THE UNNATURAL DISASTER OF INSURANCE, UNDERINSURANCE, AND NATURAL DISASTERS

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ABSTRACT

This article presents a novel data set describing the frequency of materially inadequate homeowner insurance in the event of a total loss. For decades, after a natural disaster, large percentages of homeowners who have lost their homes report suffering a second devastating loss—that, entirely to their surprise, they are vastly underinsured. These reports provocatively suggest that a large majority of all insured homes in the United States—not just homes destroyed by a natural disaster—might be profoundly, unknowingly, and unintentionally underinsured. Insurance companies reject this possibility. Insurers posit that underinsurance is rare, that other than after natural disasters it may be almost unheard of, and that no matter when it occurs, homeowners are at best complicit. Until now, there has not been robust data that could resolve insurers' and insureds' competing narratives.

The novel data set presented in this article may end the ambiguity of data on the frequency of and predominant cause of underinsurance. The new data describes that the point-of-sale algorithms insurers ubiquitously use to estimate how much it would cost to rebuild the insured home, and homeowners then almost inevitably rely upon to identify adequate policy coverage, persistently understate costs.

By clarifying the cause of underinsurance, the novel data set also explains why underinsurance persists despite the collective desire of homeowners, insurers, and regulators that homes be fully insured. The data exposing the algorithm error rate heretofore only has been visible to insurers. This heretofore has left insurers with an untenable choice. An insurer who unilaterally corrects for the error also must unilaterally raise coverage and premiums, and so will be at a competitive disadvantage. But antitrust laws put insurers in legal peril if they act collectively.

This article, after presenting the data and its implications, ends by proposing a new jurisprudential paradigm allowing insurers to profitably and successfully compete while resolving the ubiquity of homeowners being unwittingly underinsured.

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I. INTRODUCTION

This article applies a novel data set[1] to clarify a decades-long, acidic reign of confusion about the adequacy of homeowner insurance. By doing so, this article pulls from the shadows the likely true causes for an unnatural disaster of frequent, profound, unintended underinsurance, and points the way to a new, more equitable jurisprudential resolution.

Insurance is important. Sea levels are rising while almost half of the population of the United States lives in a coastal county.[2] Between wind, water, and wildfire, living inland is not any better.[3] Insurance can't eliminate the carnage, but it can and should speed recovery, improve resiliency, and compensate loss. Most importantly, because insurance is a product most necessary when things have gone horribly wrong, at that moment in particular insurance should be more than a siren song promising safe harbor while delivering insufficient relief.

Unintentional underinsurance serves no one's interests. Post-disaster, homeowners simply want their homes back, and governments want fully rebuilt communities. Pre-disaster, insurance agents and brokers want to sell as much insurance as they can, and insurers want sufficient premiums to protect their portfolios from incurred losses.

Intuitively, it might seem that if both insurers and insureds want fully adequate insurance, then absent something unforeseen and extraordinary, almost all insureds would be fully insured.[4] Yet, despite this coherence of interests across all constituencies, it has been anecdotally reported for years that a super-majority of American homeowners are profoundly and unintentionally underinsured.[5] Seemingly after every fire or flood, State insurance departments have been inundated with homeowner complaints

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[1] *See infra* Part V.

[2] *See generally* Matthew E. Hauer, Elizabeth Fussell, Valerie Mueller, Maxine Burkett, Maia Call, Kali Abel, Robert McLeman, and David Wrathall, *Sea-level Rise and Human Migration*, 1 NATURE REV. EARTH & ENV'T 28 (2020); Jordan Rappaport and Jeffrey D. Sachs, *The United States as a Coastal Nation*, 8 J. ECON. GROWTH 5 (2003).

[3] *See* NAT'L ASS'N OF INS. COMM'RS, *U.S. Property and Casualty Insurance Industry* 5–6 (2022), https://content.naic.org/sites/default/files/inline-files/2021%20Annual%20Property%20%26%20Casualty%20and%20Title%20Insurance%20Industry%20Report.pdf.

[4] Kenneth S. Klein, *When Enough Is Not Enough: Correcting Market Inefficiencies in The Purchase and Sale Of Residential Property Insurance*, 18 VA. J. SOC. POL'Y & L. 345 (2011).

[5] Kenneth S. Klein, *Minding the Protection Gap: Resolving Unintended, Pervasive, Profound Homeowner Underinsurance*, 25 CONN. INS. L. J. 34, 38–40 (2018).

about profound underinsurance, and lawsuits have followed. Insurers have responded with some combination of 'it was only an estimate,'[6] 'we did everything we could do,'[7] 'no one knows their home better than the homeowner,'[8] 'we told them that if they wanted more we would sell them

[6] *See, e.g.*, Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 87 ("We do not and cannot agree with your stated contention that the policy forms and disclosures, both those mandated and those actually provided, and all of which have been separately reviewed and approved by the Department, are in any way deficient, vague, or ambiguous. If anything, they are demonstrably quite the opposite, being repetitive and redundant to the point of belaboring the point that the determination of replacement cost for any home is at best, and even under ideal circumstances, only an estimate, not a guarantee."); *see also id.* at 1198 ("no single formula or set of calculations yet devised can produce a replacement cost figure that will prove accurate in all cases. There are simply too many variables . . . to develop a single calculation that guarantees replacement cost has been accurately projected for a given home. . . . it is probably not realistic to expect that such modelling will EVER produce a replacement cost calculation that is 100-percent accurate"); *see also id.* at 1240 ("an estimate is exactly that – it is an estimate."); Ass'n of Cal. Ins. Cos. v. Jones, 185 Cal. Rptr. 3d 788 (Cal. Ct. App. 2015), *rev'd*, 386 P.3d 1188 (Cal. 2017).

[7] *See, e.g.*, Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 371, 379 ("[O]ur estimated replacement cost is calculated using a component-based tool. Over 27 basic home characteristics are taken into consideration with over 150 options to accurately capture the interior and exterior details of a home. . . . Importantly, the [insureds] also expressly were given the option of choosing their dwelling coverage. . . . The decision regarding the limit applicable to Coverage A – Dwelling Protection is your decision to make, as long as you purchase at least the minimum limit [the insurer] specifies and meet certain other requirements."); *id.* at 1161–62 ("[I]n order to be able to offer various options, which would extend the coverage, that there's no way around the agent/broker providing some kind of estimate. Again, ultimately, it is the insured's choice, but there is just no way around that."); *id.* at 1198–99 ("[O]nly a local residential building contractor or appraiser is likely to have the detailed experience, information and expertise necessary to express an informed opinion on potential rebuilding costs in the event of a total loss in any specific area.").

[8] *See, e.g.*, *id.* at 1114 ("[I]t is the insured who has the greatest knowledge of what their property may or may not be worth.").

more,'[9] 'it is the homeowner's responsibility to select coverage,'[10] 'the estimate is no better than the information they told us about their home,'[11] and 'this all would have been fine (and usually is) but for the home being lost in a natural disaster causing a spike in costs.'[12] Sometimes insurers have won. Sometimes homeowners have won. The resolutions have solved the singular instance at hand but have made little progress on the problem writ large.

This is a contemporary problem. Homeowner insurance is a more recent product than one might suppose, and the risk to a homeowner of profound, unwitting underinsurance only emerged in the 1990s. The first

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[9] *See, e.g.*, *id.* at 163 ("[The insurer's] estimated replacement cost based on the information collected is just that, only an estimate. The actual amount it will cost to replace a home cannot be known until after a loss has occurred. The decision regarding the limit applicable to Coverage A – Dwelling Protection is your decision to make, as long as you purchase at least the minimum limit [insurer] specifies and meet certain other requirements. Reducing your Coverage A – Dwelling Protection limit could reduce the premium amount you pay. Because this decision is yours to make, you may also want to consider increasing your coverage limit."); *id.* at 1195 ("Broker-agents have no motivation to sell a lower amount of coverage than is needed to their customer. The implications that agents and insurers do anything less than try to work with the customer to meet their needs is a constant source of frustration felt by the industry.").

[10] *See, e.g.*, *id.* at 1133 ("[I]t is the responsibility of the policyholder to make that decision, not just here, but in life in general, you have to be the informed consumer, the old caveat emptor concept."); *id.* at 1198 ("Consumers are in a substantially better position than insurers or broker-agents to know . . . the value of what they own. It is for this reason that California case law long ago recognized the principle that the primary legal duty to select coverage limits falls upon the applicant for, or buyer of, insurance coverage.").

[11] *See, e.g.*, *id.* at 469 ("You . . . complain that the coverage afforded by the policy is insufficient to rebuild the home. However, such is no fault of ours. At the time the policy was quoted, we used the construction price per square foot that was standard in the industry at the time for average construction in your area. We used the exact information you provided us concerning the home under your policy. We do not have the ability to alter coverage amounts once information is inputted into the system. While this is of little relevance in light of the fact you had never requested additional; or increased coverage, it goes to show that we, as insurance agents, are not property appraisers or experts in the relevant construction costs in your area; our obligation is to procure the policy of insurance requested by you.").

[12] *See, e.g.*, Elliot Spagat, *Insurance Calculator Questioned: Homeowners Discover Coverage Was Insufficient*, WASH. POST, Jul. 24, 2006, https://www.washingtonpost.com/wp-dyn/articles/A9509-2004Jul23.html?n%20oredirect=on ("You have such a demand surge in catastrophes like these that a contractor can charge $300 (a square foot) when he charged $150 the day before.").

multi-peril homeowner policy was issued in 1950. For the next several decades, the insuring promise was a guarantee of reconstruction. The insurer would pay the cost even if a home was so comprehensively damaged that it had to be reconstructed from the ground up rather than repaired. While an underestimate of what reconstruction would cost could imperil the financial viability of an insurer, no financial risk existed for a homeowner. In the 1990s, however, insurers began to impose coverage limits on home reconstruction. By no later than the early 2000s, coverage limits—a hard cap on the amount of money an insurer would pay to repair or reconstruct a dwelling—became the industry standard. What became equally ubiquitous by the 2000s was insurers using point-of-sale algorithms to estimate reconstruction costs, insurers sharing those estimates with their insureds, and insureds relying on those estimates to select coverage limits.

Today, there is near ubiquity within homeowner insurance of a limit on available proceeds in the event of a total loss, and when push comes to shove, if those limits result in inadequate insurance, courts accept the insurer defenses—which largely rely on robust disclaimer language in insurance policies and renewal notices—resulting in inadequate insurance to rebuild.

This outcome makes sense if an underlying assumption is accepted: that, as far as insurers know, the point-of-sale reconstruction cost estimation algorithms are generally accurate most of the time. If the algorithms are generally accurate most of the time, then there should be an insurer-exogenous explanation of underinsurance absolving the insurer of liability. And even if the cost algorithms are not accurate, unless the inaccuracy is known or should be known to the insurer (and not known to the homeowner), there still is not an apparent, sound jurisprudential foundation for the allocation of responsibility to the insurer. But do the algorithms have a recurring, predictable error rate known to insurers but not known to homeowners?

Resolving this inquiry could not be more pressing. As the title and thesis of Jeff Goodell's book *The Water Will Come* portends, climate change has moved the discussion about natural disasters destroying communities from "if" to "when."[13] Consequently, perhaps huge numbers of homeowners are at risk of learning what most of us have yet to confront—we want to be fully insured; we think we are fully insured; we likely are profoundly underinsured.

This is where the data can advance current understanding. This article applies a novel data set to test the hypothesis that, as far as insurers know, the point-of-sale reconstruction cost estimation algorithms are

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[13] JEFF GOODELL, THE WATER WILL COME: RISING SEAS, SINKING CITIES, AND THE REMAKING OF THE CIVILIZED WORLD (Little, Brown & Co. 2017).

generally accurate most of the time. The data describes that the hypothesis is wrong.

While the data has been hidden from view, it has been hidden in plain sight of the insurance industry. For many years, this data has been available to insurers but not to anyone else. Indeed, as long as catastrophes were perceived as infrequent, there was little incentive for an external actor to look closely. Total losses seemingly would almost never happen, and so there could not be broad industry-wide patterns.

In 2010, however, the California Department of Insurance (CDOI) looked for and believed it found broad industry-wide patterns of underinsurance. In 2022, as part of the regulatory response in the wake of that finding, the CDOI completed validation of its first large tranche of collected, raw insurance claims data about incurred losses in wildfires. From that information, the author of this article has analyzed "aggregated wildfire risk information received from CDOI on November 9, 2022, pursuant to California Public Records Act requests."[14]

The conclusions that emerge describe an underinsurance crisis that has been entirely foreseeable, but until now not fully seen. The data describes that after a catastrophe, the likelihood that an insurer's point-of-sale reconstruction cost estimate will be less than the homeowner's post-event incurred loss is close to a certainty, and when there is a shortfall, it is by an average of 57%. A homeowner buying 20%, 25%, or even 50% extra coverage doesn't solve the problem. Many homeowners do buy these extensions (called Extended Replacement Cost coverage, or ERC). Sixty percent of homeowners with ERC who lose their homes in a catastrophe are insured below the insurer's point-of-sale reconstruction estimate, with the average shortfall at 30%. And while a catastrophe exposes and exacerbates profound underinsurance, apparently, it doesn't cause it. Rather, when the cause of a destroyed home is *not* a catastrophe, 77.4% of homes will incur a loss greater than the insurer's point-of-sale reconstruction estimate, with an average shortfall of 35.5%.[15]

Which is not to say that insurers are intentionally defrauding consumers. Rather, one must posit: what should an insurer do with such information? If an insurer acts unilaterally to adjust its point-of-sale estimates, then it will become the highest-priced product on the market; if an insurer acts in concert with its competitors, then it could be exposed to antitrust liability.

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[14] E-mail from Chao Lor, Senior Staff Att'y, Cal. Dep't of Ins., to Kenneth S. Klein, Louis and Hermoine Brown Professor of L., Cal. W. Sch. of L. (Nov. 30, 2022, 13:55 PST) (on file with author).

[15] *See infra* Part V.

The data suggests a new paradigm is needed for addressing underinsurance. All the extant jurisprudence is in harmony with the presumably uncontroversial principle that an insurer cannot present to an insured what is denominated as 'an estimate of reconstruction cost' if the insurer knows the estimate likely is materially understated.[16] The data strongly suggests that is exactly what insurers know (even if they do not know why). Jurisprudence now needs to define a way that insurers can profitably sell insurance intended and likely to be adequate without frequent exposure to losses from lawsuits or to competitors.

