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Extrapolation: Projecting Defects and Damages Based on Limited Testing

What is Extrapolation and Do We Care?

Construction defect litigation is typically driven by the opinions of expert consultants. These experts base their opinions on data they collect during their observations. Experts often don't look at 100% of the locations in question; instead they inspect or test a "sample" of locations and "extrapolate" to the remaining "population" to draw conclusions about the entire project. Contrary to the popular opinion of many defendants, there is nothing inherently wrong with this.... At least not in theory.

Scientists in all fields, every day, make observations, develop hypotheses, make predictions, conduct tests, compare their findings against the hypotheses, and draw conclusions. This is called the Scientific Method and it's the foundation of modern technology. And scientists commonly test relatively small samples and extrapolate findings. It's perfectly acceptable... But only if the "sample" is genuinely representative of the population. Here's the rub: Real scientists, including real building scientists, are VERY careful about how they select the "sample." Real scientists know that a poorly selected sample is not extrapolatable. And they know about "biased data." Scientists know that biased data is insidious and ruins otherwise good work.

What we observe in construction defect litigation, is the use of biased data to extrapolate.

Understanding Extrapolation of Damages – Scientific Speak

Extrapolation is defined as the process of estimating an unknown value or quantity on the basis of the known range of variables. Extrapolation encompasses the statistical use by an expert witness of a valid and reliable representative sample to formulate an opinion that similarly situated residences and appurtenances may have common constructional defects. The

scope of the extrapolated notice must be narrow. Homes included within the scope of an extrapolated notice typically will be similarly situated only if they are part of a subset of homes within the development. In some cases, a subset of homes for extrapolation purposes may be those of a particular floor plan.

In other cases, depending on the nature or location of the defect, the subset of homes to which the extrapolated notice applies may be even narrower, such as homes of a particular elevation within a particular floor plan. Likewise, a valid extrapolated notice may be limited to a subset of homes in which a particular product or type of construction was used. In all cases, an extrapolated notice is valid only if it identifies the subset or characteristics of the subset to which it applies.

Why would an Association want to Extrapolate?

It is impossible for any association to afford to pay for its experts to invasively test every inch of a building. That is why courts allow parties to use limited invasive testing done by experts to support an opinion that the same conditions found in the limited testing exist everywhere on the buildings.

The trial Judge is the gatekeeper of the evidence the jury gets to hear at trial. As a general matter, the use and admissibility of expert testimony based on extrapolation supporting claims of damages caused by design and construction deficiencies is based on an evaluation by the Judge of:

1. The randomness of the sample
2. The size of the sample

Daubert

Certain factors may be considered to determine the reliability of expert testimony: (1) whether the theory or technique at issue can be and has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) whether there is a known or potential rate of error; (4) whether standards controlling the technique's operation exist and are maintained; and (5) whether the technique is generally accepted within the relevant scientific community.

The focus under the Daubert standard, of course, must be solely on the expert's principles and methodology, not on the conclusions that they generate. But conclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either Daubert or the federal rules of evidence requires a district court to admit opinion evidence that is connected to existing data only by the ipse dixit of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.

Plaintiff's Burden

The plaintiff has the burden of proving his damages by a preponderance of the evidence. Proof that damages have been suffered must be made by credible evidence to a reasonable certainty, and the amount of the damages must be proven at least to a reasonable probability. The party seeking recovery must establish the nature and extent of damages with reasonable certainty. The trier of fact may not base a judgment on speculation or guesswork, but must make a reasonable estimate of damage based upon the relevant data. The evidence must also establish a reasonable basis for the jury to compute damages.

Chapter 558 Impact

Unlike prior versions, the 2015 Chapter 558 version now requires claimants to identify the location of each and every alleged construction defect. While this seemingly subtle yet profound change to 558 might appear fairly innocuous to the casual observer, the potential economic repercussions of this change could serve to dissuade property owners from participating in the 558 process altogether. This is due to the fact that, whereas the prior iterations of Chapter 558 left open the possibility that a claimed defect might be fairly extrapolated throughout the entirety of the construction project, the 2015 version of 558 would appear to significantly limit – if not preclude altogether – the use of extrapolation, a concept that has gained much prominence in recent years, particularly in the context of high-rise condominium litigation.

While claimants are under no obligation to perform destructive testing or other testing for purposes of the pre-suit 558 notice, claimants would still arguably be required to at least examine all potentially defective locations in order to successfully meet the heightened notice requirements under 558. Even without necessity of destructive testing, the fact that claimants would be required to undertake such an extensive examination up front would almost assuredly result in exponentially greater pre-suit expert costs for the claimant. Given the recency of Florida's newest iteration of Chapter 558, it remains to be seen how the courts will interpret the new notice requirements or whether the courts will be taking a literalist interpretation and requiring claimants to identify the location of each alleged construction defect, an interpretation that would surely dissuade the more knowledgeable and sophisticated owners from participating in the 558 process. Nonetheless, prudent practitioners would be well advised to discuss with their clients the potential financial implications of the new Chapter 558 notice requirements in deciding whether or not to opt-out of the 558 process when preparing or negotiating the governing construction contract.

