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THE FOUNDATION FOR INTERDISCIPLINARY RESEARCH AND EDUCATION PROMOTING
ANIMAL WELFARE

An Analysis of Breed Discrimination of Domesticated Dogs among Insurance Companies

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An Analysis of Breed Discrimination of Domesticated Dogs among Insurance Companies

RESEARCH HIGHLIGHTS
* The research most commonly cited to justify breed discrimination is not appropriate to be used for this purpose as indicated by the authors themselves.
* The most applicable research studies show that even "high risk" breeds have only 2 to 5 times the bite risk.
* Based on research on bite risk by breed combined with insurance financial data, even a high risk breed only has a risk of about 6 cents per dollar in premiums.
* Dog bites are a minor cost relative to many other homeowners insurance hazards.
* Dog bites liability costs have increased less rapidly than insurance premiums.
* Even pit bulls, the most maligned breed, do not have a risk high enough to justify a premium increase of more than 5%-10%.
* Insurance companies typically fail to address other equally important bite risks such as spaying/neutering of dogs or address some risks inappropriately (chaining).
* Although it may not seem logical for insurance companies to make poor economic choices, there are a number of possible explanations for this.

Overview

Insurance companies are increasingly using breed of dog as a criterion in determining eligibility for homeowners/renters insurance coverage. Some companies increase premiums based on dog breed while others deny coverage altogether. In addition, some companies claim they do not discriminate, but suddenly are not interested in writing a policy when they find out a homeowner has a pit bull¹. Furthermore, the number of companies offering insurance for certain breeds are declining while at the same time the premiums are growing. To make matters worse, breed specific legislation in some communities requires additional insurance for breeds that are deemed dangerous. However, there appears to be little data to support a specific premium for a specific

¹ Derived from personal communications with staff at major animal welfare organizations knowledgeable on this topic and Richard, J. 2004, "Bad Dogs...or Bad Rap?" Best Friends Magazine, November/December 2004, p. 14-17.

breed, and even less evidence to justify outright denial of coverage based on this single risk factor.

FIREPAW, Inc. conducted a study of homeowners and renters insurance discrimination based on breed of dog. Rather than focusing on whether certain breeds of dogs might have somewhat higher bite risk, FIREPAW instead sought to answer the question, ‘Does it make economic and financial sense for insurance companies to deny coverage or greatly elevate premiums based on dog breed?’

The findings of the study indicate that (1) even if certain dog breeds have a higher risk of biting that bite risk does not necessarily translate into greater insurance liability, (2) even when increased liability exists, the liability exposure can be mitigated by taking into account other relevant factors such as spay/neuter status, and (3) most importantly, even in cases where dog bite risk and liability are higher, the increased cost to insurers does not justify cancellation and at most justifies only a small rate increase.

Background

It has been well established that many insurance companies discriminate based on breed when issuing homeowners insurance policies. Allstate and the California State Automobile Association deny homeowner policies in California to applicants with dogs of certain breeds including Akita, boxer, chow, Doberman pinscher, Rottweiler, pit bull, Presa Canario, and wolf hybrid². Other companies that have been reported as having breed “blacklists” include Mercury Insurance Group, Hartford Financial Services Group,

² Bertolucci, Jeff, “Man’s best friend but insurer’s foe,” Los Angeles Times, September 1, 2004.

Travelers, Nationwide, Selective, Quincy Mutual and Wawanesa Insurance³. Some insurance companies claim to not discriminate based on breed. However, some animal welfare organizations doing undercover investigations by posing as applicants or taking complaints from community members with insurance problems suggest that even these companies often mysteriously lose interest in an applicant when they hear a dog is one of the breeds commonly deemed to be dangerous. Therefore, some insurance companies may be trying to avoid the bad publicity of an explicit breed-discrimination policy while simultaneously gaining what they perceive to be the benefits of not insuring “high risk” dogs. The difficulty in obtaining insurance can vary by region and agent, even for the same company, however there is strong anecdotal evidence that some households with allegedly high risk dogs have difficulty getting insurance at any price. In addition to the breeds listed above, other dog breeds that are on the blacklist of at least some insurance companies include: Airedale, Alsatian shepherd, American bulldog, American Eskimo, Bull Mastiff/Mastiff, Chesapeake Bay retriever, Dalmatian, German Shepherd, Giant Schnauzer, Great Dane, Husky, Kerry Blue Terrier, Rhodesian Ridgeback, and Spitz⁴.

Sometimes people with “high risk” dog breeds decide to get rid of their dogs when they are repeatedly blocked from obtaining insurance. These dog breeds not only get disproportionately relinquished to shelters, but this problem gets compounded because insurance issues will also make these breeds more difficult to adopt⁵. Therefore, breed

³ Toutant, Charles, “Putting a Leash on Dog-Bite Insurance Claims,” National News, 229(23):4, August 1, 2003; Kirk, Bill, “Bad dog: Dangerous canines spurned by insurance companies,” Gloucester Daily Times, September 7, 2004; and Bertolucci, Jeff, “Man’s best friend but insurer’s foe,” Los Angeles Times, September 1, 2004.

⁴ Kirk, Bill, “Bad dog: Dangerous canines spurned by insurance companies,” Gloucester Daily Times, September 7, 2004

⁵ There can be a number of other issues that will contribute to the disproportionate presence of certain breeds in shelters, but the focus here is on how breed discrimination in insurance aggravates this problem.

discrimination by insurance companies contributes to the problem of pet overpopulation which results in the deaths of millions of animals annually in the United States.

