

Time for Another Look at Personal Lines Territories

IF YOU WANT TO RILE THE PERSONAL LINES INSURANCE INDUSTRY, just threaten to take away territories for rating private-passenger automobile and/or homeowners insurance. Since the fate of these territories is currently at issue in California, the insurance industry has acted quickly and decisively to defend the use of territorial rating. Industry representatives there are stressing the importance of geographical differences as a rating variable and how critical this is for maintaining marketplace stability and availability.

While territories are fiercely defended as an important tool for rate making, we're amazed by the apparent lack of attention many companies give to the territory boundaries themselves, and to the potential for rating errors in the assignment of territories.

But it doesn't have to be this way. By updating territory design through geo-coding capabilities, use of multivariate analysis, and re-evaluating the use of coverages and perils, insurance companies can better match geography to insurance risk.

Taking a Closer Look

Since territories are such a fundamental consideration in developing rates, their accuracy is often taken for granted. Territories, however, are not always what they seem.

Upon closer examination, we've found territories themselves are often based on factors—such as zip codes and streets or highways—that were never designed to segment insurance risks. Many still contain simple city and county definitions or use rivers or other geographic boundaries.

In other words, they're frequently based on large geographic areas, and don't take advantage of more refined building blocks available today. Current territorial definitions inadequately segment risks, and for many companies, existing territories are seriously out-of-date.

In addition, the accuracy with which individual risks are assigned to territories may not be as high as companies would like to believe. Consider Figure 1, which shows a Cincinnati mailing address for a location that is actually outside the city proper. Because the insurer relied on the postal address, the risk is rated in the wrong territory, and the insurer's statistics are distorted.

Zip codes are another common way insurance companies define territories. Never designed for insurance rating territories, zip codes have been historically used by insurers for many reasons: They're convenient, perceived to be a better basis than larger geographic designations,

and well-understood by the public.

Zip codes might be effective for efficient mail delivery, but when it comes to insurance rating, zip codes leave a lot to be desired. Zip codes often transcend county and/or city boundaries. For example, zip code 80123 covers parts of three Colorado counties (Figure 2). In other cases, a zip code may contain a number of cities inside its boundary (Figure 3).

Also, since zip codes were designed for the sole purpose of delivering mail, the U.S. Postal Service routinely changes, reassigns, and eliminates zip codes. Hundreds of five-digit zip codes change every year. Remarkably, more than 20 percent of nine-digit zip codes can change annually.

In theory, companies that use zip codes in their definitions should probably file revisions to their territorial definitions every time a zip code boundary changes. Consider, however, that there's no reliable way to measure historical changes because of the inconsistent manner in which zip codes are maintained.

Territorial boundaries, too, can be subject to other potential issues. Anecdotal evidence suggests that at least some territorial changes instituted by individual companies were made to accommodate an agent with a large volume of business. Worse still, boundaries have been changed to follow the lead of a competitor who may have made the initial change to satisfy a major agent!

But even newer territories that are based on county, zip code, and street-demarcated boundaries frequently create territories that are too broad. As a result, finer breakdowns that should affect pricing decisions aren't captured.

Even when territories have turned out to be reliable, there are many possible ways for a policy to get the wrong territory assignment. For example, agents can misclassify or put customers into territories that result in better rates, while underwriters and customers can simply make mistakes.

HOWARD BOTTS is an executive vice president for Proxix Solutions, Inc. in Palm Harbor, Fla. **JEFFREY L. KUCERA** is senior consultant with Pinnacle Actuarial Resources in Mundelein, Ill.

The error rate for a company's territory classifications can be as high as 40 percent, according to studies done in the past year by Proxix Solutions, Inc. One obvious consequence is improper premiums—not to mention the compliance issues that arise from assigning a risk to the wrong territory.

Keeping Up With the Times

Finally, many territories can also be woefully out-of-date. A senior industry representative once told us, as he was preparing to testify before the New York State Senate about "redlining" for private passenger auto territories, that his biggest concern wasn't redlining per se, but defending the overall territorial accuracy. Why? Because substantial changes hadn't been made to his company's territorial definitions in more than 70 years. Certainly, a state like New York has seen significant demographic changes over the years that would warrant changes to its territory definitions.

If this company hasn't looked at a major state such as New York, what about other less-populated states? If another company copied these definitions, how could it be sure its territorial definitions were current and accurate?

Improving Territorial Definitions

The good news is, insurance companies don't have to be victims of antiquated approaches to defining territories.

Because many private-passenger auto and homeowner insurance companies have not consistently updated their territory definitions, those that do will secure a significant competitive advantage. Redefined territories allow insurers to competitively price those areas that produce the lowest loss costs, after all other factors are considered, and attract more of these risks.

