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Unequal Homes, Unequal Health: Applying the Loss of Chance Doctrine to Landlord-Tenant Cases

Delaram Takyar*

Abstract

Low-income families and families of color in the U.S. are disproportionately likely to live in homes that are negligently maintained by landlords, with significant implications for their physical health. Despite suffering harm, tenants often cannot seek legal relief without ruling out all possible alternate causes of their injuries. For example, if a tenant develops asthma after being exposed to black mold in her home and can show that her landlord had knowingly refused to remediate the mold, the tenant would still be barred from relief if she were genetically predisposed to developing asthma or could have also been exposed to asthma-inducing toxins elsewhere.

This Article argues that the "loss of chance" doctrine, which has historically been used in medical malpractice cases where a doctor misdiagnoses a terminally ill patient and thereby reduces his or her likelihood of survival, should be extended to these types of landlord-tenant toxic tort cases. In misdiagnosis loss of chance, the patient would likely have not survived his or her illness regardless of the doctor's negligence, making it impossible to prove that the misdiagnosis caused the patient's death. Using the loss of chance doctrine, plaintiffs can rely on large-scale data, such as survival rates in the aggregate population, to establish causation instead.

Under the expanded loss of chance doctrine proposed here, tenants would be able to use public health data that shows the negative effect of poor housing conditions on health outcomes in the same way. This expansion would allow for relief even if a plaintiff cannot definitively rule out all alternate causes of his or her injury. This would be an important step forward in holding landlords accountable and reducing economic and racial housing quality disparities.

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* Delaram Takyar is a Skadden Fellow at the Tennessee Justice Center, where she runs a medical-legal partnership that provides legal assistance to low-income families and pregnant and postpartum patients. Prior to her fellowship, Delaram received her J.D. from Yale Law School and Ph.D. in Sociology from New York University. The author would like to thank Doug Kysar for his invaluable mentorship and support throughout this project, as well as the editorial staff at the Georgetown Journal on Poverty Law and Policy for their thoughtful comments.

I. Introduction

During the peak of the COVID-19 pandemic, as millions sheltered in place, the grim picture of housing inequality in the United States grew starker. As COVID-19 rates spiked, some people escaped from cities—flocking to vacation homes on remote islands and in wealthy towns.[1] Others had nowhere to go and their homes, where they suddenly had to spend nearly twenty-four hours a day, did not provide the escape from health problems that shelter-in-place orders envisioned. For many families, primarily low-income families and families of color, quarantining meant continuous exposure to household environmental hazards that negligent public housing authorities had ignored or refused to fix.[2]

Disparities in housing quality have been a longstanding problem in the U.S.[3] Low-income families and families of color are more likely to be exposed to poor environmental housing conditions, with significant implications for their physical and mental health.[4] Despite living in dangerous housing conditions, these tenants are often foreclosed from seeking legal relief.[5] Tenants might be able to demonstrate that they were exposed to harmful environmental housing conditions, suffered a physical injury as a result, and that their landlord knew about the dangerous condition and negligently refused to fix it. Despite this, they might be unable to sue their landlord if they cannot definitively rule out alternate causes of the health issue they have suffered.[6] For example, if a plaintiff developed a respiratory condition after exposure to toxic black mold in their home and can show that that their landlord knew about the mold and that exposure to that type of mold is known to cause respiratory problems, the plaintiff will likely not be able to recover damages if they have a genetic predisposition toward developing asthma or if they were exposed to mold in a different environment at the same time. The fact that such victims currently have no route to recovery, in tort or under other legal regimes, leaves a disproportionate number of would-be plaintiffs with no avenue for relief.

This Article argues that the "loss of chance" doctrine, which has historically been used in medical malpractice cases, should be extended to landlord-tenant

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1. Anna Bahney, *In the Hamptons and Martha's Vineyard, Locals Fear Wealthy Coronavirus Refugees*, CNN (Mar. 31, 2020), https://www.cnn.com/2020/03/31/success/resort-towns-coronavirus/index.html.

2. Winnie Hu & Nate Schweber, *Trapped at Home in the Pandemic with Mold and a Leaky Roof*, N.Y. Times (Dec. 15, 2020), https://www.nytimes.com/2020/12/15/nyregion/nyc-public-housing-coronavirus.html (reporting on the state of public housing for New York City public housing residents, thousands of whom had to wait endlessly for the New York City Housing Authority to repair issues ranging from plumbing leaks and mold to pest infestations and a lack of heat during the pandemic).

3. Gary Adamkiewicz et al., *Moving Environmental Justice Indoors: Understanding Structural Influences on Residential Exposure Patterns in Low-Income Communities*, 101 Am. J. Pub. Health S238, S238-45 (Supp. 1 2011).

4. Carolyn B. Swope & Diana Hernández, *Housing as a Determinant of Health Equity: A Conceptual Model*, 243 Soc. Sci. & Med. 112571 (2019).

5. *See infra* Part IV Section B.

6. *Id*.

toxic tort cases so that potential tenant plaintiffs who likely would not otherwise be able to recover damages may have a legal theory on which to rely. Prior to the 1970s and 1980s, a whole set of medical malpractice claims were foreclosed because plaintiffs could not satisfy causation.[7] For example, in the medical malpractice realm, a patient whose terminal illness was initially misdiagnosed by a care provider would have been denied relief because the patient's likelihood of survival was less than 50% regardless of the timing of diagnosis. A similar problem applies to tenants seeking to bring toxic tort claims.

In the 1970s and 1980s, however, the adoption of the loss of chance doctrine allowed plaintiffs to seek relief.[8] Under loss of chance, plaintiffs can rely on large-scale data, such as survival rates in the population, to estimate what a potential plaintiff's likelihood of survival would have been if they had been correctly diagnosed at an initial point in time and then compare that to what their likelihood of survival was at the time of correct diagnosis. Loss of chance claims have also been successfully brought in other areas of medical malpractice, such as failure to admit a patient to a hospital,[9] as well as in areas outside of medical malpractice, such as in employment discrimination.[10]

Under the expanded loss of chance doctrine proposed in this Article, plaintiffs would be able to sue landlords for failing to remedy known environmental hazards, such as plumbing leaks that lead to mold after adult tenants or their children develop health problems. As in the case of medical malpractice suits, causation in landlord-tenant suits could be established based on extensive public health research that shows that exposure to harmful environmental housing conditions leads to negative health outcomes. Allowing tenants to seek relief in these cases would be an important step forward in reducing housing inequality in the United States.

This Article begins with an overview of research on substandard housing conditions and the effect of such conditions on the health of tenant families. It then discusses barriers to legal relief for would-be plaintiffs in such cases in Parts III and IV. Parts V and VI describe the evolution of the loss of chance doctrine and its historical origins. Part VII provides justifications for expanding the loss of chance doctrine to landlord-tenant cases and existing precedent for applying the doctrine outside of the medical malpractice realm. Finally, Part VIII considers the practical implications and limitations of applying the doctrine to landlord-tenant cases.

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7. *See infra* Part V Section A.
8. *Id.*
9. *Id.*
10. *See infra* Part VII.B.2.

II. Substandard Housing Conditions

A. Prevalence of Unhealthy and Unsafe Home Conditions

The federal interagency Healthy Homes Working Group defines a healthy home as one that is dry, well-ventilated, thermally controlled, and free of pests and contaminants.[11] Millions of homes in the United States fail to meet this standard. There are approximately six million U.S. substandard homes.[12] These homes have some type of health hazard, such as gas leaks, lead risk, elevated radon levels, or physical infrastructure problems.[13] More than 5% of, or nearly 7.5 million, U.S. homes have plumbing, electric, or heating problems and three million have exposed electrical wiring.[14] Over the past 12 months, more than 30 million homes have seen signs of pest infestations and 4.3 million homes have had mold problems.[15] It is estimated that nearly 17% of homes in the United States have an elevated lead risk.[16] Exposure to these health and safety hazards is particularly consequential given that Americans spend 70% of their time inside a home and an additional 18% in other indoor locations, such as offices.[17]

There are also deep racial and economic disparities in exposure to poor quality housing. Low-income families and families of color are more likely to live in homes with severe health and safety hazards.[18] This is partly because these individuals are more likely to live in older homes, which often are in greater need of repair and improvement.[19] In 2021, about 4.5% of white families lived in homes that were identified by the U.S. Census' American Housing Survey as being severely or moderately inadequate[20] and nearly 22% lived in homes with signs of a pest infestation. Comparatively, 8.4% of Black families lived in severely or moderately inadequate homes and about 30% lived in homes with signs of pest

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11. Fed. Healthy Homes Work Grp., Advancing Healthy Housing: A Strategy for Action 10 (2013). The HHWG includes the Department of Housing and Urban Development (HUD), organizations within the Department of Health and Human Services (HHS) including the Centers for Disease Control and Prevention (CDC) and the National Institute of Environmental Health Sciences (NIEHS), the Department of Agriculture (USDA), the Environmental Protection Agency (EPA), the Department of Energy (DOE), the Department of Labor (DOL), and the National Institute of Standards and Technology (NIST).

12. Nat'l Ctr. for Healthy Housing, State of Health Housing Report, https://nchh.org/tools-and-data/data/state-of-healthy-housing/ (last visited Nov. 9, 2023).

13. Tracey Ross et al., Creating Safe and Healthy Living Environments for Low-Income Families, 1–3 (2016).

14. U.S. Census Bureau, American Housing Survey, 2021, https://www.census.gov/programs-surveys/ahs.html.

15. *Id*.

16. *Housing with Lead Risk in the United States*, America's Health Rankings, https://www.americashealthrankings.org/explore/measures/housing_leadrisk.

17. Neil Klepeis, et al., *The National Human Activity Pattern Survey (NHAPS): A Resource for Assessing Exposure to Environmental Pollutants*, 11 J. of Exposure Analysis & Env't Epidemiology 231, 231–52 (2001).

18. Nat'l Ctr. for Healthy Housing, *supra* note 12; U.S. Census Bureau, *supra* note 14.

19. Nat'l Ctr. for Healthy Housing, *supra* note 12.

20. Defined by the *American Housing Survey* as being in a state of disrepair and/or having issues related to plumbing, electricity, and wiring. U.S. Census Bureau, *supra* note 14.

infestation.[21] Children from families of color are also more likely to live in homes with heating or cooling issues, water leaks, and mold.[22]

There is a similar stratification in housing quality along class lines. Low-income households are more likely to live in homes that need repair, have mold, have heating and cooling issues, and are plagued with unsafe lead levels.[23] Lead exposure usually results from peeling paint, outdated pipes, and dust in the air, leading to higher blood lead levels among low-income children.[24] Housing quality issues are also particularly pronounced in urban areas, with one study finding that 45% of metropolitan homes have at least one health and safety hazard.[25]

These disparities are particularly important from a policy perspective, given that low-income families and families of colors are more likely to rent their homes than are high-wealth and white families,[26] placing a significant responsibility for poor housing conditions on negligent landlords. Nearly 88% of households in the bottom wealth quintile and 60% of household in the bottom income quintile rent their homes.[27] Only 10.5% of those in the top income quintile rent their homes.[28] Of all homeowners in the United States, only 8.2% are Black and 10.2% are Hispanic.[29] The vast majority of homeowners—about 75%—are white.[30]

B. The Long-Term Health Effects of Exposure to Low Quality Housing

Why does housing quality matter? Poor housing quality has a tremendous effect on physical and mental health. The Healthy People 2030 initiative, led by the Department of Health and Human Services, describes housing quality as a key social determinant of health.[31] This means that it has classified housing conditions as one of the main environmental factors that shape an individual's health and life outcomes.[32]

Compared to other housing characteristics, such as stability and affordability, housing quality has been found to be the single strongest predictor of emotional

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21. *Id.*
22. *Id.*
23. *Id.*
24. Samiya A. Bashir, *Home Is Where the Harm Is: Inadequate Housing as a Public Health Crisis*, 92 AM. J. PUB. HEALTH 733, 734 (2002); Lead in Drinking Water, CTRS. DISEASE CONTROL & PREVENTION, https://www.cdc.gov/nceh/lead/prevention/sources/water.htm.
25. *Substandard Housing,* NAT'L CTR. FOR HEALTHY HOUSING, https://nchh.org/resources/policy/substandard-housing/ (last visited Nov. 9, 2023).
26. Drew Desilver, *As National Eviction Ban Expires, A Look at Who Rents And Who Owns in the U.S.*, PEW RSCH. CTR. (Aug. 2, 2021), https://www.pewresearch.org/short-reads/2021/08/02/as-national-eviction-ban-expires-a-look-at-who-rents-and-who-owns-in-the-u-s/.
27. *Id.*
28. *Id.*
29. *Id.*
30. *Id.*
31. *Quality of Housing*, U.S. DEP'T OF HEALTH & HUM. SERVS., https://health.gov/healthypeople/priority-areas/social-determinants-health/literature-summaries/quality-housing (last visited Nov. 9, 2023).
32. *Id.*

and behavioral health among low-income children.[33] Exposure to asbestos, for example, is known to cause chronic health problems, including impaired respiratory functioning and increased risk of certain cancers.[34] Mold exposure has been linked to impaired cognitive functioning and an increased risk of developing asthma and other respiratory problems.[35] Exposure to lead in childhood can result in neurological harm and diminished academic and cognitive skills.[36] Elevated lead levels in the blood can pass to the fetus during pregnancy, resulting in miscarriage, low birthweight, preterm birth and congenital birth defects.[37] Indoor air pollutants, such as volatile organic compounds and nitrogen dioxide, which are often released by outdated heating and cooking apparatuses, have also been linked to the development of asthma later in life.[38] Exposure to these hazards in childhood, specifically, is detrimental because children are uniquely susceptible to their negative effects. Early childhood is an especially vulnerable time for the human body,[39] and especially for brain development.[40] For these reasons, exposure to harmful environmental conditions can be detrimental to lifelong health.

C. Economic Implications of Disparities in Housing Quality

Housing quality impacts people's mental and physical health and, in turn, their life chances—their ability to achieve their full potential and realize

33. REBEKAH L. COLEY ET AL., POOR QUALITY HOUSING IS TIED TO CHILDREN'S EMOTIONAL AND BEHAVIORAL PROBLEMS 1 (2013), https://www.macfound.org/media/files/hhm_policy_research_brief_sept_2013.pdf.

34. *E.g.*, Dongmug Kang et al., *Systematic Review of the Effects of Asbestos Exposure on the Risk of Cancer between Children and Adults*, 25 ANNALS OCCUPATIONAL ENV'T MED. 10 (2013).

35. *See, e.g.*, Cheryl Harding et al., *Environmental Mold Exposure, Brain Inflammation, and Spatial Memory Deficits*, 26 BRAIN, BEHAV., & IMMUNITY S47 (2012); Wieslaw Jedrychowski et al., *Cognitive Function of 6-Year Old Children Exposed to Mold-Contaminated Homes in Early Postnatal Period. Prospective Birth Cohort Study on Poland*, 104 PHYSIOLOGY & BEHAV. 989, 989–95 (2011); Mark J. Mendell et al., *Respiratory and Allergic Health Effects of Dampness, Mold, and Dampness-Related Agents: A Review of the Epidemiologic Evidence*, 119 ENV'T HEALTH PERSP. 748 (2011).

36. *See* Bashir, *supra* note 24.

