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The Effects of a Choice Auto Insurance Plan on Insurance Costs

Allan F. Abrahamse, Stephen J. Carroll

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Preface

Escalating auto insurance premiums have been a major public policy issue at the state level for the last three decades. *No-fault* auto insurance, born in the 1960s, was one response. It offered cost savings and speedier, more certain compensation to auto accident victims. But because it required claimants to give up rights to seek compensation through the courts, many states found it an unappealing alternative. *Choice* auto insurance addresses this concern by giving drivers the option of selecting a traditional auto insurance plan or a no-fault plan. This report estimates how a choice plan would affect auto-insurance costs in each state.

The Institute for Civil Justice has been conducting research on auto-insurance issues since its inception in 1979. This study will be of interest to policymakers in each state concerned with insurance matters, to insurers, and to consumers.

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Summary

No-fault automobile insurance plans offer cost savings and speedier, more certain compensation to auto accident victims. But for motorists to obtain those benefits, the state must deny them traditional tort rights unless the costs or nature of their injuries exceeds a specified threshold. Many states confronted with this trade-off have been unwilling to impose no-fault.

Choice auto insurance was proposed as a response to this policy concern. Under a choice auto insurance system, drivers elect to be insured under either the traditional system or a no-fault plan. Those who opt for tort retain traditional tort rights and liabilities. Those who choose no-fault neither recover nor are liable to others for noneconomic losses for less serious injuries incurred in auto accidents. The plan does not affect existing insurance coverage for property damage resulting from auto accidents.

In principle, the no-fault option should cost less. But in practice, how much would a choice plan reduce the premiums motorists who chose no-fault pay? And what would happen to motorists who opted for tort?

As an initial step toward understanding these effects, we estimated how a plan that offers a choice between tort and absolute no-fault would affect the costs of auto insurance in each of the states that now relies on the traditional tort system. The plan we analyzed is the most extreme version of choice: Motorists who elect absolute no-fault neither recover nor are liable for noneconomic loss for any auto accident injury, no matter how serious. As such, the results of these analyses suggest the upper bound on the savings that can be accomplished in each tort state via the choice approach.

We also estimated the effects of an analogous choice plan on auto insurance costs in each of the states that has already adopted some form of no-fault auto insurance. In each of these states, we considered a plan offering a choice between the state's current no-fault plan and absolute no-fault. The results of these analyses suggest the upper bound on the savings that can be accomplished in each no-fault state by extending the no-fault concept to its limit.

Approach

In each state, we estimated the average costs auto insurers incur in compensating a representative sample of accident victims under the current system. We then estimated the average costs insurers would incur under the choice plan for those same accident victims on behalf of either drivers who opt for the current system or drivers who elect absolute no-fault. We compared average costs per insured driver under the current system to average costs for drivers who elect either the current system or absolute no-fault under the choice plan to determine how the adoption of the choice plan would affect auto insurance costs for drivers who elect either type of insurance.

Our data were collected in the late 1980s; thus, our results pertain to the auto insurance system then in place in each state. Because we focused on the relative costs of absolute no-fault and the current system in each state, any factors that proportionately affect costs under both the current system and the choice plan net out in the comparison. Our results are insensitive to changes in such factors over time.

Results

In the tort states, we estimated that the costs of compensating accident victims on behalf of drivers who elect no-fault would generally be at least 60 percent less than what they would be under the traditional tort system. The costs of compensating victims on behalf of drivers who choose to remain with tort under choice might increase, but probably by no more than 10 percent, and it is likely that the costs would decrease.

If auto insurance premiums are proportional to the costs insurers incur on behalf of those they insure, the adoption of a choice plan would allow drivers in tort states who are willing to waive their tort rights to buy personal injury coverage for about 40 percent of what they have to pay to buy that coverage under the tort system. (Because coverages for personal injury and property damage each account for roughly half of total auto insurance compensation costs, a 60-percent reduction in the costs of personal injury coverage should translate into a roughly 30-percent reduction in a driver's total auto insurance premium.) Drivers who prefer to retain their full tort rights could do so, at essentially the same costs as under the tort system.

In no-fault states, the effects of the choice plan on the costs of compensating accident victims are similar to the results for the tort states, with a few exceptions. In most of these states, if auto insurance premiums are proportional

to the costs insurers incur on behalf of those they insure, adopting a choice plan would allow drivers willing to waive the limited tort rights available under their state's current no-fault plan to buy absolute no-fault personal injury coverage for roughly 60 percent less than what they have to pay to buy that coverage under their state's current no-fault system. This translates into a 30-percent reduction in a driver's total auto insurance premium.

In four no-fault states, these savings are considerably lower. Drivers in these states who choose absolute no-fault will pay about 30 percent of what they pay for personal injury coverage under the current no-fault system, which translates into a 15-percent reduction in a driver's total auto insurance premium.

In most (four) no-fault states, drivers who preferred to retain their current no-fault plan would pay no more (15 percent more) for personal injury coverage than under the current system. That would imply no change (5-10 percent increase) in a driver's total auto insurance premium.

Sensitivity Analysis

We examined the sensitivity of our results to the fundamental assumptions that underlie the analysis. We varied one or another of the assumptions and repeated the entire analysis until we had systematically considered all reasonable possibilities in each state. The results map out the effects of adopting the choice plan for all reasonable assumptions in each state. Accordingly, policymakers interested in the implications of the analysis for a specific state can focus on the combination of assumptions mostly likely to apply in that state. Because the mapping shows how the results vary as each of the assumptions varies, it indicates the sensitivity of the results to variations in the assumptions.

Acknowledgments

We owe thanks to many people for the enormous amount of help that we received. We are particularly indebted to RAND colleagues Mark Peterson, Daniel Relles, and Deborah Hensler who reviewed earlier drafts of this report and offered numerous helpful comments. We are also greatly indebted to Jeffrey O'Connell (University of Virginia) who brought the Choice approach to automobile insurance plan to our attention. We have also benefited from comments and suggestions offered by the members of the ICJ's Board of Overseers who also reviewed the earlier drafts of the report

A great many people have contributed to our understanding of the workings of auto insurance systems. We cannot name every person who spent time with us; the list would be very long, and several of our conversations were on a nonattribution basis. We generally thank those public officials from many states, including judges, legislative staff, and staff from state insurance departments, who helped us understand the dimensions of the auto insurance policy debate. We also thank the many representative of private organizations—consumer groups, insurance companies, and the plaintiffs' bar—who shared their perspectives and concerns with us. And we thank the people involved in the day-to-day operations of auto insurance systems—plaintiffs' attorneys, defendants' attorneys, and claims' agents—who devoted many hours of their time to helping us understand how the auto insurance system works in practice.

We used data provided by several organizations. We are particularly indebted to the Insurance Research Council (IRC). Much of our analysis is based on the IRC's Closed Claim and Consumer Panel databases.

Finally, we thank Mary Vaiana for helping us structure the report, Phyllis Gilmore for her editorial assistance, and Tracy Jenkins for typing the drafts of this report.

Abbreviations

ANF	Absolute no-fault plan
BI	Bodily Injury
MP	Medical payments
PIP	Personal Injury Protection
TM	Tort maintenance
UIM	Underinsured Motorist
UM	Uninsured Motorist
XS	Excess specials

1. Introduction

The Roots of "Choice" Auto Insurance

Concerns about rising costs of auto insurance covering personal injuries and dissatisfaction with a liability-based system for compensating auto accident victims spawned no-fault auto insurance in the 1970s. Sixteen states enacted some form of no-fault plan between 1971 and 1976. Although many of the other states subsequently debated no-fault, none adopted a no-fault plan.[1] Cost savings and speedier, more certain compensation made no-fault appealing. But for the motorists to obtain those benefits, the states had to deny them traditional tort rights unless they exceeded the tort threshold. Policymakers confronted with this trade-off were unwilling to impose no-fault.

In response to this dilemma, O'Connell and Joost (1986) proposed choice auto insurance. Under their proposal, drivers are offered a choice between the tort system and a no-fault plan. Those who elect tort retain traditional tort rights and exposures. Those who elect no-fault waive their rights to compensation for noneconomic losses resulting from an injury that does not exceed a specified threshold. In return, they are assured compensation, regardless of fault, for their own economic losses and are exempted from liability for noneconomic losses others incur from below-threshold injuries. Because those who elect no-fault would neither be paid nor held liable for noneconomic losses resulting from below-threshold injuries, their insurance premiums would presumably be lowered.

Giving motorists a choice of coverage has strong logical appeal. In principle, cost-sensitive drivers could realize the savings that would result from electing the no-fault option without infringing on the rights of drivers who valued their tort rights over cost reductions. But in practice, how much would a choice plan reduce the premiums that motorists who chose no-fault pay? Would motorists who opted for tort encounter lower or higher premiums?[2]

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[1]Pennsylvania, one of the original no-fault states, repealed its no-fault law in 1984, then adopted a different form of no-fault in 1990. The District of Columbia adopted no-fault in 1983, but discarded its plan in 1986. Georgia and Nevada have discarded no-fault plans. Many of the no-fault states have significantly modified their plans since their initial adoption.

[2]Kentucky has offered drivers a choice between the tort system and a $1,000 threshold, no-fault plan since the 1970s. However, nearly all Kentucky drivers have opted for the no-fault alternative;

Research Approach

As an initial step toward understanding the effects of choice auto insurance on premiums, we estimated how a plan that offers a choice between tort and absolute no-fault would affect the costs of auto insurance in each of the states that relied on the traditional tort system in 1988.[3] The plan we analyzed is the most extreme version of choice—motorists who elect no-fault may never sue, nor be sued, for noneconomic loss. As such, the results of this analysis suggest the upper bound on the savings that can be accomplished in each tort state via the choice approach.

We also estimated the effects of a corresponding choice plan on auto insurance costs in each of the states that had some form of no-fault auto insurance in 1988. In each of these states, we considered a plan offering a choice between the current no-fault plan and absolute no-fault.[4] The results of these analyses suggest the upper bound on the savings that can be accomplished in each no-fault state if the no-fault approach is extended to its limit.

Key Findings

Our analysis strongly suggests that, if insurance premiums are proportional to compensation costs, drivers who opt for absolute no-fault should obtain dramatic reductions—on the order of 60 percent—in their premiums for personal injury coverage. Thus, the plan offers drivers the opportunity to waive their tort rights in return for much lower insurance premiums. At the same time, the plan will have little effect on drivers who opt for coverage under their state's current system. They will recover as much for their injuries and losses as they would under their state's current system, and there is no reason to expect any significant change in their insurance premiums.

