NAI

National Association *of*
Insurance Commissioners

Review of the Use of Credit-Based
Insurance Scoring By Insurers

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CONFIDENTIAL

I. Introduction

At the request of the NAIC's Market Conduct and Consumer Affairs (D) Committee, NAIC staff has prepared the following report addressing prior research concerning the correlation of credit-based insurance scores with insurance losses and the effect of credit-based insurance scores on consumers.

This paper will: provide a background on how insurers use credit-based insurance scores; detail concerns over the use of these scores; and provide a summary of what studies concerning credit-based insurance scores have discovered. It is hopeful that this report will be useful to state regulators as they decide what regulatory framework should be implemented with respect to credit-based insurance scores.

II. Background on Use of Credit-Based Insurance Scores by Insurance Companies

What Credit-Based Insurance Scores Are

In the past twenty years, one of the most important developments to automobile and homeowner insurance underwriting and rating has been the increased use of credit-based insurance scores. During this time, many consumer groups and regulators have questioned the predictability of these scores as well as their possible disproportionate or disparate impact on minority or low-income populations.

Although credit-based insurance scores are similar to more traditional credit scores, there are important differences as well. Traditional credit scores are used to measure a consumer's credit risk. They attempt to predict the likelihood of future credit behavior such as the chances that a consumer will default on a loan. Credit-based insurance scores are used by insurance companies to determine an insured's propensity for risk. These scores are used to "determine the correlation between information on consumer credit bureau reports and subsequent insurance loss ratio."[1]

A number of credit characteristics are utilized in developing a credit-based insurance score. Sophisticated mathematical models incorporate different weights in using these credit characteristics to come up with a numerical score. According to some, there are approximately 450 variables obtainable from a credit file and perhaps 10 to 50 are used in

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[1] Fair, Isaac, "Predictiveness of Credit History for Insurance Loss Ratio Relativities," October 1999, p. 1.

developing credit-based insurance scores models.[2] Among the credit-related variables used in credit-based insurance scores are data such as:

Payment History
Bankruptcies
Amount of Credit Utilized
Numbers and Types of Accounts
Length of Credit History
Outstanding Debt Amounts
Debt Ratios
Age of Accounts
New Applications for Credit
Types of Credit in Use

Emergence of Credit-Based Insurance Scores in Underwriting and Rating Mechanisms

In the late 1980s and early 1990s, Fair Isaac began to develop and test the relationship between credit characteristics and loss ratio performance.[3] As these models became more refined, more insurers began to use them resulting in the vast majority of insurers now utilizing credit-based insurance scores in at least some way. Conning & Company conducted a survey in 2001 that found that 92% of the largest personal automobile insurers used insurance scoring models. The Federal Trade Commission (FTC) found that in 2005 the 15 largest automobile insurers, making up 72% of the market, all used credit-based insurance scores in some way. Fair Isaac reported that it sold credit-based insurance scores to roughly 350 insurers in 2005.

Often, the size and line of business of the insurer may dictate how credit-based insurance scores are used. The models used by automobile insurers tend to be designed to predict the frequency of losses while models used by homeowners insurers are designed to predict the severity of losses. Smaller insurers appear to use credit-based insurance scores predominantly in the underwriting process while larger insurers use credit-based insurance scores for underwriting but also for pricing and market segmentation techniques.

Some insurance companies are not allowed by state law to use credit-based insurance scores for existing customers. Some insurers also choose not to use credit-based insurance scores in renewals. However, all insurance companies that use credit-based insurance scores do so in making decisions concerning potential customers.[4]

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[2] Brokett, Patrick L. and Linda L. Golden, 2007, "Biological and Pyschobehavioral Correlates of Credit Scores and Automobile Insurance Losses: Toward an Explication of Why Credit Scoring Works," The Journal of Risk and Insurance, Vol. 74, No. 1, 23-63.
[3] Fair Isaac, "Predictiveness of Credit History for Insurance Loss Ratio Relativities," October 1999, p. 1.
[4] Federal Trade Commission, 2007, "Credit-Based Insurance Scores: Impacts on Consumers of Automobile Insurance," p. 15.

According to the National Association of Mutual Insurance Companies (NAMIC), 48 states have taken some legislative or regulatory action concerning the use of consumer credit information for underwriting and rating purposes. NAMIC identified 42 states that have prohibited certain uses of credit history information or banned the use of certain negative credit factors in the formulation of insurance scores.[5]

The majority of states, 27 according to NAMIC, have enacted the National Conference of Insurance Legislators (NCOIL) Model Act Regarding the Use of Credit Information in Personal Insurance. Typically states will not allow credit-based insurance scores to be used as the sole basis for increasing rates or denying, cancelling or not renewing policies. Other states prohibit credit-based insurance scores being used as the sole basis in underwriting or rating decisions. Some states require insurers to notify applicants or insureds that adverse credit-related decisions have been taken regarding pending applications or existing coverage based on the consumer's credit score. Three states effectively have banned the use of credit information in rate regulation processes.

III. Benefits to Insurers in Using Credit-Based Insurance Scores

The main reasons insurers use credit-based insurance scores include: more refined risk classifications; customer valuation to drive target marketing; pricing and underwriting proficiency; and increased retention of customers.[6] Insurers argue that the use of credit-based insurance scores is necessary to properly evaluate risk and charge individual policyholders rates that most closely align with their true risk. They go on to say that not using credit-based insurance scores could result in subsidies from lower-risk individuals to higher-risk individuals.

Insurers use credit-based insurance scores primarily in underwriting and rating of consumers. Underwriting is the process by which the insurer determines whether a consumer is eligible for coverage and rating is the process that determines how much premium to charge a consumer. The credit-based insurance score models used by insurers are designed to predict the risk of loss. Insurers use credit-based insurance scores for underwriting to assign consumers to a pool based on risk and then for rating by deciding how to adjust the premium up or down.

Many insurers argue that they use credit-based insurance scores because the scores measure personal responsibility, specifically how well individuals manage financial affairs. If a person is being cautious in financial matters, they may also be cautious in matters related to vehicle or homeowner safety. Insurers have argued that it is "common

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[5] See NAMIC website at http://www.namic.org/reports/credithistory/credithistory.asp.

[6] Conning & Company, "Insurance Scoring in Personal Automobile Insurance – Breaking the Silence," 2001.

sense" that credit-based insurance scores work in predicting losses. According to Fair Isaac:

> One can imagine that when a person utilizes one's resources well to maintain a home or a car in safe operating conditions, he or she is probably maintaining his or her finance and credit as well.

The insurance industry argument in favor of credit-based insurance scoring has been explained as "good credit managers are usually good risk managers."[7]

Many experts believe that credit-based insurance scoring has come to be one of the most important factors insurers used in determining a consumer's automobile or homeowners insurance premium.

IV.   Consumer Concerns over Credit-Based Insurance Scores

As the use of credit-based insurance scoring has increased among insurers, it is not surprising that consumers and regulators have expressed numerous concerns over its use and possible effects.

The most basic concern has been that most consumers do not understand the concept of credit-based insurance scoring or how or why it works. Most consumers are not even aware that their credit characteristics are being used to create a score that will then affect their purchase of an insurance policy. Even if they have the knowledge of the existence of credit-based insurance scores, it is not intuitive for consumers to understand how credit-based insurance scores work or why they work.

