Use of Credit Scores by the Insurance Industry: Iowa Consumers' Perspective

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Randy L. Richards, Thomas J. Quinlan, Jr., and Patrick F. O'Leary

Acknowledgement

Introduction

In May of 2009, the Iowa Insurance Commissioner's Office contracted with the report authors through St. Ambrose University to conduct a survey of 1,200 Iowa consumers regarding their attitudes, knowledge and beliefs about the use of insurance based credit scoring. The Insurance Commissioner's Office was interested in gathering more data and information on consumers and the practice of insurance based credit scoring.

Using credit scores to determine eligibility and price of insurance is a widely used, though controversial, practice. Many insurance companies believe that an individual with a low credit score has a greater propensity to file an insurance claim.[1] Consumer advocates, state legislators and state insurance regulators believe that this is not true (Cruise, 2003). Several consumer groups want states to ban the use of credit scores in setting premiums for auto and homeowner insurance.[2] Insurers reply that credit behavior is strongly correlated with the tendency to file claims. Other opponents of the use of credit histories charge that the credit history records are full of errors and misinformation.[3] Advocates respond by citing the peripheral nature of most of the errors, on-going attempts to correct them, and methodological problems with these studies.

The insurers' position is supported by actuarial analysis (Miller & Smith, 2003). Critics feel that use of credit scores for insurance policy premiums is unfair (Sage, 2009). Consumer and civil rights groups assert that the use of credit scores discriminates against low-income people and some minorities because their scores tend to be lower (McQueen, 2009; PR Newswire Association LLC, 2007). Perhaps the most important criticism raised is that there exists no convincing causal picture connecting poor credit history with high insurance loss potential (Wu & Guszcza, 2003).

The Federal Trade Commission (FTC) found that credit based insurance scoring was an effective predictor of risk and is useful in setting premiums to match the level of risk. The FTC has stated that it lacked sufficient evidence to explain the correlation between claims and credit history (Mohl, 2007). They examined more than two million auto policies.

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[1] The following organizations have defended the fairness of insurance credit based scoring: National Association of Mutual Insurance Companies, Property and Casualty Insurers, Insurance Information Institute, The list is not meant to be exhaustive.

[2] The following organizations have questioned the fairness of insurance credit based scoring in whole or in part: Center for Economic Justice, Consumer Federation of America, National Consumer Law Center, National Council of La Raza, National Fair Housing Alliance, Consumers Union of U.S., Inc. The list is not meant to be exhaustive.

[3] (Consumer Federation of America and National Credit Reporting Association, 2002)

Insurance commissioners from many states have filed legal briefs against the use of credit scoring by insurance companies. The states have contended that some insurance companies violate the Federal Fair Credit Reporting Act if they do not send consumers adverse action notices when their rates are affected by their credit scores (Total Lawyers, n. d.). These actions by the states suggest that the use of credit scores in the determination of eligibility and rates are considered unfair.

Background

The research questions for this study are:

1. Do Iowans believe that credit scores are valid predictors of risky behavior and insurance claims?
2. What do Iowans know about credit scores generally?
3. Do Iowans believe that using credit scores to determine insurance eligibility and rates is fair?
4. Do minorities receive a disproportionate share of "adverse action" letters from insurers?

To answer these questions we created a survey of 29 questions and distributed it to a randomized, cross-sectional sample of Iowans over 18 year of age. A pilot survey was conducted using a sample size of 96 respondents to establish face validity of the instrument. It resulted in the revision and elimination of some questions. Format and scales were similarly affected and revised accordingly.

Major content includes sections on automobile insurance, homeowner insurance, demographics, and a section covering the use of credit scores.

Table 1
Overview of Survey

Variable name	Research Question	Survey Item
Predictor	Is the use of credit scores a valid predictor of risky behavior and claims?	Questions 5, 10
Knowledge	What do people know about credit scores generally?	Questions 3, 4, 11, 14, 15
Fairness	Is the use of credit scores by the insurance industry fair?	Questions 6 – 9, 13, 16, 17, 28, 29
Adverse	Do minorities receive a disproportionate share of "adverse action" letters from insurers?	Questions 26-27

Using a combination of telephone and Internet approaches, we distributed the final survey and received a total of 1,240 complete responses. Data sources included:

1. MarketTools, Inc. (Zoomerang) (Sparandara, 2009),
2. Personal Market Research (PMR) (Personal Marketing Research, 2009),
3. A supplemental survey of insurance agents that is part of a continuing education study (O'Leary, Quinlan, & Richards, 2009).

Descriptive Statistics

We received a total of some 1300 responses, of which 1,240 were usable: 859 from Zoomerang and 381 from PMR. We removed any cases that showed no ZIP code, and any that provided an out-of-state ZIP code. There was no way of knowing whether these respondents were temporarily living out-of-state or they were individuals who did not follow survey instructions.

Because our survey was a sample, as opposed to a census, the possibility of sampling error is always present. A different sample will likely yield different results. To minimize this, we have established confidence limits of 95 percent around any estimate that we have provided. This means we are 95 percent confident that any sample we might have obtained would have included the values we would have obtained had we taken a census.

In the tables below, we contrast the sample percentage with the state percentage for the variables cited. The state's demographic percentages were read directly, or computed from, the Iowa Data Center tables.

Table 2
Race Distribution

Count	Races	Sample %	State %
1,152	Caucasian (White)	92.90%	93.90%
88	Minorities	7.10%	6.10%
1,240	Total	100.00%	100.00%

Table 3
Age Distribution

Count	Age	Sample %	State %
98	18-24	7.90%	6.42%
161	25-34	12.98%	15.73%
189	35-44	15.24%	21.06%
310	45-54	25.00%	19.47%
482	55 and over	38.87%	37.32%
1,240	Total	100.00%	100.00%
Median		50.55*	

* Higher than state median because it does not include anyone under 18

Table 4
Gender Distribution

Count	Sex	Survey %	State %
474	Male	38.23%	49.30%
766	Female	61.77%	50.70%
1,240	Total	100.00%	100.00%

Table 5
Income Distribution

Count	Income range	Survey %	State %
195	Less than $20,000	15.73%	21.78%
288	$20,000 - 39,900	23.23%	28.89%
296	$40,000 - 59,900	23.87%	22.43%
203	$60,000 - 79,900	16.37%	19.62%
258	$80,000 or more	20.81%	7.28%
1,240	Total	100.00%	100.00%
Median*		$49,256.76	$47,292.00

*As an open ended frequency distribution, only the median for household income can be computed. Although it is a precise computation, the result is an estimate. The median income is estimated as $49,256.76.

Table 6
Metro/Non-metro

Count	Metro/Non-metro	Survey %	State %
801	Metropolitan	64.60%	55.20%
439	Non-metropolitan	35.40%	44.80%
1,240	Total	100.00%	100.00%

Source for state percentages: (State Data Center, 2009)

Grouping of variables: Four groups are identified via deliberate design: 1. Predictor; 2. Knowledge; 3. Fairness; and 4. Adverse.

Data analysis:

Cronbach's alpha (0.687) was used as a reliability check for the survey questions. This is an acceptable result.

For the entire study, the margin of error $= \pm 2.6\%$.

Chi-square goodness of fit tests was used on questions $30 - 39$ to determine whether the demographics of the survey matched those of the State of Iowa. These tests were also used for question 5 to ascertain whether male and female respondents answered similarly, and for questions 26 and 27 to determine whether adverse actions were disproportionate by race, age, and income.

A two-way analysis of variance (ANOVA) was conducted for the questions where this technique was applicable (questions 11 and 14). As a confirmation, the non-parametric Wilcoxon matched-pair signed-rank test of differences was applied.

Results

Synopses are provided here. Detailed development of these results is in the discussion section below:

Research question #1: Do Iowans believe that credit scores are valid predictors of risky behavior and insurance claims?

A majority (55%) of respondents disagree that credit scores are good predictors of the tendency to file claims. Only 8.7% of respondents believe that insurance companies use credit scores as an indicator of a tendency to file claims. This does not reflect reality (Miller & Smith, 2003; Mohl, 2007; Rejda, 2008), and it suggests a need for consumer education (Government Accountability Office, 2005). A separate survey of Iowa insurance professionals shows them to be about evenly divided as to whether credit scores are valid predictors of a tendency to file claims (O'Leary et al., 2009).

Research question #2: What do Iowans know about credit scores generally?