These are the matters this article addresses. Part II of this article will briefly trace "the history of underinsurance." Part III will review competing narratives homeowners and insurers have post-loss when insurance is inadequate to rebuild a lost home. Part IV will review the current jurisprudential landscape sorting through these narratives. Part V will present the novel data set. Part VI will propose a new jurisprudential paradigm for addressing underinsurance.

II. A BRIEF HISTORY OF UNDERINSURANCE

In the United States, many take it for granted that if they own a home, they have to have homeowner insurance. They assume that if their home is destroyed, they have enough insurance to rebuild it. All of this may be wrong.

A. THE SURPRISINGLY RECENT HISTORY BOTH OF HOMEOWNER INSURANCE AND OF DWELLING RECONSTRUCTION COVERAGE LIMITS IN THAT INSURANCE

Today, homeowner insurance is ubiquitous. Over 90% of owner-occupied homes in the United States have homeowner insurance.[17] Yet, the ubiquity of homeowner insurance is a relatively contemporary phenomenon. The first homeowner insurance policy was not introduced in the United States until 1950.[18]

The reason that so many homes today nonetheless have homeowner insurance is that a clause in virtually every mortgage requires it.[19] And the reason that mortgages require it is that otherwise, a mortgage without

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[16] *See infra* Part IV.

[17] *See* Kenneth S. Klein, *Ashes to Ashes: A Way Home for Climate Change Survivors*, 63 ARIZ. L. REV. 679, 693 (2021).

[18] Frederic J. Hunt Jr., *Homeowners – The First Decade*, XLIX PROC. OF THE CAS. ACTUARIAL SOC'Y 12, 12 (1962).

[19] *See* Klein, *supra* note 17, at 693–97.

insurance would not comply with the guidelines of the Federal National Mortgage Association (FNMA) or the Federal Home Loan Mortgage Corporation (FHLMC).[20]

FNMA and FHLMC requiring homeowner insurance also may be a more recent development than one might think. In 1938, Congress chartered FNMA with the primary purpose of providing stability in the secondary market for residential mortgages.[21] In 1970, Congress likewise chartered FHLMC with the same primary purpose.[22] It is unclear precisely when FNMA or FHLMC guidelines first required a "compliant" mortgage have property insurance. But it can be dated at least to after 1962 since such a sentinel event was not even alluded to in Frederic Hunt's 1962 paper, *Homeowners – The First Decade*.[23]

Today, standard homeowner insurance covers some but not all perils. The HO-3 Special Form is the most common type of homeowner insurance policy (roughly 82% of all owner-occupied homes nationwide), and covers all perils *except* "flood, earthquake, war, nuclear accident, intentional loss, collapse, mold, wear and tear, seepage, settling, and other perils specifically excluded."[24] Consequently, most homes are insured for fire and wind perils, but most are not insured for flood.[25] Homes that are insured for flood generally are insured under the National Flood Insurance Program (NFIP).[26]

This distinction between flood and fire matters for understanding the unwitting underinsurance problem. NFIP insurance limits coverage to

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[20] FANNIE MAE, SERVICING GUIDE FANNIE MAE SINGLE FAMILY 173–79 (2022); FREDDIE MAC, SINGLE-FAMILY SELLER/SERVICER GUIDE 4703-1 to 4703-11, 8202-1 to 8202-12 (2023).

[21] *Fannie Mae and Freddie Mac*, FED. HOUS. FIN. AUTH., https://www.fhfa.gov/about-fannie-mae-freddie-mac; FED. HOUS. FIN. AUTH., A BRIEF HISTORY OF THE HOUSING GOVERNMENT-SPONSORED ENTERPRISES 2 (2011), https://www.fhfaoig.gov/Content/Files/History%20of%20the%20Government%20Sponsored%20Enterprises.pdf.

[22] Federal Home Loan Mortgage Corporation Act, Pub. L. No. 91-351, § 301, 84 Stat. 450 (2010); *Fannie Mae and Freddie Mac*, *supra* note 21; FED. HOUS. FIN. AUTH., *supra* note 21, at 3.

[23] Hunt Jr., *supra* note 18.

[24] FED. INS. OFF., U.S. DEP'T OF THE TREASURY, REPORT PROVIDING AN ASSESSMENT OF THE CURRENT STATE OF THE MARKET FOR NATURAL CATASTROPHE INSURANCE IN THE UNITED STATES at 15–17 (Sept. 2015); *accord* NAT'L ASS'N INS. COMM'RS, A CONSUMER'S GUIDE TO HOME INSURANCE at 7–9, 11 (2022), https://content.naic.org/sites/default/files/publication-hoi-pp-consumer-homeowners.pdf.

[25] NAT'L ASS'N INS. COMM'RS, *supra* note 24; Klein, *supra* note 17, at 693.

[26] NAT'L ASS'N INS. COMM'RS, *supra* note 24, at 11; Klein, *supra* note 17, at 691.

$250,000 for the reconstruction of a single-family dwelling or a two-to-four-family building.[27] In studying how homes become underinsured, the coverage cap presents both an opportunity and a challenge. All NFIP policies are identical except for the selected coverage limit. For homes with an estimated reconstruction cost under the cap, NFIP policies are a useful template for testing the frequency of a homeowner's intended selection of partial, full, or over insurance. However, as a data set for testing the frequency of the adequacy of a homeowner's intended full insurance, NFIP policies are not the richest potential data source. Consider, for example, hurricane-prone and highly populated Florida, which is the State with the most storm surge risk measured either by number of single-family homes or by reconstruction value.[28] Sources like *HomeAdvisor* report that $295,000 is the average cost to build a home in Florida,[29] which is 18% above NFIP coverage limits.[30] Further, flood insurance is only mandatory for mortgaged homes in designated flood plains.[31] The *voluntary* take-up rate of flood coverage is only 9–10%,[32] and the overall take-up rate is less than 15%.[33] For these reasons, places like flood-prone Florida do not provide an ideal template for studying the frequency and depth of homeowners thinking they are fully insured when they are not. Most homes in Florida don't have flood coverage, and homes that do may not have the option to fully insure.

As a template, wildfire-prone California solves both of these problems. Coverage for fire is quite different from flood as it is part of every standard insurance policy, and over 90% of homes have standard homeowner insurance.[34] Further, there is no NFIP-like, policy-exogenous cap on

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[27] FEMA, NATIONAL FLOOD INSURANCE PROGRAM. FLOOD INSURANCE MANUAL 3.2 to 3.3 (Apr. 2021), https://www.fema.gov/sites/default/files/documents/fema_nfip-all-flood-insurance-manual-apr-2021.pdf.

[28] INS. INFO. INST., 2021 INSURANCE FACT BOOK at 93–94 (2021), https://www.iii.org/sites/default/files/docs/pdf/insurance_factbook_2021.pdf.

[29] *Average Costs to Build a House in Florida*, HOMEADVISOR, https://www.homeadvisor.com/cost/architects-and-engineers/build-house-florida/ (last visited Oct. 7, 2023).

[30] INS. INFO. INST., *supra* note 28, at 113.

[31] *See Flood Insurance*, FEMA, https://www.fema.gov/flood-insurance ("Homes and businesses in high-risk flood areas with mortgages from government-backed lenders are required to have flood insurance.") (last visited Oct. 7, 2023).

[32] Klein, *supra* note 17, at 692.

[33] *Id.*

[34] JAY M. FEINMAN, DELAY, DENY, DEFEND: WHY INSURANCE COMPANIES DON'T PAY CLAIMS AND WHAT YOU CAN DO ABOUT IT 122–23 (Portfolio Hardcover, 2010).

adequate insurance. Finally (sadly), there is a large-frequency fire loss data set in California.[35]

Neither flood nor wildfire insurance is new. But the need to study underinsurance is new (relatively). Until the 1990s, not only was almost every home covered for fire, but there was also no possibility of being underinsured. Homes had Guaranteed Replacement Cost coverage (GRC). GRC is what its name suggests—a destroyed home will be reconstructed no matter the cost.[36] While an insurer writing GRC faced financial risk, a homeowner did not.[37] A homeowner with GRC could not be underinsured for a covered peril. By contrast, Replacement Cost Value coverage (RCV) not only imposes upper limits on the financial risk an insurer faces from inaccurately setting premiums for coverage of dwelling reconstruction, but also creates financial risk for the insured.

In the second edition of his book, *Insuring to Value*, Peter Wells recounts the timing of when the industry standard shifted from GRC to RCV:

> The era between 1988 and 1997 saw a large number of insurance companies fail, property insurance being the culprit, and owners like Sears, Xerox, and ITT that had purchased insurance entities for cash-flow advantages vacated their holdings. As a result, there was a flurry of activity by homeowner policy writers. They looked for new ways to *cap* replacement cost options in order to reduce the overall risk they insured.[38]

Of course, hand in glove with that shift was the possibility of homeowners having coverage limits that resulted in the homeowner having inadequate funds to reconstruct a home—what this article denominates as "underinsurance."

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[35] INS. INFO. INST., *supra* note 28, at 155, 158–59 ("Most of the large fires with significant property damage have occurred in California, where some of the fastest developing counties are in forest areas that were once largely uninhabited.").

[36] NAT'L ASS'N INS. COMM'RS, A SHOPPING TOOL FOR HOMEOWNERS INSURANCE 11 (2014), https://content.naic.org/sites/default/files/inline-files/committees_c_trans_read_wg_related_shopping_tool_singles.pdf.

[37] PETER M. WELLS, INSURING TO VALUE: MEETING A CRITICAL NEED 49–52 (2d ed. 2007).

[38] *Id.* at 53.

B. A BRIEF HISTORY OF POINT-OF-SALE ALGORITHMS TO ESTIMATE RECONSTRUCTION COSTS

In the early decades of homeowner insurance, insurers assumed homes largely were fungible, so reconstruction costs of a home anywhere could confidently be projected at point-of-sale of insurance through a single, simple, per-square-foot calculation with minimal risk of error.[39] As homes became more bespoke, a market opportunity emerged for an algorithm that could more accurately predict construction costs at the time coverage limits were set. Peter Wells saw that opportunity and, in his words, invented "the 'total component' methodology and all of its many sophistications built in."[40] Marshall & Swift/Boeckh (MSB), the company where Wells was President,[41] "coined" the term "total-component cost estimating" to describe its "proprietary component-based valuation system" to estimate reconstruction costs by accounting for all location specific, line-item, labor, materials, profit, overhead, and fees idiosyncratically involved in reconstructing a particular, identified house.[42] The total component methodology is an abandonment of estimating reconstruction cost on a generic per square foot calculation, instead trying to model each cost component of a specific house in a specific location to determine the home's likely unique reconstruction cost.[43]

The contemporary iteration of the MSB point-of-sale algorithm can be traced back to at least 1991. One month after the Oakland Hills Fire, Wells announced in the trade magazine, *National Underwriter*, a "new and expanded version" of MSB's "80 Series program for estimating residential and commercial building costs . . . ."[44] By focusing on accurate estimates for high-value homes, Wells said the new version accounted for interior finishes "such as terra cotta tile, marble, and stone finishes for custom rooms such as

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[39] *Id.* at 7–10, 15–18.

[40] E-mail from Peter Wells, Founder and Managing Partner, Peter M. Wells Bus. Grp. L.L.C., to Kenneth S. Klein, Louis and Hermoine Brown Professor of L., Cal. W. Sch. Of L. (Mar. 1, 2023 16:18 EST) (on file with author).

[41] WELLS, *supra* note 37, at *ix*.

[42] *Id.* at 141–46.

[43] *Id.* at 2. *Accord* VERISK ANALYTICS, GET RELIABLE REPLACEMENT COSTS FOR EVERY PROPERTY IN YOUR PORTFOLIO 2 (2022) ("[R]eplacement cost estimates account for the costs needed to reconstruct a property to its original condition—down to the screws and nails."), https://www.verisk.com/siteassets/media/downloads/underwriting/360value/get-reliable-replacement-costs-for-every-property-in-your-portfolio.pdf.

[44] Editorial, *Automation Update: Expanded Building Replacement Cost Software from Marshall & Swift*, NAT. UNDERWRITER, Nov. 4, 1991, at 35.

kitchens, bathrooms, and specialty rooms."[45] It seems that before 1991, the MSB algorithm accounted for more detail about a house than just the home's address, age, and square footage but didn't dig nearly as deep into the precise details of a house as the algorithm did after 1991. Accounting for that level of detail in estimating is perceived to be the conceptual key to total component estimating.[46]

As mentioned earlier, 1996 is toward the tail end of the timeframe when insurers were moving *en masse* from GRC to RCV. In his 2007 book, Wells reflected that the 1996 edition of *Insuring to Value* was also when he and MSB made the pitch for all homeowner insurers to adopt the total component methodology for point-of-sale estimating the reconstruction cost of a home.[47] That pitch apparently worked. Total component cost estimating became standard industry practice, and MSB's algorithm was used. A 2008 CDOI Market Conduct investigation of the California wildfires of 2007 and 2008 found every insurer it investigated had a replacement cost estimating software tool.[48] Wells asserts, "[b]y 2007, with the exception of a small number of property insurance writers, the homeowner's insurance market, the entire homeowner's insurance market . . . was using the MSB RCT tool."[49] Indeed, as early as 2004, a *Washington Post* report quoted an executive at a rival company saying, "[e]verybody uses Marshall & Swift. They have a monopoly."[50] Six years later, in 2010, a non-profit focused on underinsurance noted, "[MSB] continues to be the hands-down market leader in providing the software that most insurers require[] agents to use at the point of sale."[51]

The 2003 Cedar Fire exposed a potential problem for the MSB algorithm. MSB's software had a "Quick Quote" function that could generate estimates based on *de minimus* inputs, and homeowners alleged that consequently the tool, when used in this way, routinely estimated too low.[52] The explanation was plausible. As noted above, the quality of component

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[45] *Id.*

[46] Scott Amussen & Mike Fulton, *A Balancing Act: Homeowners Writers Strive for Underwriting Efficiency Without Sacrificing Reliable Replacement-Cost Estimates*, BEST'S REV., Nov. 2010, at 41, 42.

