may be more apt to seek compensation through the tort system to supplement their income.

Finally, we come to South Carolina's traffic statistics, which are most telling. South Carolinians tend to drive more miles, drive faster, and have more serious accidents than drivers in most other states. Annual miles driver per capita were 10,993 in 1998, ranking South Carolina 12<sup>th</sup> among states. Its fatal accident rate of 2.6 (per 100 million vehicles driven), while declining with the rest of the country, remains 6<sup>th</sup> highest among all states.

Of these accidents, 47.3 percent were speed-related, the 4<sup>th</sup> highest among the states. As we will see, these data may help to identify some of the drivers of auto insurance costs in South Carolina that have heightened market and regulatory tensions. Figure C.1 maps vehicle density across the state.

We should also note that South Carolina is classified as an “Add-On” state with respect to its liability system for auto accidents. This means that there are no restrictions on lawsuits (unlike “No-Fault” states), but insured may also purchase first-party coverage for personal injuries from auto accidents (Personal Injury Protection). “Tort” and “Add-On” states tend to have higher auto insurance costs, all else equal, because of the unrestricted ability to sue against negligent drivers for damages suffered from auto accidents (Cummins and Tennyson, 1992).

## **2. Concentration**

We discuss regulation, market structure, conduct and performance sequentially, with the understanding that they interact simultaneously.<sup>21</sup> For example, market concentration may affect profits, but profits, in turn, may influence entry, exit and concentration. Hence, while our organization of these topics is linear, we recognize that we are discussing endogenous phenomena that influence each other.

South Carolina has a medium-size market for auto insurance, large enough to support numerous insurers and options to consumers. However, its pre-1999 regulatory climate depressed the number of companies supplying auto insurance. Table C.2 tracks the number of insurance companies and groups in South Carolina over the period 1990-1999.

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<sup>21</sup> See Klein (1995b) for an overview of structure, conduct and performance in personal auto insurance markets.

The number of insurer groups selling auto insurance dropped from 78 to 45 by 1998. In the Southeast region, the average number of auto insurers declined from 99 to 87.<sup>22</sup> While there were enough insurers in the state to sustain workable competition, consumers had fewer insurers to choose among.

The lower number of insurers contributed to higher market concentration in South Carolina, although it is probably not the sole cause. Table C.3 presents concentration ratios and Herfindahls in South Carolina's auto insurance market and compares them against regional averages over the last decade. In South Carolina, we see that the Herfindahl-Hirschman Index (HHI), increased from 1,195 in 1990 to 1,540 in 1998. In comparison, the regional average HHI remained relatively constant over this period and was 1,085 in 1998. Concentration in South Carolina did not reach a level that would generate concerns about adequate competition. Still, it was an adverse trend exacerbated by regulation rather than "natural" economic forces, such as economies of scale.

Fortunately, the trend towards fewer insurers and greater concentration reversed in 1999 with the implementation of regulatory and market reforms. The number of insurer groups (including unaffiliated single companies) selling auto insurance in South Carolina increased to 55 in 1999. The reforms also induced many groups to increase the number of their affiliated companies, expanding the options available to consumers. The number of insurance companies in the market doubled from 96 in 1998 to 192 in 1999, a remarkable turnaround in a short period of time.

Changes in the market shares of the leading insurer groups also are of some interest. Table C.4 indicates the premium volume and market shares of the top 20 insurers in 1999

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<sup>22</sup> Unless indicated otherwise, the term "insurer" refers to an insurer group consisting of one or more insurance companies.

and their positions in 1990 and 1995. The top three insurers – State Farm, Allstate, and Nationwide – have retained their ranking and increased their market share to a combined 60 percent over the decade. Several insurers, including Progressive, joined the top 20 during this period.

This may seem contrary to studies that have found that large insurers are more likely to withdraw from markets subject to rate suppression (Suponcic and Tennyson, 1998). However, in South Carolina, insurers could pass price-suppressed insureds to the Reinsurance Facility. Further, the subsidy of these insureds was moved to consumers with the implementation of the recoupment fee. Hence, insurers do not appear to have suffered the high loss ratios on their voluntary market business that more commonly occur in rate-suppressed environments (see Figure D.1(d)). This does not imply that conditions were benign for insurers. At the very least, there were lost opportunities to write more business and spread fixed costs over a larger portfolio of risks. It is possible that more prominent and efficient insurers may have had less difficulty dealing with this problem.

This story also would help to explain the data in Tables C.5(a) and C.5(b) that reveal the distribution of market premiums by insurer distribution systems and regional orientation. In South Carolina, direct writers increased their share of the market to 75 percent, almost 10 points higher than the regional average. Correspondingly, national insurers have maintained a higher share of the South Carolina market than the markets of other Southeast states.

### **3. Entry and Exit**

A reasonable flow of insurers in and out of a market facilitates competition and helps to ensure an adequate supply of coverage. In a “normal” market that is “workably competitive”, we would expect to see a small number of insurers both entering and exiting the market over time. Insurers that fail to respond to consumer needs efficiently and with reasonable profits would be expected to leave the market. New insurers entering the market can help to respond to growing demand, promote innovation, lower prices and pressure incumbent firms to improve. Even the threat of potential entry can foster market discipline. A high rate of exit can occur due to fierce competition, but it also can be caused by restrictive regulation and related market problems.

The experience in South Carolina appears to support at least the second hypothesis. Table C.6 tracks market entries and exits in South Carolina over the last decade. Exits outpaced entries until 1997, when the reforms began to materialize. At the same time, some insurers may have delayed their exit from the South Carolina market based on several considerations. These considerations include sunk costs, opportunities to cross-market other insurance products, and expectations about regulatory changes. Also, larger and/or more efficient insurers may be able to withstand adverse conditions for longer periods than smaller and less efficient insurers.<sup>23</sup>

One of the early indicators of the effects of the reform legislation is the high number of entries into the South Carolina auto insurance market. As of August 2000, 105 new companies had entered the state’s auto insurance market since March 1999. This is a

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<sup>23</sup> Larger insurers may have been able to maintain a volume of voluntary business sufficient to spread their fixed costs and earn profits adequate to sustain their presence in the South Carolina market. Some smaller insurers, however, may not have been able to secure sufficient voluntary market business written at adequate rates that would allow them to sustain their operations in South Carolina

clear indication that many more insurers believe the reforms will make it viable for them write auto insurance in the state.

## **D. Market Conduct and Performance**

### **1. Prices and Profitability**

How have the changes in regulation and market structure affected insurer behavior and market outcomes and vice versa? We begin our analysis of market conduct and performance by examining the prices insurers charged (or were allowed to charge) before and after the 1999 reforms. We examine both price levels and the structure of prices across risk classes and geographic areas. We also evaluate prices relative to loss costs and various indicators of rate adequacy/inadequacy and profitability. The profitability evaluation is limited to the time period prior to the reforms as data on insurers' post reform experience is not yet available.

#### *Prices*

The Insurance Services Office filed new advisory loss costs and insurers filed new rating plans coincident with the March 1, 1999 effective date for the statutory changes. This included insurers that were already present in the market as well as new insurers that had entered the market or renewed their operations. As mentioned above, ISO also filed its multistate class plan and other rating and policy form changes consistent with the new law. Insurers could choose to adopt or reference approved ISO advisory information in their own filings, or file alternative rating plans.



ISO filed for an overall statewide 18.5 percent **decrease** in advisory loss costs and it appears that at least some insurers also filed rate level decreases (see Table D.1).<sup>24</sup> At first blush, this might seem curious if insurers were subject to regulatory rate suppression and distortion prior to 1999. However, as we will show, loss costs were declining in South Carolina as part of national trend, although not as rapidly as in other jurisdictions. Indeed, ISO had filed an advisory loss cost decrease in South Carolina in 1997-1998 and Table D.1 suggests that there was little change in insurers' overall rate levels during this period. Additionally, the easing of other regulatory restrictions, including constraints on risk classification in 1999, further enabled insurers to lower their overall rate levels, noting that some higher-risk drivers might have received premium increases. Finally, the reduction in the Reinsurance Facility recoupment fee contributed to lower premiums.

Another indicator of general pricing activity are average premiums or expenditures on auto insurance in South Carolina compared with other states, as shown in Table D.2(a). In South Carolina, the average auto insurance premium (based on NAIC reports) increased from \$616 in 1991 to \$766 in 1998; a faster pace than in other Southeast states. While this may seem to contradict the data on advisory loss cost and insurer rate filings, they are not inconsistent. Statistical data provided by the Department of Insurance reveals that the average premium for voluntary market insureds was \$612 in 1993 and \$621 in 1998, a 0.3 percent average annual growth rate (see Table D.2(b)).<sup>25</sup> On the other hand, average premiums for Facility insureds increased from \$649 to \$981, an average annual growth rate of 9.1 percent.

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<sup>24</sup> The overall liability loss cost change was -12.5 percent and the overall physical damage loss cost change was -30.3 percent.

<sup>25</sup> Note that the NAIC average premiums are based on direct premiums written divided by the number of written car-years, while the average premiums derived from Department statistical data are based on direct premiums earned divided by the number of earned car-years.

Additionally, the average premiums could reflect the purchase of larger amounts of insurance per vehicle, e.g., purchase of higher liability limits, even though the effective price for a given bundle of coverages had not increased or even declined. Indeed, lower rates would be expected to increase the amount of insurance purchased. Also, the average premium paid could increase for other reasons than changes in the overall rate level.

The lower rates filed by insurers have helped to ease concerns that the regulatory reforms would tend to raise premiums for “good” drivers. The concern arose from the capping of the recoupment fee to 10 percent of an insured’s liability premium, departing from the schedule of high recoupment surcharges for drivers with driving violations. Table D.3 reveals that, for the period 1993-1998, loss ratios declined as a driver’s merit rating class increased, possibly reflecting what appear to be excessive recoupment fees for drivers with multiple violations. However, other factors could mitigate any adverse impact on low-risk drivers from the regulatory changes and ultimately may help them. This would not a surprise as the relaxation of constraints on risk-based pricing and adequate rates in the Facility would be expected to benefit low-risk drivers.

### *Profitability*

Finally, we can look at several historical measures of insurers’ profitability to judge rate adequacy. These measures are plotted in Figures D.1(a)-D.1(d). Loss ratios in South Carolina have remained higher than the national and regional averages, but have declined in recent years to a more sustainable level. The state’s loss ratio decreased from 90 percent in 1990 to 75 percent in 1998. In South Carolina, insurers report recoupment fees collected as an offset to losses incurred and paid. Correspondingly, profits on insurance

transactions, as a percentage of earned premiums, increased from -13 percent to -6 percent.<sup>26</sup> Finally, the estimated rate of return on net worth increased from -15 percent to +10 percent.<sup>27</sup>

Figure D.1(d) shows South Carolina loss ratios separately for the voluntary market and the Facility for the period 1993-1998. The voluntary market loss ratio remained relatively stable over this period and was 64.6 percent in 1998. On the other hand, the Facility loss ratio increased from 97.3 percent in 1993 to 108 percent in 1996 and then fell to 70.9 percent in 1998.

While profitability in South Carolina had significantly improved by 1998, it was still somewhat below the level necessary for insurers to earn a fair rate of return or cover their cost of capital. It will be interesting to examine 1999 and later results and there is reason to expect that profits will further improve to levels sustainable under workable competition. Improving profitability will help to maintain strong competition, high quality of service, and stable prices.

## **2. Availability**

The availability of auto insurance is as important as its cost. With a residual market mechanism, the issue is not whether most drivers can obtain insurance, but the options available to them and their affordability. If rates are suppressed, insurers will be inclined to decrease their voluntary market writings, either forcing or encouraging drivers to secure coverage through the residual market. A large residual market creates problems

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<sup>26</sup> The NAIC calculation of the profits on insurance transactions includes insurers' expenses and investment income attributed to premium and loss reserves, but not investment income attributed to surplus.

<sup>27</sup> The NAIC rate of return on net worth included investment income attributed to surplus, as estimated by the NAIC.

for insurers and insureds. Operating deficits in residual market mechanisms and the subsidies necessary to cover them can burden the voluntary market and exacerbate the growth of the residual market.

### *Residual Market*

This problem is clearly evident in the South Carolina experience. Tables D.4(a)-D.4(c) present statistics on the volume of business in the Reinsurance Facility and its operating performance from 1980-1999. Figures D.2(a) and D.2(b) compare recent residual market trends in South Carolina with other Southeastern states and the nation.

As noted in Section B, the Facility's share of insured vehicles continued to escalate from its inception and peaked at 43 percent in 1992. By 1995, the Facility insured more than 1 million private passenger vehicles. Its volume and market share then began to decline, but still constituted almost 30 percent in 1998. The South Carolina Facility dwarfed the residual market mechanisms in most other jurisdictions, which rarely account for more than 1-2 percent of a state's insured vehicles. New Jersey is the only state that has had a larger residual market than South Carolina.

The Facility's operating results worsened with its growth. Its net operating loss (excluding revenues from recoupment fees) reached \$200 million annually by 1995, approximately 40 percent of its earned premiums. As of 1999, the Facility has compiled a cumulative deficit of \$2.4 billion. After 1987, both voluntary and residual market insureds covered this deficit through the recoupment fees added to their premiums.

Because of regulatory restrictions on risk-based pricing, it would be reasonable to surmise that certain groups of drivers would be more likely to be reinsured through the

Facility than other groups. This is consistent with the geographic distribution of the Facility's share of insured vehicles, mapped in Figure D.3, although not conclusive. Interestingly, the Facility tends to account for a greater share of a county's vehicles in less densely populated areas. This appears contrary to the typical experience in many urban states (see Klein, 1996; and Harrington and Niehaus, 1998).

The explanation for South Carolina's experience may lie in a "rural phenomenon". The confluence of several factors may have led to higher loss ratios and greater compression of rates in rural areas (see Table D.9). These factors could include a greater proportion of accidents involving bodily injuries and/or a greater tendency to file and litigate BI claims, and certain social and economic variables, such as lower wages and higher unemployment, as well as compression of territorial base rates. If this is the case, it could have contributed to relatively more Facility placements in rural counties. This suggestion remains speculative, pending further econometric analysis that controls for all of the factors that affected the types of drivers that were reinsured through the Facility.

It appears that South Carolina's reform program is having its desired effect on shrinking the residual market. In 1998, the number of drivers added to the Facility averaged roughly 100,000 per month. In 1999, this figure dropped to 15,000-20,000.<sup>28</sup> At the same time, only 60 new policies had been written through the JUA as of September 1999. As of December 31, 1999, only 58,000 vehicles were insured in the Facility.

This rapid depopulation has been accompanied by significant improvement in the Facility's operating results. The operating deficit dropped to \$21 million for fiscal year 1999, and will further decline with the movement towards adequate rates. Rate adequacy

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<sup>28</sup> Dietrich, R. Kevin, 1999, "Insurance Reform Spurs Competition," *The State*, September 5, 1999; "Insurance Groups Double on Market Since New Law", *The Sun News*, August 1, 1999.

and depopulation reinforce each other and will ultimately confine the residual mechanism to the limited role it should play in a healthy marketplace.

### *Uninsured Motorists*

Some additional indication of the availability (and implicitly the affordability) of auto insurance is provided by estimates of the number of uninsured motorists (see Tables D.5 and D.6). A high number of drivers without insurance or other means to pay for damages they cause to others contributes to higher Uninsured Motorists premiums for those drivers who carry this coverage and externalizes costs to other parties. South Carolina has had a relatively high percentage of uninsured drivers despite its mandatory service and compulsory insurance requirements. Even with these provisions, some drivers may attempt to avoid buying insurance because of its relatively high cost. Under the old system, some drivers facing high recoupment fees because of their driving records may have been especially inclined to forgo insurance.

It is difficult to produce precise estimates of the number of uninsured drivers, but the relationship of the number of Uninsured Motorists claims to the number of BIL claims provides some indication. In Table D.5, we see that the ratio of UM to BIL claims in South Carolina has steadily increased from 0.177 in 1993 to .252 in 1998. As Facility insureds appear to have experienced the greatest premium increases, they may have been more likely to drop their insurance coverage, a phenomenon that would be consistent with studies of other auto insurance markets (see Smith and Wright, 1992).

This is an unfortunate development and suggests a growing externalization of liability costs from uninsured drivers to insured drivers. Consistent with this picture, a national

study ranked South Carolina 7<sup>th</sup> among states in terms of the ratio of UM to BIL claims (22 percent) for the period 1989-1995 (Insurance Research Council, 1999c). It is interesting to contemplate how the 1999 reforms will affect the number of uninsured motorists as it reallocates costs in a manner more consistent with drivers' risk, while easing compulsory insurance requirements.

### **3. Quality of Service and Market Innovation**

Although auto insurance is viewed more as a commodity than some other insurance products (e.g., universal life insurance), policy design and quality of service are still important dimensions. Unfortunately, these market dimensions are difficult to measure in a quantitative sense that facilitates comparisons across states or over time. However, many observers believe that both dimensions have significantly improved in South Carolina's auto insurance market as a result of the reforms.<sup>29</sup>

One crude indicator of quality of service is the ratio of unpaid losses to incurred losses (Table D.7). Insurers could respond to rate suppression by slowing the payment of physical damage claims. If this happens, we would expect that ratio of unpaid losses to incurred losses would be higher. However, the data on this measure are inconclusive. In Table D.7, we see that this ratio increased in South Carolina from 1990 to 1993 and then has steadily declined through 1999. On the other hand, this ratio has remained higher in the Southeast region and nationally. Conclusions on the effects of regulatory reforms on the quality of service will require a more focused analysis that is beyond the scope of this paper.

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<sup>29</sup> Dietrich, R. Kevin, 1999, "Insurance Reform Spurs Competition," *The State*, September 5, 1999.

#### **4. Solvency**

There is little dispute that the severity of market regulation can affect the solvency or financial strength of an insurer. A multi-state insurer is affected by the regulation it faces in the various states it operates in and, hence, the impact of one state may be difficult to discern. Also, it is difficult to glean insights from comparing the financial strength of insurers that write most of their business in South Carolina against other insurers, as plotted in Figure D.4. This comparison is a bit of a stretch as there are very few insurers with high concentrations of business in South Carolina. Further, we would expect that the impact of South Carolina's prior regulatory system on insurer solvency would have been mitigated by the ability to pass price-suppressed insureds to the Facility.

We do observe that the more of an insurer's business is written in South Carolina, the more likely it is to receive a lower financial strength rating from A.M. Best. This is not surprising as the rating agencies consider the regulatory environments in which an insurer operates in their analysis. However, the limited number of observations and the unique conditions in South Carolina must qualify any observations about the relationship between market regulation and financial strength ratings.

#### **5. Claim Costs**

##### *Claim Trends*

The cost of auto insurance claims and the factors that affect the frequency and severity of claims are important areas for investigation. First, rising costs tend to pressure the marketplace and can cause conflicts between insurers and regulators. Second, risk



selection and the pricing of auto insurance influence drivers' incentives to prevent or mitigate losses.<sup>30</sup> Third, the tendency for people to file claims and lawsuits, the amount of the injuries claimed, and the incidence of claim fraud affect costs and, in turn, can be affected by regulation. If regulation or other constraints distort insurance pricing, it can contribute to an escalating cycle of higher loss costs and regulatory conflicts. In this section of the paper, we examine claim cost trends and conduct regression analysis of several factors contributing to loss costs.

We begin by examining how claim costs in South Carolina compare with other states and how these costs have changed over time. Figures D.5(a)-D.5(j) plot trends in average loss costs, claim frequency and claim severity, by type of coverage, for South Carolina, the region and countrywide. All dollar amounts have been converted to "1999 dollars" to put them on a comparable basis.

The cost of liability insurance is driven by the number and severity of accidents, the cost of injuries, and the amount of litigation over accidents. The state has a relatively high fatal accident rate of 2.6 per million vehicles miles driven, which ranks 5<sup>th</sup> among the states. As noted above, high speeds on South Carolina's rural highways are probably a significant factor in this experience. Over time, fatal accident rates have declined countrywide and in South Carolina (to a lesser degree), due, at least in part, to safer vehicles and a crackdown on drunk drivers. At the same time, drivers are driving more miles and severe accidents may be a problem, even if they do not involve fatalities.

As we peer deeper into the data, it appears that Bodily Injury Liability (BIL) loss costs, driven by the frequency of BIL claims, constitute the most significant problem in

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<sup>30</sup> For example, if drivers have reduced safety incentives, they may drive at higher speeds or be less likely to use safety belts (see Derrig, et. al., 2000).

South Carolina. Figure D.5(a) indicates that the average BIL loss cost per exposure (earned car-year) in South Carolina steadily increased from under \$90 in 1983 to \$145 in 1994. The average loss cost declined in 1991, stabilized, and then began to decline further in 1994 back down to \$90 in 1999. The trend in South Carolina has generally followed the trends in the Southeast Region and countrywide. After 1989, the level of BIL loss costs in South Carolina has been lower than the countrywide average. However, South Carolina BIL loss costs exceeded the regional average until they began to converge in 1996.