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for all practical purposes, Kentucky is a dollar threshold state. New Jersey, in 1989, and Pennsylvania, in 1990, have recently adopted plans that offer drivers a choice between the tort system and verbal threshold, no-fault. It is too soon to tell how either plan will affect premiums over the long term. In any case, at best these states' experiences indicate only how the particular plan each adopted worked in that particular context.

[3]Because our data describe the outcomes of claims closed in 1988, they reflect the insurance system in place in each state that year. For purposes of this analysis, *tort states* are those that relied on the traditional tort system in 1988.

[4]For purposes of this analysis, *no-fault states* are those that had a no-fault plan in 1988, and the *current plan* is the no-fault plan in place that year.

Organization of the Discussion

The remainder of this discussion is organized as follows. In Section 2, we describe our research approach, including the data and assumptions on which the analysis is based. In Section 3, we discuss the methods we used to estimate compensation costs under either the current system or the choice plan in each state and the relative savings under the choice plan compared to the current system. Section 4 presents our findings and describes the sensitivity analyses we conducted. Section 5 contains our conclusions.

2. Research Approach

The Choice Plan

Choice in the Tort States

The choice plan we examined is patterned on one designed by O'Connell and Horowitz[1] for the states in which the traditional tort system governs compensation for auto accident victims. Under their proposal, drivers are given a choice between the tort system and a no-fault plan that absolutely bans recovery for noneconomic losses. Drivers who opt for the tort system are required to purchase *bodily injury* (BI) coverage (the insurance that pays compensation to someone injured by the driver) to at least the state's financial responsibility level. They are also required to purchase a new form of insurance, *tort maintenance* (TM), to at least that level.[2] They may purchase the same optional *medical payments* (MP), *uninsured motorist* (UM), and *underinsured motorist* (UIM) coverages as in the traditional tort system.

In the event of an accident between two tort-insured drivers or between a tort-insured and an uninsured driver, the traditional rules of the tort system govern recovery. An injured party may seek compensation for all economic and noneconomic losses[3] from the driver who caused the accident.[4] However, the accident victim is entitled to compensation only to the degree that the other driver is responsible for the accident. A driver's BI insurance pays the compensation he owes someone he injures, up to the policy's limits. UM (UIM) insurance pays the policyholder any compensation he cannot obtain from an uninsured (underinsured) motorist, up to policy limits.

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[1]O'Connell et al. (1993), Appendix II, presents a draft of the plan.

[2]Tort maintenance coverage compensates the policyholder if he or she is injured by a driver who opted for no-fault.

[3]Economic losses include an accident victim's medical costs, lost wages, burial expenses, replacement service losses, and other pecuniary expenditures. Noneconomic losses include physical and emotional pain, physical impairment, mental anguish, disfigurement, loss of enjoyment, and other nonpecuniary losses.

[4]Under the O'Connell-Horowitz proposal, auto insurance would cover only economic losses not paid or payable under federal, state, or private health insurance or disability programs; employer wage continuation programs; workers' compensation; or any other source of payment intended to compensate for auto accident injuries. Because of data and resource limitations, we do not consider that provision in this analysis; our estimates do not reflect the savings on auto insurance that would result from shifting expenses to health insurers and employers.

If a tort-insured driver is injured by a driver who had elected no-fault, the former may seek recovery from his own insurer under the TM policy. He is entitled to compensation for both economic and noneconomic losses, to the extent that the other driver was responsible for his injuries.

MP insurance compensates a policyholder for his own medical costs, without regard for fault, to the policy limit. This insurance is the only source of auto insurance compensation available to a tort-insured driver injured in a single-car accident or entirely at fault for his own injury.

Drivers who opt for the no-fault plan are required to purchase *personal injury protection* (PIP) coverage at the state's financial responsibility level. If these drivers are injured in an auto accident, including a single-car accident, their PIP coverage compensates them for any economic losses, to the policy limit, without regard for fault. Persons electing no-fault cannot seek compensation for noneconomic losses.[5]

Drivers who elected no-fault are liable for economic losses in excess of the mandated PIP coverage suffered by someone they injured—whether that person elected tort or no fault, or is uninsured—to the extent that they were responsible for the other's losses. Drivers who choose no-fault can purchase supplemental BI coverage to insure against claims against them for excess economic loss. Similarly, drivers who elect tort are liable to anyone they injure, regardless of that person's insurance status, for excess economic loss, to the extent that they were responsible for the injury. When claims for excess economic loss are pursued, a reasonable attorney's fee is recoverable, in addition to the excess economic loss.

Compensation for injured nondrivers—for example, passengers, pedestrians, or bicyclists—who have purchased auto insurance is governed by the rules relevant to their insurance even though they were not driving when injured.[6] Compensation for injured nondrivers who have not purchased auto insurance is governed by the rules relevant to the insurance purchased by the driver who injured them.

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[5]Under the O'Connell/Horowitz proposal, there would be no restriction on the injured's rights to recovery under tort when the injury was caused by a tortfeasor's alcohol or drug abuse. And no-fault electees injured while under the influence of alcohol or illegal drugs would forfeit their PIP benefits. Because of data and resource limitations, we do not consider that provision in this analysis. Our estimates do not reflect either the savings that are not realized when claimants whose recovery would be limited to economic loss under no-fault pursue tort claims against DUI tortfeasors or the savings gained by denying PIP benefits to alcohol- or drug-influenced claimants.

[6]Motorists who choose either tort or no-fault bind their resident relatives to that choice.

Choice in the No-Fault States

Every current no-fault plan allows compensation for noneconomic losses to victims whose injuries or losses are sufficiently serious to overcome a specified threshold. In 1988, when our data were collected, Florida, Michigan, and New York had verbal threshold no-fault systems in which injured parties could seek compensation for noneconomic loss if they had incurred certain injuries specified in the law.[7] The other no-fault states allowed injured parties compensation for noneconomic loss if their medical losses exceeded a specified dollar amount, the dollar threshold.[8]

We defined a choice plan for the current no-fault states analogous to the O'Connell-Horowitz plan. In this plan, drivers in a no-fault state are offered a choice between their state's current system, with its limited access to compensation for noneconomic loss, and an absolute no-fault plan (ANF), which provides no access to tort. Drivers who opt for the current system are required to purchase the same PIP and supplementary BI coverages now required in their state. They are also required to purchase TM coverage to the state's fiscal responsibility level. Drivers who opt for the absolute no-fault plan are required to purchase PIP coverage at the state's financial responsibility level. All insured drivers may purchase the same optional UM and UIM coverages as in the current system.

Under this plan, all insured drivers, and all nondrivers injured by an insured driver, are compensated for their economic losses by PIP insurance, to the policy limit, without regard for fault. The rules of the current no-fault system govern recovery for economic loss in excess of the PIP limit and for noneconomic loss in the event of an accident between two drivers who elected the current system: An accident victim whose injuries exceed his state's current tort threshold may seek compensation for excess economic loss and for noneconomic losses from others involved in the accident, to the degree that they are responsible for his injury. A driver's supplemental BI insurance pays the compensation he owes someone he injures, up to the policy's limits. The rules of the current no-fault system also govern recovery for excess economic loss and for noneconomic loss in the event of an accident between an insured motorist and a UM: The insured driver's UM insurance (if he purchased UM) compensates him for any excess economic loss

[7]Examples of the language found in the various verbal thresholds are death, significant and permanent loss of an important bodily function, permanent serious disfigurement, and permanent consequential limitation of use of a body function or system.

[8]Dollar thresholds vary across states from a few hundred dollars (e.g., Connecticut, $400) to several thousand dollars. Hawaii's threshold is annually adjusted for inflation and was $6,400 in 1988. The dollar thresholds also have a verbal component that allows access to the liability system for those whose injuries meet specified descriptions, regardless of their medical losses.

and any noneconomic loss the uninsured driver owes him, up to policy limits. The uninsured driver can seek compensation from the insured driver's supplimental BI for any excess economic loss and any noneconomic loss due him, up to policy limits.

If injured by a driver who elected ANF, a driver who elected the current system may seek recovery for his noneconomic losses from his own insurer under the TM policy, if he is over the threshold. Drivers who elect ANF are never compensated for noneconomic loss.

All drivers are liable for economic losses in excess of the mandated PIP coverage suffered by someone they injured, to the extent that they were responsible for the other's losses. When claims for excess economic loss are pursued, a reasonable attorney's fee would be recoverable, in addition to the excess economic loss.

Data

Our analysis used data from closed claim surveys conducted by the Insurance Research Council, formerly named the All-Industry Research Advisory Council.[9] These surveys obtained detailed information on a national random sample of auto-accident injury claims closed with payment during 1988 under the principal auto-injury coverages—BI, MP, UM, UIM, and PIP.[10] The data were collected by 34 insurance companies that together accounted for about 60 percent of private-passenger automobile insurance by premium volume at the time the data were collected. In each state, the survey represents a simple random sample of all claims closed in that state by the companies. The sampling fraction differs from state to state, but because we only make estimates for individual states, the differential sampling does not affect our results.

The data detail each victim's accident and resulting injuries and losses, as well as the compensation each claimant obtained from auto insurance. We combined data from several sources to estimate insurers' transaction costs,[11] including both allocated loss-adjustment expenses—costs, primarily legal fees and related expenses, incurred on behalf of and directly attributed to a specific claim—and unallocated, or general claim-processing costs, for each line of private-passenger

[9]All-Industry Research Advisory Council (1989) provides a detailed description of the data.

[10]These are the most recent available data that describe the outcomes of a national sample of individual claims.

[11]Carroll et al. (1991), Appendix D, describes the data and methods used to estimate insurers' transaction costs.

auto insurance.[12] We estimated insurers' allocated loss-adjustment expenses as 1 percent of MP compensation paid, 1 percent of PIP compensation paid, 10 percent of BI compensation paid, and 8 percent of UM or UIM compensation paid. We estimated insurers' unallocated loss-adjustment expenses as 8 percent of paid compensation for each type of coverage.

Assumptions in Estimating Costs

We assumed that the distributions of accidents, injuries, and losses observed in the 1988 data for each state are representative of the corresponding future distributions in that state. We then estimated the effects of the choice plan on insurance costs by comparing the average costs of compensating the accident victims in each state's sample under that state's current insurance system to the average costs of compensating the same victims, for the same injuries and losses, under the choice plan. We included all accident victims—insured and uninsured drivers, passengers, pedestrians, bicyclists, people injured in single-car accidents, etc.—in these calculations. Our analysis had three basic steps.