[47] WELLS, *supra* note 37, at *v*, 2.

[48] Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 1029.

[49] E-mail from Peter Wells, Founder and Managing Partner, Peter M. Wells Bus. Grp. L.L.C., to Kenneth Klein, Louis and Hermoine Brown Professor of L., Cal. W. Sch. Of L. (Feb. 21, 2023, 05:22 PST) (on file with author).

[50] Spagat, *supra* note 12.

[51] Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 1175.

[52] Spagat, *supra* note 12.

cost estimating is dependent upon the details, and for reasons of algorithm design, the less inputs, the less accurate and lower the estimate.[53] This last bit bears repeating—the errors do not distribute neutrally; the software biases low.[54]

The potential problems with Quick Quote are remediable. A California regulation addressed the problem by eliminating the use of Quick Quote; the regulation, effective June 27, 2011, requires that an insurer estimating reconstruction costs must account for, at a minimum, fourteen delineated factors/features of the home.[55]

Just before CDOI began looking closely at the MSB-dominated market, a new player entered the point-of-sale reconstruction estimating business. On October 29, 2007, Verisk Analytics announced its product launch of 360Value, which would (like MSB) be a point-of-sale total component cost algorithm used to estimate Coverage A limits ("Coverage A" is the coverage in a homeowner insurance policy for the repair or reconstruction of the dwelling; it is the coverage that could be either RCV or GRC and could be supplemented by ERC).[56] Verisk touted that the advantage of 360Value over competitor's products (meaning MSB) was, in no small part, that the core data in 360Value was component price data from actual claims settlements of home repair and reconstruction, which Verisk had through its subsidiary, Xactware.[57] Beginning in 1989, Xactware had "pioneered" a post-loss total component cost algorithm for use in claims adjusting.[58] That post-loss algorithm is called Xactimate. As a post-loss algorithm, Xactimate is the standard—used by twenty-two of the top twenty-five U.S. property insurers, 80% of insurance repair contractors, and seven of the top ten U.S. independent adjusting firms.[59] Verisk was promising the seamless integration of Xactimate into 360Value, which is important because Xactimate takes great expertise and time to accurately input

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[53] Klein, *supra* note 5, at 65–67.

[54] *Id. See also* Kenneth S. Klein, *Is Fire Insurable? Insights from Bushfires in Australia and Wildfires in the United States*, *in* CLIMATE, SOCIETY AND ELEMENTAL INSURANCE 117 (Kate Booth, Chloe Lucas & Shaun French, eds., Routledge 2022).

[55] CAL. CODE REGS. tit. 10, § 2695.183 (2011).

[56] *ISO, Xactware, and AIR Worldwide Announce 360Value, the Next-Generation Replacement-Cost Estimation*, VERISK ANALYTICS (Oct. 29, 2007), https://www.verisk.com/archived/iso-xactware-and-air-worldwide-announce-360value-the-next-generation-replacement-cost-estimation/.

[57] *Id.*

[58] XACTWARE, PRICING RESEARCH METHODOLOGY 2 (2018), https://eservice.xactware.com/esc/showme/PDF/2021/2441PricingResearchMethodology3a.pdf.

[59] VERISK ANALYTICS, GET RELIABLE ESTIMATES FOR EVERY PROPERTY IN YOUR BOOK OF BUSINESS 8 (2016) (on file with author).

hundreds of data points to estimate a reconstruction cost;[60] while 360Value empowers a lightly trained insurance agent or broker to input perhaps a couple of dozen "prefills" and the algorithm then would generate an estimate.[61] Verisk believed that 360Value allowed an insurer to "[m]atch the front end to the back end" because "[c]onsistency across your underwriting and claims means no surprises for underwriters or policyholders in the event of a total loss."[62]

The first reported significant customer of 360Value was in July of 2008, when Verisk announced, "The Farmers Insurance Group of Companies®, the third largest home and auto insurance group in the United States, has selected 360Value™ (www.360-value.com) to estimate reconstruction costs for its high-value home program."[63]

From there, Verisk's market penetration appeared to be slow going. Over a year after the Farmers' press release, when Verisk was making an initial public offering of its common stock, Verisk still was identifying 360Value as a "development initiative" and was not yet seeing itself and MSB as competitors.[64] But in July of 2011, nine days after the effective date of the new California regulation, Verisk announced the Farmers Group of Insurance Companies more broadly had selected 360Value as its tool for all of its "main street" homes in California, reporting:

> We have been very pleased with the use of 360Value on our high value book of business," said Susan Bithell, Vice President of Personal Insurance and Chief Underwriting Officer for Farmers Insurance. "In addition, by capturing the essential details of the home and applying the detailed building costs embedded in 360Value, we are able to

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[60] Klein, *supra* note 5, at 75 –76.

[61] VERISK ANALYTICS, *supra* note 43, at 4, 6 ("Its advanced algorithm chooses the most accurate, up-to-date information . . . to populate each field; Flexible, one-stop, web-based system. You can easily integrate the web-based 360Value replacement-cost estimation system into virtually any underwriting environment. . . . User proficiency in no time. 360Value is easy to learn and use. Agents, underwriters, and others involved in the underwriting process can become proficient in no time; and Speed and reliability.").

[62] VERISK ANALYTICS, *supra* note 59, at 8.

[63] *Farmers Insurance Selects 360Value to Estimate Reconstruction Costs for High-Value Homes*, VERISK ANALYTICS (July 14, 2008), https://www.verisk.com/archived/farmers-insurance-selects-360value-to-estimate-reconstruction-costs-for-high-value-homes/.

[64] Verisk Analytics Inc., Prospectus filed pursuant to Rule 424(b)(4) (Form 424B4) 69, 70 (Oct. 9, 2009).

> provide our customers with a reconstruction cost estimate that satisfies the new ITV regulation in California.[65]

That may be all it took for 360Value to gain momentum in the market. While there is no public-facing information about the relative market shares of Verisk and CoreLogic (the company that purchased MSB in 2014[66]), by 2018, the two companies dominated the market.[67] CoreLogic apparently felt the pressure from Verisk, because in the fall of 2018, CoreLogic acquired Symbility, which gave CoreLogic access to claims adjusted reconstruction data just as Verisk had.[68] Nonetheless, by 2022 Verisk claimed "360Value is the most widely used reconstruction cost estimator in the United States."[69]

There is at least one other entity that offers a point-of-sale algorithm for estimating reconstruction costs. On May 13, 2008, the United States Patent and Trademark Office issued Patent No. 7,373,303 to George Moore and Todd Rissel for a method and system for "estimating building reconstruction costs."[70] The e2Value methodology assumes the predominant drivers of replacement cost are where a house will be built and what the quality/prestige expectations of builders are for that neighborhood, and is based on algorithms that analyze data on the premise that this dimension is more predictive of accurate costs than detailed component-based price lists.[71] There is no evidence, however, that e2Value has made significant inroads into the market share dominance of Verisk and CoreLogic.

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[65] *Farmers Insurance Selects 360Value for Residential Replacement Cost Estimates*, VERISK ANALYTICS (July 6, 2011), https://www.verisk.com/archived/farmers-insurance-selects-360value-for-residential-replacement-cost-estimates/.

[66] *CoreLogic Completes the Acquisition of Marshall & Swift/Boeckh and DataQuick Information Systems*, CISION PR NEWSWIRE (Mar. 25, 2014, 4:05 ET), https://www.prnewswire.com/news-releases/corelogic-completes-the-acquisition-of-marshall--swiftboeckh-and-dataquick-information-systems-252311851.html.

[67] Klein, *supra* note 5, at 34, 59.

[68] Caitlin Hotchkiss, *CoreLogic's Acquisition of Symbility Now Complete*, BETAKIT (Jan. 9, 2019), https://betakit.com/corelogics-acquisition-of-symbility-complete/.

[69] VERISK ANALYTICS, *Get Reliable Replacement Costs for Every Property in Your Portfolio* 3 (2022), https://www.verisk.com/siteassets/media/downloads/underwriting/360value/get-reliable-replacement-costs-for-every-property-in-your-portfolio.pdf.

[70] U.S. Patent No. 7,373,303, at [21] (issued May 13, 2008).

[71] E-mail from Todd Rissel, Chairman and CEO, E2Value, to Kenneth S. Klein, Louis and Hermoine Brown Professor of L., Cal. W. Sch. of L. (Mar. 3, 2018, 11:56 PST) (on file with author).

C. THE EMERGENCE OF APPARENTLY PERSISTENT AND PERVASIVE UNDERINSURANCE

As discussed above, until RCV became the standard, underinsurance really couldn't happen; the promise of Verisk and MSB (and later of CoreLogic) was that properly using their algorithms, underinsurance generally shouldn't happen.

According to Wells, 73% of homes before 2002 were undervalued compared to their reconstruction cost, with an average undervaluation of 35% per home.[72] Wells contended, however, that MSB's algorithm, when used correctly, essentially solved the underinsurance problem.[73] In the second edition of his book, he attributed to his MSB algorithm the explanation for why (by his calculations) by 2006 the pre-2003 frequency of underinsurance had fallen by 15% and the average depth of underinsurance had fallen by 14% (finding as of 2006, underinsurance 58% of the time, and by an average depth of 21%).[74] This may not sound like a solved problem, but Wells believes any lingering underinsurance largely is explained by the failure of insurers to regularly update their estimated reconstruction costs, and the failure of homeowners to update their policies after home remodeling.[75] Verisk projects similar confidence in their algorithm, touting 360Value as providing a "true" replacement cost.[76]

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[72] WELLS, *supra* note 37, at 46.

[73] *See* Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 1236 ("MSB enables insurance professionals to generate complete and accurate replacement cost estimates. . . . Accurate estimating from MSB, proven in the many validation programs we perform serve to protect policyholders from underinsurance situations, while simultaneously enabling the insurance provider to determine the appropriate premium required to mitigate the exposure of risk.").

[74] WELLS, *supra* note 37, at 46, 68, 82, 113.

[75] E-mail from Peter Wells, *supra* note 49. *Accord* Administrative Rulemaking File for CAL. CODE REGS., tit.10, § 2695.183 at 745 ("Homesite states that it uses the 1.8 version of the Marshall & Swift/Boeckh replacement cost calculator to develop dwelling replacement cost estimates, which it presents to insureds as be an acceptable basis, from Homesite's perspective, upon which to establish dwelling limits. The 1.8 version . . . is designed to give accurate replacement cost estimates if it is used as designed."); FRANK NOTHAFT, AMY GROMOWSKI, ANNETTE TIERNEY, DENISE MOORE, & GUY KOPPERUD, 2019 INSURANCE COVERAGE ADEQUACY REPORT (2019) (on file with author).

[76] *See* VERISK ANALYTICS, *supra* note 56 ("[A] unique offering that provides true component-based replacement cost estimates and a number of associated underwriting solutions for residential, commercial, and agricultural properties."); VERISK ANALYTICS, *supra* note 59, at 2 ("360Value replacement cost estimates account for all costs needed to reconstruct a property to its original condition—down to the screws and nails. This component-based approach [for residential,

Both Verisk and CoreLogic disclaim that underinsurance is explained either by post-catastrophe demand surge or by more ordinary persistent inflation of the costs of reconstruction. Rather, Verisk and CoreLogic contend that their estimates account for both price demand surge post-disaster and more ordinary annual inflation of building costs.[77]

By 2007, was underinsurance a solved problem but for failures in updating? The numbers suggest not. A consumer-advocacy non-profit, United Policyholders, conducts post-disaster surveys of disaster survivors.[78] Some "key findings" of the United Policyholders surveys have been:

- Twenty-four months after the 2007 Southern California wildfires:
  - "66% of respondents reported being underinsured."
  - "The average amount by which people reported being underinsured was $319,500."[79]
- Twelve months after the 2010 San Bruno Gas Explosion/Fire:
  - "50% of respondents reported being underinsured on their dwelling by an average of over $200,000."[80]
- Twelve months after the 2010 Fourmile Canyon Wildfires:
  - "64% of respondents reported being underinsured on their dwelling by an average of over $200,000."[81]
- Twelve months after the 2011 Central Texas Wildfires:

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commercial, and agricultural properties] is what sets 360Value apart from other cost-estimating tools.").

[77] *See* Trish Hopkinson & Louis Vuksinick, *Current Cost Estimates Key to Manage Lumber's 'Demand Surge'*, VERISK ANALYTICS (Aug. 30, 2021), https://www.verisk.com/insurance/visualize/current-cost-estimates-key-to-manage-lumbers-demand-surge/ (discussing how Verisk tracks and incorporates demand surge into its algorithm for component-level pricing in underwriting); CORELOGIC, 2020 STORM SURGE REPORT 19 (2020), https://www.nature.org/content/dam/tnc/nature/en/documents/Corelogic-Storm-Surge-report-20200528.pdf ("CoreLogic uses its RCV methodology, which estimates the cost to rebuild the home in the event of a total loss. . . . Reconstruction cost estimates more accurately reflect the actual cost of damage or destruction of residential buildings that would occur from hurricane-driven storm surge . . . ."); *see also* NOTHAFT ET AL., *supra* note 75, at 8; WELLS, *supra* note 37, at 151–52; *How Demand Surge After Natural Disasters May Impact the Cost and Timing of Recovery*, CORELOGIC (Oct. 28, 2019), https://www.corelogic.com/intelligence/how-demand-surge-after-natural-disasters-impacts-the-cost-and-timing-of-recovery/.

[78] *Data Collection Surveys: Roadmap to Recovery Surveys*, UNITED POLICYHOLDERS https://uphelp.org/media/surveys/ (last visited Oct. 7, 2023).