Iowans' knowledge of the purpose of credit scores is inadequate. A 2005 Government Accountability Office (GAO) report found that most consumers knew what a credit score was, and approximately one-third had obtained their credit scores, but many did not know that some behaviors – such as using all their available credit – could negatively affect their scores. The report also found that several factors were associated with consumers' knowledge. For instance, having less education, lower incomes, and less experience obtaining credit were associated with lower survey scores, while having certain types of credit experiences – such as an automobile loan or a mortgage – were associated with higher scores (Government Accountability Office, 2005). Results obtained in this survey showed that 40% of Iowans had obtained their credit scores, compared to the GAO's finding that one-third of its respondents had done so. Consumer Federation of America and the Providian Financial groups' nationwide studies in 2004 and 2005 of 1000 adults reported that 24% and 31% respectively had obtained their credit reports. Both were below the Iowa study (Consumer Federation of America and Providian, 2005).

Contrary to the GAO's findings, however, our survey found no significant association of credit knowledge with either income or educational levels. 69.2% of our respondents did not select the correct answer when asked the meaning of credit scores. These responses were scattered across the income and education level demographics generally in proportion to their representation. We found no evidence of any disproportionate representation across these demographics.

Research question #3: Do Iowans believe that using credit scores to determine insurance eligibility and rates is fair?

When asked on a personal basis "Do you think **your** personal credit score should affect…" their own ability to purchase insurance or the rates they themselves are charged, the answers were overwhelmingly "No." Respondents seem to think that credit scores should have no bearing on their ability to purchase insurance, nor should credit scores have any relevance to the rates charged. When asked similar questions on an impersonal basis, the results still showed "No," but it was not as definitive or overwhelming. It is possible that any sense of fairness in some respondents might be somewhat offset by hypocrisy. In other words, respondents might expect rules to apply to others, but not to self.

Research question #4: Do minorities receive a disproportionate share of 'adverse action' letters from insurers?

Sixty respondents acknowledged receiving an adverse action notification. A visual inspection of the survey numbers (57 white, 3 minorities) compares very closely with the expectations (56.3 white, 3.7 minorities) based upon the Iowa demographics showing the population to be 93.9% white. The study did not show any evidence of racial bias.

However, we did find adverse actions disproportionate to their numbers in the 25-34 age group, and the $40,000 - $59,999 income group.

Discussion

Research question #1: Do Iowans believe that credit scores are valid predictors of risky behavior and insurance claims?

Two survey questions address this issue.
Question 5: Which of the following best describes insurance companies' use of credit score?   Select ONE only

Summary	
Predicts the likelihood of risky behavior	459
Predicts the likelihood that a person will not be able to pay for insurance	360
Predicts the likelihood that a person will file an auto or homeowners' insurance claim	108
Predicts the likelihood that a person will file false auto or homeowners' insurance claims	65
Don't know	248

Actually, the answer "Predicts the likelihood of risky behavior" is correct. Credit scoring is not a recent phenomenon. At the beginning of the 20th century, credit ratings were given as "high," "good," "fair," and "limited." The reason for deriving these ratings is because it was apparent then, as it is now, that a person's reputation for prompt payment of debts does not necessarily depend upon his estimated financial worth (Huebner, 1916). In other words, risk is different from ability to pay. This concept has stood the test of time.

The answer "Predicts the likelihood that a person will file an auto or homeowners' insurance claim" is also correct, but the respondents did not rank it near the top. It relates to the next question:

Question 10: A person's credit score is a good predictor of how likely they are to file an auto or homeowners' insurance claim.

Agree: 174
Disagree: 686
Neutral: 380
Margin of error = ± 1.9%

There is general agreement with the related choice from question #5 above. The respondents in general do not believe the predictive capabilities of the credit score. It

also supports our contention that Iowans in general are aware that credit scores have an effect, but are generally unaware of how extensive that effect is.

There is extremely strong evidence that the incorporation of the use of credit history increases the predictability of claims behavior. A brief review is all we need for our purposes here.

Let's begin with three of the most widely know and publicized studies.

The 2003 EPIC Actuaries study, "The Relationship of Credit-Based Scores to Private Passenger Automobile Insurance Loss Propensity", reviewed more than 2.7 million auto policies (Miller & Smith, 2003). It found that credit based insurance scores are strongly related to an insured's likelihood of filing a claim, and that the use of the scores added significant accuracy to the risk assessment process. Further, these scores measured risk not previously measured by other known rating factors and that they were among the top predictors of risk, outperforming more traditional underwriting factors.

The 2005 Texas Department of Insurance Study, "Use of Credit Information by Insurers in Texas: The Multivariate Analysis", examined hundreds of scores and rating factors for over two million auto and homeowners' policies (Texas Department of Insurance, 2004). "For both personal auto liability and homeowners, credit score was related to claim experience even after considering other commonly used rating variables. This means that credit scores provide insurers with additional predictive information distinct from other rating variables. By using credit score, insurers can better classify and rate risks based on the differences in claim experience."

The 2007 Federal Trade Commission study, "Credit-based Insurance Scores: Impacts on Consumers of Automobile Insurance" found that credit based insurance scoring was an effective predictor of risk under automobile policies (Federal Trade Commission, 2007), and that they were predictive of the number of claims and the total cost of those claims. They examined more than two million auto policies.

Also in 2003 at the request of the NAIC, the American Academy of Actuaries evaluated four studies on insurance credit scoring. The studies were:
1. The Impact of Personal Insurance Credit History on Loss Performance in Personal Lines by James E. Monaghan (2000).(Government Accountability Office, 2005)
2. Insurance Scoring in Personal Automobile Insurance - Breaking the Silence by Conning & Company (2001).(Government Accountability Office, 2005)
3. Predictiveness of Credit History for Insurance Loss Ratio Relativities by Fair, Isaac (1999).(Government Accountability Office, 2005)
4. Use of Credit Reports in Underwriting by the Commonwealth of Virginia, State Corporation Commission, Bureau of Insurance (1999).(Government Accountability Office, 2005)

Based on their review of the four studies and their expertise in the development and review of rating models based on credit history, the Academy members that reviewed *the studies believe that credit history can be used effectively to differentiate between groups of policyholders. Therefore, they believe credit scoring is an effective tool in the underwriting and rating of personal lines of insurance.*" (our emphasis) (Serio, 2003)

Finally, we call attention to the study by Peter Wu and James Guszcza, "Does Credit Scoring Really Explain Insurance Losses? Multivariate Analysis from a Data Mining Point of View" (Wu & Guszcza, 2003). In their Introduction they note:

> One of the more important recent developments in the U.S. insurance industry has been the rapidly growing use of credit scores to price and underwrite personal auto and homeowners insurance. But this development has not come without controversy. Perhaps the most important criticism raised is that there exists no convincing causal picture connecting poor credit history with high insurance loss potential [1-5][4]. Partly for this reason, many insurance regulators and consumer advocates have expressed doubts that the observed correlations between credit scores and insurance loss history truly reflect an underlying reality. Some critics have suggested that these correlations might be spurious relationships that would not survive more sophisticated (multivariate) statistical analyses.

They reviewed the prior findings of two studies Tillinghast's, "Credit Reports and Insurance Underwriting," NAIC White Papers, 1997 and James Monaghan's, "The Impact of Personal Credit History on Loss Performance in Personal Lines," CAS Forum, Causality Actuarial Society, 2000 in light of their own research using multivariate analysis and data mining.

Ultimately, they analyzed hundreds of possible predictive variables that they created from the internal and external data sources. Their goal is to create as many variables as possible that might be related to insurance loss and profitability. These variables would represent as wide a range of characteristics as possible about each policyholder.

> We have performed several large data mining projects that included credit variables and credit scores. Similar to the Tillinghast study and Monaghan's study, we have studied data from various sources, different

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[4] 1. "Insurance Scoring in Personal Automobile Insurance – Breaking the Silence", *Conning Report*, Conning, (2001). 2. "Insurers Battling Credit-Scoring", *National Underwriter*, March 5th Issue, (2002). 3. "Insurers Lose a Credit Scoring Battle", *National Underwriter*, February 21st Issue, (2002). 4. "Credit Reports and Insurance Underwriting", *NAIC White Papers*, National Association of Insurance Commissioners, (1997). 5. Monaghan, J. E., "The Impact of Personal Credit History on Loss Performance in Personal Lines", *CAS Forum*, Casualty Actuarial Society, (2000). (All as cited in (Wu & Guszcza, 2003).

distribution channels, and different geographic concentrations. Our studies
are very large in size, similar to Monaghan's study, usually with several
hundred thousand data points that contain a total of hundreds of millions
of dollars of premium. Our approach is tailored to the use of large
datasets, the use of train/test methodology, the use of lift curves to
evaluate models, and the exploratory use of a variety of modeling
techniques. These are all hallmarks of the data mining approach
to statistical problems. We believe that our analyses are true multivariate
analyses that yield very robust and credible results. It is precisely this kind
analysis that makes it possible to decisively answer the question: does
credit really help explain insurance losses and profitability?

