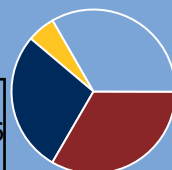


# The Potential Effects of No Pay, No Play Laws

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# **The Potential Effects of No Pay, No Play Laws**

**Insurance Research Council  
November 2012**

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## Executive Summary

Uninsured motorists create problems for regulators, insurers, and insured drivers. Regulators experiment with methods to encourage uninsured motorists to purchase insurance. Meanwhile, insurers must address resource issues in response to new regulations as well as deal with the costs of investigating and processing uninsured motorists (UM) claims. Insured drivers are affected through the premiums they pay for UM coverage and because insurers will pass on a portion of the costs incurred by the actions of uninsured motorists. All parties would benefit from a decline in the number of uninsured motorists.

National estimates of the percentage of uninsured motorists have remained somewhat stable, currently hovering around 14 percent.<sup>1</sup> Because of the problems associated with uninsured motorists, several states have taken steps to encourage uninsured motorists to purchase insurance coverage. “No pay, no play” laws are one example.

No pay, no play laws prevent an uninsured motorist from collecting compensation for noneconomic damages arising from a traffic accident with an insured, at-fault driver. Noneconomic damages include compensation for pain and suffering, emotional distress, inconvenience, and so forth. These no pay, no play laws are based on the belief that people who do not buy coverage should not receive benefits.<sup>2</sup>

The intention of no pay, no play laws is to relieve at-fault drivers who comply with state insurance requirements from having to compensate uninsured drivers for noneconomic damages. No pay, no play laws may also help reduce insurers’ losses and the premiums charged to policyholders. With such laws in place, it is also believed that fewer motorists will operate without policies.

State laws can vary in specifics. For example, in addition to targeting uninsured motorists, certain states also bar drunk drivers and drivers fleeing a felony from collecting noneconomic damages, while other states only set limits to the amount of compensation that can be rewarded.

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<sup>1</sup> Insurance Research Council, *Uninsured Motorists, 2011 Edition* (Malvern, Pa.: Insurance Research Council, 2011), p. 5.

<sup>2</sup> Insurance Information Institute, “No-Pay, No-Play” [www2.iii.org/index.cfm?instanceID=353](http://www2.iii.org/index.cfm?instanceID=353) (accessed July 2012).

Currently, ten states have no pay, no play laws on the books: Alaska, California, Iowa, Kansas, Louisiana, Michigan, New Jersey, North Dakota, Oklahoma, and Oregon. In other states, no pay, no play laws have been proposed, but have not been enacted.

Limited research has been conducted to measure the impact of no pay, no play laws, but the research that has been published suggests that the laws can reduce the costs of auto insurance.<sup>3</sup> Research published by the Rand Corporation was limited to two states, California and Texas, and did not examine the impact of no pay, no play laws on UM rates.

This study seeks to measure the impact of no pay, no play laws on UM rates. It also estimates the costs of noneconomic damages rewarded to uninsured motorists in states that have yet to enact such laws. The study seeks to demonstrate whether no pay, no play laws are associated with lower rates of uninsured motorists, and, if so, to measure the potential cost savings in states that have not yet adopted no pay, no play laws.

### Key Findings

- The results show that the percentage of uninsured motorists is affected by a no pay, no play law's enactment, albeit modestly. The Insurance Research Council (IRC) developed a statistical model to test this relationship, and its estimation shows that the uninsured motorist rate tends to fall after a state adopts a no pay, no play law.<sup>4</sup>
- For states without the law, IRC developed a mathematical model to estimate the compensation for noneconomic loss paid to uninsured third-party liability claimants in a given year. This estimate provides a reasonable upper limit proxy for the amount of money that is currently rewarded to the uninsured population and would no longer be paid if a state implemented a no pay, no play law.
- The findings suggest that not only would a properly enforced no pay, no play law result in a moderate decrease in the number of uninsured motorists, it may also reduce auto insurance costs.

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<sup>3</sup> Rand, "The Effects of a No-Pay/No-Play Plan on the Costs of Auto Insurance in Texas" [www.rand.org/pubs/issue\\_papers/IP174/index2.html](http://www.rand.org/pubs/issue_papers/IP174/index2.html) (accessed July 2012).

<sup>4</sup> These results are statistically significant at the highest level.

## Section 1

### Background on State Laws

The first states to pass no pay, no play laws were California and Michigan, each of which passed their laws in 1996.<sup>5</sup> Both states withheld from uninsured drivers rewards for pain and suffering damages. California extended the law to prevent recovery of noneconomic damages for injuries sustained while committing a felony and while driving under the influence. The California law has withstood court challenge; however, courts have not extended the limitation of damages to survivors.

Louisiana and New Jersey were the next states to enact no pay, no play laws. Louisiana's no pay, no play law originally stated that the owner or operator of an uninsured vehicle was barred from recovery of damages for the first \$10,000 of bodily injury and the first \$10,000 of property damage. These limits were amended in 2008 to bar uninsured motorists from collecting the first \$15,000 of bodily injury damages and the first \$25,000 of property damages. Nevertheless, this ban doesn't apply if the at-fault party is driving while intoxicated, flees from the scene, is taking part in a felony, or intentionally causes the accident. New Jersey's no pay, no play law bars those who operate automobiles without insurance, those who drive under the influence of alcohol or drugs, and those who act with the intent to injure others while driving from suing for personal injuries in automobile accident cases.

In 1999, both North Dakota and Oregon enacted no pay, no play laws, and Iowa followed suit in 2000. North Dakota's law prohibits recovery of noneconomic damages for uninsured drivers who have been convicted two or more previous times for driving uninsured. Oregon's law bars recovery for noneconomic damages if the injured motorist is driving without insurance, intoxicated, or is injured in the course of a felony. In Oregon, restrictions on recovery do not apply if the uninsured driver was insured under an auto liability policy within the past 180 days and has not driven an uninsured vehicle within the year preceding the coverage lapse. Iowa's law, enacted in 2000, prohibits recovery of noneconomic damages if the motorist is injured while committing a felony.

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<sup>5</sup> Property Casualty Insurers Association of America provided IRC with background information for this section regarding all no pay, no play laws.

Alaska, Oklahoma, and Kansas instituted no pay, no play laws more recently. Alaska's law went into effect in 2004 and stated that a person who does not comply with existing motor vehicle liability laws may not recover damages for noneconomic loss suffered while operating a motor vehicle.

The Kansas law, enacted in 2011, prohibits recovery of noneconomic loss sustained by uninsured drivers as a result of an accident. Exceptions include a court finding, by clear and convincing evidence, that a person bringing a cause of action did not knowingly drive a motor vehicle without mandatory PIP coverage at the time of the accident, or if the motorist failed to maintain coverage for a period of 45 days or less at the time of an accident but had maintained continuous coverage for at least one year prior to the failure to maintain coverage. The law provides that any person convicted of, or pleading guilty to, an alcohol- or drug-related violation in connection with an auto accident is also prohibited from this recovery.

Oklahoma's no pay, no play law was also enacted in 2011. This law bars recovery for noneconomic damages in civil action if the claimant was driving while uninsured. Restrictions do not apply if the plaintiff is injured by a motorist who was driving under influence of drugs or alcohol; if the plaintiff was a passenger in a vehicle s/he does not own; if the plaintiff was not in any vehicle involved in the accident; for wrongful death claims; or if the motorist who caused the accident left the scene.

