Barking Up the Wrong Tree: Regulating Risk, Not Fear

Ann L. Schiavone, *Duquesne University School of Law*
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Ann L. Schiavone
Assistant Professor of Law

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BARKING UP THE WRONG TREE: REGULATING FEAR, NOT RISK

By
Ann L. Schiavone*

Beginning in the 1980s, the curious phenomenon of breed-specific legislation (BSL) began to spread across the U.S. and abroad. The phenomenon can be traced to sensationalistic media portrayals of the pit bull at that time. This kind of sensationalism was nothing new; throughout American history, various breeds have served as scapegoats, each taking a turn as the most ‘dangerous.’ While it was not new to seek to contain fears by isolating a particular ‘problem’ breed, the legislation itself was unprecedented. Today, in light of mounting evidence that factors other than breed are more determinative of aggression in domestic dogs and that BSL does not decrease incidents of dog bites, many jurisdictions are seeking to undo these laws. For example, many states have passed legislation preempting local ordinances that discriminate based on breed. This Article calls for all jurisdictions to follow suit, in recognition of the fact that there are more rational methods available for addressing the public health hazard posed by individual aggressive dogs.

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I. INTRODUCTION

Imagine it: July 1987, U.S.—Soviet relations balance on a razor’s edge,1 and the Iran-Contra hearings are in full swing.2 But America has more important things on its mind—vicious dogs. Communities across the U.S. are being told they are under attack, not from foreign governments or terrorists, but from dogs in their community, specifically dogs known as ‘pit bulls.’3 During that month, no less than four major national magazines ran stories sensationalizing the danger of these dogs that supposedly prowled the streets of their neighborhoods, ready to attack


at a moment’s notice, unexpected and unprovoked.\textsuperscript{4} The cover of Sports Illustrated on July 27, 1987 pictured an angry pit bull-type dog, teeth bared, and ready to attack.\textsuperscript{5} The headline read “Beware of This Dog.”\textsuperscript{6} The article inside the magazine added detail to the cover picture with its descriptions.\textsuperscript{7} One humane society worker who was interviewed compared a pit bull attack to a shark attack, and a San Diego judge called pit bulls “the closest thing to a wild animal there is in a domesticated dog.”\textsuperscript{8} That same week, Time gave us a vivid description of what we should fear:

Ferocious pit bulls can be seen any day with their drug-dealer owners on the corner of Ninth and Butler streets in North Philadelphia. The dogs, with names like Murder, Hitler and Scarface, wear metal-studded collars concealing crack and cocaine and the day’s proceeds. They are equally visible on Chicago’s West and South sides, where teenage boys have taken to brandishing their fierce pit bulls just as they would a switchblade or a gun.\textsuperscript{9}

The media frenzy against the pit bull had begun, and the labels ‘dangerous’ and ‘vicious’ were attached to dogs based on their breed, rather than their behavior.\textsuperscript{10} It became instinctive to fear the pit bull by breed name alone, even for people who had never met one. (Perhaps even more so for people who had never met one.) The moment ushered in an era of breed-specific legislation (BSL), passed in communities across the country (and abroad) that banned or severely restricted ownership of certain dog breeds and dog breed types.\textsuperscript{11} While pit bulls were the initial primary targets, other breeds were soon subsumed under the BSL umbrella.\textsuperscript{12} The month of July 1987 sealed the fate of the pit bull in popular

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\textsuperscript{5} Swift, supra note 4.

\textsuperscript{6} Id.

\textsuperscript{7} Id.

\textsuperscript{8} Id.

\textsuperscript{9} Brand, supra note 4.

\textsuperscript{10} See \textit{Delise}, supra note 3, at 80, 95–99.


\textsuperscript{12} The National Canine Research Council found that various communities in the U.S. have included one or (usually) more of the following breeds and mixes of these breeds in BSL ordinances: “Akita, ‘Alapaha Blue Blood Bulldogs,’ Alaskan Malamute, ‘American Bandogge,’ American Bulldog, American Staffordshire Terrier, American Pit Bull Terrier, Belgian Malinois, Bullmastiff, Bull Terrier, Cane Corso, Chihuahua, Chow Chow, Dalmatian, Doberman Pinscher, Dogo Argentino, ‘Fila Brasileiro,’ German Shepherd Dog, Miniature Bull Terrier, Neapolitan Mastiff, ‘Pit bull,’ . . . Perro de Presa Canario, Rottweiler, Shar Pei, Siberian Husky, Staffordshire Bull Terrier, ‘Tosa Inu,’ and wolf-hybrids.”
imagination and fueled thirty years of BSL.

When such laws were first passed, there was debate over their efficacy, as well as their constitutionality. While, in general, the constitutionality of BSL has been upheld, the debate over efficacy rages on in legislatures, councils, and the court of public opinion. Significant scientific data now support the argument that breed plays little, if any, role in determining aggression in dogs, and other factors are far more predictive. Further bolstering this finding are the studies that have shown no reduction in dog bites or injuries as a result of BSL. But, despite such data and the voices of veterinarians, scientists, animal behaviorists, and others, BSL continues to be the default response when a community perceives a dog-bite problem.


15 Gary J. Patronek et al., Co-occurrence of Potentially Preventable Factors in 256 Dog Bite-Related Fatalities in the United States (2000–2009), 243 J. AM. VETERINARY MED. ASS`N 1726, 1728 (2013) (criticizing “undue emphasis on breed” and finding factors such as isolation and abuse by owners to be among the most determinative). See also Safia Gray Hussain, Note, Attacking the Dog-Bite Epidemic: Why Breed-Specific Legislation Won’t Solve the Dangerous-Dog Dilemma, 74 FORDHAM L. REV. 2847, 2850 (2006) (“There are three recurring commonalities in dog attacks. First, most dog bites occur in the home or another familiar place, with the vast majority of biting dogs belonging to the victim’s family or friend. Second, most attacks are perpetrated by unaltered males. Finally, dogs contained or otherwise restrained on the owner’s property are responsible for more serious and fatal attacks than those roaming at large.”).”


17 See First Quarter Report: Municipalities and Grassroots Prevail Against State Preemption Bills Barring Local Breed-Specific Ordinances, DOGS BITE, http://www.dogs bite.org/dogs bite-newsroom-
In recent years the public’s perception of pit bulls has somewhat improved. Fast forward twenty-plus years from 1987 to December of 2008, and Sports Illustrated again dedicated its cover story to pit bulls, but this time the cover showed a polite-looking, fawn-colored pit bull with a pink nose, peering curiously and compliantly at the camera. The story inside matched the sympathetic cover photo, detailing the fate of the pit bulls owned by NFL quarterback Michael Vick, who had plead guilty to dogfighting-related charges in federal court. Of the fifty-one dogs seized from Vick, animal rescue groups saved forty-seven. While some, scarred by their experiences with Vick, would remain permanently in an animal sanctuary with professional handlers, the majority of the forty-seven dogs would go on to loving homes. Sports Illustrated detailed the new lives of several dogs, and gone were the descriptions of shark-like bite strength and ‘unprovoked’ aggression. The new ‘poster dogs’ for the pit bull were Sweet Jasmine, as sweet as her name suggested, but still too scared to meet new people; happy Zippy, who ran around the house and played endlessly with her foster mom’s two daughters; and Jonny Justice, who loved kids so much that he was enrolled in the Paws for Tales program, in which kids who get nervous reading aloud could practice in front of a canine rather than a human. Leo, too, was mentioned; he is a certified therapy dog, spending “two to three hours a week visiting cancer patients and troubled teens.”

2015-first-quarter-report-state-preemption-laws.php (accessed Nov. 25, 2015) (noting that, as of April 2015, 860 jurisdictions retain forms of BSL despite trends in preemption at the state level); Medlin, infra note 86 (discussing a Cincinnati ordinance originally enacted in response to an incident of a dog biting a child); Debate Widens on Plans to Restrict Pit Bull Dogs, infra note 87 (discussing a Tijeras, New Mexico ordinance originally enacted in response to a local incident of a dog biting a child); Bill Tieleman, Time to Ban Pit Bulls in B.C., 24 HOURS VANCOUVER, http://vancouver.24hrs.ca/2015/01/05/time-to-ban-pit-bulls-in-bc (Jan. 5, 2015, 2:49 PM) [http://perma.cc/3H6Q-HQ6X] (accessed Nov. 25, 2015) (editorial calling for pit bull ban in British Columbia, citing three dog attacks). Many communities enacted BSL in the past three decades in response to perceived risks to public safety, amplified by particular incidents of injuries caused by dogs. Many of these laws remain in effect, while proponents continue to call for legislation in jurisdictions not yet affected, typically after publicized incidents of attack.

See Emily Swanson, There’s Still a Lot of Work to be Done for Pit Bulls, Poll Finds, HUFFINGTON POST, http://www.huffingtonpost.com/2014/07/29/pit-bulls-poll_n_5628261.html (July 31, 2014) (accessed Nov. 25, 2015) (“While two-thirds of Americans over age 45 said they would advise a family with kids against adopting a pit bull, only one-third of those under 45 said the same. And while more than half of people over age 45 said that pit bulls are too dangerous to live in residential neighborhoods, those younger than age 45 were much more likely to say that pit bulls are safe.”).


Id.

Id.

Id. Rebecca Huss, Professor of Law at Valparaiso University School of Law, was appointed guardian and special master of the dogs seized from Vick, and was instrumental in securing such placements. Id.

Id.

See id. (describing the pit bulls profiled as vulnerable and affectionate).

Gorant, supra note 19.

Id.
Despite rehabilitated images of pit bulls in the media, the emerging scientific data that show breed is a bad predictor of aggression in dogs, and the current data that show BSL is ineffective and a poor use of government resources, communities across the country continue to recycle the sound bites and questionable statistics from 1987 and pass BSL to solve their perceived dog-bite problems. It seems, despite all the contrary evidence, we cannot un-ring the bell. And that problem is as much a problem with human behavior as it is with canine behavior.

This Article will explore the behavioral psychology and emerging neuroscience of both canines and humans to explain why the public and its government representatives continue to pass BSL, despite scientific evidence that breed is largely irrelevant to the dog bite problem, and more rational alternatives are available. The purpose of this Article is to inform lawmakers about the scientific evidence available concerning BSL, as well as to encourage them toward introspective consideration of their own decision-making processes, to determine whether such processes as applied to BSL are rational, or whether they are based on irrational fear and public pressure.

In Part II, this Article explores the general background and history of breed-based canine biases, including media reporting and legal history, culminating in the current state of BSL today. Part III surveys the current scientific literature on canine behavior and dog-bite epidemiology to determine the efficacy of BSL. Part IV then explores how the recent mapping of the canine genome and DNA testing have shown significant errors in human perception of breed identification, further undermining any remaining foundation for BSL as it currently exists. After this review of the science of dogs, Part V will consider the human cognitive psychological basis for our society’s apparent obsessive fear of certain types of dogs, despite the fact that dogs are typically a relatively minor risk to most people. Additionally, Part V will illustrate how fear responses ignited and continue to fuel BSL, despite mounting evidence against its efficacy. Finally, in Part VI, this Article will consider how governments should approach the complex problem of

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27 Collier, supra note 16, at 21. See also Jessica M.R. Cornelissen & Hans Hopster, Dog Bites in the Netherlands: A Study of Victims, Injuries, Circumstances and Aggressors to Support Evaluation of Breed-Specific Legislation, 186 VETERINARY J. 292, 297 (2010) (“[T]he view that aggressive potential is linked to dog breed is a point of serious concern as a dog’s tendency to bite or show aggressive behaviour depends on more than just genetics, and other factors such as heredity, experience, socialisation and training, health, and victim behaviour all play a role.” (citation omitted)).

28 See Cornelissen & Hopster, supra note 27, at 293, 297 (discussing a study commissioned by the government in which the researchers advised against BSL and instead advocated for efforts to educate humans on dog behavior).


31 See infra Part V.
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severe, non-fatal, and fatal dog bites, based on the above observations. It will also consider specific policy alternatives to BSL that are both rational and targeted to allay societal fear and curb dog-bite problems in select communities.

II. HISTORY OF BREED BIAS AND BSL

A. Vicious Cycle: Breed Prejudices 1850–1980

Imagine yourself a contestant on Jeopardy. You choose the category of ‘Dangerous Dogs’ for a thousand. The host, Alex Trebek, reads the following clue: “Described in varied accounts as ‘frenzied,’32 ‘desperate,’33 ‘wild-eyed,’34 and ‘thoroughly and irredeemably corrupt,’35 an editorial in the New York Times called for the extermination of this canine breed.”36 What is your likely response? “What is pit bull?” “What is Rottweiler?” Perhaps, “What is Doberman pinscher?” No matter which of these responses you choose, you would find yourself a thousand dollars in the negative.

The clue actually described the spitz: a small, mixed-breed dog related to the Pomeranian and the Samoyed.37 In the later part of the nineteenth century, the media blamed the spitz for the rabies infection in New York City and surrounding locations, claiming it was the primary source of the infection.38 The New York Times editorial suggested that the spitz was responsible “directly or indirectly” for three-quarters of the rabies deaths in and around the city.39 The spitz was thought to be more susceptible to rabies infection because, as an “Arctic animal,”40 it was ill-suited to reside in a temperate climate.41 Another New York Times op-ed went so far as to claim that “it is safe to say that if there had been no Spitz dogs in New-York during the last three years, there would have been . . . not more than two cases of [rabies].”42

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36 Id.
38 A Whited Canine, supra note 35.
39 Id.
40 Id.
41 See id. (describing the spitz as “wear[ing] throughout our hottest months the heavy fur of an Arctic animal”).
42 Editorial, A Venomous Beast, N.Y. TIMES (Nov. 17, 1876) (available at http://query.nytimes.com/mem/archive-
The hysteria over the dangerousness of these dogs led to newspaper articles sensationalizing events involving spitz dogs. One such article described a stray spitz running through a crowd in Madison Square causing a state of panic.43 Even though the dog neither bit nor chased a single person, he was eventually shot and killed by a policeman on the scene for the crime of being a spitz.44

One can only guess at the original sources of these widespread beliefs. Perhaps a well-publicized instance of rabies came from a bite from a spitz dog? Certainly the articles hinted at an increased population of the spitz, logically leading to more bites and other incidents related to the breed type.45 Some pseudoscience was likely offered to link the “Arctic” dog with greater susceptibility to rabies.46 There was a general belief among the public that heat caused rabies, and “foaming at the mouth” was considered an obvious sign of rabies.47 However, thirst can also be a source of foaming at the mouth, and thirst is more common in summer and in dogs with thicker coats.48 The Pasteur Institute, the leading non-profit organization educating the public on the spread of disease since the late nineteenth century, attempted to educate people about the reality of rabies, but the belief of the dangerousness of the spitz continued on in the minds of the populous for decades.49

The spitz was by no means the only type of dog vilified in the late nineteenth century as ‘dangerous.’ Bloodhounds were equally scorned.50 Bloodhounds were accused of viciousness rather than susceptibility to rabies, but the result was the same—prejudice against the breeds and sensationalized news reports.51

The source of the bloodhound’s vicious reputation is a bit clearer. It is a story of art imitating life, and life, in turn, imitating art. While modern readers picture a long-eared, droopy-eyed dog at the mention of ‘bloodhound,’ in the nineteenth century the term bloodhound was used to refer to a number of types...
of scent-hounds trained to track humans.\(^{52}\) Types of bloodhounds were utilized prior to the Civil War to hunt escaped slaves.\(^{53}\) They also became popular ‘protection’ or ‘guard dog’ breeds in the same time period.\(^{54}\) Literature such as *Uncle Tom’s Cabin*,\(^ {55}\) and *The Hound of the Baskervilles*,\(^ {56}\) as well as their popular culture derivatives,\(^ {57}\) further painted a picture of bloodthirsty bloodhounds as man-trackers who hunt their prey relentlessly. Bloodhounds during this time period included not only English or St. Hubert’s bloodhounds (our modern version of a bloodhound),\(^ {58}\) they also included so-called Cuban or Siberian bloodhounds, whose origins are less clear and who were perhaps no more than mixed breeds used for the purpose of tracking people.\(^ {59}\) Cuban bloodhounds are most commonly believed to be mixes of mastiffs and pointers,\(^ {60}\) while Siberian

\(^{52}\) *Id.*


\(^{54}\) *Id.* at 3.

\(^{55}\) Harriet Beecher Stowe, *Uncle Tom’s Cabin* (Christopher G. Diller ed., Broadview Press 2009) (1852). One of the most famous scenes of Harriet Beecher Stowe’s novel, *Uncle Tom’s Cabin*, revolved around the heroine, Eliza, scrambling across an icy Ohio river with her baby in tow, escaping the slave trader. *Id.* at 96. In the following chapter the slave trader hires a slave hunter to track Eliza. *Id.* at 114–15. In discussing his dogs, the slave hunter describes their ferocity. “Our dogs tore a feller half to pieces, once, down in Mobile, ‘fore we could get ‘em off.” *Id.* at 116.


The most vivid description of a vicious hound likely came from the pen of Sir Arthur Conan Doyle:

“A hound it was, an enormous coal-black hound, but not such a hound as mortal eyes have ever seen. Fire burst from its open mouth, its eyes glowed with a smouldering glare, its muzzle and hackles and dewlap were outlined in flickering flame. Never in the delirious dream of a disordered brain could anything more savage, more appalling, more hellish, be conceived than that dark form and savage face which broke upon us out of the wall of fog.” *Id.* at 161.

\(^{57}\) J. Frank Davis, *Tom Shows*, SCRIBNER’S MAG. (Apr., 1925) (available at http://utc.lib.uta.edu/onstage/review/oxar42at.html [http://perma.cc/UM79-KDSV] [accessed September 9, 2015]). Performances of *Uncle Tom’s Cabin* during the later half of the nineteenth century often promised ‘real’ bloodhounds but they were not generally English Bloodhounds. In describing the necessity of real dogs in stage productions of *Uncle Tom’s Cabin*, journalist J. Frank Davis, in his article *Tom Shows*, illustrates both use of the dogs for dramatic effect, and the rather fluid definition of ‘bloodhound’ in the American psyche: “It was a poor show that carried no dogs. It ought to have a donkey for Marks to ride, but that animal’s absence could be overlooked. Failure to provide at least two dogs, however, was the unforgivable sin. It is a tradition in the profession that once upon a time a Tom impresario, desirous of doing something truly great, sent down into the South somewhere and bought some real bloodhounds. He had them in the street parade and the performance exactly one day. Northerners were unfamiliar with the low-lying, sad-faced, lop-eared dogs of the true breed—and nobody except Northerners ever saw ‘Uncle Tom’s Cabin.’ The public jeered his canine exhibit off the street and off the stage. Having brains, he wasted no time trying to convince them he was right and they were wrong, but promptly got rid of the harmless-looking animals that were the real thing and went back to the kind of bloodhounds his audiences expected—big, ugly-looking mastiffs. Not all Tom dogs were mastiffs. If they were ‘Siberian’ bloodhounds they were Great Danes. A full-grown Great Dane is an impressive figure, and he has a deep, soul-satisfying voice. Two or three Great Danes, well trained to chase Eliza, were the salvation of many a Tom Show.” *Id.*

\(^{58}\) Delise, * supra* note 3, at 25.

\(^{59}\) *Id.* at 21.

\(^{60}\) See Delise, * supra* note 3, at 22 (quoting *Bloodhound Definition*, WEBSTER’S REVISED UNABRIDGED
bloodhounds have been connected to and are possibly synonymous with Great Danes. \textsuperscript{61} The terms ‘Cuban’ and ‘Siberian’ bloodhound have fallen out of favor, but their descendants are likely our pets.

