Quick Start Guide
Case Study: CEO at 22 Years Old

Topic: insurance

by Richard Jolley

Homeowner: "Why'd you cut all the trees down in your yard?"

Visiting Friend: "No risk of falling trees."

Homeowner: "But you can't live your life worried about falling trees."

Visiting Friend: "I'm not, but my insurance company is."

Introduction

Insurance is based on mitigating risk. By pooling the risk of many individuals, the risk of catastrophic loss to an insurance company is manageable barring a natural disaster or other historic event. Of course, many insurance companies also have insurance with other insurance companies in the event an anomaly does occur. (Yes, insurance for insurance.) Today, insurance exists for just about everything—homes, cars, jewelry,

health, pets, workers, weather, NCAA tournament brackets, and even someone's physical attributes. (Before starting his junior year of college football, future Hall of Fame quarterback Peyton Manning insured himself with Lloyd's of London for $5 million in case of a career-ending injury. Manning was already a projected top draft pick and guaranteed a multimillion-dollar contract upon graduation).

From the point of view of an insurance company, the challenge is to accurately predict how risky or safe a person is. From the point of view of the insured, the challenge is to appear less risky. Similar to a company hiring a new employee, the applicant possesses information or knowledge the hiring company does not. For example, the company does not *really* know how hard-working the applicant is or how much the applicant values the culture of the company. Even if the applicant tried to share the information, how would the hiring company know the applicant was telling the truth? It could not. A similar dilemma exists between an insurance company and the insured.

An insurance company uses certain information to predict a person's level of risk (e.g., zip code, previous incidents), just as the person can make certain decisions (e.g., driving slowly, being married) to signal their level of riskiness to the insurance company.

However, the emergence of new technologies (e.g., watches that track physical activity and calories consumed, cars that track driving characteristics, gene tests that predict the probability of certain diseases) is starting to blur the line about the types of information insurance companies can and should use. Even if sharing this type of information is an individual's choice (e.g., installing a device in your car to allow the insurance company to track your every move), it is likely only the safest drivers would agree. Thus, the choice not to volunteer might identify a driver who is more risky. This case is about making complex choices and providing students the opportunity to look at themselves in a different way—not simply as purchasers of insurance, but as a bundle of characteristics and qualities companies assess for both risk and value. Realizing they can make decisions affecting their bundle of characteristics, students may more uniquely understand the importance of their decisions. Additionally, this case provides the opportunity to dialogue about what is and is not private information—and what rights companies have to access information that arguably provides the fairest[1] way to assess a person's riskiness.

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[1] In many ways, the pricing of insurance (by the company) and the utilization of insurance (by the insured) is a competitive game in which each party attempts to extract the most value from the relationship. (Even if no claims are submitted, peace of mind has considerable value.) Thus, "fair" in this context refers to transparency of information. For example, why shouldn't someone who proves they drive safely be charged less? What about someone less likely to get sick and/or who exercises routinely?

Dilemma

As InsureRight CEO, students must decide how they will determine a customer's level of risk. If they are able to accurately assess risk, the company can remain profitable while also providing a service to the community. Students must also decide what information is "fair" to use in calculating risk.

- What insurance premiums should InsureRight charge to drivers #1, #3, and #5, *using only the information from the chart*?

- What insurance premiums should InsureRight charge to drivers #1, #3, and #5, using information from the chart *and* from the "Additional Background" section? Did the premiums change? Why or why not?

- Construct a model detailing how much you would charge customers. The model may include *any* characteristic (e.g., prior incidents, zip code, average driving speed, miles of commute, favorite radio stations, number of hours slept per night, etc.) you feel is appropriate.
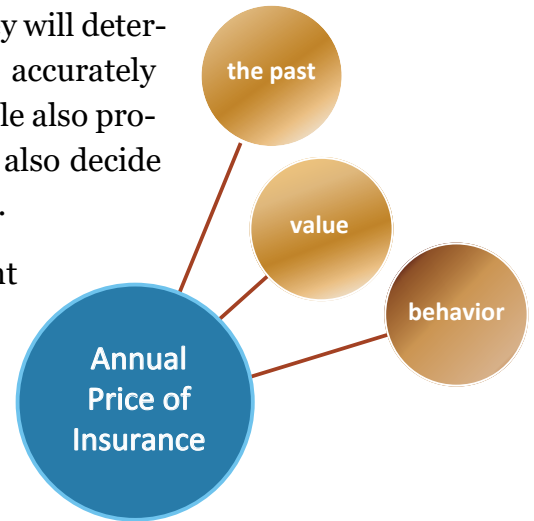
What Students Will Learn