Opposing Extrapolation Claims

One key tool plaintiffs use in construction defect cases to increase the amount of damages claims is extrapolating the findings from a small sample set to the entire building or project. The defense can challenge this attempt to extrapolate if it is prepared. This approach to challenging a portion of the experts' opinions can serve to eviscerate the overall claim by the plaintiff or, at times, discredit the plaintiff's expert.

The defense experts need to be able to critically analyze and apply reverse logic to evaluate the opposing expert's sample size(s). Buildings vary by type and are creations designed by people; thus, no set formula or statistical algorithm may be appropriate. There is no cookie-cutter equation for "appropriate sample size" for testing a suspected building defect. Thus, in part, the size of a sample set is largely a function of the level of experience that the opposing expert has in designing/analyzing/ constructing buildings of a similar type.

Investigation of construction defects inherently involves multiple levels of sample size determination. However, this does not equate with what makes the evidence sufficiently reliable upon which to allow the trier of fact to accept extrapolation from the sample set to the full universe of the project.

Determining the sample size and how that sample set is applied to the greater universe requires a detailed analysis. For example, if you have a sample set of 33% of windows, what is that comprised of? Are there different types of windows, different window assemblies in different building types? Were there different designs for each building type? What about what crew performed the work? Further, what means and methods of selection, testing and evaluation of the sample size were employed? Thus, the only way to determine, and thus challenge, the significance of the size of a sample, and multiple levels of subsamples, is through careful analysis of a qualified expert who is intimately familiar with the building type(s) being investigated.

Courts will permit plaintiffs to rely on statistical methods in determining its damages. However, the defense must be able to hold plaintiffs' feet to the fire to limit this to what the law provides. The use of statistics necessarily yields an inaccurate calculation of damages. (*Bell v. Farmers Ins. Exch.* (2004) 115 Cal.App.4th 715, 750.) California courts have affirmed that the use of statistical sampling to determine damages *cannot* be used if based upon flawed statistical analysis. This issue was clearly addressed by the California Supreme Court decision in *Duran v. U.S. Bank National Association* (59 Cal. 4th 1172 (2014)).

Selection bias occurs when members of the population are chosen based on a nonrandom criterion or are selectively included or excluded from the sample group. In litigation, selection bias can occur when members of the population are allowed to opt out of the class. If plaintiffs with high-value claims opt out, the sample will be skewed toward low-value claims and may result in an unfairly low estimate of damages. Conversely, if the opt-outs represent mainly low-value claims or plaintiffs with no valid claim, the sample results will be unfairly inflated. Self-interest may motivate class members to act in ways that will maximize the class award. Thus, any nonrandom method of picking sample cases will potentially be skewed and therefore be an inaccurate estimate of the population average. If this issue can be exploited, the court may

understand it should exclude this extrapolation evidence. A sample that includes even a small number of interested parties can produce biased results. The impact of this error is magnified when the biased results are extrapolated to the entire population. Selection bias cannot be cured simply by increasing the size of the sample. "When a selection procedure is biased, taking a large sample does not help. This just repeats the basic mistake on a larger scale." *Duran*, supra, at 41-42.

Notably, other jurisdictions treat extrapolation evidence differently and will allow extrapolation evidence to be introduced to go to the jury. For example, in 2003, the Florida Supreme Court addressed the admissibility of extrapolation evidence in expert witness testimony under *Frye* in a products liability case and found that *Frye* only required the trial court to examine the general acceptance of the underlying science and experiments from which the expert witness obtained the data used to draw his conclusions, not the reasoning or conclusions themselves. *Castillo v. E.I. Dupont de Nemours & Co.*, 854 So. 2d 1264 (Fla. 2003). In *Castillo*, the court found that the science underlying each method was generally accepted, and therefore the opinions of the plaintiff's expert witness were admissible; however, any questions about how the expert reached his conclusion would go to the weight a jury should give to the opinions not the admissibility.

Thus, the defense will do well to work aggressively to demonstrate that the plaintiff cannot meet the requirements for the introduction of its "sampling" evidence at trial that the samples were fairly representative of the whole. Once this is undermined, the plaintiff will be hard pressed to convince the court of the relevance and proper foundation for this extrapolation claims. The cases examining the recovery of damages all refer to the certainty of the actual damages suffered by the aggrieved party. The Courts have found that speculative harm is insufficient to sustain this burden of proof. Thus, although courts have recognized statistical methodology of random sampling and extrapolation as a method for determining damages, the use of statistics does not dispense with proof of damages nor does it change substantive law regarding Plaintiff's burden to prove its actual damages.

Plaintiff may attempt to argue that, because statistical sampling and extrapolation are accepted methods to calculate damages, the court should simply accept the extrapolated quantities. This is not the case where the statistical sampling, and by extension, the extrapolated quantities, are flawed and substantially overstate plaintiff's damages. For example, if the plaintiff's randomized list has flaws, that can lead to selection bias, overstated defect rates, and margins of error, and therefore an overstated claim for damages, which should be rejected.