Figures D.5(b) and D.5(c) decompose the frequency and severity elements of average BI loss costs. The data indicate clearly that the frequency and not the severity of BI claims is the cause of South Carolina's relatively high BI costs. The frequency of BI claims (claims per 100 exposures) in South Carolina has consistently exceeded the countrywide and regional averages. By contrast, the severity of South Carolina BI claims (dollars per claim) has remained considerably below the regional and national averages. The state's BIL frequency came closer to that of other states after 1994, when it dropped faster than the regional and countrywide trends. In South Carolina, BIL frequency peaked at 2.5 claims per 100 exposures in 1991 and fell to its lowest level, 2.0, in 1999. By comparison, the countrywide average was 1.8 and the regional average was 1.7. The state's relatively high frequency of BIL claims could be caused by the nature of its auto accidents, as well as the tendency of accident victims to file claims, and possibly lawsuits, against the other driver.

Examining Property Damage Liability (PDL) claims experience provides further insights, as shown in Figures 5(d)-D.5(f). South Carolina's average PDL loss cost

exceeded that of other states, until 1992, when it fell into line with the regional and countrywide average. The trend of South Carolina PDL loss costs has generally mirrored that of other states. Costs increased till the late 1980s, fell, and then began to climb again in 1994-1995. The average PDL loss cost reached its highest level in 1999 at around \$83 in South Carolina, regionally and nationwide. Hence, while PDL costs are not a South Carolina-specific problem, they are a problem contributing to higher premiums across the country.

Further, the severity of PDL claims, not their frequency, has been the major cost driver. The frequency of PDL claims in South Carolina declined from 4.6 in 1993 to 3.7 in 1999, a figure somewhat lower than the regional and countrywide averages. On the other hand, the severity of PDL claims has climbed continuously from around \$1,400 in 1983 to around \$2,200 in 1999 in South Carolina, the region and countrywide. This is most likely due the higher cost of repairing damaged vehicles, even after adjusting for general inflation.

It also is interesting to examine the ratio of BIL claims to PDL claims in Figure D.5(j). We see that this ratio is considerably higher in South Carolina than in other Southeast states and countrywide. It reached its peak near 70 percent in 1994 and has since declined to less than 55 percent in 1999. This is still 10 percentage points higher than BIL/PDL claim ratio in other states.

The cost of physical damage insurance also is a concern to owners of newer and more expensive vehicles. The pattern of Collision costs is similar to that of PDL, which is not surprising as they would tend to be influenced by some common factors (see Figures D.5(h)-D.5(j)). The average loss cost for Collision in South Carolina has followed the

regional and countrywide trends, and the trend for PDL loss costs. In 1999, the Collision average loss cost was \$135 in South Carolina, compared to \$145 regionally and \$160 nationally. The frequency of Collision claims is somewhat lower in South Carolina (it was 5.5 in 1999) than in the region and the nation. On the other hand, Collision severity has been marginally higher in South Carolina (\$2,400 in 1999) than in other parts of the country.

*Possible Contributing Factors: Comparative Statics*

A rigorous examination of auto insurance cost drivers is beyond the scope of this paper, but it is useful to speculate and present empirical evidence on some possible factors that warrant further investigation. In addition to driving conditions, driving behavior and the accidents that result, the tendency to file and litigate claims could contribute to higher costs.

Studies by the Insurance Research Council (1999a and 1999b) indicate that attorney involvement and litigation add to the cost of auto insurance claims. A review of auto insurance claims closed in 1997 revealed that 44 percent of Bodily Injury Liability claims in South Carolina involved an attorney, ranking South Carolina 18<sup>th</sup> among the 40 states with Tort or Add-On systems. In this same survey, 80 percent of BI claims dollars paid in South Carolina went to claimants represented by an attorney, ranking it 13<sup>th</sup> among the 40 states. An associated survey of 180,000 households in 1998 indicated that 41 percent of South Carolina survey respondents filing auto insurance claims hired an attorney, ranking it 18<sup>th</sup> among 50 states (Hawaii was excluded).

An interesting observation is that South Carolina's higher than average litigation incidence appears to be uncustomary among states with larger rural populations. In 1996, 69.6 percent of South Carolina's residents lived in metropolitan areas, ranking it 27<sup>th</sup> among all states. The IRC studies indicate that claims arising from accidents are more likely to involve attorneys in urban areas than in rural areas. Correspondingly, rural states tend to have a lower incidence of attorney involvement than urban states. Many factors could explain South Carolinians' above-average tendency to litigate auto insurance claims and warrant further investigation.

Then there is the issue of claim fraud, which is a significant problem countrywide. A broad definition of claim fraud would include "padding" claims arising from real injuries as well as the filing of claims when there are no injuries or even an accident. The high ratio of BI to PD claims in South Carolina could be one indicator of what some experts have labeled as "excessive claiming" (Insurance Research Council, 1994; Abrahamse and Carroll, 1999). Hard data on claim fraud by state are not readily available, but anecdotes suggest that it is a concern in South Carolina. The state's Attorney General recently instigated an insurance fraud project as one of his office's major initiatives.

While the literature suggests that higher auto insurance loss ratios and a greater tendency to file liability claims are more urban than rural phenomena (see Klein, 1996; and Insurance Research Council, 1994, 1999a, and 1999b), we observe a curious alternative pattern among South Carolina's counties.<sup>31</sup> In Table D.9 the BIL loss ratios tend to be higher in the state's rural counties, which seems to depart from the more common pattern in other states. Table D.9 also reveals that the Facility market share and

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<sup>31</sup> See Insurance Services Office and National Association of Independent Insurers (1988) for an analysis of auto insurance costs in large urban areas compared with non-urban areas.

the ratio of BIL to PDL claims is higher in less densely populated areas, which also tend to have higher unemployment rates and lower household incomes. The associations between loss ratios, residual market penetration, BIL/PDL claim ratios and population density are contrary to what we would typically expect to find. Obviously, these variables may be confounded with many other variables so it is not possible to draw any inferences about causation from these data. Table D.9 also reveals that rural counties had a greater percentage of collisions involving bodily injuries (based on state collision statistics) and alcohol. Hence, these factors also may contribute to the pattern of claims and geography. We examine some of these factors in econometric analysis in the next section.

#### *Possible Contributing Factors: Regression Analysis*

We examine four phenomena of interest: 1) loss cost inflation; 2) the residual market share; 3) “excessive claiming” or fraud; and 4) the demand for insurance. Using pooled cross-sectional (county level) and time-series data for the period 1993-1998, we estimate several models that help to explain these phenomena. Our data set consists of statistical information on premiums and losses, broken down by coverage, county and voluntary/Facility policies, and several other demographic and economic variables available by county.<sup>32</sup> Table D.10 describes all of our variables.

#### Loss Cost Inflation

A key issue is how restrictive regulation serves to inflate loss costs. Suppression and/or compression of rates for all or certain groups of drivers distort price signals and

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<sup>32</sup> Note, data on some economic and demographic variables were not available by year. In such instances, we used data for the year most closely corresponding to our sample period.

diminish incentives for safety and controlling losses. As discussed above, other factors, such as excessive claiming and litigation, can further contribute to higher costs. Even in periods when safer vehicles and tougher traffic enforcement are causing overall costs to decline, other variables could be slowing that decline and causing loss costs to remain higher than they would otherwise be. It is important to identify any such factors as some may be remedied. In Tables D.11(a)-D.11(h) we present regression results for a model of loss cost inflation, estimated separately for BIL and PDL coverages and voluntary and Facility policies. The regressions shown in Tables D.11(a)-D.11(d) were estimated using ordinary least squares (OLS); the regressions shown in Tables D.11(e)-D.11(h) were estimated using weighted least squares.

Our primary dependent variable is the log of the ratio of losses (\$) per exposure unit in year  $t$  to year  $t-1$ . Because the denominator of this ratio is lagged one year, our observations begin in 1994. In Table D.11(a), we estimate this equation for BIL losses in the Facility. Dummy variables for the various years indicate a general downward trend in losses that was counteracted by two variables. Both the log of the residual market share (BIRES) and the log of the number of lawyer per capita (LEGALPC) in a county were positive and statistically significant. Suppression of residual market rates could decrease safety incentives for Facility drivers in a county, which could increase their frequency of accidents and claim costs. Additionally, diminished incentives for insurers to expend effort in adjusting claims for Facility insureds could contribute to higher loss costs.

It is also plausible that a greater number of attorneys per capita has a positive effect on BIL costs. A greater supply of legal services would increase access for persons involved in an accident, and make it easier for them to file lawsuits, which have been

shown to increase liability claim costs. Also, a larger supply of lawyers might prompt some to more actively offer their services to persons involved in auto accidents.

Similar results were obtained for BIL policies in the voluntary market, shown in Table D.11(b). The Facility market share variable is also significantly positive in this regression, although the magnitude of its coefficient is slightly lower. If suppression of residual market rates decreases safety incentives for Facility drivers, it could increase the frequency of accidents and claim costs for voluntary market drivers in a county as well. Also, this variable could be a proxy for compression of territorial rates in the voluntary market, which also could contribute to diminished safety incentives and higher loss costs. The main difference between these regressions is that the year dummy variables indicate that the voluntary market did not experience the strong downward trend in loss costs experienced in the Facility.

Tables D.11(c)-D.11(d) show the results estimated for PDL loss cost inflation in the Facility and the voluntary market, respectively. In the Facility equation, the negative coefficients for the year dummy variables again indicate a general downward trend in PDL loss costs. Here the number of lawyers per capital also is significantly positive but the Facility market share is no longer significant. It is possible that the subsidy to the Facility for PDL was not as great as the subsidy for BIL. The log of the median household income (MEDHINC) also was significantly positive. This is plausible as higher income would be expected to be associated with the ownership of more expensive vehicles, which would tend to increase property damage losses arising from auto accidents. Similar results were obtained in the voluntary market regression, except that the negative coefficients on the year dummy variables were not statistically significant.



Tables D.11(e)-D.11(h) show regression results for the same set of equations estimated using weighted least squares. Because counties vary in size and the number of vehicles, we would expect larger and more populous counties to experience less random fluctuation in their auto insurance losses from year to year. Therefore, we use the square root of the number of registered vehicles in a county as our weight for these regressions. The log of population density (POPDENS) also has been added as an independent variable in these regressions. The results obtained are fairly consistent with the OLS estimates in terms of the signs and statistical significance of the variable coefficients, with one exception. Median household income becomes statistically significant and remains positive in the BIL regressions. Also, population density is significantly positive in all of the regressions, implying that liability loss costs rose more rapidly in more urban areas.

#### Facility Market Share

This paper and prior research suggest that the residual market plays a role in increasing claim costs if its rates are inadequate. Further, the reinsurance mechanism used by South Carolina decreases insurers' incentives to spend money to control loss costs in the claims adjustment process. In the next set of regressions presented in Tables D.12(a)-D.12(b), we examine factors that may have contributed to a higher proportion of vehicles being reinsured through the Facility. Our dependent variable is the log of the percent of BIL exposures in the Facility (BIRES). For these regressions, we have the full set of observations by county for the years 1993-1998.

The independent variables in our model measure several economic and demographic factors. One question motivating the specification of our model is whether there was a tendency for regulators to compress rates more for lower-income areas of the state, which could contribute to a higher Facility market share in these areas. In Table D.12(a), several variables are statistically significant. The log of the percentage of the population living below the poverty rate (POVERTY) and the log of the percentage of population living in rural areas (RURAL) were strongly positive. These results are consistent with an “income redistribution hypothesis” that regulators tended to restrict rates more in rural, low-income areas in an effort to keep insurance affordable for their residents. To the extent that this limited rates for drivers in these areas, they would be recipients of a subsidy. The subsidy would be expected to attract more drivers to the Facility and the compression of voluntary market rates would prompt insurers to cede more drivers to the Facility.

The log of the percentage of males in the population (MALEPOP) is positive and statistically significant, but interestingly, the logs of the percentage of the population age 15-24 and the percentage of the population age 65 or older were both significantly negative. The coefficient for the male population is consistent with the observation that males tend to be higher risk and the hypothesis that a greater percentage of male drivers would be ceded to the Facility. Although accident rates tend to increase for drivers after age 65, it is possible that insurers are less likely to cede older drivers to the Facility for various reasons, including having a long-time association with older policyholders. However, younger drivers also tend to be higher risk and we would expect that a higher proportion of them would be ceded to the Facility, all else equal. Of course, we are using population variables as proxies for the age characteristics of insured drivers, so our

results are subject to some specification error. One possible explanation for our results is that younger drivers would be more likely to forgo insurance coverage, rather than be insured through the Facility.

Finally, the log of the number of serious crimes per capita (CRIMES/POP) is significantly positive. This variable could be correlated with the rate of vehicle thefts and/or insurance claim fraud. Either type of crime would contribute to higher loss costs and a greater tendency for insurers to cede drivers to the Facility. Unfortunately, specific data on auto insurance claim fraud are not available. Our results remain robust when we add the log of median household income as an independent variable (see Table D.12(b)), which is negative but not statistically significant.

#### Excessive Claiming and Fraud

Lastly, we come to the results for a model that seeks to explain factors contributing to an excessive number of BIL claims. This is an elusive phenomenon in terms of measurement and specifying causal factors. Our dependent variable is the commonly used measure of (the log of) the ratio of BIL to PDL claims. As we discuss above, this ratio may be affected by variations in the nature of the auto accidents that occur, as well as the tendency for people to file claims, legitimate or not. We seek to isolate these factors as best we can with the data readily available.

Tables D.13(a)-D.13(c) present our results. The log of the unemployment rate (UNEMPLOY) and the log of the percentage of households using a primary language other than English are positive and statistically significant. The marginal cost of the time required to file a claim or participate in fraud would be lower for unemployed persons.

The log of median household income is significantly negative, which would also be consistent with this story. Further, tightly-knit communities of people, as proxied by the percentage of non-English speaking households, also could reduce the costs of participating in organized schemes to file auto insurance claims. The log of the Facility market share is significantly positive, which would be consistent with reduced incentives of insureds and insurers to control the number of BIL claims.

Neither vehicle density, as measured by the number of vehicles per household, nor the percentage of the population living in rural areas are statistically significant in this first version of our model. This changes in Table D.13(b) where we add a variable for the interaction of median household income and rural population. In this formulation, LOG(RURAL) becomes significantly positive and the interaction term is significantly negative. It is possible that people living in rural areas are more likely to file claims, all else equal, but this tendency is mitigated as income rises.

Further, when we change our vehicle density measure from the number of vehicles per household to the number of vehicles per capita in Table D.13(c), it becomes negative and statistically significant. This is consistent with the observation that accidents tend to be more frequent but less severe in areas with higher traffic density. Hence, traffic density would be expected to have a negative effect on the ratio of claims involving bodily injuries to claims only involving property damage. Note our vehicle density measures are imperfect proxies for variables that would more precisely measure traffic density, such as the number of vehicle miles traveled per mile of roadway.

## Demand for Insurance

The demand for insurance is estimated in Tables D.14(a)-D.14(e). Two-stage least squares (2SLS) was used to estimate the equations, with the price of insurance and the subsidy to Facility insureds treated as endogenous variables. Our primary interest is the effect of rate compression and subsidies on the demand for insurance. We would expect that these factors would increase the demand for insurance in the Facility and our regression results are consistent with this hypothesis. The subsidy to the residual market, measured by the log of the loss ratio for the residual market, is significantly positive in the equation for the Facility (Table D.14(e)) and significantly negative in the equation for the voluntary market (Table D.14(c)). In other words, the greater the subsidy, the greater is the demand for insurance in the Facility and the lesser is the demand for insurance in the voluntary market.

## **E. Conclusions**

From the mid-1970s through 1998, South Carolina intensively regulated auto insurance. Rate levels and rate structures were restricted, insurers' underwriting discretion was limited and large cross subsidies were channeled through its residual market. Contrary to political expectations, but consistent with economic theory, these regulatory measures worsened market conditions. The distortion of economic incentives escalated costs and prices and caused the residual market to balloon. All drivers were surcharged to cover residual market deficits and surcharges were especially severe for insureds with multiple points for driving violations. This led to growing public dissatisfaction with the existing system.

After several earlier attempts failed, the legislature was successful in enacting a comprehensive regulatory reform package that became effective in 1999. South Carolina's prior approval system was replaced by flex rating and restrictions on risk-based pricing and underwriting were substantially eased. The Reinsurance Facility and its large subsidies are being phased out and replaced temporarily by a JUA and ultimately by an assigned risk plan that will be required to charge adequate rates. This means that the hated recoupment fees have been substantially curtailed and will ultimately be eliminated for "clean" drivers. Compulsory liability insurance requirements also have been modified to allow some drivers to meet their obligations through means other than insurance.

With most of the reforms becoming effective in 1999, it is too soon to determine their ultimate outcome, but the early prognosis is positive. The number of insurers writing auto insurance has doubled with the implementation of the reforms. Many insurers have implemented more refined risk classification and pricing structures, as well as alternative policy options for consumers. It also appears that overall rate levels have continued to fall, possibly reflecting declining claim costs, as well as the easing of restrictions on risk-based pricing. Most importantly, the Facility is depopulating rapidly.

What lessons can other states glean from South Carolina? One lesson is that tight restrictions on price levels and price structure, regardless of their motivation, tend to distort market incentives. This can contribute to rising loss costs that pressure rates to rise and intensify conflicts between regulators and insurers. Constraints on risk-based pricing also tend to create inequities among groups of insureds and contribute to adverse selection. The residual market interacts with these forces and can suffer rapid growth and large deficits, depending on how it is structured and regulated. Insurers and/or insureds

will ultimately bear the burden of subsidies of the residual market. To the extent that there are negative effects on insurers, they will be less inclined to enter the market and more inclined to leave it. This diminishes consumer choice among different insurers.

The initial political reaction to these developments may be to further tighten regulation that worsens rather than improves market conditions. Band-aid solutions may be attempted but will fail. Public dissatisfaction will grow and government officials will receive at least part of the blame. Ultimately, regulators and legislators will have to face reality and restructure the system to bring it into a reasonable and sustainable balance. Prompt action can expedite changes that are necessary and inevitable, lessen consumers' suffering sooner, and mitigate price shocks for price-suppressed insureds. With the removal of artificial restraints, competition will "regulate" insurers' behavior to serve consumers efficiently and do so more effectively than government. In the end, consumers will benefit from a market that encourages greater safety, reduced costs and the availability of adequate coverage at the lowest feasible price. It almost goes without saying that states with competitive systems would be well advised to preserve their market-based approach and avoid the mistake of intensifying their regulation.

However, there is one cloud (perhaps a small one) on South Carolina's horizon. The move to risk based pricing should increase drivers' incentives to drive more safely, but this may not address all of the cost drivers in South Carolina. The tendency of its residents to file and litigate liability claims is relatively high, particularly considering its more rural nature. If this situation continues or worsens, consumers may pay higher premiums in the future. This will compel stakeholders to revisit South Carolina's auto

liability system and consider further reforms that will help to contain costs rather than make the mistake of re-instituting restrictive market regulation.

Hence, continued monitoring and study are warranted. First, it will be important to track changes in the structure and performance of South Carolina's auto insurance market to assess the ultimate effects of the reforms and their implementation. Second, it would be helpful to gain a better understanding of all of the primary factors influencing auto insurance costs and how they will evolve under the new regulatory system. Such analysis could reveal additional reforms that would improve the affordability of auto insurance for South Carolina consumers.

