

# The Appraisal Journal

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# The Appraisal Journal

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## The Value of Information & Data

Dear Readers:

Welcome to the latest edition of the 2022 *Appraisal Journal*. As economists, appraisers closely follow events that can and do affect markets. Currently we find ourselves responding to the challenge of valuations in markets that are in flux due to the election cycle, international turmoil, inflation, and increased interest rates. With this in mind, the theme of this issue of the *Journal* is maximizing information and data resources in the present-day evolving real estate market.

The cover feature article, “Market Analysis Data Sources in Residential Appraising,” discusses why data is important to residential appraisers in their analyses and what data sources are available to help ensure a timely and accurate market analysis. The article supplies links to readers to enhance their research.

This issue also includes a Notes & Issues companion piece that leads readers through the research processes of the Lum Library, ensuring that appraisal professionals optimize their use of the Lum’s repository of ninety years of Appraisal

Institute knowledge. The issue continues with a new Economic Perspectives column. This edition of Economic Perspectives looks at the challenges of inflation for real estate professionals. It offers insights on factors currently at play in the economy, especially the implications of government-related inflation policies.

Finally, *Appraisal Journal* Editorial Board member and frequent contributor David Lennhoff, MAI, SRA, AI-GRS, offers a Notes & Issues discussion on writing *Journal* articles. This how-to piece for potential authors provides advice on everything from selecting a topic to conducting in-depth research on that topic to constructing a readable scholarly text.

*The Appraisal Journal* appreciates the contributions of its authors, and we encourage you to consider becoming a contributor as well.

Stephen T. Crosson, MAI, SRA  
Editorial Board Chair and Editor-in-Chief  
The Appraisal Journal

## Recent Court Decisions on Real Estate and Valuation

### No right to cross property of another riparian owner along non-navigable rivers

Illinois has more than 87,000 miles of rivers and streams within its borders, but only 32 rivers or streams are classified as navigable. A waterway is navigable if it naturally, by customary modes of transportation, is “of sufficient depth to afford a channel for use for commerce.” Navigable rivers and streams have public easements for access. Non-navigable rivers and streams are owned free from any burdens in favor of the public.

The Mazon River is a 28-mile-long non-navigable tributary of the Illinois River. Near the confluence of the Mazon River and the Illinois River, there are exposures of shale that contain large deposits of fossils. The area is deemed important to paleontologists and fossil collectors and was declared a National Historic Landmark in 1997.

Between 2015 and 2017, members of the Holm family (the Holms) bought two properties along the Mazon River. The first property was 33 acres of landlocked unimproved land with no road access, while the second property upstream had both river access and road access. The Holms operate a seasonal fossil hunting business on the properties. The Holms and their customers use kayaks from their upstream parcel to access the landlocked parcel. After collecting fossils there, the Holms load the fossils into their kayaks for transport further downstream until they reach a public right of way. In doing so, the Holms cross properties owned by other people (the Defendants) without their permission.

The Defendants signed written trespass notices forbidding the Holms from kayaking on the river through their properties, even calling the county

sheriff’s office to report them. In 2018, the Holms filed suit seeking an order declaring that they had the right as riparian owners to kayak along the entire length of the Mazon River, including through property owned by the Defendants.

The Holms filed for summary judgment. They noted that they were riparian owners because they owned land bordering the river. They argued that, as riparian owners, they had the right to access the entire surface water of the Mazon River for recreational use and enjoyment. The Defendants opposed the motion, arguing that the case relied on by the Holms was inapplicable because it was limited to lakes. Thus, while the Holms had the right to full use of the river on their property, they had no right to travel over that waterway without permission of each riparian owner, because the Mazon River is non-navigable.

The trial court initially agreed with the Holms, finding that they had the right to use the surface water to travel from their upstream property to their landlocked property and from there to the downstream public right of way. But the trial court then reconsidered its decision, agreeing with the Defendants that the case law relating to lakes was distinguishable. The Holms appealed, and the appellate court upheld the ruling in favor of the Defendants, so the Holms appealed once more to the Illinois Supreme Court.