First, *to estimate the costs under the current system*, we assumed the proportions of drivers who will purchase each available type of auto insurance under a state's current system. Given these assumptions, we computed the probability that an accident victim will have access to compensation under each possible coverage, multiplied by the average compensation paid accident victims under that coverage, and summed over all possible coverages to estimate insurers' expected compensation costs under the current insurance system. We then estimated a break-even premium for the current system—the amount insurers would have to charge the average insured driver to recover exactly the compensation paid to victims and the transaction costs they incurred in providing that compensation.

Second, *to estimate costs under a choice system*, we assumed values for the proportions of drivers who are uninsured, elect the current system, or elect ANF under the choice system, then computed insurers' expected compensation costs under the choice plan. In estimating expected compensation payments under the choice plan, we distinguished between compensation costs incurred on behalf of drivers who elect the current system and compensation costs incurred on behalf of drivers who elect ANF. We estimated break-even premiums for drivers who elect either the current system or ANF under the choice plan—the amounts

[12]We do not include claimants' legal costs, the value of claimants' time, or the costs the courts incur in handling litigated claims. Those costs do not affect insurers' costs and hence do not affect auto insurance premiums.

insurers would have to charge respective types of insured drivers to recover exactly the compensation costs incurred on their behalf.

Finally, *we calculated relative savings* under choice for drivers who elect either the current system or ANF, respectively, as the percentage difference between the break-even premium under the current system and the respective break-even premiums under choice.

Scope and Limits of the Analysis

The choice plan has no effect on auto insurance coverages that apply to property damage resulting from auto accidents. Consequently, we analyzed the effects of the choice plan on the costs of auto insurance for personal injuries. We did not consider property damage coverage of any sort.

We focused on how the choice plan affects auto insurers' compensation costs, including both the amounts insurers pay out in compensation and the transaction costs they incur in providing that compensation.[13] We neglected the many other factors (e.g., insurers' overhead and profit margins and investment income) that also play a role in determining insurance premiums. Because compensation costs are a major component of insurance premiums, the effects of the choice plan on insurance premiums in a competitive market should be roughly proportional to its effects on compensation costs. Further, because we calculated relative savings, our estimates will be quite precise if compensation costs are a constant fraction of policyholder's total premium under any plan.

We estimated the relative costs of the two insurance systems. Because any factors that proportionately affect costs under both the current system and the choice plan net out in the comparison, the results are insensitive to changes in such factors over time. For example, inflation in medical costs will drive up insurance costs under both the current system and the choice plan but will have little effect on the relative costs of the two systems. However, because our results address relative costs, they do not address whether auto insurance costs will rise or fall if a state adopts the choice plan. Rather, they show the difference between what will happen in that state if the current system is retained and what would occur instead if the choice plan were adopted.[14]

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[13]Under the choice plan, claimants may recover reasonable attorney's fees for a claim for excess economic loss. The attorney's fees paid by insurers as a result of such claims are included in our estimates.

[14]For example, suppose that, in a given state, drivers who elected absolute no-fault under choice would save, say, 20 percent, relative to that state's current system. Suppose further that auto insurance costs for personal injury coverages under the current system are growing at a rate of 10 percent per year. If the current system is retained, injury coverage costs will be 20 percent greater in

We estimated the effects of the choice plan on the total costs of auto insurance. We did not attempt to estimate the plan's effects on the costs of any particular coverage. Specifically, we compared the *average amount* insurers pay per insured driver *under all coverages* in the current system to the *average amount* paid *under all coverages* on behalf of drivers who choose either the current system or ANF, respectively, under the choice plan.

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two years. If the choice plan is adopted, drivers who elect absolute no-fault will have roughly the same injury coverage costs as they have under the current system today. The 20 percent savings obtained by electing the absolute no-fault option will just make up for the 20 percent increase in costs that would have occurred under the current system.

3. Estimating the Cost Effects of the Choice Plan

Overview of Cost Estimation

We estimated the relative cost effects of the choice plan in each state in four steps:

1. We estimated the average cost of compensating accident victims under the current system.
2. We estimated the average cost of compensating accident victims on behalf of drivers who elect either the current system or ANF under the choice system.
3. For each average, we calculated a break-even premium—the premium an insurance company must charge to cover exactly what it pays in claims and the associated transaction costs.
4. We calculated relative savings under choice as the percentage difference between the break-even premium under choice for drivers who elect either option and the break-even premium under the current system.

We describe each of these steps in the following sections.

Estimating Compensation Costs Under the Current System

To estimate compensation costs under the current system, we identified the sources of auto insurance compensation that would be available to accident victims, depending on the type of insurance that they, and others, purchase. We then estimated the average amount of compensation that would be paid by each source, and the associated transaction costs, to a representative sample of auto accident victims from each state. Finally, we assumed a distribution of insurance purchase decisions and computed the expected compensation paid the average accident victim, given that distribution. The result is an estimate of the compensation costs, including transaction costs, incurred under each state's current system for the assumed distribution of insurance purchase decisions.

In the sensitivity analyses, discussed in Section 4, we examined the extent to which our estimates vary with alternative compensation estimates or assumed distributions of insurance purchase decisions.

Sources of Compensation Under the Current System

Table 1 indicates the sources of compensation available to an accident victim under the current system, depending on the driver's insurance status, whether another driver was involved the accident, and the insurance status of such a driver.

An uninsured (bare) accident victim injured in a single-car accident or in an accident involving another car whose driver is also bare has no access to any form of auto insurance compensation.

An uninsured victim injured in an accident with an insured other driver can seek compensation from the other driver's BI coverage. Tort states place no restrictions on an accident victim's right to seek BI compensation for all losses incurred as a result of the other driver's negligence. No-fault states permit accident victims whose injuries or losses exceed the state's tort threshold to claim BI compensation for all losses incurred as a result of the other driver's negligence. In a no-fault state, an accident victim whose injuries/losses do not exceed the threshold may seek compensation from another driver's BI coverage for economic losses incurred as a result of the other driver's negligence in excess of the PIP limit.

An insured accident victim can obtain compensation from his own first-party, no-fault coverage. In the tort states, MP insurance, if the driver purchased the optional coverage, covers the victim's medical expenses. In the no-fault states, PIP insurance covers all economic losses, up the policy limits. MP or PIP is the only source of auto insurance compensation to an insured driver injured in a single-car accident.

Table 1

Sources of Compensation Under the Current System

		Other Driver		Single Car
	Insurance Status	Bare	Insured	
Accident Victim	Bare	None MP/PIP+UM	BI MP/PIP+BI	None MP/PIP
	Insured			

In a tort state, an insured victim injured in an accident with another driver can also seek compensation for all losses incurred as a result of the other driver's negligence: from his or her own UM insurance if the other driver is bare; from the other driver's BI insurance if he or she is insured.

In a no-fault state, an accident victim may bring a claim for all losses incurred as a result of the other driver's negligence against his own UM or the other driver's BI insurance if his injuries/losses exceed the state's tort threshold. An insured accident victim in a no-fault state whose injuries/losses do not exceed the threshold may seek compensation from his own UM or the other driver's BI insurance for economic losses that exceed the PIP limit and were incurred as a result of the other driver's negligence.

Compensation Costs

We used our data on the compensation provided a representative sample of accident victims and the associated transaction costs to estimate the compensation elements of Table 1 (for each state) as follows:

- *Bodily Injury*: In tort states, the average amount paid on BI claims. In no-fault states, the average amount paid on BI claims times the probability that an accident victim has access to third-party compensation.[1]
- *Medical Payments*: In tort states, the average amount paid on MP claims times the fraction of insured drivers in the state who purchased MP coverage.[2] Not relevant in no-fault states.
- *Personal Injury Protection*: Not relevant in tort states. In no-fault states, the average amount paid on PIP claims.
- *Uninsured Motorist:* In tort states, the average amount paid on UM claims times the fraction of insured drivers in the state who purchased UM coverage.[3] In no-fault states, the average amount paid on UM claims times the fraction of insured drivers in the state who purchased UM coverage[4]

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[1]We take the fraction of accident victims in each state who obtained third-party compensation as an estimate of the probability that a victim has access to BI. Carroll et al. (1991), Appendix B, describes the procedures we used to estimate this fraction.

[2]National Association of Independent Insurers (1991) provides estimates of the numbers of MP and BI policies sold in each state in 1988. The ratio of MP to BI policies in a tort state is the probability that an insured driver in that state has purchased MP coverage.

[3]National Association of Independent Insurers (1991) provides estimates of the numbers of UM and BI policies sold in each state in 1988. The ratio of UM to BI policies in a tort state is the probability that an insured driver in that state has purchased UM coverage.

[4]National Association of Independent Insurers (1991) provides estimates of the numbers of UM and PIP policies sold in each state in 1988. The ratio of UM to PIP policies in a no-fault state is the probability that an insured driver in that state has purchased UM coverage.

times the probability that an accident victim has access to third-party compensation.[5]

Because insurance purchase decisions are made before accidents occur, an accident victim's decisions are independent of the victim's injuries and losses, whether or not he is subsequently involved in an accident, whether any other driver is involved in the accident, and, if so, what the other driver's insurance coverage is. Formally, we assumed that a driver's decision to purchase insurance is statistically independent of whether or not he will cause, or be injured in, an auto accident.

Given these assumptions, Table 2 shows the probability that an accident victim will fall into each of the cells in Table 1 as a function of the probability that an accident victim is injured in a single-car accident and of the probability that a driver is uninsured under the state's current system.

Expected Average Compensation

We multiplied the probabilities in Table 2 by the corresponding compensation costs in Table 1 and summed. The result is an estimate of the average costs insurers incurred in compensating a representative sample of accident victims in each state under that state's current system. The product of this estimate and the ratio of accident victims to insured drivers in that state is the amount that state's insured drivers would have to be charged, on average, to recover the costs of compensating all victims.

We lack data on the number of accident victims per insured driver in each state. However, we show later that this number cancels out when we compute the ratio

Table 2

Probability of Compensation from Each Source Under the Current System

		Other Driver		Single Car
	Insurance Status	Bare	Insured	
Accident Victim	Bare	$(1-\phi)\beta^2$	$(1-\phi)\beta(1-\beta)$	$\phi\beta$
	Insured	$(1-\phi)\beta(1-\beta)$	$(1-\phi)(1-\beta)^2$	$\phi(1-\beta)$

NOTE: ϕ = Probability that an accident victim is injured in a single-car accident.
β = Probability that a driver is uninsured under the state's current system.

[5]We take the fraction of accident victims in each state who obtained third-party compensation as an estimate of the probability that a victim has access to UM. Carroll et al. (1991), Appendix B, describes the procedures we used to estimate this fraction.

of compensation costs under the current system to compensation costs under the choice plan.