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Figure B.1

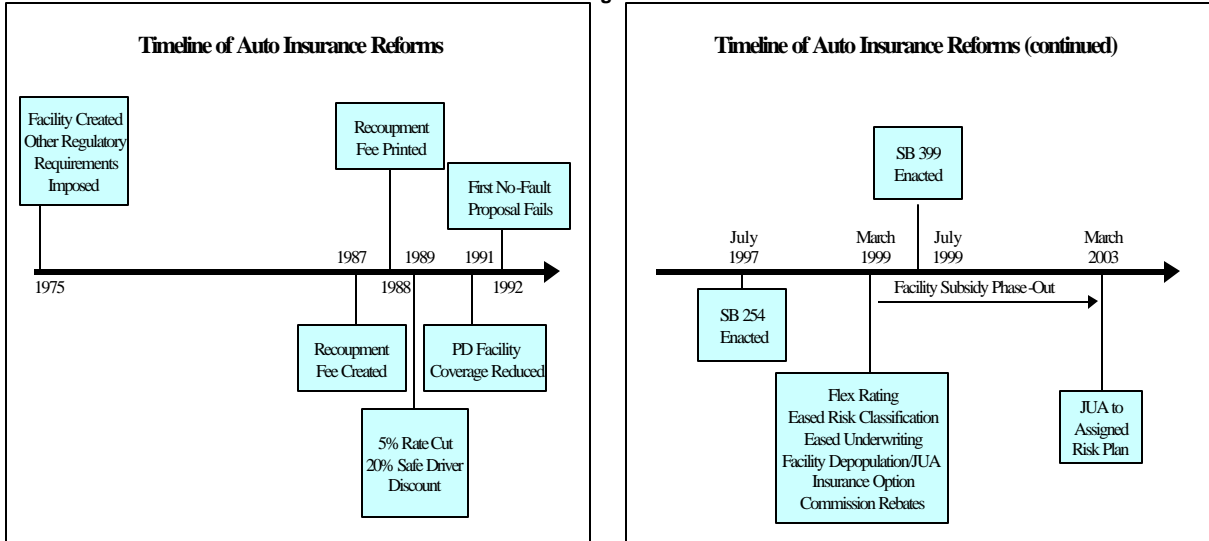
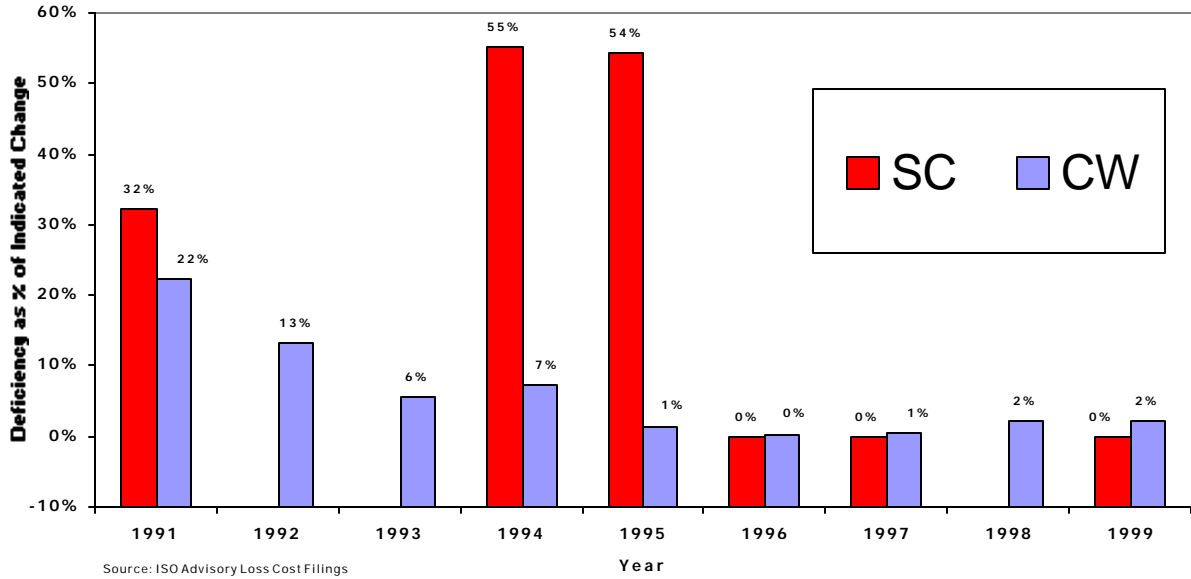


Figure B.2

Private Passenger Auto Bodily Injury Insurance  
Mean Loss Cost Change Deficiency



**Table B.1**  
**Advisory Loss Cost Change Filings**  
**Bodily Injury Liability**  
**South Carolina Compared to Other States**  
**1991-1999**

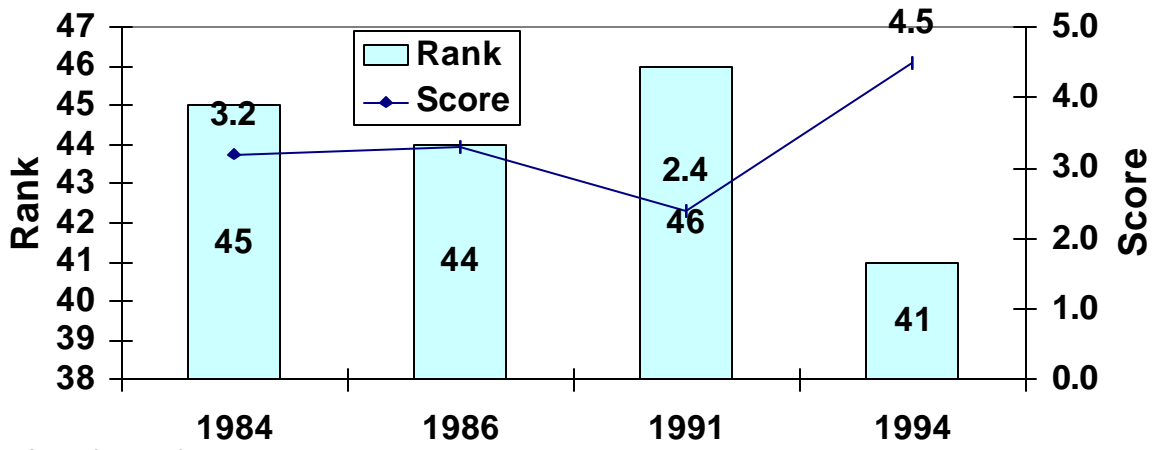
Year	South Carolina			Other States											
	Pct. Change			Percent Increases						Percent Decreases					
	Ind.	Filed	Impl.	Indicated		Filed		Imp.		Indicated		Filed		Imp.	
				No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean
1991	33.9	33.9	23.0	39	13.7	30	12.2	30	11.9	6	-3.0	6	-3.0	6	-3.0
1992				30	11.6	28	10.5	25	8.3	15	-7.7	15	-7.7	15	-7.7
1993				16	14.3	15	9.9	13	8.1	27	-6.3	27	-6.3	27	-6.3
1994	8.9	8.9	4.0	24	10.5	20	10.7	19	9.5	22	-6.1	22	-6.1	22	-6.1
1995	2.4	2.4	1.1	33	9.2	30	7.4	30	7.4	12	-3.9	12	-3.9	12	-3.9
1996	-10.7	-10.7	-10.7	22	7.4	21	6.4	20	6.4	22	-6.1	22	-6.1	24	-6.4
1997	-14.9	-14.9	-14.9	4	8.5	3	2.7	3	2.7	42	-10.5	40	-10.4	39	-10.6
1998				4	3.3	4	3.3	4	3.3	40	-10.3	38	-10.7	36	-10.7
1999	-10.3	-10.3	-10.3	3	3.3	3	3.3	1	3.3	40	-9.2	38	-9.5	35	-9.3

Note: Total of 47 states represented.

Source: Insurance Services Office (ISO)

Figure B.3

### South Carolina Regulatory Ranking



Source: Conning & Company



**Table B.2(a)**  
**Advisory Loss Cost Filing for Bodily Injury Liability**  
**1996**

Territory	15/30 Loss Cost (Experience)		15/30 Base Class Loss Cost			
	3 Years Ending 6/30/95		Present 1995		Filed 1996	
	Value	Ratio	Value	Ratio	Value	Ratio
<b>83, 91</b>	\$102.32	1.00	\$153	1.00	\$142	1.00
<b>73</b>	\$85.29	0.83	\$142	0.93	\$125	0.88
<b>93</b>	\$80.52	0.79	\$139	0.91	\$122	0.86
<b>60</b>	\$139.17	1.36	\$209	1.37	\$191	1.35
<b>52, 56</b>	\$87.50	0.86	\$127	0.83	\$119	0.84
<b>a</b>	\$82.97	0.81	\$131	0.86	\$119	0.84
<b>b</b>	\$126.66	1.24	\$207	1.35	\$181	1.27
<b>c</b>	\$88.08	0.86	\$147	0.96	\$129	0.91

(a): Territories 51, 54, 69, 74, 81, 86.

(b): Territories 53, 55, 57, 58, 63, 65-68, 71, 75, 77, 78, 84, 85.

(c): Territories 59, 61, 62, 64, 70, 72, 79, 80, 82, 87-90, 92, 94-97.

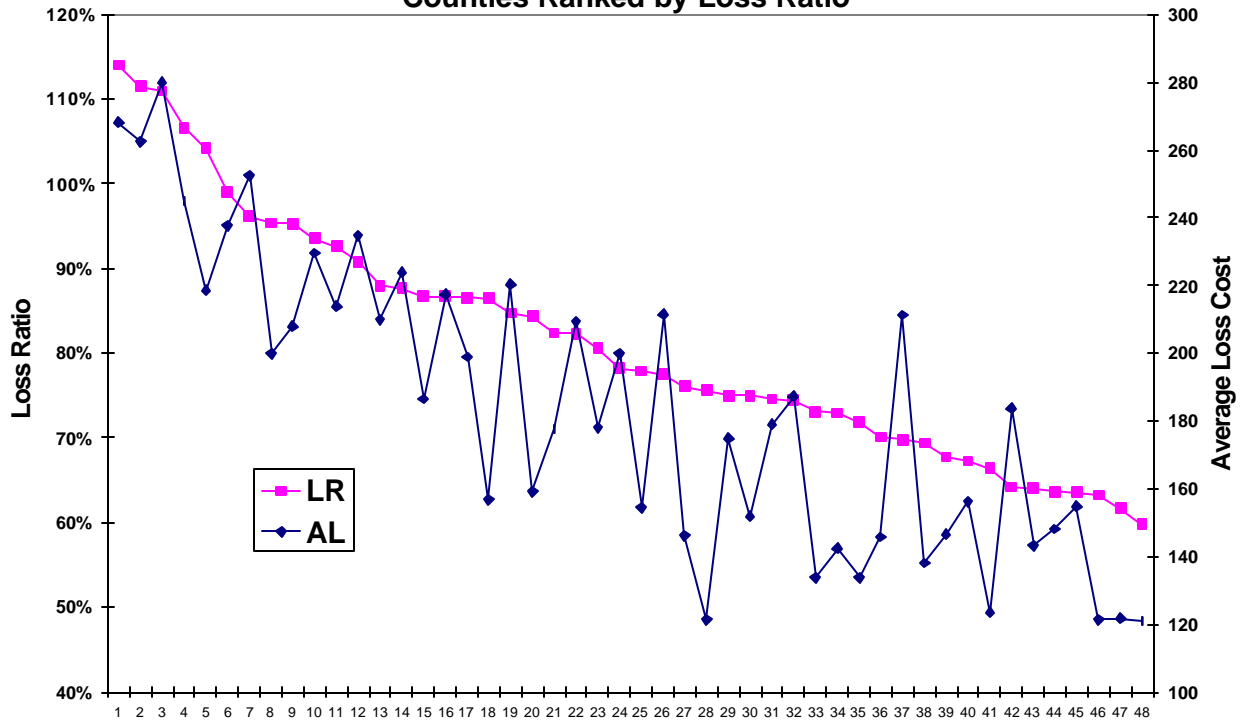
Source: Insurance Services Office

**Table B.2(b)**  
**Advisory Loss Cost Filing for Bodily Injury Liability**  
**1999**

Territory	15/30 Loss Cost (Experience)		15/30 Base Class Loss Cost			
	3 Years Ending 6/30/98		Present 1999		Filed 1999	
	Value	Ratio	Value	Ratio	Value	Ratio
<b>1</b>	\$85.97	1.00	\$115	1.00	\$106	1.00
<b>2</b>	\$94.76	1.10	\$124	1.08	\$108	1.02
<b>3</b>	\$80.62	0.94	\$109	0.95	\$97	0.92
<b>4</b>	\$77.47	0.90	\$106	0.92	\$88	0.83
<b>5</b>	\$130.31	1.52	\$170	1.48	\$148	1.40
<b>6</b>	\$141.51	1.65	\$185	1.61	\$176	1.66
<b>7</b>	\$73.52	0.86	\$100	0.87	\$88	0.83
<b>8</b>	\$120.67	1.40	\$164	1.43	\$149	1.41
<b>9</b>	\$113.66	1.32	\$155	1.35	\$143	1.35
<b>10</b>	\$110.34	1.28	\$151	1.31	\$136	1.28
<b>11</b>	\$111.16	1.29	\$151	1.31	\$134	1.26
<b>12</b>	\$83.54	0.97	\$112	0.97	\$103	0.97
<b>13</b>	\$83.50	0.97	\$116	1.01	\$112	1.06

Source: Insurance Services Office

**Figure B.4**  
**Bodily Injury 1993-1998**  
**Counties Ranked by Loss Ratio**



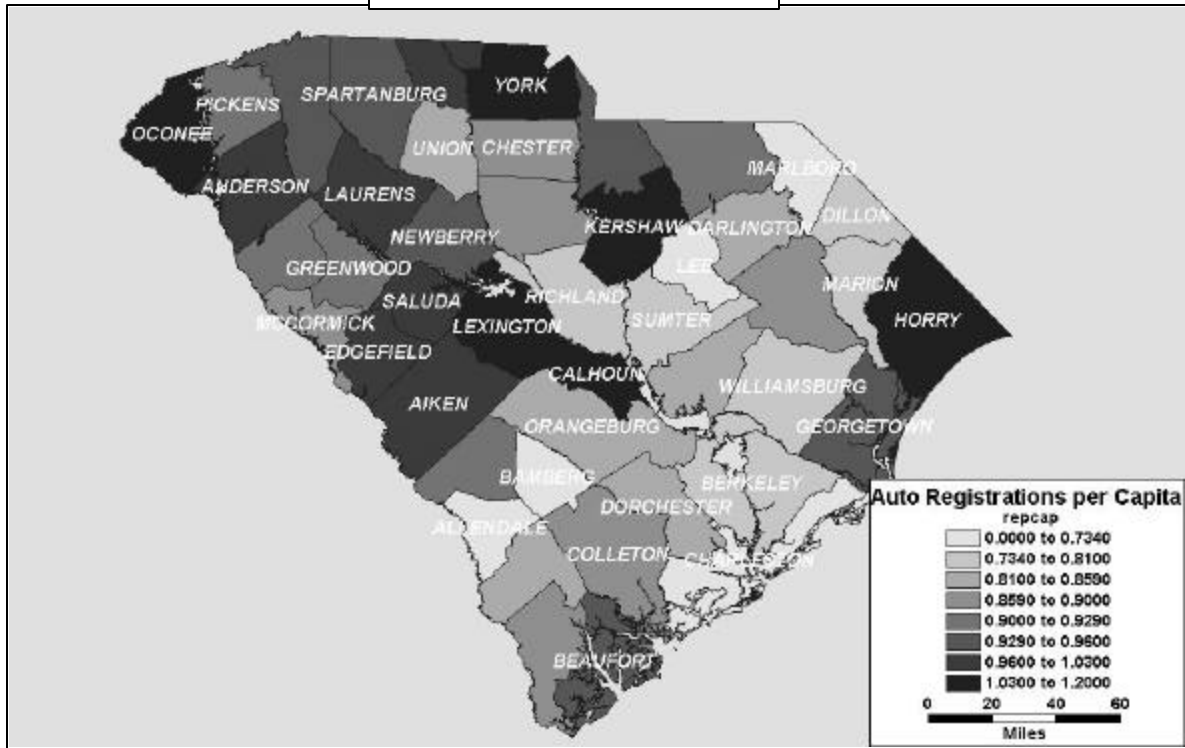
Source: South Carolina Department of Insurance

**Table C.1  
South Carolina At a Glance**

	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>1998</b>
<b>Population (Millions)</b>	2,591	3,122	3,486	3,886
<b>Rank</b>	26	24	25	26
<b>Pct. in Metro Areas</b>	58.0%	59.8%	69.5%	69.6%
<b>Rank</b>	31	32	25	26
<b>Pct. Under 18</b>	36.9%	30.2%	26.5%	25.0%
<b>Rank</b>	7	9	19	35
<b>Pct. Over 65</b>	7.4%	9.2%	11.3%	12.2%
<b>Rank</b>	46	44	36	35
<b>Average Annual Pay</b>	\$2,975	\$7,266	\$19,668	\$25,004
<b>Rank</b>	48	50	41	37
<b>Median Household Income</b>	\$7,620	\$16,978	\$35,836	\$33,267
<b>Rank</b>	45	42	28	42
<b>Unemployment Rate</b>	5.0%	6.9%	4.7%	4.5%
<b>Rank</b>	20	25	40	31
<b>Annual Vehicle Miles per Capita</b>	6,312	7,799	10,030	10,993
<b>Rank</b>	13	10	8	12
<b>MV Deaths/100M Miles</b>	6.5	3.7	2.9	2.6
<b>Rank</b>	9	13	6	6
<b>Percent Speed-Related Fatalities</b>				47.3%
<b>Rank</b>				4

Sources: Statistical Abstract, NHTS, Federal Highway Administration

**Figure C.1**  
**Vehicle Density by County**



**Table C.2**  
**Number of Insurers\***  
**South Carolina and Southeast Region**  
**1990-1999**

Year	South Carolina			Regional Average		
	Unaffiliated Companies	Companies in Groups	Groups**	Unaffiliated Companies	Companies in Groups	Groups**
1990	2	78	56	15	184	99
1991	1	66	55	15	185	97
1992	2	54	45	13	183	96
1993	2	49	40	15	184	97
1994	2	48	41	13	182	96
1995	3	53	46	12	181	92
1996	4	51	45	11	184	93
1997	5	55	43	11	188	89
1998	4	61	45	8	194	87
1999	4	104	55	10	197	82

\*Companies writing \$100,000 or more in auto premiums each year.

\*\*Includes companies in groups plus unaffiliated singles.

Source: NAIC Database

**Table C.3**  
**Market Concentration**  
**South Carolina and Southeast Region**  
**1990-1999**

Year	South Carolina				Regional Average			
	CR4	CR8	CR20	HHI	CR4	CR8	CR20	HHI
1990	55.8%	75.3%	92.9%	1,195	54.4%	67.7%	83.2%	1,082
1991	58.8%	79.2%	95.4%	1,337	56.3%	58.5%	83.6%	1,146
1992	61.4%	61.4%	97.2%	1,454	56.0%	58.2%	84.7%	1,129
1993	61.8%	82.5%	97.4%	1,470	56.0%	70.5%	85.2%	1,137
1994	61.6%	83.0%	97.1%	1,476	56.4%	71.2%	85.3%	1,129
1995	63.8%	83.7%	97.1%	1,529	56.5%	71.1%	85.8%	1,125
1996	63.7%	83.7%	97.1%	1,538	57.3%	71.4%	86.5%	1,136
1997	64.6%	84.3%	97.5%	1,556	57.6%	71.9%	87.0%	1,100
1998	64.8%	84.1%	97.4%	1,540	57.8%	72.3%	87.1%	1,085
1999	64.6%	81.7%	95.1%	1,493	57.9%	77.9%	87.3%	1,057

Source: NAIC Database

**Table C.4**  
**Leading 20 Auto Insurer Groups in South Carolina**  
**Change in Market Share**  
**1990-1999**

Insurer	1999			1995			1990		
	DPW(\$)	MS	Rank	DPW(\$)	MS	Rank	DPW(\$)	MS	Rank
STATE FARM IL	492,538,487	30.8%	1	402,598,169	32.3%	1	268,251,658	28.1%	1
ALLSTATE INS GRP	285,173,482	17.8%	2	179,403,434	14.4%	2	115,343,189	12.1%	2
NATIONWIDE CORP	159,869,863	10.0%	3	112,240,980	9.0%	3	90,070,076	9.4%	3
SOUTH CAROLINA FARM BUREAU MUTUAL	94,950,158	5.9%	4	83,890,758	6.7%	5			
UNITED SERVICES AUTOMOBILE ASN GRP	73,336,364	4.6%	5	68,345,685	5.5%	6	39,215,267	4.1%	7
ROYAL & SUN ALLIANCE USA	71,456,299	4.5%	6						
BERKSHIRE HATHAWAY	68,418,185	4.3%	7	30,716,887	2.5%	8			
SEIBELS BRUCE GRP	61,107,485	3.8%	8	65,415,861	5.3%	7	55,540,966	5.8%	5
AMERICAN MODERN INS GRP	29,873,164	1.9%	9	20,319,297	1.6%	12	8,842,398	0.9%	18
CITIGROUP	26,878,041	1.7%	10	1,821,247	0.1%	27	400,714	0.0%	48
AUTO-OWNERS GRP	23,467,084	1.5%	11	20,303,170	1.6%	13	19,094,584	2.0%	11
STATE AUTO MUT GRP	22,454,133	1.4%	12	21,412,530	1.7%	11	17,175,907	1.8%	12
CNA INS GRP	22,200,612	1.4%	13	24,221,611	1.9%	10			
GREAT AMER PROP & CAS	17,731,300	1.1%	14	14,078	0.0%	53	1,683,134	0.2%	34
HORACE MANN GRP	15,392,424	1.0%	15	15,662,631	1.3%	14	24,384,133	2.6%	10
COMPANION L I C	14,193,491	0.9%	16	29,849,502	2.4%	9	3,075,806	0.3%	29
PROGRESSIVE GRP	12,907,880	0.8%	17						
HARTFORD FIRE & CAS GRP	11,023,875	0.7%	18	2,359,701	0.2%	26	3,405,900	0.4%	27
SELECTIVE INS	9,266,012	0.6%	19	9,401,878	0.8%	15	9,288,069	1.0%	17
INTERFINANCIAL INC	8,172,334	0.5%	20	1,652,027	0.1%	30	5,711,990	0.6%	23