In Illinois, when a landowner’s property is adjacent to a river or waterway, he or she owns to the center of the waterway. An owner of the land on both sides of the river owns the whole riverbed for the length of the river across the land. Riparian owners abutting the same body of water are equals, and no such owner may exercise its rights so as to prevent the exercise of the same rights by other owners.

In arguing that they had the right, as fellow riparian owners, to kayak the entire length of the non-navigable river, the Holms relied on an earlier case regarding the use of a 240-acre private lake for boating purposes. There, because of the difficulties involved in establishing and obeying definite property lines on the lake surface, and the impractical consequences of erecting fences or barriers on the lake, the court adopted a civil law approach that provides the owner of part of the lake bed the right to reasonable use of the entire lake surface, and applied that standard for all non-navigable lakes in Illinois.

The court was not willing to extend that decision's rationale to non-navigable rivers, however. Whereas the civil law rule applying to lakes is used by several jurisdictions, there is no comparable body of law for rivers. Moreover, the physical characteristics of the Mazon River, unlike those of a private lake, do not involve the difficulties or impracticalities related to establishing and obeying definite property lines. Lakes are sufficiently distinct from rivers in this regard.

The Holms also argued that while the common law does not grant the public a right to use non-navigable rivers or streams, the law treats riparian owners differently, because they are allowed the "reasonable use" of the water in the waterway. But the court rejected that argument. The "reasonable use" doctrine of water by riparian owners applies to direct consumptive or diversionary uses of the water. That doctrine says nothing about the right to use surface water to enter the property of another riparian owner without their consent.

Ultimately, while the court acknowledged the Holms' advancement of public policy arguments in favor of promoting the recreational use of Illinois' many non-navigable streams and rivers, it said that those arguments are best made to the legislature to consider the creation of a new public policy on riparian rights for non-navigable rivers and streams. The legislature is best suited to weigh the competing interests in

such a policy. But as a matter of common and civil law, the state supreme court declined the Holms' request to hold that they have a right, as riparian owners on a non-navigable river, to use the entire length of that waterway to cross the property of other owners without their permission. The trial court's judgment was affirmed.

*Holm v. Kodat*  
Illinois Supreme Court  
June 16, 2022  
2022 IL 127511

### **Disconnection of utility service is not a taking**

In 1993, Alan Schrock purchased a lot in the City of Baytown, Texas (City) for \$21,000. He planned to lease out a mobile home on the property, but at some point, utility bills for the City's water service to the property went unpaid. Until 2011, the City required landlords to either guarantee payment of utility bills or file a declaration stating that the landlord would not guarantee its tenant's utility bills. The City also had an ordinance prohibiting the connection of new utility service at properties encumbered by outstanding utility bills.

Although Schrock rented out the property, he did not file a rental declaration with the City until 2009, after the City had assessed him \$2,000 in past unpaid utility bills. After a hearing in which the amount was reduced, the City placed a lien on the property for the remaining \$1,157.

In 2010, one of Schrock's tenants requested a connection for utilities to the property, but the City refused, which caused the tenant to cancel the lease. It was undisputed that the City's refusal to connect service violated a state law that prohibits municipalities from conditioning utility service connections on payment of outstanding utility bills incurred by other customers residing at the same address. Schrock initially

tried to pay the outstanding bill with a check which the City refused to accept. Schrock returned to the city offices with cash but ultimately Schrock refused to pay the overdue bills. In the subsequent years, Schrock did not attempt to sell or lease the property, and the property eventually fell into disrepair.

In 2012, Schrock sued the City for inverse condemnation, alleging that the City's refusal to reconnect utility service violated state law and caused damage to his property. The trial court directed a verdict for the City, concluding that Schrock had failed to adduce evidence of a taking. The court of appeals reversed, though, concluding that fact issues existed as to whether the City had interfered in bad faith with Schrock's investment-backed expectations, which, in turn, presented some evidence of a regulatory taking. The Texas Supreme Court granted review.

Here, the parties disputed whether a claim of economic harm to property resulting from the improper enforcement of a municipal ordinance alleges a regulatory taking.

When the government takes, damages, or destroys private property for public use, it must provide compensation. The Texas Constitution requires compensation in more circumstances than the US Constitution—the federal Constitution requires compensation for “taken” property, and the state constitution requires compensation for “taken, damaged, or destroyed” property—but both provide a means of redress against the government. A regulatory takings claim is one in which the plaintiff complains that the government, through regulation, so burdened their property as to deny them its economic value or unreasonably interfere with its use.