## Section 2

### Study Methods

The no pay, no play laws enacted in the ten states since 1996 provide an opportunity to document how the adoption of these laws affects the percentage of uninsured motorists within that state over time. In order to control for other factors, other variables that are believed to influence the UM rates are also examined. Panel data analysis provides a useful tool to compare these results across states that have and have not implemented law changes, while also analyzing the cross-sections over time.

Because most states do not have no pay, no play laws, many states are spending a certain amount of money compensating uninsured motorists for noneconomic damages each year. If a strict no pay, no play law was put in place, and it was properly enforced, the amount spent on compensation would fall substantially. A state-based mathematical model that estimates how much uninsured drivers have received in compensation for noneconomic damages in a specific year is presented in a later section. If a new no pay, no play law was implemented, the uninsured presumably would no longer be compensated this amount. Each of the abovementioned research designs is developed and explained in detail in the sections that follow.

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## Section 3

### Effects of No Pay, No Play Laws on Uninsured Motorist Rates

Altering the incentives behind driving uninsured is one goal of no pay, no play laws. The hope is that over time these laws will lower the percentage of motorists driving without insurance coverage. Nevertheless, limited research has been conducted on whether these laws have led to lower UM rates in the states that have implemented them. This section presents a model that estimates whether the percentage of uninsured motorists has been affected by the establishment of a no pay, no play law.

In order to capture the impact of these laws on uninsured motorist rates, an estimate for uninsured motorists for each state is needed. For all UM data, we use the IRC estimates for uninsured motorists rates by state. The data are obtained from IRC's five most recent uninsured motorists' reports.<sup>6</sup> The analysis to follow will focus on 1989 through 2009, which includes IRC's latest estimates for uninsured motorists.<sup>7</sup> Figure 1 shows the latest IRC data. Figure 2 shows the mean uninsured motorist rate from 1989–2009 for each state.

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<sup>6</sup> *Uninsured Motorists 1999 Edition, Uninsured Motorists 2000 Edition, Uninsured Motorists 2006 Edition, Uninsured Motorists 2008 Edition, and Uninsured Motorists 2011 Edition.*

<sup>7</sup> State data for 1998 were never collected and are therefore interpolated.

Figure 1

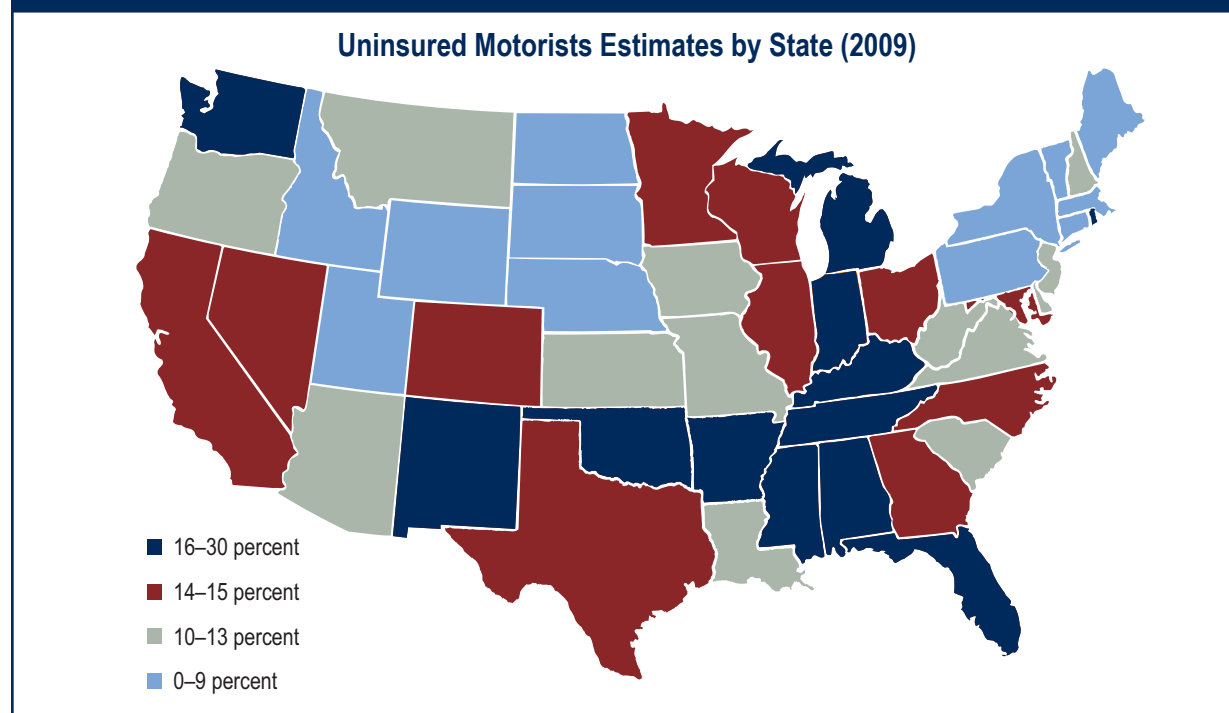
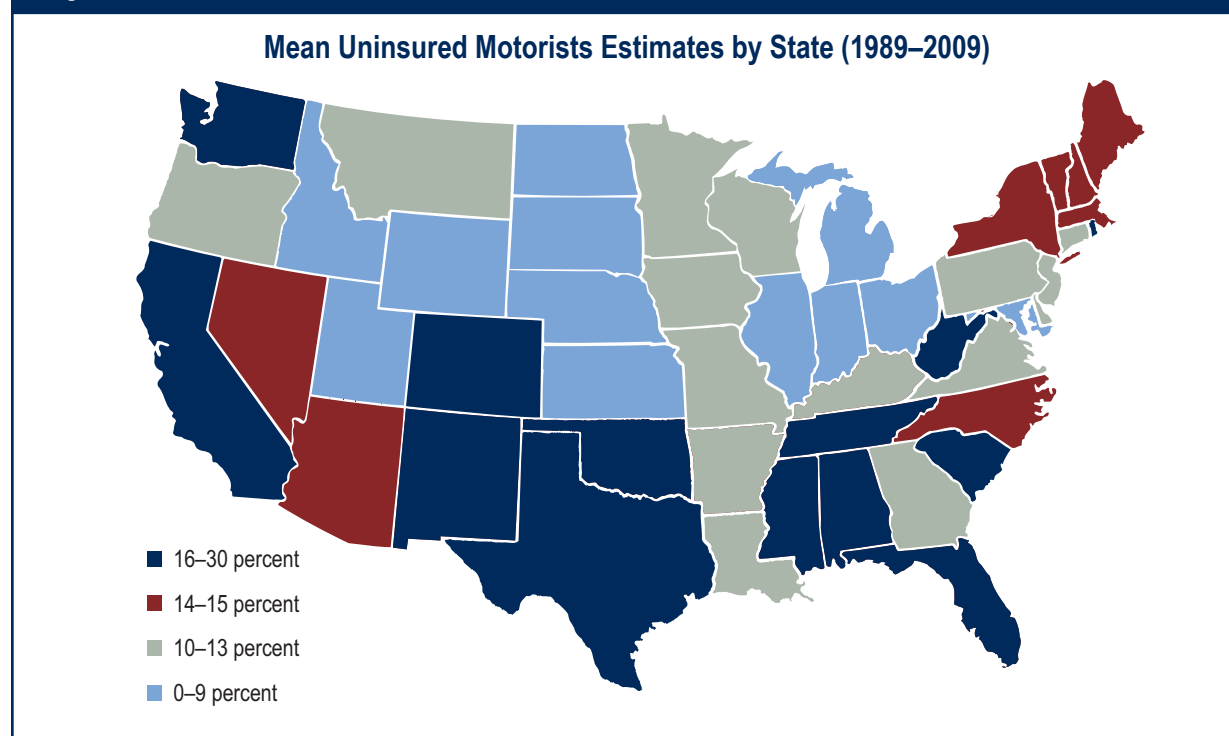