Their analysis and study confirm what Tillinghast and Monaghan had found.
Credit variables effectively predict insurance losses and add measurable and non-
reductive predictive power to the other variables. They make it clear that this does
not mean that these credit variables "cause" the losses, only that they are
undeniably predictive of the losses in the aggregate. "From a statistical and
actuarial point of view, *it seems to us that the matter is settled: credit does bear a
real relationship to insurance losses*." (our emphasis).

We think the current evidence for the predictive power of insurance credit scoring is
overwhelming. However, perhaps some future research will indicate otherwise but for
now we believe reasonable persons must conclude *on the basis of the evidence* the case in
favor of the predictive power of insurance credit scoring. Given the predictive power of
insurance credit based scoring, the Iowa consumers' opinions about the efficacy of this
method are at odds with the available evidence. Some special attention should be given to
educating Iowa consumers about the current facts regarding the strength of this method to
predict claims filing behavior because their beliefs about this will have a strong influence
on their sense of the fairness of this practice.

Research question #2: What do Iowans know about credit scores generally?

Questions 11 and 14 are a perception/expectation pair. These questions are useful in
ascertaining respondents' knowledge of the factors that are used to compute insurance
premiums.

Question 11: (The perception question) A person's auto insurance premium IS based primarily on their: RANK TOP THREE by selecting 1, 2 and 3 next to them

Summary	
Age	2,508
Gender	1,133
History of auto accidents and/or moving violations	2,756
Credit score	594
Number of miles driven annually	991
Other	251

Question 14: (The expectation question) A person's auto insurance premium SHOULD BE based primarily on their: RANK TOP THREE by selecting 1, 2 and 3 next to them

Summary	
Age	2,051
Gender	625
History of auto accidents and/or moving violations	3,130
Credit score	390
Number of miles driven annually	1,427
Other	327

The scores for questions 11 and 14 are weighted. First choice is multiplied by 3; second choice is multiplied by 2; and third choice is counted. The intention of the weighting is to give credibility to the respondents' choices relative to importance.

Questions 14 and 11 represent a perception/expectation pair. It appears that there are different responses between perceptions (IS) and expectations (SHOULD BE).

To ascertain whether this is so, a two-way analysis of variance (ANOVA) was conducted using the weighted scores (p-value = 0.788), and again using the unweighted scores (p-value = 0.831). The result was the same. The hypothesis that perceptions differ from expectations is not supported. As a confirmation, the Wilcoxon matched-pair signed-rank test of differences was conducted with the same result. Perceptions and expectations are not different. It is clear that history of accidents is perceived to be primary in both and the respondents have effectively rank-ordered these elements. (The third and fourth places change rank order between questions 11 and 14).

These items are all considered in rate setting, but the methodologies used by insurance underwriters are different. The rank order perceived, and expected, by the survey respondents indicates what they believe to be the most important factors in rate setting. This does not reflect reality (Rejda, 2008).

Questions 3 and 15 were posed to ascertain whether Iowans were interested in knowing their credit status.

Question 3: Do you know your credit score?

Yes: 501
No: 739

Question 15: Have you ever obtained a copy of your credit report (in addition to or separate from your credit score)?

Yes: 730
No: 464
Don't know: 46

The general answer is "Yes," based upon the results of question 15. Credit scores, question 3, are not provided at "no cost." This could explain why a similar number of respondents have not obtained their scores.

Question 4: To your knowledge, which of the following does a credit score MAINLY indicate?   RANK TOP THREE

Summary	
Knowledge of consumer credit	1,026
Attitude toward consumer credit	710
Amount of consumer debt	1,969
Risk of not repaying a loan	1,980
Financial resources to pay back loans	1,515
Don't know	347

Again, the scores for question 4 are weighted. First choice is multiplied by 3; second choice is multiplied by 2; and third choice is counted. The intention of the weighting is to give credibility to the respondents' choices relative to importance.

Currently, credit scores are derived through mathematical formulas that assign weights to various credit factors and summarize the results as a three-digit number. Such formulas are proprietary, and usually include outstanding debts, amounts past due, late payments and payment patterns (Rejda, 2008). They also include information from public records, such as bankruptcies and liens.

Those who selected "risk" on this survey have it right. However, they are in the minority. Those who selected "Financial resources" above miss the point that risk and ability to pay are quite different. Misconceptions such as this imply that knowledge of the fundamentals of insurance rate setting is lacking.

Research question #3: Do Iowans believe that using credit scores to determine insurance eligibility and rates is fair?

The questions of fairness standouts as one of the most controversial aspects of the use of insurance credit based scoring for rating and pricing of auto and homeowner's insurance. Mostly simply, "Is it fair to use a consumer's credit history as part of the decision on both the acquisition and the rating of auto and homeowners insurance?"

We thought it would be important to use the survey to get a sense of the moral intuition of Iowa consumers about the fairness of the use of insurance credit based scoring. Now let's be clear from the start, because a person or persons have certain opinions or beliefs about what is fair or not fair does not mean that they are correct.

First, our opinions about what is fair or unfair often are determined by whether we are advantaged or disadvantaged by some decision, policy or practice. Think about how most people evaluate taxes. If they personally benefit from the tax code, they see it as fair. If they feel burdened by it, they decry how unfair it is.

Second, fairness is a complicated concept and one almost entirely contextually driven. Is the concept of fairness in this case one that depends on merit, need, desert or some other factor? I might think it is unfair because I think fairness in this case should depend on merit as a measure and you think it fair because you think fairness in this case should depend on need.

Third, we might be talking about either fair processes or fair outcomes. People are not always clear about which they are referring to nor even be aware of the distinction. When a rich person wins the lottery, we can understand why some people will see this as fair – it is a fair process – random selection. We can also understand why others might say that it is not fair since the winning person does not need the money and so many others were more needy or deserving of the money. In the first case, people look at the process and determine that the lottery is fair. In the second case, they look at the outcome – who won – and declare it is not fair.

Fourth, in referring to the fair distribution of benefits and burdens in society, what criteria do we apply in assessing the relative weights of either the benefits or burdens? Should our measures be relative to all parties in the distribution or against some other independent factor? Should fairness be determined by strict equality – say as in a flat tax like a sales tax. It is fair because everyone pays the same 5%. Or should fairness be determined by equality of burden – say as in progressive income tax. It is fair because everyone makes an equal sacrifice relative to his/her income.

Fifth, is fairness to be rooted only in the effects on particular individuals or can we extend the concept of fairness to society as a whole? If a zoning change will economically benefit the vast majority of people in our area by placing a hog lot operation in the county is it fair to burden the three families whose farms adjoin the hog lot and cannot escape the negative effects? Is it fair for the aesthetic benefit of a mere three families that everyone else in the county be deprived of economic and financial growth?

Sixth, our opinions about fairness will be significantly affected by our depth of knowledge about the issue, and the depth and quality of reflection we have exercised on the issue. The less we know and understand methods and processes of distributions of the benefits and burdens in society the more likely we are to be suspicious of it.

Seven, our sense of what is fair and unfair is also subject to influence by our biases, prejudices and ideological commitments prior to examining the issue. If we are opposed on principle to government intervention, then any government intervention will more likely appear arbitrary and unfair regardless of its justification or effects. If we see government itself as a social mechanism to control and balance the competing forces in society, the government intervention will likely appear as establishing fair and equitable regardless of its justification or outcome.

So as we examine peoples' opinions about fairness, we need to do so carefully. Nonetheless as the Insurance Commissioner's Office and elected representatives consider how to respond to the controversies surrounding the use of insurance credit scoring, we believe they would find it valuable to understand the various opinions Iowans hold. We should, however, make a careful evaluation of these opinions of fairness and critically examine the issues at stake.

Our approach to this difficult problem was to first ask a few questions about some standard insurance practices in rating auto and home owners insurance. We wanted some context to compare Iowa Consumer responses to the practices surrounding insurance credit based scoring.

Let's begin with the practice of charging youthful drivers higher rates. Charging for youthful drivers is and has been standard insurance practice for many years. The rationale?

> Rates for auto insurance for teenage drivers are always higher than any other drivers because they pose a higher risk of accidents than more experienced drivers. Adding a teenager to an insurance policy can mean a 50 percent or even 100 percent increase in the parents' insurance premium (Insurance Information Institute, 2009).