Courts historically have limited regulatory takings claims to those arising directly from land use restrictions. The Texas Supreme Court has contrasted between an ordinance that directly regulates land use and one that does not, even though it could impair the use of the property as a result of its enforcement.

Here, the parties disputed whether a claim of economic harm to property resulting from the improper enforcement of a municipal ordinance alleges a regulatory taking. The City argued that the enforcement of municipal ordinances that do not themselves regulate property use cannot constitute a regulatory taking, even when such enforcement was improper as a matter of state law. In the present case, the ordinance was not a property use regulation, but rather a means of collecting outstanding bills for utility services provided to the property. Schrock responded that the City's improper actions caused a loss of rental income and a diminution in the property's value, even if the collection ordinance was not a land use regulation.

The court concluded that the City's ordinance in this case did not regulate land use. The ordinance permitted the City to refuse to connect utility service to the property until outstanding utility bills associated with the property were satisfied. The City's provision of utilities to the property was a service; its regulation of that service was not a regulation of the property itself. The court noted that the “true nature” of Schrock's claim lies in the City's wrongful enforcement of its ordinance, not in an intentional taking or damage of his property for public use.

While the court did not foreclose the possibility that enforcement of an ordinance that does not directly regulate land use could amount to a taking, the enforcement here did not. For example, a regulation with a condition of use so onerous that its effect is tantamount to a direct appropriation or ouster may impair a property so restrictively that it effectively takes the prop-

erty. But nearly every civil enforcement action results in a property loss of some kind. Property damage due to civil enforcement of an ordinance unrelated to land use, standing on its own, is not enough to sustain a regulatory takings claim. More concretely, an enforcement action that causes an economic loss to a property owner but allows for the reversal of that loss is not a constitutional taking.

Accordingly, the court held that the City's utility enforcement actions while violative of state law did not establish a regulatory taking of private property as a matter of law. The trial court therefore properly directed a verdict for the City on Schrock's inverse condemnation claim.

*City of Baytown v. Schrock*  
Texas Supreme Court  
May 13, 2022  
645 S.W.3d 174

### **No adverse possession of railroad right of way under STB jurisdiction**

Annette Cavanaugh-McCloud purchased a tract of commercial property in 1988 that consisted of a two-story building and an adjoining parking lot in the West End neighborhood of Atlanta. The property is located next to a former railroad right of way, which was previously owned by CSX Corporation. According to a boundary survey, the parking lot juts out beyond the property's limits and into the railroad right of way in a strip that varies in width from four to fifteen feet. The property and parking lot have been in this configuration since the property was purchased in 1988.

The adjacent railroad right of way was owned by CSX until it was deeded to the Georgia Department of Transportation (GDOT) in 2001. In March 2012, GDOT filed a verified petition with the Surface Transportation Board (STB) seeking to declare the railroad as formally aban-

doned under federal law. The STB approved GDOT's application in May 2012, provided that GDOT comply with various requirements, which were met in May 2013. In 2014, GDOT deeded the former railroad to Invest Atlanta which, along with Atlanta Beltline Inc., was developing the right of way as part of the Westside Trail portion of the Atlanta BeltLine Project.

Leslie McCloud-Pue, acting as the administrator of Cavanaugh-McCloud's estate, filed a petition to quiet title to the disputed strip of land, alleging that she had obtained title to the strip by adverse possession. Atlanta Beltline Inc. filed a motion to dismiss the petition for failure to state a claim or for judgment on the pleadings. The trial court granted the motion, concluding that McCloud-Pue's adverse possession claim was preempted by federal railroad law and that she could not receive any credit for the time she possessed the property until it was formally abandoned by the federal government in 2013. McCloud-Pue appealed.

On appeal, McCloud-Pue argued that the trial court erred in concluding that the adverse possession period could not run until the railroad was formally abandoned. She argued that while she may have been preempted from claiming the land outright while it was subject to federal regulation, her rights under Georgia's adverse possession statute still vested during that time such that her adverse possession claim ripened once the railroad was no longer subject to federal regulation.