Source: NAIC Database



**Table C.5(a)**  
**Change in Market Share by Distribution System**  
**South Carolina and Southeast Region**  
**1990-1999**

Year	South Carolina			Regional Average		
	Direct Writers	Agency Companies	Other	Direct Writers	Agency Companies	Other
1990	67.0%	30.1%	2.9%	64.2%	29.9%	5.9%
1991	69.9%	21.0%	9.1%	66.4%	28.1%	5.6%
1992	71.6%	18.8%	9.7%	66.2%	28.7%	5.1%
1993	71.3%	18.6%	10.2%	66.7%	29.6%	3.7%
1994	71.8%	18.7%	9.5%	66.7%	30.4%	2.9%
1995	73.2%	20.8%	6.0%	66.9%	30.0%	3.1%
1996	74.0%	20.3%	5.7%	67.3%	29.4%	3.3%
1997	74.6%	19.9%	5.5%	66.7%	27.3%	5.9%
1998	75.0%	19.7%	5.2%	66.4%	26.6%	7.0%
1999	75.4%	20.2%	4.4%	66.2%	26.5%	7.3%

Source: NAIC Database and A.M. Best Key Rating Guide (Various Years)

**Table C.5(b)**  
**Change in Market Share by Geographic Orientation**  
**South Carolina and Southeast Region**  
**1990-1999**

Year	South Carolina			Regional Average		
	National Companies	Regional Companies	Single-State	National Companies	Regional Companies	Single-State
1990	94.9%	4.9%	0.2%	91.6%	7.4%	1.0%
1991	97.5%	2.2%	0.3%	92.5%	6.5%	1.0%
1992	97.8%	1.8%	0.5%	91.9%	7.2%	1.0%
1993	96.9%	2.7%	0.4%	88.8%	10.1%	1.1%
1994	96.5%	3.0%	0.5%	90.3%	8.8%	0.9%
1995	96.9%	2.6%	0.5%	89.1%	9.8%	1.1%
1996	97.7%	1.8%	0.5%	89.3%	9.7%	1.0%
1997	97.0%	2.5%	0.5%	89.3%	9.3%	1.4%
1998	97.9%	1.6%	0.4%	89.9%	8.6%	1.5%
1999	98.3%	1.2%	0.4%	90.1%	8.4%	1.5%

Source: NAIC Database

**Table C.6**  
**Entries and Exits**  
**South Carolina and Southeast Region**  
**1990-1999**

Period	South Carolina							
	Entities at Start of Year		Entries		Exits		Net Change	
	Number	% Chg.	Number	% Chg.	Number	% Chg.	Number	% Chg.
1990	56		4		5		-1	
1991	55	-2%	5	25%	15	200%	-10	900%
1992	45	-18%	1	-80%	6	-60%	-5	-50%
1993	40	-11%	4	300%	3	-50%	1	-120%
1994	41	3%	9	125%	4	33%	5	400%
1995	46	12%	6	-33%	7	75%	-1	-120%
1996	45	-2%	3	-50%	5	-29%	-2	100%
1997	43	-4%	5	67%	3	-40%	2	-200%
1998	45	5%	19	280%	9	200%	10	400%
1999	55	22%						

Period	Regional Average							
	Entities at Start of Year		Entries		Exits		Net Change	
	Number	% Chg.	Number	% Chg.	Number	% Chg.	Number	% Chg.
1990	108		7		25		-18	
1991	90	-17%	30	316%	14	-43%	15	-181%
1992	105	17%	6	-78%	6	-60%	1	-93%
1993	106	1%	8	17%	10	78%	-2	-336%
1994	103	-2%	7	-6%	11	12%	-4	66%
1995	99	-4%	12	63%	11	-3%	1	-114%
1996	100	1%	9	-21%	13	18%	-4	-807%
1997	96	-4%	7	-20%	10	-23%	-3	-27%
1998	93	-3%	12	61%	16	55%	-4	30%
1999	89	-4%						

Period	South Carolina							
	Entities at Start of Year		Entries		Exits		Net Change	
	Number	% Chg.	Number	% Chg.	Number	% Chg.	Number	% Chg.
1990-1993	56		10		26		-15	
1994-1996	41	-27%	18	80%	16	-38%	2	-113%
1997-1999	43	5%	24	33%	12	-25%		

Period	Regional Average							
	Entities at Start of Year		Entries		Exits		Net Change	
	Number	% Chg.	Number	% Chg.	Number	% Chg.	Number	% Chg.
1990-1993	108		43		45		-5	
1994-1996	103	-5%	28	-35%	36	-22%	-8	57%
1997-1999	96	-7%		-100%		-100%		

Calculated on a group and unaffiliated single basis. All entities counted with DPW greater than \$100K in private passenger auto lines of business. Regional Average weighted by Percent of DPW in State.  
Source: NAIC Database

**Table D.1**  
**Average Rate Change**  
**Selected Insurers**  
**1990-1999**

<b>Year</b>	<b>Simple Mean</b>
1990	-1.0%
1991	2.5%
1992	0.0%
1993	0.1%
1994	0.0%
1995	-1.1%
1996	0.0%
1997	0.0%
1998	-4.9%
1999	-0.7%

Source: Insurer Filings

**Table D.2(a)**  
**Average Auto Insurance Premiums**  
**South Carolina and Southeast Region**  
**1991-1998**

Year	South Carolina		Other Southeast States						
	Value	% Change	AL	FL	GA	NC	VA	Average	% Change
1991	\$ 615.89		\$ 560.41	\$ 727.60	\$ 677.73	\$ 522.39	\$ 603.11	\$ 618.25	
1992	\$ 655.07	6.4%	\$ 590.57	\$ 739.81	\$ 636.48	\$ 541.07	\$ 570.62	\$ 615.71	-0.4%
1993	\$ 684.10	4.4%	\$ 604.07	\$ 753.94	\$ 664.85	\$ 528.43	\$ 564.07	\$ 623.07	1.2%
1994	\$ 680.80	-0.5%	\$ 610.52	\$ 702.28	\$ 696.83	\$ 547.08	\$ 561.66	\$ 623.67	0.1%
1995	\$ 675.93	-0.7%	\$ 632.24	\$ 778.70	\$ 726.15	\$ 576.83	\$ 559.45	\$ 654.67	5.0%
1996	\$ 698.30	3.3%	\$ 661.62	\$ 823.65	\$ 761.75	\$ 594.79	\$ 608.87	\$ 690.14	5.4%
1997	\$ 732.92	5.0%	\$ 703.43	\$ 833.50	\$ 787.53	\$ 652.46	\$ 628.51	\$ 721.09	4.5%
1998	\$ 766.23	4.5%	\$ 719.72	\$ 814.82	\$ 803.18	\$ 664.06	\$ 630.12	\$ 726.38	0.7%
1991-1998		24.4%							17.5%
Average		3.2%							2.4%

Source: NAIC

**Table D.2(b)**  
**Average Auto Insurance Premiums**  
**South Carolina: Voluntary and Facility**  
**1993-1998**

<b>Year</b>	<b>Voluntary</b>	<b>% Change</b>	<b>Facility</b>	<b>% Change</b>	<b>Total</b>	<b>% Change</b>
1993	\$612		\$649		\$628	
1994	\$597	-2.4%	\$685	5.5%	\$632	0.6%
1995	\$585	-2.0%	\$677	-1.2%	\$620	-1.9%
1996	\$583	-0.4%	\$687	1.4%	\$616	-0.5%
1997	\$609	4.4%	\$759	10.5%	\$670	8.8%
1998	\$621	2.0%	\$981	29.3%	\$693	3.4%
1993-1998	1.5%		51.2%		10.3%	
Average		0.3%		9.1%		2.0%

Source: South Carolina Department of Insurance

**Table D.3**  
**Merit Rating Experience for Bodily Injury Liability**  
**1993-1998**

Category	Earned Exposures	Earned Premiums	Incurred Losses	Average Premium		Average Loss Cost		Loss Ratio	
				Value	Ratio	Value	Ratio	Value	Ratio
<b>0</b>	12,395,404	2,666,871,229	2,136,319,559	\$215	1.00	\$172	1.00	80.1%	1.00
<b>1</b>	1,206,581	402,721,777	228,065,987	\$334	1.55	\$189	1.10	56.6%	0.71
<b>2</b>	266,689	99,288,292	50,817,106	\$372	1.73	\$191	1.11	51.2%	0.64
<b>3</b>	106,269	47,368,196	22,690,319	\$446	2.07	\$214	1.24	47.9%	0.60
<b>4</b>	35,741	18,116,101	8,751,091	\$507	2.36	\$245	1.42	48.3%	0.60
<b>5</b>	14,240	7,754,847	3,788,888	\$545	2.53	\$266	1.54	48.9%	0.61
<b>6</b>	8,208	4,630,972	2,250,308	\$564	2.62	\$274	1.59	48.6%	0.61
<b>7</b>	3,455	2,071,573	1,332,483	\$600	2.79	\$386	2.24	64.3%	0.80
<b>8</b>	13,993	7,393,034	2,005,236	\$528	2.46	\$143	0.83	27.1%	0.34
<b>9</b>	4,736	2,767,565	910,465	\$584	2.72	\$192	1.12	32.9%	0.41
<b>10+</b>	41,741	28,101,243	8,303,695	\$673	3.13	\$199	1.15	29.5%	0.37
<b>Total</b>	14,097,057	3,287,084,829	2,465,235,137	\$233	1.08	\$175	1.01	75.0%	0.94

Source: South Carolina Department of Insurance

Figure D.1(a)  
Auto Insurance Loss Ratios for South Carolina, Region and Countrywide  
1989-1998

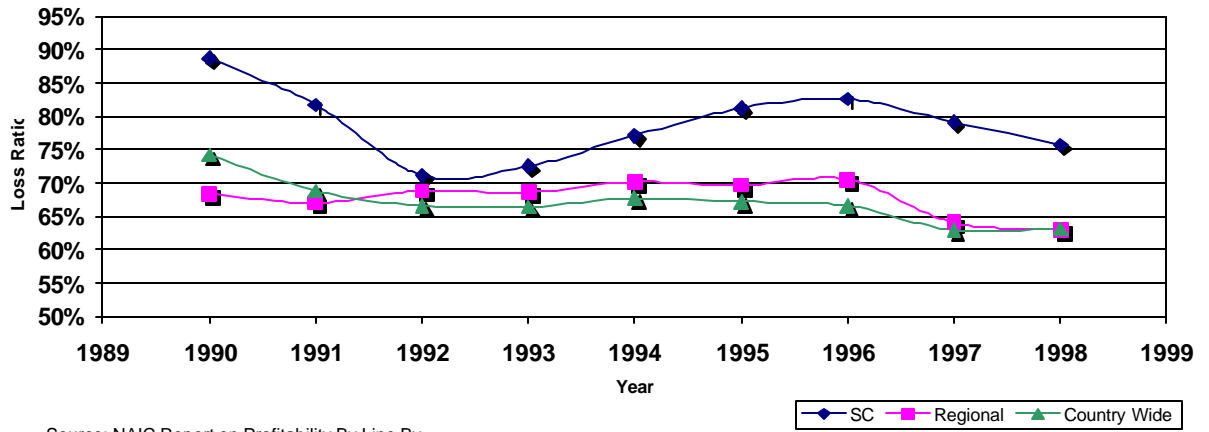




Figure D.1(b)  
Auto Insurance Profits for South Carolina, Region and Countrywide  
1989-1998

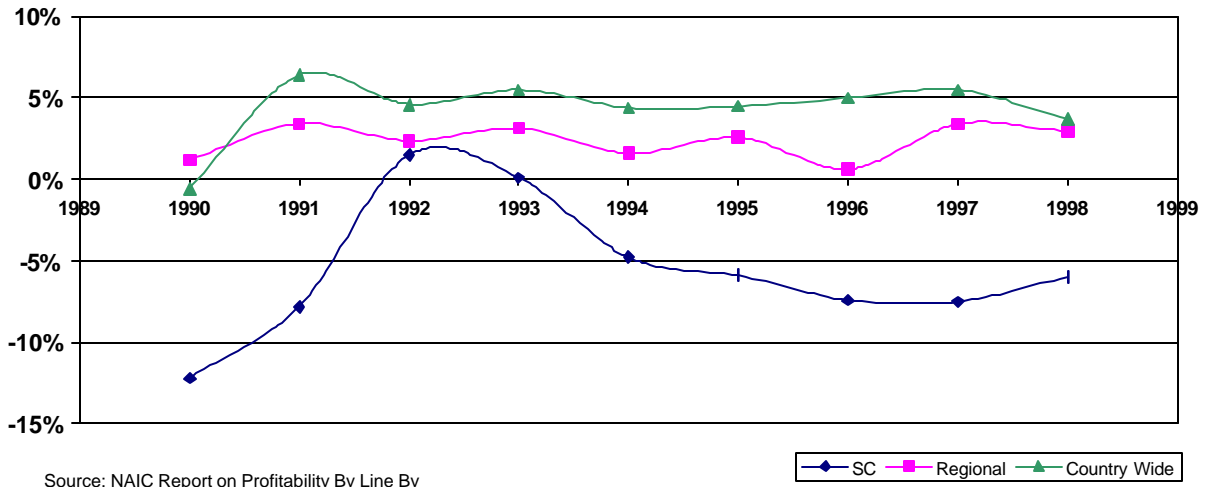
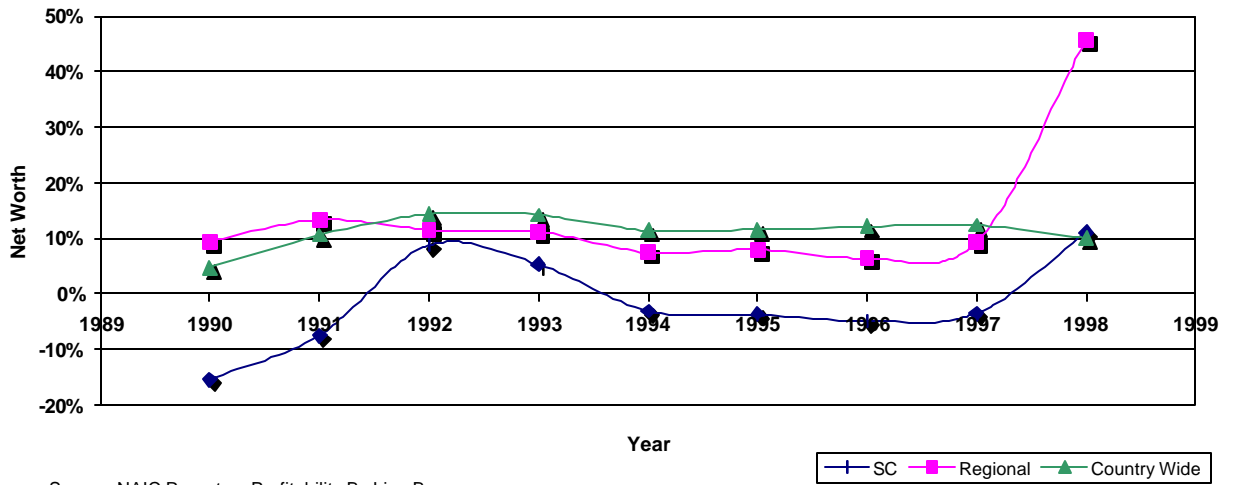
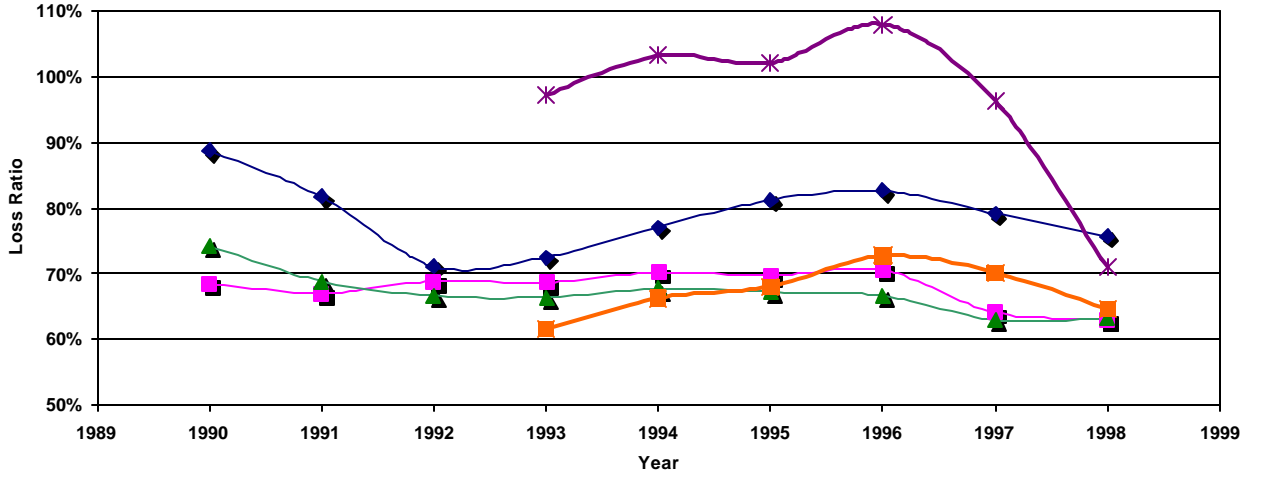


Figure D.1(c)  
Auto Insurance ROR for South Carolina, Region and Countrywide  
1989-1998



Source: NAIC Report on Profitability By Line By

Figure D.1(d)  
 Auto Insurance Loss Ratios for South Carolina Voluntary & Residual Markets, Region and Countrywide  
 1989-1998



Source: NAIC and South Carolina Department of 
 SC
  Regional
  Country Wide
  SC - Private Market
  SC - Facility

Table D.2(a)  
 Ratio of Residual Market Insured Car Years to Total Written Car Years  
 South Carolina and SE States: 1990-1997

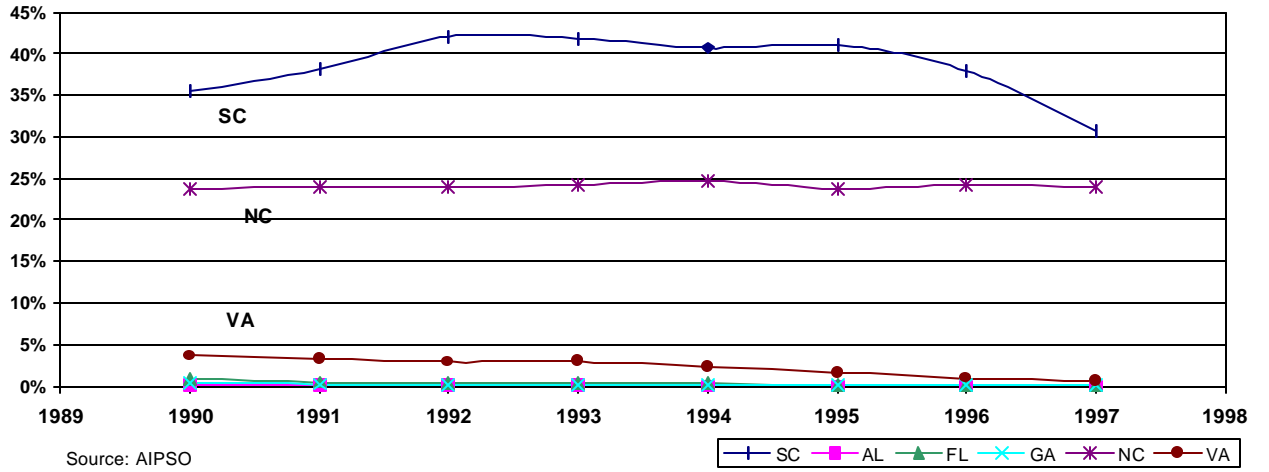
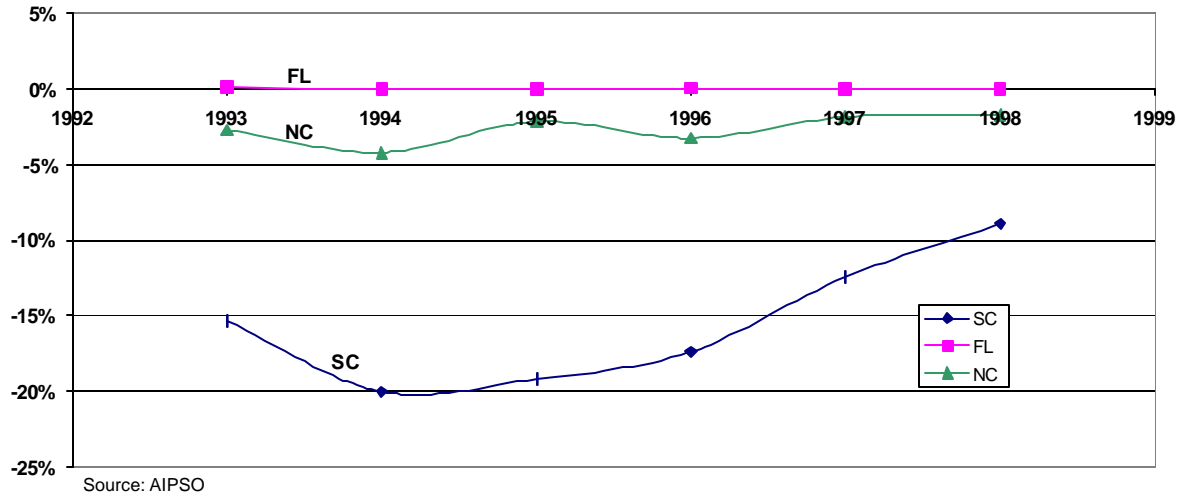


Figure D.2(b)  
Ratio of Residual Market Operating Losses to Voluntary Market Premiums  
by Policy Year: 1993-1998



**Table D.4(a)**  
**Operating Statistics for South Carolina Reinsurance Facility**  
**Fiscal Years 1982-1996**

Year	PP Vehicles Insured	Earned Premiums	Net Results from Operations			
			Before Recoup	%EP	After Recoup	%EP
1982	366,991	123,512	-42,144	-34.1%		
1983	404,498	132,829	-41,565	-31.3%		
1984	453,013	166,107	-59,757	-36.0%		
1985	477,726	200,283	-85,776	-42.8%		
1986	564,726	261,768	-106,352	-40.6%		
1987	617,075	447,038			-13,220	-3.0%
1988	680,465	517,104			-8,000	-1.5%
1989	712,243	546,309			-8,778	-1.6%
1990	765,235	581,654			-13,285	-2.3%
1991	823,046	557,361			-21,641	-3.9%
1992	919,022	620,961			-9,408	-1.5%
1993	925,380	605,776			-14,531	-2.4%
1994	941,739	656,791			-9,500	-1.4%
1995	1,011,057	658,692			-10,690	-1.6%
1996	967,399	696,346			-11,179	-1.6%

Source: AIPSO

**Table D.4(b)**  
**Operating Statistics for South Carolina Reinsurance Facility**  
**Policy Years 1993-1998**

Year	Earned Premiums	Losses Incurred	Net UW Results	Net Operating Results	
				Amount	%EP
1993	495,840	454,537	-143,236	-144,229	-29.1%
1994	495,894	511,187	-194,354	-195,987	-39.5%
1995	491,298	529,106	-198,636	-201,619	-41.0%
1996	489,281	531,313	-198,621	-200,142	-40.9%
1997	487,102	486,992	-155,543	-156,939	-32.2%
1998	437,970	411,158	-121,380	-122,559	-28.0%

Note: Results do not include offset of recoupment fees.