Consumers intuitively can understand why they may have higher rates due to prior driving history or the location of their home, but it makes no sense to most consumers why their rates would be higher because of a score whose formula is unknown. In addition, while consumers can change many of their other behaviors in order to affect a rate, it is not readily known how to improve a credit-based insurance score.

As of yet, no research, quantitative or otherwise, has been produced that shows why there is a correlation between credit-based insurance scores and insurance losses. Though there are several studies claiming the predictive effects of credit-based insurance scores on insurance losses and numerous insurance industry representatives have touted the effects of credit-based insurance scores, none have articulated why credit-based insurance scores are related to insurance claims.

This lack of an explanation is troubling to consumers as they struggle to understand why their rates may be affected by personal, financial characteristics seemingly having nothing to do with risk or insurance. Because the actual credit-based insurance score

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[7] Fair Isaac, "Predictiveness of Credit History for Insurance Loss Ratio Relativities," October 1999, p. 25.

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models are proprietary to individual insurers, it is difficult to know precisely what weight is given to credit-based insurance scores during the underwriting and rating process.

Insurers say credit-based insurance scores allow them to improve the speed and consistency of underwriting as well as being able to offer policies to more consumers. This, too, seems counter-intuitive to some consumers as they learn they may not be offered insurance or may receive a higher rate due to some unknown credit characteristics.

Many critics believe that credit-based insurance scores may actually be double counting other risk factors, meaning that the score is not directly a predictor of loss ratios, but instead the score is correlated with other data such as age and location that are already incorporated in insurers' underwriting and pricing models. In addition, credit-based insurance scores may not be measuring how responsible or careful a person is, but instead may be a proxy for identifying individuals who are unemployed, single, divorced or disabled.

In addition to consumer and regulator concerns, insurance agents have expressed frustrations with the use of credit-based insurance scores. Producers often cannot even provide a premium quote to a potential customer because of either the customer's low credit-based insurance score or lack of sufficient credit history. A producer may also be required to ask customer's for social security numbers in order for the insurer to obtain credit information. This can affect the relationship between agent and consumer when the agent is not able to explain why credit information is being used or how exactly it will affect the consumer's potential purchase. Some agents have also expressed frustrations over the way the use of credit-based insurance scores has seemed to prohibit agents from writing much business in a particular geographic area.[8]

Even ignoring the issue of not knowing for sure why credit-based insurance scoring might help measure risk, one of the basic fundamental questions that regulators and consumer groups are concerned with is whether it is fair for insurers to charge higher rates to people whose financial situation may have been caused by a catastrophic event. Using credit-based insurance scores may just contribute to creating greater disparity between socioeconomic groups.

Individuals experiencing unfortunate economic situations, often outside their own control, are unfairly penalized by the use of credit-based insurance scores. Those who have been affected by natural disaster, terrorism, identity theft, or medical crises may see their current situation exacerbated through no fault of their own.

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[8] See additional examples in "The Use of Insurance Credit Scoring In Automobile and Homeowners Insurance , A Report to the Governor, the Legislature and the People of Michigan," Frank M. Fitzgerald, Commissioner Office of Financial and Insurance Services, December 2002.

Given the recent state of the U.S. economy and financial difficulties facing individual consumers, the use of credit-based insurance scores may further unfairly treat those who are struggling to make ends meet. As the housing market falls rapidly in some U.S. cities and mortgage defaults rise, negative credit characteristics will likely increase for many individuals. As consumers face difficulties paying current bills in a climate of low job growth and rising health care costs, some individuals may be forced to make credit-related decisions that are not viewed favorably. If this then leads to a decline in credit-based insurance scores and rising insurance rates, some consumers may be headed for a never-ending declining spiral. Policymakers may find this to be unacceptable in today's economic environment.

This report focuses on credit-based insurance scores and not credit scores in general, but it is worth noting that a Freddie Mac Consumer Credit survey from 1999 concluded that African-Americans and Hispanics were significantly more likely to have negative items on their credit history than whites were.[9] If certain socioeconomic groups have worse credit scores in general or worse credit-based insurance scores in particular, it seems that charging higher rates to these groups leads to greater societal disparities in contrast to what is desired by society in general.

Credit-based insurance scores may also serve as a proxy for other factors that are typically not allowed by state insurance regulators. It was mentioned above that correlations between credit-based insurance scores and insurance losses may actually be due to other characteristics that are already accounted for in underwriting and rating. It may also be the case that the correlation is due to characteristics such as income or race that are typically barred by states from being used.

If race or income is predictive of credit-based insurance scores, then insurers could use the legally-allowed credit-based insurance scores to avoid writing policies to people of a specified income level or race. If credit-based insurance scores are found to have a disproportionate or even disparate impact on low-income consumers or minorities, these consumers may be unfairly treated when it comes to the availability or affordability of insurance.

It also is not clear what is done with consumers who either do not have a credit score or have a "thin" file. There are estimates that as many as 50 million Americans are "unscorable" using traditional credit information because of "thin" files.[10] By definition, insurers will have trouble providing a credit-based insurance score for these customers leading to the question of how insurers will handle underwriting and rating. If the lack of credit history causes these individuals to not have an appropriate credit-based insurance score, this could be detrimental to a large proportion of society. These individuals might be unfairly treated for not having enough credit history to develop a score.

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[9] Freddie Mac, 1999, Consumer Credit Survey, Freddie Mac Special Reports and Publications.
[10] "Giving Credit Where Credit's Due," Kenneth Harney, *Washington Post*, November 11, 2006, Page F1.

There have been accusations that credit-based insurance scores, instead of predicting insurance losses, may actually be predicting the profitability of potential customers. Some allege that insurers mainly use credit-based insurance scores to locate "better" customers – those who are wealthier and may tend to be more loyal to one company. Companies have attempted to refine predictive modeling in general and one of the reasons for this is to target the right audience by marketing to "profitable risks."

The insurance industry has acknowledged that predictive modeling in general can play a useful part "in increasing hit and retention ratios." [11] Insurers are able to market ads to "profitable risks." Insurers are focusing resources on not only creating models to measure risk of accidents, driver behavior, climate change and other risks, but also to model the chance that a consumer will be a loyal customer or purchase additional financial products such as life insurance or retirement products. In 2005 while speaking to investment analysts, the CEO of Allstate, Ed Liddy, stated this concept with respect to tiered pricing:

> Tiered pricing helps us attract higher lifetime value customers who buy more products and stay with us for a longer period of time.[12]

The focus on identifying consumers based on their future profitability due to loyalty or ability to buy additional financial products rather than the focus on risk and loss prevention is troubling to many consumer advocates.

V.   Prior Research Concerning the Effect of Credit-Based Insurance Scoring

Types of Studies

Since approximately 1999, there have been a series of studies and reports conducted concerning the use of credit-based insurance scores by insurers in personal lines of insurance. These studies have primarily focused on two issues:

1) The predictability of credit-based insurance scores on loss performance or insurance risk.
2) The impact of credit-based insurance scores on consumers, especially on minority and low income populations.

In addition to studies sponsored by the insurance industry and the NAIC, at least eight different state Departments of Insurance have produced reports showing the effect of credit-based insurance scores on consumers.

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[11] Mills, Howard, "Predictive Modeling," *Insurance Advocate*, May 19, 2008, p. 21.