[79] *Id.*

[80] *Id.*

[81] *Id.*

  - "56% of respondents reported being underinsured on their dwelling by an average of over $110,000."[82]
- Twelve months after the 2012 Colorado Wildfires:
  - "In the High Park and Woodland Heights Fires, 54% of survey respondents reported being underinsured on their dwelling by an average of $101,000."[83]
  - "In the Waldo Canyon Wildfires, 27.2% of survey respondents reported being underinsured on their dwelling by an average of $77,000."[84]
- Twelve months after the 2013 Black Forest Fire:
  - "46% of survey respondents do not have enough insurance to cover the cost of repairing, replacing or rebuilding their house."[85]
- Six months after the 2015 Valley Fire:
  - "53% of survey respondents do not have enough insurance to cover the cost of repairing, replacing or rebuilding their house by an average of $103,000."[86]
- Twenty-four months after the 2017 North Bay Fires:
  - "64% of survey respondents reported they do not have enough insurance to cover the cost of repairing, replacing or rebuilding their home by an average amount of $367,000."[87]
- Twenty-four months after the 2018 Camp Fire:
  - "66% of survey respondents reported they do not have enough insurance to cover the cost of repairing, replacing or rebuilding their home."[88]
- Twelve months after the 2020 Colorado Wildfires:
  - "72% of survey respondents reported that their insurer's estimates of loss and/or claim payments do not reflect current building costs in the area."[89]
  - "64% of survey respondents reported they do not have enough insurance to cover the cost of repairing, replacing or rebuilding their home. The average amount survey respondents reported being underinsured by is $355,000."[90]

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[82] *Id.*
[83] *Id.*
[84] *Id.*
[85] *Id.*
[86] *Id.*
[87] *Id.*
[88] *Id.*
[89] *Id.*
[90] *Id.*

- Twelve months after the 2020 California Wildfires:
  - "18% of survey respondents reported they have enough insurance to cover the cost of repairing, replacing or rebuilding their home. (42% of survey respondents reported being underinsured and 40% of survey respondents do not know if they have enough insurance to rebuild or replace their home)."[91]
  - "The average amount people reported being underinsured by is $375,000."
- Six months after the 2021 Marshall Fire:
  - "A substantial number of households are underinsured and do not have adequate dwelling insurance limits to cover the actual cost of replacing their destroyed assets. This is true despite the fact that the majority of surveyed households reported having "extended replacement cost coverage" which theoretically should have protected them from being underinsured. This finding is supported by the Marshall Fire Claims Data Analysis conducted by the Colorado Division of Insurance."[92]

As the last of these survey findings references, after the Marshall Fire, the Colorado Division of Insurance engaged directly in trying to quantify the frequency and depth of underinsurance. This was the second time regulators engaged in trying to quantify industry-wide underinsurance, the first being in California after the cumulative experience of the 2003, 2007, and 2008 fire seasons.

In 2022, the Colorado Division of Insurance analyzed 981 total loss claims (8% with GRC, 9% with only RCV, and 83% with both RCV and ERC), and found:

- At a rebuild cost of $250 per square foot, a total of 344 (36%) policies are underinsured. At $300 per square foot, 523 (55%) policies are underinsured. At $350 per square foot, 639 (67%) are underinsured.
- At $250 per square foot, for the 344 policies, the average amount of underinsurance per policy is estimated at $98,967. At $300 per square foot, for the 523 policies, the average amount of underinsurance per policy is estimated at $164,855. At $350 per

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[91] *Id.*
[92] *Id.*

> square foot, for the 639 policies, the average amount of underinsurance per policy is estimated at $242,670.[93]

In California in 2010, CDOI reported on a market conduct investigation of underinsurance, explaining,

> In 2003, and again in 2007 and 2008 California has experienced significant wildfires leading to the loss of a high number of residential structures. After each of these fires, fire survivors complained about problems including their experience that after the fire they learned that the replacement value estimates made in setting coverage limits for their homes were incomplete or too low, causing underinsurance issues to arise during efforts to rebuild or replace their residences.[94]

As part of the investigation, CDOI commenced an examination of four insurers who together constituted 50% of the homeowner insurance in California: "[t]hese examinations targeted the claim-handling practices related to total losses that resulted from the wildfires, and underwriting practices related to insurance to value and the customer's selection of coverage limits…."[95] After observing certain underwriting practices, the CDOI provided the following summary:

> Similar processes surrounding the estimation of dwelling replacement cost and the selection of Coverage A dwelling limits were observed in each of the four examinations. In general, each insurer had its own replacement cost estimating tool and the value generated by this tool was considered (from the insurer's perspective) to be the minimum Coverage A limit for which the policy could be issued. Each insurer stated that the insured was responsible for making the limit selection based on his or her knowledge regarding the home, but was able to make use of the

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[93] *Division of Insurance Releases Initial Estimates of Underinsurance for Homes in the Marshall Fire*, COLO. DEP'T OF REGUL. AGENCIES, DIV. OF INS. (Apr. 26, 2022), https://doi.colorado.gov/news-releases-consumer-advisories/division-of-insurance-releases-initial-estimates-of?utm_medium=email&utm_source=govdelivery.

[94] Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 1410, 1431, 1474–76.

[95] *Id.* at 1029.

> insurer's tool to assist with this selection. There were varying degrees of communication and disclosure to the insured regarding what the estimate generated by the insurer's tool represented, and regarding the insured's duty to determine the amount of coverage he or she determined to be appropriate.[96]

The CDOI examined 188 policies. In 126 of these, the Coverage A limit matched the figure produced by the insurer's tool. In these 126, the Coverage A limit was lower than the cost to rebuild (underinsurance) in 81% of the files. "When factoring in any extended replacement cost coverage that applied, [57%] continued to be underinsured for the total loss."[97] CDOI reached the conclusion these were "representative figures . . . at each insurer and across the four exams."[98]

In tracing the persistence and pervasiveness of underinsurance, one other data set on underinsurance merits mention. In 2020, CDOI published a Market Conduct Examination of insurer, CSAA, and the experience of its insureds in "major-property wildfires during 2015 and 2017" in Northern California.[99] The examination "reviewed 111 claims files and their associated underwriting files selected at random from the Companies' listing of total losses occurring during these fires."[100] Among the findings of CDOI were:

- "Of the 49 claims reviewed from the 2015 wildfires, 18 of those (37%) had insufficient dwelling limits available to rebuild the dwelling even after application of the 50% extended replacement cost coverage to the Coverage A limits. Nine were underinsured by an amount of 10% or more over the Coverage A plus the 50% extended replacement cost coverage."[101]
- "For the 2017 wildfire sample of 62 policy files and their associated claims files, the majority of the claims were still open at the time of examination. Of those containing either an insured's contractor estimate or a CSAA Xactimate estimate, 17 (or 27%) had insufficient dwelling limits available, including the Coverage A

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[96] *Id.*

[97] *Id.*

[98] *Id.*

[99] CAL. DEP'T OF INS., REPORT OF THE TARGETED MARKET CONDUCT EXAMINATION OF THE CSAA INSURANCE EXCHANGE AND THE CSAA FIRE AND CASUALTY INSURANCE COMPANY 3 (Sept. 22, 2020).

[100] *Id.* at 3.

[101] *Id.* at 10.

limit and the 50% extended replacement cost coverage to meet these estimates. Of these, 16 were underinsured by an amount of 10% or more of the Coverage A plus the 50% extended replacement cost."[102]

- "In all of these circumstances, the insureds had relied upon CSAA's replacement cost estimates to determine the appropriate dwelling limits for their homes."[103]

Finally, it bears mention that there will always be some percentage of homeowners who will intentionally partially insure when given the choice. But that turns out to be a calculable percentage. Although insurers may not offer the choice, when the option to partially insure is available, the frequency of homeowners taking it has been studied, and that frequency appears to be just 20%.[104]

III. THE COMPETING NARRATIVES OF HOMEOWNERS AND INSURERS ABOUT UNDERINSURANCE

By the 2000s, RCV coverage and point-of-sale reconstruction cost estimation had become part of any homeowner insurance transaction. And instances of post-loss underinsurance were seemingly becoming common. Consequently, courts, legislators, and regulators have had to sort through underinsurance disputes where both homeowners and insurers have asserted that the inadequacy of coverage to fully fund reconstruction has risen through no fault of their own.

As briefly detailed in the Introduction to this article, in post-loss underinsurance disputes, typically, insurers would "state that it is the responsibility of its policyholder to select appropriate coverage limits," while policyholders typically would state they were "relying upon the insurer's estimate (as calculated using the insurer's replacement cost estimation tool) to select Coverage A limits in a significant number of cases."[105]

What follows is a fuller articulation of these positions. An information-rich source for more granular documentation of the competing narratives comes from 2010, when CDOI had to defend a proposed regulation on underinsurance in court. The CDOI filed with the court a 1550+ page administrative record containing hundreds of pages

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[102] *Id.*

[103] *Id.*

[104] Benjamin L. Collier & Marc A. Ragin, *The Influence of Sellers on Contract Choice: Evidence from Flood Insurance*, 87:2 J. RISK & INS. 1, 14, tbl.3 (2019).

[105] Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 1030.

documenting over fifty exemplars of underinsurance narratives.[106] While there is no point in repeating or detailing each of these numerous exemplars, there is one notable example that stands up well as an example of the story the collective reports demonstrate: an instance where simultaneously the competing positions of the insurer and the homeowner are set forth in their most robust and complete possible form, and which perhaps by happenstance is the only exemplar reproducing the entirety of the policy language describing the process and role of point-of-sale component cost estimating in determining the adequacy of insurance coverage (it was one of two homes the insureds owned and insured, but the documentation of the loss of the insured's other home is more sparse[107]).[108]

The home was first insured in 1997.[109] The home was lost on June 24, 2007 in the Angora Fire.[110] The homeowners had the same agent through the date of loss.[111] The homeowners recall the agent having told them that they had "a great policy," "with its protection plus/inflation features," they should be "just fine," and "he would review the policy annually."[112] The homeowners believed that for ten years the policy was adjusted annually for inflation.[113] The renewal of the policy eight months before the loss did reflect an upward adjustment of Coverage A by $22,000 [12.4%].[114]

The policy in place on the date of loss provided for Coverage A of $199,000, a Building Ordinance or Law Coverage Endorsement, and 125% ERC.[115] The endorsement pages stated that "[t]he limit of liability for this structure (Coverage A) is based on an estimate of the cost to rebuild your home, including an approximate cost for labor and materials in your area, and specific information that you have provided about your home."[116]

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[106] Until this article, virtually no one may have ever carefully read the administrative record in its entirety. *See id.* at 1524 ("[N]either ACIC, nor anyone else, has attacked the information in the original rulemaking file, which included but was not limited to more than fifty separate consumer complaints and their files . . . declarations and summaries of market conduct examinations of insurance companies on issues of underinsurance and estimated replacement cost. In fact, neither ACIC, nor anyone else, has even asked to review the Rulemaking file, at any time, before or after the 15 Day Notice.").

[107] *Id.* at 445–52.

[108] *Id.* at 418–44, 445–52.

[109] *Id.* at 420.

[110] *Id.* at 431–32, 445–52.

[111] *Id.* at 419, 421, 431.

[112] *Id.* at 421.

[113] *Id.* at 432.

[114] *Id.* at 439.

[115] *Id.* at 432, 434, 446.

[116] *Id.* at 435.

Additionally, in the last pre-loss renewal package, in between "private policy information and renewal information,"[117] were four pages of text detailing exactly how policy limits were determined, reading (font size, italics, and bolding in original; graphics omitted):

> Make sure you're not ***under*-insured**.
>
> Dear [insureds]
>
> We want to help you choose the amount of coverage that is right for you. That's why we're making the extra effort to provide you with specifics about *your* house. Using the information in this notice, you can make sure the limit of insurance you choose for your house takes into account the construction, characteristics, and special features of your house.
>
> The information we have on record about your home is important because. with each renewal offer, we use it to calculate a reconstruction cost estimate.
>
> You can use the estimate as a guide to help you choose the amount of coverage you want for your home. If you don't have enough coverage, you could be under-insured. And if your house was totally destroyed, that could mean being unable to pay for complete reconstruction.
>
> We can get you back where you belong . . . *if* you're properly insured.
>
> And keep in mind: with Farmers, you have a personal agent to help with your insurance program.
>
> **Do we have current information about your home?**

[117] *Id.* at 420.

Current and complete information is the key to getting a good reconstruction cost estimate. Even if you haven't changed a thing about your home for years, it's still a good idea to check your information and make sure it's current and complete. And if you *have* made any changes …

According to one recent study, 60% of homeowners who completed major changes to their homes did not update their Homeowners insurance policies.

Here's how it could have happened:

- Lemont added an upstairs bathroom.
- Luisa upgraded her 1930s kitchen with granite counters and new appliances.
- Bob and Judi turned their unfinished basement into an exercise room.
- Kim put a second floor on his ranch style home and gained 800 square feet.

And because they didn't report these changes to their agents, they were under-insured!

Turn the page to start reviewing information about your house. =>

Information We Used to Estimate the Reconstruction Cost Estimate for Your Home

We recommend that you contact [agent] your Farmers® agent, at [telephone number], to discuss your reconstruction estimate and make sure your

home's special features and any improvements you have made are taken into account. Your agent can explain any unfamiliar terms used in the estimate. The information used to estimate labor and material costs is periodically updated to keep pace with changes in normal market conditions. However, reconstruction cost estimating programs can neither anticipate abnormal market conditions nor keep up with rapidly changing costs. The reconstruction cost estimate can serve as a guide, but it is your responsibility to choose the Coverage A limit that is right for you. The Coverage A limit in your policy is the amount of insurance on your home.

[table of home features/characteristics and coverage—32 categories of information]

Thank you for reviewing the information this notice provides about your home. It is important because the amount of insurance coverage you choose should closely match the actual cost of rebuilding your home. Our underwriting rules for most states require that your policy have a coverage A limit at least equal to the reconstruction cost estimate. You may choose a Coverage A limit at least equal to the reconstruction cost estimate. You may choose a Coverage A limit higher than the estimate, or you have the option to reduce the limit to an amount equal to the estimate.

Reconstruction costs change over time.

Here are some things to keep in mind as you choose your Coverage A limit:

- Contact your Farmers® agent. Your agent will be glad to work with you to make sure we have all the information we need for the

reconstruction cost estimate. Make sure the information we have is current and complete and tell your agent about any improvements, upgrades, or additions you've made to your home.

- Understand that reconstruction cost is not the same as market value, or what you paid for your home, or the cost of a similar new tract home. And …reconstruction cost changes over time, typically increasing year by year.

Additional coverages may be right for you.

You may want to ask your agent if your policy has "extended replacement cost" coverage. Under this coverage and subject to its provisions, we pay to repair or replace a loss covered under Coverage A up to 125% of the Coverage A limit. If your policy does not have this coverage, you may be able to add it for an additional premium.