Note that, under the assumption that insurance purchase decisions are statistically independent of subsequent accidents and the resulting injuries/losses, the estimates we obtained for each state are identical to those we would have obtained by estimating expected compensation outcomes for each individual victim and averaging over the victims in the sample for each state. In other words, the method outlined above essentially takes account of the variations in relevant accident characteristics (e.g., the victim's negligence) and injuries/losses among individual accident victims.

Estimating Compensation Costs Under the Choice System

To estimate average compensation costs under the choice system, we made assumptions about drivers' insurance purchase decisions and estimated what insurers' compensation costs will be given those assumptions. In Section 4, we explore the sensitivity of our results to these assumptions and provide estimates of what costs would be under alternative assumptions.

Observe that a driver who is uninsured under his state's current system declined to purchase the coverage—BI or no-fault—mandated under that system. We assumed that, under choice, he would *not* purchase the coverage that he declined before ANF became an option. Thus, under choice, a driver who is uninsured in the current system would either remain uninsured or would opt for ANF under the choice plan. Further, we assumed that if he did choose ANF under choice, he would not purchase supplemental BI coverage.

We assumed that if a driver *does* have insurance under his state's current system, he would elect either to retain that insurance or to switch to ANF under choice, but he would *not* decide to drop automobile insurance coverage altogether. We also assumed that a driver who purchases insurance under his state's current system and opts for ANF under choice would also purchase supplemental BI coverage under choice.

Sources of Compensation

Given these assumptions, Table 3 indicates the sources of compensation available to an accident victim under the choice plan, depending on his insurance status,

Table 3

Sources of Compensation Under the Choice System

Insurance Status		Other Driver					
	Under Current System	Bare		Insured			
		Under Choice	Bare	ANF	ANF+BI	Current	Single Car
Accident Victim	Bare	Bare	None	None	XS	BI	None
		ANF	PIP	PIP	PIP+XS	PIP+XS	PIP
	Insured	ANF+BI	PIP	PIP	PIP+XS	PIP+XS	PIP
		Current	MP/PIP+UM	MP/PIP+TM	MP/PIP+TM	MP/PIP+BI	MP/PIP

whether another driver was involved the accident, and the insurance status of any other driver involved in the accident.

An uninsured accident victim injured in a single-car accident or in an accident involving another car whose driver is also uninsured has no access to any form of auto insurance compensation.

An uninsured accident victim injured in an accident with a driver who is bare under the current system but would opt for ANF under choice is not covered by the other driver's ANF and, because the other driver would not have purchased supplemental BI insurance, has no auto insurance coverage available to him.

An uninsured accident victim injured in an accident with a driver who purchases insurance under the current system and would opt for ANF under choice can seek compensation from the other driver's supplemental BI insurance for any economic losses incurred as a result of the other driver's negligence in excess of the mandated PIP coverage.

A victim injured in an accident with an insured other driver can seek compensation from the other driver's BI coverage. In a tort state, the accident victim can seek compensation for all losses incurred as a result of the other driver's negligence. In a no-fault state, the accident victim may bring a claim for all losses incurred as a result of the other driver's negligence against another driver's BI insurance only if his injuries exceed the state's tort threshold. An accident victim whose injuries/losses do not exceed the threshold may seek compensation for economic losses incurred as a result of the other driver's negligence that exceed the PIP limit.

An accident victim who chooses ANF receives PIP compensation for his economic loss, up to the policy limit, regardless of whether or not he would purchase insurance under his state's current system, whether or not any other driver is involved in the accident, and, if another driver is involved, what kind of insurance the other driver has selected. Drivers choosing ANF who are injured in a single-car accident or in an accident with another driver who is uninsured under the current system[6] obtain only their PIP compensation. Drivers choosing ANF who are injured in an accident with a driver insured under the current system[7] have access to BI compensation for excess economic loss.

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[6]We assume drivers who do not purchase BI coverage under their state's current system do not purchase BI coverage under choice, regardless of their insurance decisions.

[7]We assume drivers who purchase BI under the current system purchase (supplementary) BI coverage under choice, whether they elect ANF or their state's current system.

Accident victims who elected ANF are never compensated for noneconomic losses, regardless of whether or not any other driver is involved in the accident and, if so, what type of insurance, if any, the other driver purchased.

An insured accident victim who elected his state's current system under choice is compensated by his own first-party, no-fault coverage—MP (if the driver purchased the optional coverage) in the tort states and PIP in the no-fault states—regardless of whether or not any other driver was involved in the accident and, if so, what insurance the other driver has. MP or PIP is the only source of auto insurance compensation to a driver who elected the current system under choice and is injured in a single-car accident.

A victim who elected the current system under choice and is injured in an accident with another driver can also seek compensation for all losses incurred as a result of the other driver's negligence from one of the following:

- His own UM insurance, if the other driver is uninsured and he purchased the optional coverage
- His own TM policy, if the other driver has elected ANF
- The other driver's (supplementary) BI insurance if the other driver elected the current system.

In each case, access to UM, TM, or BI insurance is unrestricted in the tort states. An accident victim who elected the current system under choice in a no-fault state has access to UM, TM, or BI only if his injuries/losses pass his state's tort threshold. An accident victim who elected the current system under choice in a no-fault state whose injuries/losses do not exceed the threshold may seek compensation for his excess economic losses incurred as a result of the other driver's negligence from either TM or BI insurance if the other driver is insured.

Compensation Costs

We used our data on the compensation provided a representative sample of accident victims and the associated transactions costs to estimate the compensation elements of Table 3 (for each state) as follows:

- *Bodily Injury and Uninsured Motorist in all states, Medical Payments in tort states, and Personal Injury Protection in no-fault states*: Calculated as described earlier.

- *Excess Economic Loss*: The average amount of economic losses resulting from another driver's negligence in excess of the mandated PIP policy limit, up to BI policy limits.[8]
- *Personal Injury Protection in tort states:* Economic loss up to the PIP policy limit, averaged over all accident victims in the state.
- *Tort Maintenance*: In the tort states, the average amount paid on BI claims.[9] In no-fault states, the average amount paid on BI claims times the fraction of accident victims in the state that obtained third-party compensation.

We assumed that a driver's decision to purchase insurance is statistically independent of whether or not he will cause, or be injured in, an auto accident. We also assumed that a driver's decision to elect ANF under choice is independent of his insurance status under the current system.[10] Given these assumptions, Table 4 shows the probability that an accident victim will fall into each of the cells in Table 3.

Expected Average Compensation

We grouped drivers into three types according to their insurance purchase decisions and estimated the compensation costs insurers incur on behalf of each type of driver. Specifically,

1. The *italicized* compensation components in Table 5 are paid by insurers under policies purchased by uninsured drivers under the current system who select ANF under choice.
2. The <u>underlined</u> compensation components in Table 5 are paid by insurers under policies purchased by insured drivers under the current system who select ANF under choice.
3. The remaining compensation components in Table 5 are paid by insurers under policies purchased by insured drivers under the current system who select the current system under choice.

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[8]We assumed the distribution of BI policy limits that obtained in each state in 1988. See Carroll et al. (1991), Appendix D.

[9]Because TM compensation is determined according to the rules that govern BI compensation, we used BI compensation as our estimate of the expected compensation that will be paid the average accident victim who has access to the tort system.

[10]While there is no particular reason to assume that an uninsured driver will decide to purchase insurance under choice with the same probability that an insured driver will switch under choice, we have no idea what these probabilities are, and our analysis uses the same number for each.

Table 4

Probablility of Compensation from Each Source Under the Choice System

Insurance Status	Under Current System	Under Choice	Other Driver: Bare	Other Driver: Insured: Bare	Other Driver: Insured: ANF	Other Driver: Insured: ANF+BI	Other Driver: Insured: Current	Single Car
Accident Victim	Bare	Bare	$(1-\phi)(\beta\delta)^2$	$(1-\phi)\beta^2(1-\delta)\delta$	$(1-\phi)(1-\beta)(1-\delta)\beta\delta$	$(1-\phi)(1-\beta)\beta\delta^2$		$\phi\beta\delta$
		ANF	$(1-\phi)\beta^2\delta(1-\delta)$	$(1-\phi)(\beta(1-\delta))^2$	$(1-\phi)(1-\beta)\beta(1-\delta)^2$	$(1-\phi)(1-\beta)\beta\delta(1-\delta)$		$\phi\beta(1-\delta)$
	Insured	ANF+BI	$(1-\phi)\beta\delta(1-\beta)(1-\delta)$	$(1-\phi)\beta(1-\beta)(1-\delta)^2$	$(1-\phi)[(1-\beta)(1-\delta)]^2$	$(1-\phi)(1-\beta)^2\delta(1-\delta)$		$\phi(1-\beta)(1-\delta)$
		Current	$(1-\phi)\beta(1-\beta)\delta^2$	$(1-\phi)\beta(1-\beta)(1-\delta)\delta$	$(1-\phi)(1-\beta)^2\delta(1-\delta)$	$(1-\phi)[(1-\beta)\delta]^2$		$\phi(1-\beta)\delta$

NOTE: ϕ = Probability that an accident victim is injured in a single-car accident.

β = Probability that a driver is uninsured under the state's current system.

δ = Probability of switching to new plan under the choice system.

Table 5

Compensation Components, by Type of Driver

Insurance Status	Under Current System	Other Driver					
			Bare	Insured			
		Under Choice	Bare	ANF	ANF+BI	Current	Single Car
Accident Victim	Bare	Bare	None	None	<u>XS</u>	BI	
		ANF	*PIP*	*PIP*	*PIP*+<u>XS</u>	*PIP*+XS	*PIP*
	Insured	ANF+BI	<u>PIP</u>	<u>PIP</u>	<u>PIP+XS</u>	<u>PIP</u>+XS	<u>PIP</u>
		Current	MP/PIP+UM	MP/PIP+TM	MP/PIP+TM	MP/PIP+BI	MP/PIP

NOTE: Normal type indicates compensation on behalf of insured drivers in current system who elect the current system under choice. <u>Underscored</u> type indicates compensation paid on behalf of previously insured drivers who elect ANF under choice. *Italics* indicates compensation paid on behalf of previously uninsured drivers who elect ANF under choice.

We multiplied the probabilities in Table 4 by the corresponding compensation costs in Table 5. The result is an estimate of the average costs insurers incur in compensating a representative sample of accident victims in each state under the choice plan on behalf of drivers who make each possible type of insurance purchase decision. In any state, the estimate for each type of driver, multiplied by the ratio of accident victims paid on behalf of that type of driver to the number of insured drivers of that type, is the average amount insurers would have to charge that type of driver to recover the costs of compensating victims on their behalf. (Recall that we lack data on the number of accident victims per insured driver of each type in each state. This number will cancel out when we compute the ratio of compensation costs under the current system to compensation costs under the choice plan for each type of driver.)