37. David C. Bellinger, *Teratogen Update: Lead and Pregnancy*, 73 BIRTH DEFECTS RSCH. PART A: CLINICAL & MOLECULAR TERATOLOGY 409 (2005); Martha María Téllez-Rojo et al., *Impact of Bone Lead and Bone Resorption on Plasma and Whole Blood Lead Levels During Pregnancy*, 160 AM. J. EPIDEMIOLOGY 668 (2004).

38. M. Hulin et al., *Indoor Air Pollution and Childhood Asthma: Variations Between Urban and Rural Areas*, 20 INDOOR AIR 502–14 (2010); Sharon K. Ahluwalia & Elizabeth C. Matsui, *The Indoor Environment and its Effects on Childhood Asthma*, 11 CURRENT OP. IN ALLERGY & CLINICAL IMMUNOLOGY 137–43 (2011).

39. *Early Brain Development and Health*, CTRS. DISEASE CONTROL & PREVENTION, https://www.cdc.gov/ncbddd/childdevelopment/early-brain-development.html (last visited Nov. 9, 2023); *Early Childhood Development*, UNICEF DATA, https://data.unicef.org/topic/early-childhood-development/overview/ (last viewed on Nov. 9, 2023).

40. *Early Brain Development and Health*, CTRS. DISEASE CONTROL & PREVENTION, https://www.cdc.gov/ncbddd/childdevelopment/early-brain-development.html (last visited on Nov. 9, 2023) ("[T]he first 8 years can build a foundation for future learning, health and life success.").

economic and educational success.[41] Because of this, disparities in housing quality deepen economic inequality in the United States.

As low-income households suffer physical and mental harm resulting from poorly maintained housing, they are less likely than their high-earning counterparts to achieve educational and economic success, further widening the gap between the rich and poor.[42] For example, exposure to lead has negative effects on childhood development, impacting the central nervous system and causing lower IQ scores in adulthood.[43] Similarly, mold exposure has been linked to impaired cognitive functioning.[44] Asthma, which can result from exposure to various indoor air pollutants, has been linked with absenteeism from school and cognitive impairment, which, in turn, are associated with poor educational outcomes.[45] Given that low-income families and families of color are more likely to live in homes withs toxic hazards,[46] they are more likely to suffer physical harm and, in turn, these negative economic effects. Expanding the types of tort relief available to tenants could help improve the quality of housing available to low-income people and communities of color, which could help reduce racial and economic inequality more broadly.

III. Legal Relief for Tenants Facing Housing Quality Issues

In many states, tenants facing unsafe or unhealthy housing conditions have limited legal options. Under the implied warranty of habitability, landlords generally have a duty to ensure their residential properties meet basic safety standards.[47] To meet this duty, landlords must comply with relevant housing codes, judicial decisions, or a combination of the two, depending on the state they live in. State landlord-tenant law usually codifies tenants' rights to a safe and healthy

41. Kaye-Alese Green et al., *Housing and Neighborhoods as Root Causes of Child Poverty*, 21 Acad. Pediatrics S194 (2021); Robert Manduca & Robert J. Sampson, *Punishing and Toxic Neighborhood Environments Independently Predict the Intergenerational Social Mobility of Black and White Children*, 11 PNAS 7772 (2019).

42. *Id.*

43. Johanna Rich Tesman & Amanda Hills, *Developmental Effects of Lead Exposure in Children*, 8 Soc. Pol'y Rep. 1–20 (1994); Barbara Berney, *Round and round it goes: the epidemiology of childhood lead poisoning,1950-1990*, 71 Milbank Q. 3–39 (1993).

44. *See Housing with Lead Risk in the United States*, *supra* note 16.

45. Sara B. Johnson et al., *Asthma and Attendance in Urban Schools*, 16 Preventing Chronic Disease 1 (2019); Patrick L. Kinney et al., *On the Front Lines: An Environmental Asthma Intervention in New York City*, 92 Am. J. Pub. Health 24 (2002); Charles E. Basch, *Asthma and the Achievement Gap Among Urban Minority Youth*, 81 J. Sch. Health 606 (2011).

46. *See supra* Part II Section A.

47. *E.g.*, Residential Lease Agreements: Key Lease Considerations (NJ), Practical Law Practice Note w-000-2173 ("The implied warranty of habitability imposes a duty on a residential landlord to warrant that a property rented for a residential purpose is fit for that purpose at the beginning of the lease and remains so during the entire lease term. In other words, the landlord must offer and maintain the premises in a condition that renders them livable and in a safe and decent state. This includes the affirmative duty to repair damage to vital facilities caused by ordinary wear and tear during the lease term.").

home. Housing codes vary state to state. Some states, such as California,[48] have sweeping health and safety codes that encompass a wide range of possible hazards and toxins. However, other states, such as Tennessee,[49] are more limited in the duties they impose on landlords.

When faced with toxic or unsafe conditions that violate these laws, tenants are generally advised to contact their landlord first to request remediation.[50] Landlords then have a reasonable period to complete repairs. In some jurisdictions, tenants can withhold rent until repairs are made or withhold rental payments and complete the repairs themselves if the landlord does not make repairs in a reasonable amount of time.[51] If a landlord refuses to complete repairs entirely, tenants can also file a complaint with the appropriate local or state agency if they know how to do so or can find legal representation. Tenants may be afraid to take action, however, because they might fear that their landlords may retaliate and evict them.

Even in the best-case scenario, these remedies only address ongoing housing issues while a tenant is living in a unit. They do not compensate tenants for harm suffered during the period of time when the landlord was refusing to make repairs. For example, while a local housing authority might eventually demand a landlord to repair a leaking pipe, it cannot offer any recourse after mold exposure has exacerbated a tenant's asthma.

It is technically possible for a tenant to sue a landlord for long-term harm resulting from negligent maintenance of housing, even after they move out, but such tenants often face insurmountable challenges in bringing such suits. These suits can be understood as a type of toxic tort litigation. Toxic tort cases are those in which a plaintiff alleges that he or she suffered injuries resulting from the wrongful exposure to a harmful chemical or substance. Most often, toxic tort cases are mass tort cases involving, for example, exposure to contaminated drinking water or asbestos in the workplace. Plaintiffs must generally be able to show a physical injury, usually in the form of a chronic condition or other long-term medical harm. Plaintiffs must also show general causation: the substance in question is capable of causing the type of injury suffered by the plaintiff, and specific causation: that exposure to that particular substance did cause an injury for this plaintiff.[52]

Like many toxic tort suits, the types of cases primarily discussed here – where a tenant sues a landlord for wrongful exposure to a toxin or other harm – are

48. CAL. HEALTH & SAFETY CODE § 17920.3.

49. TENN. CODE § 68-111-102. Note, for example, that the California code covers significant mold growth as a public health violation, whereas the Tennessee code makes no mention of mold.

50. *If You Rent a Place, Know Your Legal Rights and Duties*, LEGAL AID SOC'Y OF MIDDLE TENNESSEE & THE CUMBERLANDS, https://www.tn.gov/content/dam/tn/health/documents/healthy-places/healthy-homes/HHW_LAS_TN_URLTA_Renters_Rights.pdf (last visited Nov. 9, 2023).

51. *E.g.*, Vt. Stat. Ann. tit. 9, § 4458 (West).

52. Mark S. Dennison & Warren Freedman, *Handling Toxic Tort Litigation*, 57 AM. JURIS. TRIALS 395 (1995).

hampered by causation challenges, given possible alternate causes of the harm. These challenges are discussed in greater detail in the next section. This leaves injured tenants in an untenable position—often having suffered significant harms to their health as a result of their landlord failing to meet their legal duty – but with limited options for recovery.

IV. Why is Relief for These Injuries Currently Foreclosed in Tort?

A. Causation in Tort Suits

In tort, plaintiffs must demonstrate that a given injury would not have happened were it not for a negligent act *and* that the harm proximately caused the injury.[53]

The first component, sometimes known as factual, or but-for, causation, asks whether an action was necessary to create subsequent harm, even if the action was not necessarily sufficient for bringing about that harm.[54] In the context of toxic tort litigation, which is relevant to the types of landlord-tenant disputes discussed here, factual causation is generally broken down further into two sub-categories: 1) general causation and 2) specific causation.[55] General causation considers whether data shows that exposure to a particular substance *can* lead to the type of injury suffered by the plaintiff.[56] Specific causation, on the other hand, looks at the circumstance of a particular plaintiff's case and asks whether there is sufficient evidence showing that that exposure to that particular substance, for that specific period of time and level alleged, more likely than not caused an injury to a particular plaintiff.[57]

Both components of factual causation can pose significant challenges in toxic tort litigation. General causation may be challenging to establish because it requires sufficient data to support a causal link between a toxic substance and an injury, as well as some level of consensus among researchers about how to interpret that data. This precludes some litigants, such as those who are among the first group of people to experience the harms of new toxins, before widespread data supports their experiences, from successfully bringing suit. Specific causation poses even greater challenges because it is often impossible to specify the exact quantity of a given toxin and duration of time that a plaintiff was exposed to it. It can also be challenging to isolate the effect of one toxin from others. For example, as one commentator notes,

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53. *E.g.,* Doull v. Foster, 163 N.E.3d 976, 983 (Mass. 2021) ("Causation has traditionally involved two separate components: the defendant had to be both a factual cause and a legal cause of the harm . . . Legal causation is also commonly referred to as 'proximate causation.'").

54. *Id.* ("Generally, a defendant is a factual cause of a harm if the harm would not have occurred 'but for' the defendant's negligent conduct.").

55. *Id.*

56. *Id.*

57. *See* Dennison & Freedman, *supra* note 52, for a helpful overview of how causation operates in toxic tort litigation.

> [A]sbestos is known to increase the risks of, among other things, lung cancer. However, those who have contracted lung cancer subsequent to being exposed to other airborne toxins, such as those found in cigarette smoke, may have trouble establishing that asbestos is a significant contributor, much less that smoking is likely not responsible.[58]

For these reasons, many toxic torts plaintiffs cannot successfully show that one particular toxin caused the harm they have suffered, and they are unable to bring successful claims.

If factual cause is established, the court then considers proximate cause by looking at the chain of events and determining whether there is a sufficiently close nexus between the action and the ensuing harm. A key component of establishing proximate cause is foreseeability—should it have been foreseeable to the defendant that his or actions could result in the harm in question? Proximate cause allows courts to place a limit on one's responsibility for the distant consequences of their actions.

Proximate causation is often a significant barrier to many tort suits because it can be challenging to prove a sufficiently direct link between a harmful or negligent action and subsequent injury. For example, in medical misdiagnosis cases, a plaintiff who suffered a decreased chance of survival due to a negligent misdiagnosis might be foreclosed from relief because they would have still died from their illness, even if the misdiagnosis had not taken place. The loss of chance doctrine, discussed in more detail below, presents a solution to this problem. It allows litigants to rely on large-scale demographic data[59] to establish the likelihood of injury, in the absence of evidence that can provide support for the traditional proximate cause theory.[60] In the absence of doctrinal exceptions, such as loss of

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58. Note, *Causation in Environmental Law: Lessons from Toxic Torts*, 128 HARV. L. REV. 2256 (2015).

59. These data are generally collected from a representative cross-section of the population, allowing us to understand the demographic features of that population – such as its life expectancy by education level and race. *See infra* Part VIII for a more detailed discussion of this process in loss of chance cases.

60. As discussed below, *infra* Part VI, the loss of chance doctrine is not applied the same way in different states. It is therefore difficult to make generalized statements about its application. As related to this discussion about causation, however, it is worth noting that different cases and commentators inconsistently refer to it as a way to circumvent proximate causation *or* a way to circumvent but-for causation challenges. *See, e.g.*, Fehrenbach v. O'Malley, 841 N.E.2d 350, 362, *aff'd,* 862 N.E.2d 489 (2005) ("[T]he instruction is used in cases where a plaintiff cannot prove proximate cause from the negligence because, even without the malpractice, he was more likely than not to suffer the injury."); *but see* Smith v. Providence Health & Servs., 393 P.3d 1106, 1115 (2017) ("[T]he loss-of-chance doctrine should apply 'for reasons of fairness' when, but for the tortious conduct, 'it would not have been necessary to grapple with the imponderables of chance'" (internal citation omitted)). Delving into the minutiae of this inconsistency is beyond the scope of this article – in either case, it is a tool used to help lower the causation bar when there has been evidence of clear negligence, a subsequent harm linked to the negligence, and a plaintiff would otherwise be unfairly barred from recovery.

chance, however, plaintiffs are subject to stringent causation standards that are often a catch-all excuse for courts to limit the liability of negligent actors.[61]

B. Causation Barriers in Landlord-Tenant Litigation

Litigants in landlord-tenant litigation cases face challenges similar to other toxic tort litigants discussed above. For example, when a negligent landlord refuses to remediate mold in an apartment and a child tenant suffers from asthma as a result, the family might be unable to seek relief due to causation challenges. What is the causation problem? The child's family has no way of proving that, had it not been for living in that particular apartment for that amount of time, she would not have developed asthma. There may be both a specific and proximate causation issue. Asthma, like many other illnesses, cannot be easily attributed to a single cause. If the child was genetically predisposed to developing asthma, for example, it would be impossible to establish proximate cause because she might have developed asthma regardless of exposure to mold in the apartment. She might also be foreclosed from making her claim because she was exposed to mold or other asthma triggers in other settings, such as at school or other homes she frequently visited. As a result, it may be impossible to establish specific causation. Therefore, a defendant might successfully argue that even without the landlord's negligence, the plaintiff was more likely than not going to develop asthma.[62] This means that despite the fact that the landlord was negligent and that their specific type of negligence has, on the aggregate, been shown to lead to harm similar to that suffered by the plaintiff, the tenant may still be denied relief and the landlord may suffer no penalty.

Landlord-tenant cases where plaintiffs are barred from recovery on these grounds are common. For example, in *Shed v. Johnny Coleman Builders, Inc.,* the landlord defendant was granted summary judgment, and the ruling was upheld by the Fifth Circuit, in a toxic tort case regarding mold exposure where the court

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61. There are different ways of thinking about the desirability of a high bar for causation in tort suits. On one hand, it can be argued that stringent causation standards are important because they prevent limitless and erroneous legal liability from being imposed on innocent actors. Various actors who could have prevented harm are not liable because they are not viewed to have had a duty to prevent harm, in the eyes of the law. On the other hand, however, such a strict approach means that many individuals who could have prevented an injury are not held responsible for their actions. Mari Matsuda takes issue with the current overly stringent approach to proximate cause. As she notes, causation is typically understood as a "notion best cabined and controlled lest it spin wildly out of control," and therefore has served to limit torts claims. Mari Matsuda, *On Causation*, 100 COLUM. L. REV. 2195, 2203 (2000). As such, it disincentivizes behavior changes that could prevent future harm.