Many policies have limited Building Ordinance or Law coverage to pay for additional costs that result from having to rebuild in compliance with updated building codes. You may be able to increase the amount of this coverage for additional premium. Please contact your agent to discuss availability.

If you have questions about anything in this notice or would like to discuss your coverage, please call your Farmers® agent. Thank you for choosing Farmers. We appreciate your business.

[table of home features/characteristics—33 categories of information][118]

[118] *Id.* at 424–27.

After the fire, neighbors (including one who was a contractor) received reconstruction bids in the range of $225 per square foot, which for this home equated to $379,800.[119] The post-loss Xactimate estimate calculated reconstruction cost as $362,623.88.[120] The insurer offered $248,750 for reconstruction (which was the policy limits of Coverage A plus ERC).[121]

After the fire, reflecting on being underinsured by more than $100,000, the homeowners stated:

> In hindsight, we put trust in someone who always seemed confident, cordial, and responsible. He presented himself as an insurance professional representing an established, reputable company. We believed that, because our policy limits increased with what we thought was inflation, it was [the agent's] job to see that we were adequately insured. I guess we were naïve to think that there are tables/charts with current building replacement costs available to insurance companies. Only after the fire, when we questioned whether or not our primary residence in San Ramona was adequately covered, did we realize that his "expertise" wasn't anywhere in the ballpark![122]

And

> …it's extremely frustrating to us that we were never given any reason to believe that we'd be so GROSSLY under-insured on both our residences! While we knew that we didn't have "guaranteed replacement cost" coverage, we were led to believe that we were "in the ballpark" especially as yearly increases in our premiums reflected inflation. When we did meet to "review" our insurance, it was stated that with 125% of policy limits, we should be "just fine. . . ." Quite frankly, we feel betrayed.[123]

The insurer defended its position, stating:

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[119] *Id.* at 420.
[120] *Id.* at 422.
[121] *Id.* at 420.
[122] *Id.* at 421.
[123] *Id.* at 432.

> [A]ll insureds have the ultimate responsibility of choosing their limits of coverages, including the limit for Coverage A. . . . Since 1992, we have contracted with Marshall & Swift/Boeckh (M&S"), a nationwide provider of building cost information, to provide a reconstruction cost (Residential Component Technology, or RCT) estimating program for most residential buildings. We also developed and distributed to [the homeowners] and to our other insureds an RCT Disclosure, captioned "Make sure you're not under-insured," at each renewal. . . . [The homeowner] received this notice with his 2007 offer of renewal, before the subject fire loss. You will note that through this RCT Disclosure we inform insureds:
>
> a. That they can make sure that the limit of insurance they choose for their home takes into account the construction, characteristics, and special features of their home;
> b. They should review the information to verify that it is accurate and complete;
> c. That reconstruction cost estimating programs can neither anticipate abnormal market conditions nor keep up with rapidly changing costs;
> d. That the reconstruction cost estimate can serve as a guide, but it is the insured's responsibility to choose the Coverage A limit that is right for them.
>
> [T]he 2006 renewal offer. . . . was based upon RCT and included the RCT disclosure. . . . . The insured accepted the proposal; conversely, the insured never asked the agent or [the insurer] for changes to the proposed Coverage A limit. . . . There appears to be some discrepancy between what the agent recalls and what the insured recalls regarding selection of the Coverage A limit. The Coverage A limit is a figure about which reasonable persons can differ. As noted above, selection of the limit is ultimately a decision for the insured. . . . [The insurer] offered to renew the insured's policy with a Coverage A limit that reflected our estimated reconstruction cost of the dwelling using the RCT program. . . . We believe that the RCT program provided by Marshall & Swift/Boeckh takes into count labor and material costs for the area in which the reconstruction is to take place. . . . We

> believe that some of the difference between the estimated reconstruction cost before the loss and the estimated reconstruction cost after the lass may be explained by discrepancies in features of the dwelling. . . . We do not believe that the $199,000 Coverage A limit offered to the insured by [the insurer] was based on incorrect information. . . . As noted above, insureds ultimately select their own coverage limits for their own personal reasons.[124]

This exemplar is a full-throated cry by a homeowner for an insurer to accept responsibility for its estimating error, and a full-throated insurer declination of that responsibility. As will be developed in Part IV, other than perhaps the articulateness of the respective statements of position and the detail offered in support, this exemplar is not in any way positionally unusual. Rather, in a *typical* underinsurance dispute, both homeowner and insurer claim post-loss surprise, and like the scarecrow in *The Wizard of Oz*, they seem to point in opposite directions while courts, legislators, and regulators are left to sort through where responsibility resides.

IV. THE JURISPRUDENTIAL LANDSCAPE OF UNDERINSURANCE

The CDOI administrative record is the most comprehensive governmental focus to date on industry-wide practices regarding point-of-sale reconstruction algorithms. But both before and after CDOI adopted a new regulation on the minimum requirements for an estimated reconstruction value,[125] occasional lawsuits focused on the role of these algorithms in individual instances of underinsurance. What emerges from a closer look at the caselaw and the CDOI administrative record is that the law has been and continues to be that an insurer giving a reconstruction cost estimate to a homeowner at point-of-sale is not liable for inadequate coverage so long as the insurer clearly describes it as an estimate and is not sloppy in making that estimate. However, the law does not absolve an insurer from offering an estimate of adequate insurance that an insurer knows likely is inadequate.

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[124] *Id.* at 441–43.

[125] Standards for Estimates of Replacement Value, CAL. CODE REGS., tit. 10, § 2695.183 (2011).

A. A REVIEW OF THE CASELAW

An insurer cannot represent coverage as adequate if it has reason to know the coverage likely is inadequate. This core jurisprudential principle emerges from every decision involving point-of-sale estimates of adequate insurance, regardless of the constellation of plaintiffs and defendants, the allegations, the procedural posture, the jurisdiction, or the outcome. What follows is a survey of nine cases spanning thirty years and seven states, in both state and federal court.

1. Schanz v. New Hampshire Ins. Co. is a 1988 opinion from the Michigan Court of Appeals. The case litigated whether an insurer was liable to building owners for negligence after an underinsured building was completely destroyed by fire when the amount of insurance was based on an annually inflation-adjusted insurer's point-of-sale appraisal estimating replacement cost.[126] The insurer claimed it had no duty to conduct an appraisal.[127] The building owner did not disagree but contended that "once defendant undertook to appraise the building for purposes of informing plaintiffs of the required insurance coverage, defendant assumed a duty to use reasonable care in establishing the replacement cost value of the building."[128] The insurer contended that the appraisal was purely for underwriting purposes.[129] The building owners responded that they (the building owners) had relied on the replacement value estimate.[130] On these issues, the building owners won at trial, and the appellate court affirmed, holding "we cannot conclude that the trial court erred in finding that defendant owed a duty to plaintiffs to exercise reasonable care in determining the replacement cost coverage under the policy issued to plaintiffs."[131] Twenty-eight years after the *Schanz* opinion, the Michigan Court of Appeals had occasion to reaffirm that in Michigan, unless something changes the usual situation of agents taking orders from customers, generally, "insurance agents have no duty to advise the insured regarding the adequacy of insurance coverage."[132]

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[126] Schanz v. N. H. Ins. Co., 418 N.W.2d 478, 479–81(Mich. Ct. App. 1988).
[127] *Id.* at 481.
[128] *Id.*
[129] *Id.* at 482.
[130] *Id.*
[131] *Id.* at 481, 484.
[132] *Chem. Tech., Inc. v. Berkshire Agency, Inc.*, No. 326394, 2016 WL 4008455, at *2 (Mich. Ct. App. July 26, 2016) (quoting Harts v. Farmers Ins. Exch., 597 N.W.2d 47, 50 (Mich. 1999)).

2. Furtak v. Moffett is a 1996 opinion of the First Appellate District, Fifth Division, of Illinois.[133] The case litigated whether an agent and an insurer were liable to homeowners for negligence and breach of contract when their home was completely destroyed by fire and was underinsured because the agent voluntarily "offered them a policy that would fully cover their home even in the worst case scenario."[134] At trial, the homeowners conceded that under Illinois law it was their burden to know the contents of their policy, to draw any discrepancies to the insurer's attention, and that the insurer had no duty to review the adequacy of coverage.[135] Nonetheless, the homeowners contended that the insurer had voluntarily undertaken a duty to determine adequacy of coverage of its insureds through a series of actions:

> (1) [Insurers'] institution in the late 1980s of the [Insurers'] Friendly Review marketing program, which encouraged agents to contact insureds regularly to make sure that they had adequate insurance coverage on their homes and personal possessions; (2) [Insurers'] distribution in 1989 of field and procedure bulletins stating that many of their insureds did not have adequate insurance coverage on their homes and possessions and suggesting that agents send their insureds an article discussing the possibility of inadequate insurance and the need for the insureds to review their coverage; (3) a field bulletin distributed by [the insurer] in early 1992, encouraging agents to review the adequacy of policy limits without waiting for calls or renewal dates; (4) the implementation of the computerized dwelling replacement cost program, which developed lists of those insureds who were 31% underinsured and who were to be contacted by the agency force before renewal; and (5) [Agent's] conducting of a review of his policies as renewal dates approached to determine whether coverage was adequate.[136]

The appellate court affirmed the trial court's entry of summary judgment in favor of the defendants, holding that on the specific facts of the case, "[t]he fact that defendants instituted procedures to determine whether their insureds were underinsured and [the insurer] encouraged their agents to inform their insureds that they should evaluate the adequacy of their

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[133] Furtak v. Moffett, 671 N.E. 2d 827 (Ill. App. Ct. 1996).
[134] *Id.* at 829.
[135] *Id.*
[136] *Id.*

coverage does not impose upon them a duty to warn plaintiffs of their inadequate insurance" because "none of the programs instituted by [the insurer] or procedures carried out by [the agent] would have revealed to defendants that plaintiffs were underinsured."[137]

3. Everett v. State Farm Gen. Ins. Co. is a 2006 opinion of the Fourth District, Division 2, of the California Court of Appeals.[138] The homeowner sued the insurer for breach of contract, breach of implied covenant of good faith and fair dealing, negligence, reformation, and fraud, after a fire destroyed her home.[139] Despite having RCV coverage in the amount of the insurer's point-of-sale reconstruction estimate, 10% ERC coverage, and an additional 10% coverage through an endorsement for changes in building codes she was allegedly underinsured.[140] Putting aside the portion of the dispute about the building code endorsement, the homeowner contended "the policy, which promises to replace her home while stating a limit, is unclear," while the insurer contended "it never represented to her that her home was covered for up to 100 percent of the amount to replace her property" and "was clear to explain that the amount of the estimate was just that—merely an estimate."[141] The appellate court affirmed the trial court's entry of summary judgment for State Farm, with the key holding (for purposes of this article) being:

> [Annual renewal] certificates reminded [the homeowner] that the replacement cost figure identified by [the insurer] was merely an estimate, and that it was her responsibility to determine whether her property was adequately insured. Thus, contrary to [the homeowner's] contention that it was [the insurer's] duty to maintain policy limits equal to replacement cost, [the homeowner] bore such duty. Nothing in the record suggests that the original policy limits were insufficient to replace her home in 1991. Moreover, there is nothing in the record that shows [the homeowner] requested her policy limits to be increased since they were set in 1991.[142]

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[137] *Id.* at 830.

[138] Everett v. State Farm Gen. Ins. Co., 75 Cal. Rptr. 3d 812 (Cal. Ct. App. 2008).

[139] *Id.* at 816.

[140] *Id.* at 815.

[141] *Id.* at 816–17.

[142] *Id.* at 821–22.

4. Peterson v. Big Bend Ins. Agency, Inc. is a 2009 opinion from Division 3 of the Washington Court of Appeals.[143] *The homeowners sued both the broker and the insurer for* negligence, negligent misrepresentation, bad faith, and violations of the Consumer Protection Act after their home was destroyed by fire and the coverage limits were less than two-thirds of the "full replacement value of their home."[144] As the appellate court summarized:

> The [homeowners] explained that they wanted the house insured so that it could be replaced if it were destroyed. The [homeowners] indicated that they did not know what the cost of this coverage would be or how such a figure would be determined. [The broker] told the [homeowners] that his agency would use a formula that involved plugging in certain items, such as the square footage, the type of construction, and certain upgrades. . . .
> The [homeowners] described their home to [the broker]. [The broker] told the [homeowners] that they were underinsured . . . [The homeowners] asked who would come up with the replacement number for the home. [The broker] told them that he would. He explained that he would go to their house, take measurements, gather other information, and plug the information into the formula to come up with the replacement number. . . .
> The formula used by [the broker] for determining replacement value was a computer software program designed by the E.H. Boeckh Company that is known as the Boeckh Cost Guide. Use of this software, or a similar program, is a standard in the insurance industry for determining the replacement value of homes. It was [the insurer's] policy to use the Boeckh Cost Guide to estimate the cost to replace a home in the event of a total loss.
> Later, [the insurer] ran the cost guide formula . . . [The insurer] did not have the information from the standard Boeckh questionnaire and she did not have information about the home's numerous upgraded features which would have increased the replacement value. The Boeckh Cost Guide results for the [homeowners'] home established a

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[143] Peterson v. Big Bend Ins. Agency, Inc., 202 P.3d 372 (Wash. Ct. App. 2009).

[144] *Id.* at 374.