Insurers justify the practice of charging higher rates for youthful drivers based on the simple fact that youthful drivers, ***as a group***, pose a higher risk of accidents and claim

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activity. Many people point to "lack of experience" as the most plausible explanation for this higher likelihood of claims activity. Others will indicate youthful driver show a lack of judgment, forethought, and understanding of effects of their risky behavior. Obviously, these three vices are not limited to youthful drivers. Some more "experienced" drivers also show lack of judgment, forethought and an understanding of the effects of their risky behavior. We can also agree that some youth drivers do not share these characteristics with their youthful brethren. Yet, they still get charged a higher rate ***because they belong to a group*** that we can show statistically poses a significantly higher accident and claims behavior.

Generally speaking this is not considered a highly controversial issue. We do not have consumer groups or others lobbying the insurance commissioner's office or legislature about prohibiting insurance companies from charging youthful rates because it is unfair. Yet the practice does raise an issue of fairness. We posed the question this way to test respondents' moral intuitions:

Question 16: It is fair practice to charge law-abiding and low-risk individuals higher insurance rates simply because they are part of a group that engages in risky behavior (for example, teenage drivers)?

Agree: 367   (30%)
Disagree: 570   (46 %)
Neutral: 303   (24%)
Margin of error = ± 2.5%

Frankly, we were surprised by this response because there has been little or no controversy surrounding this practice. Less than one third of Iowa consumers think it fair to charge an individual a higher premium merely because he/she is a member of a group that engages in risky behavior. Almost half sees it as unfair.

The question gets at the issue of the fairness of ascribing to me, as an individual, the characteristics of the group of which I am a member. Further, in this case, it is a membership over which I have no control. Since I personally do not possess these characteristics, to ascribe them to me, and then to penalize me (with higher rates) because I belong to this group, may appear patently unfair. Indeed we might argue this is a classic example of bias and prejudice, i.e., because I am a young man, I am likely to engage risky behavior. In our sample, 46% saw this as unfair. Interestingly, this practice, which is universally accepted in insurance underwriting practice as 'fair' because it is aimed at young people, would not be allowed if the group upon which it were based was one of race or ethnicity.

Pursuing consumers' opinions of fairness further,
Question 13: People with a higher likelihood of filing insurance claims should pay higher premiums

Agree: 568   (46%)
Disagree: 296   (24%)
Neutral: 376   (30%)
Margin of error = ± 2.7%

The results were almost the opposite. Is this an example of sheer inconsistency? Perhaps. Perhaps not. We think the difference lies in the fact that in this case, respondents understood this to mean the higher likelihood of filing a claim was attributable to *the person as an individual and not a group member*. In such a case where a person as an individual would have a higher chance of filing a claim, then in the opinion of almost half the respondents, it is considered fair that a person pay a higher premium. This opinion is perfectly consistent with the answers on 16. *The rates such people pay should be a function of his/her individual behavior, not some group characteristic.*

Although, we think it is worth remarking that still fewer than half the Iowa consumers agree that those with a higher likelihood of filing claims should pay higher premiums. This was also surprising. We think this should be understood as related to the phrase "higher likelihood." This implies a projection into future behaviors. This person, however, has **not yet filed** a claim so he/she should not pay the higher rates. There may be a higher chance that he/she will file a claim, but there is also some likelihood that he/she will not file a claim. The objection to the fairness of this, we conclude, is based *on the projection of likelihood claim activity into the future.*

Understood in this way, the intuition of fairness, for these respondents, would be that the rate I am charged should be based on what I *as an individual have done*. It is unfair to attribute *all of the group characteristics* to me merely because I possess some of the group's characteristics. It is also unfair to charge me rates based on what I might do in the future but have not yet done. It appears to us that these two intuitions are driving many of these responses. It should be noted that these same intuitions will inform respondents' evaluation of the fairness of insurance credit scoring.

Unfortunately, these opinions indicate that Iowa consumers do not have a clear notion of what it means to spread the risk that is at the heart of the law of large numbers and what theoretically drives insurance as a business. Individuals are surcharged based on what they individually have done, but the base premium is determined by the law of large numbers built around large group characteristics. If the large numbers are reduced to smaller groups of individuals based on increasingly isolated variables, then the base premium of insurance becomes unaffordable to those who need it the most.

This interpretation is reinforced by the responses on Question 29 which is a re-wording of Question 13 except that instead of the more generic "people" we substituted the more personal 'you' in the question.

Question 29: If some factor in your background indicates that you are more likely to file an insurance claim than other people, then it is FAIR that you pay a higher rate for the same insurance product.

Agree: 361   (29%)
Disagree: 499   (40 %)
Neutral: 380   (31%)
Margin of error = ± 2.5%

Our intention in constructing this question was to contrast the difference in people's answers with Question 13. The results comparing the two show what we expected. When Iowa Consumers were asked in 13 the more generic question using "people" should pay higher rates if they have a higher likelihood of filing claims 46% replied affirmatively. But when asked if there was something *in their own background* that indicated that 'you' were likely to file a claim that number drops to 29%. As we indicated above in our opening remarks, intuitions about fairness can be driven by whether I am benefited or burdened by some practice or policy. The responses to this question demonstrate that tendency.

But, beyond that, once again we see *this resistance to the fairness of the practice of using my behavior in the past as a basis for projecting the likelihood of my filing claims in the future.* In question 13, 54% considered this practice either unfair or were not sure of its fairness. In question 29 where we apply this to 'you' that percentage jumps to 71%. Most Iowa consumers do not think it is fair to base auto and homeowners rates on a person's past behavior as a means of determining the probability of their future claims filings. And an overwhelming percentage is opposed *when that person is themselves*.

We are now ready to turn to the intuitions on the fairness of the use of credit scores in securing and rating of auto and homeowners insurance. Let's begin with Questions 17 and 7 that surveyed beliefs about auto insurance rates and credit scores.

Question 17: People with poor credit scores should pay higher auto insurance rates

Agree: 144   (12%)
Disagree: 802   (65%)
Neutral: 294   (24%)
Margin of error = ± 1.8%

Question 7: Do you think your personal credit score should affect the rates you pay for auto insurance?

Yes: 291   (23%)
No: 878   (71%)
Don't know: 71   (6%)
Margin of error = ± 2.4%

Once again we have paired similar questions but one asks about the generic "people" and the other about the more personal "you." The surprising thing about this pair of responses is that higher numbers of Iowans consider fair to have the increased rates for lower credit scores when they applied it to themselves. We believe this explained by the fact that in 17 the issue was poor credit scores means higher rates but in 7 the issue was simply that credit scores would *affect your rates*. The difference being that in 7, I might see that my rates would go down if I had a high credit score. However, the more important thing to notice is that in both cases the number opposing this practice is very high, 71% and 65%.

The numbers on homeowners' insurance ratings are remarkably similar to those regarding auto insurance. We paired Questions 28 and 9.

Question 28: People with poor credit scores should pay higher homeowner insurance rates

Agree: 133   (11%)
Disagree: 779   (63%)
Neutral: 328   (26%)
Margin of error = ± 1.7%

Question 9: Do you think your personal credit score should affect the rates you pay for homeowner's insurance?

Yes: 285   (23%)
No: 880   (71%)
Don't know: 75   (6%)
Margin of error = ± 2.3%

Once again we have paired similar questions but one asks about the generic "people" and the other about the more personal "you." Here, too, higher numbers of Iowans consider it fair to have the increased rates for lower credit scores when they applied it to themselves. Again, we believe this to be partly explained by the fact that in 28 the issue was poor credit scores means higher rates but in 9 the issue was simply that credit scores would affect your rates. The difference being that in 9, I might see that my rates would go down if I had a high credit score. However, as before, in both cases the number opposing this practice is very high, 71% and 63%.

The numbers change only slightly when considering credit scoring should affect the ability to buy auto or homeowners insurance.

Question 6: Do you think your personal credit score should affect your ability to buy auto insurance?
Yes: 237   (19%)
No: 906   (73%)
Don't know: 97   (8%)
Margin of error =   ± 2.2%

Question 8: Do you think your personal credit score should affect your ability to buy homeowner's insurance?

Yes: 208   (17%)
No: 966   (78%)
Don't know: 66   (5%)
Margin of error =   ± 2.1%

Whether we are referring to auto or homeowner's rates or the ability to buy either auto or homeowners, between 63 and 78 percent of Iowans oppose the practice of using credit history. Why are these numbers so high? What causes people to see this practice as unfair?