Figure 2





The hypothesis is that no pay, no play laws affect state uninsured motorists percentages over time. In order to evaluate this proposition, the qualitative information regarding the presence of a no pay, no play law needs to be quantified. One technique to quantify qualitative information is the use of dummy variables. In statistics and econometrics, particularly in regression analysis, a dummy variable (also known as an indicator variable) is one that takes the values 0 or 1 to indicate the absence or presence of some categorical effect that may be expected to shift the outcome.<sup>8</sup>

Assuming a state enacted a no pay, no play law in a specific year, the dummy variable would be 0 for the years prior to the law change.<sup>9</sup> After the law change, the dummy variable would be 1. In states that have never enacted no pay, no play laws, the dummy variable would be 0 throughout the time series (which ranges from 1989–2009). Figure 3 describes the dates each no pay, no play law was enacted. The hypothesis is that there would be a positive correlation between the percent of uninsured motorists and the dummy variable

Figure 3

#### No Pay, No Play Laws—Date Enacted

State:	Date:
Alaska	2004
California	1996
Iowa	2000
Kansas	2011
Louisiana	1997
Michigan	1996
New Jersey	1997
North Dakota	1999
Oklahoma	2011
Oregon	1999

Source: PCI

<sup>8</sup> Draper, N.R., and H. Smith, *Applied Regression Analysis* (New York: Wiley, 1998), Chapter 14.

<sup>9</sup> Two states (Kansas and Oklahoma) enacted law changes in 2011, which is beyond the scope of the available data. Therefore, for the regression analysis each state is treated as a state that did not enact a no pay, no play law within the framework of 1989–2009.

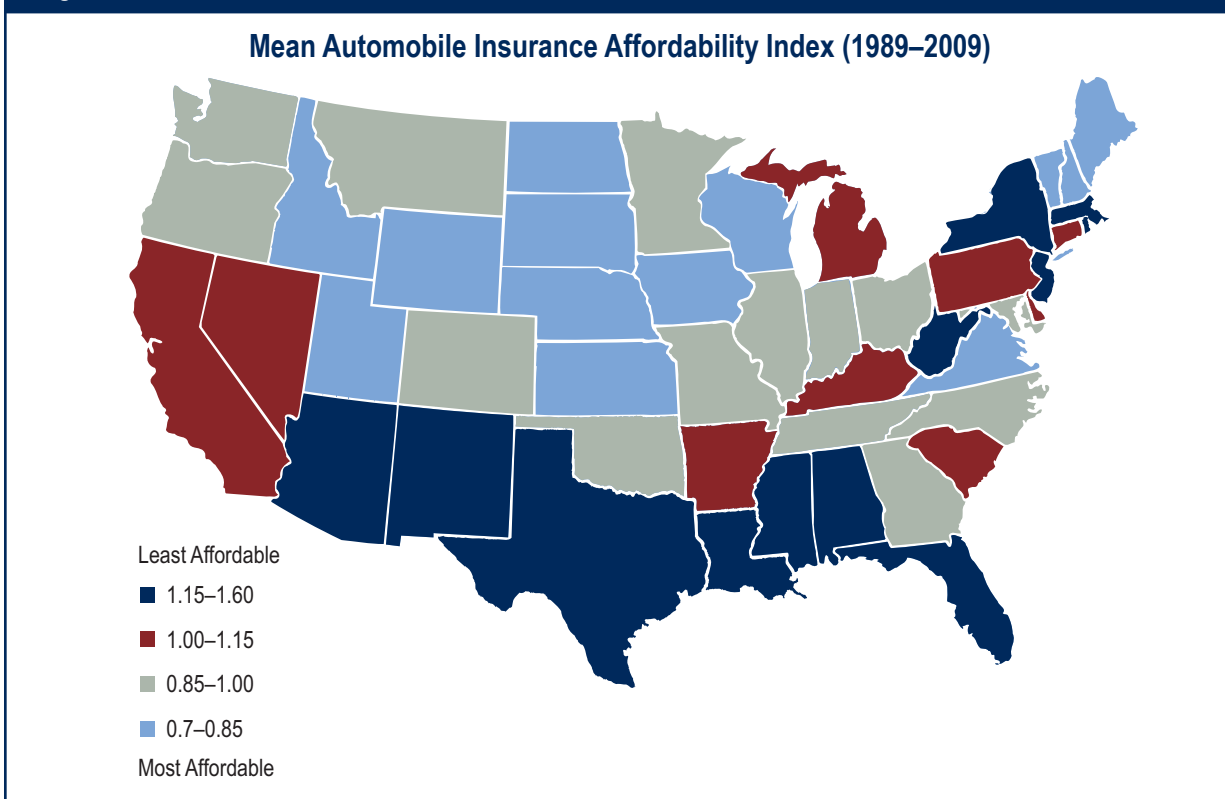


Another important factor influencing the percentage of uninsured motorists may be the relative amount of insurance expenditures. State average insurance expenditures per insured vehicle were obtained from the National Association of Insurance Commissioners (NAIC). A relative index can be created by taking each state's average insurance expenditure and dividing it by the national average.

Because states also vary in terms of incomes, an income factor should also be included. Household median income data can be obtained from census information. Once again, a relative index can be created by taking each state's household median income and dividing it by the national average.

The two indexes, the average insurance index and the median household income index, can be divided by one another to create an *automobile insurance affordability index*. More details on the creation of this variable are in Appendix 1. Figure 5 shows the mean state auto insurance affordability index from 1989–2009.

Figure 5



With all of the aforementioned variables in place, a panel least squares<sup>11</sup> regression was used to estimate the following:

$$\text{(Equation 1)} \quad U_{it} = a_0 + a_1 D_{it} + a_2 E_{it} + a_3 A_{it} + e$$

- Where  $U_{it}$  is state  $i$ 's percentage of uninsured motorists at time  $t$ .
- Where  $D_{it}$  is state  $i$ 's dummy variable for no pay, no play laws at time  $t$ .
- Where  $E_{it}$  is state  $i$ 's unemployment rate at time  $t$ .
- Where  $A_{it}$  is state  $i$ 's insurance affordability index at time  $t$ .

To recap, the hypothesis is that the dependent variable,  $U_{it}$ , will be negatively correlated with  $D_{it}$ , which would indicate that the institution of no pay, no play laws is associated with a decrease in the percentage of uninsured motorists in state  $i$  at time  $t$ . Both the unemployment rate and the insurance affordability index variables are expected to be positively correlated with  $D_{it}$ . The estimation results are summarized in Figure 6.<sup>12</sup>

**Figure 6**

## Equation 1 Estimation Results No Pay, No Play Laws (1989–2009)

Dependent Variable:	Estimation Results:
Percentage of uninsured motorists	Coefficient (Std. Error)
Dummy variable for no pay, no play law	-0.016*** (0.004)
Unemployment rate	0.239*** (0.063)
Insurance affordability index	0.063*** (0.011)
R-square (within)	0.825
Number of observations	969

\*\*\* = significant at the .01 level

<sup>11</sup> Panel data analysis is a method of studying a particular subject within multiple sites, periodically observed over a defined time frame. The fixed-effects approach is utilized in our estimations.