> basic replacement value of $219,103 with a location adjusted value of $223,463.
> When [the homeowner] received the insurance summary, he noticed the $193,000 replacement value figure, which was $14,000 more than the same coverage the prior year. [The homeowner] assumed the $14,000 increase was the result of the updated calculation of the home's replacement cost based on the formula that [the broker] had explained. But the increase was actually due to an automatic inflation guard provision.[145]

The broker argued that he was not liable because, under Washington law, it is the homeowner's responsibility to select policy limits and that asking for 'sufficient coverage' does not expand an agent's responsibility.[146] The appellate court rejected this argument, holding that the agent had misrepresented how adequate coverage would be determined, but the court also found that if there had been no misrepresentation, the agent would avoid liability.[147]

5. Bryce v. Unitrin Preferred Ins. Co. is a 2010 opinion of the Texas Court of Appeals (Austin).[148] The homeowners sued their agent and their insurer for negligence and violation of the insurance code after a fire destroyed their home and the homeowners were underinsured despite having replacement coverage that had been adjusted for inflation.[149] Several insurer inspections of the home to determine adequacy of coverage took place, but the inspection results had not been shared with the homeowners.[150] The agent recalled recommending the homeowners consult with a builder on determining replacement cost, while the homeowners recalled being told by the agent that the insurance was adequate (the homeowners also conceded that they had complained that the premiums were too high).[151] The homeowners lost at trial and the appellate court affirmed, holding that while an insurance agent has "the duty to use due diligence in obtaining the requested coverage" and "the duty to notify the client promptly if unable to do so," neither an insurer nor agent has a duty "to monitor an insured's policy

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[145] *Id.* at 375–76.
[146] *Id.* at 377–78.
[147] *Id.* at 376–80.
[148] Bryce v. Unitrin Preferred Ins. Co., No. 03-08-00670-CV, 2010 WL 1253579 (Tex. Ct. App. Apr. 1, 2010).
[149] *Id.* at *1.
[150] *Id.* at *2–3.
[151] *Id.*

in order to ensure that the requested coverage is adequate . . . [because] an insured might choose to insure their home at less than the full replacement cost, particularly if the insured wants to reduce their insurance premiums;" and noting that on the facts of the case, the insurer, "would have every reason to believe the [homeowners'] home was adequately insured."[152]

6. *Edwards v. United States Automobile Association* is a 2015 unpublished opinion from Division III of the Colorado Court of Appeals.[153] The homeowners sued their insurer for negligent misrepresentation and contract reformation after a wildfire left them underinsured on two homes, despite the policy limits on each being based on the insurer's point-of-sale reconstruction cost estimate.[154] The homeowners contended that they had relied on the insurer's expertise to determine rebuilding costs.[155] The insurer argued that the homeowners could not have *justifiably* relied on the insurer because the homeowners challenged whether they were being over-insured on the "gate house," and their casualty loss claim on the "main house" showed that they knew there were significantly higher approximate historical construction costs than the stated policy limits.[156] The policies described Coverage A limits as "the minimum estimated rebuilding costs" and stated "our estimates are based on average construction costs and labor costs for geographic areas and may not reflect the unique features of your home or the area you live in."[157] The policies reminded the homeowners that it was their "responsibility to . . . make sure [their] coverage is adequate to repair or rebuild," "[w]hile we can help calculate an estimated minimum reconstruction cost, only you can decide whether you have enough coverage," "[i]n no event will we pay more than . . . limits," and "[i]t is your responsibility to determine and maintain adequate amounts of insurance to totally replace or repair your dwelling."[158] With regard to the gate house, the homeowners presented expert testimony on why cost of new construction may be higher than costs of rebuilding.[159] The appellate court reversed the trial court's entry of summary judgment for the insurer on the negligent misrepresentation claim, noting the homeowners: "had sufficient time to investigate the estimated rebuilding cost and the information was not in

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[152] *Id.* at *5–6.

[153] Edwards v. United States Auto. Ass'n, No. 14CA1829 (Colo. App. Oct. 22, 2015).

[154] *Id.* at 1–5.

[155] *Id.* at 4.

[156] *Id.* at 5, 7, 10–12.

[157] *Id.* at 12–13.

[158] *Id.* at 18.

[159] *Id.* at 13.

USAA's sole control. But even if they had considered investigating, a reasonable jury could conclude they need not have done so because that would have required them to hire their own expert."[160]

The appellate court then affirmed dismissal of the reformation claim because Colorado reformation law requires a mutual mistake, and while the homeowners intended to "fully cover" both homes, "USAA only intended to provide coverage based on the estimated replacement value of the homes, up to policy limits."[161]

7. *Association of California Ins. Companies v. Jones* is not a homeowner/insurer underinsurance dispute, but rather a 2017 opinion of the California Supreme Court affirming that CDOI acted within the scope of its authority in adopting new insurance regulations concerning point-of-sale reconstruction cost estimation.[162] For purposes of this article, the following holding is particularly salient:

> The trial court reasoned that a replacement cost estimate—as an *estimate*—is inherently inaccurate and therefore cannot be deemed "misleading" within the meaning of section 790.03, subdivision (b). But the defect sought to be remedied by the Regulation is not the possibility that actual costs, for unforeseeable reasons, may not align with estimated costs. Rather, the Regulation seeks to reduce the possibility that an estimate would be misleading by ensuring that the estimate include all that is reasonably knowable about actual costs at the time the insurance contract is executed. It may be theoretically possible for a replacement cost estimate that omits consideration of labor costs or the materials used in constructing the home nonetheless to come close to the actual replacement cost if (say) the expected rate of inflation or some other cost component was badly or unreasonably overstated. But the estimate would still have been misleading in purporting to represent *each* of the essential components for rebuilding the dwelling. In addition, it would have been misleading to the extent that

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[160] *See* Gomba Music, Inc. v. Avant, 62 F. Supp. 3d 632, 649 (E.D. Mich. 2014) (The parties "cited no authority to justify a finding that reasonableness in this context would require appellants to . . . obtain an independent expert at their own expense." (quoting with approval Best v. Park W. Galleries, Inc., Nos. 305317, 308085, 2013 WL 4766678, at *7 (Mich. Ct. App. Sept. 5, 2013) (unpublished opinion)).

[161] *Id.* at 21.

[162] Ass'n of Cal. Ins. Cos. v. Jones, 386 P.3d 1188 (Cal. 2017).

> the incomplete estimate could not meaningfully have been compared with a competitor's estimate that *did* faithfully account for each component necessary to rebuild the dwelling. In any event, the validity of the Regulation does not depend on a finding that an incomplete replacement cost estimate would be misleading in every conceivable circumstance. The prohibition on untrue or misleading statements in section 790.03, subdivision (b), like the statutory prohibition on untrue or misleading statements at issue in *Ford Dealers*, extends to statements that are " 'likely' " to deceive the public. The Commissioner could reasonably conclude that replacement cost estimates are likely to mislead the public about the actual cost of repair or replacement when they willfully omit cost components essential to repairing or rebuilding a dwelling.[163]

8. *Nelson v. American Family Mutual Insurance Company* is a 2018 opinion from the United States Court of Appeal, Eighth Circuit, arising out of events in Minnesota.[164] It is an *over-insurance* case—the homeowner's minimum required insurance, based on the 360Value algorithm, doubled in just a few years after the assessed 'grade' of the home was revisited, and the homeowners alleged this constituted breach of contract, negligence, and/or consumer fraud by the insurer in violation of the Minnesota Consumer Fraud Act.[165] Policy clauses emphasized that replacement cost estimates can change, it is the insured's responsibility to make certain the replacement cost is accurate, the insurer's estimate is the minimum insurance that can be purchased, the estimate is a minimum but not a guarantee as the actual cost may differ, and the insured may wish to consult a contractor to make sure it is enough.[166] On these facts, the Eighth Circuit held summary judgment for the insurer was proper because "[n]othing in the Policy impose[d] on [the insurer] a contractual obligation to make objectively reasonable or accurate replacement cost estimates," the insurer did not promise "that its replacement cost estimates [would] be accurate," the policy expressly told the homeowners that it is "up to the policyholder to select the proper amount of coverage," and the homeowners could not point to any "promise, misrepresentation, or false statement that they relied upon, justifiably or unjustifiably."[167] The Eighth Circuit closed its Opinion with the observation:

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[163] *Id.* at 1203 (citation omitted).
[164] Nelson v. Am. Fam. Mut. Ins. Co., 899 F.3d 475 (8th Cir. 2018).
[165] *Id.* at 477–79.
[166] *Id.* at 478.
[167] *Id.* 480–82.

> It is also noteworthy that the Nelsons never presented any evidence that the replacement estimates for the years 2007 to 2010 were false. This failure to develop an appropriate record is fatal. Without any evidence of a misrepresentation or false statement that the Nelsons relied on, there is insufficient evidence to create a submissible case that American Family violated the MCFA.[168]

9. *Sheahan v. State Farm General Insurance Company* is a 2020 Order of United States District Court for the Northern District of California, dismissing the plaintiffs' Third Amended Complaint with prejudice.[169] A collection of homeowners brought a putative class action against their insurer and Verisk (as well as Verisk subsidiaries, the Insurance Services Office, and Xactware) alleging they "conspired together to create and apply defective financial technology tools . . . that are not being utilized to issue proper insurance."[170] The Complaint alleged that each of the homeowners selected coverage limits at or greater than the point-of-sale estimate of reconstruction value, and after wildfire destroyed their homes, each was underinsured.[171] The District Court did not reach the question of whether the defendants made any representation that the defendants likely knew was false, as the court held that the plaintiffs (despite serial opportunities) failed to plead fraud with adequate particularity about "what the false statements were, and from whom/to whom they were made."[172] The District Court noted the "general rule" is that an insurer has no duty to volunteer an opinion on the adequacy of coverage, and emphasized all of the lengthy insurance policy disclaimer language (that was as fully robust as any of the language detailed in other policies referenced in this article).[173] As to the Verisk Defendants, the District Court found, "[a]ccording to Plaintiffs, the Verisk Defendants 'represented that its software could accurately calculate the replacement costs for each home, knowing that Plaintiffs . . . would consider and rely upon such representations for the purpose of calculating rebuilding costs'" but "[i]t is unclear what, if any, representations about 360 Value the Verisk Defendants conveyed to [the insurer] or whether it was conveyed for the

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[168] *Id.* at 482.

[169] Sheahan v. State Farm Gen. Ins. Co., 442 F. Supp. 3d 1178, 1195 (N.D. Cal. 2020).

[170] *Id.* at 1181–82.

[171] *Id.* at 1183–84.

[172] *Id.* at 1186.

[173] *Id.* at 1187–89.

purpose of reaching Plaintiffs" (and that the plaintiffs stated they needed no further discovery on the issue).[174]

So, that is a survey of nine cases spanning thirty years and seven states, in both state and federal court, and in a variety of constellations of plaintiffs and defendants. Sometimes the homeowner won; sometimes the insurer won; and one time, an insurance regulator won. But the common thread across all these cases is that while an insurer has no duty to estimate adequate coverage or to select coverage limits, an insurer cannot represent coverage as adequate if they have reason to know that coverage likely is inadequate.

B. THE CDOI REGULATION ON POINT-OF-SALE ESTIMATING ALGORITHMS IS IN HARMONY WITH THE CASELAW

The CDOI action adopting a regulation on point-of-sale reconstruction estimates is, of course, different from the caselaw in that CDOI acted on an industry-wide perspective. CDOI's work, however, comes to the same conclusion as the caselaw: an insurer has no duty to estimate adequate coverage or to select coverage limits, but an insurer cannot represent coverage as adequate if they have reason to know that coverage likely is inadequate.

Based on its market conduct investigation, CDOI concluded that the estimating tools were demonstrably "inadequate" and "result in insureds who believe that they are adequately covered . . . and who therefore may not take independent steps to establish policy limits for themselves" and thus constituted violations of:

1. CIC 780 prohibiting an insurer from misrepresenting the benefits of a policy.
2. CIC 1861.05(a) because insureds who selected coverage limits in these circumstances were not paying premiums accurate to the risk presented.[175]

CDOI then released the final text of proposed new regulations (and amended text of existing regulations) addressing a variety of causes of underinsurance, or assessing responsibility for underinsurance; the proposed regulations:

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[174] *Id.* at 1191.

[175] Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 1030.

- Required training of brokers and agents on how to estimate replacement value.
- Bolstered record keeping and record retention requirements.
- Provided minimum standards for estimates of replacement value.[176]

And in the accompanying administrative record, CDOI painstakingly detailed exactly what it was, and was not, doing:

- "No provision of this article shall be construed as requiring a licensee to estimate replacement cost . . . ."[177]
- "If a homeowner chooses to be underinsured, there is nothing in the regulation that prohibits it."[178]
- "The regulations provide the definition of estimated 'replacement cost,' thereby allowing the consumer to be 'informed.' The regulations are not related to the pricing of insurance policies nor do they mandate the type of coverage to buy. The regulations purpose is to make clear what the term 'replacement cost' estimate means."[179]
- "It is not the intent of the regulations to prevent licensees from making use of software tools. Instead, the regulations require that if a licensee uses a software tool, it takes reasonable steps to verify its reliability."[180]
- "[I]t is not the third party source that has the relationship with the insured or applicant, nor is it the third party source communicating a replacement cost estimate to an insured or applicant. In this regard, the licensee is required to take reasonable steps to assure that the tools he or she or it is using are reliable."[181]
- "[T]he proposed regulations prohibit licensees from escaping the responsibility not to make misleading statements to applicants or insureds by first having a third party source produce the misleading statement and then conveying it to the applicant or insured. In this situation, the licensee has indeed made a misleading statement, notwithstanding the fact that the misleading statement was produced on behalf of the licensee by another."[182]

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[176] *Id.* at 4–15.
[177] *Id.* at 1400.
[178] *Id.* at 1411.
[179] *Id.* at 1412.
[180] *Id.* at 1441–42.
[181] *Id.* at 1457.
[182] *Id.* at 1466.

- "[T]he proposed regulations are necessary to ensure that replacement cost estimates are complete and have a chance of being more accurate. In essence, the regulations merely set forth the various components of a dwelling that typically need to be replaced in the event of a total loss. The proposed regulations do not purport to ensure that all such estimates turn out to be absolutely accurate. The regulations do, however, proceed from the basis that it is a misleading statement to communicate an estimate that is incomplete and omits considerations of certain components of a dwelling known to require replacement in the event of a total loss. In other words, calling something a replacement cost estimate when what is being estimated is necessarily something less than what it could take to replace the structure is a misleading statement. Not a single commentator has called into question this basic premise, because it is so obviously true."[183]
- "Licensees who [] virtually ensure that the estimate they provide to an applicant or insured will be insufficient to replace the home in the event of a total loss, and yet describe the estimate as a replacement cost estimate, are necessarily making a misleading statement which they know or should know is misleading, and are therefore already committing a prohibited act under the Unfair Practices Act."[184]
- "The act in question here is calling something a replacement value estimate when what is being estimated is necessarily something short of what it would take to replace the home."[185]
- "This regulation requires that licensees verify the validity of the tools they are using to estimate replacement cost. . . . if they do use the vendors, they are required to verify that the sources and methods are kept current. Again, this is not an onerous requirement but, rather, one which any reasonable licensee should follow even in the absence of a regulation, given that an estimate based upon stale data would be an unreasonable action on the part of the licensee. . . . Third party estimates that are prepared on behalf of a licensee cannot be used by the licensee as a means of escaping responsibility for making a misleading statement . . . ."[186]
- "[I]t is a misleading statement to communicate an estimate of replacement cost estimate when it is incomplete and omits consideration of certain components of a dwelling known to require replacement in the event of a total loss. In other words, calling

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[183] *Id.* at 1466–67.
[184] *Id.* at 1472.
[185] *Id.* at 1479.
[186] *Id.* at 1486–87.