62. It is true that this is similar to the problem of multiple causation. While tort doctrine already accounts for multiple causation, this is generally done by establishing joint and several liability – where, for example, two or more tortfeasor defendants are found to have acted in concert to cause harm, or, in the case of several liability, that each defendant is only liable for their proportionate share of the plaintiff's injury. To meet this bar, however, a would-be plaintiff would still have to be able to show that each defendant's actions were a substantial factor in bringing about the harm and the actions met the bar for proximate cause, leaving those in the types of cases discussed above with no recourse. For example, in the asthma example, the plaintiff would likely not be able to show that the exposure to mold, alongside a genetic disposition and exposure to indoor air pollution in other settings, led to her asthma, because it would be impossible to disentangle whether each factor independently contributed to her asthma.

found that the plaintiff could not adequately establish specific causation.[63] The plaintiff observed mold in his home and subsequently hired a home inspector who confirmed there were elevated mold levels.[64] The plaintiff then suffered multiple medical problems, for which he was treated by two separate physicians. He developed a rash that one doctor noted was "consistent with an allergic reaction to mold."[65] He also developed shortness of breath, that another doctor found was "most likely caused by heavy black mold exposure."[66] Despite the fact that there was clear evidence 1) of a significant mold problem, 2) that the plaintiff had been exposed to the mold in the home, and 3) that he had developed physical ailments that were consistent with mold exposure, the plaintiff's claims were denied and the defendant was granted summary judgment.[67] The district court held, in part, that the plaintiff's treating physician's opinions did not meet the bar for specific causation because they did not sufficiently "consider and rule out other likely causes of the plaintiff's alleged ailments."[68] In another similar case, a court granted summary judgment against a tenant plaintiff, despite the plaintiff having developed severe respiratory symptoms after exposure to mold in his apartment, because the expert physician in the case was not able to rule out the possibility that the plaintiff's allergies to tree pollen caused his respiratory symptoms.[69]

Similar causation concerns bar plaintiffs from recovery in lead paint cases. For example, in *S.T. v. 1727-29 LLC*, the plaintiff sued her landlord upon finding that her young son had elevated blood lead levels after being exposed to peeling and cracking paint chips in the family's New York City apartment.[70] Despite numerous requests, the landlord had refused to remediate the issue.[71] The plaintiff showed that the landlord had been alerted of the problem and that over a dozen other apartments managed by the landlord had lead-based paint violations.[72] The court found that plaintiff had established a prima facie case of liability and had shown that the landlord defendants had not acted reasonably in failing to remediate the lead.[73] Regardless, the court denied the plaintiff's summary judgment motion based on a causation issue presented by defendants—the claim by defendants that elevated blood lead levels and associated cognitive injuries may have

63. Shed v. Johnny Coleman Builders, No. 3:16-CV171-NBB-RP, 2017 WL 3624240, at *1 (N.D. Miss. Aug. 23, 2017), *aff'd,* 761 F.App'x 404 (5th Cir. 2019).

64. *Id.*

65. *Id.*

66. *Id.*

67. *Id.* at 3–5.

68. *Id.* at 2–3 (Noting that the lack of such testimony "on the issue of causation is fatal to [the plaintiff's] negligence claims.").

69. Sanders v. Rosenberg, No. 06–1406 (NLH), 2008 WL 1732980, at *6 (D.N.J. Apr. 10, 2008) ("[T]he primary problem with Roland's negligence claim is that his allergist never concluded that mold was more likely than not the cause of Roland's problems. Even though the evidence shows that Roland is allergic to mold, the evidence also shows that Roland is allergic to many other things.").

70. S.T. v. 1727-29 LLC, 127 N.Y.S.3d 16, 1 (2020).

71. *Id.* at 18–23.

72. *Id.* at 16–20.

73. *Id.* at 28–31.

been caused partly by a "genetic inheritance of low intelligence and psychiatric disorders," as well as his mother's use of Xanax and cocaine during pregnancy.[74]

Even in cases where plaintiffs are ultimately afforded some relief, courts generally look at expert testimony to ensure that other possible causes of the plaintiff's injury – namely genetic and other environmental factors – have been ruled out. In *New Haverford Partnership v. Stroot,* for example, two plaintiffs sued their landlord for failing to maintain habitable living conditions.[75] The plaintiffs' apartments had serious problems with water leaks and toxic mold, resulting in their filing numerous complaints with the landlord.[76] One of the plaintiffs experienced a worsening of her allergies and asthma, resulting in her having to go to the emergency room after suffering repeated asthma attacks due to her exposure to the mold.[77] The other plaintiff also experienced a sharp decline in her health after living in the apartment, developing chest pains, frequent headaches, and sinus problems.[78] In claiming that the court below had erred, the landlord defendant asserted that one of the plaintiff's injuries might have been related to the fact that she was a smoker and that she had a dog.[79] While the court ultimately found for the plaintiff, it did so because it was satisfied that the medical expert had, indeed, considered the alternate causes of the plaintiff's asthma – making clear that had other causes been to blame for the asthma, the plaintiff's claims would have been foreclosed.[80]

This approach places an immense, unfair, and unnecessary burden on plaintiffs. It is not sufficient for a plaintiff to show that their landlord violated a duty to maintain habitable living conditions, that the plaintiff suffered physical harm as a result, and that the type of negligence exercised by the landlord has been shown, on the aggregate, to lead to the type of physical harm suffered by the plaintiff. If the landlord is able to provide evidence that other factors *could* have caused the injury, the negligence claim is ignored and the landlord is not penalized. The loss of chance doctrine could be expanded and applied to these types of landlord-tenant disputes.

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74. *Id.* at 20–23, 31–34 ("While no issue of fact exists as to whether defendants acted reasonably, defendants have raised an issue of fact as to causation. . . the expert contested whether S.T. sustained any injury at all as a result of his lead poisoning.).

75. *See* New Haverford P'ship v. Stroot, 772 A.2d 792, 794 (Del. 2001).

76. *Id.* at 795–96.

77. *Id.* at 796.

78. *Id.*

79. *Id.* at 800.

80. *Id.*; *see also* Cabral v. 570 W. Realty, LLC, 900 N.Y.S.2d 373, 375 (2010) (finding, in a case where three infant plaintiffs developed asthma after exposure to severe mold in their family's apartment, that there was a triable issue of fact related to causation because the defendant had not adequately shown that the cause of infant plaintiffs' asthma was inherited. Had there been more evidence of a genetic predisposition toward developing asthma, such as demonstrating that the infant's mother had developed asthma as a child, the plaintiffs' claims would have presumably been foreclosed).

V. What is the Loss of Chance Doctrine?

A. Loss of Chance Doctrine in Medical Malpractice Cases

A failure to establish factual and proximate cause does not always sound a death knell for tort claims. The loss of chance doctrine is applied in two types of medical malpractice cases – 1) failure to diagnose and 2) failure to call emergency services or admit a patient suits—to allow for recovery, even when traditional causation cannot be established.[81]

First, in failure to diagnose cases, plaintiffs bring suit after learning that a doctor misdiagnosed them. These are cases where plaintiffs are incorrectly diagnosed by their physician and this affects their treatment plan and, usually, their health outcomes, often resulting in an earlier death. In these cases, juries generally rely on expert testimony and statistical evidence to determine what the likelihood of a patient's survival would have been at time point one (the time of misdiagnosis) and what it was at time point two (the time of the eventual correct diagnosis).[82]

For example, if a doctor initially misdiagnoses a patient who has breast cancer and the patient is properly diagnosed months later, he or she could recover based on the decreased likelihood of survival resulting from the delay in the diagnosis. In this hypothetical example, if a patient's chance of recovering from breast cancer at time point one would have been 20%, but her likelihood at time point two, when she was correctly diagnosed, was 10%, the patient could be compensated for the ten percentage point decrease in the likelihood of survival she suffered under the loss of chance doctrine. In this way, the loss of chance doctrine allows plaintiffs to recover even if they were diagnosed with a terminal illness. Because their chance of survival would have been less than 50%, regardless of when they were diagnosed, they cannot establish traditional specific causation. The alleged negligence could not have been a substantial factor in bringing about their harm because the terminal illness was more likely than not going to lead to their death.

While the majority of loss of chance cases stem from failure to diagnose suits,[83] the loss of chance theory is also used in cases where there is a failure to call emergency services,[84] or a failure to admit a patient to a hospital.[85] For example, in one case, a plaintiff sued a hotel for taking too long to call emergency services when her husband was having a heart attack.[86] The court held that there was

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81. Tory A. Weigand, *Loss of Chance in Medical Malpractice: A Look at Recent Developments: The Growing Acceptance of This Doctrine Raises Difficult Public Policy Issues, as Well as Concerns for the Limits of Medical Professional Liability*, 70 Defense Couns. J. 301, 301 (2003).

82. *Id.* at 313.

83. *Id.* at 301.

84. *See, e.g.*, Blinzler v. Marriot Int'l Inc., 81 F.3d 1148, 1152 (1st Cir. 1996); Hake v. Manchester Twp., 486 A.2d 836, 837-38 (N.J. 1985).

85. *See, e.g.*, McBride v. United States, 462 F.2d 72, 74-75 (9th Cir. 1972).

86. Blinzler v. Marriot Int'l Inc., 81 F.3d 1148, 1151-52 (1st Cir. 1996).

sufficient evidence that the hotel's failure to call emergency services in a timely fashion reduced the plaintiff's husband's chance of survival.[87] The court, in discussing causation, acknowledged that "it can rarely (if ever) be said with absolute certainty that harm would not have befallen the victim if the omitted action had been taken," and applied the loss of chance doctrine.[88]

In failure to admit cases, plaintiffs allege that hospital staff caused a loss of chance of a better outcome by failing to provide timely medical services to a patient. For example, in *McBride v. United States*, the court found a plaintiff should be allowed to recover in a case where the doctor had failed to admit him to the coronary care unit.[89] In that case, the plaintiff went to the emergency room complaining of chest pain. The physician on duty examined him, diagnosed him as likely suffering from a gastrointestinal problem, and allowed him to return home, with instructions to return if his chest pain returned.[90] The doctor misinterpreted the plaintiff's electrocardiogram and missed an abnormal pattern on it. The plaintiff died after returning home and the plaintiff's family sued, claiming that the physician should have admitted him to the coronary care unit.[91] The trial court had declined to send the case to the jury, finding that causation was not sufficiently established.[92] The appellate court remanded the case, however, noting that "the absence of positive certainty should not bar recovery if negligent failure to provide treatment deprives a patient of a significant improvement in his chances for recovery."[93]

B. Loss of Chance Doctrine: History

Before it became a part of American tort law, the English loss of chance doctrine, and a probabilistic approach to recovery from injuries more generally, was not related to medical malpractice at all.[94] The early roots of the doctrine can be traced to an English contracts case, *Chaplin v. Hicks*, where a plaintiff sued a defendant, a theater manager, for not giving her a reasonable chance to present herself to a judge at a beauty contest.[95] The defendant was late in inviting the plaintiff to the next stage of the contest and the plaintiff lost the chance to participate.[96] The plaintiff sued based on her lost chance to win the prize, despite the fact that she could not show that the defendant's act *caused* her loss—she might

87. *Id.* at 1162.
88. *Id.* at 1152.
89. McBride v. United States, 462 F.2d 72, 74-75 (9th Cir. 1972).
90. *Id.* at 73.
91. *Id.* at 74.
92. *Id.* at 73.
93. *Id.* at 75.
94. See *infra* notes 95–99.
95. [1911] 2 KB 786 (Eng.). Its role in the development of the loss of chance doctrine is discussed in Joseph H. King, Jr., *"Reduction of Likelihood" Reformulation and Other Retrofitting of the Loss-of-A-Chance Doctrine*, 28 U. MEM. L. REV. 491, 500 (1998).
96. *Id.* at 787–88.

have lost the contest regardless.[97] The appellate court ruled in her favor, holding that the loss of a chance to win the prize was a measurable and recoverable harm.[98] This case and similar English cases were premised on the idea that recovery should be possible even in the face of uncertainty.[99]

Prior to the adoption of the loss of chance doctrine in U.S. medical malpractice law, plaintiffs were foreclosed from recovery in cases where their odds of survival were already low (below 50%), but were further reduced by a negligent act, as in the case of a misdiagnosed chronic illness.[100] Plaintiffs were subject to an all-or-nothing approach—they had to show that their likelihood of survival was higher than 50% prior to the negligent act and was reduced to 50% or lower afterward.[101] Plaintiffs were denied all relief when they could not show, for example, that their doctor's failure to correctly diagnose them, as opposed to the fact of having a deathly illness, led to their death. This meant that if a terminally ill patient passed away sooner than he or she would have had it not been for a doctor's misdiagnosis, she would be denied relief. In *Cooper v. Sister of Charity of Cincinnati Inc.,* for example, where an emergency room doctor failed to recognize that a patient had a fractured skull, the court ruled for the defendant because the plaintiff could not show that there was more than a 50% chance that he could have survived, even if the doctor had properly diagnosed him.[102] In the case, Mrs. Cooper took her 16-year-old son to the emergency room after he sustained various injuries from a bicycle accident.[103] The doctor did not comply with the widely-accepted medical standards of the time—he did not conduct a proper physical examination of the patient, nor did he take the patient's vital signs.[104] A medical expert in the case, however, testified that "[a]lthough there is a near certainty of death when an injury, such as suffered by decedent, goes untreated. . . 'there is no possible way for a physician or anyone else to ascertain with any degree of certainty whether with medical intervention, the individual would have survived or died.'"[105] A different medical expert agreed that the patient's likelihood of survival, had he been correctly diagnosed, would have been difficult to accurately ascertain, but that it would have likely been "around fifty percent."[106]

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97. *Id.*

98. *Id.* at 791–801.

99. *Id.*; *see also* Miller v. Allstate Ins. Co., 573 So. 2d 24, 29 (Fla. Dist. Ct. App. 1990) ("This alternative theory of recovery was established under the English Common Law where the courts rejected the all-or-nothing approach . . . The English cases permitted recovery accordingly on the theory that although uncertainty diminishes the value of an opportunity, it does not render it worthless.").

100. Ralph Frasca, *Loss of Chance Rules and the Valuation of Loss of Chance Damages*, 15 J. LEGAL ECON. 91, 95 (2008).

101. *Id*.

102. 272 N.E.2d 97, 98–101 & 104–05 (1971).

103. *Id.* at 98–99.

104. *Id.* at 99–101 (noting that, in addition to failing to follow the widely accepted medical practice of taking vital signs, the doctor did not examine the back of the patient's head, test his gait, or use an ophthalmoscope).

105. *Id.* at 101.

106. *Id.*

Based on this evidence, the court held in the defendant's favor.[107] It agreed that medical malpractice had taken place, but "reaffirm[ed] the principle" that a verdict has to be directed for the defendant when there is no evidence to support a reasonable inference that the malpractice was the "direct and proximate cause of injury."[108] The court explicitly rejected the loss of chance approach, which had been put forth in a case from a different jurisdiction at the time,[109] arguing instead that "traditional proximate cause standards require that the trier of the facts, at a minimum, must be provided with evidence that a result was more likely than not to have been caused by an act, in the absence of any intervening cause."[110] In Ohio, where the *Cooper* case originated, it took another 25 years for the Court to overrule its decision and recognize the loss of chance doctrine.[111]

In states that have not adopted the modern loss of chance doctrine, medical malpractice cases continue to be adjudicated based on the proximate cause standard of causation today.[112] The only plaintiffs who can successfully seek relief in jurisdictions that have not adopted the loss of chance doctrine are those who would have had a higher than 50% likelihood of recovery to begin with, prior to a negligent act, such as a misdiagnosis, taking place. For example, in *Harvey v. Silber*, the plaintiff's estate recovered in a wrongful death suit, but only because an expert in the case was able to testify that had the doctors followed accepted medical practice, there was a probability that the patient would have lived.[113] That is, the negligence was a proximate cause of the plaintiff's death.[114] An expert in the case testified that the "negligent diagnosis" was "the proximate cause of the failure to operate," and "there was a probability that an operation would have saved Harvey's life."[115] Therefore, the court concluded that the misdiagnosis was the proximate cause of the death.[116]

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107. *Id.* at 104–05.