We have already seen in our prior discussions about more traditional insurance rating that many hold that it is unfair to use information about one's past history as a basis for projection about whether one is likely to file a claim in the future. Additionally, we have seen that many people hold it is unfair to increase their rates based on a calculation of future likelihood of claim activity based on my membership in a particular demographic group. I should only be accountable for what actually has occurred and is attributable specifically to me.

Understanding these prior opinions on fairness helps us to better understand the reaction to insurance credit based scoring. First past behaviors and histories are being used to project the likelihood I will file a future claim. As we saw earlier, there are strong opinions among many Iowans that this is unfair. But the numbers rejecting this particular practice of insurance credit scoring are higher and less ambiguous than when we were simply using past "information." In the prior cases the percentages finding it outright unfair and rejecting it were much smaller than in this case.

The sense of unfairness in this case is clearly more sharply felt. But is this opinion of unfairness justified? Or, would a deeper look at the issue and practices change our opinions? To look into this issue we need to examine four questions:

1. Does Insurance Credit Based Scoring accurately predict personal lines losses?
2. Is it plausible to believe that the choices persons make in managing their financial risk are connected with the choices they make managing the risks associated with driving and owning a home?
3. Do the items used by the rating agencies and insurance companies identify financially responsible and financially risky behavior?
4. If the outcomes of the process do not produce results that mimic random distributions, then is that process *ipso facto* unfair?

Let's examine each issue in more closely.

1. Does Insurance Credit Based Scoring accurately predict personal lines losses?

We begin with the question, "Does insurance credit scoring accurately predict claim filing behavior?" If the use of credit scores does not accurately predict future claim filing behavior, then it seems clear that the case for their use falls apart. In section above on the research results of our first question (pages 6-9), we provided extensive documentation that insurance credit based scoring does accurately predict personal lines losses. So to the extent to which someone's opinions about fairness is based on the belief that this method does not work, then that opinion needs to be revised accordingly.

2. Is it plausible to believe that the choices persons make in managing their financial risk are connected with the choices they make managing the risks associated with driving and owning a home?

So let's assume for the moment that the use of insurance credit scoring does accurately predict claim-filing behavior in the future. Can we grant this and still reasonably claim it is arbitrary and unfair? Maybe. We need to ask, Is there any reasonable, plausible and research supportable explanation for how it does this? What if we found a connection between my voting behavior in prior elections and my claim filing behavior? Hypothetically, let's say it turns out that we can show that a pattern of not voting in the prior six local and national elections will show a strong correlation with my claim filing behavior. Those who vote less, regardless of party affiliation, file more claims. Those who vote more file fewer claims. Would it then be unfair for insurance companies to gather and analyze people's voting behavior as part of an insurance rate setting method? If there is little to explain the connection, then it is likely that most people would oppose such practices as unfair even if there was a strong statistical correlation between the two.

Is there a plausible and understandable connection between my credit history and my claim filing behavior or is the connection arbitrary and capricious? Is there any evidence or research that might give some credence, some plausible belief that how I have managed my financial affairs might be predictive of whether or not I will likely file a claim in the future? Is it plausible that how I behave and react to and manage my risk-related affairs in one area of my life may be strongly indicative of how I will behave, react and manage my risk related affairs in other aspects of my life? Might we be looking

at patterns of risk management behavior in a person's life that are generally consistent and predicable across broad areas?

Patrick Brockett and Linda Golden argue there is a solid, plausible and research supported explanation as to why credit scoring predicts auto insurance claims. In their 2007 article, "Biological and Psychobehavioral Correlates of Credit Scores and Automobile Insurance Losses: Toward an Explication of Why Credit Scoring Works," they connect increased auto claims with a life pattern of risk-taking behavior across a multiple dimensions of a person's life (Brockett & Golden, 2007). They note in their Abstract:

> However, in spite of its obvious success as an underwriting tool, and the clear actuarial substantiation of a strong association between credit score and insured losses over multiple methods and multiple studies, the use of credit scoring is under attack because there is not an understanding of why there is an association. … Credit scoring can give information distinct from standard actuarial variables concerning an individual's biopsychological makeup, which then yields useful underwriting information about how they will react in creating risk of insured automobile losses.

Brockett and Golden review in specific detail the biological, psychological, and behavioral literature searching for characteristics of individual risk taking and sensation seeking behaviors and connect these characteristics with both financial decision making and risky driving habits. They argue that certain biochemical and psychobehavioral elements of risk taking attitudes and behavior are not confined to a specific area in life. Rather, these behaviors extend across multiple areas of a person's life. They note, citing the studies of Kellison et al, 2003, Miller and Smith, 2003 and Wu and Guszcza, 2003, that the correlation between credit scores and insurance losses persist even after the effects of traditional underwriting variables are factored out. They conclude that credit scores are, therefore, revealing a new and distinct aspect of individual risk-taking behavior.

> Credit scoring "works" because it provides a numerical proxy for the biopsychobehavioral makeup of the individual that affects insurance losses. It yields additional information about one's responsibility and stability, stress level, and distractibility, all of which influence the amount of insured losses paid by the insurance company.

While Brockett and Golden focused their attention on the connection between risk taking and sensation seeking behavior in driving and financial management, Winfred Arthur, Jr. and William Graziano found a connection between driving accidents and lack of conscientiousness (Arthur & Graziano, 1996). To appreciate their study, we need some brief background on the Five Factor Model (FFM).

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In 1958 and again in 1961, Ernest Tupes and Raymond Christal conducted seminal studies of Air Officers revealing that five basic factors of personality were responsible for describing a wide range of behavior (Tupes & Christal, 1958; Tupes & Christal, 1961). Subsequent studies, with minor variations, have discovered these same five factors among different subjects, regardless of age or gender and in different languages and cultures. Other studies have shown the five factors to be valid and systematically related to behavior, and to endure across decades in adults. In the last two decades, dozens of studies have used the FFM to describe and explain a wide variety behavior across multiple realms of human activity. FFM proponents believe they have discovered the basic dimensions of personality rooted in both heredity and environment.

The acronym CANOE sets forth the names of the five factors: Conscientiousness, Agreeableness, Neuroticism, Openness, and Extroversion. For purposes of this paper, it is only necessary to explain Conscientiousness. Conscientiousness is characterized by feelings of competence and capability, neatness, attentiveness to duties and responsibilities, diligence, purposefulness, self-discipline, persistence, and cautious deliberation.

In their article "The Five-factor Model, Conscientiousness, and Driving Accident Involvement." in the 1996 Journal of Personality, Arthur and Graziano employ the Five Factor Model to understanding automobile accidents. Their research revealed that in a sample 477 respondents, that results generally showed a significant inverse relationship between those who rated themselves as more disciplined, reliable, and dependable (characteristics of Conscientiousness in the Five Factor Model) and automobile accidents. This finding is consistent with a large number of other studies demonstrating a consistent pattern of relationship between Conscientiousness and other positive tasks and behavioral outcomes. Persons scoring high on the Conscientious scale tend to regulate themselves during instances of frustration and stress (Digman & Takemoto-Chock, 1981). Those prone to criminal behavior show an absence of self-control in such instances (Gottfredson & Hirschi, 1990). Conscientious persons have the lowest likelihood of a history of family alcohol abuse, and tend not abuse alcohol themselves (Martin & Sher, 1994). Lower conscientiousness was part of the profile of workers with higher absenteeism from the job (Furnham & Bradwell, 2006). One of the characteristics of pathological gamblers was a low score on the Conscientious scale (Bagby et al., 2007). Highly conscientious individuals were more likely to wear seat belts, utilize alcohol-related harm reduction, exercise, get enough sleep, and consume fruits and vegetables (Raynor & Levine, 2009).

The research on the Five Factor Model (FFM) is robust and has been shown to be effective across cultures. The evidence is clear that conscientiousness extends broadly across multiple aspects of a person's life and affects choices and behaviors consistently. So, like the research by Brockett and Golden, the FFM would indicate *there is a connection between one's financial choices and the choices one makes in one's driving (and homeownership), and those choices are driven by the degree of conscientiousness one exercises in both realms*. In this way, if insurance credit scoring is indicative of the financial choices one makes, then we would expect the behavioral basis of those choices

to be reflected in one's driving and homeowner's behavior. If this is so, then our opinions of fairness may change to reflect that recognition of the connection.

The fact that insurance credit scoring does predict claim filing behavior, together with the research on behavioral patterns that are consistent and explanatory across different aspects of our lives, strongly suggest that such a connection exists between risky behavior in one area with risky behavior in another.