Between 1855 and 1910, a review of newspapers from a ten-state area revealed at least thirty-eight severe and fatal attacks by bloodhounds. \textsuperscript{62} However, it is impossible to determine what types of ‘bloodhounds’ were involved in these incidents, or if they were even actually bloodhounds at all. While newspaper articles occasionally specified that the offending animal was a Cuban or Siberian bloodhound, \textsuperscript{63} such identification did not occur in all instances. \textsuperscript{64}

How did the bloodhound reputation first arise? What made Harriet Beecher Stowe use the imagery of the bloodhound in her novel? Most likely, it came from the stories of escaped slaves and the dogs used to track runaways in the South. \textsuperscript{65} Anecdotal evidence establishes that slaveholders did train certain large-breed dogs to track runaways, and no matter their actual breed, they were called bloodhounds. \textsuperscript{66} Former slave and prominent abolitionist orator, Frederick Douglass, recounted one example of the training methods used on these dogs:

> Slaves frequently escape from bondage, and live in the woods. Sometimes they are absent eight or nine months without being discovered. They are hunted with dogs, kept for the purpose, and regularly trained. Enmity is instilled into the blood-hounds by these means: A master causes a slave to tie up the dog and beat it unmercifully. He then sends the slave away and bids him climb a tree; after which he unties the dog, puts him upon the track of the man and encourages him to pursue it until he discovers the slave. Sometimes, in hunting negroes, if the owners are not present to call off the dogs, the slaves are torn in pieces . . . \textsuperscript{67}

With such training methods, vicious attacks by these dogs seem completely

\textsuperscript{61} \textsc{Stowe, supra} note 55, at 33.
\textsuperscript{62} \textsc{Delise, supra} note 3, at 21.
\textsuperscript{63} \textsc{Id.} No media article specifically named an English, St. Hubert’s, or true bloodhound, although there is mention of a $500 bloodhound, which at least suggests it was purchased as a purebred. \textit{See} \textsc{Delise, supra} note 3, at 28–31.
\textsuperscript{64} \textsc{Delise, supra} note 3, at 56.
\textsuperscript{65} \textit{E.g.}, \textsc{Solomon Northup, Twelve Years a Slave} (Sue Eakin & Joseph Logsdon eds., La. State Univ. Press 1968) (1853). Narratives of former slaves often included mention of the dogs sent to chase them in any attempted escape, including the following from Solomon Northup: “I stood upon the fence until the dogs had reached the cotton press. In an instant more, their long, savage yells announced they were on my track. Leaping down from my position, I ran towards the swamp. Fear gave me strength, and I exerted it to the utmost. Every few moments I could hear the yelpings of the dogs. They were gaining upon me. Every howl was nearer and nearer. Each moment I expected they would spring upon my back—expected to feel their long teeth sinking into my flesh. There were so many of them, I knew they would tear me to pieces, that they would worry me, at once, to death.” \textsc{Id.} at 101–02.
\textsuperscript{66} \textsc{Id.} at 101 (“The dogs used . . . for hunting slaves are a kind of blood-hound, but a far more savage breed than is found in the Northern States.”).
\textsuperscript{67} \textsc{Delise, supra} note 3, at 24 (quoting \textsc{Douglass, supra} note 53).
logical. Slaveholders likely bred for aggressiveness in their bloodhounds (no matter the breed or mixture of breeds) and encouraged aggressiveness towards humans, especially slaves.

Art then imitated the true-life stories of these slave-hunting dogs, and the imagery of Stowe’s Uncle Tom’s Cabin, followed by the various stage productions, produced a general belief in the viciousness of bloodhounds among the populous. After the Civil War, these bloodhounds were sought by people looking for guard and protection dogs because of their reputation for viciousness. The breeding and training cycle continued, solidifying the public belief that this ‘breed’ of dog was vicious. The reputation not only followed Cuban and Siberian bloodhounds, but also our modern English bloodhounds. Such was the prejudice against bloodhounds that aficionados of the St. Hubert’s (English) bloodhound breed wrote editorials and articles defending the gentleness and good nature of the English bloodhound.

Throughout the nineteenth and twentieth centuries, a parade of dog breeds have vied for the title of most ‘vicious’ or ‘dangerous.’ During the mid- to late 1800s, the bloodhound, Newfoundland, and mastiff had the worst reputations. In the early twentieth century, the collie and the Saint Bernard were vilified. By the 1920s the German shepherd dog had begun to get a bad reputation until its use as a police dog overcame the initial prejudice, but by World War II, the Doberman pinscher, often pictured with Nazi henchman, solidified its place as public enemy number one. It was not until the 1980s that the pit bull, and to a somewhat lesser extent, the Rottweiler, became the new ‘most dangerous’ breeds.

Today, we are tempted to laugh at the nineteenth century urban legends that longhaired spitz dogs were more susceptible to rabies because of their coats, or that the long-eared, sad-eyed bloodhounds were particularly vicious. We give no heed to the thought that the Saint Bernard or Doberman is a crazed killer. But

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68 DELISE, supra note 3, at 24.
69 Id. at 22, 24.
70 Id. at 28–29.
71 See id. at 28, 31 (noting that in the late nineteenth century, some owners sought bloodhounds precisely for their negative reputation).
72 See id. at 31 (“Poor and abusive owners” sought bloodhounds, and therefore these bloodhounds were poorly socialized dogs who may have lived up to their reputation for viciousness.).
73 Id. at 22–26.
75 See DELISE, supra note 3, at 72.
77 DELISE, supra note 3, at 48–49.
78 Id. at 81.
these stories are instructive of the cycle of breed bias, the same cycle that contributed to the most popular current breed bias against so called ‘pit bulls’ and ‘pit bull-type’ dogs, along with Rottweilers, and to a lesser extent, a handful of other breeds.

The cycle usually begins with an increase in the number of representatives of the breed in society, and is followed by several incidents of injury to humans attributed to the breed.80 Fear takes hold of the community, often including the spread, via media or word-of-mouth, of rumors, urban legends, or even unfounded pseudoscience (such as the susceptibility of “Arctic animal[s]” to rabies).81 The media’s hype ironically advertises the breed, making it both more popular (especially with those persons seeking an aggressive or ‘tough’ dog) and more widely known to the general public.82 This popularity makes the breed more susceptible to owners who will seek to increase aggression in the breed,83 and it makes the breed more prone to misidentification by the general public.84 It is only recently, since the mid-1980s, that this cycle has led communities to pass breed-specific laws, banning or severely curtailing the ownership of certain dog breeds.85

B. The Pit Bull Problem: Breed Bias 1980–Today

It is believed that the very first breed-specific ordinance in the U.S. was passed restricting ownership of pit bulls by the Cincinnati City Council in 1983, following the death of an 11-year-old boy, who was killed by his parents’ two dogs.86 Tijeras, New Mexico followed with a pit bull ban in 1984, as a result of a severe non-fatal attack on a 9-year-old by four dogs who were owned by a relative of the girl.87 In 1985, approximately thirty communities were considering some sort of ordinance restricting pit bulls.88

July of 1987 was a rather bad month for pit bulls and dogs that looked like

80 See generally Delise, supra note 3, at 36, 51 (explaining this phenomenon for the Newfoundland and St. Bernard breeds).
81 See A Whitened Canine, supra note 35 (“It is not charged that the Spitz wantonly or malignantly becomes mad, and it is quite possible that his proneness to rabies is the result of his attempt to live in a climate unsuited to him.”).
83 Delise, supra note 3, at 31, 35. See id. at 86 (“An increase in a breed’s negative image or reputation for aggression unfailingly leads to an increase in the number of substandard owners.”).
84 See infra Part IV for discussion of misidentification of breeds.
85 See infra notes 86–88 and accompanying text.
88 Id.
pit bulls. Ohio enacted legislation to statutorily categorize pit bulls as per se “vicious dogs” and to restrict ownership of them.89 Throughout the month, numerous local and national media sources ran stories about these dogs, and the headlines alone were the stuff of nightmares: Boy and His Dog in Hell (Rolling Stone),90 An Instinct for the Kill (People),91 Beware of This Dog (Sports Illustrated),92 Time Bombs on Legs (Time).93 These news and magazine stories included some sensationalism and even some patently false pseudoscience that increased fear and remain the stuff of urban legend today.94 By 1989 the large metropolitan areas of Miami-Dade County, Florida and Denver, Colorado had passed BSL.95

The panic in the U.S. soon spread to Canada, where BSL was passed in Winnipeg, Manitoba in 1999,96 and then overseas to the United Kingdom, which enacted BSL in its Dangerous Dogs Act of 1991.97 Many other nations around the world followed suit.98

As noted earlier, BSL did not just include a single pit bull breed. The term ‘pit bull’ or ‘pit bull-type’ usually includes several breeds, including the American pit

90 Sager, supra note 4.
91 Green, supra note 4.
92 Swift, supra note 4.
93 Brand, supra note 4.
94 DELISE, supra note 3, at 108. Some of the most outrageous myths about pit bulls are that they have a locking jaw and are impervious to pain. Id. at 108, 116. While pit bulls do have strong bites like other large dogs, and are tenacious, they are not super-predators. Id. at 108.
96 Winnipeg Responsible Pet Ownership By-Law 92/2013 (July 17, 2013) [hereinafter Winnipeg Responsible Pet Ownership By-Law] (available at http://winnipeg.ca/CLKDMIS/DocExt/ViewDoc.asp?DocumentTypeId=1&DocId=6054&DocType=0 (accessed Nov. 25, 2015)). The Winnipeg Law was first passed in 1990 and continues to be in effect today. Id.
98 The examples of BSL worldwide are numerous. The following are just a few examples: In 1994, Victoria, Australia passed the Domestic Animals Act 1994, prohibiting five restricted breeds including pit bulls. Domestic Animals Act 1994 [Vic], s 3 (Austl.) [hereinafter Victoria Domestic Animals Act]. In 1999, Spain passed country-wide BSL in the form of the Spanish Dangerous Animals Act of 1999, targeting a list of eight breeds or breed types. Rosado et al., supra note 16, at 167. In 2000, in response to a dog-bite fatality, the government of Lower Saxony, Germany passed Niedersaechsische Gefahrtierverordnung (GeftVO), legislation prohibiting the keeping of pit bulls and placing severe restrictions on the keeping of such large breed dogs as Rottweilers, Doberman pinschers, mastiffs and eight other named breeds. Esther Schalte, Stefanie A. Ott, Amelie M. von Gaertner, Hansjoachim Hackbart & Angela Mittmann, Is Breed-Specific Legislation Justified? Study of the Results of the Temperament Test of Lower Saxony, 3 J. VETERINARY BEHAV. 97 (2008) [hereinafter Schalte et al.].
bull terrier, the American Staffordshire terrier, the Staffordshire bull terrier, and the bull terrier. In practice, it also often includes dogs with any mix of one of these breeds, or that substantially look like one of these breeds. In addition, while BSL started with pit bull bans, it has expanded steadily to include a wide range of dog breeds, including: Rottweilers, Akitas, bullmastiffs, mastiffs, Presa Canarios, Cane Corsos, and many other breeds, depending on the location and whims of the local legislature. Generally, the one constant is the ‘pit bull,’ but almost any dog can be included in a BSL ordinance.

The cycle of breed bias detailed above occurred with pit bulls perhaps more than with any other dog. The intense media scrutiny in the 1980s led to increases in certain types of owners seeking out the dog for its ‘vicious’ reputation. This time period saw an increased use of the dogs as status symbols rather than pets and an overall growth of the population of these dogs in the hands of irresponsible owners, combined with poor controls on breeding. These factors likely led to more bites by pit bulls, but they also led to more awareness and identification of any biting dog as being a pit bull.

C. Types of Breed-Specific Laws

1. Local Ordinances

The most common form of BSL in the U.S. is the local ordinance. As mentioned above, Cincinnati, Ohio appears to be the modern birthplace of BSL, passing its ordinance in 1983. The state of Ohio followed in 1987, and by 1989 major cities across the country were passing various versions of BSL. The
legislatures and city councils utilized highly publicized attacks from their own communities, or other communities, to ‘prove’ the danger posed by certain dog breeds, particularly pit bulls.\textsuperscript{111}

The types of ordinances passed are as numerous and varied as the communities that passed them. Some laws require registration and restrict breeding of certain breeds in the jurisdiction.\textsuperscript{112} Others outright ban ownership or keeping of certain breeds,\textsuperscript{113} while others place restrictions on ownership in creative ways, such as requiring all dogs of certain breeds to be muzzled and leashed when outside, requiring certain fence heights or materials, or even requiring the tattooing of restricted breeds kept in the jurisdiction.\textsuperscript{114} Many

\begin{enumerate}
\item Post on the premises, in a conspicuous place where the dog is kept, at least one city-issued warning sign available, upon payment of a fee, from Customer Service. The sign shall be visible and capable of being read from the public highway or street;
\item Identify the dog by having the dog wear, at all times, a fluorescent green collar available upon payment of a fee, from Customer Service;
\item Pay a fee and annually, between January 2 and January 20, and whenever a dog is newly obtained, register the dog with the Customer Service Division; at the time of registration provide proof of liability insurance with an insurer authorized to write liability insurance in this state providing coverage in each occurrence, subject to a limit, exclusive of interest and costs, of not less than fifty thousand dollars because of damage or bodily injury to or death of a person caused by the dog and shall provide a certificate of insurance to Customer Service at the time the collar required by § 92.25(E)(1) is obtained;
\item Ensure that the dog does not go unconfined on the premises of another or be at large within the city;
\item Annually license the dog, if the dog is more than three months of age, with the County Auditor. Failure of any dog at any time to wear a valid license tag shall be prima facie evidence of lack of licensing;
\item Vaccinate the dog against rabies by a licensed veterinarian at least once every three years; a tag

\textsuperscript{111} Medlin, supra note 86; Debate Widens, supra note 87. See also Delise, supra note 3, at 102 (describing how, in Denver, lawmakers relied on unproven claims while ignoring expert testimony to the contrary).

\textsuperscript{112} E.g., PRINCE GEORGE’S CTY., MD., CTY. CODE § 3-185.01 (Prince George’s County, Maryland prohibits the keeping of any pit bull.).

\textsuperscript{113} AKRON, OH., CODE OF ORDINANCES 92-25(E). By way of illustration, the city of Akron, Ohio has extensive and severe restrictions on the ownership of certain breeds of dog, codified as follows: Any person owning, keeping, possessing, harboring, maintaining, or having the care, custody, or control of a Pit Bull, Canary Dog or American Bulldog or vicious dog shall:
\begin{enumerate}
\item 1. Identify the dog by having the dog wear, at all times, a fluorescent green collar available upon payment of a fee, from Customer Service;
\item 2. Post on the premises, in a conspicuous place where the dog is kept, at least one city-issued warning sign available, upon payment of a fee, from Customer Service. The sign shall be visible and capable of being read from the public highway or street;
\item 3. Identify the dog by having the dog tattooed with a code number provided by the Customer Service Division;
\item 4. Notify the Customer Service Division within twenty-four hours if the Pit Bull, Canary Dog or American Bulldog or vicious dog has died or has been sold or donated, and provide the Customer Service Division with the name, address, and telephone number of the new owner;
\item 5. Keep the dog secured at all times by one of the following means:
\begin{enumerate}
\item a. Keep the dog inside the owner’s home;
\item b. Keep the dog in a locked enclosure which has a top, and has a concrete base with the fencing securely attached or anchored to the concrete perimeter to a depth of six inches;
\item c. Keep the dog muzzled and on a chain-link leash that is not more than six feet in length which is held in the hand of a person who is of suitable age and discretion and is outside with the dog.
\end{enumerate}
\item 6. Pay a fee and annually, between January 2 and January 20, and whenever a dog is newly obtained, register the dog with the Customer Service Division; at the time of registration provide proof of liability insurance with an insurer authorized to write liability insurance in this state providing coverage in each occurrence, subject to a limit, exclusive of interest and costs, of not less than fifty thousand dollars because of damage or bodily injury to or death of a person caused by the dog and shall provide a certificate of insurance to Customer Service at the time the collar required by § 92.25(E)(1) is obtained;
\item 7. Ensure that the dog does not go unconfined on the premises of another or be at large within the city;
\item 8. Annually license the dog, if the dog is more than three months of age, with the County Auditor. Failure of any dog at any time to wear a valid license tag shall be prima facie evidence of lack of licensing;
\item 9. Vaccinate the dog against rabies by a licensed veterinarian at least once every three years; a tag

\textsuperscript{114} A number of ordinances restrict certain breeds within a community. Some states have passed laws that restrict dog ownership and breeding based on any community’s request. Other states have prohibited cities from enacting laws to restrict dog ownership or breeding. For example, in Arkadelphia, Arkansas, pit bulls must be registered and cannot be transferred within the city of Arkadelphia. Arkadelphia, Ark., ORDINANCE RESTRICTING THE KEEPING OF PIT BULL BREED DOGS WITHIN THE CITY OF ARKADELPHIA, ARKANSAS 0-07-04.
localities require special insurance or permits.\textsuperscript{115} Often, municipal laws will combine two or more of these requirements.\textsuperscript{116} The state of BSL at the local level is constantly in flux as new communities pass ordinances and old ordinances are repealed due to a variety of factors, including: ineffectiveness of the laws, costs of enforcement, or strong pressure by canine advocates. It is, however, safe to say that at any one time hundreds of jurisdictions across the country employ BSL.\textsuperscript{117}

Even when breeds are not banned outright, BSL can be a \textit{de facto} breed ban because owners find it prohibitively difficult or expensive to obtain homeowners’ insurance, find a rental property that will accept the dog, or take on the added personal liability that may arise from ownership.\textsuperscript{118}

2. \textit{State Laws}

For the most part, states have left BSL to the purview of local government—Ohio being the exception. Ohio’s BSL statute, passed in 1987, defined a pit bull as a “vicious dog,” regardless of any other factors.\textsuperscript{119} If a person owned a pit bull, it was assumed to be dangerous, and the person would be, in effect, strictly liable for any damage caused by the dog.\textsuperscript{120} In addition to the statewide law, municipalities throughout Ohio passed breed bans on pit bulls and other types of dogs.\textsuperscript{121} In 2012, the Ohio legislature repealed the BSL provision and returned to a
breed-neutral version of the definition of “vicious dog.” Ohio municipalities still have their own BSL on the books, and that is unaffected by the statutory changes. The 2012 measure merely places Ohio back in the camp of a majority of other states—no statewide BSL, but local governmental measures remain in effect.

While a majority of U.S. states allow municipalities to pass BSL, a growing number of states have preempted local ordinances on this issue, passing laws that prohibit local governments from regulating the keeping or ownership of dogs based on breed. In effect, these laws prohibit any local BSL in these states. California was the first state to preempt BSL in 1989, although it does currently allow breed-specific spay/neuter requirements. Twenty-five years later, the number of states banning BSL has swollen to eighteen, although a few of those states have grandfathered local BSL enacted before passage of the statewide statute. Each of these state laws is different. While some laws focus only on breed-based ‘dangerous dog’ legislation, others focus on all breed-based laws, or even prohibit insurance regulation based on breed. For example, in March of 2014, South Dakota became one of the most recent states to preempt BSL. The statute prohibits local governments from enacting “any ordinance, policy, resolution, or other enactment that is specific as to the breed or perceived breed of a dog.” Pennsylvania, on the other hand, has not only preempted local governments from passing BSL, but has also preempted any ordinance regulating dangerous dogs, and prohibited insurance discrimination based on breed.