Existing Research on Dog Bites and Breed

Most studies conducted on dog bites that account for breed have used an unmatched survey methodology. Data for these studies have come from animal control agencies, health departments, hospital records, and media coverage (particularly for studies specifically focusing on fatal dog attacks). These studies are “unmatched” in the sense that a comparison group of dogs from the general population is not used to assess the relative frequency of a breed and other relevant baseline data. One important problem with these studies is that no statistical conclusions can be drawn without some kind of control group. A publication by the American Veterinary Medical Association (AVMA) Canine Aggression Task Force points out that simply obtaining bite statistics by breed without a control group is misleading because the frequencies of breeds for the general population in the area being studied is unknown⁶. In other words, if nine attacks are from pit bulls and seven are from Labradors, this does not in any way tell you whether pit bulls or Labradors are more likely to attack, because pit bulls may be more common in the study area’s general population.

By far the most commonly cited public data to justify breed discrimination in newspaper articles and by the insurance industry was sponsored by the U.S. Center for Disease Control (CDC) and used an unmatched methodology. This CDC research has been updated several times during the last few decades and appears to be the primary

basis of discrimination by many insurance companies⁷. This research is also frequently cited by lawmakers and organizations wishing to craft “dangerous dog” legislation that discriminates based on breed. The focus of the CDC study is only on fatal dog attacks. There can be problems with the CDC’s methodology even when applying this research to its intended use of understanding dog bite mortality risk, but when used for a different purpose such as liability risk this research can give a very misleading picture. The data is based on an average of 16.5 fatalities per year while according to the study’s authors, in 1994 there were 800,000 dog bite injuries that required medical care. This implies that the fatalities studied represent only about one in 50,000 of the dog bites that required medical care.

According to the CDC data the breeds that have caused the most fatalities between 1979 and 1998 are pit bulls, followed by rottweilers and then by German shepherds. In fact, combined, these three breeds make up most of the dog bite fatalities in their study. However, the authors themselves point out several reasons why their breed fatality statistics may be biased. Since the authors rely on news reports, not all fatalities are included in the data, and since attacks by one breed may be more newsworthy than others, certain breeds may be overrepresented. In addition, the authors point out that dog breed is subjective and attacks may be attributed with a bias towards breeds with a

⁶ American Veterinary Medical Association Canine Aggression Task Force, 1991. A community approach to dog bite prevention, *Journal of the American Veterinary Medical Association*, 218(11), June, p. 1732-1749.

⁷ Publications based on this research include Sacks, J.J., Sinclair, L., Gilchrist, J., Golab, G.C., and Lockwood, R., 2000. Breeds of dogs involved in fatal human attacks in the United States between 1979 and 1998, *Journal of the American Veterinary Medical Association*, 217(6):836-840; and Sacks, J.J., Sattin, R.W., and Bonzo, S.E., 1989. Dog Bite-Related Fatalities From 1979 through 1988, *Journal of the American Medical Association*, 262(11): 1489-1492.

reputation for aggression⁸. Cross-bred dogs also present a data analysis issue. The authors also point out that the breed responsible for the greatest number of deaths has changed over time and that the risk of certain breeds may have more to do with the propensities of the owners/guardians than the nature of the breeds themselves.

Other studies have also looked at dog bites or fatalities by breed. A study at a Children's Hospital in Philadelphia found German shepherds to cause the most injuries followed by pit bulls, rottweilers, and Dobermans⁹. Another study of severe attacks in South Carolina counties found American Staffordshire terriers (pit bulls), St. Bernards, and cocker spaniels to be the most frequently attacking breeds¹⁰. Another study which, like the CDC looked at fatal dog attacks, using the period 1965 to 2001 found pit bulls, rottweilers and German Shepherds to be the three breeds most frequently involved in fatal attacks¹¹. This study also found that a quarter of attacks came from chained dogs and that 95% of fatal dog attacks were by unneutered dogs.

A matched survey of dog bites in Denver was conducted in 1991 and improves on the methodologies described above by including a comparison group from the general population which allowed the authors to do statistical tests on the likelihood of specific breeds of dogs that bite and as well as other relevant factors¹². The study found that German shepherds were 3.4 times as likely to bite and that Chow Chows were 5.5 times as likely to bite than other dogs. These were the two most commonly biting breeds in

⁸ Breed labeling has been shown to be inconsistent at shelters, with the same animal being given a different breed label at different times (Marston, L.C., Bennett, P.C., and Coleman, G.J., 2004. What Happens to Shelter Dogs? An Analysis of Data for 1 Year From Three Australian Shelters. *Journal of Applied Animal Welfare Science*, 7(1), p. 27-47.).

⁹ Avner, J.R. and Baker, M.D., 1991. Dog bites in urban children, *Pediatrics*, 88(1): 55-57.

¹⁰ Wright, J.C., 1985. Severe attacks by dogs: characteristics of the dogs, the victims, and the attack settings, *Public Health Reports*, 100(1): 55-61.

¹¹ Delise, K. 2002. Fatal Dog Attacks, Anubis Pub.

their sample. Rottweilers and pit bulls were lumped under “other breeds” in their study because the number of biting dogs and general population dogs from these breeds were too small to conduct valid statistical tests. Combined, only 25.8% of biting dogs came from these “other breeds”, while 34.8% of the total dog population came from other breeds¹³. The authors also found that nonneutered dogs were 3.5 times as likely to bite, guard/attack trained dogs were 4.0 times as likely to bite¹⁴, unlicensed dogs were 3.3 times as likely to bite, dogs not vaccinated for rabies were 2.5 times as likely to bite, chained dogs were 2.4 times as likely to bite, male dogs were 3.0 times as likely to bite, and female dogs who had at least one litter were 7.0 times as likely to bite.

A separate study with a matched sample from the general population was conducted in Australia using 1991 data¹⁵. The Australian study found the most commonly attacking dogs to be Doberman pinschers which were 4.7 times as likely to attack than other dogs. German shepherds were 2.5 times as likely to attack, rottweilers were 2.2 times as likely to attack, and bull terriers were 2.1 times as likely to attack.