Note that, under the assumption that insurance purchase decisions are statistically independent of subsequent accidents and the resulting injuries/losses, the estimates we obtain for each state are identical to those we would have obtained by estimating expected compensation outcomes for each individual victim and averaging over the victims in the sample for each state. In other words, the method outlined above essentially takes account of the variations in relevant accident characteristics (e.g., the victim's negligence) and injuries/losses among individual accident victims.

Break-Even Premiums

To calculate the break-even premium for the current system, assume there are N drivers, that the average driver is involved in k injury-producing accidents per year, and that each injury costs insurers C dollars, on average, including transaction costs. (That is C dollars for *every* injury, including injuries suffered by pedestrians, passengers, bicyclists, and insured and uninsured drivers.) Insurers will pay out kNC dollars a year.

Let X denote the fraction of all drivers who are insured. Let P be the average premium insurers must charge to just cover what they pay out in claims and associated transaction costs. To break even, P must be set such that XNP=kNC. Thus, the break-even premium is P=Ck/X. Note that we know how to calculate C (see last two subsections). In calculating relative savings under choice, we will assume the value of X and specify k as an unknown parameter.

Relative Savings Under Choice

To calculate the *relative* savings under choice, we extended the above notation to three notional insurance companies. The first sells all the insurance policies purchased by drivers in a state under its current system. The second sells all insurance policies purchased by drivers in that state who elect the current system under the choice plan. The third sells all insurance policies purchased by drivers in that state who elect ANF under the choice plan. If insurers pass on cost savings to their customers, the effects of the choice plan on drivers who are insured in the traditional system and who would elect the current system under choice are reflected in the ratio of the second company's break-even premium to the first company's break-even premium. Similarly, the effects of the choice plan on drivers who are insured in the current system and who would elect ANF under choice are reflected in the ratio of the third and first companies' break-even premiums.

Assume the fraction of drivers insured in the current system is X_1 and that the company that insures them pays out an average C_1 dollars for every injury. The corresponding parameters for the company that insures drivers electing the current system under choice are X_c and C_c, respectively. The break-even premium for the current-system company is $P_1=kC_1/X_1$. The break-even premium for the company that insures current system electees under choice is $P_c=kC_c/X_c$. The ratio of the two companies' break-even premiums is P_c/P_t. The number of injury-producing accidents per driver per year, k, cancels out, and this expression depends only on the fraction insured by each company (the Xs) and the amount of compensation paid for each injury (the Cs).

We made a corresponding set of calculations for the ratio of the break-even premiums for the first and third companies.

In our calculations, we made assumptions about the Xs and estimated the Cs, so we could compare the relative change in the break-even premium for drivers who elect either their state's current system or ANF under choice without knowing the accident rate, assuming that the accident rate remains the same.

4. Results and Sensitivity Analysis

Overview

We estimated that, in most tort states, the costs of compensating victims on behalf of drivers who elect ANF under the choice plan would be at least 60 percent less than what they would have been had those drivers been insured under the traditional tort system. And in most tort states, adoption of the choice plan would have little effect on the costs of compensating victims on behalf of drivers who choose to remain with tort under the choice plan.

Our estimates for the states that have adopted some form of no-fault auto insurance system vary widely, depending on the kind of plan currently in place. The costs of compensating victims on behalf of drivers who elect ANF would be reduced by at least 30 percent in all but one state compared to what the costs would have been had those drivers been insured under their state's current system. In some no-fault states, adoption of the choice plan may increase the costs of compensating victims on behalf of drivers who elect to remain in the current system under the choice plan, but probably not by very much.

These results formally pertain to the situation that existed in each state when our data were collected, in 1988. However, we believe the results generally describe what would happen in each state if it were to adopt a choice plan at some future date. Because we estimated savings in terms of the ratio of expected compensation costs under choice to expected compensation costs under the current system, our results are insensitive to changes over time in any factors that proportionately affect compensation costs under either plan. Inflation, for example, will proportionately affect both the numerator and denominator of the ratio, cancelling out in the estimate of savings. Further, in both tort states and no-fault states, differences among states are relatively small. They may reflect sampling errors in our estimates or differences in the extent to which our assumptions apply. In any case, our general results are robust with respect to interstate variations in the distributions of accidents and injuries. This suggests that, even if these distributions vary over time in any state, the variations are not likely to significantly affect our results.

The Effects of the Choice Plan on Costs

Table 6 presents our estimate of the average percentage of savings that drivers who elect either their state's current system or ANF would realize in each of the states if compensation for auto accident injuries were governed by the choice plan. In each case, the entry is based on an analysis in which we assumed that (1) 20 percent of drivers in the state were uninsured under the current system; (2) 50 percent of those who were insured under the current system would opt for ANF if given the choice; (3) 50 percent of those who were uninsured under the current system would opt for ANF if given the choice; and (4) 10 percent of all accidents are single-car accidents.

Drivers who opt for ANF under choice are not liable for others' noneconomic losses. In the tort states, the compensation costs incurred on their behalf are substantially lower than they would have been under the tort system. On the other hand, the amounts paid them under their PIP coverages generally exceed what would be paid them under MP insurance. In general, the savings obtained by eliminating compensation payments on their behalf for noneconomic loss under choice greatly outweigh the additional costs incurred in providing them more generous first-party no-fault compensation—PIP versus MP. Hence, tort-state drivers who elect ANF realize substantial savings—more than 60 percent in most states—relative to the costs incurred on their behalf under the traditional tort system.

Current no-fault plans already limit accident victims' access to compensation for noneconomic loss. Hence, the savings obtained by totally eliminating compensation payments for noneconomic loss on behalf of drivers who elect ANF are smaller, compared to the tort states. But current no-fault plans already include PIP compensation, so no new costs are incurred on behalf of drivers who elect ANF under choice in the no-fault states. Hence, ANF electees in the no-fault states would also generally realize substantial savings relative to the costs incurred on their behalf under their state's current system.

Drivers who opt for the current system under choice retain the right (unlimited in tort states, limited in no-fault states) to seek compensation from others responsible for their injuries for noneconomic loss and are liable for others' noneconomic losses to the extent of their negligence. When they are involved in an accident with either another driver who opted for the current system or with an uninsured driver, both their recovery and their liability are the same as they would have been under the tort system. Their insurers and those of the other drivers incur the same costs as they would under the current system.

Table 6

Relative Savings Under Choice by State

Current Insurance System	State	Relative Savings (%)	
		Drivers Who Retain Current Insurance	Drivers Who Select ANF Under Choice
Tort/Add-on	Alabama	–3.6	54.4
	Alaska	–11.9	39.4
	Arizona	–0.9	64.3
	Arkansas	4.7	70.5
	California	1.1	65.4
	Delaware	–8.4	59.4
	Idaho	6.4	64.1
	Illinois	2.1	63.6
	Indiana	4.5	66.2
	Iowa	–7.7	67.0
	Louisiana	8.0	77.8
	Maine	4.4	72.4
	Maryland	–4.2	71.8
	Mississippi	–6.8	59.6
	Missouri	4.6	67.3
	Montana	7.5	79.7
	Nebraska	5.4	64.5
	Nevada	1.7	66.1
	New Hampshire	–5.1	58.7
	New Mexico	5.1	66.8
	North Carolina	6.0	65.5
	Ohio	–2.5	65.3
	Oklahoma	–1.2	69.1
	Oregon	–7.1	55.8
	Pennsylvania	0.7	62.4
	Rhode Island	–7.3	52.3
	South Carolina	–8.2	73.4
	South Dakota	9.1	80.0
	Tennessee	–1.4	56.8
	Texas	–3.6	71.4
	Vermont	–8.4	53.5
	Virginia	–4.6	66.2
	Washington	0.9	67.0
	West Virginia	7.3	74.9
	Wisconsin	3.1	71.0
	Wyoming	9.9	63.3
No-Fault	Colorado	–0.1	57.5
	Connecticut	2.0	75.2
	Florida	–3.2	54.6
	Georgia	–4.8	58.9
	Hawaii	–4.3	66.7
	Kansas	–17.0	36.0
	Kentucky	–27.0	30.6

Table 6—continued

Current Insurance System	State	Relative Savings (%)	
		Drivers Who Retain Current Insurance	Drivers Who Select ANF Under Choice
	Massachusetts	–0.2	73.7
	Michigan	1.2	30.1
	Minnesota	1.9	62.7
	New Jersey	3.5	65.4
	New York	1.0	71.1
	North Dakota	–25.0	4.4
	Utah	2.2	62.7

NOTE: 20% are uninsured; 50% switch under choice; and 10% are single-car drivers.