122 Id.
123 Id. For example, Lakewood, Ohio bans all pit bulls and canary dogs. LAKEWOOD, OH., ORDINANCES § 506.03 (2008). Parma, Ohio also prohibits pit bulls and wolf hybrids within its prohibited animals ordinance. Pit bulls are one of only two domesticated animals in a list of over thirty prohibited animals, including lions, tigers, bears, sharks, hyenas, wolves, coyotes, and even elephants. PARMA, OH., CODE OF ORDINANCES § 618.09 (2006).
125 CAL. FOOD & AGRIC. CODE § 31683 (West 2006); CAL. HEALTH & SAFETY CODE § 12331 (West 2006).
VA. CODE ANN. § 3.2-6540.1 (2013).
129 3 PA. CONS. STAT. § 459-507-A (2008) (“(c) Local ordinances—Those provisions of local ordinances relating to dangerous dogs are hereby abrogated. A local ordinance otherwise dealing with dogs may not prohibit or otherwise limit a specific breed of dog. (d) Insurance coverage
3. Federal Regulations

While there is no national BSL, in 2009, the U.S. Army and U.S. Marine Corps instituted BSL on all bases, including all privatized housing, banning pit bull-type dogs, Rottweilers, Doberman pinschers, chow chows, wolf hybrids, and other dogs prone to aggression or dominance, as well as exotic pets of all kinds. In 2012, the U.S. Air Force followed suit with a similar ban. The reasons behind these regulations were noted as public health, safety, and welfare of the members of the military and their families, but they have caused significant heartaches for many. In 2013, President Obama came out against BSL in principal, stating in part:

We don’t support breed-specific legislation—research shows that bans on certain types of dogs are largely ineffective and often a waste of public resources. In 2000, the Centers for Disease Control and Prevention looked at twenty years of data about dog bites and human fatalities in the United States. They found that fatal attacks discrimination—No liability policy or surety bond issued pursuant to this act or any other act may prohibit coverage from any specific breed of dog.


132 Army Memorandum, supra note 130.

133 E.g., SaraN, BSL in the Military: One Family’s Sacrifice, THE BLOG OF A ROLLA LOVE PLUS, http://www.arottalove.net/blog/2011/12/bls-in-the-military-one-family’s-sacrifice/ [http://perma.cc/H688-SU3E] (Dec. 16, 2011) (accessed Nov. 25, 2015). In a blog post, a current member of the military recounted the pain endured by herself, her husband, and her two children, when they had to re-home Willa, the family dog: “My husband, my children, and I have made many sacrifices for the military, and have done so with pleasure; these sacrifices have been made for the love of our country. In the timespan of mere months, my children have moved across [the] country, changed schools, and said goodbye to friends. But the loss of our friendly, playful, humorous, snuggling, PB&J snatching, constant companion is an unexpected, undeserved injustice—and is one sacrifice I will never forgive.” Id. See also Breed-Specific Legislation for On-Base Pet Owners Way Off-Base?, PETS FOR PATRIOTS, http://blog.petsforpatroits.org/is-breed-specific-legislation-for-on-base-pet-owners-way-off-base/ [http://perma.cc/RE3W-ZZUW] (accessed Nov. 25, 2015) (“Military families with banned dogs are feeling the impact two-fold: unable to live on-base due to military pet regulations, and unable to live off-base because of municipal breed bans. The issue is further complicated when service members deploy and seek to foster their pets, since BSL limits where these pets can be cared for while awaiting their owners’ return.”).
represent a very small proportion of dog-bite injuries to people and that it’s virtually impossible to calculate bite rates for specific breeds.\textsuperscript{134}

Despite this strong statement against BSL, the military bans remain in effect and there are no indications they will be repealed anytime soon.\textsuperscript{135}

4. Court Challenges

While there have been numerous court challenges to BSL over the last thirty years—some successful—all opponents of BSL have had an uphill battle as a result of the U.S. Supreme Court’s decision in Sentell v. New Orleans & Carrollton R.R., which described an owner’s property interest in a dog as “qualified” and the government’s police power to govern dogs as both broad and plenary.\textsuperscript{136} Essentially, this 1897 ruling, which acknowledges both the value of dogs as human companions and the potential risks to public health associated with dogs in society,\textsuperscript{137} has given carte blanche to state and local legislatures to pass laws and ordinances restricting property rights in dogs.\textsuperscript{138} Examples of such laws include license requirements, leash laws, spay-and-neuter requirements, and dangerous dog laws.\textsuperscript{139} Sentell has been used frequently to uphold the constitutionality of BSL.\textsuperscript{140}

Constitutional challenges to BSL, based on both state and federal law, have come in the form of procedural and substantive due process claims, vagueness claims, and equal protection claims.\textsuperscript{141} Most often, courts employ a ‘rational basis


\textsuperscript{136} Sentell v. New Orleans & C.R., 165 U.S. 698, 704, 706 (1897). “Although dogs are ordinarily harmless, they preserve some of their hereditary wolfish instincts, which occasionally break forth in the destruction of sheep and other helpless animals. Others, too small to attack these animals, are simply vicious, noisy and pestilent. As their depredations are often committed at night, it is usually impossible to identify the dog or to fix the liability upon the owner, who, moreover, is likely to be pecuniarily irresponsible. In short, the damages are usually such as are beyond the reach of judicial process, and legislation of a drastic nature is necessary to protect persons and property from destruction and annoyance.” \textit{Id.} at 705–06.

\textsuperscript{137} \textit{Id.} at 701.

\textsuperscript{138} See City of Dickinson v. Thress, 290 N.W. 653, 655 (N.D. 1940) (citing Sentell, 166 U.S. 698) (“It is well settled that the Legislature, under the police power, may regulate the keeping of dogs ….”).

\textsuperscript{139} See Thiele v. City of Denver, 312 P.2d 786, 788–90 (Colo. 1957) (quoting Sentell in upholding prohibition against dogs running at large under the police power); City of Dickinson, 290 N.W. at 655 (upholding license and registration requirements for dogs under the police power); Concerned Dog Owners of Cal. v. City of L.A., 123 Cal. Rptr. 3d 774, 779, 781, 789 (2011) (upholding mandatory spay/neuter ordinance under the police power).

\textsuperscript{140} See, e.g., Vanater v. Vill. of S. Point, 717 F. Supp. 1236, 1242 (S.D. Ohio 1989) (upholding prohibition against pit bulls as valid exercise of police power under rationale of Sentell).

\textsuperscript{141} See, e.g., Colo. Dog Fanciers, Inc. v. City of Denver (Dog Fanciers), 820 P.2d 644, 648, 650, 652 (Colo. 1991) (denying substantive due process and equal protection claims under rational basis test); Garcia v. Vill. of Tijeras, 767 P.2d 355, 358, 360, 361 (N.M. Ct. App. 1988) (denying both substantive and procedural due process challenges, as well as challenges to vagueness), \textit{cert. denied}, 765 P.2d 768 (N.M. 1988). Due process and equal protection claims are often brought under both the 14th
test’ to the due process and equal protection challenges after determining no suspect classes, quasi-suspect classes, or fundamental rights are at issue. The rational basis test gives broad discretion to the legislature and requires only that a law be ‘rationally related’ to a legitimate government interest in order for it to be upheld, even if it infringes upon certain property rights.\footnote{Amendment of the U.S. Constitution and the equivalent state constitutional basis. Generally, the 14th Amendment has provided little, if any, traction, with the exception of some success in the area of vagueness under due process. However, those states that have determined BSL to be void for vagueness tend to have strong state (as opposed to federal) case law upon which to base the decision. See, e.g., Am. Dog Owners Ass’n, Inc. v. City of Lynn, 533 N.E.2d 642 (Mass. 1989) (applying Massachusetts case law to strike down sections of local BSL).} Constitutional challenges to BSL have generally been unsuccessful.\footnote{E.g., Kristen Swann, Irrationality Unleashed: The Pitfalls of Breed-Specific Legislation, 78 UMKC L. Rev. 839, 847–51 (2010) (describing rational basis test applied to restrictions on dog ownership, which relies on the concept of dogs as property).} There has been some limited success with vagueness challenges.\footnote{id. at 867. In Irrationality Unleashed: The Pitfalls of Breed-Specific Legislation, student author Kristen Swann rightfully advocates for courts to employ “rational basis plus” or “rational basis with a bite” analysis concerning BSL. As science continues to advance and show the absence of a relationship between breed identification and aggression, the rational basis for these laws evaporates. Courts should no longer hide behind the Sentell opinion and where laws are based in irrational fear, rather than rational problem solving. \footnote{E.g., Kristen Swann, Irrationality Unleashed: The Pitfalls of Breed-Specific Legislation, 78 UMKC L. Rev. 839, 847–51 (2010) (describing rational basis test applied to restrictions on dog ownership, which relies on the concept of dogs as property).}}

One of the most interesting constitutional challenges to BSL came from the Ohio courts, and because it includes differing opinions by the court of appeals and supreme court on the constitutionality of BSL, it both illustrates how the substantive due process claims could be won by BSL opponents and also how most courts have treated this issue under a rational basis test. In \textit{Toledo v. Tellings}, an owner of three “pit bull-type” dogs was cited for two violations of the municipal ordinance that set a limit of one pit bull per household and two violations for failing to provide liability insurance under Ohio Revised Code § 955.22, which is required when harboring a vicious dog under § 955.11(4)(ii) (which defined pit bulls as per se “vicious”).\footnote{Toledo v. Tellings, \textit{Tellings I}, No. L-04-1224, 2006 WL 513946, at ¶¶ 2, 3 (Ohio Ct. App. 2006), rev’d, 871 N.E.2d 1152 (Ohio 2007).} The dogs were observed in the


home of the owner during a lead-based paint inspection and were reported to the dog warden. Subsequently, the owner gave one dog away, was permitted to keep one, and the third was confiscated by the warden and destroyed. The owner filed a motion challenging the constitutionality of the statute and municipal ordinance on the basis of substantive and procedural due process, among other bases.

The trial court heard five days of testimony from at least sixteen expert witnesses (twelve for the owner, four for the state). After hearing the testimony, the court upheld the constitutionality of the laws, finding that, although “pit bulls are not, as a breed, more dangerous than other breeds[,]... the state statutes and municipal ordinance were constitutional since the pit bull still presented a problem in the urban setting.” The court based this finding on the fact “that the pit bull has been used extensively for dog fighting and by ‘criminal elements of the population, such as drug dealers, dog fighters, and urban gang members,’” and was prevalent in urban areas with crowded living conditions and large numbers of children.

On appeal, the Ohio Court of Appeals reversed the trial court’s decision, finding no rational basis for distinguishing pit bulls from other dogs. Specifically, the court of appeals recognized that older cases upholding BSL were based on unsubstantiated myths and sensationalized hype about pit bulls that have since been corrected by scientific findings. The appeals court determined that the assertions that a pit bull can bite with a “force of 2,000 pounds per square inch” have absolutely no basis in fact or scientific proof. The testing of dog-bite strength has never been done, and would be difficult if not impossible to perform.”

Furthermore, the court noted: “Although [one expert] testified he believed that pit bulls have some sort of ‘trigger mechanism’ which makes their behavior unpredictable and they give off no warning ‘signals,’ he acknowledged that he had done no studies, and had no scientific data, proof, or other evidence in support of his theory. The other experts dismissed this theory and agreed that all dogs give off signals which may be ignored or unrecognized by people. They also stated that, although pit bulls may have some genetic predisposition for certain behaviors, these behaviors can be easily modified or controlled with training and environmental socialization.”

As scientific information advances and becomes available, courts have a duty to reconsider issues and make decisions which are supported by the actual evidence presented, instead of relying on ‘common knowledge’ and opinion generated by newspaper sensationalism and hearsay, rather than accurate, scientific evidence.”
Ohio statute finding pit bulls as per se vicious was unconstitutional because the trial court admitted there was no basis to find the breed more dangerous than any other; therefore, singling out one breed “has no real and substantial relationship to a legitimate state interest.” 155

However in its reversal of the court below, the Ohio Supreme Court stressed the power of the legislature to make laws related to public health, safety, and welfare. 156 It applied a weaker version of the rational basis test than did the court of appeals, and found there was sufficient evidence for the trial court to determine BSL has a real and substantial relationship to the legitimate state interest of public safety. 157

While Toledo v. Tellings is an excellent example of the kinds of constitutional arguments used in support of and against BSL, it is by far not the only case weighing in on these issues. 158 While most courts have upheld BSL on rational basis, it is interesting to note how often the same evidence that is relied upon by the courts in these cases has been either called into serious question or even refuted outright by science. As we will discover in Part III, much of this evidence is the same as that which was sensationalized in the media during the mid-1980s. For example, the Colorado Supreme Court in Colorado Dog Fanciers, Inc. v.

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155 Id. at ¶ 66. The court also determined that statute was void on the basis of vagueness because of the lack of a real definition for the term “pit bull-type” dog, and the apparent subjectivity of prosecution. Id. at ¶¶ 73–76. Specifically, Toledo’s dog Warden admitted that the determination of whether a dog was a “pit bull-type” was based purely on observation of the official. Id. at ¶ 30. The court questioned, with so many similar looking breeds, whether anyone would really know if they were potentially subject to prosecution or not, especially if their dog was of a mixed breed. Id. at ¶ 73. This finding by the court is substantiated by scientific studies discussed in Part IV.


157 Id. at 1158. Specifically, in making its rational basis determination, the Ohio Supreme Court relied on evidence presented by the chief dog warden of Lucas County who testified that, “[1] when pit bulls attack, they are more likely to inflict severe damage to their victim than other breeds of dogs, (2) pit bulls have killed more Ohioans than any other breed of dog, (3) Toledo police officers fire their weapons in the line of duty at pit bulls more often than they fire weapons at people and all other breeds of dogs combined and (4) pit bulls are frequently shot during drug raids because pit bulls are encountered more frequently in drug raids than any other dog breed.” Id. at 1157. The accuracy of these claims made by the dog warden is unknown, but the Ohio Supreme Court found them sufficient to establish a rational basis. With regard to the vagueness challenge, the Supreme Court, quoting an earlier decision of State v. Anderson, held, “[T]he physical and behavioral traits of pit bulls together with the commonly available knowledge of dog breeds typically acquired by potential dog owners or otherwise possessed by veterinarians or breeders are sufficient to inform a dog owner as to whether he owns a dog commonly known as a pit bull dog.” Id. at 1158 (quoting State v. Anderson, 566 N.E.2d 1224, 1228 (Ohio 1991)).

158 See Starkey v. Chester Twp., 628 F. Supp. 196, 197 (E.D. Pa. 1986) (denying preliminary injunction upon determination that BSL would likely survive an equal protection challenge by meeting a traditional rational basis test); Hearn v. City of Overland Park, 772 P.2d 758, 764, 765, 766–68 (Kan. 1989) (opining that an ordinance banning pit bulls was related to a legitimate government purpose, was neither too vague nor unlawfully overbroad, and satisfied a rational basis test for purposes of an equal protection challenge), cert. denied, 493 U.S. 976 (1989); State v. Peters, 534 So. 2d 760, 764 (Fla. Dist. Ct. App. 1988) (holding ordinance did not violate equal protection when it was “underinclusive” and did not include mixed-breed pit bulls), review denied, 542 So. 2d 1334 (Fla. 1989); Garcia, 767 P.2d at 360–61 (denying both substantive and procedural due process challenges, as well as challenges to vagueness).
Denver, noted that “pit bull attacks, unlike attacks by other dogs, occur more often, are more severe, and are more likely to result in fatalities.”159 Furthermore, the court noted “that pit bulls tend to be stronger than other dogs, often give no warning signals before attacking, and are less willing than other dogs to retreat from an attack, even when they are in considerable pain.”160

Similarly, in Garcia v. Village of Tijeras the New Mexico Court of Appeals pointed to evidence that pit bulls have “inherent characteristics of aggression, strength, viciousness and unpredictability not found in any other breeds of dog,” that they are subject to “berserk frenzies [that] do not occur in other breeds of dog,” that their bite is as much as twice as strong as other dogs, and that they are “especially dangerous due to their unpredictability” because they display no warning behavior.161 Again, most of these claims appeared in the media in and around 1987,162 and have proven false or highly suspect.163 Yet this case and others that trusted such spurious evidence continue to be cited, discussed, and relied upon by other courts deciding BSL cases.164 As recently as 2013, the Supreme Court of West Virginia pointed to the same evidence in upholding a breed ban.165

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159 Dog Fanciers, 820 P.2d at 652.
160 Id.
161 Garcia, 767 P.2d at 359.
162 See supra notes 5–8 and accompanying text.
163 See Tellings I, 2006 WL 513946, at ¶ 63 (“[P]revious cases involving ‘vicious dog’ laws, especially from the late 1980s and early 1990s, relied on what is now outdated information which perpetuated a stereotypical image of pit bulls.” (citations omitted)).
164 E.g., Am. Canine Fed’n v. City of Aurora, Colo., No. 06-CV-01510-WYD-BNB, 2008 WL 2229943, at *5, *8 (relying on Dog Fanciers and Garcia). The initial cases challenging BSL all included, at best, questionable testimony about pit bulls, and, at worst, patently false claims about the dogs. Unfortunately, because of the precedential value of these early cases, this same unsubstantiated ‘evidence’ has been passed down to the next set of cases and the next, leading courts to uphold BSL on the basis of pseudoscience long since debunked. For example: In Starkey, the district court noted importance of testimony from the township’s Health Officer who said “the Pit Bull bites to kill without signal.” 628 F. Supp. at 197. Similarly in Hearn, the Kansas Supreme Court noted the following evidence to support the finding that pit bulls were a “unique hazard” to public safety: “Defendant city introduced expert testimony that pit bull dogs are both more aggressive and destructive than other dogs. Pit bull dogs possess a strongly developed ‘kill instinct’ not shared by other breeds of dogs. This testimony indicated that pit bull dogs are unique in their ‘savageness and unpredictability.’” 772 P.2d at 765. Even more egregiously, the ordinance challenged and upheld in Peters includes an outright false statement regarding pit bull jaw strength: “[T]he Pit Bull’s massive canine jaws can crush a victim with up to two thousand (2,000) pounds of pressure per square inch—three times that of a German Shepherd or Doberman Pinscher, making the Pit Bull’s jaws the strongest of any animal, per pound . . . .” 534 So. 2d at 764. Each of these pieces of ‘evidence’ has since been debunked. Fear vs. Fact, NATIONAL CANINE RESEARCH COUNCIL, http://www.nationalcanineresearchcouncil.com/uploaded_files/tinyence/Fear%OverVs%20Fact_1.pdf [http://perma.cc/PP63-GZ5G] (accessed Nov. 25, 2015).
165 Hardwick v. Town of Ceredo, No. 11-1048, 2013 WL 149628, at *5 (W. Va. Jan. 14, 2013). “[E]ach Defendant’s dogs are of the breed that is typically referred to generically as pit bull dogs which are aggressive by nature, have been known as attack animals with strong massive heads and jaws, and have been found to represent a public health hazard. The majority of jurisdictions have accepted the proposition that dogs of this type have a propensity to be aggressive and attack without provocation and it is well established that such dogs have gotten a lot of notoriety of being dangerous to public health and safety.” Id.
Colorado Dog Fanciers, Garcia, and other cases have held that there is enough evidence to support the rational basis test and that neither due process nor equal protection were violated by the ordinances or statutes. Some scholarship has suggested that courts should approach BSL with a stronger rational basis test, often called “rational basis plus” or “rational basis with bite.”166 The Ohio Court of Appeals, in its opinion in Toledo v. Tellings, did just that.167 The arguments presented in this Article would support that approach, but it is not the intent of this Article to advocate specifically for such a strengthened test, because even a standard rational basis test should not allow a statute to stand when it is not rationally related to accomplishing a legitimate government interest. While the state arguably has a legitimate interest in preventing dog bites, BSL is not rationally related to this goal because breed does not predict propensity to bite.

The one constitutional area where BSL opponents have gained traction is on the vagueness issue. While many courts have agreed with the Colorado and Ohio supreme courts, which found that vets and dog owners are typically capable of determining the breed of a dog, including pit bulls and pit bull-type dogs,168 not all agree. The Colorado Supreme Court specifically held that BSL "provides adequate notice to dog owners and is not unconstitutionally vague."169 Conversely, some courts have acknowledged that determining breed, especially breed of a ‘type’ of dog, or of a mixed breed, is difficult and can be deemed vague.170 However, legislatures always have the opportunity to redraft statutes to bring them into constitutional compliance. The real question here, which will be discussed in greater depth in Part IV, is whether the underlying assumption that owners know what breed of dog they have is correct. Evidence suggests not, but courts have been unwilling to explore the accuracy of the underlying assumption,171 specifically because if answered in the negative, it brings down the whole BSL house of cards.