[12] Presentation of Edward M. Liddy, Chairman and CEO, The Allstate Corporation, Twenty-First Annual Strategic Decisions Conference, Sanford C. Bernstein & Co., June 2, 2005.

This section of the report will go through the reports chronologically, with special emphasis on methodology and the findings of each report. Although there are at least 18 reports of relevance, the literature remains somewhat sparse and more work, as described in Section V of this report, could and should be done.

In addition to this literature, there have been numerous press accounts and testimony by regulators, consumer groups, insurance companies and insurance trade groups before legislative and regulatory bodies. For the most part, those reports and testimony are duplicative of research covered in this section and will not be covered in detail.

Due to the importance of predicting risk, insurance companies have likely completed enormous amounts of internal research concerning the effect of credit-based insurance scores on loss performance and insurance risk. However, that data and the results are proprietary and, for the most part, unknown to the public. It is worth mentioning that access to these models and the corresponding data could provide tremendous additional information to the overall topic.

Nature of Studies

In an attempt to measure the importance of credit-based insurance scores to underwriting and rating, many studies have evaluated whether credit-based insurance scores are correlated with loss ratios. Loss ratios are the amount that an insurance company pays out on claims divided by the amount of premium that the company receives. Studies using loss ratios have done so in order to try to control for the effects of non-credit factors on risk such as age and driving history.

Studies have compared credit-based insurance scores to loss ratios because, in theory, the premium (the denominator in the loss ratio) should reflect all of the components of a rating plan. Therefore, a correlation between a new variable and the loss ratio indicates the degree to which this variable can explain losses not already explained by the existing rating plan. Because risk factors are already realized in the policy premium, any differences between the loss ratio for a newly added variable must be attributable to that variable. However, this method assumes that all risk classification factors are properly factored and priced into premium.

The NAIC, in its 1996 report described below, has criticized the studies that use loss ratio as the dependent variable and credit history as the predictor. The NAIC report pointed out that credibility of this method rests on underlying assumptions. If the rating variables within the existing premium are not completely accurate then the analysis of new variables is not valid. There are hundreds of rating factors such as geographic rating territory, driving experience, age of driver, age of home, various discounts and surcharges. Small errors in pricing a number of these factors could add up to significant overall pricing errors. In addition, a company may deviate its pricing away from true

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target loss ratios for marketing reasons, making the loss ratios inaccurate and inappropriate as measures for these studies.

These deficiencies with using loss ratios as a dependent variable have led some, including the NAIC in its 1996 report, to call for a multivariate analysis in order to measure the correlation between credit-based insurance scores and risk of loss. Some regulators suggest that an unbiased and multivariate analysis is necessary to determine the effect of credit-based insurance scores on loss costs after accounting for all other factors.
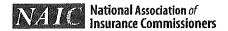
Listing of Reports

National Association of Insurance Commissioners, "Credit Reports and Insurance Underwriting," 1996

In 1996, the NAIC's Market Conduct and Consumer Affairs (EX3) Subcommittee requested that the NAIC prepare a white paper concerning credit as an underwriting tool. The report recognized that even in 1996 there was considerable controversy about the correlation between credit history and risk of loss. The report also expressed concern for the way that insurers might use credit reports or credit information as the sole underwriting tool to determine insurability, ignoring factors that are more traditional. There were also concerns over the accuracy of credit characteristics that went into forming the credit-based insurance scores.

The report's Appendix included a study performed by Tillinghast-Towers Perrin that supported a relationship between credit-based insurance scores and loss ratio. The Tillinghast study performed a univariate analysis by dividing credit-based insurance scores into deciles and then looking at loss ratio relativity for each decile. Tillinghast compared credit-based insurance scores to loss ratio relativity graphically and concluded that "From simply viewing the graphs...it seems clear that higher loss ratio relativities are associated with lower Insurance Bureau Scores." The NAIC report called for a multivariate analysis in order to determine the effect of credit-based insurance scores while factoring for all other risk factors.

Commonwealth of Virginia, State Corporation Commission, Bureau of Insurance, "Use of Credit Reports in Underwriting," 1999

In 1999, the Virginia Bureau of Insurance published a report analyzing the relationship between credit-based insurance scores and race and income. The Bureau obtained average credit scores for certain ZIP codes from Fair Isaac, a modeler of credit-based insurance scores for insurance companies. The Bureau matched average credit score by ZIP code to demographic data by ZIP code and performed various regression analyses to determine if credit scores could be used to determine a person's income or race. Though the report found a correlation between credit-based insurance scores and losses, the report concluded that nothing in the analysis led them "to the conclusion that income or race

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alone is a reliable predictor of credit scores, thus making the use of credit scoring an ineffective tool for redlining."

The study included no raw data. There was also no verification of the credit-based insurance scores received by the Bureau from Fair Isaac.

Fair Isaac, "Predictiveness of Credit History for Insurance Loss Ratio Relativities," October 1999

Fair Isaac conducted a univariate analysis comparing five credit characteristics to loss ratio relativities. The following credit characteristics were grouped by decile and compared with corresponding average loss ratio relativities:

1. Number of adverse public records
2. Months since most recent adverse public record
3. Number of trade lines 60+ days delinquent in last 24 months
4. Number of collections
5. Number of collections; number of trade lines opened in the last 12 months

The charts showed that these credit variables were correlated with loss ratio relativities. Fair Isaac also concluded that credit-based insurance scores are created in such a way that the lower the score, the higher the loss ratio relativities. The authors concluded that credit-based insurance score models tend to be highly effective at predicting loss ratio relativities. The report found that the use of credit-based insurance scores allows insurers to improve the speed and accuracy of underwriting.

Monaghan, James E., "The Impact of Personal Insurance Credit History on Loss Performance in Personal Lines," 2000, *Casualty Actuary Society Forum-Winter: 79-19-05.*

James Monaghan conducted a study in 2000 that examined the correlation of claims filed and credit report characteristics. The author looked at data from 170,000 automobile and homeowner policyholders who filed claims within a three-year period. The data was sent to a national credit vendor to append archived credit histories for each match that could be found. The policies were private passenger auto policies written by one insurance company in 1993. The policies only consisted of new business, not renewals. Credit information was obtained only on the named insured.

The multivariate analysis was actually a bivariate analysis where different segments of the credit characteristics were compared to one another by relative loss ratios. The credit characteristics analyzed included: the number and types of accounts a consumer holds, the number of late payments, duration of late payments, adverse public records, such as bankruptcies and tax liens, and the number of inquires a consumer had on the report. Monaghan found that consumers with negative credit characteristics filed claims more frequently and the claims were of higher severity.

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The study also combined credit characteristics to create four distinct population groups according to the quality of the credit characteristics. It then found that the group with the most negative credit characteristics had the highest loss ratio.

This study was criticized for possibly measuring the amount of disposable income a customer has because not all accidents are reported. Other criticisms include the fact that renewal business was not examined and the data was confined to a single company.

Conning & Company, "Insurance Scoring in Personal Automobile Insurance - Breaking the Silence," 2001

In 2001, Conning & Company provided a summary of how insurers use credit-based insurance scores in underwriting and pricing. The report did not include original data but reviewed some of the existing literature showing a correlation between credit-based insurance scores and loss ratio performance. The report noted that some credit quality measures are clearly correlated with lower income households.