This case introduces students to the complex topic of insurance and how making decisions often involves drawing on multiple sources of information. Additionally, it provides students with the opportunity to discuss issues of personal privacy resulting from advancing technology and the choices confronting businesses with access to increasingly more information about customers.

Problem-Solving Skills

- To conceptualize how insurance companies attempt to evaluate risk and charge customers for coverage

- To identify the different characteristics insurance companies may use to evaluate an individual's level of risk

- To evaluate the costs and benefits of using personal information, which may or may not be provided knowingly

Related Financial Literacy Concepts

Adverse selection: The behavioral outcome where those who need insurance most are most likely to obtain it. For example, someone who gets sick often may be likely to seek out insurance, whereas someone who is healthy may not. Consequently, an insurance company does not draw its customers from the full population, but from a population self-identified as being high risk, which causes the insurance company to charge more to this higher risk population. However, not all of those seeking insurance will be high risk and they may be unfairly charged. The risk that adverse selection will make health insurance unaffordable for those who most need it is the rationale behind the Affordable Care Act, which mandates that everyone purchase health insurance. An insurance company can also use adverse selection to its benefit. For example, a driver who elects to have a tracking computer put in their car will likely be a safe driver, whereas those electing not to may be seen as inherently more risky—information the insurance company can use to charge more.

Moral hazard: People continuously evaluate the consequences of their actions. If consequences are somehow mitigated for certain actions, people may be more likely to take those actions. For example, if someone has great car insurance with a $0 deductible with premiums that can't go up, they may drive less safety. However, someone with no insurance, or insurance with a very high deductible, may be very cautious to avoid risky behavior for fear of facing additional costs. Thus, the very presence of insurance may cause individuals to act with less caution (though fear of increased premiums intentionally acts to counterbalance this type of behavior).

Risk: An evaluation of a person or institution's propensity to engage in activities that may have unfavorable outcomes and the willingness to accept those unfavorable outcomes. In this case study, risk is the likelihood an individual makes an insurance claim for repairs to their car *and* the potential size ($) of the claim. Note: Risk is often viewed quite differently by those engaged in the risky behavior vs. those evaluating the perceived risky behavior. For example, an experienced skydiver would evaluate the riskiness of skydiving very differently from someone afraid of flying.

In the Classroom . . .

1 HOMEWORK

Assign this case study for homework. Ask students to put themselves in the role of CEO and begin thinking about what they might do. To initiate this process, have students complete "Task: Part I," which involves completing the chart included in the case (and provided as reference below).

ID#	AGE	GENDER	ADDITIONAL INFO	YEARS AS CUSTOMER	CLAIMS*	CAR INFO AND VALUE	ANNUAL PRICE OF INSURANCE
1	18	Female	High school vale-dictorian; about to head to college	2	0	Sedan; $20,000	$ _____
2	45	Male	Father of 3; plant manager for 20 years	14	4	Minivan; $30,000	$1,500
3	33	Male	Local factory worker	5	0	Compact; $5,000	$ _____
4	75	Female	Retired and married	20	2	Luxury sedan; $100,000	$1,000
5	23	Male	Recent college graduate; working full time for bank	1 month	0	Coupe; $40,000	$ _____
6	40	Female	Superior court judge	10	3	Convertible; $50,000	$ 2,500

*The claims column details the number of times the insured (the customer) lets the insurance company know they've had some type of accident or damage to the car. The insurance company may then pay to fix the damage. Noteworthy is that some types of damages are covered whereas others are not.

2 AS A WHOLE CLASS

Agree on a detailed understanding of the facts. As an entire class, first ask students to recap what they consider to be the key facts of the case so everyone has a shared understanding. Clarify definitions as necessary for understanding the case, in particular *deductible* and *premium*.