D. Current Picture of BSL in the U.S. and Abroad

As of 2014, ‘pit bulls’ are the most common targets of BSL in the U.S. and

166 Swann, supra note 142, at 840, 868.
168 Dog Fanciers, 820 P.2d at 652; Tellings II, 871 N.E.2d at 1158.
169 Dog Fanciers, 820 P.2d at 652.
170 See, e.g., City of Lynn, 533 N.E.2d at 647 (finding pit bull ban “leaves dog owners to guess at what conduct or dog ‘look’ is prohibited, and requires ‘proof’ of a dog’s ‘type’ which...may be impossible to furnish”); Des Moines, 469 N.W.2d 416, 418 (finding that language including “dogs of mixed breed” in pit bull ban “allows subjective determinations based on a choice of nomenclature by unknown persons and based on unknown standards”).
171 See, e.g., Tellings II, 871 N.E.2d at 1158 (quoting Anderson, 566 N.E.2d at 1228) (“[T]he physical and behavioral traits of pit bulls together with the commonly available knowledge of dog breeds typically acquired by potential dog owners...are sufficient to inform a dog owner as to whether he owns a dog commonly known as a pit bull dog.”); Des Moines, 469 N.W.2d at 418 (validating sections of ordinance pertaining to specific breeds because “the determination of a dog’s breed can be done according to objective standards” and these sections “permit a reader of ordinary intelligence to determine which dogs are included”); Dog Fanciers, 820 P.2d at 652 (“[T]he standards for determining whether a dog is a pit bull are readily accessible to dog owners, and...most dog owners are capable of determining the breed or phenotype of their dog.”).
abroad, but they are by no means alone. Other targeted breeds include: Rottweilers, Cane Corsos, Presa Canario, various types of mastiffs, chow chows, and Akitas, among others. Currently, none of the fifty states have enforceable statewide BSL. As mentioned above, Ohio did have statewide BSL until 2012 when the legislature amended its dog law to eliminate its designation of dogs belonging to “a breed that is commonly known as a pit bull dog” as per se “vicious.”

For the most part, BSL in the U.S. is a local concern, and thirty-one of the fifty states continue to allow their local communities to enact BSL with no restriction. U.S. military bases also continue to impose BSL against pit bulls, wolf hybrids, Rottweilers and other breeds.

Internationally, the United Kingdom and Spain have enacted forms of BSL on the national level. Other international BSL includes restrictions in the Australian province of Victoria and in Winnipeg, Manitoba. The Netherlands recently repealed BSL, determining it had no effect on rates of dog attacks. Most notably, Italy had, at one time, placed restrictions on out-right bans on ninety-two different breeds of dog. That number was reduced to seventeen breeds, before the government finally repealed its BSL in favor of a new breed-neutral law directed at reducing dog bites.

Overall, despite strong opposition and significant evidence against its efficacy, BSL is alive and well in the U.S., as well as other parts of the world.

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172 Breed-Specific Legislation (BSL) FAQ, supra note 11.
173 Id.
176 Army Memorandum, supra note 130; Marine Corps Order, supra note 130; AIR FORCE STANDARDIZED PET POLICY, supra note 131.
177 U.K. Dangerous Dogs Act, supra note 97; Rosado et al., supra note 16, at 167.
178 Victoria Domestic Animals Act, supra note 98; Winnipeg Responsible Pet Ownership By-Law, supra note 96.
180 Id.
181 Italy Repeals Ban, supra note 12.
182 Id.
III. THE SCIENCE BEHIND CANINE AGGRESSION

A. Research Does Not Support the Concept of a ‘Dangerous’ Breed

As noted by the Ohio Court of Appeals in Toledo v. Tellings, to date, the scientific evidence concerning canine aggression does not point toward the identification of aggressive breeds as a whole.\textsuperscript{183} Instead it suggests that the problem of canine aggression is a complex one involving many variables, and points to risk factors other than breed as more predictive of aggression.\textsuperscript{184} Over the past ten years, several studies have been conducted to determine the efficacy of breed-specific laws enacted outside the U.S.\textsuperscript{185} Universally, these studies fail to support BSL and, in fact, some have led many nations to repeal their BSL in favor of other breed-neutral measures.\textsuperscript{186}

A series of studies of Australian, Spanish, German, and Dutch BSL, published from 2006 to 2009, all asked the central question of whether BSL is justified based on statistical evidence.\textsuperscript{187} Each study utilized different data and methodology, but all concluded that BSL was not an effective means of curbing canine aggression.\textsuperscript{188}

1. Australian Study

In a 2006 Australian study, published in the Journal of Veterinary Behavior, Dr. Stephen Collier analyzed the existing data regarding dog bites in several regions of Australia, comparing pre-BSL and post-BSL statistics to determine if BSL had any quantifiable effect.\textsuperscript{189} Essentially, he analyzed the bite reports per breed and “population attributable fraction percentage” (PAF%) of each breed present in the population, then compared these statistics over time, both before and after passage of BSL.\textsuperscript{190}

\textsuperscript{183} See Tellings I, 2006 WL 513946, at ¶ 64 (finding that expert testimony presented at trial “showed many of the beliefs and ‘myths’ about pit bulls to be simply untrue and unsupported by now accepted scientific, genetic, medical, or canine behavior principles”).

\textsuperscript{184} Patronek, supra note 15, at 1726.

\textsuperscript{185} See, e.g., Schalke et al., supra note 98 (discussing the efficacy of BSL in Germany).

\textsuperscript{186} See Cornelissen & Hopster, supra note 27 (discussing a study evaluating BSL in the Netherlands finding BSL ineffective); Ott et al., Is There a Difference? Comparison of Golden Retrievers and Dogs Affected by Breed-Specific Legislation Regarding Aggressive Behavior, 3 J. VETERINARY BEHAV. 134 passim (2008) (discussing a study evaluating BSL in Lower Saxony, Germany finding BSL ineffective, and therefore BSL was repealed).

\textsuperscript{187} E.g., Collier, supra note 14 (Australian study, 2006); Rosado et al., supra note 16, at 167 (Spanish study, 2007); Ott et al., supra note 186, at 135 (German study, 2008); Cornelissen & Hopster, supra note 27, at 293 (Dutch study, 190).

\textsuperscript{188} Collier, supra note 16, at 21; Rosado et al., supra note 16, at 169; Ott et al., supra note 186, at 139–40; Schalke et al., supra note 98, at 101–02; Cornelissen & Hopster, supra note 27, at 297.

\textsuperscript{189} Collier, supra note 16, at 17–22. The history of Australian BSL began in 1991. Based almost entirely on media reports of the dangerousness of the breed in the U.S. and the U.K., Australia prohibited the importation and breeding of American pit bull terriers (APBT), imposed restrictions and requirements on owners, and in some cases banned the dogs in certain areas. Id. at 17–18.

\textsuperscript{190} Id. at 18–20. Collier is quick to point out many of the methodological problems with determining the “dangerousness” of any particular breed based on bite reports and percentage of registered dogs. Id. First and foremost, the reliability of the data is immediately questionable because the calculation of population attributable fraction percentage (PAF%) is inherently flawed. Id. at 19. The PAF% measures the percentage of a breed within the overall population. Id. at 18. For a simple
One important statistical flaw noted by Collier is that owners of American pit bull terriers, in particular, are quite logically reticent to register their dogs under the proper breed designation, and likely do not do so in the same numbers as other non-restricted breeds.\textsuperscript{191} The results of this flaw are obvious. Where the PAF\% of a breed is underestimated, each attack recorded by that breed is diffused over a smaller estimated population, and it makes the breed seem more aggressive.\textsuperscript{192} Collier also points out that the identification of dog breeds involved in the attacks comes primarily from eyewitnesses to the attacks or the news media, and that neither are reliable sources of data,\textsuperscript{193} a point that will be made in greater detail in later studies.

Even based on a review of these flawed numbers, Collier determined that aggressive dogs make up only a very small percentage of any breed (at the highest only 1\% of any one breed), that BSL has shown no change in the number of bites in Australia, and that BSL directed at a breed or group of breeds with the worst bite records is unlikely to affect statistics for any length of time because there are many breeds that could be made dangerous through irresponsible ownership.\textsuperscript{194}

2. Spanish Study

Similarly, a 2007 Spanish study, also published in the Journal of Veterinary Behavior, considered the effects of Spain’s “Dangerous Animals Act” (DAA), which included both breed-specific and breed-neutral laws.\textsuperscript{195} Reviewing dog-bite data from the five-year period immediately prior to the enactment of the new law, and the five-year period after the enactment of the new law, the researchers determined that BSL had no effect on the rate of dog bites.\textsuperscript{196}

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\textsuperscript{191} Id. at 19.
\textsuperscript{192} Id.
\textsuperscript{193} Id. at 20.
\textsuperscript{194} Id. at 21.
\textsuperscript{195} Rosado et al., supra note 16, at 167. At the time of the study, the Spanish Dangerous Breed list included the pit bull terrier, Staffordshire bull terrier, American Staffordshire terrier, Rottweiler, Argentine Dogo, Brazilian Fila, Tosa Inu, and Akita Inu breeds. Id.
\textsuperscript{196} Id. at 169. The study, the first conducted over such a long period of time, looked specifically at statistics from the Aragon region of Spain, which comprises three provinces of the northeastern area of the country. Id. at 167. Researchers also compared bite rates in densely populated areas of the region, compared to sparsely populated and rural areas over the same time period. Id. These researchers used the 2001 official Aragon census to determine human population in the region, and utilized data collected on rabies vaccinations in the region to estimate the canine population based on breed. Id. Because rabies vaccination is mandatory in Aragon, researchers believed the vaccination numbers would mirror the great majority of the canine population. See id. (“Canine population data were obtained from the 2004 municipal census . . . . In this regard dogs were registered by a tax code linked to the rabies vaccination that remains mandatory once a year in this region.”).
The results of the study showed no great changes in the number of bite incidents or the breeds of dog involved in biting.\textsuperscript{197} German shepherds and crossbreed dogs accounted for the majority of bites both before enactment of the DAA and after.\textsuperscript{198} These are two of the most popular types of dogs in Spain, so it is logical that most bites would come from these breeds.\textsuperscript{199} While researchers noted a slight increase in the reporting of bites attributed to dogs from the dangerous-breed list in the post-enactment period, they generally attributed this to the greater awareness of, and possibly bias against, breeds on the list due to media attention surrounding the enactment of the DAA.\textsuperscript{200} Such bias would manifest through over-identification.\textsuperscript{201}

What the study did show was that the BSL and accompanying dangerous-breed list was not based on actual likelihood of danger.\textsuperscript{202} The dangerous breeds were involved in only 2.4% of biting incidents prior to enactment of the legislation, and the breeds themselves represented only about 4.2% of the canine population.\textsuperscript{203} Researchers also noted the DAA in general (both breed-specific and breed-neutral provisions) showed no real impact on bite frequency, but that bites continued to be more frequent in the rural, less densely populated areas than in urban areas.\textsuperscript{204} While at first this may seem counterintuitive, it is likely that the urban owner exerts more control over their dog in public settings, preventing many potential bite episodes.\textsuperscript{205}

The Spanish researchers note that BSL measures were both overinclusive and underinclusive of the aggressive dog population, because the vast majority of dogs whose breeds are included on the list are not aggressive, and some dogs of other breeds are aggressive.\textsuperscript{206} Again, this is an important point that will be addressed in later studies. Perhaps even more importantly, the researchers noted that BSL can give the public, both dog owners and non-owners, a false sense of security that if a breed is not on the list, it is per se ‘safe.’\textsuperscript{207}

3. German Studies

In 2008, a group of German researchers conducted their own studies to determine whether BSL is justified, through behavior and temperament testing.\textsuperscript{208} In July of 2000, the Lower Saxony region of Germany enacted BSL that restricted the keeping of pit bull-type dogs\textsuperscript{209} and eleven other breeds.\textsuperscript{210} The keeping of

\textsuperscript{197} Id. at 169, 171.
\textsuperscript{198} Id. at 170.
\textsuperscript{199} Id.
\textsuperscript{200} Id. at 167, 171.
\textsuperscript{201} Rosado et al., supra note 16, at 171.
\textsuperscript{202} Id. at 172.
\textsuperscript{203} Id.
\textsuperscript{204} Id. at 169.
\textsuperscript{205} Id. at 170.
\textsuperscript{206} Id. at 172.
\textsuperscript{207} See Rosado et al., supra note 16, at 172 (discussing that owning a breed of dog not designated as a dangerous breed, such as a German shepherd, “might lead to a false sense of security regarding the risk of causing an incident”).
\textsuperscript{208} Schalke et al., supra note 98, at 98.
\textsuperscript{209} Id. at 97–98 (including American Staffordshire terriers, bull terriers, and other dogs “of the pit
breeds commonly known as pit bulls was prohibited unless the individual dog or dogs could pass a particular behavior evaluation established by the Ministry of Nutrition, Agriculture, and Forestry. Even if they passed the test, pit bulls were still required to be muzzled and leashed at all times while off private property.

The other eleven breeds were subject to the muzzling and leash law, and after they passed the behavior test, such dogs could be exempted from the breed-specific restrictions. Under no circumstances could pit bull-type dogs be exempted from muzzle and leash requirements.

For their research, the German group put 415 dog-and-owner teams through the official behavior evaluation. An examiner observed each dog-and-owner team as it moved through twenty-one scenarios, and the dog was assigned a score of 1 to 7 based on how aggressive its response was to each interaction. A score of 1 indicated no aggression whatsoever, while 2 to 7 indicated aggression in six escalated steps. The researchers noted no significant difference between breeds with regard to inappropriate aggression on this test. All told, 95% of the dogs in the study reacted appropriately to each given situation. Based on these conclusions, the researchers concluded breed-based classifications were not

210 Id. at 98. Doberman pinscher, Rottweiler, Staffordshire bull terrier, bull mastiff, Dogo Argentino, Fila Brasiliense, Caucasian Ovtscharka, mastiff, Mastino Español, Mastino Napoletano, and Tosa Inu breeds are restricted in this group. Id.

211 Id.

212 Id.

213 Id. at 98.

214 Schalke et al., supra note 98, at 98.

215 Id. All dogs were members of, or crossbreeds of one of five different breeds: American Staffordshire terriers, bull terriers, Rottweilers, Doberman pinschers, Staffordshire bull terriers, or “dogs of the pit bull type.” Id. All dogs were privately owned and previously unknown to researchers. Id. The significant portion of the behavior evaluation was the temperament test, where the dog-and-owner teams were observed in twenty-one different situations involving commonplace dog-human contact. Id. at 99. These situations tested the relationship between the dog and owner and how the dog reacted to strangers, including friendly strangers, threatening strangers, people making abrupt or unusual movements, and people with uncommon appearances. Id. Additionally, dogs were exposed to situations which might typically arise in the presence of children, as well as common everyday occurrences such as moving bicycles, opening umbrellas, or passing joggers. Id. at 103 app.2. Dogs were also evaluated for dog-on-dog interactions, but the researchers did not include the results in this study as the focus of the study was on aggression toward people. Id. at 99.

216 Id. at 98–99.

217 Id. at 99. Of 415 dogs tested, 158 showed no aggressive behavior under any of the circumstances (score of 1) and an additional 201 only gave visual or auditory signals while staying still or backing away from the stimulus (score of 2). Id. A total of eighteen dogs exhibited bite movements, but either remained still, backed away, or stopped some distance from the stimulus (scores of 3 and 4). Id. Thirty-seven dogs exhibited threatening behavior, followed by an actual completed bite or attack (score of 5), while only one dog reacted with a bite or attack without first showing threatening behavior (score of 6). Id. No dogs reached a score of 7. See id. (415 dogs accounted for in numbers scoring 1 through 6). Of the dogs that showed some aggression, it was generally observed most frequently when the dog was physically threatened, followed by instances where a stranger made abrupt movements. Id. at 100. Of the thirty-seven dogs that reached the level of 5, only nineteen showed aggression at inappropriate times. Id.

218 Id. at 99.

219 Id.
justified.\textsuperscript{220}

In a follow-up article, published later in 2008, the German team conducted the same test on seventy golden retrievers.\textsuperscript{221} Over 98\% of these dogs reacted appropriately to each situation (compared to 95\% in the former study), and 1.43\% of the dogs displayed aggressive behavior in inappropriate situations (compared to 5\% in the former study).\textsuperscript{222} Comparing the two studies, the scientists again found no statistically significant difference between the golden retriever control group and the other breeds affected by BSL.\textsuperscript{223} As a result of the publication of these two studies, the government of Lower Saxony repealed its BSL.\textsuperscript{224}

4. Dutch Study

In what is believed to be the first scientific evaluation of BSL commissioned by a government, researchers from the Netherlands conducted three surveys to determine if BSL was justified in their country.\textsuperscript{225} The first survey contacted over 40,000 Dutch households, identifying 1,420 people who had been bitten by a dog in the preceding twenty-four months.\textsuperscript{226} The second survey was directed toward those individuals identified in the first survey, and asked respondents to give information about the dog–victim interaction as well as the breed of dog responsible for the bite.\textsuperscript{227} The last survey, reaching out to over 10,000 dog owners, collected information on breed and registration status.\textsuperscript{228}

Based on these surveys, the researchers found that about 33\% of victims were bitten by their own dogs, while 62\% of all bites, and 75\% of bites to children, occurred in non-public places.\textsuperscript{229} About 31\% of the bites were characterized as “unintentional,” meaning they happened during play or by accident.\textsuperscript{230} Most bite incidents resulted in no injury or only minor injury (total of 80\%).\textsuperscript{231}

Almost all persons surveyed about their injuries made a breed identification.\textsuperscript{232} In total, eighty-six different breeds were identified.\textsuperscript{233} The study calculated bite risk indices based on the representation ratio, a likelihood that a dog of the breed would bite based on representation of the breed within the

\textsuperscript{220} Schalke et al., supra note 98, at 102.
\textsuperscript{221} Ott et al., supra note 186, at 135.
\textsuperscript{222} Id. at 134.
\textsuperscript{223} Id. at 140.
\textsuperscript{224} See id. at 134–35, 140 (reviewing results of previous study, reporting results of present study, and indicating that BSL was repealed).
\textsuperscript{225} See Cornelissen & Hopster, supra note 27, at 293 (study of effectiveness of BSL commissioned by the Dutch government, completed in 2009).
\textsuperscript{226} Id.
\textsuperscript{227} Id. at 293. In order to help with identification of breed, researchers included pictures of the fifty most popular breeds in the Netherlands, as well as pictures of breeds most commonly the subject of BSL. Id. In the study they acknowledge that the term ‘breed’ includes look-alikes and crossbreeds.
\textsuperscript{228} Id. at 293.
\textsuperscript{229} Id. at 294.
\textsuperscript{230} Id. at tbl.1.
\textsuperscript{231} See Cornelissen & Hopster, supra note 27, at 294 tbl.1 (32\% resulted in no injuries, and 48\% resulted in minor injuries).
\textsuperscript{232} Id. (92\%).
\textsuperscript{233} Id.
reference population.234 The average dog has a bite risk index of 1.235 Certain breeds had a bite risk index above 1, such as Belgian shepherds, Jack Russell terriers, German shepherds, and Dobermans, among others.236 Breeds such as golden retrievers, Yorkshire terriers, and the polymorphic mixed-breed group had ratios below 1.237 While these numbers may provide some general support for BSL against certain breeds, the researchers noted that eighty-six different breeds did bite.238 Eliminating one or two breeds or even twenty breeds does not eliminate the risk.239 The breadth of the entire study illustrates the complexity of the dog-bite problem.240 Simply eliminating breeds that bite the most implies removing the most common breeds, a result that the researchers deemed “neither practicable nor desirable.”241

Instead, the researchers urge multiple prevention strategies based on characteristics of the injuries.242 For instance, the study supported the finding that most children are bitten in their own homes by dogs they know.243 Educating children on how to safely interact with dogs,244 combined with warning parents of the dangers of leaving children and dogs together unsupervised,245 should prevent many of the most common dog bites to children.246 Similarly, preventing dogs from biting their owners would require different strategies than preventing dogs from biting strangers in public locations.247 Recently, after the completion of the Dutch government’s inquiry into the efficacy of BSL, the Netherlands repealed its BSL in favor of prevention efforts that more closely matched the bite risks in

\[\text{See id. at } 293 \text{ (noting that the bite risk index is established by dividing the fraction of breed within the biting population by the fraction of breed within the canine population and that a breed with an average bite risk will necessarily have an index of 1).}\]

\[\text{id. at } 296 \text{ tbl.2.}\]

\[\text{Cornelissen & Hopster, supra note 27, at } 296 \text{ tbl.2.}\]

\[\text{id. at } 294.\]

\[\text{See id. at } 297 \text{ (“Our findings . . . do not support the use of an attack record in developing mitigation strategies. We found that all dogs can bite.” (emphases in original)).}\]

\[\text{id. at } 293–97.\]

\[\text{id. at } 297.\]

\[\text{id. at } 296–97.\]

\[\text{Cornelissen & Hopster, supra note 27, at } 296.\]

\[\text{id. in } \text{Harry Potter and the Prisoner of Azkaban,} \text{ author J.K. Rowling illustrates the problem of children who fail to respect the personal space of an animal. In one iconic scene (later portrayed in the movie of the same name) protagonist Harry Potter demonstrates a proper and respectful interaction with a potentially dangerous hippogriff named Buckbeak. The interaction goes very well, and the hippogriff allows Harry to ride on his back. Later, the antagonist, Draco Malfoy, always jealous of Harry’s successes, attempts to ride the hippogriff, but approaches the creature aggressively, paying no attention to the warning body language of the animal. In response the hippogriff injures Malfoy and is sentenced to death for hurting the boy. This type of incident happens all the time in interactions between people (both children and adults) and dogs, and just like Buckbeak, it is the dog that pays the ultimate price with his life. In Rowling’s book, Harry Potter and his friends are able to save the day and protect Buckbeak, but such a happy ending is rare in real life. J. K. Rowling, } \text{Harry Potter and the Prisoner of Azkaban} \text{ at 33:30 (Warner Bros. 2004).}\]

\[\text{Cornelissen & Hopster, supra note 27, at } 296.\]

\[\text{See id. (“Several successful educational interventions for the prevention of dog bites in children have been reported in the literature.”).}\]

\[\text{id. at } 296–97.\]

234  \text{id. at } 297.