Auto accidents are caused by one or more of the drivers making an error in judgment – someone took an unnecessary and unwarranted risk. If they had it to do over again, likely they would choose a different course of action because *they can now see clearly the consequences of their choices*. They would slow down, proceed with more caution, be more attentive to what is going on around them, not consume alcohol, not text-message or eat while driving. They would make better driving adjustments to the conditions instead of treating all environments as if they were sunny afternoons with high visibility, a dry pavement and no other drivers on the road. They would exercise greater awareness of their situation and cautious decision-making in their driving. In short, they would be more conscientious in the driving behavior.

Is it possible to find predictors of those who would exercise more or less conscientiousness while driving? Underwriting is in part a search for and application of the findings of those predictors. As Brockett and Golden point out:

> Many underwriting variables are clearly related to the losses they are designed to predict (e.g., automated sprinkler system installation for insured fire loss, seat belt and security alarms for automobile insurance, employment activity for workers compensation insurance, etc.) and have been used for decades. Others (e.g., marital status, gender, and "good student" status in automobile insurance) are also of long standing; however, the relationship between the variable and the loss it is intended to predict is less readily apparent. *In fact, their usefulness as an underwriting variable stems from their being a proxy for stability and responsibility not from their direct link to automobile accidents.* (our emphasis). (Brockett & Golden, 2007).

The parallel case can be made with a person's financial credit choices. In retrospect, regardless of what the bank or realtor said, was it really wise for me to borrow 100% of the money for my house? How much of my monthly pay should go to my house – perhaps 50% is too much? Is it really smart to buy and charge all of these things on my credit card? How will I pay the bills if I unexpectedly get sick, injured, or fired? Are my savings sufficient to protect me in these situations? Do I need the latest of everything? I would not act as if I was on an economic highway that was sunny, with dry pavement, no curves and no others "drivers" out there. I would plan for and adjust my financial behavior based on knowing that there are very real risks out there: the economic highway has rain, curves, ups and downs and dangerous intersections. In short, now that I see the

consequences of my actions, I would do things differently. *I would exercise more conscientiousness and attentiveness to my finances.*

If we could pick out the people who do this who give more forethought, deliberate more reflectively on the choices given the financial risks they faced, then the expectation is that these same folks will also be more conscientious drivers and homeowners confronting the risks they face. Given the behavioral and statistical evidence, it is a plausible, though not an absolutely certain expectation. It would depend on a number of other factors, but certainly it is plausible to see this *as one of the factors to consider*.

3. Do the items used by the rating agencies and insurance companies identify financially responsible and financially risky behavior?

Now it is beyond the scope and expertise of the authors to know if the dozens of factors that are used in insurance credit based scoring by its various practitioners actually identify financially responsible and financially risky behavior. Some may and some may not. However, if those with this kind of expertise determine that these factors are able to pick out these financially cautious, risks aversive, conscientious people then we believe the case for the fairness of the practice increases, otherwise, not.

4. If the outcomes of the process do not produce results that mimic random distributions, then is that process *ipso facto* unfair?

Since the insurance credit based method does not use race or ethnicity as a factor, there can be no direct discrimination. But there is some evidence, inconclusive and mixed, that, although racial and ethnic minorities are found at all levels of insurance credit scores, they are "over represented" in the bottom scores, "over represented" being under defined. This taken by critics that this is, *de facto*, unfair. Borrowing a concept from employment law and practice, they claim it amounts to either adverse impact or adverse selection or both. Defenders of insurance credit based scoring counter by saying that clearly there is no overt discrimination and that it is improper to import employment-based concepts into the insurance area and that if turns out that it is proper then under the employment practices model, adverse impact/selection is allowable so long as there is a valid business reason.

Rather than address this question directly, we would like to explore why people may have different opinions about what is fair under such a situation as this.

Let's begin with the question: Does fairness mean that an equal percentage of each and every ethnic /economic group be represented in each category? That their representation in each category would be roughly the same as in the general population?

Suppose,

1. The Coodbeyoo represent 15% of the population of Welivehere.

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2. There are 10 rating categories – from the worse to best categories of insurance rates.

Does fairness require that roughly 15% of each category be composed of Coodbeyoos? Suppose there are 100,000 people in Welivehere. Most simply, 10,000 people would be found in each of the ten categories. Hence, do you expect that if the distribution were fair then roughly 1,500 Couldbeyoo would be in each category?

So that we think that fairness in the distribution of Coodbeyoos should approximate what we would produce if we randomly dropped marbles into a set of ten boxes. If we had 100,000 marbles of which 15,000 were blue marbles, we would about 1,500 blue marbles in each box. Fairness under this understanding is closely tied with a strong notion of numerically equal distributions.

What if Welivehere was an elite university and the Coodbeyoo were those students whose parents did not go to college. We rank student performance in 10 performance categories. Would we expect those students to be equally distributed in each one of the performance categories?

What if the evidence showed that Coodbeyoo were more likely to be in the bottom categories, although there were Coodbeyoo in all categories and the professors had no records indicating who the Coodbeyoo in their classes were. No one knows exactly why the Coodbeyoo are over represented (in comparison to a random selection distribution). Speculations abound on the reason behind the correlation.

Would this be an indication of an unfair grading system? Does this non-random distribution indicate some hidden bias against the Coodbeyoo? Have the Coodbeyoo been treated unfairly as a group? Should we change the grading system so that the distribution of Coodbeyoo more closely resembles the random distribution of blue marbles?

Let's say we did change the grading system and now we have a distribution of Coodbeyoo that more closely resembles the random distribution of blue marbles.

So now we ask you to vote choose between the two systems on the basis of what is more fair?

Which would you choose between the two? Do you choose the original grading system where Coodbeyoo were "over represented" in the bottom groups? Or do you choose the new grading system that distributes the Coodbeyoos more equally across the performance categories?

Does the fact that the new system produces a more random like result *make it appear to be more fair?* We think most people's intuition would be that it does and they would choose the second system.

But, suppose we understand that grades are meant to distinguish among students who perform well or poorly on a variety of academic tasks. Let's say the second system does that, but it does not do it as well as the first system: it looks at fewer tasks, aggregates the performance differently, etc. Then we might plausibly argue it less fair because those that performed the academic tasks better would not be properly measured and rewarded. In that case, people's intuitions may be that the first system was more fair.

But that may not hold true with everyone. Suppose it turns out that student grades have a big impact on who gets hired and what they are paid following graduation. *Then the effect of each system on the lives of the Coodbeyoo will be significantly different.* Under the first system, Coodbeyoo alumni, as a group, are not as likely to earn as much over their lifetime, as their non-Coodbeyoo classmates. Does our intuition on fairness still hold?

Could we hold that yes the first system does a better job of distinguishing academic performance but the second one a) still distinguishes academic performance and b) the difference between the two grading systems is not so large that we should allow it determine a person's life time earnings? We think many of us would hold, looking at the whole picture not just what happens the university, the second system would be more fair.

But this assumes that the effect on the non-Coodbeyoo is neutral. What if the change in the grading system negatively affects their postgraduate earning power? If we implement the second system then their earning potential drops by a significant percent because it does not accurately report their true abilities. Suddenly we might lurch back in the other direction.

The Coodbeyoo example reflects the situation with ICBS. Proponents believe the method is fair because *the process is the most accurate predictor of claims filing behavior* and the method, like the Coodbeyoo professors, does not have information on race or income levels. That they use a fair process allows them to call the results fair. Not only that, but we will not be able to benefit those with lower scores without increasing the rates of the others in the pool which would be unfair to them. So the process is fair and so is the outcome.

Some opponents believe that because the distribution of certain groups does not resemble a random dropping of blue marbles into multiple boxes *then ipso facto the system is unfair in its outcomes* as it relates to *the consequences* for low-income insureds.

These differences of the intuitions of fairness are difficult to reconcile and overcome.

We think all should agree that the process itself must be impartial and do what it says: it does not identify race, ethnicity or income and it does predict losses. If these are true, *then we have a fair process and that is important*.

But what about the outcomes? It is hard to imagine that we would not consider the effects of the process if for no other reason than to see if it can be improved. But in examining the outcomes, we cannot escape the fact that those with higher credit scores will pay more if we abandon their use. We also think we would be hard pressed to find any system where the distribution of the benefits and burdens of social cooperation end in a distribution pattern that mimics random selection.

Perhaps, we might ask, "Do we think of fairness as a yes/no matter – like an on/off switch or is fairness to be thought of as matter of degree – like a dimmer switch?" Upon reflection, we think most people would see it as a matter of degree. We do not expect any process to produce perfect results. *Rather, we are looking to see if this rating process generally and for the most part picks out those people whose behavior creates extra losses in the system for which they are, at least in part, responsible.* We can believe this and still believe that certain individuals are being unfairly burdened by the process because it takes no account of their personal situation.