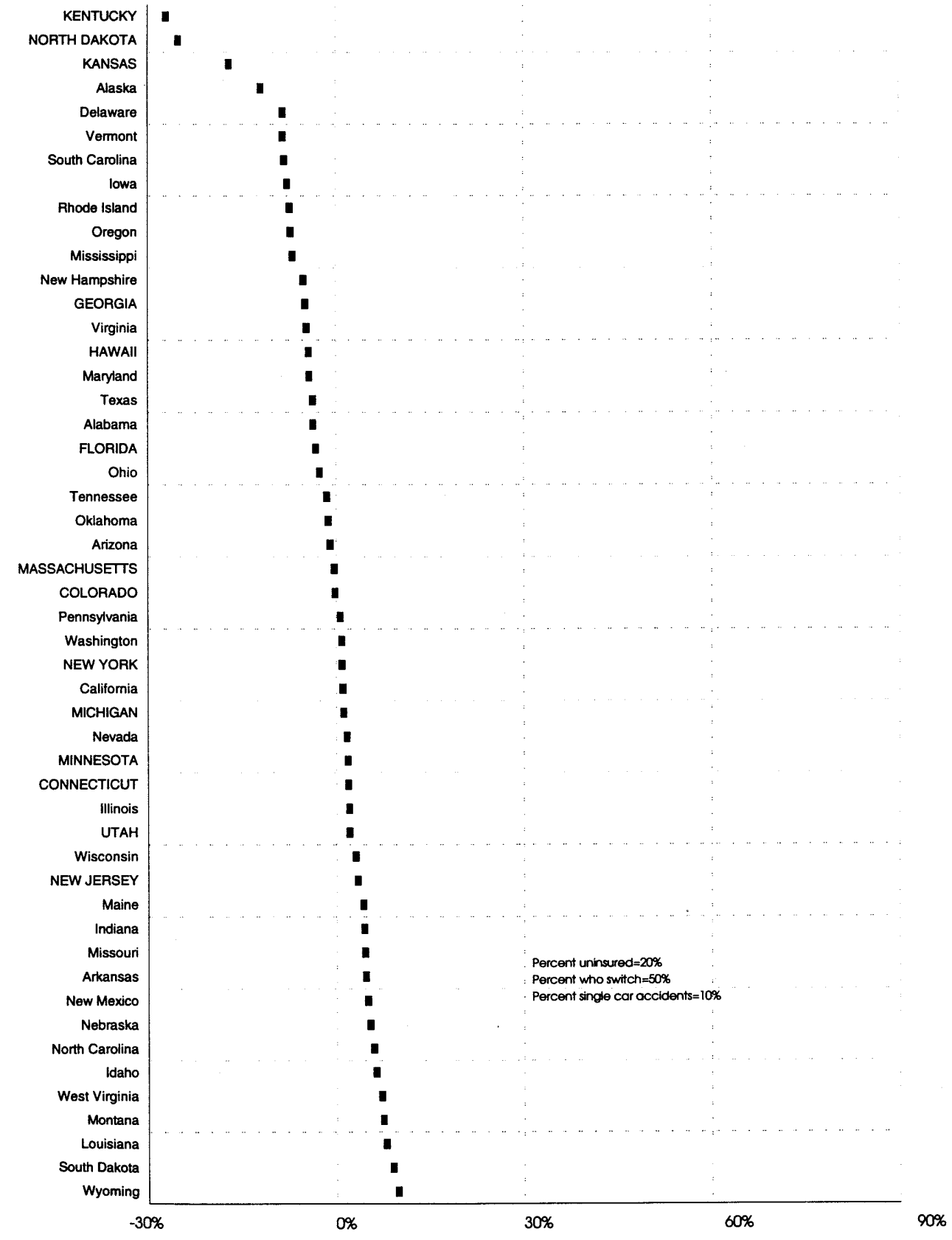
A driver who selected the current system and is involved in an accident with a driver who chose ANF is entirely free from liability to the other driver for noneconomic loss; his insurer would pay out less, on average, under choice than under the current system. But a driver who chose the current system and is injured in an accident with a driver who chose ANF must turn to his own TM coverage, rather than to the other driver, for recovery of his own noneconomic loss. Compared to what would happen under the current system, his insurer saves the costs of compensating the other driver for noneconomic loss but incurs the additional costs of compensating the current system electee for his own noneconomic loss. If there is no adverse selection in the choices made under the choice plan, drivers who choose the current system and ANF will have the same average noneconomic loss and negligence, and these savings will approximately equal the additional costs.

Figures 1 and 2 illustrate these cost estimates by ranking the states according to the amount of cost savings or increase.

Sensitivity Analyses

Sensitivity to Assumed Parameter Values

The estimates presented above are based on the assumed values of three critical parameters in each state: (1) the UM rate under the current system, (2) the rate at which drivers insured under the current system would opt for ANF coverage if given the choice, and (3) the rate at which UMs under the current system would opt for ANF coverage if given the choice. To test the robustness of our results against variations in these parameters—percentage uninsured and percentage who would switch to ANF under choice—we used our model to estimate savings in each state under a number of different sets of parameter values.



UPPER CASE: Currently a no-fault state

Figure 1—Relative Savings for Drivers Who Retain Current Insurance

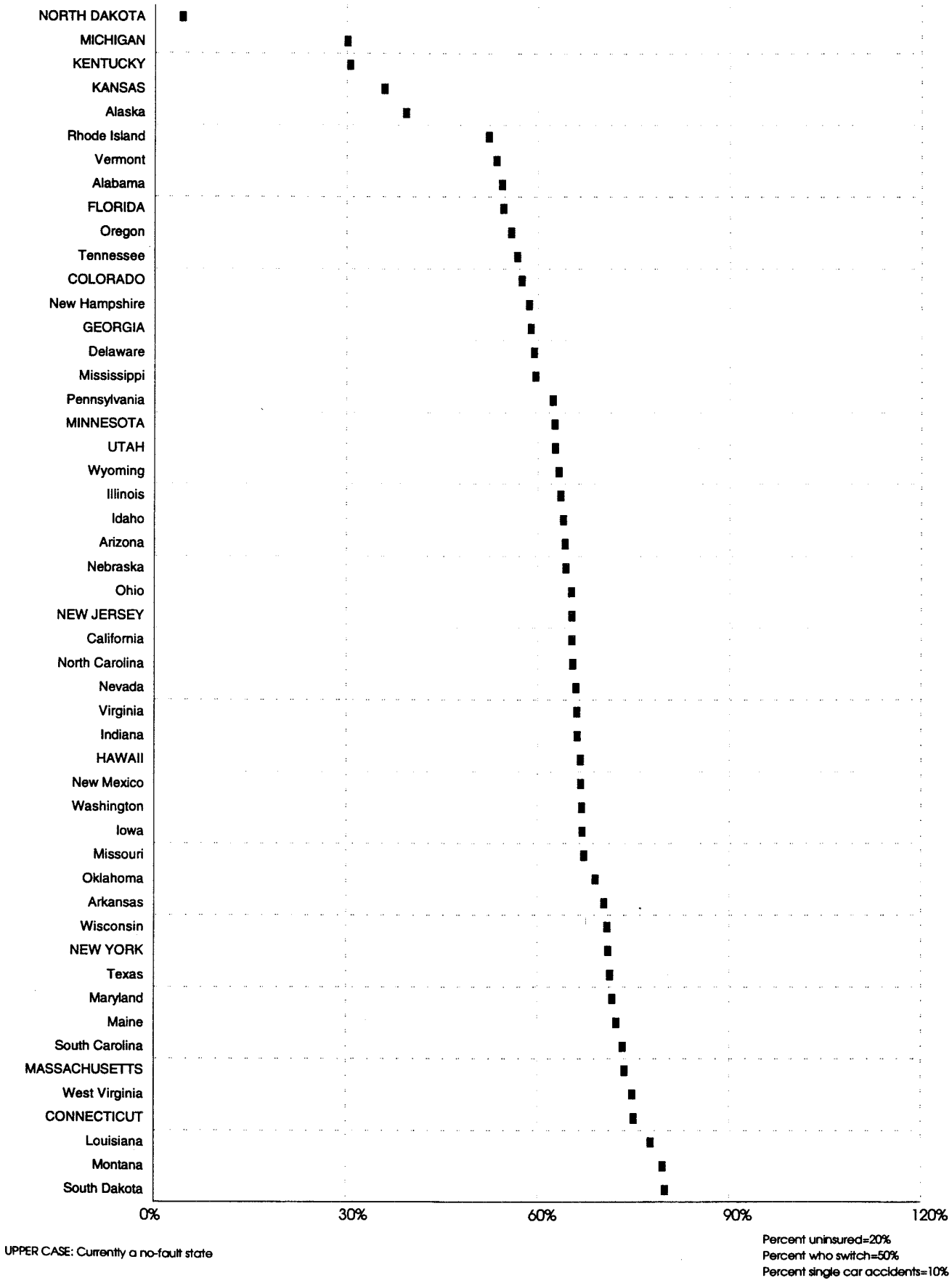


Figure 2—Relative Savings for Drivers Who Switch

Table 7 shows an example of these calculations for California. The table shows estimated savings for 81 different cases with the following insurance parameters:

- 10, 20, or 30 percent are uninsured under the current system
- 20, 50, or 80 percent of currently both insured and uninsured drivers elect no-fault under choice
- 0, 10, or 20 percent of injuries are incurred in single-car accidents.

We call the midpoint of these ranges the *nominal case* (20, 50, and 10 percent).

Table 8 shows upper and lower bounds of relative savings under choice for all these combinations of insurance parameters, for all 50 states, for drivers who

Table 7

Relative Savings Under Different Values of Insurance Parameters: California

Uninsured Prior to Choice (%)	Switch Under Choice (%)	Single-Car Accidents (%)	Relative Savings (%)	
			Drivers Who Retain Current Insurance	Drivers Who Select ANF Under Choice
10	20	0	–0.57	69.0
		10	–0.56	66.1
		20	–0.55	62.6
	50	0	–1.42	66.9
		10	–1.40	64.0
		20	–1.39	60.5
	80	0	–2.26	64.7
		10	–2.24	61.8
		20	–2.22	58.4
20	20	0	0.45	69.9
		10	0.45	67.2
		20	0.44	63.8
	50	0	1.12	68.1
		10	1.11	65.4
		20	1.10	62.0
	80	0	1.80	66.3
		10	1.78	63.6
		20	1.76	60.2
30	20	0	1.37	70.8
		10	1.36	68.1
		20	1.34	64.9
	50	0	3.42	69.2
		10	3.39	66.6
		20	3.36	63.4
	80	0	5.48	67.7
		10	5.43	65.1
		20	5.38	61.9

Table 8

Sensitivity of Relative Savings Under Choice by State

Current Insurance System	State	Relative Savings for Drivers Who Retain Current Insurance Under Choice			Percent Relative Savings for Drivers Who Switch to ANF Under Choice		
		Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
Tort/Add-on	Alabama	–12.6	–3.6	0.1	41.8	54.4	63.6
	Alaska	–22.8	–11.9	–3.9	39.4	51.1	
	Arizona	–5.1	–0.9	1.9	57.0	64.3	69.9
	Arkansas	0.5	4.7	12.5	63.9	70.5	75.4
	California	–2.3	1.1	5.5	58.4	65.4	70.8
	Delaware	–16.4	–8.4	–2.7	49.9	59.4	68.2
	Idaho	1.1	6.4	15.3	56.6	64.1	69.8
	Illinois	–3.3	2.1	9.1	54.3	63.6	70.5
	Indiana	0.2	4.5	12.6	58.0	66.2	72.3
	Iowa	–13.8	–7.7	–2.7	59.8	67.0	74.6
	Louisiana	1.1	8.0	19.7	71.2	77.8	82.4
	Maine	0.6	4.4	11.1	66.7	72.4	76.7
	Maryland	–12.4	–4.2	–0.5	63.6	71.8	78.4
	Mississippi	–14.6	–6.8	–1.9	49.9	59.6	67.8
	Missouri	0.4	4.6	12.3	60.0	67.3	72.9
	Montana	1.6	7.5	16.9	75.4	79.7	82.9
	Nebraska	0.4	5.4	14.6	55.3	64.5	71.2
	Nevada	–3.3	1.7	8.1	57.5	66.1	72.4
	New Hampshire	–15.7	–5.1	–0.5	45.9	58.7	67.7
	New Mexico	0.8	5.1	12.6	60.1	66.8	72.0
	North Carolina	0.6	6.0	15.8	56.4	65.5	72.1
	Ohio	–9.1	–2.5	0.4	56.4	65.3	71.9
	Oklahoma	–6.0	–1.2	1.8	62.1	69.1	74.4
	Oregon	–14.8	–7.1	–2.1	46.1	55.8	64.1
	Pennsylvania	–4.6	0.7	6.1	53.3	62.4	69.1
	Rhode Island	–17.5	–7.3	–1.6	39.4	52.3	61.7
	South Carolina	–18.5	–8.2	–2.1	64.5	73.4	82.0
	South Dakota	2.0	9.1	20.2	75.7	80.0	83.3