American Academy of Actuaries and Risk Classification Subcommittee of the Property/Casualty Products, Pricing, and Market Committee, "The Use of Credit History for Personal Lines of Insurance: Report to the National Association of Insurance Commissioners," 2002

In 2002, the American Academy of Actuaries (AAA) was requested by the Credit Scoring Working Group of the NAIC's Market Regulation & Consumer Affairs (D) Committee to review papers related to the use of credit history in rating and underwriting; provide guidelines on how the NAIC could conduct a study of credit scoring; and provide best practices that could be used in reviewing rating plans that use credit history.

The AAA paper summarized four prior studies that are also all included in this report. The paper provided recommendations regarding a future study including the recommendation that a study consider both credit history and insurance claims experience as manifestations of other personal characteristics. The paper also recommended that a future study looking at the effect of credit-based insurance scores on protected classes should define what is meant by "disproportionate impact" and define what magnitude of "disproportionate impact" would cause regulatory concern.

"The Use of Insurance Credit Scoring In Automobile and Homeowners Insurance," A Report to the Governor, the Legislature and the People of Michigan, Frank M. Fitzgerald, Commissioner Office of Financial and Insurance Services, December 2002

The Michigan Department of Insurance surveyed insurance companies reporting written premium in private passenger automobile and homeowners insurance for the year 2000 regarding rating criteria with respect to credit-based insurance scores.

The study found a correlation between a person's insurance credit score and the likelihood that a claim will be filed. The study reviewed data from ChoicePoint and insurers and found that higher scores were correlated with fewer claims.

The report, contrary to most other research, found that individuals with "relatively lower socio-economic standing had better insurance credit scores, on average, than those of higher socio-economic standing." The Michigan study was not able to find evidence of bias or illegal impact with respect to race or ethnicity.

Kellison, Bruce, Patrick Brockett, Seon-Hi Shin, and Shihong Li, "A Statistical Analysis of the Relationship Between Credit History and Insurance Losses," Bureau of Business Research, University of Texas at Austin, 2003

In 2003, researchers at the Bureau of Business Research (BBR) at McCombs School of Business at the University of Texas used data from five automobile insurance companies in Texas to study the relationship between credit-based insurance scores and losses.

The study matched automobile policies with the credit history of the named insured. The study stated that it used "logistic and multiple regression analyses" though some critics have alleged that multiple regressions were not performed and the study only utilized univariate or bivariate regressions.[13]

The study attempted to test whether a credit-based insurance score for the named insured on a policy was related to incurred losses for that policy. Policies were sorted by credit score into ten groups of equal size (deciles) and then compared with each decile's average relative loss ratios. The study consisted of an analysis of the correlation of credit-based insurance score range midpoints to relative loss ratios. The study found that the lower a credit-based insurance score, the higher the probability that the insured will incur losses on an automobile insurance policy and the higher the expected loss on the policy.

The researchers found that customers with lower credit-based insurance scores were more likely to file automobile policy claims than customers with higher credit-based insurance scores. In addition, the researchers reported that customers with lower credit-based insurance scores filed claims for larger dollar amounts than customers with higher scores. The authors felt that credit-based insurance scores did yield new information not contained in the existing underwriting variables.

The study did not look at why credit-based insurance scores help predict losses. The study suffers from criticisms outlined earlier with respect to using loss ratios as the dependent variable. If all risk classifications are not properly priced, or if companies are altering risk factors for marketing reasons, the use of loss ratios holds less credibility. It is

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[13] Birnbaum, Birny, "Review of the University of Texas Bureau of Business Research Study on Insurance Credit Scoring," June 2003.

possible that credit-based insurance scores are correlated with other risk factors already factored in, thus weakening the true relationship between the insurance scores and the risk of loss.

Miller, Michael J. and Richard A. Smith, "The Relationship of Credit-Based Insurance Scores to Private Passenger Automobile Insurance Loss Propensity An Actuarial Study" by EPIC Actuaries, LLC, 2003

This 2003 study analyzed the correlation between credit history and risk. The authors received policy records from participating automobile insurers and then submitted its database to ChoicePoint, a commercial firm that sells proprietary insurance scores to automobile insurers throughout the United States. ChoicePoint attached credit-based insurance scores to the policy records. The random sample of policies was taken from policies in effect during 2000 and 2001.

The study was based on relative pure premiums rather than relative loss ratios. The authors believed that pure premiums would be able to directly measure the level of risk independent from the rate that is being charged to the insured. The theory used in this study is that pure premium will directly show the level of risk, independent from the rate being charged.

The study was performed separately on each of six automobile insurance coverages. A multivariate analysis was utilized to adjust for interactions between credit-based insurance scores and other risk factors.

The study showed relative claim frequency and average cost per claim by insurance score range. The study found that liability pure premium tends to decrease as the insurance score increases because the claim frequency tends to decrease as the insurance score increases. The authors concluded that credit-based insurance scores were found to be correlated with risk of loss due to claim frequency rather than severity.

The study found that credit-based insurance scores do overlap with other risk characteristics but credit-based insurance scores still significantly improve the accuracy of predicting risk of loss. The study also contends that credit-based insurance scores are among the three most important risk factors for automobile coverages. The study made no attempt to explain why insurance scores predict claim losses.

Wu, Cheng-Sheng Peter and James C. Guszcza, "Does Credit Score Really Explain Insurance Losses? Multivariate Analysis from a Data Mining Point of View," 2003, *Proceedings of the Casualty Actuarial Society* 113-138

This 2003 study reviews what the authors believe to be the only two actuarial studies at that time that evaluated the effect of credit-based insurance scores on insurance losses and profitability. In general, the authors believe that loss ratios are the best statistical measurement because premium reflects all of the components of a rating plan so "a

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correlation between a new variable (say, credit score) and loss ratio indicates the degree to which this variable can explain losses not already explained by the existing rating plan."

The authors criticized the Tillinghast study for being a univariate analysis while giving more credence to the Monaghan study. They go on to remind future researchers that, "A multivariate statistical analysis is necessary to establish the importance of credit for personal auto ratemaking."

Unfortunately, this study does not provide any new data nor do the authors provide any sort of multivariate analysis. Instead, the authors state that they have conducted several multivariate studies that find that a relationship exists between credit-based insurance scores and risk of loss even after taking into account other variables. The authors believe that any model will be "somewhat stronger" by including credit-related variables compared to not including them. However, the authors are not able to provide any detail or data regarding their prior work with multivariate analyses.

"A Report to the Legislature, Effect of Credit Scoring on Auto Insurance Underwriting and Pricing," Washington Office of Insurance Commissioner, Prepared by: Washington State University, Social & Economic Sciences, Research Center, Dave Pavelchek, PRR Inc. Bruce Brown, January 2003

The State of Washington prepared a report in 2003 whose purpose was to examine whether credit-based insurance scoring had unequal impacts on certain demographic groups. The study did not attempt to measure whether credit-based insurance scores were correlated with loss ratios.

The state obtained data on several thousand consumers from three automobile insurance companies. Data obtained included, age, gender, ZIP code, credit scores and rate classifications. The consumers were then contacted by phone in order to obtain additional information regarding ethnicity, marital status and income level.

The study found that age was the most significant factor, meaning that older drivers had, on average, higher credit-related insurance scores, lower credit-based rate assignments, and less likelihood of lacking a valid credit score than younger drivers. Income was also a factor in that people in the lowest income categories had higher premiums and lower credit-related insurance scores. More of the low income individuals also lacked the credit history to have a credit-related insurance score. Ethnicity was not able to be sufficiently measured due to the small number of minorities in the sampling. Overall, the study found that the impact of credit-based insurance scores is probably not equally distributed among demographic groups.