Credit scores play "...an increasingly critical role in determining the financial fortunes of consumers:..." (Washington Post, 2009). Use of credit scores in making the determination of risk and subsequent pricing is often justified by the belief that low credit scores are a result of a series of bad decisions (Glater, 2009). While true, it is only one cause of low credit scores. Low credit scores can also be caused by death, divorce, incarceration, military deployments, major medical problems, etc. Some of these are not the fault of the individual, and could possibly be traced to insensitivity or even vindictiveness on the part of entities reporting to the credit agencies.

Can we find a way to address this? Let's return to case of youthful driver rating and the unfair way in which our exemplary youth is treated by being lumped in with his less than conscientious brethren. Insurance companies do find ways to make allowances for this through a variety of mechanisms: good student discounts (which signal more conscientious behavior in school and suggest more conscientious behavior behind the wheel), reduction in rates for extended periods of time without accidents or moving violations (again suggestive of more conscientious behavior), etc.

Could we not find a comparable mechanism in these cases – a few objective indicators that this person did not act in a less than conscientious fashion but was a victim of circumstance beyond his/her control? If such a method could be developed, then we might believe that the process was more fair.

We would also expect the careful and constant examination of the factors that are used in insurance credit based scoring by its various practitioners to ensure they actually identify financially responsible and financially risky behavior. This, too, would make the system more fair.

Research question #4: Do minorities receive a disproportionate share of "adverse action" letters from insurers?

With respect to the question whether minorities are disproportionately receiving adverse insurance actions based on their credit scores we asked in Question 26: Have you ever received a letter from your insurance company stating that your insurance rates had been raised due to your credit score? The results were:
Yes: 60
No: 1,135
Don't know: 45

The 60 who acknowledged receiving an adverse action notification constitute an insufficient sample size upon which to run a chi-square test to compare the results against the racial demographics. However, visual inspection of the survey numbers (57 white, 3 minorities) compares very closely with the expectations (56.3 white, 3.7 minorities) based upon the Iowa demographics showing the population to be 93.9% white.

We did find adverse actions disproportionate to their numbers in the 25 - 34 age group, and the $40,000 - $59,999 income group.

Question 27 asked: "Has your insurance agent ever shared with you how your credit score affects your auto and homeowners' insurance rates?
The results of this inquiry are:

Yes: 82
No: 1,097
Don't know: 61

It should also be pointed out that of the 60 adverse actions noted above, 19 (32%) acknowledged that their insurance professional had shared with them the effects of credit scores on insurance pricing. 39 (65%) stated that they were unaware, and 2 (3%) acknowledged that they did not know whether their agent had shared this information with them. Based on the results of another study, 71% of insurance professionals stated that they share this information with their clients (O'Leary et al., 2009). Across the entire database, only 7% of recipients of adverse actions acknowledged that they had been so notified. This may be a case of selective memory, or the agents believe that perhaps including such information in the fine print constitutes notification. Nothing more can be inferred.[5]

Credit scores play "...an increasingly critical role in determining the financial fortunes of consumers:..." (Washington Post, 2009). Use of credit scores in making the determination of risk and subsequent pricing is often justified by the belief that low credit

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[5] There is litigation concerning insurance companies' handling of adverse actions (Total Lawyers, n. d.).

scores are a result of a series of bad decisions (Glater, 2009). While true, it is only one cause of low credit scores. Low credit scores can also be caused by death, divorce, incarceration, military deployments, major medical problems, etc. Some of these are not the fault of the individual, and could possibly be traced to insensitivity or even vindictiveness on the part of entities reporting to the credit agencies.

Conclusions and Recommendations

As the Iowa Insurance Commissioner's Office and elected representatives consider how to respond to the controversies surrounding the use of insurance credit scoring, we believe they will find it valuable to understand the various opinions Iowans hold. Most Iowans believe that the use of credit scores to set rates is unfair. These opinions seem to be based on widely-held, but incorrect, perceptions that credit scores are not predictive of risky behavior that might lead to a tendency to file claims. There does not appear to be a factual basis for these opinions. For this perception to be true, the following conditions would have to be true:

1. Insurance Credit Based Scoring does not accurately predict personal lines losses.
2. The choices a person makes in managing their financial risk are not plausibly connected with the choices they make managing the risks associated with driving and owning a home.
3. The items used by the rating agencies and insurance companies do not identify financially responsible and financially risky behavior.
4. If the outcomes of the process do not produce results that mimic random distributions then the process is *ipso facto* unfair.

Our examination shows that Item 1 is clearly and demonstrably false. For Item 2, we saw there is plausible behavioral theory and research to connect risk behaviors and management across multiple dimensions of a person life. For Item 3, experts in managing financial risk generally agree these are relevant factors. Item 4, is highly debatable. If any of these conditions changed then we would have to re-examine our conclusion but given what we believe to be the case today, the belief that this is unfair lacks the necessary justification for the claim.

We suggest that the best way to look at the fairness question is not to see the practice as fair or unfair but to look at as more or less fair. For something to be thought of as fair it is not necessary that there be no examples of unfairness. Rather that the process is impartial and produces largely and for the most part fair individual outcomes. Where it does not, then there should exist some mechanism to address the imperfection in the process. We also believe that legislators and policy makers should make a careful evaluation of these opinions, especially as they relate to fairness. It will be necessary to examine critically the issues at stake before pursuing any ban on the use of credit scores to set insurance rates.

Consumers are seriously uninformed about insurance fundamentals. Iowa consumers do not have a clear notion of what it means to spread the risk. Although individuals are surcharged based on what they individually have done, the base premium is built around large group characteristics. If the large groups are reduced to smaller groups of individuals based on increasingly isolated variables, then the base premium of insurance will become unaffordable to those who need it the most. A policy recommendation to the legislature might include a block of instruction at the high school level on both insurance and the wide-ranging effects of credit scores. This need not be a semester length course, but should be included with training for other adult skills like maintaining a checkbook and the use of credit cards, etc.

There is no evidence within this study to suggest that the minority population of Iowa is disproportionately subjected to adverse actions based on the use of credit scores.

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Authors Profile

Randy Richards is a second career academic who spent almost 20 years in management before turning to teaching fulltime. He is currently the Chairperson of Managerial Studies at St. Ambrose University where he teaches at both the Bachelor and Master levels. Dr. Richards is also a Visiting Professor at the International Business School in Vilnius Lithuania and at the Zagreb School of Economics and Management in Zagreb Croatia. His current areas of interest in both teaching and research include leadership, conflict management, organizational and social ethics, small group dynamics and human resource management. In 1988, Randy and Gary Soldat founded the original AAA Insurance Continuing Education program that later became St. Ambrose Insurance Continuing Education which today is one of the largest providers of insurance continuing education in Iowa. Randy has taught insurance continuing education in Iowa and Nebraska since 1988 specializing in ethical behavior and practices. He has had almost 8,000 licensed agents attend his sessions. He earned his Bachelor's degree at St. Ambrose, his Master Degree at Georgetown University and his Ph.D. at Iowa. All of his degrees are in Philosophy.

Thomas J. Quinlan, Jr. has retired as an Associate Professor of Finance, Economics, and Decision Sciences in the College of Business at Saint Ambrose University. He taught statistics and operations management at both graduate and undergraduate levels. In a prior career, Dr. Quinlan developed the industrial modernization plan for Rock Island Arsenal. He investigated unexplored areas of manufacturing technology and determined independently the technical action necessary to accomplish objectives, facets of which extended beyond available precedents and guidelines. Dr. Quinlan is currently involved in assessing the efficacy of continuing education for insurance professionals. He received his Bachelor of Science degree from Drexel University, and he holds M.B.A. and D.B.A degrees from St. Ambrose University. He joined the St. Ambrose University faculty in 1989 after a career in the United States Army.

Patrick O'Leary teaches management and international business at St. Ambrose University. Born and raised in Ireland, he received his graduate degrees from the Universities of Washington and Iowa. He has taught management in diverse regions of the world, spending several years in Japan and Dubai, and has been a visiting professor at colleges in Russia and Croatia. His research interests are in cross-cultural management as well as service efficiency and effectiveness. Presently he is investigating the efficacy of continuing education for insurance professionals as well as the rationale for different approaches to the valuation of illiquid assets. He has been published in the International Journal of Health Care Quality Assurance, Ivey Publishing, the American Journal of Distance Education, and others.