Table 8—continued

Current Insurance System	State	Relative Savings for Drivers Who Retain Current Insurance Under Choice			Percent Relative Savings for Drivers Who Switch to ANF Under Choice		
		Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
	Tennessee	–9.2	–1.4	3.7	44.9	56.8	65.4
	Texas	–12.6	–3.6	0.0	62.5	71.4	78.1
	Vermont	–19.0	–8.4	–2.1	40.7	53.5	63.2
	Virginia	–13.7	–4.6	–0.5	56.2	66.2	73.5
	Washington	–2.9	0.9	5.4	60.0	67.0	72.3
	West Virginia	0.8	7.3	18.5	67.2	74.9	80.3
	Wisconsin	0.0	3.1	9.4	64.5	71.0	75.9
	Wyoming	2.2	9.9	21.9	55.0	63.3	69.6
No-Fault	Colorado	–1.2	–0.1	0.7	53.7	57.5	60.9
	Connecticut	–1.9	2.0	7.7	69.8	75.2	79.3
	Florida	–12.0	–3.2	0.6	44.3	54.6	62.7
	Georgia	–12.1	–4.8	–1.0	50.8	58.9	65.4
	Hawaii	–8.2	–4.3	–1.4	61.7	66.7	71.9
	Kansas	–31.9	–17.0	–5.7	23.5	36.0	49.2
	Kentucky	–47.1	–27.0	–9.9	15.8	30.6	49.9
	Massachusetts	–6.6	–0.2	5.0	66.7	73.7	78.9
	Michigan	0.2	1.2	3.2	26.9	30.1	33.3
	Minnesota	–2.4	1.9	7.9	55.6	62.7	68.3
	New Jersey	0.7	3.5	8.3	61.4	65.4	68.8
	New York	–0.4	1.0	3.6	67.3	71.1	74.2
	North Dakota	–45.8	–25.0	–8.7	–10.8	4.4	21.4
	Utah	–0.2	2.2	7.0	57.3	62.7	67.3

NOTES: The percentage of uninsured ranges from 5 to 35%. From 20 to 80% switch under choice. The percentage of single-car drivers ranges from 0 to 20%.

retain their current insurance status under choice and for drivers who switch to the ANF plan under choice. Figures 3 and 4 show the same bounds along with the quartiles for all such combinations.

For most states, the range of estimates is relatively small. Nothing in these estimates poses a serious threat to our main finding that insured drivers who elect ANF under choice will see savings of about 60 percent or more, while drivers who retain their current status will, in most cases, experience only a slight change.

Data Outliers

Compensation estimates in the AIRAC file are somewhat skewed, and in some states we find a few large settlements along with a large number of smaller ones. To see if this distribution posed a threat to our conclusions, we recalculated everything, two different ways:

1. In every state and for each compensation element, we dropped the top 10 percent of all cases.
2. Similarly, we dropped the bottom 10 percent of all cases.

Table 9 compares relative savings under choice using each of the two sets of estimates. As might be expected, dropping the bottom 10 percent makes very little difference in most states. Dropping the top 10 percent makes a significant difference in a few states. For example, our earlier estimate indicated that drivers who selected PIP under choice would see a 70-percent savings. When the top 10 percent of the data is dropped, this estimate falls to 46 percent.

In terms of our main conclusions, however, dropping the top 10 percent makes no difference. Figure 5 plots relative savings for drivers who switch to ANF under choice, calculated after the top 10 percent of all cases have been dropped. Figure 5 should be compared with Figure 2. In most states, relative savings still exceed 60 percent, and in no state is the relative savings negative. Compared with Figure 2, we see a few more states in which relative savings drop below 60 percent, but for all tort states, relative savings always exceed 45 percent.