108. *Id.* at 102.

109. Hicks v. U.S., 368 F.2d 626, 632 (4th Cir. 1966).

110. Cooper v. Sisters of Charity of Cincinnati, 272 N.E.2d 97, 262.

111. Roberts v. Ohio Permanente Med. Grp., Inc., 668 N.E.2d 480, 484 (1996) ("[W]e recognize the loss-of-chance theory and follow the approach set forth in Section 323, Restatement of Torts. Under this view, we hold as follows: In order to maintain an action for the loss of a less-than-even chance of recovery or survival, the plaintiff must present expert medical testimony showing that the health care provider's negligent act or omission increased the risk of harm to the plaintiff. It then becomes a jury question as to whether the defendant's negligence was a cause of the plaintiff's injury or death. Once this burden is met, the trier of fact may then assess the degree to which the plaintiff's chances of recovery or survival have been decreased and calculate the appropriate measure of damages. The plaintiff is not required to establish the lost chance of recovery or survival in an exact percentage in order for the matter to be submitted to the jury. Instead, the jury is to consider evidence of percentages of the lost chance in the assessment and apportionment of damages.").

112. Ralph Frasca, *Loss of Chance Rules and the Valuation of Loss of Chance Damages*, 15 J. LEGAL ECON. 91, 95 (2008).

113. 2 N.W.2d 483, 487–88 (1942).

114. *Id.*

115. *Id.* at 487.

116. *Id.* at 488.

This approach can result variably in both under- and over-compensating plaintiffs. As discussed above, plaintiffs may be undercompensated because they are barred from recovering for actual harm they have suffered, as in *Cooper*—a lower chance of survival is still a chance, even if it cannot be quantified exactly. In the absence of reliance on the loss of chance doctrine, medical care providers have zero liability in any case where a patient has a condition that makes survival unlikely.[117] Plaintiffs can also be overcompensated, depending on how a given jurisdiction handles multiple causation problems because defendants may be liable for the full amount of plaintiffs' injuries, not just the proportionate increase in risk of injury that their negligence caused.[118]

Additionally, this approach can impose a somewhat arbitrary distinction between plaintiffs who, for example, had a 51%, versus 49%, chance of recovery prior to the commission of a negligent act.[119]

In response to this problem, the loss of chance doctrine first gained traction in the United States in the late 1970s and early 1980s. The foundation for this approach was laid earlier, in the early-to-mid 20th century in *Zinnel v. U.S. Shipping Bd. Emergency Fleet Corp* and *Hicks v. United States*.[120] Unlike modern loss of chance cases that built upon the reasoning of *Zinnel*, *Zinnel* itself was not a medical malpractice case.[121] It was a failure to rescue case, brought by a crewmember's father after the crewmember was swept overboard a ship and died.[122] There, the plaintiff argued that the defendant was at fault for failing to provide a required guard rope on the deck. The defendant argued that there was no evidence that the deceased would have lived had there been a guard rope. The court rejected this reasoning and held that a lack of certainty is not sufficient

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117. *See* Matsuyama v. Birnbaum, 890 N.E.2d 819, 829–30 (2008) ("So long as the patient's chance of survival before the physician's negligence was less than even, it is logically impossible for her to show that the physician's negligence was the but-for cause of her death, so she can recover nothing. Thus, the all or nothing rule provides a 'blanket release from liability for doctors and hospitals any time there was less than a 50 percent chance of survival, regardless of how flagrant the negligence.'") (quoting Herskovits v. Grp. Health Coop. of Puget Sound, 99 Wash.2d 609, 614, 664 (1983)).

118. Cahoon v. Cummings, 734 N.E.2d 535, 541 (Ind. 2000) (noting that "holding defendants liable for the full value of the wrongful death claim. . . would hold doctors liable not only for their own negligence, but also for their patients' illnesses, which are not the product of the doctors' actions").

119. For example, the Supreme Court of Colorado found that a rule that requires the plaintiff's chance of avoiding harm be over 50% "absent defendant's negligence. . . sets an arbitrary percentage threshold and fails to deter negligent conduct in cases where chance of survival or recovery are less than 50 percent." Sharp v. Kaiser Found. Health Plan of Colorado, 710 P.2d 1153, 1156 (Colo. App. 1985), *aff'd*, 741 P.2d 714 (Colo. 1987) ("Even though plaintiffs' evidence shows that Mrs. Sharp had less than a 50% chance of suffering a heart attack, her expert's testimony that her chances of suffering a heart attack were increased by 20 to 25% is sufficient evidence of causation in fact to allow a jury to consider whether defendants' failure properly to treat Mrs. Sharp was a substantial factor in causing her injuries.").

120. Zinnel v. U.S. Shipping Bd. Emergency Fleet Corp., 10 F.2d 47, 49 (2d Cir. 1925); Hicks v. United States, 368 F.2d 626, 632 (4th Cir. 1966).

121. Zinnel, 10 F.2d 47 (2d Cir. 1925).

122. *Id.* at 48.

reason to deny recovery.[123] Judge Learned Hand's famous quote from the case, that courts are not "justified, where certainly [sic] is impossible, in insisting upon it,"[124] has since been cited in subsequent loss of chance cases and set the groundwork for further lenience with regard to causation standards.[125]

Decades later, in *Hicks v. United States,* an action was brought on behalf of a woman who was misdiagnosed by a Navy doctor.[126] The doctor had diagnosed her with gastroenteritis and sent her home to recover.[127] The doctor had failed to abide by the accepted standard of care because he failed to thoroughly examine her – she actually had an internal obstruction and died hours later.[128] The defendant argued that there was no proof that the misdiagnosis was the proximate cause of the plaintiff's death, given that it was not clear that a proper diagnosis and subsequent surgery would have allowed her to live.[129] The court rejected his reasoning, noting that:

> when a defendant's negligent action or inaction has effectively terminated a person's chance of survival, it does not lie in the defendant's mouth to raise conjectures as to the measure of the chances that he has put beyond the possibility of realization. If there was any substantial possibility of survival and the defendant has destroyed it, he is answerable.[130]

Shortly after that, courts began to allow plaintiffs to recover even when their chance of survival was low to begin with in loss of chance cases.[131] That move, toward more widespread acceptance of the loss of chance doctrine, was partly catalyzed by an article Joseph King published in 1981 about causation in personal injury torts.[132] King argued that courts should widely adopt a probabilistic

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123. Zinnel, 10 F.2d at 49. ("There of course remains the question whether they might have also said that the fault caused the loss. About that we agree no certain conclusion was possible . . . we are not dealing with a criminal case, nor are we justified, where certainly is impossible, in insisting upon it.").

124. *Id.*

125. *E.g.*, *Hicks*, 368 F.2d at 632 n.3; Mitchell v. Volkswagenwerk, AG, 669 F.2d 1199, 1205 (8th Cir. 1982).

126. *Hicks*, 368 F.2d at 628.

127. *Id.*

128. *Id.* at 629–30.

129. *Id.* at 632.

130. *Id.* The court went on to say, "Rarely is it possible to demonstrate to an absolute certainty what would have happened in circumstances that the wrongdoer did not allow to come to pass. The law does not in the existing circumstances require the plaintiff to show to a certainty that the patient would have lived had she been hospitalized and operated on promptly." *Id.* Despite the fact that this quote is commonly cited as an early originator of the modern loss of chance doctrine, the court also clearly notes that the plaintiff's experts concluded that the plaintiff definitively "would have survived" with a prior diagnosis and surgery. *Id.*

131. E.g., Kallenberg v. Beth Israel Hospital, 357 N.Y.S.2d. 508 (N.Y. App. Div. 1974).

132. *See infra* note 134.

approach to torts claims.[133] He proposed that plaintiffs should be awarded damages that are proportional to their lost probability of recovery.[134] Therefore, if a negligent act reduces the chance of survival from 40% to 20%, a patient's compensation (in a medical malpractice case) would be equal to 20% of the value of his life, regardless of the fact that the patient was unlikely to survive to begin with.[135] Nearly 150 cases, the vast majority of which are medical malpractice cases, have cited King's article.[136]

In cases that followed the publication of King's article, courts began to slowly recognize a probabilistic approach to torts in the medical malpractice context and award plaintiffs relief even when their pre-existing likelihood of survival was lower than 50%.[137] For example, in *Kallenberg v. Beth Israel Hospital*, the plaintiff's estate recovered in a wrongful death suit, despite uncertainty around the plaintiff's initial likelihood of survival.[138] The plaintiff was prescribed a blood pressure medication during her hospital stay. She was not given the prescribed medication by hospital staff, however, and eventually hemorrhaged and died before being able to undergo a necessary surgery. The court found that the doctors at the hospital violated accepted medical practice when they negligently failed to administer the medication[139] and that the jury could have reasonably concluded that "had Mrs. Kallenberg been properly treated with the indicated medication of choice, her blood pressure *could* have been kept under control, and she *might have* improved sufficiently, even after August 22, to undergo surgery and make a recovery."[140] This possibility, despite the uncertainty around its likelihood, was sufficient to allow the court to find for the plaintiff.

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133. *See* Joseph H. King Jr., *Causation, Valuation, and Chance in Personal Injury Torts Involving Preexisting Conditions and Future Consequences*, 90 YALE L.J. 1353 (1981). Importantly, King's proposal was to treat the loss of a chance of a better outcome as an injury in and of itself, going a step further than many states that have accepted loss of chance. He argued, "The loss of a chance of achieving a favorable outcome or of avoiding an adverse consequence should be compensable and should be valued appropriately, rather than treated as an all-or-nothing proposition. *Id.* at 1354. A more in-depth discussion of this approach to loss of chance can be found below. *See* discussion *infra* Part VI.B.

134. *Id.* at 1391–95.

135. For an application of this logic in practice, see Alberts v. Schultz, 975 P.2d 1279 (N.M. 1999).

136. *E.g.*, Smith v. Providence Health & Servs, 393 P.3d 1106, 1114 (Or. 2017); Wendland v. Sparks, 574 N.W.2d 327, 332 (Iowa 1998); Alberts v. Schultz, 975 P.2d 1279 (N.M. 1999).

137. *E.g.,* Kallenberg v. Beth Israel Hospital, 357 N.Y.S.2d. 508 (N.Y. App. Div. 1974); Alberts v. Schultz, 975 P.2d 1279, 1280 (N.M. 1999).

138. 357 N.Y.S.2d. 508 (N.Y. App. Div. 1974).

139. *Id.* at 510; *see also* Wendland, 574 N.W.2d at 332 ("In the present case, in which the chances of successful resuscitation were questionable and any recovery for wrongful death would be severely limited because of the patient's preexisting condition, even a small chance of survival is worth *something*.").

140. Kallenberg, 357 N.Y.S.2d at 511 (emphasis added). It is worth noting that the court's reasoning is somewhat muddled in other parts, highlighting the inconsistent ways that the loss of chance doctrine is applied by states and even within a single case at times. For example, the court's opinion in *Kallenberg* relies on expert testimony that the plaintiff "could not be considered a terminal case" when she first entered the hospital and that the failure to the medication would have been the "difference between life and death." *Id.* at 510.

In another case, a plaintiff sued his doctor for failing to order a diagnostic test, to conduct the right examination, or to give him a timely referral to a specialist for severe pain in his foot.[141] About two weeks later, the plaintiff's leg had to be amputated.[142] The plaintiff's expert could not establish that a timely surgery would have definitely, or even likely, prevented the need for amputation.[143] The expert was able to testify, however, that the proper examination "would have increased the chance of saving [the plaintiff's] leg."[144] The court found for the plaintiff, noting that "the patient with a slim chance is deprived of the opportunity to beat the odds. Where there was once a chance of a better result, now there is a lesser or no chance."[145]

VI. The Loss of Chance Doctrine Today

Over the past few decades, the loss of chance doctrine has come to be more widely accepted. Currently, it has been adopted in about half of states and has only been outright rejected in a few.[146] Where the loss of chance doctrine has been accepted, causation is established if the plaintiff can show that a medical care provider's negligence lowered their chance at a better outcome, regardless of what that chance was at the time of misdiagnosis.[147] Beyond that, however, there is tremendous state-by-state variation in how the doctrine is applied. Adopting states have generally taken one of two approaches, adopting loss of chance as 1) a theory of causation or 2) as an independent cause of action.[148]

A. Loss of Chance as a Theory of Causation

When loss of chance is adopted as a theory of causation, injured plaintiffs can be compensated when a negligent act is a substantial factor in reducing their

141. Alberts v. Schultz, 975 P.2d 1279, 1280 (N.M. 1999).

142. *Id.* at 1281.

143. *Id.*

144. *Id.*

145. *Id.* at 1282.

146. Courts that have explicitly rejected the loss of chance doctrine have done so for various reasons, including that medical experts must base their testimony on medical certainty, that allowing these claims to be presented to the jury would require the jury to unduly speculate, and that it would place an unfair burden on medical care. John D. Hodson, *Medical Malpractice: "Loss of Chance" Causality,* 54 A.L.R.4th 10 §2(a) (1987). These states continue to require evidence that it was more likely than not – that there was a greater than 50% chance – that the proper treatment or diagnosis would have resulted in the patient having a better result. For a thorough state-by-state overview of loss of chance cases, see the American Law Report on loss of chance. *See id.* at §§3–7 (1987); *see also* Lauren Guest, David Schap, & Thi Tran, *The Loss of Chance Rule as a Special Category of Damages in Medical Malpractice: A State-by-State Analysis*, 21 J. Legal Econ. 53 (2014); Paul Fangrow, *Will Loss of Chance Doctrine Lose its Chance in North Carolina?*, Wake Forest L. Rev.: Current Issues Blog (Sep. 10, 2019), https://www.wakeforestlawreview.com/2019/09/will-loss-of-chance-doctrine-lose-its-chance-in-north-carolina.

147. *See* Hodson, *supra* note 146, at §2(a).

148. One article, written when loss of chance was first being litigated in courts, provides a helpful perspective of these two approaches. Jonathan D. Wolf, *Playing the Percentages: A Re-Examination of Recovery for Loss of Chance*, 26 Santa Clara L. Rev. 429, 438, 441 (1986) (referencing the first approach as the "substantial possibility approach" and the second as the "compensation approach").

chance of survival or an improved outcome. As discussed above, this is unique in tort law because it allows for recovery even if a plaintiff cannot show that a negligent act did, in fact, cause the harm.[149] That is, plaintiffs are not required to meet the traditional standard for establishing causation—causation is established as long as a plaintiff can show that there is evidence, usually based on large-scale scientific data, that such an act *could* have caused the harm.