The research results of these studies suggest that certain breeds are more prone to attack than others. However, the predominance of a given breed can change from country to country, time to time, and study to study, suggesting that the cause of aggressive behavior may have more to do with the nature of the dog owners/guardians and why they keep certain breeds rather than lying solely with the inherent nature of the breed itself. Of course, for the purpose of determining insurance risk, the cause of a

¹² Gershman, Sacks, and Wright, 1994. Which Dogs Bite? A Case-Control Study of Risk Factors, *Pediatrics* 93(6), p. 913-917.

¹³ The authors mention that only one dog bite incident was from a pit bull. However, this was affected by a Denver ban on new pit bulls in 1989.

¹⁴ However, there was only a small sample of guard/attack trained dogs so this particular variable was not statistically significant.

dog's risk for aggression is irrelevant. What matters when underwriting a policy is just how likely a claim is, regardless of the true underlying causes of the risks. However, what should also matter to insurance companies is that many other factors have been found to be associated with higher bite risk. Furthermore, the two studies with a matching sample from the general population allow that increased risk to be put into context. Although some dogs have increased risk for biting, the highest risk that has been demonstrated statistically for any breed is 5.5 times as high as the average dog. Does this increased risk justify cancellation of premiums? As we will see, when this risk is put into context it does not. The results raise an equally important question: How can insurance companies continue to underwrite unneutered dogs for example, when their risk appears to at least as high as the risk of German shepherds, one of the most commonly blacklisted breeds?

Putting discrimination into context: The Insurance Industry

According to the insurance industry's most recent estimate, insurance liability claims involving dog bites totaled \$345.5 million in 2002¹⁶. This sounds like a lot of money, and in many respects it certainly is. However, the net premiums written in 2002 for the property and casualty industry were \$369.7 *billion*, more than a thousand times higher than claims involving dog bite-related injuries¹⁷.

¹⁵ Thompson, P.G. 1997. The public health impact of dog attacks in a major Australian city, *The Medical Journal of Australia*, August.

¹⁶ Dog Bite Liability, The Insurance Information Institute, March 2004, <http://iiiidev.iii.org/media/hottopics/insurance/dogbite>.

¹⁷ Catherine A. Seifert, "Standard and Poor's Industry Surveys, Insurance: Property-Casualty", *Standard and Poor's*, July 15, 2004.

The same report by the insurance industry also states that dog bite liability makes up “almost one-quarter” of homeowner’s insurance liability claims. This again sounds very high—possibly the single greatest cost for providers of homeowner’s insurance. But in fact liability claims made up only a small portion of homeowner’s insurance claims. In 2001, 72 cents for every dollar of premiums earned went to property damage while five cents for every dollar of premiums earned went to liability claims¹⁸. This implies that, excluding other expenses and looking just at claims, only 6.5% of all homeowners insurance claims paid go to liability claims. If we combine this with the fact that a quarter (or slightly less) of all liability claims are dog bite-related, this implies that only 1.6% at most of every dollar in homeowners insurance claims paid went to dog bite costs.

Now if one assumes based on the scientific research, that the highest risk breeds are about five times as likely to bite as other dogs, then insuring a household with this type of dog increases expected claims cost by 8%. In other words, insurance companies can expect to pay an additional 8 cents for every claims dollar paid if they insure a very high risk dog, even assuming they do nothing to mitigate this risk. Of course, insurance companies have other expenses outside of claims. Even if we increase the costs associated with dog bites by allocating all of the cost of settling claims and the cost of company operations proportionally to claims payment costs including dog bites, the total added cost of a high risk dog for every dollar of total expenses for homeowners insurance is 5.9 cents. **In other words, it appears that the most insurers should reasonably be able to justify increasing premiums for a family with a high risk dog is about 6%.**

This is less than the routine premium increase in many years for many customers and

¹⁸ Facts and Statistics: Homeowner’s Insurance, The Insurance Information Institute, September 2004, <http://www.iii.org/media/facts/statsbyissue/homeowners/>.

would not pose a significant hardship on customers¹⁹. It should be noted that the way this 6% is allocated based on cost already takes into account administrative expenses and the fact that insurers expect to make a profit. Therefore, dramatic premium increases due to the presence of “dangerous” breeds and outright cancellation of insurance by carriers does not appear to be justified by the industry financial data.

Figure 1 helps to put the cost of dog bites to the homeowners insurance industry in perspective²⁰. The chart is meant to give a sampling of hazards rather than provide an exhaustive list. As indicated, a number of one-time disasters have cost the insurance industry 10 times or even fifty times as much as the annual costs of dog bites. In addition, many regular annual homeowners insurance costs are a level of magnitude larger. Even mold-related losses in one particular year for just the state of Texas cost 15 times as much as the annual cost of dog bites for the entire nation.