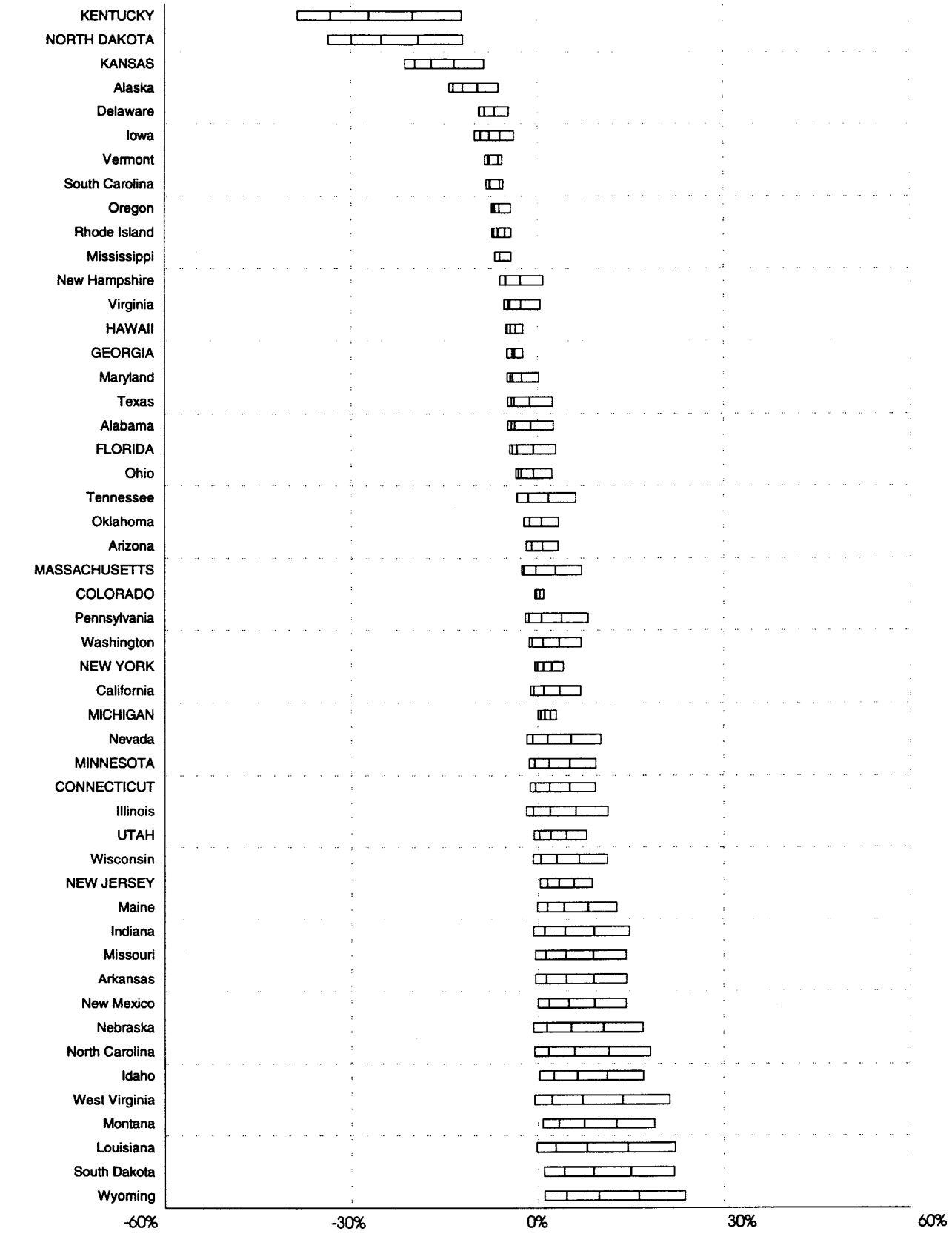


Figure 3—Sensitivity Analysis: Drivers Who Retain Insurance

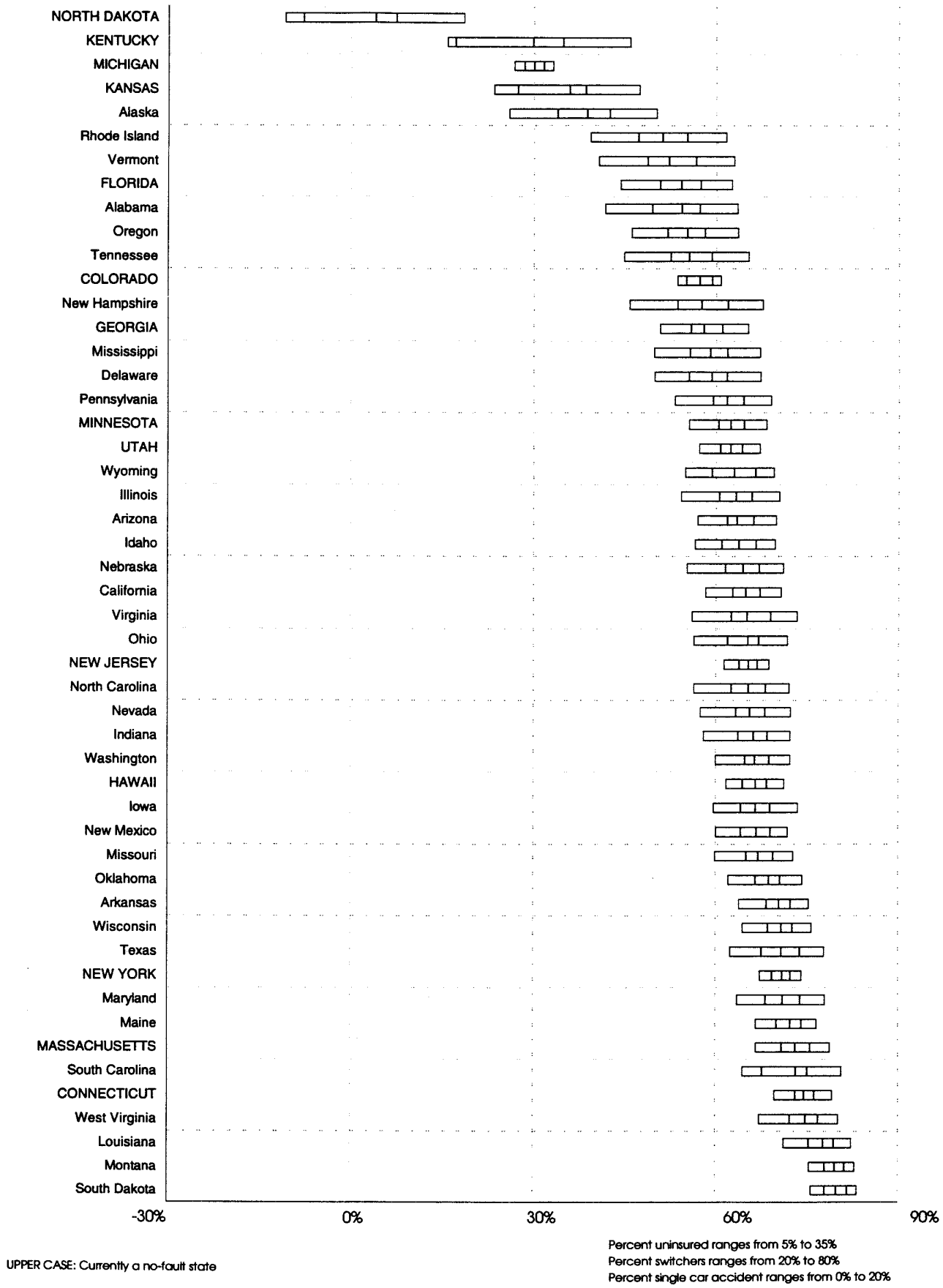


Figure 4—Sensitivity Analysis: Drivers Who Switch

Table 9

Relative Savings Under Choice by State, Using Variations on Cost Elements

Current Insurance		Drivers Who Retain Current Insurance			Drivers Who Select ANF Under Choice		
System	State	10 pctile	Nominal	90 pctile	10 pctile	Nominal	90 pctile
Tort/Add–on	Alabama	–3.6	–3.6	–18.5	54.4	54.4	38.9
	Alaska	–5.1	–11.9	–15.7	47.5	39.4	41.3
	Arizona	–0.8	–0.9	–1.2	64.3	64.3	62.3
	Arkansas	5.0	4.7	3.9	70.7	70.5	70.9
	California	1.1	1.1	0.8	65.3	65.4	63.3
	Delaware	–8.4	–8.4	–14.5	59.4	59.4	43.5
	Idaho	7.5	6.4	8.5	65.3	64.1	77.9
	Illinois	2.1	2.1	2.2	63.6	63.6	59.8
	Indiana	4.6	4.5	5.8	66.4	66.2	67.2
	Iowa	–7.6	–7.7	–26.7	67.1	67.0	36.6
	Louisiana	8.1	8.0	5.2	77.8	77.8	77.2
	Maine	4.6	4.4	7.1	72.7	72.4	73.9
	Maryland	–4.2	–4.2	0.2	71.8	71.8	66.1
	Mississippi	–6.8	–6.8	–7.0	59.6	59.6	58.2
	Missouri	4.6	4.6	3.6	67.3	67.3	65.4
	Montana	7.6	7.5	9.4	79.7	79.7	79.4
	Nebraska	9.0	5.4	13.1	68.8	64.5	75.3
	Nevada	1.9	1.7	1.6	66.2	66.1	64.3
	New Hampshire	–4.9	–5.1	–13.6	60.4	58.7	52.6
	New Mexico	5.2	5.1	2.6	67.0	66.8	64.0
	North Carolina	6.4	6.0	5.2	65.9	65.5	63.8
	Ohio	–2.5	–2.5	–5.6	65.4	65.3	57.8
	Oklahoma	–0.9	–1.2	–2.5	69.4	69.1	59.8
	Oregon	–7.2	–7.1	–13.0	55.8	55.8	53.0
	Pennsylvania	0.7	0.7	1.9	62.4	62.4	59.3

Table 9—continued

Current Insurance System	State	Drivers Who Retain Current Insurance			Drivers Who Select ANF Under Choice		
		10 pctile	Nominal	90 pctile	10 pctile	Nominal	90 pctile
	Rhode Island	–0.9	–7.3	–8.4	60.1	52.3	58.3
	South Carolina	–8.1	–8.2	–5.0	73.4	73.4	65.9
	South Dakota	9.0	9.1	9.7	79.9	80.0	83.0
	Tennessee	–1.3	–1.4	–8.9	56.9	56.8	48.5
	Texas	–3.6	–3.6	–3.3	71.4	71.4	61.9
	Vermont	–7.5	–8.4	–8.9	54.6	53.5	62.5
	Virginia	–4.6	–4.6	–9.5	66.2	66.2	51.3
	Washington	0.9	0.9	0.3	66.9	67.0	69.4
	West Virginia	8.2	7.3	–2.6	75.5	74.9	63.2
	Wisconsin	3.2	3.1	0.1	71.0	71.0	70.7
	Wyoming	9.8	9.9	10.1	63.1	63.3	77.8
No–Fault	Colorado	0.0	–0.1	0.3	57.6	57.5	76.0
	Connecticut	2.1	2.0	2.9	75.2	75.2	75.1
	Florida	–3.2	–3.2	–2.7	54.6	54.6	54.9
	Georgia	–4.8	–4.8	–3.7	58.9	58.9	60.2
	Hawaii	–4.2	–4.3	–3.9	67.3	66.7	77.7
	Kansas	–16.6	–17.0	–29.1	36.7	36.0	22.1
	Kentucky	–26.8	–27.0	–40.4	31.0	30.6	24.4
	Massachusetts	–0.1	–0.2	2.0	73.8	73.7	74.4
	Michigan	1.3	1.2	2.1	30.2	30.1	51.3
	Minnesota	2.6	1.9	1.8	63.5	62.7	73.1
	New Jersey	3.5	3.5	4.3	65.2	65.4	69.9
	New York	1.0	1.0	1.8	71.0	71.1	77.3
	North Dakota	–15.4	–25.0	–26.9	15.8	4.4	29.8
	Utah	2.2	2.2	5.4	62.9	62.7	76.4

NOTE: 20% are uninsured; 50% switch under choice; and 10% are single-car drivers.

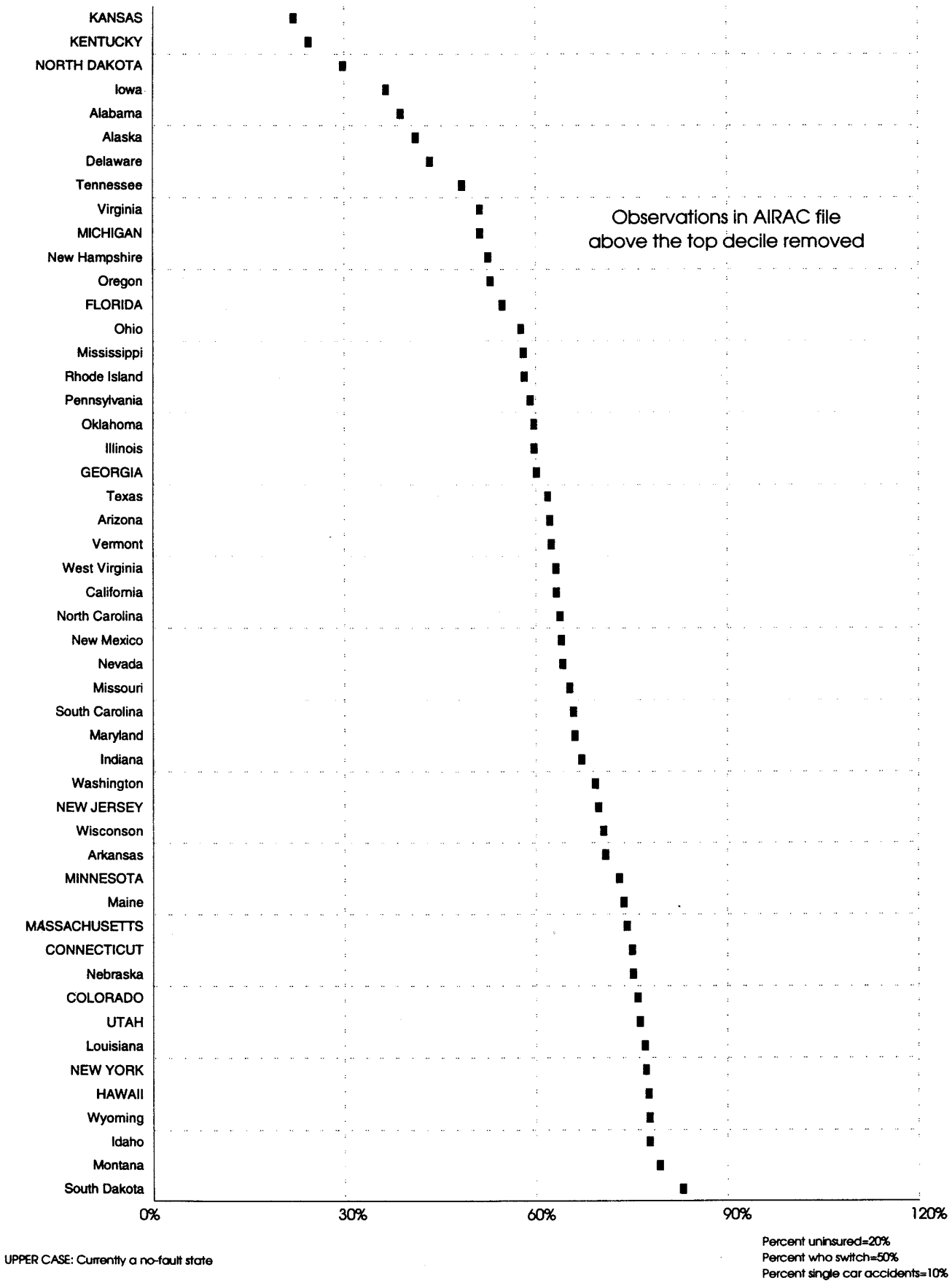


Figure 5—Variation on Relative Savings for Drivers Who Switch

5. Conclusions

Our results suggest that the choice plan can deliver on its promise to offer dramatically less expensive insurance to drivers willing to give up access to compensation for noneconomic loss without affecting those who want to retain access to compensation for all their losses, both economic and noneconomic. If insurers pass on cost savings, the adoption of a choice plan would

- *allow drivers in tort states* who are willing to waive their tort rights to buy ANF personal injury coverage for just over a third of what they have to pay for personal injury coverage under their state's current system
- *allow drivers in tort states* who preferred to retain their full tort rights to do so, at essentially the same costs as under the tort system
- *allow drivers in current no-fault states* who are willing to waive their tort rights for serious injuries to buy ANF personal injury coverage for roughly one-half to two-thirds of what they have to pay for personal injury coverage under their state's current system
- *allow drivers in current no-fault states* who prefer to retain access to the tort system to do so, at somewhat greater costs than under their state's current system.

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