Many states that have adopted the loss of chance doctrine in this form have cited *Hamil v. Bashline*[150] and its reliance on the Restatement (Second) of Torts section 323(a) for support.[151] In *Hamil*, the plaintiff sued on her late husband's behalf after he was not properly treated for chest pains at the hospital and died from a heart attack. One of the medical experts in the case testified that the plaintiff's husband would have died regardless of the treatment he received, rendering the physician's negligence immaterial. Based on this testimony, the trial court concluded that the plaintiff did not establish with medical certainty that the alleged negligence was the proximate cause of her husband's death.[152] On appeal, the Supreme Court of Pennsylvania rejected this reasoning. It relied on the Restatement's section on negligence performance:

> One who undertakes, gratuitously or for consideration, to render services for another which he should recognize as necessary for the protection of the other's persons or things, is subject to liability to the other for physical harm resulting from his failure to exercise reasonable care to perform his undertaking, if (a) his failure to exercise such care increases the risk of such harm.[153]

The court held that the standard for negligence is met if a jury finds that three factors are present: 1) the "defendant failed to exercise reasonable care," 2) "that this failure increased the risk of physical harm to the patient," and 3) "that such harm did in fact result."[154] Notably, this does not require plaintiffs to establish that the defendant's failure to exercise reasonable care actually caused the harm, just that it increased the *risk,* or likelihood, of harm.

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149. Ehlinger by Ehlinger v. Sipes, 454 N.W.2d 754, 763 (1990) ("The plaintiff need not show that proper treatment more probably than not *would* have been successful in lessening or avoiding the plaintiff's injuries as a prerequisite to satisfying his or her burden of production on the issue of causation. In addition to the other requirements previously noted, all that is required is that the plaintiff establish that proper treatment *could* have lessened or avoided the plaintiff's harm.").

150. 392 A.2d 1280 (1978).

151. *E.g.*, Robert S. Bruer, *Loss of a Chance as a Cause of Action in Medical Malpractice Cases*, 59 MO. L. REV. 969, 975 (1994) (explaining this doctrinal shift among states).

152. *Hamil*, 392 A.2d at 1283.

153. RESTATEMENT (SECOND) OF TORTS § 323(a) (AM L. INST. 1965).

154. *Hamil*, 392 A.2d at 1283.

B. Loss of Chance as a Standalone Tort

In states that have adopted the loss of chance doctrine as a theory of causation, plaintiffs are still foreclosed from relief if they experienced a lower chance of survival but did, ultimately, survive. This might happen in the case of a patient who needs more aggressive treatment as a result of a misdiagnosis but does not ultimately die from the illness. For example, a patient who beats the odds despite initially having a 40% chance of survival that is reduced to 20% because of a doctor's misdiagnosis, would not be able to recover. States that do not allow recovery in these cases dismiss proposals to do so either as a mere issue of "semantics" or for falling too far outside the bounds of traditional tort doctrine.[155]

Other states, however, recognize loss of a chance for a favorable outcome as a compensable harm in and of itself, even if a plaintiff survives.[156] As mentioned above, Joseph King's article, arguing that loss of chance should be a standalone tort, popularized this approach.[157] This argument was based on the idea that if a negligent act results in a decreased likelihood of survival (or some other outcome, such as recovery from an illness), a negligent defendant should be answerable. Regardless of whether the plaintiff does survive, there is an important harm that he or she suffered by virtue of having a lower chance of survival.[158] For example, the negligent act might have resulted in the plaintiff needing additional or more aggressive treatment or having faced a prolonged bout of illness. Allowing for recovery in these cases is based on the idea that "the chance of obtaining a benefit or avoiding a harm has value in itself that is entitled to legal protection."[159] Therefore, "destruction of this chance ought to be regarded as damage giving rise to an actionable tort."[160]

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155. *See, e.g.*, Fennell v. Southern Maryland Hosp. Center, Inc., 580 A.2d 206, 213 (M.D. 1990) ("Re-defining loss of chance of survival as a new form of damages so that the compensable injury is not the death, but is the loss of chance of survival itself, may really be an exercise in semantics. Loss of chance of survival in itself is not compensable unless and until death ensues. Thus, it would seem that the true injury is the death."). In other cases, such as *Hamil*, courts have held that a plaintiff has to introduce evidence showing that a negligent act increased the risk of harm and that eventual harm was sustained and that the jury can then decide whether the "increased risk was a substantial factor in producing the harm." 392 A.2d at 1286.

156. *See* Hodson, *supra* note 146 at §§3–7 (presenting an overview of states that have taken this approach). This approach has gained popularity in recent years but has not yet been widely accepted. The most recent Restatement of Torts declined to take a stance on the issue. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 26 cmt. n (AM. L. INST. 2010) ("Both because the lost-opportunity doctrine is one involving the definition of legally cognizable harm and because it has been confined to medical malpractice, a specialized area of negligence liability outside the scope of this Restatement, the Institute takes no position on this matter, leaving it for future development and future Restatements.").

157. *See* King, *supra* note 133, at 1397.

158. S*ee id.* at 1382 ("Regardless of whether it could be said that the defendant caused the decedent's death, he caused the loss of a chance, and that chance-interest should be completely redressed in its own right.").

159. David A. Fischer, *Tort Recovery for Loss of a Chance*, 36 WAKE FOREST L. REV. 605, 617 (2001).

160. *Id.* at 617–618.

A minority of states have adopted this approach. For example, in *Sawlani v. Mills,* the Indiana Court of Appeals allowed a plaintiff to recover based on her statistically reduced life expectancy when there was a delay in diagnosing her breast cancer.[161] The defendant, a radiologist, failed to diagnose the plaintiff's breast cancer after a routine mammogram. When the cancer was discovered a year later, a different radiologist re-evaluated the initial mammogram and found that the first radiologist had misdiagnosed the patient—the cancer had been present all along. While the plaintiff was able to receive treatment and the tumor was removed, the lapse in time resulted in a small reduction in her ten-year survival rate.[162] Under the modified loss of chance doctrine, the defendant was found liable. Similarly, in *Matsuyama v. Birnbaum,* the Supreme Court of Massachusetts embraced loss of chance as a theory of injury approach this approach to the loss of chance doctrine.[163] There, a defendant failed to order appropriate tests to determine if a plaintiff had gastric cancer.[164] While the plaintiff in the case did pass away as a result of the misdiagnosis, the case has still come to stand for the idea that courts should "recognize loss of chance not as a theory of causation, but as a theory of injury" because of the opinion's emphasis on the independent value of a lost opportunity.[165] The court explained:

> Injury need not mean a patient's death. . . When a physician's negligence diminishes or destroys a patient's chance of survival, the patient has suffered real injury. The patient has lost something of great value: a chance to survive, to be cured, or otherwise to achieve a more favorable medical outcome.[166]

In another example, in *Dickhoff ex rel. Dickhoff v. Green*, the Supreme Court of Minnesota held that damages in a loss of chance case involving a child who was diagnosed with cancer should not be based on death, given that the baby was still alive, but based on reduction in life expectancy resulting from the doctor's failure to timely diagnose the child.[167] The defendant failed to properly examine a lump on the baby's buttocks soon after she was born. By the time the lump was properly diagnosed, the plaintiff's cancer had progressed rapidly. The child's parents alleged on her behalf that her cancer would have been curable if it had been diagnosed when the parents first told the doctor about the lump.[168] Given the initial failure to diagnose the cancer, there was an increased chance that it

161. Sawlani v. Mills, 830 N.E.2d 932, 939 (Ind. Ct. App. 2005).
162. *Id.* at 936.
163. *See* Matsuyama v. Birnbaum, 890 N.E.2d 819, 823 (2008).
164. *Id.* at 826.
165. *Id.* at 832.
166. *Id.* (internal citations omitted).
167. Dickhoff ex rel. Dickhoff v. Green, 836 N.W.2d 321, 324 (Minn. 2013).
168. *Id.* at 325.

would become fatal.[169] The court characterized the alleged injury as a loss of chance injury[170] and held that "[i]t should be beyond dispute that a patient regards a chance to survive or achieve a more favorable medical outcome as something of value."[171]

Under this approach, unlike when loss of chance is applied only as a theory of causation, the requirement for causation remains unchanged from traditional tort cases. Loss of a chance at a better outcome is itself the injury, which means plaintiffs must still meet the bar for proximate cause.[172] As the court in *Matsuyama* explains, "[t]he loss of chance doctrine, so delineated, makes no amendment or exception to the burdens of proof applicable in all negligence claims."[173] Plaintiffs must show the causal link not between a negligent act and wrongful death, however, but rather between a negligent act and a statistically reduced likelihood of survival.

This distinction, between loss of chance as a theory of causation and loss of chance as a standalone tort, has significant implications for thinking about how to expand the loss of chance cause of action. In practice, it is likely that many courts would not be receptive to granting individuals damages when there is no accompanying tangible, demonstrated harm. This is partly because it is extremely difficult to quantify harm that is based solely on a loss of *chance* of survival, especially when there is no other measurable harm, such as increased suffering through additional medical treatment. This would be particularly true when expanding the loss of chance doctrine to the landlord-tenant context. It would be nearly impossible to measure damages and recover based on an increased risk of suffering a physical injury, such as developing asthma, when a tenant plaintiff did not actually develop the disease. For this reason, the expanded loss of chance approach that I propose here is mostly based on the limited recovery theory – where plaintiffs can recover only if they can demonstrate that they not only

169. In support of this assertion, the plaintiffs provided medical expert testimony that the "failure to diagnose Jocelyn's cancer resulted in a delay in treatment that made it probable that Jocelyn will not survive her cancer." *Id.* at 326.

170. *Id.* at 330 (Minn. 2013) ("[T]he injury that lies at the heart of the Dickhoffs' medical malpractice action is a claim that Dr. Tollefsrud's alleged negligence increased the risk that Jocelyn's cancer would recur and decreased her chances of survival—an archetypal loss of chance claim in a failure-to-diagnose cancer case.").

171. *Id.* at 334.

172. *See e.g.*, Matsuyama v. Birnbaum, 890 N.E.2d 819, 832–33 (2008) ("Recognizing loss of chance as a theory of injury is consistent with our law of causation, which requires that plaintiffs establish causation by a preponderance of the evidence. In order to prove loss of chance, a plaintiff must prove by a preponderance of the evidence that the physician's negligence caused the plaintiff's likelihood of achieving a more favorable outcome to be diminished. That is, the plaintiff must prove by a preponderance of the evidence that the physician's negligence caused the plaintiff's injury, where the injury consists of the diminished likelihood of achieving a more favorable medical outcome.") (internal citations omitted).

173. *Id.* at 833; *see also* Jorgenson v. Vener, 616 N.W.2d 366, 371 (S.D.2000) ("Properly applied, the loss of chance doctrine does not alter or eliminate the requirement of proximate causation. Rather, a plaintiff must still prove by a preponderance of evidence, or more likely than not, that the defendant's actions reduced her chance of a better outcome.").

experienced an increased likelihood of harm, but that they also did subsequently suffer that predicted harm. Unlike in the medical malpractice context, however, harm does not necessarily mean that the plaintiff has died, only that they suffered a physical injury or illness.

VII. Expanding Loss of Chance Beyond Medical Malpractice

In the United States, the loss of chance doctrine is most often applied in the medical malpractice context.[174] This is not inevitable. In thinking about whether it is possible to expand loss of chance to landlord-tenant cases, it is helpful to look at 1) similarities between the types of medical malpractice cases where loss of chance is currently applied and landlord-tenant toxic tort cases; 2) existing precedent for applying loss of chance beyond the medical malpractice arena, which demonstrate that it is possible to apply the loss of chance approach to other areas of law, including areas outside of tort law; 3) the doctrine's historical origins and application outside of medical malpractice in the United Kingdom, where the doctrine first originated in contract law cases, and 4) justifications used by courts and commentators for applying loss of chance to medical malpractice cases – justifications which can be applied with equal force to landlord-tenant cases.

A. Medical Malpractice Loss of Chance Cases Compared to Landlord-Tenant Toxic Tort Cases

Landlord-tenant toxic tort cases share a number of similarities with the type of medical malpractice cases discussed here. In both types of cases,

1) A defendant has committed a negligent act – either a doctor has failed to meet the accepted standard of care and misdiagnosed a patient or a landlord has failed to abide by housing codes or other ordinances and did not remedy a dangerous or toxic housing issue. In both cases, a defendant violated a duty owed to the plaintiff by acting negligently;

2) A plaintiff has suffered a physical harm—a plaintiff has died or suffered an injury following an act of negligence. In a medical misdiagnosis case, it is possible that a patient may have died as a result of a chronic condition, regardless of the misdiagnosis, but he or she lost some chance of surviving after being misdiagnosed. In the landlord-tenant context, a tenant may have developed a condition, such as asthma, regardless of the landlord's negligence, due to exposure to other irritants, for example, but the likelihood of developing the medical condition was increased as a result of exposure to a toxin in the home; and

3) While it may be difficult to prove that the defendant's negligence was the definitive cause of the plaintiff's injury, given that the plaintiff might have suffered the ultimate injury regardless of the negligence, aggregate data demonstrate that the plaintiff's negligence tends to cause the type of injury suffered by the

174. *See* Restatement (Third) of Torts: liability for Physical & Emotional harm § 26 cmt. n (2010) ("The courts that have accepted lost opportunity as cognizable harm have almost universally limited its recognition to medical malpractice cases.").

defendant. In a medical misdiagnosis case, this might mean that sufficient data exist showing, for example, that patients with the same demographic characteristics as the plaintiff have a 30% chance of recovery when diagnosed with stage 1 cancer, but only a 15% chance of recovery when diagnosed with stage 3 cancer. Similarly, in a landlord tenant toxic tort case, this might mean that sufficient data exist to show that individuals with shared demographic characteristics who are exposed to certain toxins for a specific period of time and level suffer the type of physical injury suffered by the plaintiff.

B. Precedent for Applying Loss of Chance Outside of the Medical Malpractice Context

While the loss of chance doctrine has been used almost exclusively in medical malpractice cases in the United States, there is some precedent for it being applied in other types of cases.

Before it became common in the medical malpractice context, the idea of compensation for a loss of chance was used in contract cases. For example, in one case, a court allowed a plaintiff to recover against a magazine because it had mistakenly told the plaintiff she was not eligible to participate in a competition.[175] There, the magazine had held a contest whereby participants could compete for prizes based on the number of subscriptions they sold. The plaintiff participated in the contest until the magazine informed her that it was abandoning the contest in the district where she lived. The plaintiff, who was winning the contest prior to the magazine's termination of her participation, sued for breach of contract. The trial court awarded her only nominal damages because it found that her damages were too speculative—given that there was no way to prove that she would have ultimately won—and could not be measured by a jury. The Supreme Court of Iowa found that the question of damages should have been put to the jury, because "[r]ecoverable damages are often incapable of exact determination, i.e., damages for pain and suffering; permanent injuries, loss of profits. The measure of plaintiff's damages was the value of the contract, the value of the right to compete for one of the prizes offered."[176] Uncertainty around exactly what the plaintiff would have won, had she been permitted to continue participating in the contest, was not sufficient to limit her award to nominal damages—the court found that the right to compete had inherent value.[177]

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175. Wachtel v. Nat'l Alfalfa J. Co., 176 N.W. 801 (1920); *see also* Kansas City & Orient Ry. Co. v. Bell, 197 S.W. 322, 323 (Tex. Civ. App. 1917) (ruling against the plaintiff but noting that "difficulty in ascertaining the amount of damages resulting from the violation of a right is not an insuperable obstacle to recovery.").

176. Wachtel, 176 N.W. at 804–05 ("It seems to us that the damages claimed are the reasonable, natural, and probable consequence of the admitted breach of the contract. The right of plaintiff to obtain a valuable prize was of some value, although the damages resulting from the loss thereof may be incapable of precise or exact specification.").