235  \text{See id. at } 293 \text{ (noting that the bite risk index is established by dividing the fraction of breed within the biting population by the fraction of breed within the canine population and that a breed with an average bite risk will necessarily have an index of 1).}\n
236  \text{id. at } 296 \text{ tbl.2.}\n
237  \text{Cornelissen & Hopster, supra note 27, at } 296 \text{ tbl.2.}\n
238  \text{id. at } 294.\n
239  \text{See id. at } 297 \text{ (“Our findings . . . do not support the use of an attack record in developing mitigation strategies. We found that all dogs can bite.” (emphases in original)).}\n
240  \text{id. at } 293–97.\n
241  \text{id. at } 297.\n
242  \text{id. at } 296–97.\n
243  \text{Cornelissen & Hopster, supra note 27, at } 296.\n
244  \text{id. in } \text{Harry Potter and the Prisoner of Azkaban,} \text{ author J.K. Rowling illustrates the problem of children who fail to respect the personal space of an animal. In one iconic scene (later portrayed in the movie of the same name) protagonist Harry Potter demonstrates a proper and respectful interaction with a potentially dangerous hippogriff named Buckbeak. The interaction goes very well, and the hippogriff allows Harry to ride on his back. Later, the antagonist, Draco Malfoy, always jealous of Harry’s successes, attempts to ride the hippogriff, but approaches the creature aggressively, paying no attention to the warning body language of the animal. In response the hippogriff injures Malfoy and is sentenced to death for hurting the boy. This type of incident happens all the time in interactions between people (both children and adults) and dogs, and just like Buckbeak, it is the dog that pays the ultimate price with his life. In Rowling’s book, Harry Potter and his friends are able to save the day and protect Buckbeak, but such a happy ending is rare in real life. J. K. Rowling, } \text{Harry Potter and the Prisoner of Azkaban} \text{ at 33:30 (Warner Bros. 2004).}\n
245  \text{Cornelissen & Hopster, supra note 27, at } 296.\n
246  \text{See id. (“Several successful educational interventions for the prevention of dog bites in children have been reported in the literature.”).}\n
247  \text{id. at } 296–97.
the community.\textsuperscript{248}

B. Epidemiological Studies of Dog Bites Illuminate Complexity of Problem

The findings of the Dutch study echo many of the epidemiological studies on dog bite prevention, showing that the factors contributing to dog bites are numerous and complex.\textsuperscript{249} Breed plays only a small part, if any.\textsuperscript{250} A 2013 comprehensive study of 256 dog bite-related fatalities (“DBRF”)\textsuperscript{251} in the U.S. found a number of key preventable factors play a significant role in such deaths.\textsuperscript{252} The authors noted that undue and widespread emphasis on breed has detrimentally affected efforts to prevent serious and fatal canine attacks because it “has contributed to a lack of appreciation of the ownership and husbandry factors that more directly impact dogs and the complex genetic factors that work in combination with husbandry to influence a dog’s behavior responses to a given set of stimuli.”\textsuperscript{253} In other words, when we focus on breed, we miss the real dangers.

This particular study was unique in that the information regarding the incidents was not taken solely from media reports, but rather from interviews of primary sources including law enforcement, animal control officers, veterinarians, prosecutors, dog owners, and witnesses and therefore more detailed information was gathered.\textsuperscript{254}

Of the victim-related factors, it is important to note that 85\% of the victims had either no relationship with the dog (74.2\%)\textsuperscript{255} or only an incidental relationship (10.9\%).\textsuperscript{256} Over half the victims were either under the age of five

\begin{footnotes}
\item[248] See id. at 293 (study itself contributed to the abolition of BSL in the Netherlands); see also EXPATICA DUTCH NEWS, supra note 180 (stating that the Agriculture Minister, Gerda Verburg, announced the repeal, citing the fact that the ban did not reduce biting incidents).
\item[251] Patronek, supra note 15, at 1726. DBRFs are extremely rare. Id. at 1726, 1729. The 256 DBRFs studied occurred over a ten-year period, with a mean of 25.6 incidents per year. Id. at 1729. The human population in the U.S. during this time period was approximately 295.5 million, while the canine population was estimated at 68.8 million. Id. This corresponds with a rate of 0.087 fatal bite incidents per 1 million people per year, and 0.38 fatal bite incidents per 1 million dogs per year. Id.
\item[252] Id. at 1726.
\item[253] Id.
\item[254] Id. at 1729.
\item[255] Id. at 1730. Victims with no relationship with the dog were visitors, intruders, or passersby. Id. at 1727.
\item[256] Id. at 1730. A victim with an incidental relationship is a person “other than the owner or primary caretaker . . . who is regularly present at the home, . . . and who does not regularly interact with the dog in positive and humane ways.” Id. at 1727.
\end{footnotes}
(45.3%) or their ability to properly interact with a dog was compromised (10.6%) due to drug and alcohol intake, dementia, Alzheimer’s disease, or uncontrolled seizure disorders.\textsuperscript{257} In 87.1% of the incidents, there was no able-bodied adult present at the scene to intervene.\textsuperscript{258}

In relation to the characteristics of the dogs themselves, the sexual status of the dog stood out as particularly important. In 212 incidents (82.2%), only sexually intact dogs were involved, while another 4 incidents included both intact and altered dogs.\textsuperscript{259} For twenty-two incidents, investigators were unable to determine the sex status of the dogs involved.\textsuperscript{260} Only 7% were documented to involve neutered male dogs alone,\textsuperscript{261} and spayed female dogs were only noted to be involved in 2 of the 256 incidents (less than 1%).\textsuperscript{262} While the investigators also gathered breed information on the dogs involved, they found that “disagreement occurred with sufficient frequency to cast doubt” on identifying breed without support from DNA evidence or pedigree papers.\textsuperscript{263}

In the category of husbandry, researchers noted several factors contributing to DBRFs. In 37.5% of the incidents there was evidence of owner mismanagement\textsuperscript{264} and in 21.1% there was evidence of prior abuse\textsuperscript{265} or severe neglect\textsuperscript{266} of the dog.\textsuperscript{267} The most striking statistic was that 76.2% of DBRF-involved “resident” dogs, not family dogs.\textsuperscript{268} Resident dogs are generally isolated from positive interactions with humans.\textsuperscript{269} These dogs may be tethered or penned outside for most of their lives, or sequestered in a basement, garage or other location in the house, but the key factor is that resident dogs are isolated.\textsuperscript{270} Family dogs, on the other hand, are kept in the house and have positive interactions with the family.\textsuperscript{271} This is a particular distinction that has gone unnoticed, or largely been ignored by the media, but it is a factor well worth exploring. In addition, 74.2% of deaths occurred on the dog owner’s property.\textsuperscript{272}

\textsuperscript{257} Patronek, supra note 15, at 1729.
\textsuperscript{258} Id. at 1730.
\textsuperscript{259} Id. The authors theorize that it is possible or perhaps even likely that the sexually-intact dog incited the other dogs involved in these types of attacks. \textit{id}.
\textsuperscript{260} Id.
\textsuperscript{261} Id. at 1730 tbl.2. Other neutered male dogs may have been involved in attacks by multiple dogs when an intact male was present. \textit{id}.
\textsuperscript{262} Id. at 1730.
\textsuperscript{263} Patronek, supra note 15, at 1734. Unreliability of eyewitness breed identification will be explored in depth in Section V of this paper.
\textsuperscript{264} Id. at 1732. Mismanagement was defined as allowing the dog to be a danger, via either knowledge of prior dangerous acts, or allowing the dog to run loose. \textit{id} at 1728.
\textsuperscript{265} Id. at 1732. Abuse included beating a dog, using it for dogfighting, sexual abuse of the dog, or evidence of other physical punishment. \textit{id} at 1728. In general, abuse was considered more severe than neglect. \textit{id}.
\textsuperscript{266} Id. at 1732. Neglect was defined as either failure to provide adequate food, water, shelter or shade, or failure to obtain treatment for medical conditions. \textit{id} at 1730.
\textsuperscript{267} Id. at 1732. The authors noted that the actual level of abuse or neglect may not have been thoroughly investigated, and therefore may be underreported. \textit{id} at 1734.
\textsuperscript{268} Id. at 1732.
\textsuperscript{269} Patronek, supra note 15, at 1732.
\textsuperscript{270} Id.
\textsuperscript{271} Id. at 1728.
\textsuperscript{272} Id. at 1732.
and in 87.1% of the incidents, the owner was not present.273

Documentation of the co-occurrence of these factors is, perhaps, the biggest take-away from this study. In over 80% of the DBRFs studied, at least four different factors were present at the time of the fatality, and in over 60% at least five factors were present.274 Thus, it is not usually one mistake by an owner that leads to a DBRF, it is a pattern of neglect, mismanagement, isolation, and abuse, coupled with a vulnerable victim, which leads to a DBRF. DBRFs are certainly rare, but they are also, in many cases, preventable—not through BSL, but through responsible dog ownership.

Similarly, recent studies surveying dog owners in the U.S. and United Kingdom about their experiences with canine aggression support the argument that canine aggression is a complex problem.275 These studies show “substantial within-breed variations” in aggression,276 suggesting that environmental and developmental factors play a major role in canine aggression.277 Specifically, researchers found increased instances of aggression in dogs subjected to physical punishment,278 unneutered male dogs,279 older dogs,280 dogs with younger owners,281 and dogs with female owners.282 On the other hand, researchers found decreased aggression in younger dogs,283 spayed female dogs,284 dogs with older owners,285 and puppies that had attended training classes.286 Again, the literature supports the fact that canine aggression does not occur in the vacuum of breed and requires a comprehensive, multi-faceted, and breed-neutral response.

273 id. at 1731 tbl.3.
274 id. at 1732 fig.1.
275 See, e.g., Rachel Casey et al., Human Directed Aggression in Domestic Dogs (Canis Familiaris): Occurrence in Different Contexts and Risk Factors, 152 J. APPLIED ANIMAL BEHAV. SCI. 52, 52–63 (2014) (discussing the “relatively small amount of variance” when applying the same factors to aggressive and non-aggressive dogs, which suggests “a much greater importance of factors specific to the experience of individual dogs” instead of generally to their breed); Deborah Duffy et al., Breed Differences in Canine Aggression, 114 J. APPLIED ANIMAL BEHAV. SCI. 441, 451–52 (2008) (“Differences between lines of distinct breeding stock indicate that the propensity toward aggressive behavior is at least partially rooted in genetics, although substantial within-breed variation suggests that other factors (developmental, environmental) play a major part in determining whether aggressive behavior is expressed in the phenotype.”); Yuying Hsu & Liching Sun, Factors Associated with Aggressive Responses in Pet Dogs, 123 J. APPLIED ANIMAL BEHAV. SCI. 108, 109 (2010) (finding variables in environmental factors, such as “dog and owner characteristics, living environments and owner-dog interactions”, had “significant relationships” with aggression scores).
276 Duffy et al., supra note 275, at 451–52.
277 Id. at 457.
278 Casey et al., supra note 275, at 61; Hsu & Sun, supra note 275, at 109.
279 Casey et al., supra note 275, at 60; Hsu & Sun, supra note 275, at 109.
280 Casey et al., supra note 275, at 60.
281 Id.
282 Id. at 59.
283 Id. at 60.
284 Id.; Hsu & Sun, supra note 275, at 120.
285 Casey et al., supra note 275, at 60.
286 Id. at 61.
One emerging area of scientific inquiry into canine aggression centers on the brain chemistry of aggressive dogs. While admittedly narrow, two studies published in 2010 and 2013 noted certain brain chemistry similarities in some aggressive dogs. In one study, the researchers looked at genes related to neurotransmitter systems in canine brains, and identified haploid genotypes (“haplotypes”) that seemed to indicate either risk of aggression or protection against aggression in dogs. Particularly, the researchers noted a correlation among low serotonin levels, higher than normal dopamine levels, and aggressive behavior. These findings are similar to the findings of other studies in humans and animals that link serotonin hypoactivity and dopamine hyperactivity to impulse aggression. Risk of aggression is likely a complex phenomenon resulting from combined effects of several haplotypes and environmental factors. The presence of one gene or haplotype will not cause aggressive behavior, but the presence of several specific haplotypes working together and combined with environmental factors, such as physical punishment or neglect/isolation, could cause a tendency toward aggression. These brain...
chemistry characteristics may be inherited by some dogs through certain breed lines, but they do not appear to be a breed-wide phenomenon. This means not every dog, or even most dogs of any particular breed, shows the brain chemistry of aggression. Just as the brain chemistry of violent humans is different than the majority of humans, so too the brain chemistry of aggressive dogs may be, simply, different than most other dogs regardless of breed. While this neuroscience-based inquiry is in its infancy it does give hope for the possibility of early diagnoses of aggressive tendencies that may respond to behavior modification therapy or even drug intervention before aggression actually occurs.

D. Studies that Support BSL

While the great majority of recent scientific studies reject BSL as a solution to the problem of dog bites, a few studies have been used to support such legislation. One of the most controversial of the supporting literature is a 2011 article published in the *Annals of Surgery* that purports to review all dog-bite traumas admitted to a level 1 trauma unit at the University of Texas Health Science Center in San Antonio over a fifteen-year period. The researchers attempted to determine the breed of the dogs involved in attacks on people subsequently admitted to the hospital. They established two categories: pit bulls (including dogs determined to be pit-mixes) and non-pit bulls. However, there is no explanation of how the researchers established breed, nor is there a clear understanding of what characteristics were required to be included in the ‘pit bull’ category, since it included mixed breeds. As will be discussed in greater depth in Part IV, determination of breed, especially when mixed breeds are involved, is much more complex and uncertain than it may at first appear. At the very least, the researchers should have provided information on their methods of breed determination, whether by media report, victim or witness interview, AKC registration, etcetera. The study has also been criticized for its

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297 For example, over 95% of dog breeds involved in the German study behaved properly under all circumstances. Schalke et al., supra note 98, at 102.

298 Just as we should not single out a race or ethnicity of humans as overly violent because a few of its members are violent, we should also not single out a canine breed in this manner.


300 Id. at 792. Two hundred twenty-eight victims of dog attacks were admitted to the hospital, but breed assignment (by whatever means used by the researchers) was only available for eighty-two of those victims (only 36% of the incidents).

301 Id.

302 Id.

303 See discussion infra Part IV.
citation to highly questionable statistics from unpublished sources.\textsuperscript{304} This article concluded that from their evaluation of records, injuries sustained in attacks by pit bulls were generally more severe than those by non-pit bulls.\textsuperscript{305} However, even the authors admitted that their small sample size and the limitations of their retrospective data might have compromised their results.\textsuperscript{306} These shortcomings, coupled with questionable statistics and undefined method of breed determination, undermine this study’s usefulness.

Similarly questionable is a recent study published in 2012 of the rate of dog-bite hospitalizations in areas of Manitoba, Canada, that have passed BSL at the community level.\textsuperscript{307} Researchers in the province of Manitoba attempted to compare the dog-bite related hospitalization rates in Manitoba’s non-BSL communities with hospitalization rates in communities that have enacted BSL in order to determine the efficacy of BSL.\textsuperscript{308} When comparing the pre-BSL hospitalization rates to post-BSL hospitalization rates within individual jurisdictions, the researchers found “no significant reduction in the period after BSL implementation.”\textsuperscript{309} It was only after researchers introduced “temporal and geographic variations” that they found any difference in comparing BSL and non-BSL jurisdictions.\textsuperscript{310} Specifically, they compared urban jurisdictions to rural by comparing the single major metropolitan area of Winnipeg to the smaller city of Brandon, and they found that the “hospitalization rate in Winnipeg (city with BSL) relative to Brandon (city without BSL) was lower after implementation.”\textsuperscript{311} These results are not surprising, nor should they be tied to BSL.\textsuperscript{312} Comparing Winnipeg, a city of nearly 700,000 people, to Brandon, a city of fewer than 50,000 people (less than 10% of Winnipeg’s population), is comparing apples to oranges.\textsuperscript{313} European researchers established that more densely populated areas generally have fewer dog-bite related injuries per capita.\textsuperscript{314}

In addition to these geographical differences, the Canadian researchers did not compare the same time periods in the BSL and non-BSL jurisdictions. Researchers compared data from the BSL jurisdictions while the legislation was in effect\textsuperscript{315} to data from the non-BSL jurisdictions over the entire study time period.

\textsuperscript{304} See, e.g., Karen Delise, \textit{Imprudent Use of Unreliable Dog Bite Tabulations and Unpublished Sources}, 225 \textit{ANNALES OF SURGERY} e11, e11 (2012) (calling into question the methods and limitations used by the research team).

\textsuperscript{305} Bini et al., \textit{supra} note 299, at 796.

\textsuperscript{306} \textit{id}.

\textsuperscript{307} Raghavan et al., \textit{supra} note 16, at 177.

\textsuperscript{308} \textit{id}.

\textsuperscript{309} \textit{id} at 181.

\textsuperscript{310} \textit{id}.

\textsuperscript{311} \textit{id} at 182.


\textsuperscript{313} \textit{id}.

\textsuperscript{314} Rosado et al., \textit{supra} note 16, at 169.

\textsuperscript{315} Winnipeg passed BSL in 1990, and other small communities passed BSL between 1991 and 2006, so the amount of time considered in the study for each BSL community varied based on when the legislation was passed. Raghavan et al., \textit{supra} note 16, at 177. The data from non-BSL communities was calculated for the full time period from 1984 to 2006. \textit{id}.
from 1984 to 2006.  

In addition to these two studies whose authors have come out in favor of BSL, proponents also point to the following study out of Catalonia, Spain, despite no specific endorsement of BSL from its authors. In this 2010 study, researchers noted a decline in dog-bite related hospitalizations from 1997 to 2008. Stricter regulations on dog ownership were passed in the area in 1999, some of which were breed-specific. While the decline was noted, researchers acknowledged that it was not possible to tell which regulations were effective, whether the change was due to education related to the regulations, or whether other factors were involved in the decline. Particularly, the authors noted that there was general decline in dog-bite related injuries documented during that time period in other locations, including the U.S., that could not be tied to specific interventions.