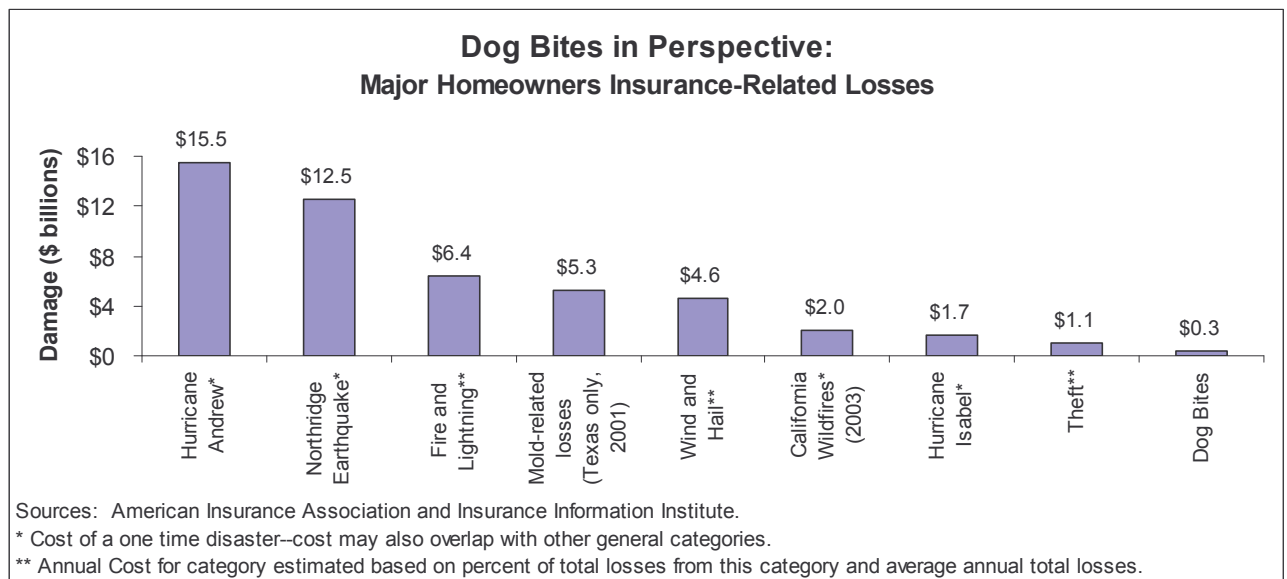


Figure 1

¹⁹ In fact, in 2003 average homeowners insurance premiums increased by 7.3% over all according to “Facts and Statistics: Homeowners Insurance”, Insurance Information Institute, data as of September 28, 2004.

²⁰ Data for this table is estimated based on “The Changing Homeowners Insurance Marketplace”, Advocate, American Insurance Association, Washington DC, July 23, 2004; and “Facts and

Additional perspective can be gained by looking at dog bite-related deaths compared to a sampling of other causes of death. As Figure 2 shows, dog bite deaths are dwarfed by many other sources of accidental death including getting struck by lightning and getting killed by cattle on the job.

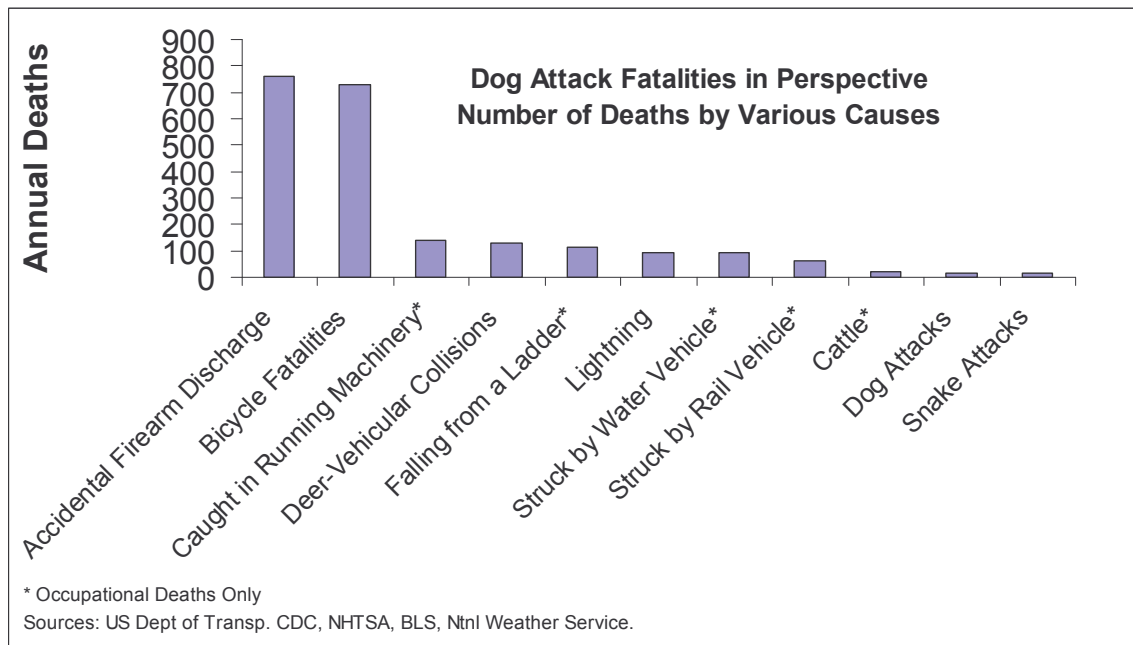


Figure 2

Articles that seek to dramatize the extent of the insurance issue often emphasize the sharp rise in dog bite liability costs. However, once again it is important to keep this in perspective. While dog bite payouts by insurance companies increased by 38.2% between 1995 and 2002, premiums for homeowners' insurance increased by 66.8% over that same period²¹. Therefore despite all the talk of rising dog bites, the cost of dog bites

Statistics:Homeowners Insurance", Insurance Information Institute, data as of September 28, 2004, <http://www.iii.org/media/facts/statsbyissue/homeowners>.

²¹ Based on Insurance Information Institute and Standard and Poor's data.

to insurance companies constituted a much smaller portion of premiums received in 2002 than it was in 1995.

Despite the evidence that the cost of dog bites of “high risk” breeds to insurance companies are too minor to justify extreme rate increases or cancellation of policies, it would seem that insurance companies *must* have some kind of firm basis for such blatant discrimination against certain dog breeds. However, this appears not to be the case. FIREPAW interviewed insurance company and industry representatives to try to obtain some reasonable economic basis for discrimination by breed. But FIREPAW did not find any evidence of data which suggests that the actual expected cost of a high risk breed is much higher than our calculations. In fact, some industry and company representatives cite the CDC data on fatalities as their primary rationale for breed discrimination. Yet the authors themselves give multiple caveats regarding using this data for such a purpose. In addition, the CDC research only covers fatalities and does not include a control group. This appears to be weak justification indeed for such sweeping policies.