What do you notice? Encourage students to raise important questions, but steer them away from jumping to solutions before they have had a chance to fully examine all of the issues at hand. Attempt to draw out the major factors that should be considered when estimating insurance premiums for their customers.

3 GROUP ACTIVITY

Break students into groups of about 4–6 based on grouping strategies you normally use. Orally or on the board, give them directions to do the following as a group:

- First, have students discuss what insurance prices they estimated as part of their homework and provide a rationale for why.

- Second, have students complete "Task: Part II" and discuss what they would charge customers given the information provided in the "Additional Background" section of the case. Emphasize that coming to conclusions about what to charge is less important than determining how they would weigh certain criteria in arriving at those prices.

4 PAIRED RESEARCH

Once students have discussed in small groups, have them break into pairs to complete "Task: Part III," which involves developing a method or instrument to estimate insurance prices for their customers. Use the organizer on the next page if students are having difficulty getting started.

The organizer is not a formula for pricing, but a way to think about the factors that influence pricing. Students might determine pricing based on how many years away the customer is from ideal and charge a specific amount for each year outside of the ideal value. Alternately, students might start with a base price given the value of the car and then use proximity to the ideal value to provide customers with discounts from the base charge. There is no one right way.

If the organizer is utilized, emphasize the provided values are only examples and the correct answers will be up to the students—as the CEO. Encourage students to consider the full spectrum of potential characteristics as discussed previously in small groups. For each of the factors listed, pairs should have a clear rationale for their inclusion and weight. Alternately, did the pairs choose to leave off certain factors? Why?

Finally, have all pairs document their final model on a large piece of paper or poster board, which they'll then hang for others to see. During the last 5 minutes of paired research have students walk around to see how other students determined insurance pricing for their customers.

Example of completed organizer:

Potential Factors	Customer Information	Ideal Value	Difference	Importance of Factor
Age		40–55		0.15
Value of car				0.30
# of prior incidents		0		
Avg. cost of incidents				0.20
Years since last incident		> 10		
Years as a customer		> 10		0.05
[other]				
[other]				
[other]				
				= 1.0

5 CLASS DISCUSSION

Once all students have had an opportunity to see the models of all the other pairs, gather feedback and comments about the different solutions. Would they change their own? Did they really like another group's model? Why or why not? Was anything surprising?