The vast majority of current scientific literature disfavors and undermines the efficacy of BSL. Generally, BSL is characterized through these studies as simplistic and reactionary, based on little actual evidence, and sometimes based on nothing more than media hype. Governments should be looking more closely at the varied risk factors that contribute to dog aggression and dog bites instead of ending their inquiry at the breed of dog.

IV. THE UNRELIABILITY OF VISUAL IDENTIFICATION OF DOG BREEDS

The scientific research discussed in Part III above employs a number of different empirical strategies to study the issue of canine aggression, but none of them considers the impact of DNA analysis on BSL. Up until recently, visual identification of breed has been accepted as correct; however, new evidence suggests visual identification of breed is not reliable, and in so doing, it rocks the already shaky foundations of BSL. Strongly paralleling the DNA exoneration of humans wrongfully convicted of crimes based on eyewitness identification, we are now seeing that canine DNA tests can call into question many breed identifications.

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316 Id. at 177–78.
319 Id. at 408.
320 Id. at 409.
321 Id.
322 Id.; Gilchrist et al., supra note 317, at 296.
324 See Victoria L. Voith et al., Comparison of Visual and DNA Breed Identification of Dogs and Inter-Observer Reliability, 3 AM. J. SOC. RES. 17, passim (2013) (discussing the results of a study where “[o]ver 900 participants” were asked to identify breeds by sight); Incorrect Breed Identification Costs Dogs Their Lives, MADDIE’S FUND, http://www.maddiesfund.org/incorrect-breed-identification.htm
For over one hundred years, scientists and criminal law scholars have debated the reliability of eyewitness identification in criminal trials. The current general consensus finds that eyewitness identification is extremely unreliable, and some scholars even advocate for ways to decrease its prevalence in criminal trials or its evidentiary admissibility. As noted in a recent opinion by the Pennsylvania Supreme Court, forty-five of the fifty states and most federal jurisdictions now allow, at the discretion of the trial court, expert testimony to be introduced at criminal trials to explain the limits of human perception and the unreliability of eyewitness identification. Of the states that have considered the issue, only Kansas and Louisiana preclude expert testimony on eyewitness identification per se.

DNA evidence, and its use in freeing persons convicted of crimes on the basis of inaccurate eyewitness identification, has essentially forced the hands of the courts to reform the way they deal with inherently unreliable eyewitness testimony. It should come as no surprise then that human eyewitness identification of canines and canine breeds is not more accurate or reliable than identification of persons perpetrating criminal acts. And once again, it is DNA that provides irrefutable evidence of that fact.

To date, the most groundbreaking scientific study on the topic of visual identification of canine breeds came in a 2013 study in the American Journal of Sociological Research, which found that the accuracy of visual breed identification...
is extremely low even by persons who work in canine-related fields.\textsuperscript{332} This study undermines the foundational basis of breed-specific laws and calls into question whether they could ever be implemented rationally or justly enforced.

Until the completion of the mapping of the canine genome,\textsuperscript{333} and tests to identify dog breeds through DNA became available,\textsuperscript{334} determination of breed was almost solely based on visual identification.\textsuperscript{335} Whether a dog of mixed or unregistered heritage would be considered a particular breed was decided by the visual perception of the enforcer in most cases. In some cases, ‘expert’ witness testimony (opinion of shelter workers or even the breed identification made by the owner themselves) would satisfy the proof requirement.\textsuperscript{336}

Based on Voith’s findings, those visual identifications are inherently unreliable. The study utilized 923 participants, all of which were persons engaged in dog-related professions and/or activities and were assumed to be knowledgeable about dogs and dog breeds in general.\textsuperscript{337} Each participant viewed one minute, color video clips of twenty mix-breed dogs used in the study. Each participant was then asked to visually identify the dogs’ predominant breed or breeds.\textsuperscript{338} The results are staggering.

For fourteen of the twenty dogs, fewer than 50% of the respondents could visually identify any of the breeds that matched the DNA identification.\textsuperscript{339} That means over half of the participants could not identify even one of the two or three (or in some cases four or more) breeds identified by the Wisdom Panel as making up the heritage of fourteen of the twenty dogs.\textsuperscript{340}

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\textsuperscript{332} Voith et al., supra note 324, at 22–24. All 923 human participants in the study worked in canine-related fields, as veterinarians, shelter workers, and AKC show judges and would be expected to have a better ability to identify dog breeds than the average person. \textit{id.} at 21.

\textsuperscript{333} Kerstin Lindblad-Toh et al., \textit{Genome Sequence, Comparative Analysis and Haplotype Structure of the Domestic Dog}, 438 \textit{Nature} 803 \textit{passim} (Dec. 8, 2005).

\textsuperscript{334} The Wisdom Panel, by Mars Veterinary, is the dominant canine DNA test and boasts that it can identify over 200 breeds. Mars Veterinary, \textsc{FAQs}, \textsc{The Wisdom Panel}, \textsc{http://www.wisdompanel.com/why_test_your_dog/faqs/#750} [http://perma.cc/2HKJ-WZ9C] (accessed Nov. 25, 2015).

\textsuperscript{335} In some relatively rare cases, breed identification could be based upon registration by the AKC, UKC, or other similar canine organizations. \textsc{See generally Dog Breeds}, \textsc{Am. Kennel Club}, \textsc{http://www.akc.org/breeds/complete_breed_list.cfm} [http://perma.cc/G4PT-VZ9C] (accessed Nov. 25, 2015) (stating that there are many factors the Board must consider in breed identification, including accuracy of records and proof of true breeding for generations of the particular breed in question); \textsc{Breed Standards}, \textsc{United Kennel Club}, \textsc{http://www.ukcdogs.com/Web.nsf/Webpages/Registration/BreedStandardsRev} [http://perma.cc/N5SA-2A4J] (accessed Nov. 25, 2015) (advising that the standards be used by responsible breeders who are familiar with breeds and by UKC judges, but not by the typical dog owner due to the likelihood of misidentification).

\textsuperscript{336} See State v. Lee, 257 P.3d 799, 807 (Kan. Ct. App. 2011). In this case, DNA testing was done on a dog that was involved in the death of an adult woman in order to determine if the municipality banned that particular dog breed. \textit{id.} at 804. The testing results were admissible, but neither the defendant nor the prosecutor were able to obtain testimony from any representative of the lab conducting the testing. \textit{id.} at 809. Other expert testimony included primarily visual identification of dog breed by veterinarians. \textit{id.} at 807.

\textsuperscript{337} Voith et al., supra note 324, at 20–21.

\textsuperscript{338} \textit{id.} at 19.

\textsuperscript{339} \textit{id.} at 22–23.

\textsuperscript{340} \textit{id.} at 23–24.
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Not only were the participants generally wrong about their identifications, they also failed to agree on identification. Participants agreed on predominant breeds for only seven of the twenty dogs.\textsuperscript{341} Of those seven, participants were wrong about three of them.\textsuperscript{342} For those three dogs, the commonly agreed upon breed was not a breed identified by DNA testing at all.\textsuperscript{343} Significantly, of the twenty dogs in the study, only four had a predominant breed correctly and consistently identified by more than 50% of the participants through visual identification.\textsuperscript{344}

This study undermines BSL in two ways. Most obviously, it calls into question the ability of any state or local government to enforce the laws justly. Unless every dog in a community receives a DNA test to determine breed heritage, enforcement will necessarily be both over-inclusive and under-inclusive. For example, in a community where pit bulls are banned, an attempt to enforce the ban without DNA testing will, based on Voith’s findings, lead to a significant numbers of dogs with no ‘pit bull-type’ heritage being identified as a ‘pit bull’ or ‘pit bull mix.’ This is evidence of over-inclusion. Similarly, a number of dogs that do in fact have a ‘pit bull-type’ breed in their genetic make up, but that do not look in any way like a ‘pit bull,’ will be passed over for enforcement. Thus under-inclusion is also inevitable. The obvious question arises: Is the community concerned about a particular breed, or a particular ‘look’ of a dog?\textsuperscript{345} If it is the former, just enforcement is impossible without mandatory DNA testing of all dogs. If it is the latter, then clearly breed-specific legislation does not accomplish that goal.\textsuperscript{346}

\textsuperscript{341} Id. at 22.
\textsuperscript{342} Id.
\textsuperscript{343} Voith et al., supra note 324, at 22.
\textsuperscript{344} Id.
\textsuperscript{345} In his testimony before the trial court in Toledo v. Tellings, Toledo Dog Warden, Tom Skeldon, testified that he was more interested in the “look” of a dog, rather than its actual breed identification. Specifically, he testified that “even if a dog was 50 per cent pit bull, if it did not ‘look like a pit bull,’ the owner would not be charged. On the other hand, if a dog did ‘look like a pit bull,’ it would be classified as a pit bull and the owner would be subject to the ‘vicious dog’ laws.” Tellings I, 2006 WL 513946, at *5.
\textsuperscript{346} See Voith et al., supra note 324, at 24. The lack of agreement among participants in the Voith study is telling here. Had participants been wrong about breed identification, but generally agreed on that inaccurate identification, we could at least see that laws based on visual identification alone or the “look” of the dog (while not technically “breed bans”), may be enforced consistently, if not accurately, such that all dogs that “looked” a certain way would be identified as included or excluded from a particular group. But, we see here, based on general lack of agreement among the 923 participants that even such inaccurate consistency seems implausible. The problem with visual identification has been acknowledged both by BSL proponents and opponents for some time. In 2004, while advocating for Bill 132 which would ban pit bulls in Ontario, Ontario Attorney General Michael Bryant responded to the argument of misidentification by stating, “Those who disagree with the ban will say that there will be identification problems. I don’t doubt there will be some issues on the margins, but, by and large, I think most people know what a pit bull is. . . . I’ve said before and I will say again, if it walks like a pit bull, if it barks and bites like a pit bull, wags its tail like a pit bull, it’s a pit bull. That is going to apply, I’m sure, to the vast majority of identification cases. That’s number one. Number two, everybody knows what kind of dog they own. Who doesn’t know what kind of dog they own? If you own a pit bull, you know you own a pit bull. If you know you don’t own a pit bull, then surely you will have the papers to say, ‘This isn’t a pit bull,’ it’s a whatever, it’s something else.
Perhaps even more importantly, the Voith study undermines the basis for breed discrimination at its roots. Can we even trust that the dog attacks upon which breed-specific legislation has historically been based actually involved the breed blamed for the attack? In some cases, where a dog is either registered as a particular breed or has known registered parents, we can be sure of its breed identification. Similarly, we may have DNA confirmation of breed. However, how many people identifying dogs at the scene of an attack to the police or media source stop to ask for breed registration or DNA results? The answer is none—and we would not expect them to do so. The basis of nearly every eyewitness breed identification related to an attack is based on the identifier’s subjective opinion of the look of the dog. Such evidence is inherently unreliable. 347

As mentioned above, the cycle of breed discrimination begins with an increase in popularity of the breed, followed by a few attacks by the breed or by dogs that ‘look’ like the breed and are identified as the breed. As we will discuss in more detail in the next Section, images that invoke strong feelings of fear often cause humans to overemphasize and over-identify that danger. 348 Even before the Voith study, there are countless examples of misidentification of dogs involved in attacks. 349 Dogs ‘known’ in the public conscience to be dangerous are over-identified as the culprits, and are often subject to violence without any

Now, the Voith study gives us scientifically measureable data to back up the anecdotal evidence that certain breeds will be over-identified by visual identification. Shelter workers, vets, and even dog owners over (and under) identify based on their own knowledge and understanding of breed standards. The tendency of over identification is likely to be enhanced for perceived vicious or dangerous breeds by eyewitnesses to dog attacks. Any list of ‘dangerous dogs’ based solely on anecdotal evidence or visual identification will necessarily be inaccurate and practically unenforceable.

V. BSL ARISES FROM FEAR, NOT RISK MANAGEMENT

By now, it should be fairly clear that the policy behind BSL is neither well grounded in science nor especially effective at curbing the problem it purportedly intends to curb—dog bites—especially severe and/or fatal bites. So, why do our communities continue to employ it? Why, despite scientific evidence to the contrary, do we continue to vilify a few select breeds of dog and perpetuate the vicious cycle of breed bias? The answers to these and similar questions can be found, not in the science of the dog, but rather in disciplines that focus on humans, particularly behavioral psychology. Current research in behavioral psychology helps explain why a simplistic knee-jerk response, in this case BSL, has become the go-to solution to a very complex problem. As we will see in this Section, the human brain is prone to certain errors of judgment, especially when dealing with emotionally charged dangers such as vicious dogs, and our responses to those dangers are often not formulated by rational thinking.\footnote{DANIEL KAHNEMAN, \textsc{Thinking Fast and Slow} 25 (2011).} Therefore, a very real biological reason exists for why we continue to implement BSL, even though the data tells us it is ineffective and unresponsive to the true problem. Although BSL may reduce fear, it has little or no effect on the risk of danger it purports to address.

Over the last forty years, research in areas such as cognitive and behavioral psychology has yielded significant data on human decision-making at the individual level.\footnote{The psychology of human decision-making was pioneered by such notable psychologists as Amos Tversky, Daniel Kahneman, Paul Slovic, Sarah Lichtenstein, and Baruch Fischhoff. See, e.g., Paul Slovic et al., \textit{Behavioral Decision Theory}, 28 AM. REV. PSYCHOL. 1, 4 (1977) (stating “the impetus for this change can be attributed to Tversky & Kahneman’s demonstrations”); Daniel Kahneman & Amos Tversky, \textit{Prospect Theory: An Analysis of Decision Under Risk}, 47 ECONOMETRICA 263 \textsc{passim} (1979) [hereinafter \textit{Prospect Theory}]. Beginning in the 1960s, these scientists and others considered the concept of risk and how people make decisions when faced with risk, also called “prospect theory.” Out of this foundation grew additional research in how human perception affects judgment, and how}
decades is that a large portion of decisions made by humans everyday are not based on perfectly rational cogitation, but rather arise from a more intuitive place assisted by ‘heuristics.’ A heuristic is defined as a “simple procedure [or shortcut] that helps find adequate, though often imperfect, answers to difficult questions.”

Building upon this psychological research, neuroscientists explored the biological systems that produce these psychological decision-making responses. Since then, experts and scholars in economics, law, and public policy have applied this cognitive science research to both explain and critique how societies make decisions and policy on the macro level. One of the most important critiques of policy making to recently emerge from this work centers on the fact that human decisions and thus societal decisions—particularly in areas of law and policy—often arise from an emotional fear response based on inaccurate assessment of risk rather than from rational calculation. BSL is a perfect example of the type of laws and policy that arise from fear rather than reason.

A. Dual Process Thinking and Decision-Making

The behavioral research touched on above yielded a model to explain how humans answer questions and make decisions in our environment called the dual system model. The first type of decision-making, called ‘system 1,’ occurs quickly. These are the split-second, intuitive, almost unconscious decisions. The second type of thinking, called ‘system 2,’ is more deliberative, rational, reasoned, and overall slower.
Despite decades of study, there is much that is unknown about the dual-process theory of thinking and much that will likely be discovered in the coming years. However, it is enough for purposes of the discussion here to understand the basic theory of dual process thinking, and to acknowledge that sometimes the systems do not work exactly when and how they should. While both levels of thinking are vital to human survival and development, at times, the quick, reactionary thinking of system 1 can and does overwhelm the higher-order, rational, and slower thinking of system 2. Of course, while this is beneficial when fight or flight is necessary, sometimes system 1 takes over when it should not do so, when higher-order thinking, deliberation, and reason are necessary, leading to the systematic judgment errors that were observed by Tversky and Kahneman.

In a nutshell, the research shows that system 1 bases its decisions much of the time on heuristics. These shortcuts allow the brain to make a decision without a long, complicated, and rational multi-stepped process. There are a number of different heuristics that assist intuitive decision-making including two that will be discussed in more depth below: the availability heuristic and the affect heuristic. Because these heuristics take a shortcut around reason and logic, the results, at times, can end up being quite wrong because some questions cannot be properly answered without system 2 thinking. When faced with a complex, difficult question, our brains, through the assistance of heuristics, will change the question to a much simpler one that can be answered. However, we do not always recognize that the question has changed, and therefore the answer does not match the original, complex question. The following are short discussions of the two heuristics most obviously at work in the policy decisions that have led to BSL: the availability heuristic and the affect heuristic.
1. **Availability Heuristic**

One of the most easily observable and common heuristics is the availability heuristic.\(^370\) When humans are asked to determine the likelihood of a result or the risk of a particular danger, we immediately call to mind examples to determine how likely that result is or how prevalent the risk.\(^371\) What we can recall most readily will be considered more probable, more common, of greater risk, or more likely to occur.\(^372\) Generally, we are more likely to recall events that are recent, vividly illustrated, or more emotionally engaging.\(^373\) Thus, it is those events, seared into our memories, which we believe more likely or more probable to occur again.\(^374\)

With regard to dangerous dogs, media coverage of dog attacks, especially when the dog is identified as a pit bull, is ubiquitous and often both vivid and emotionally provocative.\(^375\) The story of Diane Whipple, killed in San Francisco in 2001, is a perfect example.\(^376\) Her death was covered extensively in the media,

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\(^{370}\) *Judgment Under Uncertainty*, supra note 352, at 1127.

\(^{371}\) *Id.*

\(^{372}\) *Id.*

\(^{373}\) Sunstein, *supra* note 356, at 37.

\(^{374}\) Daniel Gardner, *The Science of Fear* 3 (2008). Plane crashes are an example of a relatively rare event that is generally covered extensively and vividly by the media and thus believed to be a greater potential danger than car accidents. After 9-11, Americans abandoned air travel in droves, while car travel increased substantially. A study by psychologist Gerd Gigerenzer from Berlin’s Max Planck Institute tracked this shift and found that it took about a year for air travel and car travel to return to normal levels. During that year, an additional 1,595 people died on U.S. roads as a result of the increase in automobile travel. Levels of flying and driving returned to normal in late 2002, and so did the number of deaths on U.S. highways. *Id.* Another more recent example is the Ebola scare in the U.S. While several persons infected with Ebola entered the country from West Africa and sought treatment, only two people—nurses who had treated one of the victims in Texas—were infected on U.S. soil. The CDC and other experts have continually attempted to allay the fears of citizens noting that Ebola can only be transmitted through bodily fluids and an infected person is not contagious until symptoms, such as fever, appear. Despite the fact that 99.99% of Americans are at no risk of contracting Ebola, a nationwide panic took hold. Alan Yuhas, *Panic: The Dangerous Epidemic Sweeping the U.S.*, *The Guardian*, http://www.theguardian.com/world/2014/oct/20/panic-epidemic-ebola-us [http://perma.cc/D9LA-KS2M] (Oct. 20, 2014) (accessed Nov. 25, 2015). A school district in Ohio even closed for a few days because one of its administrators may have been on the same plane (not even the same flight) as one of the Texas nurses who later exhibited symptoms of Ebola. Lindsay Beaver, *Chain Reaction: Concern About Ebola Nurse’s Flight Prompts School Closings in Two States*, *WASH. POST*, http://www.washingtonpost.com/news/morning-mix/wp/2014/10/16/after-concern-about-ebola-patients-flight-schools-close-in-two-cities/ [http://perma.cc/6KTA-EZYX] (Oct. 16, 2014) (accessed Nov. 25, 2015). Similarly, several states passed mandatory quarantines for persons traveling back from West Africa, and many businesses suspended the rights of employees to travel to that region of the world. Brady Dennis et al., *NY, NJ, Illinois, to Impose New Ebola Quarantine Rules*, *WASH. POST*, http://www.washingtonpost.com/national/health-science/ny-nj-governors-impose-new-ebola-quarantine-rules/2014/10/24/8096e43e-5bac-11e4-8264-deed9f9a92_story.html [http://perma.cc/6KTA-EZYX] (Oct. 25, 2014) (accessed Nov. 25, 2015). While the nation became gripped with fear over Ebola, most citizens failed to recognize that in 2013 over 56,000 people died of influenza and/or pneumonia, but since the flu and pneumonia are known, common, and expected, they no longer cause the same fear. *Deaths and Mortality, CTR. FOR DISEASE CONTROL*, http://www.cdc.gov/nchs/fastats/deaths.htm [http://perma.cc/MX8E-MNVY] (accessed Nov. 25, 2015).