<sup>12</sup> We use Gretl for all econometric work included in this research.

The estimation results show that the institution of a no pay, no play law is associated with a 1.6% decline in the percentage of uninsured motorists. Indeed, there is a negative correlation between the two, and although the magnitude of the correlation is limited, the relationship is statistically significant. The control variables, which include the unemployment rate and the insurance affordability index, also have the expected signs and are also statistically significant. The unemployment rate has the strongest relationship with the percentage of uninsured motorists. According to the  $R^2$ , the model explains roughly 83% of the variation in uninsured motorists across states from 1989–2009. This is a very strong indicator of the reliability of the model to predict future outcomes.<sup>13</sup>

To summarize, IRC's no pay, no play model indicates that no pay, no play laws are associated with lower state UM rates. Although other factors, such as the unemployment rate and the insurance affordability index, appear to matter more in terms of magnitude, no pay, no play laws have a moderate, yet statistically significant, effect on the percentage of motorists who drive uninsured.

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<sup>13</sup> Steel, R. G. D. and J.H. Torrie, *Principles and Procedures of Statistics* (New York: McGraw-Hill, 1960), pp. 187, 287.

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## Section 4

### Potential Impact of New No Pay, No Play Laws

In the preceding section, it was shown that no pay, no play laws are associated with lower UM rates, albeit moderately. Although that may be the most important aspect of these laws, their purpose is broader than constraining the number of uninsured drivers who get behind the wheel. Indeed, these laws also seek to promote fairness in compensation. This section of the report seeks to estimate how much compensation paid to uninsured motorists could potentially be eliminated by the institution of a fully effective no pay, no play law. The focus is on states that *do not* have no pay, no play laws.<sup>14</sup>

A seminal study of this nature was published by Rand in the late '90s (Carrol, Abrahamse 1996, 1998) regarding the implementation of these laws in California and Texas. In that research, the authors estimated the likely effect of each law's provisions and found that the implementation of these laws in California and Texas would reduce auto insurance compensation costs for personal injuries by about 10 percent and 6 percent in each state, respectively.

In formulating IRC's model, portions of the methodology used within the Rand study are updated. However, the IRC model seeks to advance the Rand methodology when possible, altering the methods in certain areas and substituting data with actual experience when feasible. While the Rand studies focused on California in 1996 and Texas in 1998, the IRC model studies all the states that do not have no pay, no play laws, except Texas.<sup>15</sup> All data included within the IRC model are from 2007, yet the 2007 estimates are projected to 2012 based on inflation and time adjustments.

Equation 2 describes the IRC methodology for developing this estimate and models the compensation for noneconomic damages to uninsured motorists. This exact amount is the upper limit of what would be eliminated under a no pay, no play law, because under these laws the uninsured can't receive compensation for noneconomic damages.

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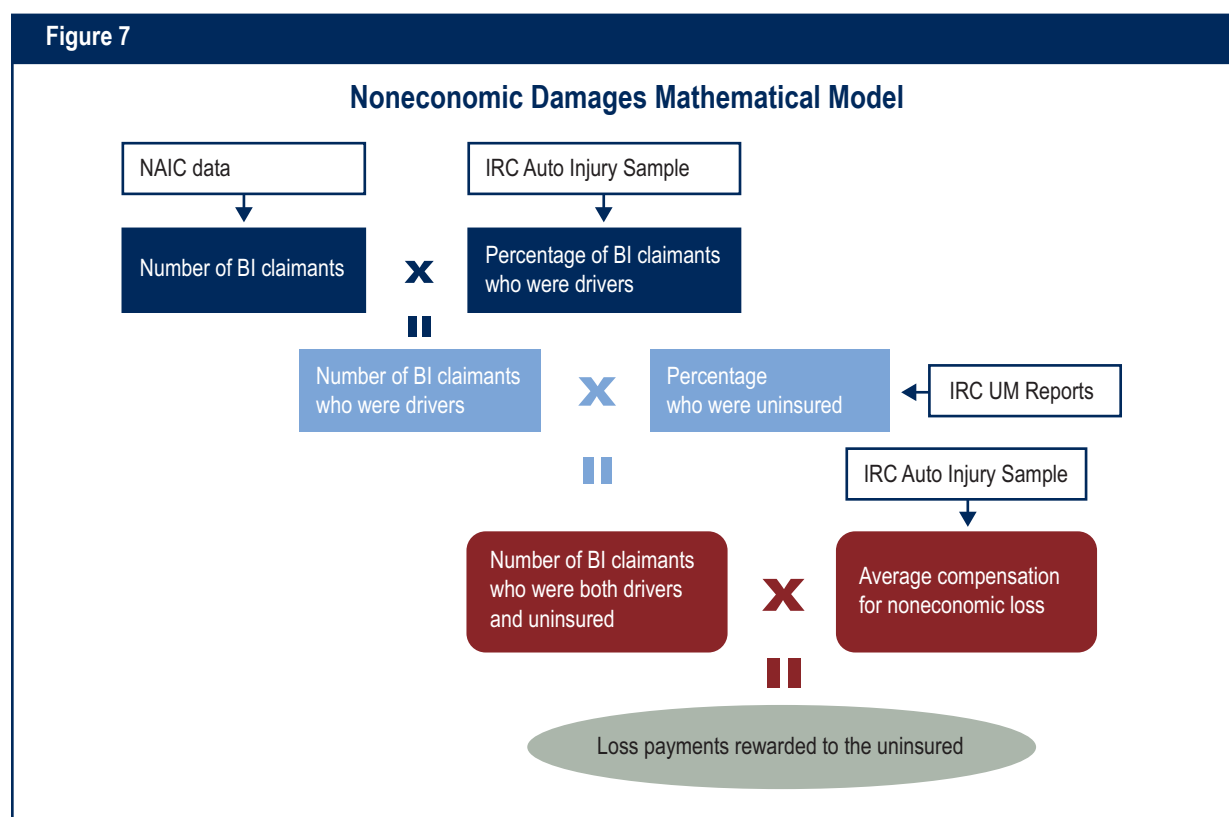
<sup>14</sup> No pay, no play laws exist in ten states, and certain data points don't exist for Texas. Therefore, the analysis focuses on thirty-nine states and District of Columbia.

<sup>15</sup> NAIC data incurred claims data is not available for Texas.

(Equation 2)  $R_i = C_i[U_i(D_i \times N_i)]$

- Where  $R_i$  is the noneconomic damages rewarded to the uninsured in state  $i$ .
- Where  $C_i$  is the average compensation for noneconomic loss in bodily injury (BI) claims in state  $i$ .<sup>16</sup>
- Where  $U_i$  is the percentage of uninsured motorists in state  $i$ .
- Where  $D_i$  is the percentage of BI claimants who were drivers in state  $i$ .
- Where  $N_i$  is the number of BI claimants in state  $i$ .

Figure 7 depicts the mathematical model in a graphical form and explains data sources.