State of Alaska, Department of Community and Economic Development, Division of Insurance, "Insurance Credit Scoring in Alaska," February 21, 2003

In 2003, Alaska Division of Insurance surveyed all insurers writing homeowners and personal auto insurance in the state. The state received data related to ZIP codes, age, marital status, gender and tier but did not receive individual policyholder data or income or race data. The state used income and race data by ZIP code to identify urban rural areas. The state was not able to compare credit-based insurance scores data by ZIP code but divided areas by percentage of preferred, standard and nonstandard tiers.

The report found that rural policyholders were more likely to be placed in the nonstandard tier than urban policyholders. The report also found that older consumers are more likely to move to less desirable tiers. The report pointed out that a determination about whether a policyholder distribution between the tiers is due primarily to credit history or other factors is premature.

The report, after assuming that the preferred tier would likely include policyholders with good credit histories, stated that "data does appear to indicate that the use of a consumer's credit history is causing some shifts in market distribution between preferred, standard and nonstandard business." However, because no actual credit-based insurance scores were used, few conclusions can be made about scoring and its effect on any groups.

Maryland Insurance Administration, "Report on the Credit Scoring Data of Insurers in Maryland," 2004

The Maryland Department of Insurance requested data by ZIP code data from insurers. The report found that, because insurers do not collect data regarding an applicant's race or income, there was insufficient data to determine what effect credit-based insurance scores have on low-income or minority populations.

Kabler, Brent, "Insurance-Based Credit Scores: Impact on Minority and Low Income Populations in Missouri," 2004

The Missouri Department of Insurance has conducted the most comprehensive state study concerning credit-based insurance scores and their potential effects on various socioeconomic groups. The Department's 2004 study used ZIP-code level data on credit-based insurance scores and race, income, and other demographic variables. The report used credit-based insurance scores from twelve large insurance companies used for automobile or homeowners policies.

Credit score data was aggregated at the ZIP code level. The data contained mean credit scores and the number of exposures for each of five equal credit score intervals. The study examined the bivariate relationship between credit score deciles and minority populations and per capita income in a ZIP code. A multivariate analysis was also completed that factored for race/ethnicity, income, and additional socioeconomic variables.

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The Missouri study found that credit-based insurance scores were correlated with the racial, ethnic, and income characteristics of ZIP codes. The report found that the use of credit-based insurance scores leads to significantly worse scores for residents of high-minority ZIP Codes and for residents of low-income ZIP Codes. The correlations remained after controlling for education, income and marital status. The impact on pricing and availability of insurance was not studied in depth in the Missouri report.

Criticisms of the Missouri study were that the study "ignores the fact that the variation of scores between individuals will dwarf any differences among average scores by race, income, or ZIP code. We expect that an analysis which accounted for the variation of scores among individuals would show virtually no relationship between insurance scores and race or income."[14]

The study also assumed that most differences in average credit-based insurance scores between ZIP codes were from race, income and geography. The study did not attempt to determine the impact of credit-based income on loss propensity.

Texas Department of Insurance, "Use of Credit Information by Insurers in Texas: The Multivariate Analysis" (Jan. 31, 2005) and Texas Department of Insurance, "Use of Credit Information by Insurers in Texas" (Dec. 30, 2004)
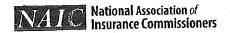
In 2004 and 2005, the Texas Department of Insurance conducted studies concerning the relationship between credit-based insurance scores and risk propensity for automobile and homeowner policies. The Department obtained data from six large insurance firms operating in Texas, using each company's credit scoring model.

The Department obtained race data for each consumer from the Texas Department of Public Safety and ethnicity data from a Hispanic surname match. The study used median income for the ZIP code in which policyholders lived.

For automobile policies, the study found that credit-based insurance scores were negatively correlated with the total amount of claims. The report stated that insurers paid out less on automobile policies for customers with higher scores because they filed fewer claims than customers with lower scores. For homeowners insurance, the Texas study found that credit-based insurance scores were negatively correlated with the size of the claims and loss ratios.

The multivariate analysis found that credit-based insurance scores were correlated with claims experience even after factoring for other variables. The report found that losses for the 10 percent of policyholders with the worst credit-based insurance scores were 1.5 to 2 times higher than that of the 10 percent of policyholders with the best credit-based

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[14] Miller, Michael J. and Richard A. Smith, 2004, "A Critique Of: 'Insurance-Based Credit Scores: Impact on Minority and Low-Income Populations in Missouri.'"

insurance scores. The study concluded that "By using credit score, insurers can better classify and rate risks based on differences in claim experience."

The study found that African Americans and Hispanics tended to have lower credit-based insurance scores than Asians and whites. African Americans and Hispanics combined to make up over 60% of consumers having the worst credit scores but only around 10% of the best scores. It did not find consistent results in terms of income.

Arkansas Insurance Department, "Use and Impact of Credit in Personal Lines Insurance Premiums Pursuant to Ark. Code Ann. § 23-67-415," July 2007

The Arkansas Insurance Department submitted a report to the state Legislature in July 2007. The state requires each insurance company to annually report the number of personal polices that received a premium increase and decrease due to credit scoring. The report found that a strong majority of insurers used credit in determining premium. The companies using credit history made up 94% of Arkansas' market in 2006.

Unlike most of the other state reports, the Arkansas report sought to discover how many consumers were helped and hurt by the use of credit-based insurance scores. During 2006, 30% of all policies received a premium reduction due to credit scoring and 9% received a premium increase due to credit scoring. The percentages were similar when broken out by individual lines of business. Although most consumers were either not affected or positively affected by the use of credit, the Arkansas Insurance Department was not able to report on whether those negatively impacted were disproportionately minority or low-income.

Federal Trade Commission, "Credit-Based Insurance Scores: Impacts on Consumers of Automobile Insurance," 2007

The FTC, as required by Congress, studied whether credit-based insurance scores affect the availability and affordability of automobile and homeowners insurance. In July of 2007, the FTC released its report regarding automobile insurance. A study regarding homeowners insurance is currently being conducted by the FTC with a forthcoming release.

The FTC used data from five insurers that had previously provided automobile data for the EPIC study. The information included data related to the policy and the driver, claims and a ChoicePoint Attract Standard Auto credit-based insurance score for the first named insured on the policy. The data related to automobile insurance policies in place between July 1, 2000, and June 30, 2001. The FTC combined the data from the five insurance companies with data on race and income data based on ZIP code.

The FTC divided credit-based insurance scores into deciles and found that the average number of claims and average size of claims fell as scores rose. The FTC study attempted to control for other risk factors such as age and driving history and found that credit-

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based insurance scores continued to be correlated with loss ratios although the relationship lost some of its strength.

The FTC report found that credit-based insurance scores are "effective predictors" of the number of automobile claims and the total cost of those claims. The report was not able to address the question of why credit-based insurance scores are an effective predictor of risk.

The FTC report found that African Americans and Hispanics were strongly over-represented in the lowest credit-based insurance score deciles and under-represented in the highest credit-based insurance score deciles. Nonetheless the FTC found that credit-based insurance scores have only "a small effect as a proxy" for membership in racial groups. The FTC found that the relationship between credit-based insurance scores and claims risk remained strong even when controlling for race, ethnicity and income.