Similarly, in areas with the highest costs, insurers can increase their rates to realize their desired underwriting profit, or drive those risks to their competitors who may be underpriced in these areas.

While we believe redefining territories can be a decisive way to boost market share, we recognize that it has to be done



carefully. There are three major considerations a company should make before it redefines territories:

- Decide on the building block to be used in the clustering routine that will define the new territories;
- Ensure that territorial definitions appropriately identify the interactions among

other rating variables using the latest actuarial technology and techniques;

- Reconsider how to determine risk by coverage and perils.

Building Better Territories

Better territories begin with better building blocks. We believe block groups,

R²

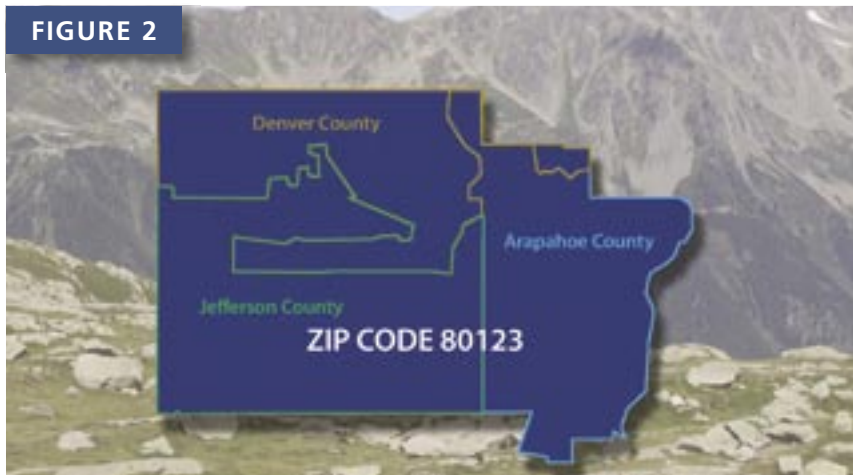
The Reinsurance Resolution

A life & disability income reinsurance administration system

Parlez-vous français?

Reports can be produced in several languages and use multiple currencies.

8989 North Port Washington Road • Suite 227
Milwaukee, WI 53217-1662
(414) 228-8622
www.qsi-r2.com

FIGURE 2**FIGURE 3**

which can be gotten from the U.S. Census, are the best territorial building blocks because they provide smaller and more consistent geographic units.

A block group (BG) is a cluster of census blocks that share the same first digit of a four-digit identifying number within the census tract. For example, block group 3 (BG 3) within a census tract includes all blocks numbered from 3000 to 3999.

Block groups are the smallest unit for which the U.S. Census releases detailed demographic information. Most BGs are delineated by local participants as part of the U.S. Census process and contain 600 to 2,000 people, with an optimum size of 1,500. Consequently, these block groups are much more likely to contain a homogeneous group than a larger area such as a zip code, township, or county.

The hierarchical presentation of the BG, called the “standard census geographic hierarchy,” is as follows: census block, block group, census tract, county subdivision, county, state, division, region, and finally the nation. Graphically,

this is shown in Figure 4 as:

Each state, county, census tract, and block group is numbered and identified for each geographic location. These IDs are referred to as Federal Information Processing Standards (FIPS) Codes. Data is accumulated and other boundaries are derived from these standards.

The U.S. Census may split the census tract or block group from decade to decade, but its historical makeup will be preserved because the split block group will always add up to its previous definition. Therefore, historical changes can be measured because of consistent geographical makeup.

A company can create more accurate personal lines territories by using loss experience based on block group as the underlying building block. BGs can be aggregated to form a new territory that meets an expected threshold for statistical or credibility standards.

Apply Latest Technology

To get the most out of better-designed and

updated territories, it's vital to appropriately identify the interactions among territories and other rating variables using the latest actuarial technology and techniques. Insurers have historically used procedures for defining territories that don't typically take into consideration the relationships between territory and other rating variables. These procedures include one-way loss ratio or pure premium analyses, and definitions based on territory surveys.

There are many differences in the makeup of rating territories. For example, not every territory for private passenger auto will have the same percentage of vehicle types, young drivers, or drivers with accidents and violations. And there are many correlations among elements in the rating plan and territories. For homeowners insurance, there are correlations among territories and amount of insurance and protection class that often are not taken into account.

So, when defining territories and calculating the subsequent relativities, it's important to consider these interrelationships. The use of multivariate techniques such as Generalized Linear Modeling (GLM) ensures that your territorial definitions and relativities account for only that portion of the risk that's not already being accounted for elsewhere in the rating plan.