\(^{375}\) See Delise, *supra* note 3, at 100 (stating that the “unbridled media coverage” of a CDC report on dog-bite related fatalities can “only be described as orgasmic”).

\(^{376}\) See Hussain, *supra* note 15, at 2847 (using the story of Diane Whipple as an example of the
particularly because it was such a rare event.\textsuperscript{377} First, any dog attack fatality is necessarily a rare event.\textsuperscript{378} The fact that she was a healthy adult, and that the attack was particularly savage, made the story even more provocative.\textsuperscript{379} Whipple was killed in her apartment building by two dogs (not pit bulls) being cared for by a neighbor.\textsuperscript{380} The story received international attention, and is possibly still the most commonly cited dog attack fatality case.\textsuperscript{381} Whipple is certainly not the only case covered by the media. Any dog attack is major local news, and is sometimes covered extensively in other parts of the country.\textsuperscript{382} Identification of the dog involved as a pit bull (though in Whipple’s case the dogs were not pit bulls) seems to spur more media coverage.\textsuperscript{383} Although dog attack fatalities are extremely rare, the extensive media coverage of these cases act on the availability heuristic and allow people to bring to mind these incidents readily, making them seem much more likely.\textsuperscript{384}

In his book \textit{Laws of Fear}, Cass Sunstein points out that the availability heuristic never works in a vacuum.\textsuperscript{385} What is ‘available’ to some people and cultures is less ‘available’ to others.\textsuperscript{386} Hence, with regard to BSL, some communities with more recent incidents or media coverage may be more likely to pass BSL, while other communities that do not have recent or vivid incidents of dog attacks or fatalities may be less likely to pass such laws.\textsuperscript{387} There are risks to

\textsuperscript{377} See, e.g., Nieves, supra note 379 (discussing the attack which occurred in San Francisco).
\textsuperscript{378} Delise, supra note 3, at 100.
\textsuperscript{379} Kahneman, supra note 351, at 135.
\textsuperscript{380} Sunstein, supra note 356, at 89.
\textsuperscript{384} Id.
every decision, but the availability heuristic has a tendency to emphasize certain risks to certain people, and deemphasize or even hide other risks.\footnote{An example of this is the fact that European countries are very concerned with the use of hormones in beef, while the U.S. has not shown the same concern. Contrarily, the U.S. has been much more precautionary when dealing with risks of mad cow disease. Sunstein, supra note 356, at 20.} For example, banning pit bulls from a community has risks, though they may not be as ‘available’ in people’s minds as the risk of an attack by a pit bull.\footnote{For example, one “risk” of breed bans is that such bans can harm persons with service animals counted as members of the banned breeds. Recently, after Moreauville, Louisiana passed a ban on pit bulls and Rottweilers, a family took to social media to seek support to save their family pit bull who provided both companionship for the family and assistance in predicting seizures in one of the children. Emanuella Gringberg & Natalie Sneddon, Family Fights to Save Pit Bull from Being ‘Impounded’, CNN, http://www.cnn.com/2014/11/22/living/louisiana-pit-bull-rottweiler-ban/index.html (Nov. 23, 2014) (accessed Nov. 25, 2015).} For example, banning a breed may cause emotional distress in individuals and families forced to give up beloved pets.\footnote{Bans and restrictions also make it harder for people to obtain housing with certain breeds of dog and may exacerbate the problem of homelessness.\footnote{It is also well known that pets provide stress relief for owners, reducing heart disease and other physical and mental illnesses, and breeds that are often the subject of BSL have also been useful therapy dogs. Thus BSL can affect the health and well-being of individuals in the community deprived of their companion. Just because these risks are less ‘available’ to individuals and communities does not make them less frequent, less severe, or less important.} Bans and restrictions also make it harder for people to obtain housing with certain breeds of dog and may exacerbate the problem of homelessness.\footnote{Thus BSL can affect the health and well-being of individuals in the community deprived of their companion. Just because these risks are less ‘available’ to individuals and communities does not make them less frequent, less severe, or less important.} It is also well known that pets provide stress relief for owners, reducing heart disease and other physical and mental illnesses,\footnote{Andrea Beetz et al., Psychosocial and Psychophysiological Effects of Human-Animal Interactions: The Possible Role of Oxytocin, 3 FRONTIERS IN PSYCHOL. 234 passim (2012).} and breeds that are often the subject of BSL have also been useful therapy dogs.\footnote{John Platt, Iowa Town’s Pit Bull Ban Forces Veteran Cop to Give Up His Service Dog, MOTHER NATURE NETWORK, http://www.mnn.com/family/pets/stories/updated-iowa-towns-pit-bull-ban-forces-veteran-cop-to-give-up-his-service-dog [http://perma.cc/92MJ-R43S] (Dec. 23, 2011) (accessed Nov. 25, 2015).} Thus BSL can affect the health and well-being of individuals in the community deprived of their companion. Just because these risks are less ‘available’ to individuals and communities does not make them less frequent, less severe, or less important.

2. The Affect Heuristic

The affect heuristic, in particular, seems to work closely in conjunction with other heuristics. It describes how images and the positive and negative feelings (or affects) connected to those images influence decision-making processes.\footnote{In his article The Affect Heuristic, Slovic points to research that shows how} In his article The Affect Heuristic, Slovic points to research that shows how
subliminal messages and pictures can influence decisions. For example, in one study subjects were shown smiling faces or frowning faces prior to having them evaluate Chinese ideographs. Those ideographs presented following a smiling face received significantly higher scores of “likability” than those that followed a frowning face. The priming was long lasting, so that even when subjects were shown the ideograph in a second session “primed” with the other face, the original impression caused by the priming in the first session remained in effect.

One of the ways that the affect heuristic influences decisions seems to be the inverse relationship between benefit and risk. Where an individual believes an action has particularly strong benefits, that individual downplays the risks. Similarly, the opposite is true. When risk seems apparently high, the perception of the activity’s benefits is depressed. Slovic used the example of nuclear power to illustrate the inverse relationship of risk and benefit. The study showed that no matter what position a subject started with (high risk, low risk, high benefit, or low benefit) the inverse relationship held true. Where people were provided information to show the benefits of nuclear power were high, their corresponding inference of the associated risks were low. Information showing low risk, produced perception of high benefit. High risk produced perception of low benefit, and as expected, low benefit led to a belief of high risk inherent to the activity.

This risk–benefit relationship is often manipulated in advertising as illustrated by the tobacco industry. Slow points out that for many years, tobacco companies have particularly used affect-driven advertising to counteract the Surgeon General warning of risks associated with cigarette smoking and tobacco use. It is easy to call to mind the pictures of the ruggedly handsome “Marlboro Man” on horseback, with blue skies and wide-open fields ahead of him. This picture has nothing to do with smoking a cigarette, but the advertisement evokes a feeling of well-being and benefit in the consumer. If that feeling of benefit is strong enough, Slovic’s study shows that it can in fact depress the consumer’s perception of the risk of the activity.

395 id. at 1336.
396 id.
397 id.
398 id. This persistence has far-reaching consequences as it provides further evidence to show that emotion-based opinions are long lasting and difficult to counteract or change.
399 id. at 1343–44.
400 The Affect Heuristic, supra note 366, at 1343–44.
401 id.
402 id.
403 id.
404 id. at 1344.
405 id. at 1343.
406 The Affect Heuristic, supra note 366, at 1343.
407 id. at 1347.
408 id. at 1347–48.
409 id. at 1347.
410 id.
411 id. at 1348.
The affect heuristic clearly comes into play in our decision-making relative to dogs. Think about those persons whose first, and perhaps only, impression of a pit bull was the cover of *Time* magazine in 1987, or another who sees the local drug dealer with a pit bull in a spiked collar hanging out on the corner. These images evoke a negative response and promote a perception of high risk related to these dogs. Compare that with the person who grew up with a pit bull-type dog and recalls the hours of playtime and naps on the couch with nostalgic fondness. The images are intensely positive, the benefits obvious, and the risks perceived as extremely low. How easy is it then, to move either of these people from their established perceptions of pit bulls?

It would be naïve to believe that the scientists studying it, this author, or you the reader are not subject to the results of the affect heuristic. It is likely impossible to eliminate it in any context, especially one with a particularly emotional bent, but perhaps self-awareness may at least somewhat temper its ability to manipulate. In describing the heuristic, Slovic observes that, “[the affect] heuristic appears at once both wondrous and frightening: wondrous in its speed, and subtlety, and sophistication, and its ability to ‘lubricate reason’; frightening in its dependency upon context and experience, allowing us to be led astray or manipulated—inaudiently or intentionally—silently and invisibly.”

### B. The Results of Heuristics

Accepting that the heuristics described above (and others) do indeed influence decisions, how then do they guide macro-level decisions such as economic behavior, legislative action, regulation, and public policy decisions?

#### 1. Probability Neglect

One of the main factors behind the systematic errors that arise from decision-making via heuristics is that humans cannot accurately calculate probability intuitively. Sunstein names this phenomenon ‘probability neglect.’ Generally, it occurs because a heuristic (through system 1 thinking) leads to a particular and perhaps irrational decision, and because sometimes we cannot appreciate probability accurately, we struggle to override irrational decisions presented by the heuristic.

Probability neglect follows from the actions of heuristics. Where we can call to mind ‘available’ examples of a danger, or our emotions are intensely engaged by fear of a result, we will overestimate the likelihood of that risk and neglect the
true probability of that result.\textsuperscript{421} On the other hand, where a risk does not give rise to any particular examples in our mind, or where it is so commonplace it does not raise a strong emotional response, we are likely to underestimate the probability of the risk.\textsuperscript{422}

Probability neglect is not just experienced by self-interested individuals. Administrative regulators, judges, legislators, and other public actors can experience probability neglect.\textsuperscript{423} In Probability Neglect: Emotions, Worst Cases, and Law, Cass Sunstein points out the resulting damage:

\begin{quote}
[The demand for legal intervention can be greatly affected by probability neglect, so that government may end up engaging in extensive regulation precisely because intense emotional reactions are making people relatively insensitive to the (low) probability that the relevant dangers will ever come to fruition.\textsuperscript{424}

This is exactly what happens with BSL. Because of the availability and affect heuristics that kick in after a severe dog attack in a community, or even one across the country heavily covered by the media, the public and public officials neglect the low probability of another incident and have an intense need to control the risk with regulation and law.\textsuperscript{425} As Sunstein and Kahneman both note, public fear itself is a kind of harm and should not be trivialized.\textsuperscript{426} Legislatures and regulators should do what they can to reduce fear, and where laws or regulations are rational responses to a danger they should be promoted.\textsuperscript{427} However, while the knee-jerk reaction of BSL may reduce fear, it likely has little or no effect on the risk of danger.\textsuperscript{428} Also, where small risks are overemphasized and large risks are underemphasized, resources are misallocated away from where they are needed most.\textsuperscript{429} While studies of the economic impact of BSL are limited, at least

\begin{itemize}
\item \textsuperscript{421} Id. at 39–40. “[W]ith respect to risks of injury or harm, vivid images and concrete pictures of disaster can ‘crowd out’ other kinds of thoughts, including the crucial thought that the probability of disaster is very small. ‘If someone is predisposed to be worried, degrees of unlikeliness seem to provide no comfort, unless one can prove that harm is absolutely impossible, which itself is not possible.’” Id. at 82–83 (quoting JOHN WENGART, WASTE IS A TERRIBLE THING TO MIND 362 (2001)).
\item \textsuperscript{422} SUNSTEIN, supra note 356, at 37.
\item \textsuperscript{423} Cass R. Sunstein, Probability Neglect: Emotions, Worst Cases, and Law, 112 YALE L.J. 61, 63 (2002) [hereinafter Probability Neglect].
\item \textsuperscript{424} Id. at 68.
\item \textsuperscript{425} See id. at 92, 99–100 (pointing out the tendency for people to call for laws and regulations in response to these heuristics).
\item \textsuperscript{426} SUNSTEIN, supra note 356, at 63; KAHNEMAN, supra note 351, at 144.
\item \textsuperscript{427} SUNSTEIN, supra note 356, at 63; KAHNEMAN, supra note 351, at 144.
\item \textsuperscript{428} See, e.g., NAT’L CANINE RESEARCH COUNCIL, supra note 312; Ott et al., supra note 186, at 135; Cornelissen & Hopster, supra note 27, at 293. Laws and policies that reduce public fear, thereby taking pressure off of legislators, but do not actually affect the risk of danger, can promote a false sense of security amongst community members and lead to increased risks when individuals lower their guard against a danger believed to be removed. In communities where pit bulls are banned, dog bites, and even dog attack fatalities remain a risk.
\item \textsuperscript{429} Sunstein points to shark attacks as an example of such misallocation of resources:
\end{itemize}
one county task force concluded BSL enforcement was an inefficient use of resources, noting that the seizure, impoundment, and maintenance of pit bulls cost the jurisdiction over half-a-million dollars annually, and could cost up to $68,000 per animal between initial seizure and euthanasia.430

2. Role of the Media

Sunstein and Gardner, among others, have noted the enormous role media plays in fueling fear by presenting examples where ‘worst-case scenarios’ actually occur.431 News stories sensationalize these examples, activating heuristics and promoting probability neglect.432 Media sources choose emotionally evocative stories because they make better news, but they also provide the fodder for the ‘availability,’ ‘affect,’ and ‘representativeness’ heuristics for the same reason.433

It is likely not a coincidence that the beginning of the upswing in ‘panics’ over various remote risks began in the 1980s when the news business became ever more global, more competitive, and more profit-centered.434 Over the past forty years, news has increasingly become a source of profit that supports other entertainment and media companies that must convince the public to watch their news shows and read their papers and magazines.435 Unfortunately, the stories

discussion of new regulations to control the problem and eventually regulations were adopted. Public fear seemed relatively impervious to the fact that the underlying risk was miniscule.” Probability Neglect, supra note 423, at 99–100 (internal citations omitted).


431 Probability Neglect, supra note 423, at 85–86; SUNSTEIN, supra note 356, at 65. For example, Sunstein points to the anthrax attacks of October 2001 and the ‘summer of the shark,’ while Daniel Gardner in SCIENCE OF FEAR points out a variety of media panics over the past few decades, including internet pedophiles in the early 2000s, satanic cults in the 1990s, and child abductions in the 1980s. Probability Neglect, supra note 423 at 99–102; GARDNER, supra note 374, at 34.

432 SUNSTEIN, supra note 356, at 38, 103, 206.

433 The representativeness heuristic guides people in their prediction of probability. The probability that A is a member of B’s class, is evaluated or determined based on how much A resembles, or is representative of, B. An example used by Tversky and Kahneman considers the question of how probable it is that a particular neighbor named ‘Steve’ is a librarian. When Steve is described in terms such as withdrawn, shy, and bookish yet helpful, people estimate the probability of him being a librarian to be high, mainly based upon the fact that he resembled the stereotype of a librarian, even though the actual probability of him being a librarian is quite low. See Judgment Under Uncertainty, supra note 352, at 1124.

434 SUNSTEIN, supra note 356, at 103.

435 Id.; see also, David A. Logan, All Monica, All of the Time: The 24-Hour News Cycle and the Proof of Culpability in Libel Actions, 23 U. ARK. LITTLE ROCK L. REV. 201, 201–04 (Fall 2000) (tracing the history of the 24-hour news cycle and its impacts on contemporary journalism, media coverage, and the law—often resulting in misstatements of facts).

436 Logan, supra note 435, at 201–04.
that sell are ones that pique emotion, including stories that pique the fear response.437

Problems can arise from such intense media focus on relatively low risks.438 As Sunstein points out:

Media coverage of highly unusual crimes makes people fearful of risks that they are most unlikely to face. When newspapers and magazines emphasize deaths from anthrax or mad cow disease, we should expect a significant increase in public concern, not only because of the operation of the availability heuristic, but also because people will not naturally make sufficient adjustments from the standpoint of probability.439

Over time, continued coverage of remote risks can cause long-lasting changes in a society’s perception of certain risks.440 Risks associated with certain breeds of dog, especially pit bulls, have been stressed to such a degree by media and other popular culture mediums that the term ‘pit bull’ now not only means a type of dog, but is also defined as “an aggressive or tenacious” person.441 The perception of pit bulls, Rottweilers, and other breeds as vicious or dangerous is so engrained into the American public’s consciousness that it will be very hard to ever reverse.442

3. Biases, Predispositions, and Cascading

It is important to note that individuals view events, even those covered by mass media, through individual lenses. Our previous biases, beliefs, opinions and experiences predispose us to treat certain events differently than others.443 For example, gun control advocates are more likely to pay attention to, remember, and recall stories about how guns were used in the commission of crimes, while Second Amendment advocates tend to focus on stories of the shop owner who had a gun and was able to prevent a crime.444 Thus, biases are reinforced through

437 One of the recurring themes on the HBO drama, Newsroom, is the conflict between the idealistic, old-time ‘newsman’ who wants to educate the public about the news they should know about, and the modern network that employs him and must give the public the news they want because it will pay the bills. See The Newsroom In Brief, HBO, http://www.hbo.com/the-newsroom/inside/in-brief/video/the-newsroom-in-brief-will-mcavoy.html?autoplay=true (accessed Nov. 25, 2015) (discussing the development of one of the main characters in the series, Will McAvoy, and his issues with the modern news system).
438 SUNSTEIN, supra note 356, at 85.
439 Id. at 87.
440 Id.
442 While it is relatively easy to evoke fear and probability neglect concerning low risk dangers, it is not as easy to turn back that fear. Presentation of statistics, probabilities, and other facts to reverse the effect of the heuristics meet with very limited success. Sunstein advises that sometimes the best means of reducing fear is actually just to ‘change the subject’ of the conversation. SUNSTEIN, supra note 356, at 125.
443 The discussion of the affect heuristic above shows us that if we are “primed” to think positively about something, that positivity is likely to persist and influence us in subsequent evaluations. The Affect Heuristic, supra note 366, at 1336.
444 SUNSTEIN, supra note 356, at 39.
heuristics—our biases make certain examples and stories more “available” than others, reinforcing our original opinions and feelings.\textsuperscript{445}

These biases and predispositions do not exist solely in individuals. Humans are social creatures, and rarely do we keep our own opinions, thoughts, biases, and predispositions to ourselves—instead, we like to share them.\textsuperscript{446} Most particularly, we like to share our fears.\textsuperscript{447} Social sharing in this context often leads to a phenomenon called “cascading.”\textsuperscript{448}

Any person who has spent even a small amount of time on a social media site, or even reading e-mail, over the past twenty years should be quite familiar with the phenomenon of cascading as it relates to fear.\textsuperscript{449} Social cascades occur when people pay attention to and adopt the fears of others around them.\textsuperscript{450} When a person sees that others around them share the same concern, it is amplified and forwarded on to others.\textsuperscript{451} Media of all kinds—traditional, new, and social—play roles in cascading, but it is our social networks that often play the biggest roles.\textsuperscript{452} As discussed above, all actions have risks associated with them, so cascading events are not baseless, but they can and do result in an amplification of the fear that is out of proportion to the actual risks of the activity.\textsuperscript{453} For example, consider the actual likelihood of a stranger abducting a child from a bus stop or a person falling victim to a terrorist attack or mass shooting. Children are far more at risk of being kidnapped by a parent or other family member than by a stranger at a bus stop.\textsuperscript{454} And the likelihood of becoming a victim of gun violence at home far outstrips our risk of victimization in a school shooting or terrorist attack.\textsuperscript{455} Despite the actual risk, we fear the stranger and the foreign terrorist far more than our ex-spouse or a family member.