177. *Id.* at 805 (relying on Chaplin v. Hicks, the early English loss of chance case discussed previously, and noting, "In estimating damages to be allowed, the jury would have a right to take into consideration the number, character, and value of the prizes offered, the number of contestants, the

Similarly, the court in *Miller v. Allstate Insurance Co.*, allowed a plaintiff to recover in a suit alleging that Allstate Insurance Company had breached its promise to return to her a wrecked automobile, which she needed as evidence in a product liability suit, based on her loss of a chance to win her lawsuit.[178] In this case, the plaintiff had entered an oral agreement with the defendant, Allstate Insurance Company, that the defendant would make the plaintiff's car available to the plaintiff, who wanted to examine the car for defects in order to bring a possible products liability claim against the car's manufacturer. In violation of the agreement, the defendant sold the car to a salvage yard. The plaintiff claimed that the defendant's breach of the agreement prevented her from the "opportunity" to bring a products liability action against the manufacturer.[179] The court's decision cited tort law, including the loss of chance doctrine, for the idea that "although damages usually must be established within a reasonable degree of certainty, . . . when the difficulty in establishing damages is caused by the defendant, he should bear the risk of uncertainty that his own wrong created."[180] While the court acknowledged that "courts have applied the certainty requirement more stringently in contract cases than in tort," it went on to say that, in contract law, "recovery will be allowed where a plaintiff has been deprived of an opportunity or chance to gain an award or profit even where damages are uncertain." The court found in the plaintiff's favor by citing old English loss of chance cases, which had "permitted recovery accordingly on the theory that although uncertainty diminishes the value of an opportunity, it does not render it worthless."[181]

The loss of chance doctrine has also been accepted by some courts in failure to rescue cases—cases where one party had a duty to rescue another from injury or death and is found liable for failing to do so. For example, in one case, a court found a ship's master to be liable for a seaman's death given that he did not attempt to search for him and that there was a possibility of rescue.[182] The court

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extent of territory covered by the contract, the standing of plaintiff at its termination, her reasonable probability, if shown, of winning some one of the prizes, and such other facts and circumstances as might reasonably bear thereon. There is, of necessity, much uncertainty as to what might have been the outcome of the contest, but the probabilities of plaintiff's winning a prize under the facts disclosed were not so uncertain, indefinite, and contingent as to limit her right of recovery, as a matter of law, to nominal damages only.").

178. Miller v. Allstate Insurance Co., 573 So. 2d 24, 28 (Fla. Dist. Ct. App. 1990); *see also* Bondu v. Gorvich, 473 So. 2d 1307, 1313 (Fla. 1984) (allowing the plaintiff to recover when a hospital did not provide her with her hospital records, resulting in her losing a medical negligence suit. Noting, additionally, that the difficulty in measuring damages did not bar her from recovery).

179. Miller, 573 So. 2d at 26.

180. *Id.* at 28. The court went on to note that loss of chance originated as an action for breach of contract, not a tort cause of action. *Id.* at 29 ("This alternative theory of recovery was established under the English Common Law where the courts rejected the all-or-nothing approach and permitted recovery under circumstances where not only the amount of damages was uncertain, but also where the fact of damage remained open to question. Recovery was based not on the value of the contract; instead the value of the plaintiff's opportunity or chance of success at the time of the breach became the basis for the award.").

181. *Id.* at 28–29.

182. Gardner v. Nat'l Bulk Carriers, 310 F.2d 284 (4th Cir. 1962).

held that it did not matter how probable the success of a rescue attempt would have been. Instead, "causation is proved if the master's omission destroy[ed] the reasonable possibility of rescue."[183]

More recently, the Seventh Circuit applied the loss of chance doctrine in employment discrimination cases.[184] Although this innovation has only been embraced by the Seventh Circuit so far, the Sixth Circuit has indicated it is potentially open to adopting it as well.[185]

The application of loss of chance to employment discrimination cases in the Seventh Circuit originated in *Doll v. Brown*.[186] There, the plaintiff, an electrician, sued his employer for unfairly refusing to consider him for a promotion. The plaintiff had previously had a laryngectomy and temporarily could not breathe in heavy dust. His employer transferred him to a different job where he would not be exposed to dust. After he recovered, however, the plaintiff wanted to be reinstated as an electrician and applied for a promotion as an electrician foreman. His employer refused to consider his application for the position and he sued the employer for discrimination. The court indicated it was open to importing the loss of chance doctrine, as used in medical malpractice cases, to other cases "where proof of injury is inescapably uncertain."[187] The court noted that despite the fact that this theory has been limited to medical malpractice cases, it may be "appropriate in employment cases involving competitive promotion" where "plaintiff's chances are inherently uncertain because of the competitive setting," making the chances of successful litigation under other theories difficult.[188] The court emphasized that extending loss of chance to employment discrimination suits is not as unconventional as it may seem at first glance. Rather, it is "an extension of the routine practice in tort cases involving disabling injuries of discounting lost future earnings by the probability that the plaintiff would have been alive and working in each of the years for which damages are sought."[189] The key question that must be asked when considering expanding the loss of chance doctrine to other areas of law is whether there are enough data to make it possible to estimate the initial probability of a positive outcome, a necessary precursor to quantifying the lost chance. In *Doll*, the court acknowledged that this might be more challenging in

183. *Id.* at 287.

184. Doll v. Brown, 75 F.3d 1200 (7th Cir. 1996).

185. Howe v. Akron, 801 F.3d 718, 752 (6th Cir. 2015) ("We believe that appellate review will benefit from a district court opinion that addresses whether Akron has presented credible evidence that the lost-chance method of calculating back pay is appropriate in this case.").

186. Doll, 75 F.3d 1200.

187. *Id.* at 1205–07 (7th Cir. 1996) (noting that "this basis for an award of damages is not accepted in all jurisdictions, but it is gaining ground and it is in our view basically sound" though ultimately declining to accept it "because of the novelty of the issue and the fact that it has not been briefed.").

188. *Id.* at 1206.

189. *Id.*

the employment discrimination, as compared to the medical malpractice, context, but that the uncertainty is no greater than in other tort cases.[190]

The Seventh Circuit has since formally adopted the doctrine in other similar cases. For example, in *Biondi v. Chicago, III*, the court held that recovery was possible under a theory of lost employment opportunity when a fire department maintained racial quotas and gave preferential treatment for promotions to non-white applicants.[191] The court there noted that the "'loss of a chance method,'" where the jury is asked to "determine the probability that being held back in 1986 cost the plaintiffs later chances for advancement. . .is the best way to handle probabilistic injuries."[192] These types of injuries, as mentioned above, are those where the fact of the injury cannot be definitively proven, but there is a substantial probability it occurred. In this case, for example, the plaintiff could not definitively show that he was injured because he could not establish that he would have undoubtedly been promoted had it not been for the racial quotas, but there was enough evidence to conclude that he probably suffered harm.

In *Alexander v. City of Milwaukee*, the Seventh Circuit upheld its previous decisions to expand the doctrine to the employment discrimination context.[193] In that case, the court considered whether the Milwaukee Police Department had discriminated against seventeen white male police officers by favoring women and minorities in its promotion practices.[194] The court upheld the defendant's liability but instructed the district court to redetermine damages on remand. The appellate court made clear that the plaintiff's injury was "a chance to compete on fair footing, not the promotion itself" and went on to examine the nuances of how to calculate damages based on the limited scope of a loss of chance injury.[195] It found that, at the damages phase of the trial, the district court should have instructed the jury to consider the plaintiff's likelihood of receiving a promotion against all other candidates, instead of limiting the comparison to other *plaintiff* candidates and excluding non-plaintiff candidates.[196] It also found that "compensatory damages for a lost chance must be linked to promotional likelihood."[197] That is, damages cannot be based on the lack of promotion, because that is not what was lost – what was lost was the opportunity to seek the promotion.

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190. *Id.* at 1206–07 ("The difference between employment discrimination and medical and other forms of personal-injury tort is that the relevant probabilities may be more difficult to compute in the employment setting. It would be hard to pick a number that would reliably estimate the probability of Doll's receiving the promotion but for discrimination. . .Yet no less uncertainty attends the efforts of triers of fact to fix the percentage of a plaintiff's negligence in a tort case governed, as most tort cases are today, by the rule of comparative negligence.").

191. Biondo v. Chicago, 382 F.3d 680 (7th Cir. 2004).

192. *Id.* at 688.

193. Alexander v. Milwaukee, 474 F.3d 437, 449 (7th Cir. 2007).

194. Alexander, 474 F.3d 437.

195. *Id.* at 449.

196. *Id.* at 451.

197. *Id.*

The Sixth Circuit has also indicated a potential willingness to apply the loss of chance doctrine to employment discrimination cases. In a suit alleging that the City of Akron's promotional examination for firefighters had discriminated against Black and white candidates and had disparately impacted candidates over the age of forty, the Sixth Circuit explained how loss of chance *could* be applied to the calculation of damages in such a case:

> The lost-chance theory of back-pay calculations, if applicable, would require the finder of fact to estimate the probability that the plaintiffs would have been promoted using a non-discriminatory process, and then reduce the back-pay award to the percentage of the back pay the plaintiff would have received had he or she been certain to be promoted.[198]

While it declined to hold that the district court should have used the loss of chance method, it ordered a new trial on the issue of back pay because it found that "appellate review [would] benefit from a district court opinion that addresses whether Akron has presented credible evidence that the lost-chance method of calculating back pay is appropriate in this case."[199]

Legal scholars have also argued for extending the loss of chance doctrine to federal sentencing error cases. For example, Kate Huddleston has argued that the "lost probability of a lower sentence" should be considered a "cognizable injury."[200] The argument is that sentencing errors result in a diminished chance of a lower sentence and that lost chance is itself a harm.[201]

In sum, there is a great deal of precedent for applying the loss of chance doctrine outside of medical malpractice suits. Cases where this has already been done demonstrate the feasibility of expansion and the possibility of doing so while avoiding feared pitfalls, such as limitless liability.[202]

C. Application of Loss of Chance Outside the U.S.

True to its historical roots, English courts continue to apply the loss of chance doctrine more broadly than in the United States. For example, in 2014, in *Chweidan v. Mishcon de Reya*, an English court found that a plaintiff should be compensated because his former attorneys' negligence resulted in him losing an opportunity to pursue an employment discrimination claim, even though his

198. Howe v. Akron, 801 F.3d 718, 751 (6th Cir. 2015).

199. *Id.* at 752. Because the parties eventually resolved all issues related to damages, the district court did not issue an opinion related to the application of loss of chance to employment discrimination.

200. Kate Huddleston, *Federal Sentencing Error as Loss of Chance*, 124 YALE L.J. 2663, 2666 (2015).

201. The Comment does not go into detail about how this framework would be applied in sentencing cases and what the implications of understanding loss of chance as a significant harm would be from a practical perspective.

202. For example, despite such fears, there has not been a flood of employment discrimination suits in the Seventh Circuit.

chances of success were "limited" regardless.[203] In *Allied Maples Group Ltd. v. Simmons & Simmons*, the plaintiff, a retail company, sued its contract attorneys for providing negligent advice when the attorneys erroneously removed a warranty protection clause in a merger contract.[204] The defendants argued they should not be found liable because the plaintiff could not prove it would have avoided the loss it suffered under the contract if the defendant had acted differently.[205] The court applied the loss of chance doctrine, rejecting the defendants' argument and finding that the plaintiff need not establish the loss would have been avoided had the defendants not been negligent.[206]

While most American courts use the loss of chance doctrine exclusively in medical malpractice cases, applying the doctrine to other types of cases is in line with the doctrine's historical origins as well as how it is used in the United Kingdom, where the doctrine first originated. These examples of its application in contracts and economic loss cases highlight the doctrine's malleability and its portability to cases outside of medical malpractice.

D. Justifications for Expanding Loss of Chance Beyond Medical Malpractice

The justifications that are most commonly provided for using the loss of chance doctrine in medical misdiagnosis cases apply just as well to landlord-tenant tort cases. When the loss of chance doctrine was first adopted, its usefulness was primarily supported by arguments that 1) it would promote fairness, 2) it would help deter wrongdoing, and 3) modern science provides the type of data that make it possible to draw conclusions when causality is impossible to prove. These same justifications can be used in support of expanding the doctrine's application beyond medical malpractice and specifically to the landlord-tenant context.

1. Fairness

In the medical malpractice context, scholars have argued that it would be unfair to allow a wrongdoer to benefit from uncertainty by escaping liability altogether, especially when the wrongdoer has created that uncertainty to begin with by, for example, failing to correctly diagnose a patient.[207] A doctor who misdiagnoses a patient who had only a 25% chance of survival still committed an error and caused a harm—the patient lost a quantifiable chance of surviving. The fact that it is impossible to prove that the misdiagnosis, as opposed to the patient's pre-existing condition, caused the patient's death should not allow the doctor to evade liability all together. [208] This justification applies equally to contexts other than medical malpractice. Why would it be unfair to allow a doctor to benefit from uncertainty and escape liability, but fair to allow a landlord, who knowingly

203. Chweidan v. Mishcon de Reya, [2014] EWHC (QB) 2685 (Eng.).
204. [1995] 1 WLR 1602 (Eng.).
205. *Id.*
206. *Id.*
207. *See* Frasca, *supra* note 100.
208. *See* Fischer, *supra* note 159, at 626; *see also* Shively v. Klein, 551 A.2d 41, 43 (Del. 1988).

refused to remove mold from an apartment or update appliances so they not release toxins in the air, to do the same? Denying recovery in either case would mean that a harmed plaintiff, who has suffered a real, quantifiable injury, backed by an established scientific link to a defendant's actions, is foreclosed from all relief and that a negligent party is not held accountable.

2. Deterrence

The loss of chance doctrine can also be justified based on its deterrent effect.[209] If a person who is entrusted with another's care is negligent but escapes liability because of a small degree of uncertainty about whether that negligence caused an injury, then there will be no check on similar harmful behavior in the future. In medical malpractice cases, this can translate into a greater number of misdiagnosed illnesses. Loss of chance offers protection against this by penalizing those with a duty to protect patients when they are negligent. If allowing for recovery may, indeed, have a deterrent effect, why should we seek to deter negligence in the medical setting and not in others?[210] In areas outside of medical malpractice, where loss of chance has not been traditionally applied, such as in landlords' negligent maintenance of housing conditions, recovery is limited based on traditional causation requirements. By expanding loss of chance claims, however, it may be possible to deter individuals, especially those entrusted with a duty, such as landlords, from committing negligent acts that harm disadvantaged communities. As in the medical malpractice context, a child who is exposed to various environmental hazards as a result of a landlord's negligent maintenance of housing conditions and ends up developing a chronic illness may not be able demonstrate that one type of hazard was the exclusive cause of their eventual injury. But the child did suffer a negligent act that is statistically linked to harm—often grave, life-altering harm. In medical malpractice loss of chance cases, this statistical evidence is sufficient to meet the bar of causation, and the same should be true in landlord-tenant cases, in an effort to deter negligent landlord conduct.

3. Data

One of the primary reasons that the loss of chance doctrine has been adopted by many courts is that scientific data exists now that allows them to successfully apply the doctrine. Professor Joseph King, whose writing on probabilistic injuries helped catalyze the adoption of loss of chance, as discussed above, emphasized

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209. *See* Fischer, *supra* note 159, at 627.