In models without controls for race, the FTC found average predicted risks for African Americans and Hispanics to be 10% and 4.2% higher than if scores were not used. In models with controls for race, these groups had average predicted risk 8.9% and 3.5% higher than if scores were not used. The FTC acknowledges that "The difference between these two predictions for African Americans and Hispanics (1.1% and 0.7%, respectively) is a measure of the effect of scores on these groups that is attributable to scores serving as a statistical proxy for race and ethnicity." So the FTC study does find a proxy effect for race but it believes the effect is a small one.

The FTC was not able to develop its own model using credit-based insurance scores to effectively predict risk while decreasing differences in scores among racial groups.

The FTC report claims that credit-based insurance scores may have benefits to consumers. Through the use of these scores, companies are able to measure risk more accurately, which may lead insurers to offer insurance to higher-risk consumers. Insurers may also be able to offer coverage more efficiently and more cheaply, passing along savings to consumers. The FTC was not able to quantify these benefits.

The FTC study was criticized for failing to obtain a comprehensive and independent data set of claims related data. Some critics argued that the data was "hand-picked by the insurance industry."[15] Also, the FTC report did not address the question of insurance availability and affordability. The FTC was not able to create a model to show alternatives to credit-based insurance scores that are predictive of claims but do not use credit information and do not have disproportionate impact on minorities or low income consumers. It is also important to note that though the FTC stated there was a "small" proxy effect, the data did show that certain minority groups could be adversely affected by the use of credit-based insurance scores.

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[15] Birnbaum, Birny, Testimony Before The House Financial Service Committee Subcommittee on Oversight and Investigations, "Credit-Based Insurance Scores: Are They Fair?" October 2, 2007

<u>Brokett, Patrick L. and Linda L. Golden, "Biological and Psychobehavioral Correlates of Credit Scores and Automobile Insurance Losses: Toward an Explication of Why Credit Scoring Works," The Journal of Risk and Insurance, 2007, Vol. 74, No. 1, 23-63.</u>

This study is unusual in that it examines credit-based insurance scoring from a psychobehavioral standpoint. The study accepts the notion that there is a correlation between credit-based insurance scores and insured losses and attempts to answer why there is a correlation from a biological and psychobehavioral perspective.

The report conducts a literature review and finds that "basic chemical and psychobehavioral characteristics (e.g., a sensation-seeking personality type) are common to individuals exhibiting both higher insured automobile loss costs and poorer credit scores." The study claims that credit-based insurance scores work as a "numerical proxy for the biopsychobehavioral makeup of the individual which affects insurance losses."

The study alleges that after an accident the insured's actions concerning whether or not to file a claim and for how much can be indicative of risk-taking behaviors. The study also points out that these decisions are influenced by income or financial status which may be included within a credit-based insurance score. The study focused on how behaviors were correlated with credit characteristics and decisions related to insurance claims so it did not focus on credit-based insurance scores being correlated to income.

VI. LITIGATION

<u>Willes v. State Farm Fire and Casualty Co., *512 F.3d 565* (Jan. 9, 2008)</u>

The Ninth Circuit Court of Appeals affirmed its previous decision on remand from the United States Supreme Court. The Supreme Court cited *Safeco Ins. Co. of Am. V. Burr,* when holding that liability under 15 U.S.C. §1681n(a) for "willfully failing to comply" with the Fair Credit Reporting Act (FCRA) includes reckless disregard of statutory duties. The Court of Appeals held that notice is required only when the credit report is a necessary condition of the increased rate and affirmed the district court's grant of summary judgment to State Farm.

<u>Alaska Dep't. of Commerce v. Progressive Cas. Ins. Co., *2007 WL 2333341* (Alaska August 17, 2007)</u>

Alaska's insurance code contains a statute that forbids insurers from failing to renew or, renewing an individual's policy "based in whole or in part on a consumer's credit history or insurance score." Progressive sought approval from the Division of Insurance to use a consumer's credit score in underwriting to create a "credit tier" which would then be "frozen" for use in subsequent policy renewals. The Division rejected this proposal on the grounds that it would violate the credit scoring statute. The Superior Court reversed the

Director's order. On appeal, the Alaska Supreme Court rejected Progressive's argument that maintaining a consumer's status in the same underwriting classification is not an "affirmative action" triggering the statute. The Court asked, for what purpose would Progressive "maintain" a consumer's credit tier if not for underwriting? A decision on renewal is, by definition, an underwriting decision according to the court.

The Court also rejected Progressive's claim that the Fair Credit Reporting Act (FCRA) preempted the state statute. The Division had argued that the McCarran-Ferguson Act reverse-preempted FCRA. The Court disagreed and held that reverse-preemption does not apply when the federal law specifically relates to the business of insurance. Instead, the Court ruled that FCRA was not fundamentally inconsistent with the Alaska statutes, as both were enacted to protect consumers. Therefore, the state statute was not preempted.

Safeco Ins. Co. v. Burr, *127 S.Ct. 2201* (U.S. June 4, 2007)

This case was an appeal from an earlier consolidated action, Reynolds v. Hartford, *435 F.3d 1081* (9th Cir. Jan. 25, 2006). Only two insurers remained in this suit on appeal to the U.S. Supreme Court. The first was GEICO, an insurer that did not issue FCRA notices when policyholders were placed into a category with a rate that would be assigned to a customer with a "neutral" credit score. The second insurer was Safeco, an insurer that did not issue FCRA notices when credit information affected initial applicants. The Court ruled that, when enacting FCRA, the U.S. Congress was concerned with whether the consumer's rate actually suffered when his or her credit report was taken into account. This departs from the Ninth Circuit's analysis, which focused on whether the consumer would have gotten a better rate with the best possible credit score. The Supreme Court found that GEICO's use of the neutral credit score when determining whether to send FCRA notices did not violate the statute. Safeco might have violated FCRA when it failed to send notices to new applicants, but the court found that Safeco's mistaken reading of the statute was not unreasonable and, therefore, did not constitute reckless disregard.

DeHoyos v. Allstate Corp., *240 F.R.D. 269* (W.D. Tex. Feb. 21, 2007)

The Western District Court of Texas approved the settlement agreement entered into by the parties in late 2006. This settlement was brokered after plaintiffs sued Allstate, alleging that its credit scoring procedure resulted in discriminatory action against approximately 5 million African-American and Hispanic customers nationwide. Allstate denies any discrimination occurred and maintains that its use of information from credit reports is valid. The settlement provides for the following: a new algorithm for calculating premiums, an appeals process for those with resulting adverse credit information, funding for education, media and marketing, and monetary relief ranging from $50 to $150 per class member.

VII. Conclusion

Common Findings

From a review of the previous literature, it appears that most studies show a fairly strong relationship between credit-based insurance scores and loss ratios or pure premium or risk propensity. Several studies have attempted to discern whether credit-based insurance scores alone are correlated with other characteristics that are already included. Much of the research has found that credit-based insurance scores do add new information to insurance models used in underwriting and rating.

In this way credit-based insurance scores seem valuable in measuring true risk and may allow for more accurate pricing and underwriting. Several industry-funded studies as well as state studies argue that there are some benefits to credit-based insurance scores. These benefits include more accurate pricing of risk; more efficient and effective underwriting and rating that may lead to lower premiums for consumers; and greater availability for high risk consumers due to insurers' more accurate risk assessments. Though these benefits have been reported in numerous places, they are typically presented as theory rather than actual examples of these benefits being presented.