Analysis of the Ultimate “Vicious” Breed’s Risk

One possible partial counterargument that can be made regarding the analysis above is that the matched research studies which allow computing an odds ratio do not include pit bulls and this breed in particular may have a much higher risk than the estimate for a “high risk” breed used above (a risk of five times a typical dog was used in the analysis above based on prior research of high risk breeds).

Pit bulls in recent years have had by far the most notorious reputation for aggression, and the data on dog-bite fatalities shows that the breed most commonly involved in fatal attacks are in fact pit bulls. So just how dangerous are pit bulls relative to other dogs? According to the CDC fatality data that is often cited by the insurance industry, 31.9% of all dog bite fatalities between 1979 and 1998 came from pit bulls (either purebred or crossbred). According to researcher Alan Beck, about 6% of the general dog population in the United States are pit bulls²². Beck bases this estimate on American Kennel Club registrations by breed. It should be noted that Beck is not an advocate for pit bulls with a motive for giving an upward-biased population estimates. In fact, Beck is firmly on the side of people who claim that pit bulls are a dangerous breed, and uses this 6% figure relative to pit bull fatalities to suggest that pit bulls are particularly dangerous. Beck may in fact be correct that pit bulls present a greater fatality risk than the average dog. But the question here is whether this risk is sufficient to justify the actions of many insurance companies. Using Beck's pit bull population estimate and the CDC's 20-year fatality rates, pit bulls are 5.3 times as likely as the average dog to be the cause of a fatal bite. This is almost exactly the figure that was used in FIREPAW's analysis above—which concluded that keeping a "dangerous" breed justified a 6% rate increase at most by insurance companies.

However, perhaps the risk of a pit bull attack is higher now. Beck stated that 40%-50% of fatal dog attacks are from pit bulls, though he appears to base this number on the same CDC data. Even if we take the average of Beck's range rather than the 31.9% calculated by FIREPAW, we then get a fatal attack rate 8.3 times as high as the general

²² As quoted in Nevius, C.W., "Vocal pit bull owners stand by the breed, despite the statistics," San Francisco Chronicle, July 16, 2004.

dog population, which would justify a larger rate increase, but still well under an increase of 10% by insurance companies.

Another way of looking at this cost is to take the total cost of bite injuries multiplied by the percent of fatal bites that are from pit bulls. The twenty-year CDC data suggests that pit bulls cause 31.9% of fatalities, while Beck suggests a number possibly as high as 50%. Even if we use an average of Beck's range of 45% again, we come out with a total bite cost from pit bulls of \$155.48 million. Now if pit bulls are 6% of all dogs and there are 63.5 million dogs in the country²³, then there are 3.8 million pit bulls, which works out to an extra cost of \$40.83 per pit bull. **In other words, if each pit bull owner/guardian were charged a premium of \$41 annually on their homeowner's insurance, all of the additional risk of these dogs would be covered by payments received from customers²⁴.** Since the average expenditures for a consumer on homeowner's insurance nationwide was \$591 in 2003, this works out to only a 7.0% increase in the cost of insurance to pit bull owners/guardians to cover this added risk²⁵. It should be kept in mind that in many ways this is a high-end estimate of the cost. Furthermore, this is the cost for the highest risk breeds--the added cost for lower risk breeds in the "high risk" category such as German shepherds should be significantly lower.

²³ This is based on data from "U.S. Pet Ownership & Demographics Sourcebook", 2002, American Veterinary Medical Association, Schaumburg, Illinois. The 2001 estimate for the dog population is 61,572,000. The 2002 estimate is based on an average dog population growth rate between 1996 and 2001 of 3.1%.

²⁴ This \$40.83 figure does assume that the entire pit bull population is insured when in fact it is unclear what portion of pit bulls are insured. However, the calculation done earlier that gives an increase of well under 10% does not make any assumptions about the portion of the pit bull population that is insured.

²⁵ Premium estimate is from "Facts and Statistics: Homeowners Insurance", Insurance Information Institute, data pulled September 28, 2004.

There are many good reasons to believe that this is an overestimate of the liability risk of pit bulls to insurance companies. First, there is good reason to believe that the percentage of dog bite fatalities from pit bulls is higher than the percentage of dog bite injuries that are from pit bulls. That is, when pit bulls attack, their attacks are more likely to cause death or serious injury. This would cause pit bulls to be overrepresented when using fatality data for drawing conclusions regarding insurance liability from bites of all levels of severity. Data from a 1999 study in Texas supports the idea that pit bull attacks tend to be more severe²⁶. The data from the study on dog attacks and bites in general shows that pit bulls caused only 7.4% of the attacks, while data on bites severe enough to require hospitalization from the same study indicates that 13.8% of the attacks were from pit bulls²⁷. As already noted, the data nationally on pit bull fatalities indicates a much higher percentage of pit bulls—31.9% over a twenty year period. Although Texas may be somewhat different than the national average, it would be reasonable to surmise that the fatal attack percentage from Texas is higher than the 13.8% indicated for attacks requiring hospitalization. It appears that the percentage of pit bulls strongly increases as we move up in severity of attack from all attacks requiring medical care, to attacks that require hospitalization, to fatal attacks. Therefore, using fatal attacks as the basis for calculating risk by breed may greatly inflate the insurance liability risk from pit bulls. Of course, fatal attacks will be more expensive for insurance companies than minor bites. However, insurance policies typically limit liability coverage to \$100,000 to \$300,000²⁸.