<sup>16</sup> It is assumed that the average compensation for uninsured BI claimants is equal to that of insured BI claimants.



To obtain an estimate for noneconomic damages rewarded to uninsured motorists in each state, or  $R_i$ , the number of drivers who were uninsured BI claimants in each state and the average compensation for noneconomic loss in each state, or  $C_i$ , can be multiplied together. The average compensation for noneconomic loss state data,  $C_i$ , are obtained from IRC's auto injury study.<sup>17</sup> A sample of the auto injury study's general damages for BI claims provides a good proxy for this variable.

The data on the number of drivers who were both uninsured drivers and BI claimants in each state can be estimated by multiplying the percentage that are uninsured in each state, or  $U_i$ , with the number of BI claimants in each state who were drivers. Each state's uninsured motorist estimate is obtained from IRC's uninsured motorists study.<sup>18</sup> The number of BI claimants who were drivers in each state is obtained by multiplying the percentage of BI claimants in each state who were drivers, or  $D_i$ , by the number of BI claimants in each state, or  $N_i$ . The percentage of BI claimants who were drivers in each state, or  $D_i$ , is obtained from IRC's auto injury study while the number of BI claimants in each state, or  $N_i$ , is obtained from the NAIC.<sup>19</sup>

<sup>17</sup> Insurance Research Council, *Auto Injury Insurance Claims: Countrywide Patterns in Treatment, Cost, and Compensation* (Malvern, PA: Insurance Research Council, 2008).

<sup>18</sup> Insurance Research Council, *Uninsured Motorists, 2011 Edition* (Malvern, PA: Insurance Research Council, 2011).

<sup>19</sup> National Association of Insurance Commissioners, 2009, *State Average Expenditures & Premiums for Personal Automobile Insurance in 2010* (Kansas City, MO: NAIC).

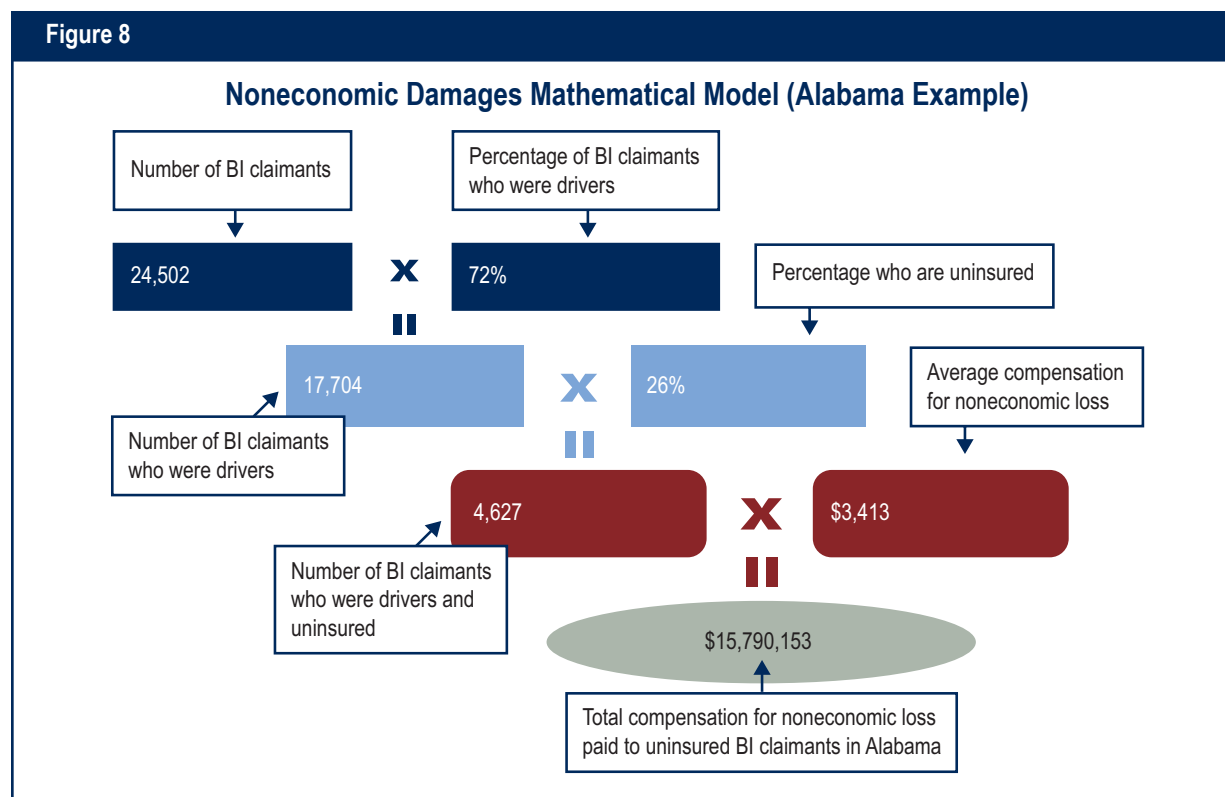
## Example: Alabama

So that the reader understands the model and methodology, an example using the state of Alabama is presented. In order to develop an estimate for noneconomic damages we insert the data below for the associated variables from Equation 2.

$$R_i = C_i [U_i (D_i \times N_i)]$$

- Where  $R_i$  is the noneconomic damages rewarded to the uninsured in state  $i$ .
  - In Alabama,  $R = \$15,790,154$
- Where  $C_i$  is the average compensation for noneconomic loss in BI claims in state  $i$ .
  - In Alabama,  $C = \$3,413$
- Where  $U_i$  is the percentage of uninsured motorists in state  $i$ .
  - In Alabama,  $U = 26\%$
- Where  $D_i$  is the percentage of BI claimants who were drivers in state  $i$ .
  - In Alabama,  $D = 72\%$
- Where  $N_i$  is the number of BI claimants in state  $i$ .
  - In Alabama,  $N = 24,502$

Figure 8 depicts the mathematical model for Alabama in a graphical form.



Applying this model, IRC estimates that Alabama's auto insurance system paid \$15,790,154 in noneconomic damages to uninsured motorists in 2007.

Using NAIC incurred losses and pure premium data, this dollar amount can be further broken down to estimate the amount insured drivers contribute so that noneconomic damages can be rewarded to the uninsured motorists.<sup>20</sup> IRC estimates that an insured driver in Alabama, on average, paid an additional \$5.19 in 2007 to address the \$15.7 million loss associated with 4,626 uninsured BI claimants, who averaged roughly \$3,412 each in noneconomic loss claims.

## State Estimates

The methodology explained previously is used to create estimates for all states that do not have no pay, no play laws, with the exception of Texas. Texas was excluded because the state is also excluded from the NAIC incurred claims data. Across all of the 39 states studied, the average insured driver in 2007 paid an additional \$4.69 (\$5.10 in 2012 dollars) to address the average \$17.5 million loss in each state (\$19.3 million in 2012 dollars),<sup>21</sup> Figures 9, 10, and 11 present the state data.

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<sup>20</sup> Methods for estimating the insured driver contribution are contained in Appendix 2.

<sup>21</sup> Methods for inflation and time difference adjustments are contained in Appendix 3.