Valid criticisms exist questioning whether true multivariate analyses have been conducted to eliminate the possibility that credit-based insurance scores act as a proxy for variables that are already being measured or ones that should not be used, such as income or race. Until multivariate analyses have been conducted, the question of how much impact credit-based insurance scores have on loss experience will not be answered fully.

In addition, most studies seem to acknowledge that credit-based insurance scores are correlated with race and income. Certain minority groups as well as low income populations tend to have lower credit-based insurance scores. This leads to low income and minority populations having availability and affordability issues when it comes to insurance.

Several studies have found that credit-based insurance scores may serve to some extent as a proxy for race or income. Because insurers cannot use race or income as rating or underwriting factors, perhaps credit-based insurance scores are being used as a proxy for race or income. If this is the case, it may be that credit-based insurance scores should not be allowed by state regulators – just as race is no longer allowed in life insurance regardless of any actuarial validity.

A large concern of consumers and regulators is that credit-based insurance scores may be used primarily as a tool to predict profitability of customers. Even if credit-based insurance scores have some correlation with risk propensity, the larger issue might be how effective credit-based insurance scoring is in measuring loyal or high income consumers who are less likely to make an insurance claim. Such a measure is contrary to the typical risk variables that are used in risk prevention. For instance, charging drivers

more based on past accidents is a way to influence future behavior, i.e., safer driving. Charging consumers more because they are less loyal or wealthy is contrary to the notion of risk prevention because a consumer can not change their behavior and aid in loss prevention. If credit-based insurance scores are merely used as a profitability measure regulators may wish to decide if this is truly best for the overall consumer good.
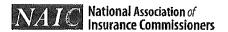
Possible Future Research

Although there has been a fair amount of research related to credit-based insurance scoring and loss propensity and effects on consumers, more can be studied. The FTC thus far has been unable to create a model to recreate credit-based insurance scores without affecting race and income groups. The forthcoming FTC study may attempt to create a model. It is unknown for certain whether insurers can get the same results without using credit-based insurance scores. Unfortunately, it is difficult for regulators or others to truly test the effects of credit-based insurance scoring because insurers hold their models to be trade secrets and thus proprietary.

Future studies could add valuable information to the existing literature and aid regulators in deciding what public policy stances to take with respect to the use of credit-based insurance scores. Two aspects could use additional research. The first is determining, through a multivariate analysis, the exact nature of credit-based insurance scores and how they work. Within this, additional study is needed into whether credit-based insurance scores are correlated with risk factors already taken into account by insurers. Analyzing actual models utilized by insurers would be the most accurate way to study the full effect of credit-based insurance scoring.

When conducting an analysis of the predictive powers of credit-based insurance scores it is important that the researchers also consider whether credit-based insurance scores are primarily being used for profitability reasons. On its face, credit-based insurance scoring may seem to be predictive of loss ratios but it may be that the underlying effect of using credit-based insurance scores is to find more profitable customers. These customers may be more profitable not due to consumers having fewer or less severe losses but because those consumers report losses less frequently or are more "loyal" to their insurance company. This reason is in contrast with the role of loss prevention for insurance. In this case insurers are no longer pricing risk but pricing profitability. Such a situation, if discovered, would need to be considered fully by regulators as they likely would look on credit-based insurance scores differently.

The importance of credit-based insurance scoring on minority populations remains an important and timely issue. A bill introduced in Congress (HR 5633) would amend the Fair Credit Report Act (FCRA) to prohibit the use of credit information in underwriting or rating personal lines of insurance if the FTC finds that the use of credit information results in "racial or ethnic discrimination" or "represents a proxy or proxy effect for race or ethnicity." The bill goes on to define the term "proxy for race or ethnicity" as "a

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substitute or stand-in for race or ethnicity, either by design or in effect, without regard to the extent of the effect."

Additional research could be done on how the use of credit-based insurance scores by insurers affects minority groups and lower income groups. Most of the research shows that these groups do experience some negative impact due to the use of credit-based insurance scores. In order to do this, a study would likely need to analyze actual models used by insurers. In 2002, the Risk Classification Subcommittee of the American Academy of Actuaries (AAA), at the request of the NAIC's Credit Scoring Working Group, defined objectives for a possible study concerning credit-based insurance scores. The subcommittee stressed that a future study would need to decide how to measure disproportionate impact and what magnitude of impact would cause concern.

The AAA Report defined "disproportionate" impact as a rating tool that "results in higher or lower rates, on average, for a protected class, controlling for other distributional differences." The report defined "disparate" impact as resulting in "substantial disproportionate impact" with no business necessity for the practice.[16] The term disparate impact has also been used in recent proposed legislation, although an exact definition has not been defined in that legislation.

If a disproportionate impact is found due to credit-based insurance scores it may be sufficient for regulators to give further consideration to the practice of using credit-based insurance scores. Even if there are actuarial sound reasons for using credit-based insurance scores, public policy concerns may provide enough reason to restrict or eliminate the use of credit-based insurance scores.

Additional multivariate analyses, possibly utilizing actual models from insurers, could provide regulators and the public with additional information explaining 1) whether credit-based insurance scores alone truly influence loss experiences and 2) whether the use of credit-based insurance scores has a disproportionate impact on certain minority or low-income populations. This additional research will allow regulators to make more informed decisions concerning the use of credit-based insurance scores.

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[16]American Academy of Actuaries and Risk Classification Subcommittee of the Property/Casualty Products, Pricing, and Market Committee, "The Use of Credit History for Personal Lines of Insurance: Report to the National Association of Insurance Commissioners," 2002, p. 31.

NAIC National Association *of*
Insurance Commissioners

APPENDIX

Studies Examining the Relationship between
Credit-Based Insurance Scores and Loss Experience

Study/Report	Major Findings
National Association of Insurance Commissioners, "Credit Reports and Insurance Underwriting," 1996	"There still is insufficient data to prove to all regulators' satisfaction whether credit history, or lack of credit history, are or are not valid indicators, or are related to future property or liability loss. Some regulators suggest that an unbiased and reasonably precise multivariate analysis is necessary to determine the actual rating factor for the credit history variable and to determine how incorporating credit history should affect the rating factors for the other rating variables."
Commonwealth of Virginia, State Corporation Commission, Bureau of Insurance, "Use of Credit Reports in Underwriting," 1999	There is a statistical correlation between credit score and policy loss performance.
Fair Isaac, "Predictiveness of Credit History for Insurance Loss Ratio Relativities," October 1999	"[W]hile the exact causal relationship between credit characteristics and loss ratio relativities is not known, there is a demonstrated statistical relationship between the two."
Monaghan, James E., "The Impact of Personal Insurance Credit History on Loss Performance in Personal Lines," 2000, *Casualty Actuary Society Forum-Winter*: 79-19-05.	"The data reviewed in this study produced clear evidence of a strong correlation between credit history and future loss performance."
American Academy of Actuaries and Risk Classification Subcommittee of the Property/Casualty Products, Pricing, and Market Committee, "The Use of Credit History for Personal Lines of Insurance: Report to the National Association of Insurance Commissioners," 2002	"[T]he subcommittee believes that credit history can be used effectively to differentiate between groups of policyholders and therefore it is an effective tool. This recognition is based on review of the four papers listed above, especially the Monaghan paper, and on the subcommittee's members' personal knowledge as obtained through the development and/or review of rating models based on credit history."
"The Use of Insurance Credit Scoring In Automobile and Homeowners Insurance," A Report to the Governor, the Legislature and the People of Michigan, Frank M. Fitzgerald, Commissioner Office of Financial and Insurance Services, December 2002	"There exists a correlation between a person's insurance credit score and the likelihood that a claim will be filed. A thorough review of material submitted by ChoicePoint and by a number of companies demonstrates that better scores are connected to fewer claims and thus lower expenses than are the scores of persons with weaker credit histories."