The multivariate analyses are critical to optimal territory definitions and relativities. Within the framework of GLM, one should consider using spatial smoothing, clustering, and demographic characteristics to help define territories.

Rethinking Coverages and Perils

When establishing new territories and applying multivariate techniques, it's no longer necessary to combine all coverages or major perils to determine rates. When rates were calculated manually and agents needed to carry manuals around with them, rating plan simplicity necessitated a combined approach. However, with computers now available to everyone, we no longer need to apply the antiquated rules of 20 or 30 years ago.

For example, you may consider using

the same territories for private-passenger auto property damage and collision coverages, since typically losses under these coverages are all related to the same event—a car accident and the cost of auto repairs.

However, using the same territory definition for bodily injury, comprehensive, or uninsured motorists coverage might not be the best approach. Additional considerations—including medical costs, theft rates, and the uninsured motorist population—will have major impacts on rates for these coverages.

We believe much better territories would be created if coverages were considered separately. Homeowners insurance doesn't have individual coverages per se, however; for this line we suggest looking separately at the major perils, such as fire, wind, and theft. This might require looking at individual perils separately for rating. But again, major improvements in accurate rating of the product could be realized.

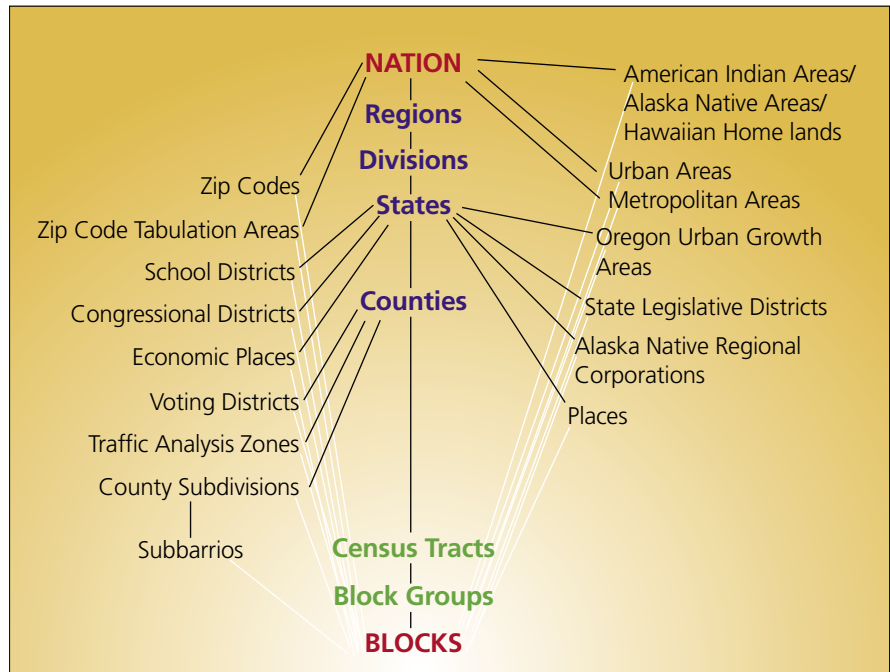
Summary

Although Texas or California might sometimes threatens to eliminate or reduce the use of insurance territories, this factor remains one of the most important rating elements in use today for personal lines insurance. In hearings for California Proposition 103 a few years ago, a California Actuarial Advisory Committee study found that territories explained 49.7 percent of the risk for bodily injury coverage.

However, there are many companies in the industry that continue to use outdated territorial definitions. With better building blocks and the use of geocoding, insurers can more accurately define territories and assign risks to the correct territory.

By using better territorial building blocks, insurers can more effectively identify homogeneous territories and eliminate existing correlations with other rating variables. More sophisticated techniques, such as multivariate analyses using GLM, are available to define territorial boundaries and to develop the subsequent rating relativities.

By combining these new resources



and techniques, the industry will do a better job of segmenting risks. The pioneer companies that invest the time

and money necessary to improve their territories will be the first to see the financial rewards.

Relationships are built over time.



Whether you are a candidate seeking a new position or a client seeking top-notch actuarial talent, ACTEX Actuarial Recruiting can partner with you to help you achieve your goals.

A division of ACTEX Publications, ACTEX Actuarial Recruiting maintains relationships with both hiring companies and actuarial candidates.

Let us help you find the candidate or job that meets your needs.

ACTEX Actuarial Recruiting



Contact
Kathi D. Boratko, CPC
Recruiting Specialist
800-282-2839
or 860-379-5470
aar@actexmadriver.com
www.actexmadriver.com