Figure 9

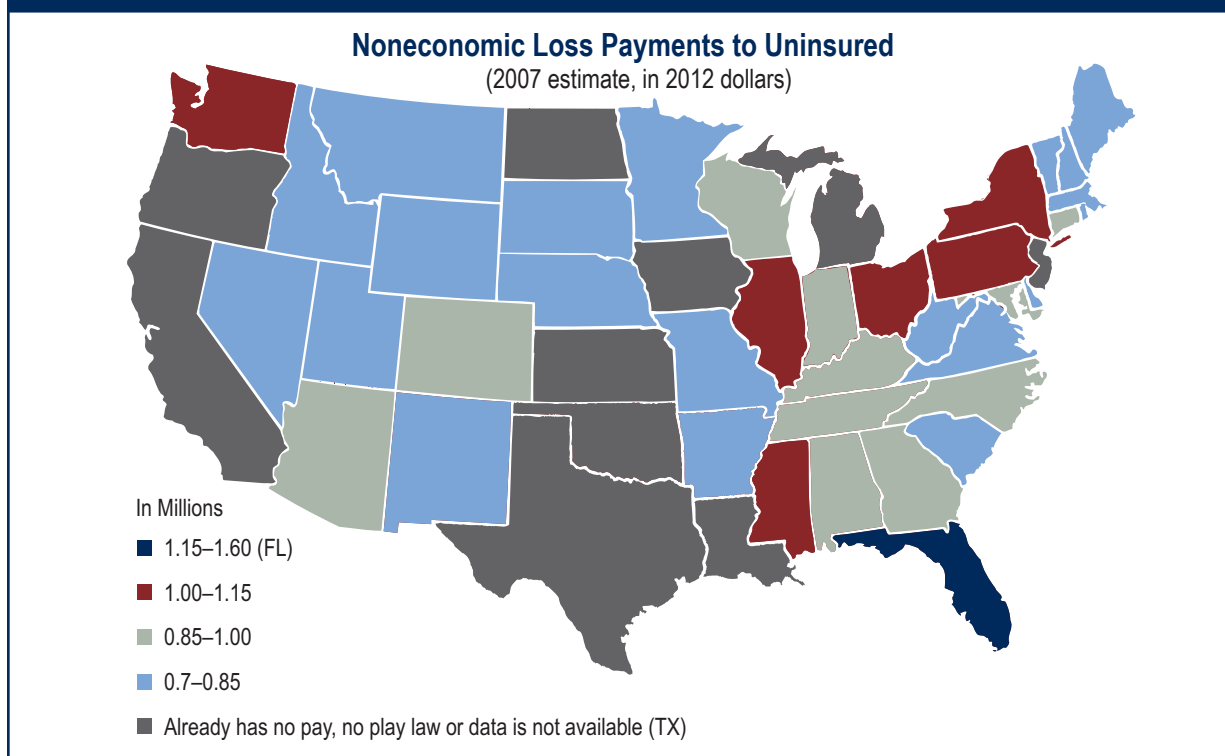


Figure 10

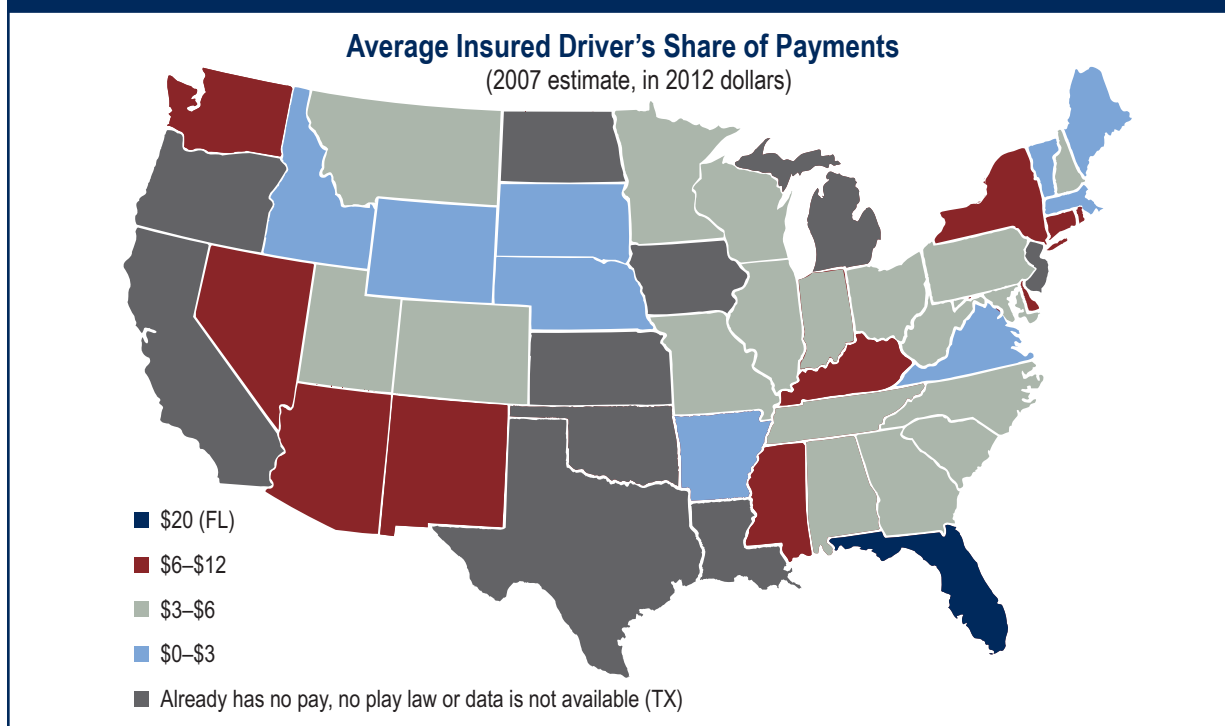


Figure 11 presents additional information on the state data.