6 CLOSURE

Have students consider any moral and/or legal concerns with the selected factors. Are some factors unfair to consider? Why or why not? If appropriate, bridge this conversation to other forms of insurance, such as medical or home. Ask student if they were a CEO, what factors would they want to measure to charge their customers appropriately? What if instead the students were the customer and someone was attempting to charge them based on some of those factors? How would they feel? What would they do as CEO then?
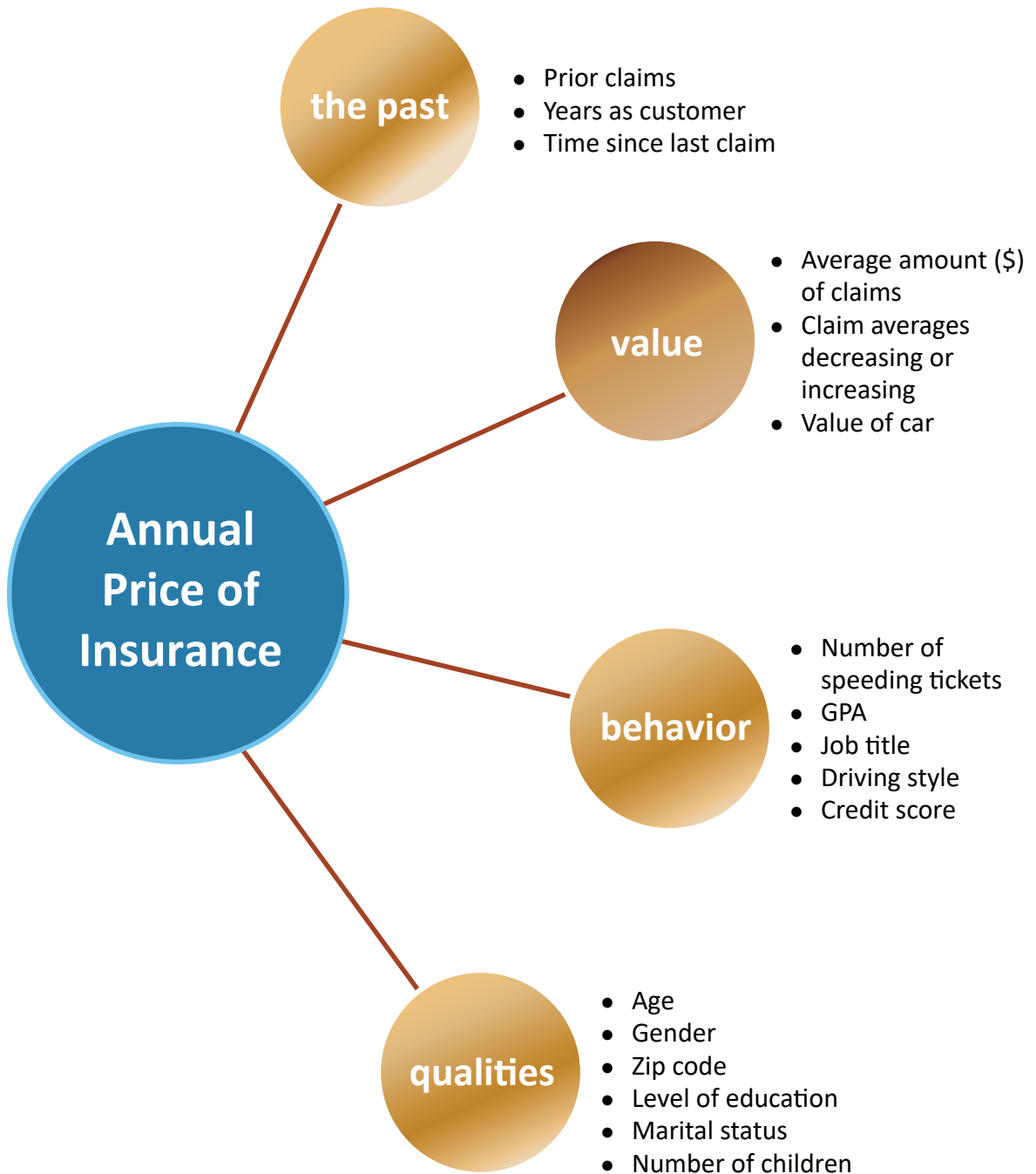
COMPLICATING FACTOR

At the teacher's discretion or if some students appear ahead of others, ask students if more than one model might be appropriate. For example, what if someone's health condition changes? What if someone retires and thus doesn't have to commute 20 miles to work each day? Should there be different models for those who use their cars for work vs. those who don't? Also, feel free to provide prompts for other potential factors such as grades in school, number of cars owned, number of drivers who use the car being insured, or if drivers had completed a safe driving course.

Extension

What if it was legal to consider any factor—or what if any factor could be measured (e.g., propensity to get angry or have a heart attack, stressfulness of job, appropriate signaling while changing lanes, etc.)? How would the model look then? Would some of the factors be less relevant in light of the additional information? Have students develop an ideal model for charging for auto insurance and/or a model for home insurance.

Completed Dilemma Map

the past
- Prior claims
- Years as customer
- Time since last claim

value
- Average amount ($) of claims
- Claim averages decreasing or increasing
- Value of car

Annual Price of Insurance

behavior
- Number of speeding tickets
- GPA
- Job title
- Driving style
- Credit score

qualities
- Age
- Gender
- Zip code
- Level of education
- Marital status
- Number of children

Car Insurance Basics

by Richard Jolley

Insurance Pricing Matrix

ID#	AGE	GENDER	ADDITIONAL INFO	YEARS AS CUSTOMER	CLAIMS[*]	CAR INFO AND VALUE	ANNUAL PRICE OF INSURANCE
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Organizer

Potential Factors	Customer Information	Ideal Value	Difference	Importance of Factor
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Avg. cost of incidents				0.20
Years since last incident		> 10		
Years as a customer		> 10		0.05
				= 1.0