To raise a successful adverse possession claim, a plaintiff's possession of the property (1) must be in the right of the possessor, (2) must not have originated in fraud, (3) must be public, continuous, exclusive, uninterrupted, and peaceable, and (4) must be accompanied by a claim of right. Additionally, a plaintiff must show adverse possession of the disputed property for a total of twenty years.

The preemption doctrine is a product of the Supremacy Clause, which invalidates state laws

that interfere with, or are contrary to, federal law. Congress has placed the power to regulate railroads with the STB. The STB specifically has exclusive jurisdiction over the construction, acquisition, operation, abandonment, or discontinuance of railway tracks. To remove a railway from the STB's jurisdiction, federal law requires that the rail carrier who intends to abandon part of its railroad lines file an application with the STB.

In a 2012 decision, the STB stated its position that state law adverse possession claims are categorically preempted by federal law. A contrary approach to preemption would permit landowners to carve off strips of railway right of way across the country for nonrail use, even though the STB had not authorized the right of way to be permanently removed from the nation's rail system. That result would undermine interstate commerce and the strong federal policy in favor of retaining rail property in the national rail network.

The Georgia Court of Appeals agreed with the STB's analysis. That reasoning extends such that the adverse possession clock cannot run while the land is under the STB's jurisdiction, because by definition, an adverse possession claim involves situations where landowners must take "exclusive" and "public" possession of the land. That exclusive and public possession requirement means that allowing adverse possession time to run while the land is still under STB's jurisdiction would allow private claimants to take measures that might restrict maintenance on the railways as well as limit the railways' ability to conduct rail service. Also, the entire portion of a railway right of way must be presumed to be necessary for railway operations.

Similarly, the STB's position mirrors the reasoning that Georgia courts have applied when examining adverse possession claims against land owned by the state. State law provides that adverse possession claims cannot be made against property owned by the state, so adverse posses-

sion time does not run while the land is owned by the state, a county, or a city.

Accordingly, the court concluded that the time period for adverse possession prescription cannot run against railway land under the STB's jurisdiction. As a result, the allegations contained in McCloud-Pue's complaint affirmatively show that she cannot maintain a valid claim to the property because she cannot show valid adverse possession of the property for the requisite amount of time. The trial court's dismissal of her quiet title petition was affirmed.

*McCloud-Pue v. Atlanta Beltline Inc.*  
Georgia Court of Appeals  
June 14, 2022  
874 S.E.2d 482

### **Wind turbines taxable as real property but associated equipment is personal property**

Wind Colebrook South LLC (WCS) owns and operates a wind turbine facility on two parcels of land in Colebrook, Connecticut (Town). The facility is the first and only full-scale wind-to-electricity generation facility in Connecticut and consists of two 2.85-megawatt wind turbines controlled by a remote computer system stored on one of the parcels.

The turbines collectively weigh more than 200 tons. Each turbine includes a tower, a hub, a nacelle, and a rotor with three blades. The towers are 328 feet tall and contain a control panel and other equipment accessible through an exterior door at the base. Each turbine is mounted on a concrete foundation 58 feet in diameter and 9 feet deep. The turbines were completed in October 2015 and began operation in November 2015, with an expected useful life of about twenty years. WCS agreed to decommission them at the end of their life expectancy at an estimated cost of between \$1.65 million and \$3.2 million.

The Town first taxed the turbines on its grand list in October 2015, having determined that the turbines should be taxed as real property. Afterward, WCS filed its 2015 declaration of personal property, reporting the value of its fixtures and equipment at \$9.6 million, with no supporting information to explain the basis for that value. The Town's assessor determined that WCS's proposed valuation of that property must have included the turbines, so she did not accept the reported valuation. The Town hired an appraiser experienced in valuing energy production facilities to appraise the properties. The resulting fair market value of \$13,300,100 was used on the Town's grand list through 2018.

WCS challenged the Town's assessment by appealing to the Town's board of assessment appeals, claiming that the assessor improperly overvalued the property and misclassified the turbines as real property. Further, because the turbines were declared and assessed as personal property, WCS was subjected to double assessment and taxation by the Town's assessment of the turbines as real property. The board denied WCS's appeal, and WCS appealed to the trial court.