²⁶ “1999 Severe Animal Attack and Bite Surveillance Summary.” Texas Department of Health, Zoonosis Control Division.

²⁷ The study included all bites that broke the skin and would cause “most prudent and reasonable people to seek medical care for treatment of the wound, without consideration for rabies prevention alone”, as well as attacks where the person has extreme difficulty terminating the attack.

²⁸ “Dog Bite Liability”, Insurance Information Institute, 9/28/04
<http://iiiidev.iii.org/media/hottopics/insurance/dogbite>

Therefore, even if we assume that all dog bite fatalities are fully covered by insurance (which overstates the cost of fatalities), then the total cost to insurers from fatalities is not more than 1%-2% of the total dog bite claims cost. In other words, the vast majority of claims cost is from injuries less severe than a fatality. And although the cost of a claim decreases with less severe bites, the number of bites also greatly increases as we look at lower levels of severity. If we instead focus on bites that require hospitalization as the “typical” insurance claim and assume the Texas data is representative of the nation, then the results indicate that pit bulls are only approximately 2.3 times more costly for insurance companies than the average dog, which amounts to an increase in cost to insurance companies of about 2-3%--a negligible amount. Of course, the Texas data may not be representative of the whole country, but the example clearly demonstrates just how biased the conclusions might be when using fatality figures as the basis for insurance risk.

A second reason the pit bull risk may be overstated using fatality figures is that much of this data relies on media accounts. As the authors of the CDC study themselves indicate, this may cause pit bulls to be overstated. To understand this, take the case of a mixed breed dog that is 75% Labrador retriever and 25% pit bull. If asked about their breed of dog, the guardian would probably refer to it as a “lab mix”. However, if that dog causes a severe or fatal bite injury, it is highly likely that investigating officials and the media will refer to it as a “pit bull mix”, particularly if there are any visible pit bull features in the dog²⁹.

²⁹ This is not meant to fault the media in their coverage. Since pit bull attacks are an issue that resonates with the public, it is reasonable for the media to point out if the animal is part pit bull.

A third reason the risk of pit bulls may be overstated is that the 6% figure used for analysis here that originated from Alan Beck may be too low. Beck considers his number conservative because he used a “broad” definition of pit bulls. However, the definition of pit bull used in media accounts will also be broad, as previously discussed. The issue arises from Beck’s use of AKC registrations as a basis for his number. There may be no better number available, however if there are more non-AKC-registered or mixed breed dogs that are pit bulls than other breeds, this will cause the pit bull population to be underestimated. There is good reason to believe that this is the case with pit bulls. It is well-known that a portion of pit bull guardians/owners are people who use the dogs for fighting, as guard dogs, or simply as a “macho” symbol—particularly among urban youth. These segments of the population may be less likely to register their animal with the AKC. In fact, shelter data suggests that the pit bull population may be much higher, with some shelters reporting that the majority of their dogs are pit bulls. FIREPAW did an independent analysis of this by looking at all dogs available by breed over six months at a major national website for dog adoptions, petfinder.com, which lists tens of thousands of dogs from a wide range of sources. According to FIREPAW’s data, 12.3% of the dogs available during that period fall under the broad classification of “pit bulls”. This is double Beck’s number and would translate into a relative cost to insure pit bulls of about half of the already-small number estimated earlier.

A fourth reason why the risk of pit bulls may be overestimated is that aside from the fatality issue there is a difference between dog bite liability and dog bites. There is very good reason to believe pit bulls are underinsured. The urban youth culture that favors pit bulls (often related to gang activity and drug dealing) will most likely be underinsured

relative to the general population³⁰. Of course, these are not the only guardians/owners of pit bulls in society, but they are a significant portion, and arguably the subpopulation of pit bull guardians/owners most likely to be involved in a fatal attack. In addition even if we assume all pit bulls proportionately insured, fatal bite incidents and other serious bite incidents often include reckless behavior (such as dogs being ordered to attack people) and these behaviors are likely to allow insurance companies to escape liability³¹. This reckless behavior element may be more likely for pit bulls because their disproportionate biting is often due to training for attacking and fighting.

One final issue that may cause pit bull insurance risk to be overestimated is the presence of stray/roaming dogs. “Unowned” dogs are responsible for a portion of fatalities, but they generally do not cause any homeowner’s insurance liability. Given the disproportionate presence of pit bulls at shelters and their high likelihood to be dumped when used in fighting or other illicit activities, it is reasonable to conclude that pit bulls are more likely to be strays. This once again would cause the insurance risk of pit bulls to be overstated.

This section began by demonstrating that the insurance cost of pit bulls (which are generally regarded today as the most “risky” dog breed) is at most very small—justifying less than a 10% increase in premiums. In addition, multiple arguments, most with scientific evidence to support the argument, have been presented to show that this is most likely a significant overestimate of the cost. There appears to be little justification for

³⁰ One recent study that seems consistent with the idea that pit bulls and Rottweilers may be both under-registered and under-insured is a study of canine distemper by the Conservation Medicine Center. Most of the dogs infected have been mixed-breed Rottweilers and pit bulls. If these dogs tend to be under-vaccinated, this is also consistent with them receiving sub-standard consideration in other respects such as with registering and insurance. (Gorner, P. , 2005, “Killer disease returns to stalk dogs”, Chicago Tribune, February 6).

insurance companies to discriminate based on breed, other than making a very minor adjustment to their premium.

Mitigating the Risk

In addition to the cost of high risk breeds being relatively minor for insurance companies, it is also important to recognize that insurance companies can establish policies that mitigate the risk. There are at least two factors have been shown in previous research to be relevant and controllable: (1) chaining of dogs, (2) and spay/neuter status. It is important that they are controllable by the homeowner since this implies that no homeowner need ever relinquish their animal if insurers base rates or insurability on these factors—the insured can simply adjust their behavior.