Source: AIPSO Facts 1999

**Table D.4(c)**

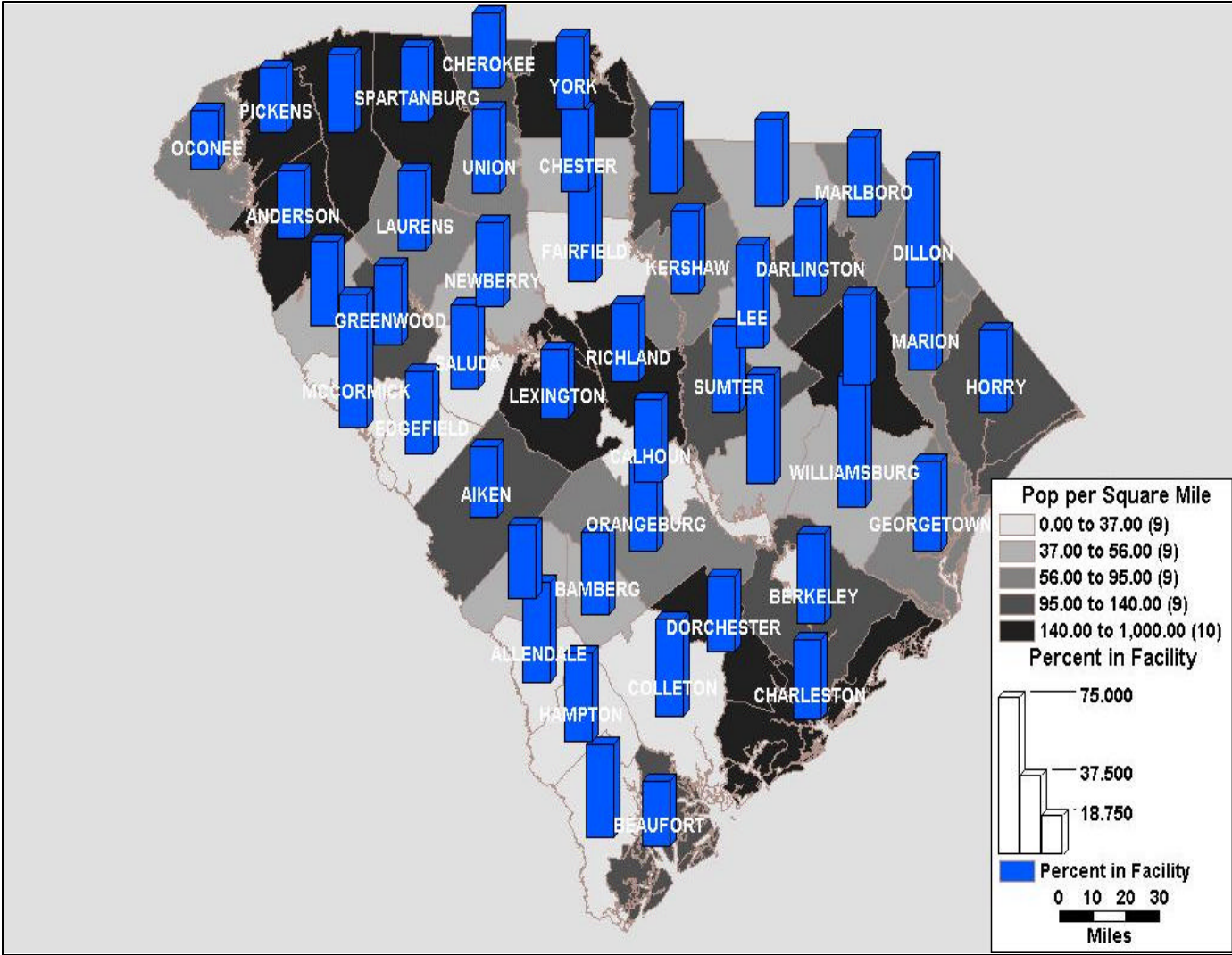
**Operating Statistics for South Carolina Reinsurance Facility  
Private Passenger Non-Fleet By Fiscal Quarter: 1995-2000**

<b>Fiscal Year</b>	<b>Fiscal Quarter</b>	<b>Written Premium</b>		<b>Earned Premium</b>		<b>Incurred Losses</b>		<b>Net Operating Results</b>			<b>Recoupment</b>	
		<b>Quarter</b>	<b>Fiscal Year</b>	<b>Quarter</b>	<b>Fiscal Year</b>	<b>Quarter</b>	<b>Fiscal Year</b>	<b>Quarter</b>	<b>Fiscal Year</b>	<b>Pct. EP</b>	<b>Quarter</b>	<b>Fiscal Year</b>
	Mar 95	118,906,562		111,414,753		112,173,404		(42,943,610)		-38.5%	33,996,542	
	Jun 95	112,235,564		112,990,700		109,674,483		(35,259,605)		-31.2%	34,537,959	
	Sep 95	111,353,803		112,834,111		121,916,163		(47,843,170)		-42.4%	49,578,547	
	Dec 95	109,557,064		112,308,636		132,858,023		(57,500,795)		-51.2%	47,800,274	
	Mar 96	119,429,689		112,980,383		116,228,464		(42,107,691)		-37.3%	51,778,133	
	Jun 96	115,604,094		115,154,016		129,734,773		(52,196,408)		-45.3%	48,789,860	
1996	Sep 96	110,781,990	455,372,837	114,385,161	454,828,196	127,169,388	505,990,648	(48,985,567)	(200,790,461)	-42.8%	50,690,409	199,058,676
	Dec 96	106,213,773		111,930,456		138,325,333		(62,021,284)		-55.4%	52,093,648	
	Mar 97	115,912,839		108,823,769		95,208,097		(23,988,933)		-22.0%	54,269,760	
	Jun 97	109,509,567		110,186,845		121,209,778		(47,360,887)		-43.0%	52,221,462	
1997	Sep 97	113,729,271	445,365,450	110,702,859	441,643,929	112,606,808	467,350,016	(40,007,973)	(173,379,077)	-36.1%	58,786,733	217,371,603
	Dec 97	107,621,733		112,426,584		123,424,352		(47,768,206)		-42.5%	54,187,655	
	Mar 98	132,929,293		116,616,569		108,289,174		(35,180,609)		-30.2%	60,293,538	
	Jun 98	113,941,328		119,543,745		117,120,144		(35,836,209)		-30.0%	54,490,976	
1998	Sep 98	103,997,874	458,490,228	112,585,000	461,171,898	105,260,857	454,094,527	(27,185,312)	(145,970,336)	-24.1%	49,306,050	218,278,219
	Dec 98	94,887,663		107,716,696		98,558,624		(24,000,575)		-22.3%	47,107,900	
	Mar 99	76,107,344		100,039,773		74,336,267		(1,341,472)		-1.3%	38,233,872	
	Jun 99	14,071,500		68,053,212		56,280,409		5,536,995		8.1%	13,825,459	
1999	Sep 99	16,360,077	201,426,584	33,320,211	309,129,892	26,142,512	255,317,812	(1,168,724)	(20,973,776)	-3.5%	17,376,536	116,543,767
	Dec 99	11,050,826		20,463,603		14,630,682		169,924		0.8%	21,906,020	
	Mar-00	12,418,888		15,184,097		11,452,806		(1,929,483)		-12.7%	24,600,000	
	Jun-00	9,401,516		12,595,574		11,460,767		(3,510,281)		-27.9%	20,227,654	

Source: South Carolina Department of Insurance



**Figure D.3**  
**Facility Market Share and Population Density**



**Table D.6**  
**State Uninsured Motorist Estimates**  
**1989-1995**

State	Percent	Rank
Colorado	34%	1
Mississippi	29%	2
Alabama	28%	3
New Mexico	27%	4
California	26%	5
Alaska	22%	6
Delaware	22%	7
South Carolina	22%	8
Texas	21%	9
Florida	20%	10
Rhode Island	20%	11
Tennessee	20%	12
Oklahoma	19%	13
Maryland	17%	14
Washington	17%	15
Arizona	16%	16
Hawaii	16%	17
Nevada	16%	18
District of Columbia	15%	19
Georgia	15%	20
Indiana	15%	21
Oregon	15%	22
Virginia	15%	23
Michigan	14%	24
Minnesota	14%	25
Ohio	14%	26
Missouri	13%	27
Pennsylvania	13%	28
Arkansas	12%	29
Illinois	12%	30
Kentucky	12%	31
Louisiana	12%	32
New Jersey	12%	33
Connecticut	11%	34
Wisconsin	11%	35
Iowa	10%	36
Montana	10%	37
Vermont	10%	38
Idaho	9%	39
New Hampshire	9%	40
Utah	9%	41
West Virginia	9%	42
Kansas	8%	43
New York	8%	44

North Dakota	8%	45
Wyoming	8%	46
Massachusetts	7%	47
Nebraska	7%	48
South Dakota	6%	49
Maine	5%	50
North Carolina	5%	51

Source: Insurance Research Council

**Table D.7**  
**Ratio of Unpaid to Incurred Losses**  
**Private Passenger Auto Physical Damage**  
**South Carolina, Southeast Region, and Countrywide**  
**1990-1999**

Year	South Carolina		Regional Average		Countrywide	
	Unpaid Losses	Ratio to Incurred	Unpaid Losses	Ratio to Incurred	Unpaid Losses	Ratio to Incurred
1990	549,921,757	0.6639	1,761,130,764	0.877	44,350,733,272	0.9467
1991	580,061,989	0.7062	2,002,099,988	0.905	50,102,248,792	1.0256
1992	594,201,948	0.7615	1,963,727,495	0.836	53,385,325,552	1.0166
1993	617,519,467	0.7444	1,979,261,748	0.851	56,340,503,749	1.0210
1994	636,930,342	0.6968	2,085,186,862	0.801	67,544,447,741	0.9527
1995	651,417,108	0.6517	2,193,991,552	0.776	67,822,855,524	0.9728
1996	675,828,667	0.6288	2,240,876,793	0.761	68,589,441,057	0.9472
1997	717,578,928	0.6443	2,188,465,918	0.792	67,297,438,105	0.9465
1998	732,079,888	0.6402	2,513,866,507	0.869	66,756,606,842	0.9026
1999	737,886,390	0.6179	2,031,926,823	0.643	66,423,809,340	0.8507

Source: NAIC Database

**Figure D.4**  
**Distribution of Companies in South Carolina by Ratio of SC Premiums to Country Wide for Private Passenger Ai Coverage**

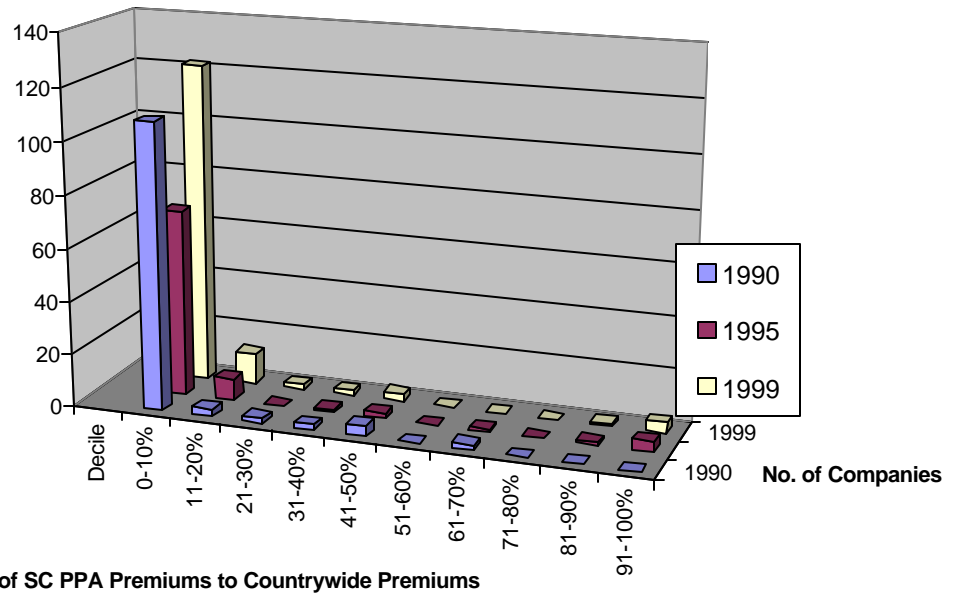


Figure D.5(a)  
Bodily Injury Liability  
Average Loss Cost  
1983-1999

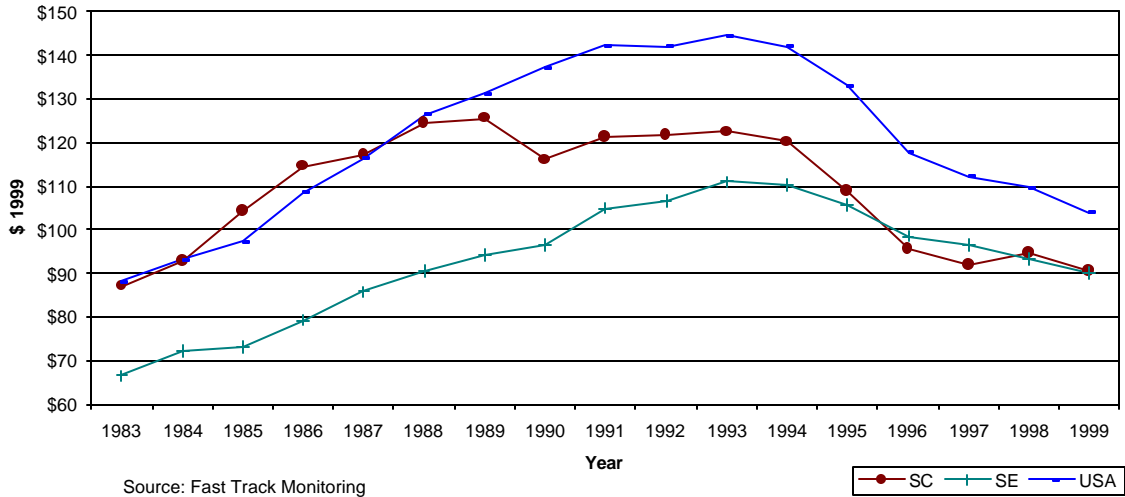
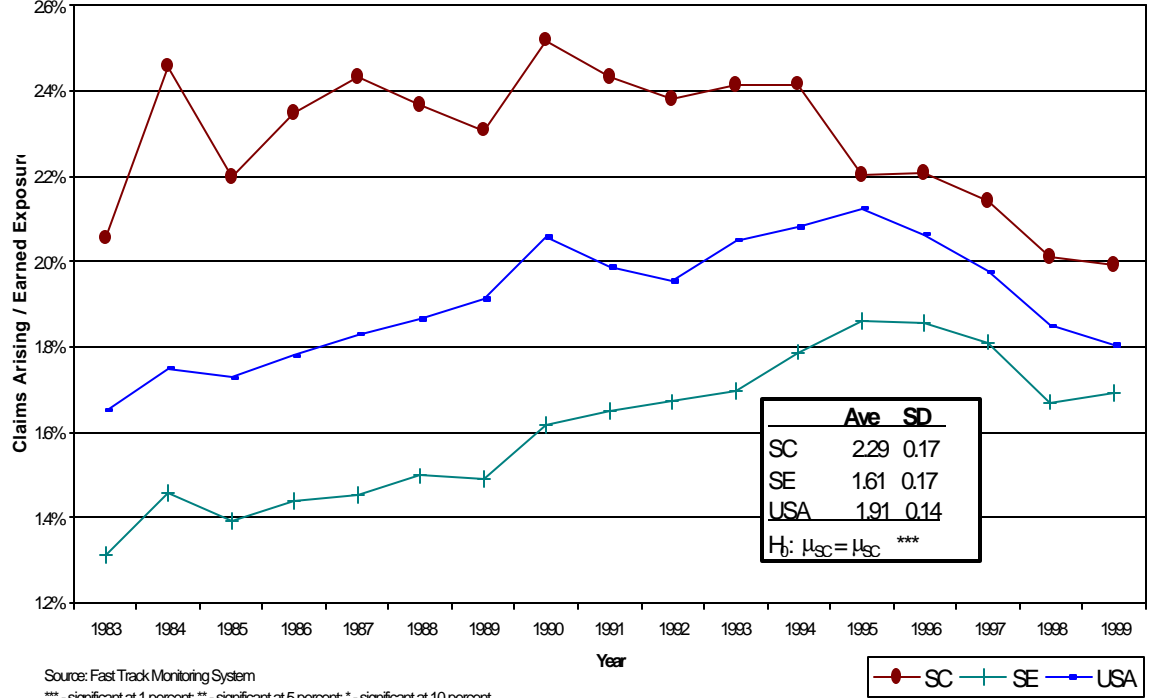


Figure D.5(b)  
 Bodily Injury Liability  
 Frequency: 1983-1999



Source: Fast Track Monitoring System  
 \*\*\* - significant at 1 percent; \*\* - significant at 5 percent; \* - significant at 10 percent