<b>Figure 11</b>				
<b>State by State Findings</b>				
<b>State</b>	<b>2007 Estimate</b>		<b>2012 Dollars</b>	
	<b>Loss Payments to Uninsured Claimants</b>	<b>Average Insured Driver's Share</b>	<b>Loss Payments to Uninsured Claimants</b>	<b>Average Insured Driver's Share</b>
Alabama	\$15,790,154	\$5.19	\$17,418,503	\$5.66
Alaska		Has Law		Has Law
Arizona	\$22,121,609	\$6.18	\$24,402,885	\$6.30
Arkansas	\$4,662,525	\$2.80	\$5,143,344	\$2.56
California		Has Law		Has Law
Colorado	\$17,266,826	\$5.33	\$19,047,456	\$5.02
Connecticut	\$14,708,036	\$7.85	\$16,224,792	\$10.56
Delaware	\$3,288,696	\$6.34	\$3,627,840	\$6.89
D.C.	\$999,391	\$4.90	\$1,102,452	\$5.56
Florida	\$164,155,350	\$15.50	\$181,083,757	\$19.82
Georgia	\$18,895,062	\$3.37	\$20,843,602	\$4.45
Hawaii	\$2,990,952	\$4.00	\$3,299,392	\$3.40
Idaho	\$2,317,109	\$2.51	\$2,556,059	\$2.55
Illinois	\$25,142,389	\$3.90	\$27,735,181	\$3.99
Indiana	\$13,923,090	\$3.56	\$15,358,899	\$3.86
Iowa		Has Law		Has Law
Kansas		Has Law		Has Law
Kentucky	\$16,442,832	\$6.01	\$18,138,488	\$8.53
Louisiana		Has Law		Has Law
Maine	\$804,876	\$1.13	\$887,878	\$1.25
Maryland	\$14,307,764	\$3.97	\$15,783,243	\$4.45
Massachusetts	\$2,764,590	\$0.69	\$3,049,687	\$0.61
Michigan		Has Law		Has Law
Minnesota	\$11,668,429	\$3.47	\$12,871,728	\$3.37
Mississippi	\$16,341,094	\$8.82	\$18,026,258	\$10.23
Missouri	\$10,904,227	\$3.09	\$12,028,718	\$3.12
Montana	\$2,768,028	\$4.37	\$3,053,479	\$3.39
Nebraska	\$2,390,689	\$1.87	\$2,637,228	\$2.05
Nevada	\$13,100,416	\$8.44	\$14,451,387	\$8.64
New Hampshire	\$3,989,050	\$5.15	\$4,400,418	\$5.26
New Jersey		Has Law		Has Law
New Mexico	\$10,634,166	\$8.54	\$11,730,807	\$8.72
New York	\$45,215,314	\$5.88	\$49,878,112	\$6.73
North Carolina	\$21,888,497	\$3.28	\$24,145,733	\$3.75
North Dakota		Has Law		Has Law
Ohio	\$24,374,120	\$3.47	\$26,887,684	\$3.47
Oklahoma		Has Law		Has Law
Oregon		Has Law		Has Law
Pennsylvania	\$24,333,297	\$3.26	\$26,842,651	\$3.25
Rhode Island	\$5,198,685	\$9.98	\$5,734,796	\$11.68
South Carolina	\$9,560,839	\$3.23	\$10,546,794	\$3.88
South Dakota	\$610,011	\$1.11	\$672,918	\$1.07
Tennessee	\$18,466,669	\$4.83	\$20,371,031	\$5.75
Utah	\$5,884,740	\$3.87	\$6,491,600	\$4.51
Vermont	\$922,766	\$2.63	\$1,017,925	\$2.24
Virginia	\$13,139,509	\$2.37	\$14,494,512	\$2.50
Washington	\$35,373,983	\$9.55	\$39,021,900	\$10.43
West Virginia	\$5,495,885	\$4.57	\$6,062,645	\$3.74
Wisconsin	\$18,943,773	\$5.67	\$20,897,336	\$5.15
Wyoming	\$858,320	\$2.17	\$946,833	\$2.05

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## Appendix I

### Creation of Insurance Affordability Index

In order to properly measure insurance affordability, the data on income and expenditures require adjustments to account for differences in insurance expenditures and median incomes. We begin by adjusting both the insurance expenditure and median income data and creating an index for each. The technique utilized is the same for both.

Each state's insurance expenditure, or  $E$ , is examined relative to the United States average, and an insurance expenditure index is created. Mathematically, let  $i$  be a typical state in the U.S. for year  $t$ . For each variable  $E$ , define the new variable  $\tilde{E}$  as  $\tilde{E}_{it} = E_{it} / \bar{E}_t$ , where  $\bar{E}_t = 1/n \sum_{i=1}^n E_{it}$ .

Each state's median income, or  $Q$ , is examined relative to the U.S. average and a median income index is created. This can be explained mathematically. Let  $i$  be a typical state in the U.S. for year  $t$ . For each variable  $Q$ , define the new variable  $\tilde{Q}$  as  $\tilde{Q}_{it} = Q_{it} / \bar{Q}_t$ , where  $\bar{Q}_t = 1/n \sum_{i=1}^n Q_{it}$ .

The insurance affordability index for state  $i$  during year  $t$  is simply the insurance expenditure index for state  $i$  during year  $t$  divided by the median household income index for state  $i$  during year  $t$ . Mathematically, this means the insurance affordability index is simply  $\tilde{E} / \tilde{Q}$ .

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## Appendix II

### Insured Driver Contribution

In order to estimate how much an average insured driver contributes to the total noneconomic loss payments provided to uninsured BI claimants (defined here as  $A_i$ ), IRC starts with the noneconomic loss estimates provided to uninsured BI claimants (or  $R_i$ —see Equation 2). Incurred losses by state (defined here as  $I_i$ ) and pure premiums by state (defined here as  $P_i$ ) were obtained from the National Association of Insurance Commissioners.<sup>22</sup> These data can be used to develop an estimate of the average insured driver's contribution to noneconomic loss provided to uninsured BI claimants in states without no pay, no play laws.

IRC divides the noneconomic loss estimate,  $R_i$ , in state  $i$  by the incurred losses within that state  $I_i$ . That quotient is then multiplied by the pure premium for state  $i$ . The product is an estimate for the amount an average driver contributes to the total noneconomic loss payment rewarded to uninsured BI claimants in state  $i$ . Mathematically, this can be expressed as:

$$\text{(Equation 3)} \quad A_i = (R_i / I_i) \times P_i$$

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<sup>22</sup> National Association of Insurance Commissioners, 2009, *State Average Expenditures & Premiums for Personal Automobile Insurance in 2010*.

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## Appendix III

### Inflation Adjustments and 2012 Data

Both the estimates for noneconomic loss payments provided to the uninsured,  $R_i$ , and the average insured driver's contribution to those payments,  $A_i$ , were originally estimated for 2007 because that was the most recent data available for all inputs involved in creating the estimate. Nevertheless, IRC does adjust these estimates for inflation and trend growth.

In order to obtain a 2012 estimate for noneconomic loss payments provided to the uninsured in state  $i$ , the 2007 estimate,  $R_i$ , is simply multiplied by CPI growth from 2007 to 2012.<sup>23</sup> The product provides a reasonable proxy for the amount of noneconomic loss payments provided to uninsured BI claimants in 2012.

Unfortunately, the process to go from 2007 dollars to 2012 dollars is not as simple for the average insured drivers' contribution,  $A_i$ . In order to inflate pure premiums, IRC uses Fast Track pure premium data.<sup>24</sup> The growth rate in Fast Track's pure premium data from the first quarter of 2007 to the first quarter of 2012 is used as an inflation proxy. Each state's Fast Track pure premium growth rate differs. The growth rate for each state  $i$  is then multiplied by the NAIC's 2007 pure premium data by state (or  $P_i$ ). The product is a new inflated pure premium expressed in 2012 dollars. This number is then multiplied (see Equation 3) by the quotient ( $R_i/I_i$ ) in order to obtain the 2012 average insured drivers contribution estimate (or  $A_i$ ).

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<sup>23</sup> CPI grew by 10.3 percent from 2007 to 2012.

<sup>24</sup> Fast Track Monitoring System.

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## Recent Publications

***The Potential Effects of No Pay, No Play Laws***, November 2012, 31 pages.

This study seeks to measure the impact of no pay, no play laws on the percentage of uninsured motorists. It also estimates the costs of noneconomic damages awarded to uninsured motorists in states that have yet to enact such laws. The findings suggest that not only would a properly enforced no pay, no play law result in a moderate decrease in uninsured motorists, it may also reduce auto insurance costs. Cost: \$300 electronic version (pdf) and \$400 printed version, postpaid.

***Trends in Homeowners Insurance Claims***, September 2012, 86 pages.

This report documents homeowners insurance claim frequency, severity, and loss cost trends from 1997 to 2011. Special emphasis is given to the role of catastrophe-related claims. Countrywide and state findings are presented. Cost: \$300 electronic version (pdf) and \$400 printed version, postpaid.