The Denver study discussed previously found regularly chained dogs to be 2.4 times as likely to bite. Adjusting premiums upwards for chained dogs may be a reasonable policy that will cut down on insurer's risk. Interestingly, a representative of one of the largest insurance agencies is quoted in an article as saying that keeping a dog chained will work in a customer's *favor* when they judge a dog's risk³². That insurance company denies having this policy. However, a separate statement from an industry representative interviewed by FIREPAW indicates that some companies do in fact use chaining of a dog in a customer's favor when considering risk. Therefore, either insurance companies have data that says the exact opposite of the scientific research (conversations with the companies suggest that they probably *do not*), or they are simply using unvalidated

³¹ Data on the involvement of gross human negligence or criminal intent in dog bite fatalities is provided in Delise, K. 2002. Fatal Dog Attacks, Anubis Pub.

³² "Good dogs, bad dogs and homeowners' policies." MSN, April 18, 2004.

opinions to reach important conclusions about dog bite risk—conclusions which clearly are inaccurate at least some of the time.

Perhaps the most important controllable mitigating factor that insurance companies can consider is whether a dog is spayed/neutered. Several studies have demonstrated that spayed/neutered animals are at lower risk of biting. The Denver study, for example, found unneutered dogs to bite 3.5 times as often³³. It is also reasonable to expect that the impact of spay/neuter will be even higher for some high risk breeds. Pit bulls that are raised for fighting, aggressive behavior, and as “macho” status symbols will typically be male and almost undoubtedly be unneutered. These will also be the pit bulls who have the highest risk of aggression because of the nature of their owners’ behaviors and the way the dogs have been trained/raised. Therefore, spay/neuter status may be a much more powerful indicator of aggression in certain breeds such as pit bulls and rottweilers. There is some evidence to support this contention. Data from a study of 431 fatal attacks found that despite numerous fatal pit bull attacks, between 1965 and 2002 there were no cases of a fatal attack from a single, neutered American pit bull terrier³⁴. A policy of adjusting rates for spay/neuter would help insurance companies reduce their risk exposure. In addition, it would encourage responsible behavior without forcing policyholders to relinquish their animal.

In fact, instead of advocating breed bans, requiring spay/neuter of certain “dangerous” breeds such as pit bulls may accomplish the same goals for many governmental bodies that consider such bans. It would greatly reduce the risk of bites from those dangerous

³³ This is in addition to females who have had a litter being 7 times as likely to bite, which of course could be prevented by spaying/neutering the female early.

³⁴ Delise, K. 2002. Fatal Dog Attacks, Anubis Pub.

breeds while reducing the future prevalence of a breed believed to have higher risk and reducing shelter intake of an overrepresented breed. In addition, it would greatly reduce the controversy surrounding such measures and may in fact be embraced rather than bitterly resisted by the humane community. Most importantly, it is quite possible that spayed/neutered pit bulls may be of no higher risk of serious or fatal attacks than an average dog³⁵.

How could insurance companies be so wrong?

It is astounding that most insurance companies could be denying insurance to tens of thousands of households and leaving money on the table based on faulty theories and bad economics. One question that immediately comes to mind is how can insurance companies possibly be so wrong when it comes to insuring customers with dogs? After all, we have all been taught that it is survival of the fittest in the jungles of capitalism, and inefficient policies made by companies simply do not survive long. Interestingly however, there is a growing body of scientific literature in economics demonstrating alternatives to cut-throat competition and survival of the fittest that are so numerous they may be more of the rule than the exception.

First, it is important to recognize some key attributes of the insurance industry. The industry can be characterized as what is referred to in economics as an “oligopoly”. The

³⁵ Hypothetically, if pit bulls are about five times as likely to cause a fatality (as previously calculated using twenty years of CDC data), and spay/neuter reduces aggression by 3.5 times (based on Denver data) then if, as discussed, pit bull risk is somewhat more responsive to spay/neuter (say 40% more responsive), then the risk of pit bulls is roughly the same as other dogs.

revenue of the top four property and casualty companies made up two-thirds of the earned premiums for the industry³⁶. If a monopoly is an industry with only one competitor, an oligopoly is an industry with a small number of very large competitors. In such an industry, competitive forces may not work well or may not work at all. For example, the OPEC nations are a well-known example of a market oligopoly where prices are set by agreement by suppliers rather than by competitive forces. Economists have recognized for quite some time that in an oligopoly, the rules of “perfect competition” for pricing and for market efficiency do not necessarily apply.

The insurance industry also has very high “barriers to entry”. What this means is that somebody cannot easily decide they can do a better job providing insurance and start a new company. The insurance industry is highly regulated, with each state having its own rules and governing boards. The industry by its very nature requires huge amounts of capital and a wide customer base since the industry works by diversifying risk. Companies must rely on a massive marketing infrastructure and large amounts of data which can only be acquired over time. Small “start-up” insurance companies simply do not come around every day, because they *cannot*. Barriers to entry have long been recognized by economists as adversely effecting competitive forces. In fact, even a monopoly may have to respond to competitive forces if it knows that a competitor could enter the market at any time. But if there are large barriers to entry, it helps oligopolies remain insulated. In addition, barriers to entry reduce the opportunity for natural selection to take place among firms³⁷.

³⁶ Calculations are based on data from “Facts and Statistics: Industry Overview”, Insurance Information Institute, data pulled 9/28/04, <http://www.iii.org/media/facts/statsbyissue/industry/>.

³⁷ The effect of entry barriers on natural selection is discussed in Hodgson GM (1993) Economics and Evolution. The University of Michigan Press, Ann Arbor.