Figure D.5(c)  
Bodily Injury Liability  
Severity: 1983-1999

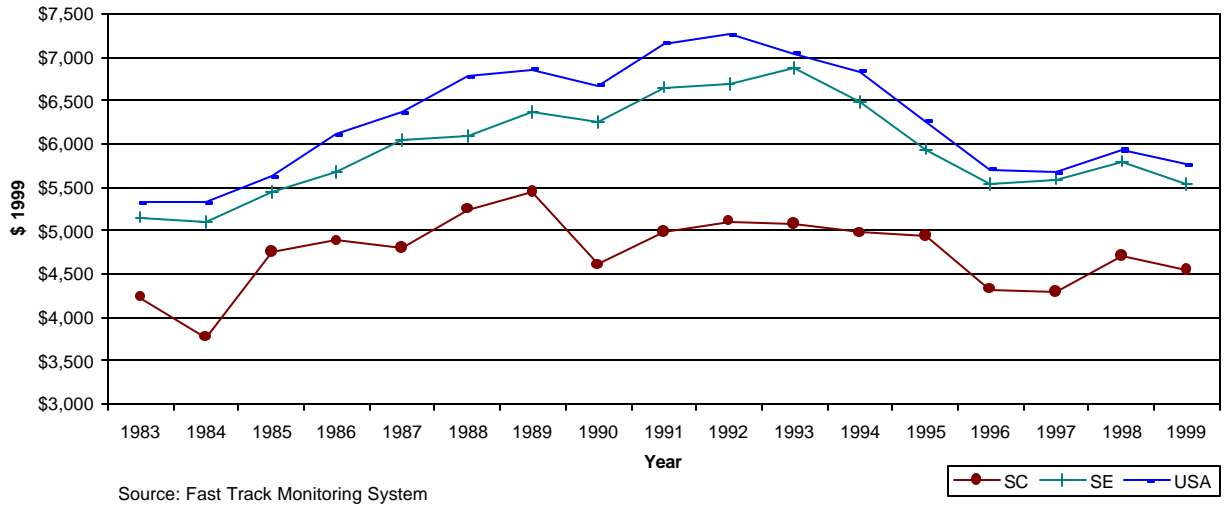




Figure D.5(d)  
Property Damage Liability  
Average Loss Cost: 1983-1999

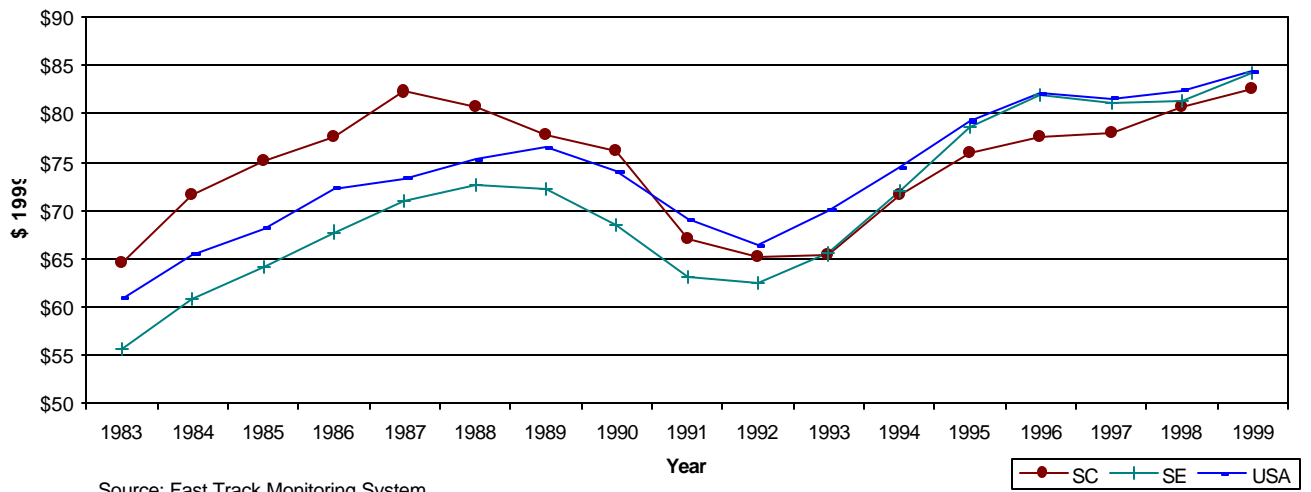


Figure D.5e  
 Property Damage Liability  
 Frequency: 1983-1999

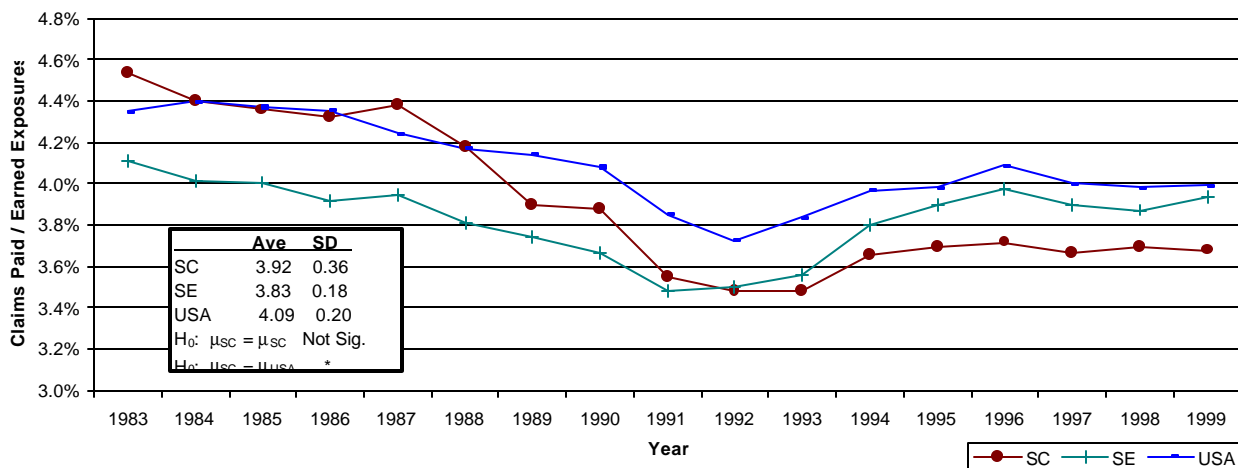
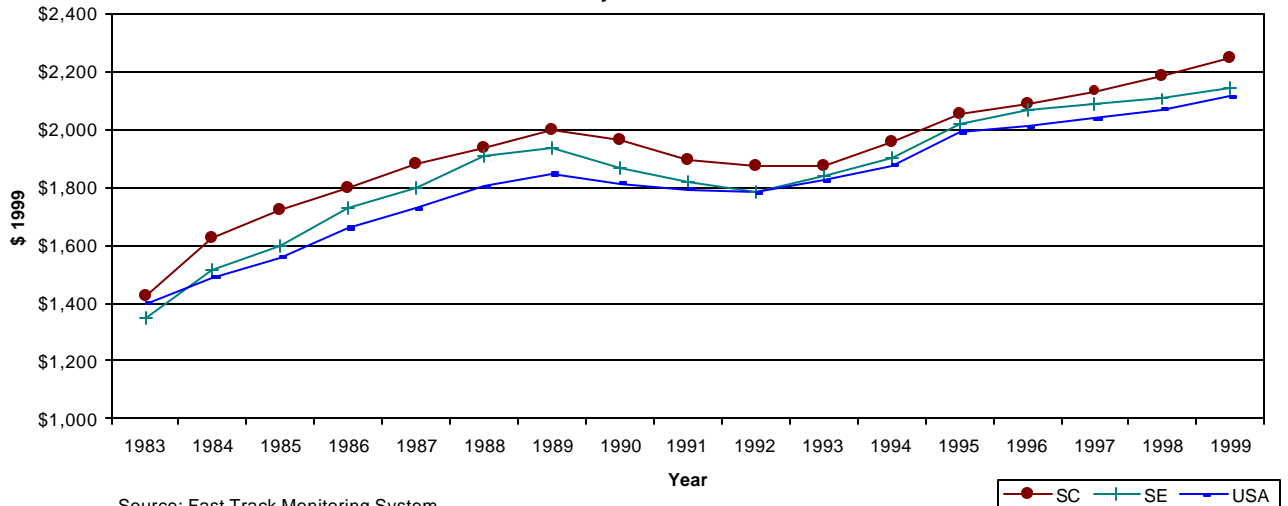


Figure D.5(f)  
Property Damage Liability  
Severity: 1983 - 1999



Source: Fast Track Monitoring System

SC SE USA

Figure D.5(g)  
Collision  
Average Loss Cost: 1983-1999

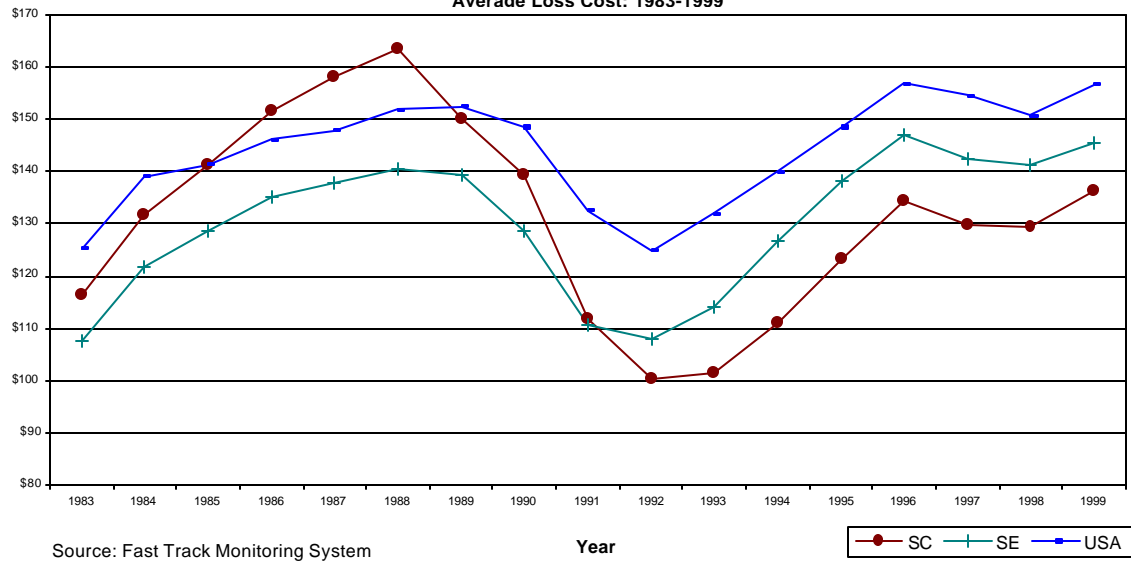


Figure D.5(h)  
Collision  
Frequency: 1983-1999

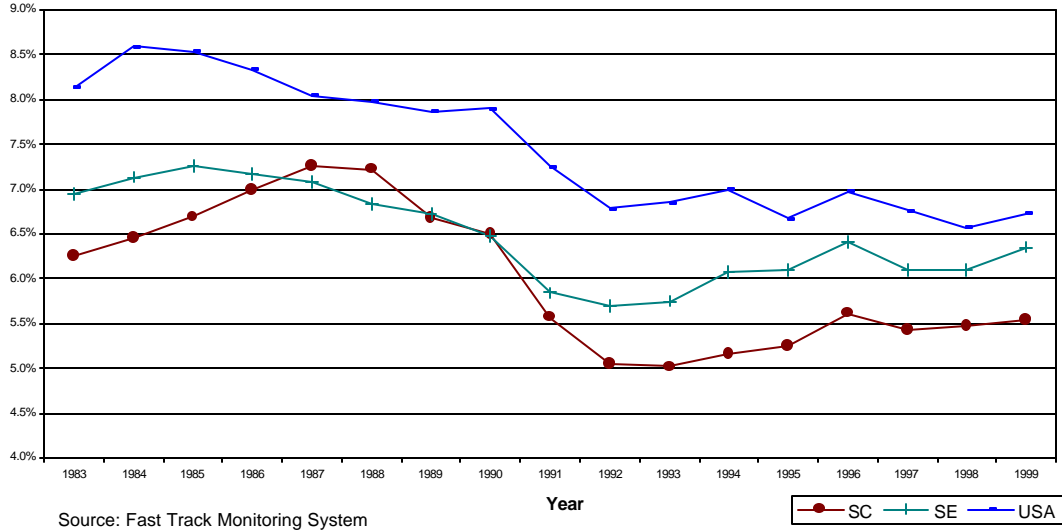


Figure D.5(i)  
Collision  
Severity: 1983-1999

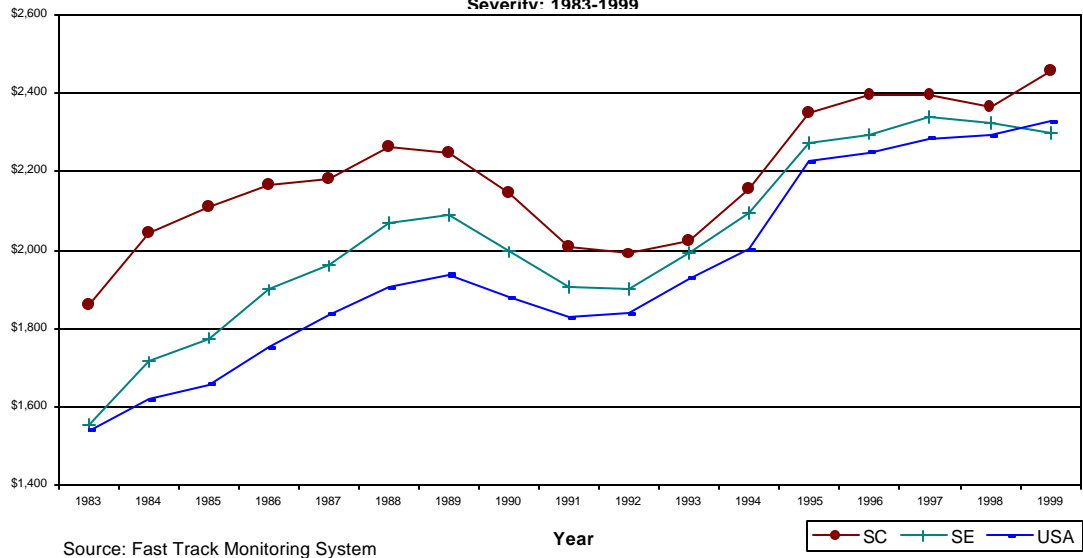
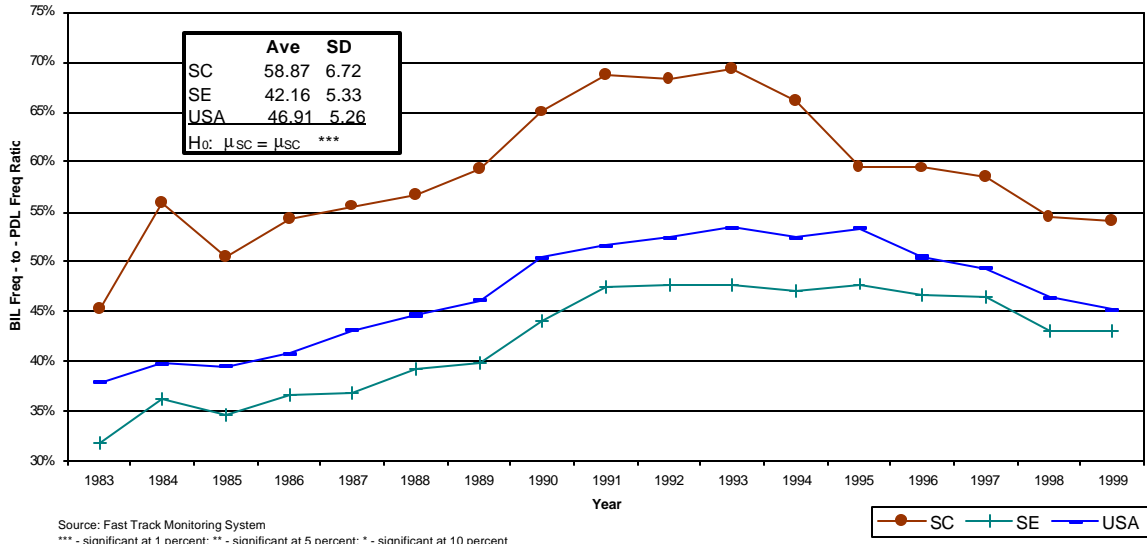


Figure D.5(j)  
Ratio BI to PD Claims: 1983 - 1999



**Table D.8(a)**  
**Attorney Representation Among Claimants**  
**in Tort and Add-On States**

**Based on Survey of Auto Injury Claims Closed in 1997**

<b>State</b>	<b>System</b>	<b>No. of BI Claimants</b>	<b>Pct. With Attorney</b>	<b>Rank</b>	<b>Pct. \$ to Rep. Claimants</b>	<b>Rank</b>	<b>Pct. Metro Pop.</b>	<b>Rank</b>
New Jersey	Add-On	442	86%	1	94%	1	100.0%	1
District Columbia	Add-On	199	70%	2	91%	2	100.0%	2
Connecticut	Tort	438	64%	3	89%	3	95.6%	4
Maryland	Add-On	1,503	61%	4	88%	5	92.8%	6
Pennsylvania	Add-On	763	61%	5	88%	6	84.6%	9
Rhode Island	Tort	184	58%	6	89%	4	93.8%	5
Nevada	Tort	575	56%	7	76%	18	85.7%	8
Louisiana	Tort	1,302	55%	8	81%	9	75.2%	16
California	Tort	6,219	54%	9	78%	15	96.6%	3
Georgia	Tort	1,319	53%	10	78%	16	68.5%	20
Texas	Add-On	4,949	49%	11	74%	23	84.2%	10
Virginia	Add-On	1,272	48%	12	80%	12	77.9%	15
Delaware	Add-On	186	47%	13	84%	7	81.9%	13
Arizona	Tort	1,179	47%	14	75%	19	87.6%	7
New Hampshire	Tort	127	46%	15	81%	10	59.8%	27
Mississippi	Tort	329	46%	16	69%	30	35.3%	36
Wyoming	Tort	54	44%	17	81%	11	29.7%	39
South Carolina	Add-On	1,140	44%	18	80%	13	69.6%	19
North Carolina	Tort	1,412	43%	19	69%	31	66.8%	25
Ohio	Tort	1,581	41%	20	82%	8	81.1%	14
Washington	Add-On	1,098	41%	21	75%	21	82.8%	12
Arkansas	Add-On	373	40%	22	70%	29	48.3%	30
Illinois	Tort	2,043	38%	23	79%	14	84.1%	11
Wisconsin	Add-On	695	38%	24	74%	24	67.7%	23
Montana	Tort	127	38%	25	71%	28	33.7%	37
Tennessee	Tort	904	38%	26	69%	32	68.0%	21
Missouri	Tort	1,112	36%	27	66%	34	68.0%	22
Maine	Tort	135	36%	28	66%	35	35.8%	35
Idaho	Tort	199	35%	29	74%	22	37.5%	34
South Dakota	Add-On	77	35%	30	73%	26	33.3%	38
New Mexico	Tort	344	35%	31	67%	33	56.7%	28
Oklahoma	Tort	773	35%	32	59%	39	60.2%	26
Nebraska	Tort	229	34%	33	77%	17	51.3%	29
Indiana	Tort	999	34%	34	75%	20	71.7%	17
Oregon	Add-On	896	33%	35	72%	27	70.2%	18
Alabama	Tort	674	30%	36	73%	25	67.7%	24
Iowa	Tort	246	30%	37	64%	37	44.3%	31
West Virginia	Tort	402	27%	38	65%	36	41.8%	32
Alaska	Tort	95	23%	39	56%	40	41.3%	33
Vermont	Tort	52	21%	40	60%	38	27.7%	40
<b>All Add-On States</b>		13,593	49%		80%			
<b>All Tort States</b>		23,050	45%		76%			

Source: Insurance Research Council (1999a)



**Table D.8(b)**  
**Litigation and Auto Insurance Claims**  
**Based on 1998 Survey of 180,000 Households**

State	No. Persons		Percent Attorney	Rank	Pct. Metro Pop.	Rank
	Filing Claims	Hiring Attorney				
Delaware	16	11	68.8%	1	81.9%	18
Nevada	33	21	63.6%	2	85.7%	11
Massachusetts	94	55	58.5%	3	96.1%	4
New Jersey	127	72	56.7%	4	100.0%	2
South Dakota	17	9	52.9%	5	33.3%	48
Arkansas	56	29	51.8%	6	48.3%	38
Maryland	92	46	50.0%	7	92.8%	8
New York	265	130	49.1%	8	91.8%	9
Connecticut	44	21	47.7%	9	95.6%	5
Virginia	88	42	47.7%	10	77.9%	20
New Hampshire	17	8	47.1%	11	59.8%	34
Rhode Island	15	7	46.7%	12	93.8%	6
Louisiana	87	40	46.0%	13	75.2%	22
Florida	226	103	45.6%	14	92.9%	7
California	488	216	44.3%	15	96.6%	3
Georgia	115	48	41.7%	16	68.5%	27
North Carolina	168	70	41.7%	17	66.8%	32
South Carolina	83	34	41.0%	18	69.6%	26
Washington	132	54	40.9%	19	82.8%	16
Texas	333	135	40.5%	20	84.2%	13
District of Columbia	5	2	40.0%	21	100.0%	1
Mississippi	40	16	40.0%	22	35.3%	46
New Mexico	23	9	39.1%	23	56.7%	35
Kentucky	89	34	38.2%	24	48.2%	39
Illinois	163	62	38.0%	25	84.1%	14
Wisconsin	87	33	37.9%	26	67.7%	30
Missouri	108	40	37.0%	27	68.0%	28
Oklahoma	74	27	36.5%	28	60.2%	33
Wyoming	11	4	36.4%	29	29.7%	49
Pennsylvania	194	69	35.6%	30	84.6%	12
Montana	20	7	35.0%	31	33.7%	47
Alabama	62	21	33.9%	32	67.7%	31
Tennessee	95	32	33.7%	33	68.0%	29
Nebraska	24	8	33.3%	34	51.3%	37
Minnesota	61	20	32.8%	35	69.7%	25
Ohio	191	62	32.5%	36	81.1%	19
Maine	19	6	31.6%	37	35.8%	45
Michigan	110	34	30.9%	38	82.4%	17
Indiana	95	29	30.5%	39	71.7%	23
Arizona	89	27	30.3%	40	87.6%	10
Oregon	99	29	29.3%	41	70.2%	24
Colorado	73	19	26.0%	42	84.0%	15
Vermont	14	3	21.4%	43	27.7%	50