***The Long-Term Effects of Rate Regulatory Reforms in Automobile Insurance Markets***, March 2012, 57 pages.

This comprehensive report examines the impact of regulatory reform in three states (Massachusetts, New Jersey, and South Carolina) by comparing market performance before and after the highlighted reforms came into effect. The results of this study show that regulatory reforms have led to a number of positive developments in the automobile insurance market without leading to increases in insurance prices or reductions in availability of insurance and quality of service. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***Trends in Auto Injury Claims, 2011 Edition***, November 2011, 65 pages.

This report examines the frequency, severity, and loss costs associated with auto insurance claims under the PD, BI, and PIP coverages from 1990 to 2010. National and state statistics are provided. Also included is information on total auto injury loss costs from 1990 to 2008. Cost: \$300 electronic version (pdf) and \$315 printed version, postpaid.

***New York's No-Fault System: Final Report on Closed Auto Injury Claims***, October 2011, 101 pages.

This comprehensive report examines key issues in New York's no-fault system, such as the prevalence of claim fraud and buildup, the role of medical providers in escalating costs, and the wide disparity between claims in the New York City metro area and those in the rest of the state. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***The Impact of Third-Party Bad-Faith Reforms on Automobile Liability Insurance Claim Costs in West Virginia***, September 2011, 11 pages.

This report examines bad-faith reforms enacted in West Virginia in 2005 and the impact they had on bodily injury liability claim costs in the state. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***Uninsured Motorists, 2011 Edition***, April 2011, 39 pages.

This study examines trends in the percentage of uninsured motorists in each state based on uninsured motorists and bodily injury claim frequencies from 2008 and 2009. The report also presents the national uninsured motorist trends and discusses factors that may alter the percentage of uninsured motorists. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***The Impact of First-Party Bad-Faith Legislation on Key Insurance Claim Trends in Washington State***, February 2011, 12 pages.

This report estimates the impact of first-party bad-faith legislation enacted in Washington State in 2007 on insurance claim outcomes and the claim environment in the state. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***PIP Claiming Behavior and Claim Outcomes in Florida's No-Fault Insurance System***, February 2011, 18 pages.

This report documents cost drivers in Florida's no-fault system, utilizing data from the IRC auto injury database for claims closed with payment in 2007. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***State Beach and Windstorm Plans, An Overview of Operations and Financial Structures***, October 2010, 118 pages.

This IRC report documents the growth in state beach and windstorm plans and the changing role of the plans in state homeowners insurance markets. The report also summarizes the risk finance structure of each state plan. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***Hospital Cost Shifting and Auto Injury Insurance Claims***, February 2010, 56 pages.

This report examines hospital cost shifting to auto injury insurance claims. The study estimates that for BI liability claims in 38 tort and add-on states, cost shifting in 2007 resulted in \$1.2 billion in excess hospital charges. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***Auto Injury Insurance Claims: Countrywide Patterns in Treatment, Cost, and Compensation, 2008 Edition***, January 2008, 96 pages.

This closed claim study is based on a sample of more than 42,000 auto injury claims paid in 2007. The report compares 2007 data to results from similar studies conducted in 2002 and earlier. The study examines trends in claim patterns, including characteristics of the accidents and those injured, medical treatment, losses and payments, the claim settlement process, and the impact of attorney involvement. Cost: \$300 electronic version (pdf) and \$315 printed version, postpaid.

## Public Attitude Monitor Series

The IRC has conducted Public Attitude Monitor (PAM) surveys of U.S. households since 1980, measuring public attitudes and beliefs on a variety of topics related to risk and insurance. Visit the IRC's Web site at [www.ircweb.org](http://www.ircweb.org) for more information about how to obtain these reports.

**PAM 2011.** Accident Response Fees

**PAM 2010.** Texting While Driving.

**PAM 2010.** First-Party Bad-Faith Legislation.

**PAM 2009.** Insurance Satisfaction and Shopping.

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**PAM 2005. Issue 1:** Homeowners Insurance Profitability. **Issue 2:** Homeowners Insurance Deductibles and Claims.

**PAM 2004.** Civil Justice Reform, Personal Injury Lawsuits, Class Action Lawsuits.

## Automobile Insurance

***Trends in Auto Injury Claims, 2011 Edition***, November 2011, 64 pages.

This report examines the frequency, severity, and loss costs associated with auto insurance claims under the PD, BI, and PIP coverages from 1990-2010, both countrywide and by state. Cost: \$300 electronic version (pdf) and \$400 printed version, postpaid.

***Alternative Medical Treatment in Auto Injury Insurance Claims***, September 2007, 60 pages.

This IRC report investigates the utilization and cost of alternative medical treatment in BI and PIP auto insurance claims. The report also documents the wide variation in the utilization of alternative treatment in different states. Cost: \$125 electronic version (pdf) and \$140 printed version, postpaid.

***Paying for Auto Injuries: A Consumer Panel Study of Auto Injury Compensation, 2004 Edition***, June 2004, 98 pages.

The IRC's fifth consumer panel study, this report analyzes the cost of auto injuries from the perspective of persons injured in an auto accident. The study contains auto injury claim details, plus several additional measures, such as payment sources other than auto insurance, decisions about attorney involvement, and satisfaction with claim settlement. For more information, visit the IRC's Web site at [www.ircweb.org](http://www.ircweb.org).

***Accuracy of Motor Vehicle Records: An Analysis of Traffic Convictions***, June 2002, 72 pages.

This report examines over 50,000 traffic convictions in four states to study the accuracy of MVRs with respect to traffic convictions. It also contains details about traffic schools and other conviction avoidance methods across the United States that restrict how complete a picture of driving histories MVRs may provide. For more information, visit the IRC's Web site at [www.ircweb.org](http://www.ircweb.org).

## Insurance Fraud

***Insurance Fraud: A Public View***, June 2003, 66 pages.

This report explores public awareness of and tolerance for various forms of insurance fraud, including application fraud, property damage claim fraud, and injury claim fraud. Because recent indicators have suggested that auto insurance fraud has been on the rise in New York State, the report also explores differences between the attitudes of New Yorkers and respondents countrywide. For more information, visit the IRC's Web site at [www.ircweb.org](http://www.ircweb.org).

***Fighting Insurance Fraud, Survey of Insurer Anti-Fraud Efforts***, December 2001, 56 pages.

A collaboration of the IRC and Insurance Services Office, Inc. (ISO), this report presents results of a survey of companies representing 73 percent of the property-casualty insurance market. Findings show how insurers perceive the problem of fraud and the strategies and resources their companies have dedicated to fighting it. For more information, visit the IRC's Web site at [www.ircweb.org](http://www.ircweb.org).

For a complete list of available IRC publications, please contact the Insurance Research Council, 718 Providence Rd., Malvern, PA 19355-3402; phone: 610.644.2212; fax: 610.640.5388; Internet: [www.insurance-research.org](http://www.insurance-research.org).

## **Insurance Research Council**

The Insurance Research Council is a division of The American Institute For Chartered Property and Casualty Underwriters (The Institutes), a not-for-profit organization dedicated to providing educational programs, professional certification, and research for the property-casualty insurance business. The Council's purpose is to provide timely and reliable research to all parties involved in the public policy issues affecting risk and insurance, but the Council does not lobby or take legislative positions. The Council is supported by leading property-casualty insurance organizations.

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