210. There is some scholarly debate about the extent to which civil justice, and specifically tort law, act to deter unwanted contact. *E.g.*, Gary T. Schwartz, *Reality in the Economic Analysis of Tort Law: Does Tort Law Really Deter?*, 42 UCLA L. REV. 377 (1994). There is strong evidence, however, that tort lawsuits do indeed have a deterrent effect. *See* Andrew F. Popper, *In Defense of Deterrence*, 75 ALB. L. REV. 181 (2012) ("This article . . . concludes that the tort system is fully defensible as a primary deterrent mechanism . . . the civil justice system provides a powerful and continuous messaging device that positively affects the safety and efficiency of goods and services.").

this – noting that the new availability of medical data would allow for the adoption of the loss of chance doctrine.[211]

Courts have taken this logic to heart. In one early American loss of chance case, for example, the court remarked that it was appropriate to adopt the doctrine because "medical science has progressed to the point that physicians can gauge a patient's chances of survival to a reasonable degree of medical certainty, and indeed routinely use such statistics as a tool of medicine."[212]

In recent cases, judges have similarly emphasized the importance of data innovations when discussing their decisions to adopt loss of chance. For example, in *Dickhoff ex rel. Dickhoff v. Green*, the Minnesota Supreme Court adopted the loss of chance doctrine in the medical malpractice context, acknowledging that a lack of reliable data had long plagued the loss of chance doctrine.[213] Due to improved scientific advancements, however, the court now found that it could "recogniz[e] that an injury that has always existed is now capable of being proven to a reasonable degree of certainty."[214] This certainty was due to the fact that "the reliability of the evidence that victims of medical malpractice are able to marshal when a physician's negligence reduces a patient's chance of recovery or survival has dramatically improved in recent years—now making it possible to prove causation in a loss of chance case."[215] To that end, the court compared the process of calculating recovery in medical malpractice loss of chance cases to determining damages based on a loss of a victim's earning capacity, which courts have done for a long time.[216]

The Restatement (Third) of Torts does not take a clear affirmative stance on the loss of chance doctrine, but it notes that one of the three main features of loss of chance cases where courts have recognized lost opportunity as a cognizable harm is that "reasonably good empirical evidence is often available about the general statistical probability of the lost opportunity."[217]

Therefore, an important factor that may be considered in determining whether the loss of chance doctrine can be extended and applied outside of medical malpractice is whether similarly robust data are available to experts in that field. The empirical evidence linking exposure to household environmental toxins

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211. *King*, *supra* note 133, at 1386, n.111 (noting that "valuing chance appears to be well within the competency of science"; "[m]edical science, for example, has become skilled in predicting the probabilities of survival for various diseases and traumatic injuries.").

212. Matsuyama v. Birnbaum, 890 N.E.2d 819, 834 (2008).

213. Dickhoff ex rel. Dickhoff v. Green, 836 N.W.2d 321, 334 (Minn. 2013) ("The longstanding proof problem associated with loss of chance claims was that it was difficult, if not impossible, to prove causation for a loss of chance injury.").

214. *Id.* at 335.

215. *Id.*

216. *Id.* ("Indeed, in light of modern medical science, allowing a patient to recover damages for a lost chance of recovery or survival is no more abstract, speculative, or hypothetical than allowing the jury to determine damages for the loss of a victim's earning capacity throughout their lifetime—an inquiry that courts and juries routinely undertake, and that our court has long endorsed.").

217. RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL & EMOTIONAL HARM § 26 cmt. m (2010).

such as asbestos, mold, and cockroaches with diminished health outcomes is not much different from the type of epidemiological data used in medical misdiagnosis loss of chance cases. As discussed in greater detail above, modern public health data has become increasingly sophisticated over time, and there is strong, causal evidence of the effect of a wide array of toxins on long-term physical health.[218] There is sufficient data demonstrating the causal effect of exposure to toxins such as asbestos and lead and environmental hazards such as mold on respiratory condition and neural development.[219] Accordingly, the availability of robust scientific data permit the expansion of the doctrine to landlord-tenant toxic tort cases.

VIII. Applying Loss of Chance to Toxic Tort Landlord-Tenant Cases in Practice

A. Process of Applying Loss of Change to Toxt Tort Landlord Tenant Cases

A typical loss of chance medical misdiagnosis case begins with the plaintiff presenting a jury with evidence about an act of negligence, just as in any other medical malpractice case. For the plaintiff to be successful, the evidence must show that a physician negligently misdiagnosed a patient by, for example, not following commonly accepted standards of medical practice and thereby violating their duty to the patient. The plaintiff might provide evidence that following the misdiagnosis, the patient passed away from the terminal illness. The loss of chance doctrine would then help the plaintiff establish causation. The jury would be presented with information about the patient's likely chance of survival at the time of misdiagnosis (timepoint A) and the patient's reduced chance of survival at the time of proper diagnosis (timepoint B), based on statistical findings and facts relevant to the patient.[220] Jurors might be presented with that, for example, people of the same age as the patient, and with similar demographic characteristics, generally have a 40% chance of being cured when diagnosed with stage 2 breast cancer. Then, additional statistical evidence would show the reduction in a patient's chance to be cured when diagnosed with stage 4 cancer instead. A plaintiff expert witness could, for example, calculate the lost chance of survival as follows:

> [Dr. Glick] testified to a reasonable degree of medical certainty that, had Renzi's cancer been detected in June, 1994, it would have been either stage 1 or stage 2A breast cancer, and that if the cancer had been stage 1, Renzi's chance of "ten year disease free survival" would have been 88% to 90%; if the cancer had been stage 2A, her ten-year survival rate would have been 73%. Had the cancer been diagnosed in January

218. See *supra* Part II.B.
219. *Id.*
220. *E.g.*, Roberts v. Ohio Permanente, 668 N.E.2d 480, 481 (1996).

> 1995, he stated, Renzi's cancer would have been either stage 2B or stage 3A, which would have given Renzi a 58% chance of ten-year survival. He also told the jury that in August 1995, when Renzi's cancer actually was detected, she was stage 3B, with a 30% chance of ten-year survival, a decrease of twenty-eight percentage points.[221]

Based on this testimony, the court could quantify the plaintiff's damages, as in any other tort case. A different expert may be called to testify as to the value of lost income based on the lost chance, calculating a patient's net economic loss from premature death.[222] Plaintiffs might also be awarded damages similar to those in a personal injury case, including compensation for physical or mental pain and suffering, as well as medical costs incurred.[223]

A nearly identical process could take place in the context of wrongful or negligent exposure to environmental toxins in the home, allowing for compensation for long-term harm that results from avoidable physical injury. For example, in a case where a tenant contracts asthma after exposure to mold resulting from a water leak, the court could rely on expert testimony in a similar way as in the medical malpractice cases. Medical experts could testify about the counterfactual—given the patient's demographic information, what would their risk of contracting asthma had been had they not been exposed to the mold? The expert could then testify as to the likelihood that a person with the plaintiff's demographic characteristics would develop asthma after exposure to mold at the levels present in the home and for the duration of time the plaintiff lived there. The difference between these two estimates would capture the loss of chance—the plaintiff's increased likelihood of contracting asthma as a result of exposure to mold in the home.

The doctrine's application would be particularly useful in cases where the plaintiff was likely to develop asthma regardless of exposure to mold in the home—where, for example, a child might be genetically predisposed to developing asthma or might have been exposed to water leaks in other settings, such as a school. In such cases, traditional tort causation would be nearly impossible to establish. Applying loss of chance, however, would allow the plaintiff to recover based on harm suffered and hold the landlord liable for wrongful conduct.

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221. Renzi v. Paredes, 890 N.E.2d 806, 810–11 (Mass. 2008). The defense may then present their own expert testimony, arguing, for example, that this particular type of cancer would have been deadlier, even if caught early, which would impact the plaintiff's damages, but not the defendant's liability altogether.

222. *See id.* at 811.

223. Of course, calculating damages is more complicated in instances where the plaintiff did not die prematurely, but merely suffered a reduced chance of survival, as in *Sawlani v. Mills*, discussed in Part VI.B above. 830 N.E.2d 932, 947–49 (Ind. Ct. App. 2005). In those cases, plaintiffs would still be eligible to be compensated for any increased medical costs they incurred, as well as any physical or mental pain and suffering they experienced as a result of the delayed diagnosis. These cases are not as relevant for this discussion, however, given that the expansion of the loss of chance doctrine proposed here would only apply to plaintiffs who have indeed suffered a physical harm.

Having satisfied causation through the loss of chance doctrine, a jury could then quantify damages as is done in medical misdiagnosis loss of chance cases and tort cases more broadly. To do this, a court might consider future loss of income, physical and mental anguish, and medical costs incurred as a result of the injury—the proportional increase in likelihood of developing asthma. Calculating lost earnings based on impairment in this way is well established in torts cases,[224] which rely on life expectancy tables,[225] as well as actuarial tables that estimate an individual's earning capacity based on demographic variables.[226] This is quite similar to how the Seventh Circuit calculates damages in loss of chance employment discrimination cases, as discussed above.[227] Because the awarded sum is based on damages with an antecedent physical injury, this conceptualization fits neatly within existing tort doctrine.

B. Policy Implementation and Limitations

There are a number of potential challenges to implementing an expanded loss of chance approach. I first discuss how this proposal could be implemented and then address three potential counterarguments: 1) limiting the types of defendants who could be liable under this proposed expansion, 2) limiting the definition of redressable harm under an expanded loss of chance approach, and 3) whether government immunity would foreclose relief in some of the cases proposed above.

1. Implementing an Expanded Loss of Chance Approach

Expanding the loss of chance doctrine to landlord-tenant toxic tort cases could be done in one of two ways—by state supreme court decision or by state legislation.

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224. *See, e.g.*, Kinsey v. Kolber, 431 N.E.2d 1316, 1324-26 (Ill. App. Ct. 1982) (relying on expert testimony about how a plaintiff's brain damage from an automobile accident resulted in reduced "vocational functioning in terms of memory functioning and in terms of capacity to organize, motivate, and direct his efforts in a productive way").

225. *See, e.g.,* N.C. GEN. STAT. § 8–46 (2022) (providing a life expectancy table for state courts to rely on in North Carolina).

226. Of course, this approach is by no means perfect and runs the risk of further cementing entrenched inequalities itself. By awarding people damages based on their earning potential, a court must first definitively ascertain people's earning potential. The fact that this is done based on actuarial tables, and factors in demographic variables, such as gender and race, might lead certain groups to be classified as having a disproportionately low earning potential. This low earning potential is actually reflective of structural inequality, rather than true earning "potential." *See, e.g.*, Martha Chamallas, *Questioning the Use of Race-Specific and Gender-Specific Economic Data in Tort Litigation: A Constitutional Argument Women and the Law*, 63 FORDHAM L. REV. 73, 75 (1994) ("This explicit use of race-based and sex-based economic data dramatically reduces some damage awards for women and for African American and Hispanic men. The effect for white male plaintiffs, in contrast, is to set their recoveries at an unjustifiably high amount, which perpetuates and recreates gender and race disparities in the distribution of personal income."). Of course, this is not, on its own, a reason to deny expanding recovery to these classes of cases, especially given the alternative of no possibility of recovery.

227. *See* Vaughn v. Johanns, No. 06-CV-4038 MJR, 2007 WL 1141946, at *2 (S.D. Ill. Apr. 17, 2007) (noting that the jury should "determine what percentage chance each applicant would have had to obtain the job, absent discrimination, and to calculate damages.").

In every state where the loss of chance doctrine has been adopted in the medical malpractice context, it has been done by the state's supreme court and without legislative involvement.[228] In some cases, however, the state's legislature has codified the doctrine after judicial expansion or adopted it in its state court rules.[229] This approach is possible here as well—courts could expand the loss of chance doctrine to landlord-tenant toxic tort cases and set out explicit rules for how the doctrine would be applied moving forward. This is similar to the Seventh Circuit's decision to expand loss of chance to employment discrimination cases, as discussed above.[230]

Given that any sizeable expansion of the loss of chance doctrine might be met with pushback by the courts and other actors, such as landlord associations, an alternative approach would be for the state legislature to explicitly create the expanded cause of action. The legislature could include language that draws clear boundaries around the expanded doctrine, preventing critics from claiming that any expansion could open the door to liability for a limitless number of defendants far outside the landlord-tenant context. While this has not happened in the medical malpractice loss of chance context and could, theoretically, be met with judicial frustration, statutory causes of action have been adopted in other areas, most notably in the context of civil rights with the Civil Rights Acts. A key advantage of a statutory cause of action is that it would prevent a legislative veto, whereby the state legislature abrogates a state supreme court's decision to expand the doctrine, as has happened in some states where courts have attempted to adopt the doctrine for medical malpractice cases.[231] A statutory cause of action could also provide a legislative template for other states looking to implement an expansion of the loss of chance doctrine, making universal adoption more likely.

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228. Some state legislatures have, however, passed statues explicitly abrogating the doctrine after its adoption by the state's supreme court, as was the case in New Hampshire and South Dakota, for example. *See* discussion *supra* note 231.

229. *See, e.g.*, N.M. R. App. 13-1635, Committee Commentary (2000) (adopting the doctrine in its state court rules and noting, in committee commentary, that "New Mexico recognizes the loss of a chance as a theory of recovery" based on decisions by the state's supreme court and one appeals court); MONT. CODE ANN. § 27-1-739 (West 2005).

230. As discussed above, the 7th Circuit initially considered applying the loss of chance doctrine to employment discrimination suites in Doll v. Brown, 75 F.3d 1200, 1205–07 (7th Cir. 1996) and formally adopted the doctrine in subsequent cases. *See* Bishop v. Gainer, 272 F.3d 1009 (7th Cir. 2001); Biondo v. Chicago, 382 F.3d 680 (7th Cir. 2004); Alexander v. Milwaukee, 474 F.3d 437, 449 (7th Cir. 2007).

231. In the medical malpractice context, there have been some instances of courts embracing the loss of chance doctrine, only for the legislature to explicitly ban it in response. For example, in New Hampshire, the move to adopt loss of chance in the medical context was initiated by the state's supreme court in a 2001 decision. Lord v. Lovett, 770 A.2d 1103, 1106 (N.H. 2001). In response, however, the state legislature passed a statute in 2003 explicitly barring loss of chance claims. N.H. REV. STAT. ANN. § 507-E:2 (2015) ("The requirements of this section are not satisfied by evidence of loss of opportunity for a substantially better outcome."); *see also* S.D. CODIFIED LAWS § 20-9-1.1 ("The Legislature also finds that the application of the so-called loss of chance doctrine in [] cases [where a plaintiff claims that a defendant failed to exercise 'ordinary care or skill'] improperly alters or eliminates the requirement of proximate causation. Therefore, the rule in Jorgenson v. Vener, 2000 SD 87, 616 N.W. 2d 366 (2000) is hereby abrogated.").

2. Limiting Liability: Defendants and Types of Harm

As with any new or expanded cause of action, a key consideration here is how to limit the groups of people who might be liable for harm if a state expands the loss of chance doctrine. Judges, policymakers, and legal scholars might be concerned that opening the door to landlord-tenant toxic tort cases could pave the path to extending liability far beyond that—to, for example, teachers, employers, or even strangers who negligently harm one another. It could be argued that there are a virtually limitless number of defendants who could, theoretically, be found liable for reducing an individual's opportunity for an improved outcome, including outcomes that do not relate to physical injuries, but are economic instead.