Idaho	33	7	21.2%	44	37.5%	44
North Dakota	5	1	20.0%	45	42.7%	41
West Virginia	40	8	20.0%	46	41.8%	42
Iowa	52	9	17.3%	47	44.3%	40
Kansas	36	6	16.7%	48	55.4%	36
Utah	34	5	14.7%	49	77.1%	21
Alaska	1	0	0.0%	50	41.3%	43
<b>Simple Mean</b>	88.9	35.6	37.4%		68.0%	
<b>Weighted Mean</b>			40.1%			
<b>Median</b>	73.5	27.0	36.3%		67.3%	

Source: Insurance Research Council (1999b)

**Table D.9**  
**Bodily Injury Claim Costs and Economic Variables by County: Values & Ratio to Mean**  
**In Descending Order of Loss Ratio**

County	BIL 1993-1998		Facility MS 1998	Bodily Injury Claim		BI/PD Claims 1993-98	Median Household Income	UN Rate	Pop Den	Veh Den	% Collisions Involving Bod. Inj.	% Collisions Involving Alcohol
	Loss Cost	Loss Ratio		Freq	Sev							
Allendale	262.51	111.5%	43.4%	3.97	6,604	107.5%	15,013	8.6%	28.7	12.7	114.8%	5.8%
Dillon	280.06	110.9%	50.2%	4.28	6,546	124.8%	18,365	10.1%	71.9	36.9	59.1%	5.7%
York	244.90	106.6%	26.2%	2.76	5,668	63.2%	31,288	5.5%	156.3	129.7	43.6%	5.1%
Lee	218.70	104.2%	38.4%	4.10	5,329	115.6%	18,174	6.5%	45.0	24.4	58.6%	7.6%
Marlboro Co	237.73	99.0%	38.1%	3.51	6,764	105.6%	17,825	12.5%	69.3	35.3	92.0%	6.1%
Marion	252.39	96.2%	52.7%	3.71	6,803	111.5%	19,226	12.4%	24.6	13.5	48.2%	5.9%
Chester	199.95	95.4%	34.0%	3.67	5,441	87.9%	23,054	13.5%	55.4	33.8	57.7%	4.0%
Union	208.06	95.3%	25.8%	2.49	5,380	64.4%	21,526	9.3%	59.9	36.9	65.4%	5.7%
Hampton	229.69	93.6%	40.6%	3.17	7,242	104.0%	18,615	8.6%	32.5	17.1	31.1%	5.7%
Georgetown	213.92	92.6%	33.9%	3.28	6,523	86.7%	23,981	8.6%	56.8	32.2	71.3%	4.4%
Darlington	234.68	90.8%	33.7%	3.34	7,018	94.0%	22,642	7.9%	110.1	64.1	85.5%	8.4%
Colleton	209.93	88.0%	43.1%	3.68	5,710	108.8%	20,617	8.1%	32.5	18.3	60.8%	5.3%
Berkeley	223.97	87.7%	36.5%	3.43	6,536	80.3%	29,106	4.7%	117.1	69.7	54.2%	4.9%
Lancaster	186.55	86.8%	32.2%	3.22	5,795	79.7%	25,320	8.7%	99.3	64.7	49.8%	6.0%
Jasper	217.35	86.7%	40.8%	3.16	6,879	88.1%	18,071	5.8%	24.2	11.9	35.0%	4.5%
McCormick	199.00	86.5%	29.3%	3.21	6,191	97.4%	18,068	11.0%	61.2	29.5	90.3%	7.5%
Edgefield	156.73	86.5%	25.1%	2.50	6,274	69.8%	23,021	6.0%	36.6	22.7	68.5%	5.4%
Florence	220.28	84.8%	33.8%	3.55	6,206	85.5%	24,264	5.9%	143.1	82.9	55.3%	4.6%
Barnwell	159.12	84.4%	26.2%	2.69	5,906	84.9%	23,501	14.2%	37.0	22.2	79.7%	5.5%
Orangeburg	177.68	82.4%	33.9%	3.34	5,325	91.0%	20,216	8.3%	76.7	42.9	52.1%	5.3%
Dorchester	209.44	82.4%	30.1%	3.31	6,325	77.5%	30,764	4.7%	144.5	90.3	40.4%	3.4%
Fairfield	178.01	80.6%	41.3%	3.30	5,394	95.2%	21,484	11.8%	32.5	18.3	76.9%	5.4%
Pickens	199.91	78.2%	22.5%	2.19	5,517	54.8%	26,336	5.3%	189.1	127.6	41.6%	7.0%
Calhoun	154.38	77.9%	34.7%	2.68	5,764	84.0%	23,750	9.2%	33.6	21.5	73.6%	8.1%

Horry	211.57	77.5%	32.5%	3.07	6,894	73.1%	24,959	7.7%	127.0	79.9	42.3%	4.6%
Anderson	146.19	76.1%	19.8%	2.40	6,102	62.4%	25,748	6.6%	202.2	141.3	49.4%	4.2%
Abbeville	121.33	75.6%	24.9%	2.16	5,621	65.3%	23,170	8.3%	47.0	31.6	63.5%	6.6%
Cherokee	151.83	75.0%	26.5%	2.54	5,979	66.2%	24,655	6.9%	113.2	71.2	58.9%	6.1%
Bamberg	179.03	74.6%	35.9%	3.41	5,244	95.9%	17,496	10.6%	43.0	20.9	64.7%	4.0%
Saluda	187.27	74.4%	25.7%	2.11	6,529	66.0%	22,176	4.8%	36.3	24.2	50.2%	3.9%
Laurens	133.81	73.1%	26.2%	2.56	5,222	69.9%	24,905	6.6%	81.5	51.9	60.4%	4.8%
Aiken	142.38	73.0%	22.4%	2.50	5,700	64.0%	29,994	4.9%	112.7	75.7	48.5%	4.7%
Williamsburg	133.83	71.9%	51.6%	3.56	6,883	106.7%	18,409	8.9%	40.9	20.1	72.1%	7.9%
Kershaw	145.78	70.1%	29.5%	2.34	6,235	69.5%	28,282	8.6%	60.1	40.2	56.4%	5.8%
Charleston	211.31	69.8%	31.2%	3.56	5,930	77.2%	26,875	4.9%	321.7	180.2	60.4%	3.1%
Spartanburg	138.07	69.4%	25.1%	2.80	5,244	66.4%	26,941	5.5%	279.7	185.6	47.2%	5.4%
Sumter	146.60	67.7%	33.4%	3.37	6,177	87.3%	22,387	9.4%	132.8	82.2	45.2%	4.6%
Greenwood	123.43	66.4%	25.4%	2.18	5,669	54.7%	23,584	7.1%	130.6	85.4	42.7%	3.6%
Beaufort	183.74	64.2%	25.0%	2.42	7,584	64.7%	30,450	4.2%	113.2	86.0	40.0%	3.6%
Greenville	143.11	64.0%	26.2%	2.62	5,459	59.1%	29,088	4.9%	404.3	274.9	32.0%	3.7%
Lexington	148.17	63.6%	24.4%	2.68	5,522	65.7%	32,914	4.1%	239.1	169.8	46.3%	4.7%
Chesterfield	154.77	63.5%	36.5%	2.66	5,820	85.3%	21,069	5.9%	48.3	29.7	64.1%	9.0%
Newberry	121.31	63.3%	26.5%	1.95	6,233	64.6%	23,405	5.5%	52.6	34.9	43.0%	5.8%
Oconee	121.76	61.7%	19.6%	2.09	5,816	61.2%	25,723	7.7%	92.0	65.7	51.5%	5.8%
Richland	121.06	59.8%	29.8%	3.54	5,296	72.5%	28,848	4.6%	377.4	220.7	41.1%	3.3%
<b>Total</b>	156.16	67.3%	29.0%			63.2%	1,082,950		113.9	71.9	32.6%	4.6%
<b>Mean</b>	174.88	75.0%	100.0%	3.01	6,090	100.0%	23,542	7.7%	105.2	66.4	56.8%	5.4%

### Correlations

	<i>LR</i>	<i>ALC</i>	<i>FACMS</i>	<i>FREQ</i>	<i>SEV</i>	<i>BI/PD</i>	<i>MEDHI</i>	<i>UNR</i>	<i>VEHDEN</i>	<i>POPDEN</i>	<i>BI/TOTC</i>	<i>AL/TOTC</i>
LR	1.0000											
ALC	0.8570	1.0000										
FACMS	0.5204	0.5740	1.0000									
FREQ	0.5886	0.6497	0.7912	1.0000								
SEV	0.3273	0.4957	0.3885	0.1829	1.0000							
BI/PD	0.6355	0.6193	0.8941	0.8524	0.3373	1.0000						
MEDHI	-0.5106	-0.3898	-0.6522	-0.4584	-0.2581	-0.7437	1.0000					

UNR	0.4438	0.2558	0.4477	0.3562	0.0785	0.5665	-0.6036	1.0000				
VEHDEN	-0.4525	-0.2910	-0.4688	-0.1696	-0.3236	-0.5380	0.6889	-0.5585	1.0000			
POPDEN	-0.4448	-0.2661	-0.4114	-0.0882	-0.3128	-0.4741	0.6341	-0.5332	0.9889	1.0000		
BI/TOTC	0.3701	0.2154	0.2685	0.3008	0.0360	0.4413	-0.4919	0.5100	-0.4514	-0.4090	1.0000	
AL/TOTC	0.2851	0.1263	0.2948	0.0524	0.1633	0.3718	-0.4480	0.2874	-0.4437	-0.4488	0.4314	1.0000

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Sources: SC Department of Insurance, SC Department of Public Safety, Bureau of Labor Statistics

**Table D.10**  
**Description of Variables Used in Regression Analysis**

<b>Variable</b>	<b>Description</b>	<b>Data Years</b>	<b>Source</b>
county	County Name	NA	NA
year	Year	NA	NA
male1519	% Population Male aged 15-19	93-96	City County Data Book
male2024	% Population Male aged 20-24	93-96	City County Data Book
malepop	% Population Male	93-96	City County Data Book
pop1519	% Population aged 15-19	93-96	City County Data Book
pop2024	% Population aged 20-24	93-96	City County Data Book
pop6064	% Population aged 60-64	93-96	City County Data Book
pop65+	% Population aged 65 or higher	93-96	City County Data Book
pop	Total resident population	93-96	City County Data Book
poverty	% Population below poverty Rate	93	City County Data Book
highsch	% Population aged 25+ with a high school diploma	90	City County Data Book
college	% Population aged 25+ with a college degree	90	City County Data Book
athefts	Number of vehicle thefts	93-95	City County Data Book
crimes	Number of serious crimes	93-95	City County Data Book
vcrimes	Number of violent crimes	93-95	City County Data Book
landarea	County land area in square miles	NA	City County Data Book
numhholds	Number of house holds	90	City County Data Book
forborn	% Population born in a foreign country	90	City County Data Book
oenglish	% Population speaking other than english at home	90	City County Data Book
rural	% Population living in rural area	90	City County Data Book
medhinc	Median household income	90	City County Data Book
unemploy	Civilian Unemployment rate	93-96	City County Data Book
legalest	% Service establishments offering legal services	92	City County Data Book
clintwon	Indicator if clinton won popular vote in 1996	96	City County Data Book
numveh98	Number of Registered Vehicles - 1998	98	SC Department of Commerce
numveh90	Number of Registered Vehicles - 1990	90	SC Department of Commerce
numveh	Number of Registered Vehicles - Interpolated	93-98	
fatal	Number of Fatal Accidents	99	SC Department of Commerce
injury	Number of Injury Accidents	99	SC Department of Commerce
phydonly	Number of Accidents with Physical Damage Only	99	SC Department of Commerce

bires	% BI Exposures in Facility	93-98	SC Department of Insurance
pdlres	% PD Exposures in Facility	93-98	SC Department of Insurance
otcres	% OTC Exposures in Facility	93-98	SC Department of Insurance
collres	% COLL Exposures in Facility	93-98	SC Department of Insurance
bifreq	BI Claims Per Exposure Unit	93-98	SC Department of Insurance
bifreqc	BI Claims Per Exposure Unit - Private Market	93-98	SC Department of Insurance
bifreqr	BI Claims Per Exposure Unit - Facility	93-98	SC Department of Insurance
pdfreq	PD Claims Per Exposure Unit	93-98	SC Department of Insurance
pdfreqc	PD Claims Per Exposure Unit - Private Market	93-98	SC Department of Insurance
pdfreqr	PD Claims Per Exposure Unit - Facility	93-98	SC Department of Insurance
otcfreq	OTC Claims Per Exposure Unit	93-98	SC Department of Insurance
collfreq	COLL Claims Per Exposure Unit	93-98	SC Department of Insurance
bipd	Ratio: BI Frequency to PD Frequency	93-98	SC Department of Insurance
bipdc	Ratio: BI Frequency to PD Frequency - Private Market	93-98	SC Department of Insurance
bipdr	Ratio: BI Frequency to PD Frequency - Facility	93-98	SC Department of Insurance
biaprmc	BI Earned Premium Per Exposure Unit - Private Market	93-98	SC Department of Insurance
biaprmr	BI Earned Premium Per Exposure Unit - Facility	93-98	SC Department of Insurance
biaprm	BI Earned Premium Per Exposure Unit	93-98	SC Department of Insurance
apmallc	Earned Premium Per Exposure Unit All Coverages - Private Market	93-98	SC Department of Insurance
apmallr	Earned Premium Per Exposure Unit All Coverages - Facility	93-98	SC Department of Insurance
apmall	Earned Premium Per Exposure Unit All Coverages	93-98	SC Department of Insurance
pdaprmc	PD Earned Premium Per Exposure Unit - Private Market	93-98	SC Department of Insurance
pdaprmr	PD Earned Premium Per Exposure Unit - Facility	93-98	SC Department of Insurance
pdaprm	PD Earned Premium Per Exposure Unit	93-98	SC Department of Insurance
bialossc	BI Losses Per Exposure Unit - Private Market	93-98	SC Department of Insurance
bialossr	BI Losses Per Exposure Unit - Facility	93-98	SC Department of Insurance
bialoss	BI Losses Per Exposure Unit	93-98	SC Department of Insurance
pdalossc	PD Losses Per Exposure Unit - Private Market	93-98	SC Department of Insurance
pdalossr	PD Losses Per Exposure Unit - Facility	93-98	SC Department of Insurance
pdaloss	PD Losses Per Exposure Unit	93-98	SC Department of Insurance
alossc	Losses Per Exposure Unit - Private Market	93-98	SC Department of Insurance
alossr	Losses Per Exposure Unit - Facility	93-98	SC Department of Insurance
aloss	Losses Per Exposure Unit	93-98	SC Department of Insurance
lrbir	BI Loss Ratio - Facility	93-98	SC Department of Insurance
lrpdr	PD Loss Ratio - Facility	93-98	SC Department of Insurance
lrr	Loss Ratio - Facility	93-98	SC Department of Insurance

**Table D.11(a)**  
**Loss Inflation**  
**Dependent Variable: LOG(BIALOSSR/LBIALOSSR)**  
**Method: Least Squares**  
**Sample: 48 276**  
**Included observations: 229**  
**White Heteroskedasticity-Consistent Standard Errors & Covariance**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.4923	0.9841	4.5647	0.0000
LOG(LBIALOSSR)	-0.6793	0.0588	-11.5472	0.0000
LOG(BIRES)	0.4289	0.1125	3.8110	0.0002
LOG(MEDHINC)	-0.0292	0.1007	-0.2895	0.7725
LOG(LEGALPC)	0.0771	0.0311	2.4806	0.0139
YDUM95	-0.1856	0.0415	-4.4714	0.0000
YDUM96	-0.0679	0.0360	-1.8851	0.0607
YDUM97	-0.1205	0.0479	-2.5147	0.0126
YDUM98	-0.4221	0.0578	-7.3014	0.0000
R-squared	0.633736	Mean dependent var	0.533578	
Adjusted R-squared	0.620418	S.D. dependent var	0.331596	
S.E. of regression	0.204297	Akaike info criterion	-0.29998	
Sum squared resid	9.182186	Schwarz criterion	-0.16503	
Log likelihood	43.34737	F-statistic	47.58254	
Durbin-Watson stat	2.05196	Prob(F-statistic)	0	



**Table D.11(b)**  
**Loss Inflation**  
**Dependent Variable: LOG(BIALOSSC/LBIALOSSC)**  
**Method: Least Squares**  
**Sample: 48 276**  
**Included observations: 229**  
**White Heteroskedasticity-Consistent Standard Errors & Covariance**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.8415	1.3349	1.3795	0.1692
LOG(LBIALOSSC)	-0.5580	0.0780	-7.1535	0.0000
LOG(BIRES)	0.4197	0.1071	3.9182	0.0001
LOG(MEDHINC)	0.0768	0.1245	0.6170	0.5379
LOG(LEGALPC)	0.0674	0.0321	2.1016	0.0367
YDUM95	-0.1324	0.0501	-2.6404	0.0089
YDUM96	0.1258	0.0544	2.3126	0.0217
YDUM97	0.0772	0.0519	1.4860	0.1387
YDUM98	-0.0262	0.0533	-0.4912	0.6238
R-squared	0.379116	Mean dependent var	-0.63742	
Adjusted R-squared	0.356539	S.D. dependent var	0.286975	
S.E. of regression	0.2302	Akaike info criterion	-0.06123	
Sum squared resid	11.65822	Schwarz criterion	0.073719	
Log likelihood	16.01094	F-statistic	16.79172	
Durbin-Watson stat	1.956259	Prob(F-statistic)	0	

**Table D.11(c)**

**Loss Inflation**

**Dependent Variable: LOG(PDALOSSR/LPDALOSSR)**

**Method: Least Squares**

**Sample: 48 276**

**Included observations: 229**

**White Heteroskedasticity-Consistent Standard Errors & Covariance**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.1043	0.4963	-0.2102	0.8337
LOG(LPDALOSSR)	-0.4860	0.0607	-8.0020	0.0000
LOG(PDLRES)	-0.0221	0.0526	-0.4193	0.6754
LOG(MEDHINC)	0.2281	0.0555	4.1060	0.0001
LOG(LEGALPC)	0.0514	0.0176	2.9202	0.0039
YDUM95	-0.0907	0.0286	-3.1750	0.0017
YDUM96	-0.0714	0.0311	-2.2915	0.0229
YDUM97	-0.0611	0.0326	-1.8758	0.0620
YDUM98	-0.1986	0.0376	-5.2812	0.0000
R-squared	0.561677	Mean dependent var	0.041139	
Adjusted R-squared	0.545738	S.D. dependent var	0.180759	
S.E. of regression	0.121829	Akaike info criterion	-1.33388	
Sum squared resid	3.26533	Schwarz criterion	-1.19893	
Log likelihood	161.7294	F-statistic	35.23908	
Durbin-Watson stat	2.128839	Prob(F-statistic)	0	

**Table D.11(d)**  
**Loss Inflation**  
**Dependent Variable: LOG(PDALOSSC/LPDALOSSC)**  
**Method: Least Squares**  
**Sample: 48 276**  
**Included observations: 229**

**White Heteroskedasticity-Consistent Standard Errors & Covariance**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.2152	0.6037	-0.3564	0.7219
LOG(LPDALOSSC)	-0.4694	0.0574	-8.1779	0.0000
LOG(PDLRES)	0.0492	0.0554	0.8890	0.3750
LOG(MEDHINC)	0.2069	0.0669	3.0934	0.0022
LOG(LEGALPC)	0.0482	0.0191	2.5236	0.0123
YDUM95	-0.0453	0.0287	-1.5803	0.1155
YDUM96	-0.0048	0.0292	-0.1660	0.8683
YDUM97	-0.0019	0.0333	-0.0586	0.9534
YDUM98	-0.0103	0.0362	-0.2859	0.7752
R-squared	0.301573	Mean dependent var		0.04015
Adjusted R-squared	0.276176	S.D. dependent var		0.151902
S.E. of regression	0.129235	Akaike info criterion		-1.21586
Sum squared resid	3.674384	Schwarz criterion		-1.08091
Log likelihood	148.2156	F-statistic		11.87421
Durbin-Watson stat	2.047319	Prob(F-statistic)		0

Table D.11(e)

Loss Inflation - Weighted Least Squares Estimation

Dependent Variable: LOG(BIALOSSC/LBIALOSSC)