> something a replacement value estimate when what is being estimated is necessarily something less than what it could take to replace the structure is a misleading statement. Not a single commentator has called into question this basic premise."[187]

C. THE LINGERING JURISPRUDENTIAL QUESTION ABOUT BROADER INDUSTRY KNOWLEDGE

As reflected above, there largely has been an absence of any discussion in caselaw of what the industry knows about the accuracy of point-of-sale reconstruction estimation algorithms, the frequency of underinsurance, and the causes of underinsurance. Instead, in both the litigation and regulatory context, apparently either no one has asked for that data, or insurers have been successful in deciding not to present it.

Insurers certainly have the data. Insurers know which claims within their portfolios are homes requiring complete reconstruction, and for each of those homes, insurers know both what was the point-of-sale reconstruction estimate (if any) and the post-event incurred loss. Insurers know which losses were in catastrophes or not. Insurers know what demand surge pricing their insureds encountered.

The industry has never directly and unambiguously disclaimed having the data. Rather, the CDOI administrative record reflects that the industry position is more nuanced:

The National Association of Mutual Insurance Companies (NAMIC) testified:

- There was no "demonstration there's an underinsured problem."[188]
- "[T]here's nothing here that sets forth we received 24,000 complaints specifically about the fact that they were not provided certain information that they needed to make an informed decision about what insurance coverage limitation they have."[189]
- "[Y]ou have to see whether or not the Department has demonstrated that, if there is an underinsured problem, that that underinsured problem is lack – is because of a lack of knowledge in or it's unintentional . . . ."[190]
- "There hasn't been any statement that [current disclosures] aren't doing what they should do, and that is provide information to a

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[187] *Id.* at 1488.
[188] *Id.* at 1131.
[189] *Id.*
[190] *Id.* at 1132.

consumer for that person to weigh what they need and make that assessment themselves."[191]

- "[A]berrational cases . . . ."[192]
- " [A] few outlier situations . . . ."[193]
- "[This regulation] would actually regulate truthful nondeceptive communications between the insurer and the policyholder."[194]

In its written comments, NAMIC added, "the CDI has failed to tender any evidence to support the conclusion that a *significant number* of insurance consumers involved in the wildfires were actually underinsured, or if they were underinsured, it was because they were unaware of their homeowners' insurance coverage needs."[195]

The Personal Insurance Federation of California (PIFC) asserted:

- "[T]he Department jumps to the conclusion that inadequacy following a fire is directly the result of a deficiency in the original replacement value estimate. . . . The Department offers no actual evidence, specific facts, studies, or expert opinion to justify dramatically altering the process of estimating replacement cost."[196]
- "[T]here's always places of underinsurance, particularly after a disaster. . . . it's a pretty small percentage . . . ."[197]
- "With all due respect for the impact to any homeowner who has inadequate insurance at a time of loss . . . the number of insureds in that situation are few compared to the overall insured homeowner population and even to those who suffer a loss."[198]

In written comments, the Insurance Agents and Brokers Association of California (IABAC) argued:

- "The Commissioner has not provided any study or data to support this claim [that CDOI and the Legislature received 'a significant number of complaints by homeowners who lost their residences in the Southern California Wildfires of 2003."[199]

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[191] *Id.* at 1133.
[192] *Id.* at 1134.
[193] *Id.* at 1134–35.
[194] *Id.* at 1135.
[195] *Id.* at 1167.
[196] *Id.* at 1187.
[197] *Id.* at 1162.
[198] *Id.* at 1247.
[199] *Id.* at 1216.

And, in the written comments to proposed amended text, the Association of California Insurance Companies (ACIC) argued:

- "The department's Informative Digest for the proposed regulations asserts after the 2007 wildfires, homeowners 'learned that replacement value estimates made in setting coverage limits for their homes was [sic] too low, causing underinsurance issues to arise during efforts to rebuild or replace their references.' But this assertion is not backed up with facts."[200]
- "The only seemingly 'statistical' study added to the rulemaking file is the United Policyholders survey of 2007 wildfire victims. But the survey is not a valid study. The survey is not based on a scientific sampling of the 40,000 wildfire claims. The survey merits no consideration."[201]

Finally, outside of the CDOI administrative record, sometimes there is the assertion that insurance would have been adequate but for demand surge. As an example, consider what the American Property Casualty Insurance Association (APCIA) said in 2021:

> The insurance industry is encouraging property owners in high-risk areas to take steps now to mitigate potential losses. . . . This might include verifying if your homeowner's policy includes replacement cost coverage, which pays an amount necessary to rebuild the home with construction materials of like kind and quality and replace your personal belongings, without deducting depreciation. Also, checking to see if your policy includes optional features such as an automatic inflation factor, increased coverage to help comply with any new building code ordinances, or adding extended replacement cost coverage, which increases the coverage available to rebuild your home when labor and material costs skyrocket after a natural disaster.[202]

Essentially, a data fog has resulted in never reaching the underinsurance question: what did insurers know and when did they know it?

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[200] *Id.* at 1254.

[201] *Id.* at 1254–55.

[202] AM. PROP. CAS. INS. ASS'N, U.S. PROPERTY INSURANCE MARKET STRUGGLES TO BALANCE SUPPLY & DEMAND 2 (2021).

V. A NOVEL DATA SET LARGELY RESOLVING THE UNCERTAINTY

This article presents novel data on the accuracy of point-of-sale reconstruction cost algorithms in predicting reconstruction costs and by extension, informs on what insurers knew and when they knew it.

The data discussion must begin with a caveat: as referenced above, insurers have precise internal data both on which claims are reconstructions ("total losses" or "TLs") versus profoundly expensive repairs and on what was the point-of-sale reconstruction cost estimate for those TLs.[203] But that data is not public facing.

Pursuant to California Public Records Act requests, the data presented in this article is aggregated wildfire risk information from CDOI received on November 9, 2022.[204] The California Insurance Code requires an admitted insurer with written premiums above a specified threshold to submit a report with specified fire information on its residential property policies to the Commissioner every two years and requires the Commissioner to post a report on wildfire risk compiled from the submitted data.[205] In 2022, the Commissioner published his first report.[206] As that report described, its conclusions were based upon reports from each insurer with written California premiums of $10,000,000 or more regarding the insurer's residential property experience for years 2018 and 2019 and constituted data from seventy-six insurers representing 98.8% of the homeowner insurance market in California.[207] Spreadsheets of data analyzing six policy forms (types of policy) were formatted into fifteen separate worksheets reporting data both in statewide totals and at a zip code level.[208] The publicly posted report of the Commissioner did not include these worksheets, but from these worksheets, aggregated wildfire risk information was received by the author of this article from the California Department of Insurance on November 9, 2022, pursuant to California Public Records Act requests.[209]

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[203] Pursuant to CAL. CODE REGS. tit. 10, §§ 2695.182, 2695.183(i), CDOI has the authority to collect this data, but CDOI has not yet undertaken collecting data on these estimates.

[204] E-mail from Chao Lor, *supra* note 14.

[205] CAL. INS. CODE § 929 (2019).

[206] CAL. DEP'T OF INS., WILDFIRE RISK INFORMATION REPORTING (2022), http://www.insurance.ca.gov/0250-insurers/0800-rate-filings/upload/Wildfire-Risk-Information-Reporting-for-2018-and-2019-SB-824.pdf.

[207] *Id.* at 2.

[208] *Id.*

[209] E-mail from Chao Lor, *supra* note 14.

The first step in the analysis is to identify which incurred losses are dwellings requiring 100% replacement as opposed to partial dwelling repair. In other words, which losses are TLs? CDOI has not yet collected data on incurred losses with the TL classification. In lieu of available TL data, the assumption of this article is that within the set of policies with ERC, aggregating claims by the ratio of incurred loss to Coverage A limits will identify when an incurred loss is a complete reconstruction as opposed to a profoundly expensive repair.

Put simply, in policies with ERC, the selected Coverage A likely is the at or near the point-of-sale estimate of the cost of total reconstruction. And within these policies, the closer the incurred loss is to 100% of Coverage A, the more likely the loss was a TL as opposed to a profoundly expensive repair.

This is not an arbitrary assumption. An insured sometimes has the option (depending upon the policies of the insurer) to select Coverage A limits at, above or below the point-of-sale algorithm estimate of 100% replacement cost.[210] A study of NFIP insureds who have these options finds an insured will select coverage below the estimate ("partially insure") 20.45% of the time, will select coverage at the estimate ("fully insure") 67.86% of the time, and will select coverage above the estimate ("overinsure") 11.69% of the time.[211] NFIP policies do not have an ERC option.[212] When ERC endorsements require the underlying Coverage A be 100% of replacement cost,[213] partially insuring is not an option. These ERC

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[210] For example, using the California Department of Insurance's *Homeowners Coverage Comparison Tool*, one can see that an Allstate Deluxe Plus Homeowners Policy or a Fire Insurance Exchange (Farmers) Next Generation Homeowners Policy requires Coverage A with a minimum coverage limit of 100% of the point-of-sale estimate of replacement cost, while a USAA Homeowners Policy or a State Farm does not. *Homeowners Coverage Comparison Tool*, CAL. DEP'T OF INS., https://interactive.web.insurance.ca.gov/apex/f?p=143:16:0::NO (last visited Mar. 21, 2023) (access by selecting "Homeowner" from Form Type drop-down list; input Allstate Insurance Company in Company 1 field; input Allstate Deluxe Plus Homeowners Policy in Policy 1 field; input USAA Casualty Insurance Company in Company 2 field; input Homeowners Policy Program in Policy 2 field; select compare).

[211] Collier & Ragin, *supra* note 104.

[212] FEMA, NATIONAL FLOOD INSURANCE PROGRAM: FLOOD INSURANCE MANUAL 2-1, 3-32 - 3-33, 4-1 (Oct. 2022), https://www.fema.gov/sites/default/files/documents/fema_nfip-flood-insurance-manual-sections-1-6_102022.pdf.

[213] *See, e.g.*, ZURICH, EXTENDED REPLACEMENT COST ENDORSEMENT PROTECTOR PLUS POLICY 9-97 http://docs.nv.gov/doi/documents/home_policies/ZurichForms/E6047.pdf (insuring your dwelling to 100% of the replacement cost is a condition of ERC); CSAA,

endorsements are, not surprisingly, in policies that require Coverage A limits to be at least 'full' insurance. In policies that do not require Coverage A limits to be at least 'full,' there is no reason to purchase ERC unless or until Coverage A is topped off at 100%. That said, when an insured selects ERC, there is less incentive to also select Coverage A limits above the estimate from the point-of-sale algorithm. For these reasons, in policies with ERC, it is reasonable to conclude: (1) the Coverage A limits are full, and (2) the Coverage A limits are the amount that the point-of-sale algorithm estimates as fully insuring without over-insuring (in other words, the expected cost of a reconstruction).[214]

The resulting hypothesis is that when the incurred loss is 90% or more of Coverage A in ERC policies, the frequency of the incurred loss being a profoundly expensive repair approaches zero. To test the hypothesis, in policies with ERC, the frequency of incurred loss of at least 70% of Coverage A was aggregated:[215]

HOMEOWNER POLICY SPECIAL FORM-HO-3, SUPPLEMENT 11, https://interactive.web.insurance.ca.gov/apex/f?p=143:16:0::NO (available using the California Department Insurance Homeowners Coverage Comparison Tool)("Coverage A – Dwelling . . . is increased to 150% of the respective amounts shown . . . if the dwelling . . . [has] been insured . . . to 100% of the replacement cost"). Colorado law makes this same point. COLO. REV. STAT. ANN. §10-4-110.8(6)(a) (effective Jan. 1, 2024).

[214] Some confirmation of this conclusion is that when comparing policies with only RCV (eighty-nine claims) to policies with RCV and ERC (7220 claims), if the homeowner does not purchase ERC, then the frequency of incurred loss being less than the amount of Coverage A is 12.4%, less than if the homeowner only purchased RCV, and the depth of underinsurance is 12.8% less.

[215] *See generally* Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183.

In policies with both RCV and ERC, when comparing the incurred losses that are losses covered by Coverage A to amount of Coverage A, tabulating the number of claims within each of the following ratio brackets:			
Incurred loss as a % of Cov. A	# of Claims - non-CAT	# of Claims - CAT	# of Claims total
70-74	121	15	136
75-79	107	24	131
80-84	92	19	111
85-89	100	33	133
90-94	100	45	145
95-99	104	46	150
100-104	119	90	209
105-109	70	216	286
110-114	65	640	705
115-119	57	317	374
120-124	56	762	818
125-129	43	179	222
130-134	37	176	213
135-139	32	222	254
140-144	31	234	265
145-149	29	296	325
>150	155	3368	3523

This chart does not support the conclusion that there will be a cleanly identified ratio that will capture virtually all incurred losses that are reconstructions while capturing virtually no incurred losses that are profoundly expensive repairs. Or put another way, the selection of 90% is in some ways arbitrary. This chart does support a conclusion that a ratio roughly between 85% and 95% will capture virtually all incurred losses that are reconstructions while capturing virtually no incurred losses that are profoundly expensive repairs. But selecting 90% versus any other break point remains arbitrary. That said, however, this chart also supports the conclusion that, nonetheless, using 90% does not distort the utility of the data in better understanding underinsurance. This can be seen because even a ratio that is likely in error, such as 70% (in other words, assuming that an incurred

loss that is 70% of Coverage A will virtually never be a profoundly expensive repair) would lead to the conclusion that Coverage A is inadequate 89.925% of the time. To put the point colloquially, homes so rarely are profoundly but not totally destroyed that no matter where one draws the line for defining total loss, the conclusions do not change very much. That said, it always bears keeping in mind—insurers do have the data on which losses are TLs, so the below calculations could always be checked using that data.