This concern can be alleviated by liability limiting protections offered by current tort doctrine, as well as by deliberate steps taken by parties implementing the doctrine's expansion.

Existing tort doctrine already provides some protection against such a slippery slope argument. For example, under existing doctrine, plaintiffs generally cannot recover for purely economic harm.[232] That is, the economic loss rule, as applied in most states, bars tort liability for economic loss that is unaccompanied by some type of personal injury. Applied here, this would necessarily foreclose any application of the loss of chance doctrine to torts cases where a plaintiff is seeking to apply the loss of chance doctrine to a contract case or seeking relief based solely on lost wages, with no accompanying physical injury.[233]

Other would-be defendants could likely avoid liability by relying on various immunity laws. Emergency medical response immunity, family immunity, qualified immunity, and other sovereign immunity laws would make it particularly difficult to expand the loss of chance doctrine to a wide range of would-be defendants, including firefighters, police officers, emergency medical responders, and public school teachers.[234] Emergency medical response immunity laws, for example, often protect emergency responders from tort lawsuits based on negligence, unless there is proof of "willful and wanton misconduct."[235] Qualified immunity protects public officials, such as police officers and prison personnel,

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232. *See, e.g.*, Dubinsky v. Mermart, LLC, 595 F.3d 812, 819 (8th Cir. 2010) ("The economic loss doctrine bars 'recovery of purely pecuniary losses in tort where the injury results from a breach of a contractual duty'") (quoting Zoltek Corp. v. Structural Polymer Group, Ltd., 2008 WL 4921611, at *3 (E.D.Mo. 2008)).

233. Of course, states could decide to modify the economic loss doctrine and allow for recovery for economic harms. The complicated history of how the economic loss rule has developed over time and potential reforms that it would benefit from have been discussed in more detail by others. *E.g.*, Ward Farnsworth, *The Economic Loss Rule Lectures*, 50 VAL. U. L. REV. 545 (2016); Gennady A. Gorel, *The Economic Loss Doctrine: Arguing for the Intermediate Rule and Taming the Tort-Eating Monster Note*, 37 RUTGERS L.J. 517 (2006).

234. A more complete discussion of government immunity is included below, in Part VIII.C.

235. *See, e.g.*, Abruzzo v. Park Ridge, 898 N.E.2d 631, 644 (Ill. 2008); Dickman v. Elida Cmty. Fire Co., 752 N.E.2d 339 (Ohio Ct. App. 2001); Eastburn v. Reg'l Fire Prot. Auth., 80 P.3d 656 (Cal. 2003) (finding that public entities, such as emergency dispatch services, are public entities and have qualified immunity).

from lawsuits alleging they have violated a plaintiff's rights. Qualified immunity has been found to apply to a wide range of government officials, including public school officials[236] and administrative agency representatives.[237] In most states, parental immunity laws bar parents and children from suing one another for tort claims—meaning that a child could not use the loss of chance doctrine to sue a parent for negligently exposing him or her to mold in the home, for example.[238] Government immunity, more broadly, would also prevent a wide class of loss of chance claims, as noted below. A deeper discussion about the wisdom of sweeping immunity laws is beyond the scope of this Article, but such laws as they currently stand would severely circumscribe the expansion of loss of chance claims beyond the proposed change here and alleviate concerns about limitless liability.

Finally, legislators and courts could make a deliberate effort to explicitly limit the types of cases to which the loss of chance doctrine could be applied. For example, in expanding the doctrine to landlord-tenant law, they could make clear that the expansion is specific to a small sub-class of new types of cases. This is already done in the context of medical malpractice loss of chance statutes, where notes of decisions accompanying codifications of the doctrine explicitly reference medical malpractice cases when discussing loss of chance, limiting the doctrine's application to those particular cases.[239] Judges could also make clear that landlord-tenant cases uniquely lend themselves to the loss of chance doctrine because of the similarities between these cases and medical malpractice cases. In addition to the similarities discussed above, namely that they can be justified on similar grounds and that their application is supported by similar types of demographic data, physicians and landlords both owe would-be plaintiffs a special duty of care. Medical care providers are held to a heightened duty of care, with courts asking whether they followed commonly accepted professional standards in treating patients.[240] In a similar way, landlords, who are explicitly (and statutorily[241]) entrusted with the maintenance of habitable living conditions, owe tenants a special duty of care. [242] Justifying expanding the loss of chance doctrine to landlord-

236. *See, e.g.*, Morgan v. Swanson, 755 F.3d 757, 760 (5th Cir. 2014) ("Where there are no allegations of malice, there exists a 'presumption in favor of qualified immunity' for officials in general, and for educators in particular" (quoting Schalk v. Gallemore, 906 F.2d 491, 499 (10th Cir. 1990))).

237. *See, e.g.*, Bowman v. Alabama Dep't of Hum. Res., 857 F. Supp. 1524, 1533 (M.D. Ala. 1994).

238. Other recourse, including state intervention, is, of course, available in cases of parental negligence, but such intervention would not implicate the loss of chance doctrine.

239. *See, e.g.*, MONT. CODE ANN. § 27-1-739 (West 2005).

240. RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL & EMOTIONAL HARM § 7 (AM. L. INST. 2010) (referencing "the modified duty applicable to medical professionals, which employs customary rather than reasonable care."); RESTATEMENT (THIRD) OF TORTS: DUTIES TO PATIENTS AND OTHERS § 3 (AM. L. INST., Tentative Draft No. 1, 2022) ("In addition to their duties to avoid actions that harm patients, medical providers owe patients an affirmative duty of care. . . medical liability, as with other forms of professional liability, goes beyond standard negligence law.").

241. *See* discussion *supra* note 49.

242. Under an implied warranty of habitability, which is assumed to be included in residential leases in most jurisdictions, landlords are required to maintain habitable housing units and comply with local housing codes.

tenant cases under this similarity necessarily prevents its expansions to other groups – those where no such special duty exists.

Of course, even with these limits in mind, it is still possible that the loss of chance doctrine, could, in the future, be extended beyond medical misdiagnosis and landlord-tenant toxic tort cases. This is not only a poor basis for rejecting the doctrine's expansion, it actually highlights the doctrine's potential utility. If courts and legislators eventually see it fit to expand the loss of chance doctrine to a wider range of cases, they would do so in recognition that current causation standards can be overly cumbersome for plaintiffs and bar recovery in a myriad of cases where plaintiffs have suffered factual harm. Concerns about administrability and overburdening courts should not, on their own, stand in the way of the administration of justice.

3. Government Immunity

Public housing tenants may be foreclosed from seeking relief under the loss of chance doctrine due to sovereign immunity laws. This might be concerning because it would mean that the expansion of the doctrine would do little to protect those that might need it the most—low-income renters living in public housing communities. Sovereign immunity, established by various statutes, common law doctrine, and the Eleventh Amendment, protects government entities from being haled into court for alleged wrongdoing.[243] Whether sovereign immunity would bar loss of chance claims brought by public housing tenants depends on the state where the plaintiff lives, as well as the specifics of the underlying case.

Loss of chance suits by public housing residents would not necessarily be foreclosed in all cases. For example, if a plaintiff seeks relief in federal court, it might be possible to argue that they are suing an officer, instead of an agency. In an officer suit, a plaintiff is suing a specific government official who has allegedly acted beyond their official authority.[244] Officer suits are more likely to be allowed by courts, though the doctrine is complicated and riddled with exceptions to this rule.[245] Particularly relevant here is that a suit against a state officer is allowed in federal court when seeking prospective relief, but retrospective relief may be more limited.[246] This would bar plaintiffs from seeking retrospective relief for poorly maintained housing conditions after having moved out, for example.

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243. *See* Practical Law Government Practice, *Sovereign Immunity of State and Local Governments in State Courts*, Practical Law Practice Note w-002-5544 for a helpful overview of sovereign immunity in state courts.

244. *Ex parte* Young, 209 U.S. 123 (1908).

245. *See, e.g.*, Ford Motor Co. v. Department of Treasury of Ind., 323 U.S. 459 (1945); Edelman v. Jordan, 415 U.S. 651 (1974); Milliken v. Bradley, 433 U.S. 267 (1977); Hutto v. Finney, 437 U.S. 678 (1978); Pennhurst State Sch. & Hosp. v. Halderman, 465 U.S. 89 (1984); Idaho v. Coeur d'Alene Tribe of Idaho, 521 U.S. 261 (1997).

246. Edelman v. Jordan, 415 U.S. 651 (1974); Milliken v. Bradley, 433 U.S. 267 (1977); Hutto v. Finney, 437 U.S. 678 (1978).

Another important consideration is whether there is a relevant law that has waived sovereign immunity in the type of case at hand. Tort suits against government employees, for example, are allowed under the Federal Tort Claims Act (FTCA).[247] That act allows litigants to sue the federal government and its agencies for negligence, effectively waiving immunity in these cases.[248] There are, however, some exceptions to the FTCA. Namely, the discretionary function exception preserves immunity in cases where a government official is shown to have been "exercising judgment," or acting in a way not required by their official duties.[249]

In many cases, tort suits against state and local agencies are similarly permissible because immunity has been waived. States generally have their own tort claims acts, which waive negligence immunity in some cases, if not other types of immunity beyond that.[250] Courts have, at times, construed such statutes against government entities in public housing cases. For example, in an Ohio wrongful death suit, where housing authority officials removed an apartment's smoke detector and failed to replace it, the court held that based on Ohio law, "political subdivisions are liable for injury, death, or loss of property that is caused by the negligence of their employees and that is . . . due to physical defects within, or on the grounds of, buildings that are 'used in connection with the performance of a governmental function.'"[251] They concluded that public housing units were "used in connection with the performance of a government function," for the purposes of this law.[252]

In other states, however, tort claims acts preserve immunity and might make relief under an expanded landlord-tenant loss of chance cause of action more difficult.[253] For example, the California Government Claims Act (CGCA) was passed in response to a California Supreme Court decision that had essentially eliminated government tort immunity. Accordingly, under the CGCA, government officials are only liable if there is a specific statute declaring them as such.[254] The CGCA has been found to apply to public

247. 28 U.S.C.A. § 1346(b)(1) (West 2013).

248. *Id.* It should also be noted that the FTCA does not provide a cause of action—suits must be brought under a relevant state cause of action.

249. Dalehite v. U.S., 346 U.S. 15 (1953). This exception has been complicated by cases that have followed. *See, e.g.*, Indian Towing Co. v. U.S., 350 U.S. 61, 69 (1955) (finding that even when a government activity is discretionary, there is no immunity against claims alleging negligence in the operational level of the activity).

250. *See, e.g.*, Iowa Code Ann. §§ 670.1-13 (2015).

251. Moore v. Lorain Metro. Hous. Auth., 905 N.E.2d 606, 610 (Ohio 2009).

252. *Id.* at 611; *see also* Cobos v. Dona Ana Cnty. Hous. Auth., 970 P.2d 1143 (N.M. 1998); Bligen v. Jersey City Hous. Auth., 619 A.2d 575, 576 (N.J. 1993).

253. See, e.g., Cal. Gov't. Code §§ 810–998.3 (1981).

254. 35A Cal. Jur. 3d *Government Tort Liability* § 2 (2023) ("The Government Claims Act abolished all common law or judicially declared forms of liability for public entities except for such liability as might be required by the federal or state constitution. Accordingly, there is no common-law tort liability for public entities under the Government Claims Act; a common-law negligence claim thus

housing agencies in California.[255]

Consideration of the merits of government immunity in the context of public housing authorities, who disproportionately interact with low-income communities, is important. For the purposes of this Article, it is worth noting that state legislatures have full authority to waive government immunity.[256] The fact that residents of non-public housing units may be free to bring these suits against their landlords, while public housing residents cannot, prompts important questions about equity.

IX. Conclusion

Legal scholars have long argued in favor of rethinking our approach to tort relief. Professor Mari Matsuda argues that tort doctrine should engage critically with the structural sources of inequality and consider the true, ultimate effects of harmful action.[257] She argues against tort law's current stance on proximate cause – which holds someone liable only for the immediate consequence of their actions, limiting responsibility in an effort to be "predictable, stable, and objective."[258] Limiting responsibility in this way serves, above all, the interests of the elite class, who might otherwise be subject to greater liability for widespread wrongdoing. Legal reform has the potential to help remedy societal-level harm and expand our conceptions of causation and duty.

Such reform would bring tort doctrine closer to its intended purpose – to provide relief to parties who have been harmed by other private citizens.[259] It may be true that tort law cannot remedy system-wide inequality. It would be a poor tool for doing so, absent other large-scale policy change. But it can provide significant relief to individuals who have suffered avoidable harm and deter future wrongdoing. Expanding loss of chance doctrine to provide relief for avoidable harm suffered by tenants would be one step toward accomplishing this.

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may not be asserted against a county. Tort liability for public or governmental entities under the Act must be based on statute, either a specific statute declaring the entities as to be liable or at least creating some specific duty of care.").

255. Stevenson v. San Francisco Hous. Auth., 29 Cal. Rptr. 2d 398 (Cal. Ct. App. 1994). Suits may be allowed, however, if the government fails to properly inspect property that it owns or for injuries stemming from dangerous conditions of property that it owns. Zuniga v. Hous. Auth., 48 Cal. Rptr. 2d 353 (Cal. Ct. App. 1995).

256. Often, however, legislatures fail to do so in ways that reduce inequalities. For example, in Texas, the state legislature has waived governmental immunity as it relates to landlord obligations and tenant remedies for public housing residents, meaning that these residents can bring suit if their housing units violate local housing code maintenance provisions. However, the law explicitly prevents public housing residents from bringing suit for personal injuries. Tex. Loc. Gov't Code Ann. § 392.006 (West 2007).

257. *See* Matsuda, *supra* note 61.

258. *Id.* at 2201.

259. John C. P. Goldberg & Benjamin C. Zipursky, The Oxford Introductions to U.S. Law: Torts 9–18 (Oxford University Press 1st edition ed. 2010) (noting that at its earliest stage of development, tort law "embraced the idea that the law's fundamental tasks include the defining of wrongs and the empowering of victims to initiate court proceedings as a form of recourse").

This Article argues for expanding existing tort doctrine to allow for recovery in cases where toxic exposure in the home can be linked to various types of long-term harm. Recovery is currently limited by problems of causation. It is often impossible to prove that a single type of exposure was the immediate cause of physical harm. But we accept this uncertainty in medical malpractice cases and allow for recovery based on data that links negligence with an increased chance of poor outcomes in a loss of chance approach. Social scientific and medical data on the long-term effects of exposure to toxins, such as mold and lead, provide similar evidence.

Historically, tort law has been shaped by economic and social realities.[260] But it is an area of law that has a unique capacity to be malleable and responsive to the needs of people. Because it is based on the principle that people owe each other certain duties by virtue of living in the same society, it must also grow and expand as our lived realities do. Our most pressing social problems today are inequality and poverty, social ills we have failed to remedy despite mounting evidence of their harm to us all. Providing a potential path for long-term relief for families who are disproportionately affected by poor housing conditions would be an important step forward for tort doctrine.

260. *See, e.g.*, JOHN FABIAN WITT, THE ACCIDENTAL REPUBLIC 4 (Harvard University Press 2004) (showing how the rise in industrial accidents during the period of American industrialization gave way to legal reform and the creation of modern torts law).