Appendix

Descriptive results for the individual questions follow:

Question 1: Do you have auto insurance?

Yes: 1,152
No: 88

Question 2: Do you have homeowners insurance?

Yes: 985
No: 255

Question 3: Do you know your credit score?

Yes: 501
No: 739

Question 4: To your knowledge, which of the following does a credit score MAINLY indicate?   RANK TOP THREE

Summary	
Knowledge of consumer credit	1,026
Attitude toward consumer credit	710
Amount of consumer debt	1,969
Risk of not repaying a loan	1,980
Financial resources to pay back loans	1,515
Don't know	347

These are weighted scores. First choice is multiplied by 3; second choice is multiplied by 2; and third choice is counted. The intention of the weighting is to give credibility to the respondents' choices relative to importance.

Question 5: Which of the following best describes insurance companies' use of credit score?   Select ONE only

Summary	
Predicts the likelihood of risky behavior	459
Predicts the likelihood that a person will not be able to pay for insurance	360
Predicts the likelihood that a person will file an auto or homeowners' insurance claim	108
Predicts the likelihood that a person will file false auto or homeowners' insurance claims	65
Don't know	248

To ascertain whether male and female respondents answered this question similarly, a chi-square goodness-of-fit test was conducted. The test shows that males and females had significantly different answers (p-value = 0.0006). The major difference is that male respondents, disproportionately to female respondents, believed that insurance companies use credit scores to predict the likelihood that a person will file an auto or homeowners' insurance claim. The other, less significant, difference was that a disproportionately higher number of female respondents suggested that they did not know which of the choices best described an insurance company's use of credit scores.

Question 6: Do you think your personal credit score should affect your ability to buy auto insurance?

Yes: 237
No: 906
Don't know: 97
Margin of error = ± 2.2%

Question 7: Do you think your personal credit score should affect the rates you pay for auto insurance?

Yes: 291
No: 878
Don't know: 71
Margin of error = ± 2.4%

Question 8: Do you think your personal credit score should affect your ability to buy homeowner's insurance?

Yes: 208
No: 966
Don't know: 66
Margin of error = ± 2.1%

Question 9: Do you think your personal credit score should affect the rates you pay for homeowner's insurance?

Yes: 285
No: 880
Don't know: 75
Margin of error = ± 2.3%

Question 10: A person's credit score is a good predictor of how likely they are to file an auto or homeowners' insurance claim.

Agree: 174
Disagree: 686
Neutral: 380
Margin of error = ± 1.9%

See also question #5. 108 of 1240 suggested this as a potential use by insurance companies.

Question 11: A person's auto insurance premium IS based primarily on their: RANK TOP THREE by selecting 1, 2 and 3 next to them

Summary	
Age	2,508
Gender	1,133
History of auto accidents and/or moving violations	2,756
Credit score	594
Number of miles driven annually	991
Other	251

Question 12: Insurance companies should be allowed to use all publicly available data to determine an individual's insurance risk and premium

Agree: 421
Disagree: 444
Neutral: 375
Margin of error = ± 2.6%

Question 13: People with a higher likelihood of filing insurance claims should pay higher premiums

Agree: 568
Disagree: 296
Neutral: 376
Margin of error $= \pm\, 2.7\%$

Question 14: A person's auto insurance premium SHOULD BE based primarily on their: RANK TOP THREE by selecting 1, 2 and 3 next to them

Summary	
Age	2,051
Gender	625
History of auto accidents and/or moving violations	3,130
Credit score	390
Number of miles driven annually	1,427
Other	327

Question 14, along with question 11, represent a perception/expectation pair, and there are visibly different responses between perceptions (IS) and expectations (SHOULD BE). Analysis of variance techniques showed that the differences are not statistically significant. History of accidents is perceived to be primary in both.

Question 15: Have you ever obtained a copy of your credit report (in addition to or separate from your credit score)?

Yes: 730
No: 464
Don't know: 46

A similar question "Have you ever viewed your credit report?" was asked in a GAO survey (Government Accountability Office, 2005). 58% responded that they had.[6]

Question 16: It is fair practice to charge law-abiding and low-risk individuals higher insurance rates simply because they are part of a group that engages in risky behavior (for example, teenage drivers)?

Agree: 367
Disagree: 570
Neutral: 303
Margin of error $= \pm\, 2.5\%$

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[6] It should be noted that credit reports can be obtained free annually from http://www.annualcreditreport.com

A chi-square contingency table test for this question compared the *Agree/Disagree/Neutral* responses against age groups and found that the age group most adversely affected by this practice (18 – 24) was the only one that had a plurality agreement. It is possible that this result could be attributed to youthful idealism or naïveté. (P-value = 0.0003, a very definitive result).

Question 17: People with poor credit scores should pay higher auto insurance rates

Agree: 144
Disagree: 802
Neutral: 294
Margin of error = $\pm$ 1.8%

Question 18: Have you ever had an auto accident for which you did not file a claim?

Yes: 549
No: 691

Question 19: If yes to above question 18, did you

Summary	
Go without repairs?	141
Pay the expenses out-of-pocket?	249
Allow other party to pay?	104

Question 20: If you had an auto accident for which you did not file a claim, approximately how much did the repairs cost?

Based on the frequency distribution, the median is $401.34. In many cases, the amounts reported as repairs were less than the deductibles. This explains the reason for non-reporting. Because of an open-ended class, neither the standard deviation nor the mean can be estimated.

Question 21: If you had an auto accident for which you did not file a claim -- why did you not report it?

The most common reasons given involved minimal damage and amounts less than deductible (223), fear of premium increases (82), and several reasons with frequencies of fewer than 15 each. These included uninsured, insufficient coverage, the "hassle" of filing claims, and damage that exceeded the value of the vehicle.

Question 22: Have you ever had damage to your home for which you did not file a claim?

Yes: 291
No: 949

Question 23: If yes to above question 22, did you

Summary	
Go without repairs?	57
Pay the expenses out-of-pocket?	57
Allow other party to pay?	0

Question 24: If you had damage to your home for which you did not file a claim, approximately how much did the repairs cost?

Based on the frequency distribution, the median is $614.55. The amounts reported as repairs were frequently less than the deductibles. This explains the reason for non-reporting. Because of an open-ended class, neither the standard deviation nor the mean can be estimated.

Question 25: If you had damage to your home for which you did not file a claim -- why did you not report it?

The most common reasons given involved minimal damage and amounts less than deductible (152), fear of premium increases (74), insufficient coverage (20), and several reasons with frequencies of fewer than 10 each. These included uninsured, the "hassle" of filing claims, damage that exceeded the value of the property, and ignorance of policy provisions.

Question 26: Have you ever received a letter from your insurance company stating that your insurance rates had been raised due to your credit score?

Yes: 60
No: 1,135
Don't know: 45

Question 27: Has your insurance agent ever shared with you how your credit score affects your auto and homeowners' insurance rates?

Yes: 82
No: 1,097
Don't know: 61

Question 28: People with poor credit scores should pay higher homeowner insurance rates

Agree: 133
Disagree: 779
Neutral: 328
Margin of error = ± 1.7%

Question 29: If some factor in your background indicates that you are more likely to file an insurance claim than other people, then it is FAIR that you pay a higher rate for the same insurance product.

Agree: 361
Disagree: 499
Neutral: 380
Margin of error = ± 2.5%

Question 30: Is your age between

18-24: 98
25-34: 161
35-44: 189
45-54: 310
55-65: 321
Over 65: 161

Question 31: Are you

Male: 474
Female: 766

Question 32: Education level

Some High School: 12
High School diploma: 365
Associates degree: 220
Bachelor's degree: 249
Masters: 155
Doctorate: 103
Other, please specify: 136

Question 33: Marital status

Currently married: 679

Formerly married: 379
Never married: 182

Question 34: Number of dependents

Mean = 1.407
Standard deviation = 0.036

Question 35: How would you describe yourself?

Caucasian (White): 1,152
African-American (Black): 46
Hispanic/Latino: 12
Native American (Indian): 7
Asian: 4
Other: 19

Question 36: Employment

Full-time worker: 597
Part-time worker: 141
Student: 43
Homemaker: 95
Retired: 242
Unemployed: 75
Other: 47

Question 37: Job title, if applicable

Not used.

Question 38: Residential ZIP code

Metropolitan area: 802
Non-metropolitan area: 439

Question 39: Household income last year - includes salaries, pensions, social security and other money received.

Less than $20,000: 195
$20,000 - 39,900: 288
$40,000 - 59,900: 296
$60,000 - 79,900: 203
$80,000 or more: 258