Using the 90% definition of TLs leads to a series of conclusions about underinsurance.

MAJOR CONCLUSION 1: Point-of-sale estimates of the cost of reconstruction, even in the absence of a catastrophe-caused loss, underestimate the cost of reconstruction at least three-quarters of the time and when underestimates occur, they are, on average, at least one-third too low. If the loss occurs because of a catastrophe, then the frequency and depth of underinsurance is worse. Amongst homes fully insured and experiencing an insured loss requiring complete reconstruction (7220 claims), the frequency of the incurred loss being more than the Coverage A limit is 96.1%, with the average depth of shortfall of coverage being 54.9%. If the loss occurred in a catastrophe, then the frequency of the incurred loss being more than the Coverage A limit is 98.6%, with the average depth of shortfall of coverage being 57.1%. If the loss did not occur in a catastrophe, then the frequency of the incurred loss being more than the Coverage A limit is 77.4%, with the average depth of shortfall of coverage being 35.5%.[216]

The point-of-sale algorithm used to estimate reconstruction cost anticipates and accounts for projected demand surge, so in the instances of non-catastrophe loss events, the front-end estimate is over-stated. When both: (a) the insured's actual reconstruction costs exceed the post-event algorithm estimate of reconstruction cost, and (b) the insurer and insured do not reach an agreement on the amount of the incurred loss, the insurer-reported incurred loss will be the algorithm estimate and therefore will be understated. Consequently, the major conclusion may be, to an undetermined degree, understated.[217]

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[216] Amongst the policies with RCV only, the frequency of the incurred loss being more than the Coverage A limit is 83.5%, with the average depth of loss being 43.1%. If the loss occurred in a catastrophe, then the frequency of the incurred loss being more than the Coverage A limit is 85.0%, with the average depth of loss being 46.9%. If the loss did not occur in a catastrophe, then the frequency of the incurred loss being more than the Coverage A limit is 73.5%, with the average depth of loss being 20.5%.

[217] Across all homeowner policies in the data set, 88.04% of TLs were caused by a catastrophe. Eliminating GRC and ACV policies from the data set changes the frequency to 87.97%.

MAJOR CONCLUSION 2: ERC does not work as an adequate prophylactic for underinsurance. When a home with ERC coverage is underinsured, 48.97% of the time the depth of underinsurance is more than 50%. If a loss occurs in a catastrophe, policies with ERC still have an incurred loss that exceeds Coverage A plus ERC 62.01% of the time and by an average depth of 29.86%; if the loss is not in a catastrophe, then the incurred loss exceeds Coverage A plus ERC 43.04% of the time and by an average depth of 21%. The three most common levels of ERC are 120%, 125%, and 150%, accounting for 18.1% (1307 claims), 31.2% (2203 claims), and 41.76% (3015 claims) of all ERC policies, respectively. If a loss occurs in a catastrophe, then policies with 120% ERC still have an incurred loss that exceeds Coverage A plus ERC 95.13% of the time and by an average depth of 35.89%; if the loss is not in a catastrophe, then the incurred loss exceeds Coverage A plus ERC 56.78% of the time and by an average depth of 24.35%. If a loss occurs in a catastrophe, then policies with 125% ERC still have an incurred loss that exceeds Coverage A plus ERC 47.92% of the time and by an average depth of 29.08%; if the loss is not in a catastrophe, then the incurred loss exceeds Coverage A plus ERC 41.99% of the time and by an average depth of 18.42%. If a loss occurs in a catastrophe, then policies with 150% ERC still have an incurred loss that exceeds Coverage A plus ERC 59.68% of the time and by an average depth of 29.76%; if the loss is not in a catastrophe, then the incurred loss exceeds Coverage A plus ERC 33.78% of the time and by an average depth of 19.56%.[218]

MAJOR CONCLUSION 3: Demand surge does not explain underinsurance. Demand surge can be measured by the delta between incurred losses that do and do not occur in catastrophes. The delta is 23.8%. Since reconstruction cost estimates seek to incorporate demand surge pricing, if demand surge explained underinsurance, then underinsurance would not be seen, or at least would not be seen in any material frequency and depth, in policies with RCV and ERC (7220 claims). Across these policies, there is underinsurance 60.18% of the time, and by an average depth of 29.21%. Of these 7220 claims, 98.7% of these policies have at least 120% ERC.

THE IMPORTANCE OF THESE CONCLUSIONS: So, what does all this 2022 data demonstrate about what did insurers know and when did they know it? To answer that question, recall that insurers have (and have always had) precise internal data both on which claims are reconstructions versus profoundly expensive repairs ("total losses" or "TLs"), and for each of those claims on what the point-of-sale estimate of reconstruction cost was. What the above data analysis exposes is what the insurers' internal data

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[218] *See generally* Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183.

likely has reflected all along: (1) that point-of-sale estimates of the cost of reconstruction underestimate the cost of reconstruction at least three-quarters of the time, and when underestimates occur, they are on average at least one-third too low; (2) ERC does not work as an adequate prophylactic for underinsurance; and (3) demand surge does not explain underinsurance.

VI. SOLUTIONS

A *lot* of money is on the line. In its *2021 Insurance Fact Book*, for example, the Insurance Information Institute estimated that in the Gulf and Atlantic States in the United States, over 7.3 million single-family homes faced moderate to extreme hurricane wind risk, with a cumulative reconstruction value of over $1.8 trillion.[219] Verisk's 2019 Wildfire Risk Analysis estimates 4.5 million homes across the United States are at high or extreme risk from wildfire.[220] According to worldwide insurance broker, Aon, "[i]nsured losses from natural disasters hit a 10-year high of $42 billion in the first half of 2021, with the biggest loss related to extreme cold in the United States in February."[221] Because floods can happen without a hurricane—arguably every home is at some risk from flood.[222]

As seen in this article, insurance policies emphasize that RCV is not GRC. But, as one insurance trade magazine acknowledged, ERC is "somewhat similar to a guaranteed replacement cost policy."[223] That is troubling, as with some regularity, by raising questions (that public data did not answer) about the frequency of underinsurance, cause of underinsurance, and responsibility for selection of inadequate coverage, insurers have

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[219] INS. INFO. INST., *supra* note 28, at 92.

[220] *FireLine State Risk Report – California*, VERISK ANALYTICS https://www.verisk.com/insurance/campaigns/location-fireline-state-risk-report/ (populate "Please fill out the form to get access to our FireLine Risk Reports"; click "Access Reports"; select "California FireLine Risk Report, 2021") (last visited Mar. 21, 2023).

[221] Carolyn Cohn, *Natural Disaster H1 Insured Losses Hit 10-year High-Aon*, REUTERS (July 21, 2021, 12:31 PM), https://www.reuters.com/business/finance/natural-disaster-h1-insured-losses-hit-10-year-high-aon-2021-07-21/.

[222] Stephanie K. Jones, *It Doesn't Take a Hurricane to Cause a Flood*, INS. J. (May 25, 2021), https://www.insurancejournal.com/news/southcentral/2021/05/25/615635.htm (last visited Mar. 21, 2023).

[223] Bethan Moorcraft, *Three Insurance Coverages that Will Make a Difference in a Total Loss Wildfire*, INS. BUS. AM. (June 8, 2021), https://www.insurancebusinessmag.com/us/news/catastrophe/three-insurance-coverages-that-will-make-a-difference-in-a-total-loss-wildfire-257270.aspx.

avoided legal consequences for underinsurance in a policy "somewhat similar to a guaranteed replacement cost policy."[224]

Those outcomes are at odds with what data now indicates about what insurers know and when they knew it. Insurers have the data. The now public-facing data strongly suggests that what data shows: point-of-sale reconstruction estimates underestimate almost every time, and by on average of roughly 55%. The now public-facing data debunks the notion of adequacy but-for a natural disaster.

It may well be that the cause of the error rate in an insurer's point-of-sale algorithm cannot be identified; that it is akin to a "mathematical fallacy."[225] Yet, does that matter? Whether or not an insurer can understand *why* the algorithms are consistently and profoundly underestimating in its portfolio, each insurer can look at its own portfolio and know the algorithms *are* consistently and profoundly underestimating, and each insurer can calculate within its portfolio: (1) how often; and (2) on average by how much. Consequently, each time the insurer makes a point-of-sale reconstruction estimate of reconstruction cost, the insurer is presenting something as true that likely is not true.

In theory, insurers do not have to make a point-of-sale reconstruction estimate. But as a practicality they do, because the market has created that expectation. For an insurer, it may be a useful post-loss narrative to assert that no one knows the true reconstruction cost of a home better than the homeowner, but as seen throughout this article, that is not the point-of-sale narrative. Insurers themselves advise homeowners to be sure they have adequate insurance, and if they are not sure, to discuss it with their insurer. Or as the National Association of Insurance Commissioners puts the point in its adopted template consumer guide:

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[224] *Id.*

[225] Cecil B. Read, *Mathematical Fallacies*, 33 SCH. SCI. & MATHEMATICS 585 (1933) (defining mathematical fallacy as a mistake in an apparently sound mathematical proof; the end point of the proof is absurd and thus exposes a buried if sometimes unknown error. When "an apparently correct chain of operations leads to an absurd result" one must "admit the conclusion to be false; the problem is to find the flaw in the reasoning."). *See also* Viki Zeta & Andrew Hayes, *Mathematical Fallacies*, BRILLIANT, https://brilliant.org/wiki/mathematical-fallacies/#:~:text=An%20assumption%20or%20series%20of,is%20called%20a%20mathematical%20fallacy (last visited Oct. 7, 2023) ("An assumption or series of steps which is seemingly correct but contains a flawed argument is called a mathematical fallacy."); ARTHUR CONAN DOYLE, THE CASE BOOK OF SHERLOCK HOLMES 1011 (John Murray, 1927) ("When you have eliminated all which is impossible, then whatever remain, however improbable, must be truth.").

> Your insurance agent usually will help you decide how much dwelling coverage to buy when you first get homeowners insurance. Your coverage should equal the full replacement cost of your home. Note that replacement cost and market value are not the same. The market value, which includes the price of your land, depends on the real estate market.[226]

But this advice has pitfalls. As the General Counsel to the Independent Agents and Brokers of the West have explained:

> [I]nsurers . . . have an economic incentive to underestimate replacement costs. Simply put, the lower the replacement cost valuation, the lower the premium. And the lower the premium, the more likely an insurer is to sell its policies in a highly competitive marketplace. . . . Insurers . . . understand that total losses are very rare—a fact that makes this line of insurance generally very profitable for insurers, and also generally insulates all parties from the consequences of underestimating total replacement cost.[227]

This explanation correlates to the agent behaviors described *infra* by Wells and alluded to with some frequency in the caselaw and the CDOI administrative record—failure to input all the details about a property and failure to update reconstruction estimates and revisit premium at annual renewal.

What is an insurer to do? In theory, the best option would be a mechanical fix to correct for a known error rate, metaphorically putting glasses on the algorithm's short-sightedness. Assume the simplest case, meaning that the error rate is the same for all houses in all locations. If an insurer knows their algorithm generally underestimates by an average of 45%, then the insurer could adjust all its estimates up by 45%. But that theoretical fix does not work. As was alluded to in the *Sheahan* opinion, an insurer is in a box that hamstrings it from the mechanical fix; if an insurer acts unilaterally, then they may lose business to competitors, and if they coordinate with other insurers, then they may attract antitrust attention.[228]

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[226] NAT'L ASS'N INS. COMM'RS, *supra* note 24, at 4.

[227] Administrative Rulemaking File for CAL. CODE REGS., tit. 10, § 2695.183 at 1198.

[228] *See, e.g.*, Sheahan v. State Farm Gen. Ins. Co., 442 F. Supp. 3d 1178, 1193–95 (N.D. Cal. 2020).

The same crosscurrents also hamstring Verisk and CoreLogic from "putting glasses" on the algorithms.

In a jurisdiction that does not wish to revisit the rule that selection of coverage is the insured's responsibility, a possible solution is a combination of quality control and transparency. The quality control piece could take the approach of the already-adopted California regulatory reform, which corrects for the known causes of error. The regulation defines minimum components of an estimate, requires the estimate be updated annually, requires the person applying the algorithm to have at least minimal training, and requires the insurer to annually validate the methodology of the algorithm.[229] This regulatory approach then could be expanded in two ways. Validation requirements could be expanded to explicitly require insurers to make annual calculations of algorithm error rates and could require insurers to report those error rates to regulators (those same reporting requirements could reach the vendors of the algorithms).

The transparency piece could be a marketplace application of the reporting requirements. Both at point-of-sale and renewal, an insurer quoting RCV could be required to quote two premiums. The first quote would be the premium if the homeowner purchases Coverage A capped at the algorithm's estimated reconstruction cost. However, the insurer would be required to disclose its algorithm's error rate. The second quoted premium would be the premium if the insurer puts metaphorical glasses on the algorithm to correct for that insurer's known error rate.

The transparency piece needs to be a regulatory requirement, so no insurer is put at a structural competitive disadvantage by doing it. Additionally, the method of disclosure needs to meet appropriate standards for it to be effective.[230]

In a jurisdiction willing to revisit the rule that the selection of coverage is the insured's responsibility, the solution could be more straightforward. After putting responsibility for adequacy of coverage estimates on the insurer, the jurisdiction could adopt a rule that when an insured purchases RCV with a Coverage A limit equal to the insurer's point-of-sale estimate, then if the insurer's point-of-sale estimate (calculated however the insurer wishes) is in error (to the insured's detriment) by more than 5%, the policy is reformed to insure as if the policy was GRC.[231]

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[229] CAL. CODE REGS., tit.10, §§ 2188.65, 2190.2, 2190.3, 2695.180, 2695.181, 2695.182, 2695.183.

[230] *See generally* Klein, *supra* note 4.

[231] *See* Klein, *supra* note 5, at 109–10.

VII. CONCLUSION

There is a sentinel message every insurer and insurance regulator emphasizes to homeowners about homeowner insurance–it is really, really important to *fully* insure a home. But right now, the law ties the hands of both the insurer and the insured. After every natural disaster, stories abound about homeowners who thought they were fully insured, only to discover they were not. At which point, the finger-pointing (and perhaps the litigation) begins. All of this is avoidable. It should be avoided. It serves no one.