Method: Least Squares

Sample: 48 276

Included observations: 229

Weighting series: NUMVEH^(-.5)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.8605	1.8711	3.6666	0.0003
LOG(LBIALOSSC)	-0.6964	0.0815	-8.5489	0.0000
LOG(BIRES)	0.4195	0.1240	3.3826	0.0009
LOG(MEDHINC)	-0.2876	0.1885	-1.5255	0.1286
LOG(LEGAL/NUMHHOLDS)	0.1068	0.0489	2.1851	0.0299
LOG(POPDENS)	0.0983	0.0449	2.1899	0.0296
YDUM95	-0.0802	0.0586	-1.3676	0.1728
YDUM96	0.1295	0.0561	2.3070	0.0220
YDUM97	0.0630	0.0618	1.0200	0.3088
YDUM98	-0.0629	0.0662	-0.9492	0.3436

Weighted Statistics

R-squared	0.641669	Mean dependent var	-0.64171
Adjusted R-squared	0.626943	S.D. dependent var	0.49255
S.E. of regression	0.300842	Akaike info criterion	0.478222
Sum squared resid	19.82078	Schwarz criterion	0.628166
Log likelihood	-44.7565	F-statistic	14.46026
Durbin-Watson stat	1.966135	Prob(F-statistic)	0

Unweighted Statistics

R-squared	0.351012	Mean dependent var	-0.63742
Adjusted R-squared	0.324341	S.D. dependent var	0.286975
S.E. of regression	0.235889	Sum squared resid	12.18593
Durbin-Watson stat	1.857124		

Table D.11(f)

Loss Inflation - Weighted Least Squares Estimation

Dependent Variable: LOG(BIALOSSR/LBIALOSSR)

Method: Least Squares

Sample: 48 276

Included observations: 229

Weighting series: NUMVEH^(-.5)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.081	1.377	8.047	0.000
LOG(LBIALOSSR)	-0.863	0.050	-17.412	0.000
LOG(BIRES)	0.468	0.093	5.049	0.000
LOG(MEDHINC)	-0.525	0.146	-3.602	0.000
LOG(LEGAL/NUMHHOLDS)	0.112	0.038	2.956	0.004
LOG(POPDENS)	0.105	0.035	3.000	0.003
YDUM95	-0.211	0.043	-4.899	0.000
YDUM96	-0.112	0.044	-2.569	0.011
YDUM97	-0.142	0.048	-2.987	0.003
YDUM98	-0.496	0.051	-9.735	0.000

Weighted Statistics

R-squared	0.793808	Mean dependent var	0.539876
Adjusted R-squared	0.785334	S.D. dependent var	0.503571
S.E. of regression	0.233314	Akaike info criterion	-0.03017
Sum squared resid	11.92141	Schwarz criterion	0.119771
Log likelihood	13.45481	F-statistic	59.40966
Durbin-Watson stat	2.036812	Prob(F-statistic)	0

Unweighted Statistics

R-squared	0.61436	Mean dependent var	0.533578
Adjusted R-squared	0.598512	S.D. dependent var	0.331596
S.E. of regression	0.210109	Sum squared resid	9.667946
Durbin-Watson stat	2.025644		

Table D.11(g)

Loss Inflation - Weighted Least Squares Estimation

Dependent Variable: LOG(PDALOSSC/LPDALOSSC)

Method: Least Squares

Sample: 48 276

Included observations: 229

Weighting series: NUMVEH<sup>(-.5)</sup>

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.8682	1.0005	1.8672	0.0632
LOG(LPDALOSSC)	-0.5012	0.0604	-8.2937	0.0000
LOG(PDLRES)	0.0798	0.0653	1.2235	0.2225
LOG(MEDHINC)	0.0405	0.1081	0.3750	0.7081
LOG(LEGAL/NUMHHOLDS)	0.0343	0.0295	1.1635	0.2459
LOG(POPDENS)	0.0469	0.0277	1.6925	0.0920
YDUM95	-0.0930	0.0357	-2.6048	0.0098
YDUM96	-0.0344	0.0358	-0.9588	0.3387
YDUM97	-0.0655	0.0399	-1.6410	0.1022
YDUM98	-0.0659	0.0424	-1.5516	0.1222

Weighted Statistics

R-squared	0.361009	Mean dependent var	0.04034
Adjusted R-squared	0.334749	S.D. dependent var	0.222527
S.E. of regression	0.181499	Akaike info criterion	-0.53244
Sum squared resid	7.2143	Schwarz criterion	-0.3825
Log likelihood	70.96479	F-statistic	13.55656
Durbin-Watson stat	1.98057	Prob(F-statistic)	0

Unweighted Statistics

R-squared	0.295808	Mean dependent var	0.04015
Adjusted R-squared	0.266869	S.D. dependent var	0.151902
S.E. of regression	0.130063	Sum squared resid	3.704715
Durbin-Watson stat	1.937363		

Table D.11(h)

Loss Inflation - Weighted Least Squares Estimation  
 Dependent Variable: LOG(PDALOSSR/LPDALOSSR)  
 Method: Least Squares  
 Sample: 48 276  
 Included observations: 229  
 Weighting series: NUMVEH^(-.5)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.560	0.817	1.909	0.058
LOG(LPDALOSSR)	-0.554	0.053	-10.437	0.000
LOG(PDLRES)	0.075	0.055	1.344	0.180
LOG(MEDHINC)	0.101	0.092	1.095	0.275
LOG(LEGAL/NUMHHOLDS)	0.023	0.025	0.947	0.345
LOG(POPDENS)	0.084	0.023	3.625	0.000
YDUM95	-0.076	0.031	-2.428	0.016
YDUM96	-0.046	0.032	-1.453	0.148
YDUM97	-0.048	0.035	-1.376	0.170
YDUM98	-0.187	0.037	-5.016	0.000

Weighted Statistics

R-squared	0.560007	Mean dependent var	0.039933
Adjusted R-squared	0.541925	S.D. dependent var	0.228782
S.E. of regression	0.154843	Akaike info criterion	-0.85013
Sum squared resid	5.250795	Schwarz criterion	-0.70019
Log likelihood	107.3398	F-statistic	30.9401
Durbin-Watson stat	2.082344	Prob(F-statistic)	0

Unweighted Statistics

R-squared	0.583307	Mean dependent var	0.041139
Adjusted R-squared	0.566182	S.D. dependent var	0.180759
S.E. of regression	0.119056	Sum squared resid	3.104195
Durbin-Watson stat	2.149875		

**Table D.12(a)**  
**Residual Market**  
**Dependent Variable: LOG(BIRES)**  
**Method: Least Squares**  
**Included observations: 276**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.2661	0.3079	0.8642	0.3883
LOG(POVERTY)	0.4823	0.0288	16.7714	0.0000
LOG(RURAL)	0.1670	0.0230	7.2715	0.0000
LOG(POP1519+POP2024)	-0.1404	0.0761	-1.8438	0.0663
LOG(POP6599)	-0.3202	0.0514	-6.2300	0.0000
LOG(CRIMES/POP)	0.0831	0.0213	3.9043	0.0001
LOG(MALEPOP)	1.1154	0.3073	3.6301	0.0003
YDUM94	-0.0837	0.0250	-3.3443	0.0009
YDUM95	-0.1269	0.0251	-5.0577	0.0000
YDUM96	-0.1412	0.0252	-5.6028	0.0000
YDUM97	-0.2940	0.0252	-11.6642	0.0000
YDUM98	-0.3839	0.0252	-15.2282	0.0000
R-squared	0.757766	Mean dependent var	-0.94815	
Adjusted R-squared	0.747673	S.D. dependent var	0.238653	
S.E. of regression	0.119881	Akaike info criterion	-1.36214	
Sum squared resid	3.794042	Schwarz criterion	-1.20473	
Log likelihood	199.9747	F-statistic	75.07767	
Durbin-Watson stat	1.887542	Prob(F-statistic)	0	



**Table D.12(b)**  
**Residual Market**  
**Dependent Variable: LOG(BIRES)**  
**Method: Least Squares**  
**Included observations: 276**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.9264	1.4664	1.3137	0.1901
LOG(POVERTY)	0.3891	0.0855	4.5499	0.0000
LOG(RURAL)	0.1524	0.0262	5.8194	0.0000
LOG(POP1519+POP2024)	-0.1488	0.0764	-1.9470	0.0526
LOG(POP6599)	-0.3475	0.0565	-6.1478	0.0000
LOG(CRIMES/POP)	0.0881	0.0217	4.0596	0.0001
LOG(MALEPOP)	1.0924	0.3077	3.5502	0.0005
LOG(MEDHINC)	-0.1871	0.1616	-1.1580	0.2479
YDUM94	-0.0837	0.0250	-3.3460	0.0009
YDUM95	-0.1269	0.0251	-5.0596	0.0000
YDUM96	-0.1412	0.0252	-5.6042	0.0000
YDUM97	-0.2940	0.0252	-11.6695	0.0000
YDUM98	-0.3838	0.0252	-15.2358	0.0000
R-squared	0.758995	Mean dependent var	-0.94815	
Adjusted R-squared	0.747998	S.D. dependent var	0.238653	
S.E. of regression	0.119803	Akaike info criterion	-1.35998	
Sum squared resid	3.774796	Schwarz criterion	-1.18945	
Log likelihood	200.6765	F-statistic	69.02181	
Durbin-Watson stat	1.877715	Prob(F-statistic)	0	

**Table D.13(a)**  
**Excessive Claiming/Fraud**  
**Dependent Variable: LOG(BIPD)**  
**Method: Least Squares**  
**Included observations: 276**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.1049	1.2056	5.0638	0.0000
LOG(UNEMPLOY)	0.1160	0.0350	3.3178	0.0010
LOG(NUMVEH/NUMHHOLDS)	0.1096	0.1616	0.6784	0.4981
LOG(RURAL)	-0.0376	0.0464	-0.8112	0.4180
LOG(BIRES)	0.5327	0.0636	8.3727	0.0000
LOG(OENGLISH)	0.0966	0.0361	2.6778	0.0079
LOG(MEDHINC)	-0.5583	0.1368	-4.0807	0.0001
LOG(LEGALEST)	-0.0388	0.0336	-1.1524	0.2502
YDUM94	0.0917	0.0306	2.9926	0.0030
YDUM95	0.2029	0.0353	5.7454	0.0000
YDUM96	0.2027	0.0389	5.2120	0.0000
YDUM97	0.2634	0.0476	5.5307	0.0000
YDUM98	0.2162	0.0560	3.8574	0.0001
R-squared	0.712633	Mean dependent var		-0.29545
Adjusted R-squared	0.699522	S.D. dependent var		0.251483
S.E. of regression	0.137853	Akaike info criterion		-1.07931
Sum squared resid	4.99789	Schwarz criterion		-0.90878
Log likelihood	161.9441	F-statistic		54.35061
Durbin-Watson stat	2.020176	Prob(F-statistic)		0

**Table D.13(b)**  
**Excessive Claiming/Fraud**  
**Dependent Variable: LOG(BIPD)**  
**Method: Least Squares**  
**Included observations: 276**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.3491	1.5404	6.0692	0.0000
LOG(UNEMPLOY)	0.1592	0.0368	4.3326	0.0000
LOG(NUMVEH/NUMHHOLDS)	0.1402	0.1589	0.8822	0.3785
LOG(RURAL)	6.1643	1.8851	3.2701	0.0012
LOG(BIRES)	0.4111	0.0726	5.6656	0.0000
LOG(OENGLISH)	0.1012	0.0354	2.8571	0.0046
LOG(MEDHINC)	-0.8709	0.1645	-5.2936	0.0000
LOG(MEDHINC)*LOG(RURAL)	-0.6034	0.1834	-3.2910	0.0011
LOG(LEGALEST)	-0.0262	0.0332	-0.7878	0.4315
YDUM94	0.0878	0.0301	2.9152	0.0039
YDUM95	0.2005	0.0347	5.7804	0.0000
YDUM96	0.1902	0.0384	4.9561	0.0000
YDUM97	0.2308	0.0478	4.8287	0.0000
YDUM98	0.1712	0.0567	3.0185	0.0028
R-squared	0.724041	Mean dependent var		-0.29545
Adjusted R-squared	0.710348	S.D. dependent var		0.251483
S.E. of regression	0.135346	Akaike info criterion		-1.11257
Sum squared resid	4.799489	Schwarz criterion		-0.92892
Log likelihood	167.534	F-statistic		52.87819
Durbin-Watson stat	1.925618	Prob(F-statistic)		0

**Table D.13(c)**  
**Excessive Claiming/Fraud**  
**Dependent Variable: LOG(BIPD)**  
**Method: Least Squares**  
**Included observations: 276**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.3590	1.5971	3.3555	0.0009
LOG(UNEMPLOY)	0.1344	0.0362	3.7177	0.0002
LOG(NUMVEH/POP)	-0.5040	0.1432	-3.5198	0.0005
LOG(RURAL)	5.1022	1.8643	2.7368	0.0066
LOG(BIRES)	0.4248	0.0705	6.0280	0.0000
LOG(OENGLISH)	0.0563	0.0371	1.5184	0.1301
LOG(MEDHINC)	-0.5074	0.1572	-3.2272	0.0014
LOG(MEDHINC)*LOG(RURAL)	-0.4929	0.1814	-2.7167	0.0070
LOG(LEGALEST)	-0.0298	0.0325	-0.9189	0.3590
YDUM94	0.1131	0.0289	3.9084	0.0001
YDUM95	0.2507	0.0323	7.7697	0.0000
YDUM96	0.2734	0.0343	7.9762	0.0000
YDUM97	0.3479	0.0419	8.2968	0.0000
YDUM98	0.3214	0.0494	6.5070	0.0000
R-squared	0.735718	Mean dependent var		-0.29545
Adjusted R-squared	0.722605	S.D. dependent var		0.251483
S.E. of regression	0.132452	Akaike info criterion		-1.1558
Sum squared resid	4.596399	Schwarz criterion		-0.97216
Log likelihood	173.5006	F-statistic		56.10507
Durbin-Watson stat	1.894555	Prob(F-statistic)		0

Table D.14(a)

Insurance Demand - Two-Stage Least Squares

Dependent Variable: LOG((BIEEC+BIEER)/NUMHHOLDS)

Method: Two-Stage Least Squares

Date: 01/15/01 Time: 14:34

Sample: 1 276

Included observations: 276

Instrument list: C LOG(MEDHINC) LOG(POPDENS) YDUM94 YDUM95

YDUM96 YDUM97 YDUM98 LOG(COLLEGE) LOG(CRIMES/POP)

LOG(LEGALPC)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.921	2.678	-0.717	0.474
LOG(MEDHINC)	0.582	0.119	4.911	0.000
LOG(POPDENS)	-0.113	0.027	-4.134	0.000
LOG(APRMALL)	-0.456	0.294	-1.549	0.123
YDUM94	-0.024	0.040	-0.596	0.551
YDUM95	0.015	0.040	0.374	0.709
YDUM96	0.039	0.040	0.968	0.334
YDUM97	0.099	0.051	1.934	0.054
YDUM98	0.138	0.059	2.332	0.021
R-squared	0.160425	Mean dependent var		0.622272
Adjusted R-squared	0.135269	S.D. dependent var		0.205005
S.E. of regression	0.190636	Sum squared resid		9.703354
F-statistic	8.167242	Durbin-Watson stat		2.114122
Prob(F-statistic)	0			

Table D.14(b)

Insurance Demand - Two-Stage Least Squares

Dependent Variable: LOG((BIEEC)/NUMHHOLDS)

Method: Two-Stage Least Squares

Date: 01/15/01 Time: 14:37

Sample: 1 276

Included observations: 276

Instrument list: C LOG(MEDHINC) LOG(POPDENS) YDUM94 YDUM95

YDUM96 YDUM97 YDUM98 LOG(COLLEGE) LOG(CRIMES/POP)

LOG(LEGALPC)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.833	2.096	-4.214	0.000
LOG(MEDHINC)	1.134	0.094	12.032	0.000
LOG(POPDENS)	-0.106	0.023	-4.706	0.000
LOG(APRMALLC)	-0.358	0.232	-1.541	0.125
YDUM94	0.041	0.033	1.240	0.216
YDUM95	0.114	0.034	3.391	0.001
YDUM96	0.142	0.034	4.238	0.000
YDUM97	0.265	0.033	8.132	0.000
YDUM98	0.342	0.034	10.124	0.000
R-squared	0.63531	Mean dependent var		0.098898
Adjusted R-squared	0.624383	S.D. dependent var		0.253295
S.E. of regression	0.155239	Sum squared resid		6.434454
F-statistic	56.63901	Durbin-Watson stat		2.059917
Prob(F-statistic)	0			

Table D.14(c)

Insurance Demand - Two-Stage Least Squares

Dependent Variable: LOG((BIEEC)/NUMHHOLDS)

Method: Two-Stage Least Squares

Date: 01/15/01 Time: 14:39

Sample: 1 276

Included observations: 276

Instrument list: C LOG(MEDHINC) LOG(POPDENS) YDUM94 YDUM95

YDUM96 YDUM97 YDUM98 LOG(COLLEGE) LOG(CRIMES/POP)

LOG(LEGALPC)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.8053	3.4040	-0.5303	0.5963
LOG(MEDHINC)	0.6570	0.1913	3.4355	0.0007
LOG(POPDENS)	-0.0651	0.0304	-2.1443	0.0329
LOG(APRMALLC)	-0.7326	0.3073	-2.3837	0.0178
LOG(LRR)	-1.0068	0.3229	-3.1177	0.0020
YDUM94	0.1041	0.0448	2.3250	0.0208
YDUM95	0.1456	0.0421	3.4545	0.0006
YDUM96	0.2256	0.0488	4.6209	0.0000
YDUM97	0.2395	0.0405	5.9111	0.0000
YDUM98	0.0311	0.1077	0.2889	0.7729
R-squared	0.461956	Mean dependent var		0.098898
Adjusted R-squared	0.443751	S.D. dependent var		0.253295
S.E. of regression	0.188913	Sum squared resid		9.493043
F-statistic	35.07695	Durbin-Watson stat		2.20777
Prob(F-statistic)	0			

Table D.14(d)

Insurance Demand - Two-Stage Least Squares

Dependent Variable: LOG((BIEER)/NUMHHOLDS)

Method: Two-Stage Least Squares

Date: 01/15/01 Time: 14:40

Sample: 1 276

Included observations: 276

Instrument list: C LOG(MEDHINC) LOG(POPDENS) YDUM94 YDUM95

YDUM96 YDUM97 YDUM98 LOG(COLLEGE) LOG(CRIMES/POP)

LOG(LEGALPC)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.755	3.998	0.939	0.348
LOG(MEDHINC)	-0.058	0.151	-0.384	0.702
LOG(POPDENS)	-0.133	0.042	-3.177	0.002
LOG(APRMALLR)	-0.433	0.515	-0.841	0.401
YDUM94	-0.085	0.069	-1.242	0.215
YDUM95	-0.085	0.067	-1.263	0.208
YDUM96	-0.070	0.070	-0.996	0.320
YDUM97	-0.090	0.191	-0.470	0.639
YDUM98	-0.106	0.252	-0.421	0.674
R-squared	0.241757	Mean dependent var	-0.325876	
Adjusted R-squared	0.219038	S.D. dependent var	0.315346	
S.E. of regression	0.278678	Sum squared resid	20.7356	
F-statistic	11.12812	Durbin-Watson stat	1.932179	
Prob(F-statistic)	0			



Table D.14(e)

Insurance Demand - Two-Stage Least Squares

Dependent Variable: LOG((BIEER)/NUMHHOLDS)

Method: Two-Stage Least Squares

Date: 01/15/01 Time: 14:42

Sample: 1 276

Included observations: 276

Instrument list: C LOG(MEDHINC) LOG(POPDENS) YDUM94 YDUM95

YDUM96 YDUM97 YDUM98 LOG(COLLEGE) LOG(CRIMES/POP)

LOG(LEGALPC)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.7382	6.0881	-0.9425	0.3468
LOG(MEDHINC)	0.4823	0.2936	1.6430	0.1016
LOG(POPDENS)	-0.1902	0.0521	-3.6512	0.0003
LOG(APRMALLR)	0.2372	0.6335	0.3744	0.7084
LOG(LRR)	1.1929	0.5393	2.2118	0.0278
YDUM94	-0.2177	0.0953	-2.2842	0.0232
YDUM95	-0.1826	0.0848	-2.1527	0.0322
YDUM96	-0.2374	0.1072	-2.2142	0.0277
YDUM97	-0.2887	0.2251	-1.2826	0.2007
YDUM98	-0.0382	0.2734	-0.1397	0.8890
R-squared	0.118851	Mean dependent var	-0.325876	
Adjusted R-squared	0.089037	S.D. dependent var	0.315346	
S.E. of regression	0.30098	Sum squared resid	24.09671	
F-statistic	9.023622	Durbin-Watson stat	2.112645	
Prob(F-statistic)	0			