The Ebola scare of 2014 is a recent example of a cascading event. Fears were passed within social groups and communities and rational argument and discourse concerning the true risks of Ebola infection were drowned out by the voices of friends and family.\textsuperscript{456} On the opposite side, the risks of death from flu or


\textsuperscript{446} SeeId., supra note 374, at 185–186. The average number of family abductions of children per year is 200,000, while the number of stranger abductions of children under the age of 18 is 115. Id.

\textsuperscript{447} SeeId., supra note 374, at 185–186. The average number of family abductions of children per year is 200,000, while the number of stranger abductions of children under the age of 18 is 115. Id.

\textsuperscript{448} See Id. at 101.

\textsuperscript{449} Id. at 102.

\textsuperscript{446} Id. at 101.
antibiotic resistant MRSA infections are very real for many Americans, but discussion of these topics amounts to little more than background noise.457 Certain types of fears are probably more susceptible to cascading; for instance, the new and unknown danger (Ebola) is much more fearsome than the one we live with every day (flu).458 Similarly, those fears that touch a particular emotional chord or that pique moral outrage are more likely to be expressed to others, discussed, and amplified.459

4. Moral Panics

One particular type of cascading event is called a “moral panic.”460 Moral panics occur when a group or segment of society becomes fearful of a “perceived moral threat” that somehow attacks or undermines the group or societal values.461 Because these panics tap into deeply held morals and beliefs, and threaten them on some level, they can be even more powerful than other cascades in a society.462

Cass Sunstein points to “extreme leaps” in concern in the U.S. during the 1970s and 1980s over problems like teen suicide, gang violence, AIDS, children born out of wedlock, or even herpes.463 This time period coincided with a “near exponential growth” of nationwide media frenzies over issues that seemed to attack our very moral core.464 These “panics” were instigated and sustained by vivid coverage in the media, causing the concern to far outstrip the actual danger.465 Moral panics continue today as fear of the impacts that immigrants, alternative sexual orientations, and different religions have on a society’s moral fabric.466 Certainly news media, as well as social media, contribute to these moral panics.467

There are elements of the moral panic phenomenon in BSL, especially in regards to pit bulls. Historically, pit bulls have been closely linked to criminal elements in society, particularly dogfighters, drug dealers, and gang members.468 Because the perception of these dogs is one of ‘counterculture’ and the ‘other’ in society, people have been more willing to allow ‘that breed’ of dog to be banned,
because that breed, as symbolized by its most common owners, is morally corrupt.\footnote{See, e.g., Barnes et al., Ownership of High-Risk ("Vicious") Dogs as a Marker for Deviant Behaviors, 21 J. INTERPERSONAL VIOLENCE, 1616 passim (2006) (linking socially deviant behavior with owning what the authors of the study defined as a high-risk dog: pit bulls or breeds typically covered under BSL).} After reading the 1987 Time magazine piece, Time Bombs on Legs, it is no wonder the moral panic against pit bulls ensued.\footnote{Brand, supra note 4.} The author, perhaps appealing to the scaremongering running rampant throughout the decade, painted a picture that inextricably linked the pit bull with moral corruption.\footnote{Id.} These were the dogs of drug dealers and gang members.\footnote{Id.} Pit bulls prowled inner city streets and were used to conceal drugs placed in their collars.\footnote{Id.} The dogs, the author claimed, were weapons of choice, like guns and knives—to be used against the unsuspecting.\footnote{Id.} People magazine also peddled the morally corrupt picture of pit bulls and their owners, insisting the regular dog owning public did not favor the dog, but only ‘back-alley types,’ ‘drug dealers and lowlifes’ and ‘inner city teenagers’ sought out the breed.\footnote{Id.}

In Toledo v. Tellings, the Ohio Supreme Court showed further evidence of moral panic when it referenced the testimony of the local dog warden who warned, “Toledo police officers fire their weapons in the line of duty at pit bulls more often than they fire weapons at people and all other breeds of dogs combined[,] and pit bulls are frequently shot during drug raids because pit bulls are encountered more frequently in drug raids than any other dog breed.”\footnote{Id.} Whether these statistics are accurate or not is irrelevant. The mere fact that these dogs are present at drug raids (through no fault of their own) and often shot by officers\footnote{Id.} was sufficient to support their reputation as a vicious breed.

C. Results of Misplaced Fear

The risk of being killed by a dog (any dog, not just one targeted by BSL) in the U.S. is about the same or even less than being killed in a lightning strike.\footnote{See Danger of Death!, supra note 378 (depicting the likelihood of death from dog attacks as significantly less likely than many other potential causes of death).} The odds of dying from falling down the stairs, choking, or hypothermia are far greater than the odds of dying from a dog attack.\footnote{Id.} For some reason we treat the
danger from dogs differently, and I posit that the reason for this different treatment is the effect of the availability and affect heuristics. The graphic stories of children being mauled coupled with magazine covers picturing vicious dogs with teeth bared activate the availability and affect heuristics, leading us to neglect the true probability of the risk and overestimate the danger.\footnote{See Brand, \textit{supra} note 4; Sager, \textit{supra}, note 4; Swift, \textit{supra} note 4 (describing the pervasive nature of the public’s association of pit bulls with crime and danger).} Considering that the media obsession with focusing on pit bulls and breed identification and the cascading and moral panic effects that follow, it is easy to see why our fear of dogs, particularly pit bulls, far exceeds the actuality of the danger.\footnote{\textsc{Sunstein}, \textit{supra} note 356, at 102.} Arguably, this excessive fear has led to over-responsiveness in the form of BSL enacted by local governments, but what are legislatures and governments supposed to do in the face of excessive fear and moral panics among constituents?\footnote{\textit{Id}.} Part VI of this article will tackle the solution to the BSL quandary and point legislatures in a better direction to responsibly and effectively tackle the problem of serious dog attacks.

VI. RECOMMENDATIONS

This Article has reviewed the history of dangerous dog panics, the foundations of BSL, and the current state of such laws in the U.S. and abroad. We see that available scientific evidence does not support the notion that certain breeds are inherently dangerous. We also see that comparative studies show that BSL is largely ineffective. Furthermore, we now know that the errors of human judgment of both risk perception and visual breed identification have compounded the problem and further promoted otherwise poor public policy regarding ‘dangerous’ dogs. Legislatures, policy makers, courts, and animal advocates all have a role in ending BSL and putting forward more positive and effective policy to curb serious dog bites.

A. Legislatures and Policy Makers

First and foremost, lawmakers must recognize the true nature and complexity of the question they are attempting to answer. In discussing the effects of heuristics on decision-making, Daniel Kahneman points out that heuristics often take the complex question asked and reformulate it into a simpler, more easily answered question.\footnote{\textit{Id}.} For instance, the question, “How do we prevent serious dog-bite related injuries?” has effectively been changed to, “How do we prevent the ‘type’ of dog that I think causes serious injuries from biting people?” Unless we as a society would choose to ban all dogs, the answer to the first question is necessarily complex. The epidemiological studies discussed above point to multiple interrelated factors that lead to serious dog attacks, and an effective legislative solution requires a multi-faceted approach.\footnote{See, e.g., Patronek, \textit{supra} note 15 \textit{passim} (discussing the multiple factors leading to serious dog bites). But, the
simple act of changing the question slightly makes it much easier to answer. Now, you need only determine what type of dog causes serious injuries, and simply make it unlawful to own that type of dog. That second question is even further simplified by turning the question of ‘type’ into a question of ‘breed.’ This, of course, does not answer the original question, but few lawmakers in jurisdictions with BSL have noticed.

Once legislatures reframe the question and acknowledge the difficulty and complexity of the question, they are better able to craft meaningful policy initiatives. First and foremost, policy makers must stop obsessing over breed, recognizing that only a small portion of any one breed is dangerous and that visual breed identification is wholly unreliable. Instead, focus should be on the known factors that contribute to serious dog attacks. The Patronek study and similar research is a great place to start.\textsuperscript{485} Patronek’s study determined that the co-occurrence of a number of factors tended to precipitate dog-bite related fatalities.\textsuperscript{486} This pattern included poor treatment of the dog in the form of neglect, abuse, or at the very least, isolation of the dog from positive human interaction.\textsuperscript{487} It often included owner mismanagement such as letting a dog run loose often or failing to supervise a dog when it is in the presence of a vulnerable victim such as a child or an elderly adult.\textsuperscript{488} Usually, the worst attacks—the fatal ones—involve unaltered dogs, particularly unneutered male dogs.\textsuperscript{489}

This list of common characteristics gives legislators a good starting point for policy action. Patronek’s observation that most attacks include a co-occurrence of at least four of these factors is heartening because, if a policy can eliminate even one or two of these factors in a given situation, then the probability of a serious attack drops precipitously.

How, then, can resources be allocated more effectively to reduce dog attacks? First, legislatures must increase penalties for animal abuse and neglect, and put more resources toward investigation and prosecution. In addition to current definitions of neglect and abuse, however, legislatures should include language that defines isolation of dogs from humans as a form of abuse. There is plenty of literature to support the understanding that dogs have evolved in a way that they crave, even require, human interaction for well-being.\textsuperscript{490} Some jurisdictions have enacted ordinances prohibiting tethering a dog on a chain or other wire for long periods of time.\textsuperscript{491} This is a beginning, but it does not get to the heart of the problem since isolation can occur within the home or in a fenced-in yard with no tie-out.

Second, legislatures and policy makers should find new ways of encouraging attacks and the potential legislative solution).
\textsuperscript{485} Id.
\textsuperscript{486} Id. at 1732 fig.1.
\textsuperscript{487} Id. at 1726.
\textsuperscript{488} Id. at 1729–30, 1732.
\textsuperscript{489} Patronek, supra note 15, at 1730.
\textsuperscript{490} Crista L. Coppola, Human Interaction and Cortisol: Can Human Contact Reduce Stress for Shelter Dogs?, 87 PHYSIOLOGY & BEHAV. 537, 540 (2006). Human contact showed a decrease in cortisol levels for shelter dogs, indicating a reduction in stress response. Id.
\textsuperscript{491} See, e.g., H.B. 2783, 77th Gen. Assemb., Reg. Sess. (Or. 2013) (limiting the amount of time an animal may be tethered to ten hours within a twenty-four hour period).
spaying and neutering. This not only helps with the dog-bite problem, but also with reducing the number of homeless pets in shelters. Some jurisdictions have attempted mandatory spay-neuter laws, though they are extremely controversial, difficult to enforce, and easily ignored by citizens. A better way to encourage spaying and neutering may be what Sunstein calls “nudging.” Nudging is the use of laws or policies to make a citizen act (or not act) in a desired way without mandating it. In this case, it would be a policy that either makes it more attractive to spay or neuter your dog or more unattractive to leave your dog intact. Legislatures would do well to expend resources to provide free spay-neuter services, especially in low-income neighborhoods. In fact, when Los Angeles had a low-cost spay/neuter program, the city discovered that for every dollar the community put into the program it saved ten dollars in animal control costs because of the reduction in the number of pets taken in at shelters. With such savings, and adding the reduction in serious dog bites to the equation, communities might even do well to consider paying a nominal fee to citizens to encourage them to spay and neuter.

Certainly educational efforts would also be a positive step, though the reach and effectiveness of such measures has always been questionable. It is a fairly easy step for policy makers to insist that all children receive education concerning proper ways of interacting with dogs. This can be accomplished in schools through the help of humane societies and other animal advocate groups, and it will make a difference. Educating dog owners on management issues is a tougher question. Perhaps again, communities can provide a ‘nudge’ to encourage dog owners to attend educational sessions. Different types of communities may require different forms of nudges, and local legislatures could be in the best position to accomplish widespread spaying and neutering.

These are just a few of the possible breed-neutral efforts that legislatures could pursue once they properly restate the real question and address the true complexities of the issue.

B. Courts

Despite their current disinterest in these issues, courts now have an even clearer role in addressing the legitimate constitutional problems with BSL. The


494 Id.

495 For example, Allegheny County, PA, where Duquesne University School of Law is located, charges less for a dog license if the dog is spayed or neutered rather than left intact. Allegheny County, PA., Dog License Application (available at http://www.alleghenycounty.us/treasurer/Regular-Dog-License-Application.pdf (accessed Nov. 25, 2015)).


497 Id.
Voith study, and others like it, has shown that breed-specific laws as they currently exist are impossible to enforce with any semblance of fairness. If the target of a ban is based on the ‘look’ of a dog alone, it is not a breed-specific law at all—breed has little to do with it. Basing such laws on visual identification is also, as the Massachusetts court noted in American Dog Owners Ass’n v. City of Lynn, too reliant upon the subjective opinion of the person enforcing the law.498

Bans based on actual breed should require DNA evidence. The problem with this of course is two-fold: 1) it would be wildly expensive, and 2) the dogs banned would likely not accurately reflect the intentions of the legislature. Either way, courts should recognize there is truly a question as to whether this sort of law can ever be rationally related to a government interest. In light of the vast expansion of scientific evidence now available, courts must stop simply parroting the Sentell court and engage in a meaningful analysis under the rational basis test in light of the vast expansion of scientific evidence now available.

Second, as an added incentive to engage in the rational basis analysis, courts must recognize that BSL infringes upon personal liberties in an unequal way. BSL infringes upon the liberties of certain disenfranchised members of the community far more than on others. No, there is likely no particular ‘suspect class’ involved, but there is an argument that BSL has a disproportional effect on the poor, and that fact is worthy of consideration.

In his discussion of the problem of fear pertaining to national security issues, Sunstein points out a primary problem with heuristics when they promote ineffective safety measures. “Simply because of fear, the public and its leaders will favor precautionary measures that do little to protect security, but that compromise important liberties.”499 Sunstein is particularly concerned when the cost of certain liberties is borne by a particular identified group and with no detriment to most people.500

With regard to BSL, it is the poor who bear the brunt of pit bull bans most severely. Persons with monetary means can escape the effect of BSL if so inclined. They can afford the cost of defending a dog in court, they can move out of municipal borders to avoid BSL, and they can afford to pay for special insurance premiums or build particular enclosures as required in some ordinances. These expenses, however, are beyond the means of many. The only options for many poor are euthanasia or rehoming of their dogs. In addition to the direct effects of BSL, the indirect effects of BSL include discrimination by landlords or insurance companies. Again, it is the poor who are most affected by these costs.

It is likely no coincidence that the conversation about pit bulls has changed as more white, middle and upper class people identify themselves as pit bull owners. Suddenly, it is not just the rights of the dogfighters, ‘drug dealers,’ ‘lowlifes,’ and ‘inner-city youth’ that are being restricted, it is also the rights of the teacher, the doctor, the athlete,501 and the actress.502

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499 SUNSTEIN, supra note 356, at 204.
500 id.
501 MLB pitcher Mark Buehrle, owner of a pit bull named Slater, has had to deal with pit bull bans in Miami and Toronto. While with the Miami Marlins, the pitcher and his family bought a house in nearby Broward County to avoid the Miami-Dade county ban. Once traded to the Toronto Blue Jays
Though the founding fathers did not have the benefit of modern cognitive science, they did have an understanding of human behavior. In The Federalist Paper 78, Alexander Hamilton charges the judiciary:

> to guard the Constitution and the rights of individuals from the effects of those ill humors, which the arts of designing men, or the influence of particular conjunctures, sometimes disseminate among the people themselves, and which, though they speedily give place to better information, and more deliberate reflection, have a tendency, in the meantime, to occasion dangerous innovations in the government, and serious oppressions of the minor party in the community.\(^5\)

The judiciary has thus far been generally unhelpful at curbing the results of BSL panic. Has the judiciary failed in its special role of protecting individual liberties against the whims of the majority? It is not to be suggested that the right to share your home with the dog of your choice is a fundamental right, or should not be regulated under any circumstances, but certainly there is a point where the overwhelming evidence shows a law is not rationally related to its purpose. Where BSL is not repealed by legislatures, courts have a duty to look to the rights of individuals and protect them against laws that infringe upon liberties for no legitimate reason. Certainly courts can look to the science surrounding this issue and be willing to employ a true rational basis test. If for no other reason, courts must reconsider the constitutionality of BSL because problems with visual identification prevent consistent or just application of these laws.

### C. Animal Advocates

Animal advocates have been doing the heavy lifting in opposing BSL, but as Sunstein notes it is very hard to un-ring a bell of panic and fear once it has been rung.\(^6\) His primary solution is to change the subject of the popular

however, Buehrle and his family had to make a tough decision. In the end, they decided to have the family and Slater remain at their home in St. Louis, while the pitcher went to Toronto to play during the eight-month season. Buehrle has the financial means to make decisions like this, though it certainly could not be easy for him or his family. Others are not so lucky. Jerry Crasnick, Lonely Days Ahead for Mark Buehrle, ESPN, http://espn.go.com/mlb/story/_/id/8921726/outlawed-pit-bull-keep-mark-buehrle-away-family [http://perma.cc/C8LJ-T67G] (Feb. 7, 2013) (accessed Nov. 25, 2015).


\(^5\) The Federalist No. 78 (Alexander Hamilton).

\(^6\) Probability Neglect, supra note 423, at 95. “There is . . . a striking asymmetry between increasing fear and decreasing it. If people are now alarmed about a low-probability hazard, is there anything that government can do to provide assurance and to dampen concern? This is an unanswered question. The only clear point is that government is unlikely to be successful if it simply emphasizes the low probability that the risk will occur. There appears to be no evidence that any particular strategy will succeed. But the best approach may well be simple: Change the subject. We have seen that discussions of low-probability risks tend to heighten public concern, even if those
conversation. Like reformulating the question, changing the subject takes the emphasis off of the fear-inducing factor and places it on the correct topic, presumably allowing the panic to run its course. Certainly, efforts to change the subject have already begun. Breeds other than pit bulls that are targeted by BSL have advocates in the form of breed clubs and organizations that watch out for the image of the breed portrayed in society and the media. For pit bulls, ironically, it was the investigation, arrest, and subsequent prosecution of Michael Vick on dogfighting-related charges, as well as the efforts of the advocates who worked to save Vick’s dogs from euthanasia, that most effectively changed the conversation on pit bulls, moving it away from the ‘viciousness’ of the dogs to their victimhood at the hands of dogfighters.

While some progress has been made in regard to rehabilitating the image of pit bulls, the prior demonization was so long-lasting and so wide in scope that a full-scale makeover of the pit bull may be too much to ask, at least in the short term. The phrase ‘pit bull’ has been given new meanings in the popular lexicon, and that will be difficult to root out. It may, in fact, be best to stop using the term ‘pit bull’ to refer to any dog. Like the ‘Siberian’ and ‘Cuban bloodhounds’ of the last century, a simple name was sufficient to wipe out the baggage of breed bias. Since there is no actual ‘pit bull’ breed, this may be possible, even if difficult. There is a current movement among shelters and advocates to avoid the term pit bull altogether. Some go so far as to suggest avoiding breed designations for any dog in a shelter or rescue and simply calling them American Shelter Dogs. That solution seems warranted, not only in order to change the conversation on pit bulls, but also because the science shows humans, even animal shelter workers, lack the ability to accurately identify breeds of dog by sight.

VII. CONCLUSION

The risk of severe or fatal dog bites is very small. While experts estimate there have been about 4.7 million dog bites per year in America in past years, this statistic remains questionable because there is no reporting requirement. Even assuming accuracy of the statistic, a large number of those bites are very minor, not even requiring medical attention. It is estimated that there are upward of 77 million dogs in households across the U.S. With the number of dogs in our society, it is actually quite amazing that serious injury from dog attacks is so rare. It is a testament to the relationship that has been built between discussions consist largely of reassurance. Perhaps the most effective way of reducing fear of a low-probability risk is simply to discuss something else and to let time do the rest. Of course, media attention can undermine this approach.”

505 Id.
507 Gilchrist et al., supra note 317, at 296.
508 Id. at 300.
humans and canines over the millennia. Dogs have been man’s (and woman’s) best friend for tens of thousands of years; it is now time that humans return the favor by enacting laws that regulate the real but minor risk of severe injury from dog bites while also reducing the irrational fear response that precipitates unjust laws.