Claims Analysis: Setting Reserves and Analysis of the Defense Approach

For claims examiners, cost and efficiency are the key concerns. Thus, when consideration to challenging an expert, the defense team must have their strategy prepared early on in the case so that it can be determined how and when to challenge the other experts,

the costs involved, and whether it is necessary a part of the defense strategy. That means, an early budget must consider and include the potential actions to challenge an expert. This may include the need for statistical experts and early work by the statistician to enable the challenge to extrapolation evidence to be performed. Often times, in construction defect cases, defense team waits until the case does not appear it will settle to retain an engage a statistician. This may be a mistake and lead to a harder battle to preclude the extrapolation evidence. Having a statistician involved early on can help the technical construction experts in developing their opinions and position to bolter to claim of the improper sampling methods and sample sets.

If a claims examiner sets reserves prior to receiving a litigation budget from counsel, it is most likely based upon personal experience and/or “rules of thumb” for the particular jurisdiction – how much cases in that jurisdiction have settled for or where trial results have come down on a per home/unit basis and/or the amount the particular trade is contributing. It is therefore unlikely that a claims examiner would budget for challenges to the other sides’ experts. Thus, when it becomes apparent to counsel that challenging the other side’s experts, whether early or late in the case that issue should be brought to the examiner’s attention quickly and separately from the other aspects of the case. Counsel should have a budget/cost estimate for any actions or motions to affect the recommended challenge and be prepared to describe and discuss in detail what will be required to do so.

Most judges in most jurisdictions will be reluctant to prevent or limit a party from presenting its case via expert testimony – especially in technical cases such as construction defects requiring expert testimony. A claims examiner is likely to assume that the judge will require that such a motion be filed as a motion in limine (pre-trial motion) rather than one that can be resolved at an earlier stage of the case. However, if there is a basis early on in the case to challenge the other side’s experts, counsel and the claims examiner should discuss it. Of importance is to consider the goal of the disqualification motion:

-Is the goal to disqualify an expert or limit what subjects upon which the expert can testify?

-What percentage/how much of the damage claims will be eliminated by challenging the other side’s expert?

-Is the other side’s expert trying to introduce “junk science” into the case?

Like a motion to challenge an expert, when it becomes apparent to counsel that challenging extrapolation testimony, whether early or late in the case, that issue should be brought to the examiner’s attention quickly and separately from the other aspects of the case. With proper planning, and the retention of a strong defense expert team, challenges to the plaintiff experts can be an effective part of the defense strategy.

Do False Claims Act Cases Preview What's coming?

Statistical sampling involves the collection and analysis of data from a subset of the population of interest and then projecting those results (i.e., extrapolation) across the population. This methodology is routinely used in other areas of litigation and is regularly used by administrative agencies when estimating overpayment amounts. It has also been used to establish damages in FCA cases once liability has been established. However, in a new trend, FCA plaintiffs have begun to rely on sampling to prove liability

Michaels et al. v. Agape Community Senior Living

In *Agape*, relators allege that a chain of South Carolina nursing homes submitted fraudulent claims to Medicare and Medicaid for hospice reimbursement. According to the relators, *Agape* admitted patients to hospice even though the patients did not have a terminal illness with a prognosis of six months or less. During the relevant time period, the hospital chain submitted over 50,000 claims. While the case was still in discovery, relators proposed that their experts review a small percentage of the claims to determine what percentage of those claims were not medically necessary. The relators proposed then to extrapolate that percentage across the population of submitted claims to determine the number of false claims. The relators informed the court that the sampling method was necessary because its experts would cost between \$1,600 and \$3,600 to review the claims of a single patient, resulting in up to \$36 million of costs to review all relevant claims. The relators argued that it would simply take too much time and money to review such a large volume of data.

In future cases, lower courts may well agree with the Fourth Circuit's reasoning that the use of sampling is an evidentiary issue rather than a pure legal issue. If courts find that there is nothing about the FCA that precludes the use of sampling as a matter of law, plaintiffs and defendants will continue to fight over the use of sampling but rather than resolving the issue at the summary judgment stage it will likely be resolved on Daubert motions or at trial in a battle of experts.

Fourth Circuit declines to reach a ruling in *Agape* - February 2017

After granting the relators' petition for an interlocutory review of the district court's rejection of the use of statistical sampling to establish FCA liability, the Fourth Circuit ultimately declined to reach that issue in its opinion recently issued in *U.S. ex rel. Michaels v. Agape Senior Community, Inc.*

Many had hoped that the Fourth Circuit would provide clarity as to the question of whether statistical sampling should be allowed in FCA cases to establish liability over a large universe of potentially false claims. The district court had concluded that statistical sampling would be inappropriate to use in connection with consideration of whether the defendants improperly billed for hospice services provided to ineligible patients largely as a result of the individualized nature of the determination regarding any particular patient's eligibility for those services. The Fourth Circuit, however, defined the issue on appeal "as whether the district court may, in its discretion, allow relators to use statistical sampling to prove their case." Defined as such and not as a pure question of law, the Fourth Circuit found itself "constrained to dismiss that aspect of the relators' appeal as improvidently granted."