The insurance industry is also somewhat unusual in that it faces something called “adverse selection”. The negative effects of adverse selection on markets has long been known by economists, and although it exists in some other types of markets (such as bank loans) the insurance industry has typically been used as the primary example of adverse selection at work. Without going into a detailed description of adverse selection, it should suffice to say that its effect is to cause the average risk of a customer to be higher than what an insurer’s model would indicate because the higher risk customers will choose to contract with the insurer. One effect of adverse selection is that it creates an incentive for companies to stay very close together in their risk assessment. Although this may be justified by the insurers’ market environment, it is caused by a market imperfection rather than a properly functioning market. In addition, over time insurers may simply develop a rule of thumb of not varying far from their competitors in their rules and risk assessment even when it is not economically justified.

It is also important to recognize that if all insurers reject a customer with a dangerous breed dog, that insurance premium may not be lost to the industry. The customer’s most likely response may be to either get rid of the dog, or to lie about the dog’s presence. In both cases the insurer will still receive the premium from the client, and either way the dog is no longer a liability to the insurer since if the customer lies about the dog’s presence a bite most likely would not be covered. Therefore, while it is true that an insurance company could win clients with a breed-friendly policy, this is not the same thing as saying companies necessarily lose if all of them discriminate by breed.

In addition to these industry-specific issues, there is growing evidence that decisionmakers frequently do not act rationally and that natural selection in economic

markets may not work in the idealized way people sometimes assume. Decisionmakers have been shown to make a variety of serious errors in assessing probabilities. In addition, there is strong evidence that people can be strongly biased by media accounts³⁸.

Decisionmakers have also been shown to often do what economists call “satisficing”³⁹. This means that overwhelmed with too many decisions and too much information, managers tend to find a “good enough” solution to their business problems rather than looking for the optimal solution. In other words, if insurance companies are performing adequately while discriminating by breed, managers will decide to not worry about this issue and focus on something else. They may therefore continue to discriminate by breed even if it is not the optimal solution.

A number of researchers have pointed out important reasons why natural selection in markets may not lead to efficiency⁴⁰. There are a few issues with natural selection in economic markets that are particularly important for the dog-bite issue⁴¹. First, there is an issue of time-scale. Prior research has suggested that the natural selection process takes time in economic markets and it can take quite a long time to weed out inefficient companies. Dog breed discrimination among insurance companies is a relatively recent phenomenon—even if such discrimination would eventually disappear through natural

³⁸ For discussions of some of these biases see Tversky A & Kahneman D (1974) Judgment under uncertainty: Heuristics and biases. *Science*, 27: 1124-1131; and Camerer, C (1995) Individual Decision Making. In *The Handbook of Experimental Economics*, Kagel, JH & Roth, AE (eds), Princeton University Press, Princeton. Cooper, WS (1989) How Evolutionary Biology Challenges the Classical Theory of Rational Choice. *Biology and Philosophy* 4: 457-481.

³⁹ As originally discussed in Simon H.A. 1959. Theories of decision-making in economics and behavioral science, *American Economic Review* 99: 253-283.

⁴⁰ For some discussion see Nelson R & Winter S (1982) *An Evolutionary Theory of Economic Change*. Harvard University Press, Cambridge, MA; and Hodgson, GM (1994) *Optimisation and Evolution: Winter's Critique of Friedman Revisited*. *Cambridge Journal of Economics*, 18(4): 413-4

⁴¹ For more discussion see Frank, J. (2003). Natural Selection, Rational Economic Behavior, and Alternative Outcomes of the Evolutionary Process, *Journal of Socio-Economics*, 32(6), December, 601-622; and Frank, J. (1999). Applying memetics to financial markets: do markets evolve towards efficiency. *Journal of Memetics*, 3(2).

selection, it may remain for quite a while. In addition, prior work has suggested that the evolution of ideas can be quite complicated and often lead to unexpected results. Ideas can persist in companies indefinitely if they are somehow appealing to decisionmakers. For example, as indicated by one insurance industry representative, it may seem intuitive to insurance company personnel that regularly chained dogs are less likely to bite. Therefore they may lower rates and approve policies more easily for dogs that are chained—even though the scientific evidence suggests that these dogs are actually *more* risky. This kind of behavior can persist even if it hurts the bottom line because the idea has its own self-perpetuating appeal. It can even spread as personnel from the small number of large insurance companies switch jobs and bring their ideas with them. It is easy to see then that breed discrimination with its strong intuitive appeal combined with media hype could easily perpetuate itself even if it hurts the insurance companies.

There is also one other possible explanation for breed discrimination even when it does not appear to make good economic sense based on bite liability risk. The keeping of certain breeds, particularly breeds often kept for guarding and fighting, may be associated with certain neighborhoods or even ethnic groups that are high risk for theft or other insurance costs that have nothing to do with dog bites. And while insurance companies may not legally be able to discriminate based on these other factors, discriminating by dog breed may be a tacit but (on its surface) legal way to reduce these other risks.

Conclusion

Insurance company breed discrimination results in the death and forced separation of many dogs, hurts consumers, and potentially even hurts the insurance companies themselves.

It is reasonable to conclude that certain breeds are more likely to cause serious bites than others. However, even if we assume that certain breeds have a much higher risk of biting, this risk has been shown to be a relatively minor portion of the total claims paid overall for homeowners insurance. The research results indicate that insurance companies are greatly overreacting when they cancel insurance or dramatically increase premiums based on dog breed.

Using existing research on breed risk, and estimating how many insured households have dogs, we have estimated a range for how much more is reasonable to charge in a premium. In the Denver study, even the highest risk breeds had only three to five times the risk of the average dog. It is likely that even the highest risk breeds can reasonably justify only a modest premium increase (under 10%). Therefore, the practice of large premium changes or outright cancellation of insurance coverage over such a relatively minor risk is unreasonable and can have dire consequences for both consumers and dogs.