Studies Examining the Relationship between Credit-Based Insurance Scores and Loss Experience

Study/Report	Major Findings
Kellison, Bruce, Patrick Brockett, Seon-Hi Shin, and Shihong Li, "A Statistical Analysis of the Relationship Between Credit History and Insurance Losses," Bureau of Business Research, University of Texas at Austin, 2003	"In general, lower credit scores were associated with larger incurred losses. It was determined that credit score did yield new information not contained in the existing underwriting variables." "The analysis found that incurred losses on individual policies are statistically significantly related to the credit score of policy's named insured Additionally, incorporating underwriting variables used by the companies through the use of relative loss ratios, it was found that there was still a statistically significant relationship between credit score and the relative loss ratio for policies, so standard underwriting variables do not explain the observed statistically significant relationship between credit scores and losses."
Miller, Michael J. and Richard A. Smith, "The Relationship of Credit-Based Insurance Scores to Private Passenger Automobile Insurance Loss Propensity An Actuarial Study" by EPIC Actuaries, LLC, 2003	"Using multivariate analysis techniques to adjust the data for interrelationships between risk factors, insurance scores were found to be correlated with the propensity for loss."
Wu, Cheng-Sheng Peter and James C. Guszcza, "Does Credit Score Really Explain Insurance Losses? Multivariate Analysis from a Data Mining Point of View," 2003, *Proceedings of the Casualty Actuarial Society* 113-138	"We have conducted a number of comprehensive, large-scale data mining projects in the past that included credit information as well as an extensive set of traditional and non-traditional predictive variables....Our experience does suggest that such a relationship exists even after many other variables have been taken into account."
Texas Department of Insurance, "Use of Credit Information by Insurers in Texas: The Multivariate Analysis" (Jan. 31, 2005) and Texas Department of Insurance, "Use of Credit Information by Insurers in Texas" (Dec. 30, 2004)	"For both personal auto liability and homeowners, credit score was related to claim experience even after considering other commonly used rating variables."
Federal Trade Commission, "Credit-Based Insurance Scores: Impacts on Consumers of Automobile Insurance," 2007	"Even when non-credit variables are included in the analysis, credit-based insurance scores continue to predict the amount that insurance companies are likely to pay out in claims to consumers."

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Insurance Commissioners

Studies Examining the Relationship between
Credit-Based Insurance Scores and Loss Experience

Study/Report	Major Findings
Brokett, Patrick L. and Linda L. Golden, "Biological and Psychobehavioral Correlates of Credit Scores and Automobile Insurance Losses: Toward an Explication of Why Credit Scoring Works," The Journal of Risk and Insurance, 2007, Vol. 74, No. 1, 23-63.	Credit-based insurance scores work as a "numerical proxy for the biopsychobehavioral makeup of the individual which affects insurance losses."

National Association of Insurance Commissioners

Studies Examining the Impact of Credit-Based Insurance Scores on Minority and Low-Income Groups

Study/Report	Major Findings
Commonwealth of Virginia, State Corporation Commission, Bureau of Insurance, "Use of Credit Reports in Underwriting," 1999	"Credit scoring is an ineffective tool for 'redlining' because income and race alone are not reliable predictors of credit score."
"The Use of Insurance Credit Scoring In Automobile and Homeowners Insurance," A Report to the Governor, the Legislature and the People of Michigan, Frank M. Fitzgerald, Commissioner Office of Financial and Insurance Services, December 2002	"Indeed, evidence was submitted during the course of the study to indicate that persons of relatively lower socio-economic standing had better insurance credit scores, on average, than those of higher socio-economic standing. No study conducted, including this one, has concluded that insurance credit scoring has an inappropriately or illegally disparate impact based on immutable personal characteristics or other factors, such as income level or location of residence."
"A Report to the Legislature, Effect of Credit Scoring on Auto Insurance Underwriting and Pricing," Washington Office of Insurance Commissioner, Prepared by: Washington State University, Social & Economic Sciences, Research Center, Dave Pavelchek, PRR Inc. Bruce Brown, January 2003	"In almost every analysis, older drivers have, on average, higher credit scores, lower credit -based rate assignments, and less likelihood of lacking a valid credit score. Income is also a significant factor. Credit scores and premium costs improve as income rises. People in the lowest income categories – less than $20,000 per year and between $20,000 and $35,000 per year –often experienced higher premiums and lower credit scores. More people in lower income categories also lacked sufficient credit history to have a credit score."
State of Alaska, Department of Community and Economic Development, Division of Insurance, "Insurance Credit Scoring in Alaska," February 21, 2003	"The survey data indicates that rural Alaska policyholders are more likely to be placed in the nonstandard markets than are urban policyholders. The survey data also suggests that there is a trend for older consumers to move from the preferred market to the standard market and even nonstandard market with increasing age. A determination whether the policyholder distribution between preferred, standard and nonstandard markets is due primarily to credit history or other underwriting and rating factors is premature."
Maryland Insurance Administration, "Report on the Credit Scoring Data of Insurers in Maryland," 2004	"At this time, there is insufficient data to conclusively determine whether the use of credit scoring by insurers has an adverse impact on low-income or minority populations."

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Studies Examining the Impact of Credit-Based Insurance Scores on Minority and Low-Income Groups

Study/Report	Major Findings
Kabler, Brent, "Insurance-Based Credit Scores: Impact on Minority and Low Income Populations in Missouri," 2004	"Credit scores are significantly correlated with minority status and income, as well as a host of other socio-economic characteristics, the most prominent of which are age, marital status and educational attainment."
Texas Department of Insurance, "Use of Credit Information by Insurers in Texas: The Multivariate Analysis" (Jan. 31, 2005) and Texas Department of Insurance, "Use of Credit Information by Insurers in Texas" (Dec. 30, 2004)	"The average credit scores for Whites and Asians are better than those for Blacks and Hispanics. In addition, Blacks and Hispanics tend to be over-represented in the worse credit score categories and under-represented in the better credit score categories."
Arkansas Insurance Department, "Use and Impact of Credit in Personal Lines Insurance Premiums Pursuant to Ark. Code Ann. § 23-67-415," July 2007	During 2006 for all personal lines coverages, 30% of policies resulted in the premium being decreased and 9% resulted in the premium being increased due to the use of credit as a factor contributing to premium.
Federal Trade Commission, "Credit-Based Insurance Scores: Impacts on Consumers of Automobile Insurance," 2007	"Credit-based insurance scores appear to have little effect as a 'proxy' for membership in racial and ethnic groups in decisions related to insurance." "Credit-based insurance scores are distributed differently among racial and ethnic groups, and this difference is likely to have an effect on the insurance premiums that these groups pay, on average."

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