In its appeal, WCS renewed the claims it raised to the board, and introduced testimony from an appraiser. WCS's appraiser valued the property using the cost and income approaches and by treating the turbines and equipment as personal property. He determined the value of the property as a whole—real and personal property—was \$9,850,500.

The trial court concluded that the Town properly classified the turbines as real property because they were structures or buildings within the contemplation of the tax statutes, and further concluded that the associated equipment was real property. Given that conclusion, the court rejected WCS's appraisal because it treated the turbines and equipment as personal property. WCS appealed.

In Connecticut, both real property and personal property are subject to tax, but under differ-

ent statutory provisions. Real property includes "dwelling houses," "buildings used for business," and "warehouses, silos, and all other buildings and structures." Personal property includes "machinery used in mills and factories, cables,

The trial court concluded that the turbines were suitable for occupancy and storage, based on the undisputed fact that there was enough room in the interior of the base for several individuals to be present at one time.

wires, poles... and other fixtures of water, gas, electric, and heating companies." Neither definition expressly includes turbines. WCS argued that the turbines are "machines," because they are comprised of components expressly identified in that statute, such as cables, wires, and poles. WCS also argued that the turbines have none of the defining characteristics of "structures."

The Connecticut courts have previously defined "building" in this context as a constructed edifice designed to stand permanently, enclosed by walls and serving as a dwelling, storehouse, factory, shelter for animals, or other useful structure. Although a building is always a structure, not all structures are buildings. The trial court concluded that the turbines were suitable for occupancy and storage, based on the undisputed fact that there was enough room in the interior of the base for several individuals to be present at one time. The turbines are also "virtually permanent" given their construction and the high cost of decommissioning them. Based on those factual findings by the trial court, the state supreme court agreed that the turbines were buildings, properly characterized as real property.

WCS also argued that the turbines were fixtures of a company engaged in the production of electrical energy, and thus were personal property. The court agreed with respect to the equipment associated with the turbines, but disagreed as to the turbines themselves. Since the turbines, as constructed, were not once personalty that became realty through physical annexation to the land, they are not fixtures at all.

The court did conclude, however, that the trial court made one error. The trial court rejected WCS's appraisal entirely because the court concluded that the turbines and the associated equipment were real property. But the supreme court found that only the turbines were real property; the associated equipment was, contrary to the trial court's conclusion, personal property. Accordingly, the supreme court remanded the case for further proceedings on the question of overvaluation but affirmed the trial court's conclusions as to the classification of the turbines.

*Wind Colebrook South, LLC v.  
Town of Colebrook*  
Connecticut Supreme Court  
August 2, 2022  
278 A.3d 442

### Early childhood center entitled to exemption as a “seminary of learning”

The Minnesota Constitution provides that “academies, colleges, universities, and all seminaries of learning... shall be exempt from taxation.” Under the Rainbow Early Education Center (Rainbow) petitioned for a property tax exemption, claiming status as a seminary of learning for its property in Goodhue County (County). Rainbow is a childcare center operating as a 501(c)(3) nonprofit. Rainbow provides care for children beginning as infants and continuing through age 12, although most stop by age 10.

Rainbow's property contains eight classrooms divided between infants, toddlers, preschoolers, and school-age children. The classrooms contain all the typical features of a classroom, including desks and whiteboards. The facility also has four playgrounds.

In terms of its curriculum, Rainbow manages activities through individual written lesson plans based on the age group of each child. Rainbow performs written evaluations of the children in its care, and those evaluations are recorded on state forms. Rainbow is also licensed by the State of Minnesota as a childcare facility. Rainbow also participated in the Parent Aware program established by the state, which provides rating, certification, and information services for early childhood care. Rainbow has a four-star rating, the highest possible rating, like the early childhood program in the local public school district.

In 2019, Rainbow applied for an exemption from property taxes as a seminary of learning. The application indicated that the principal use of the property was providing early childhood education for ages 6 weeks to 12 years. But the county assessor denied Rainbow's application, stating that the property did not meet the minimum requirements for property tax exemption as a public charity—a separate exemption not raised by Rainbow.

Rainbow challenged the denial in the state tax court. Both parties sought summary judgment. Rainbow presented evidence about its facilities and programming, and that evidence was unopposed. The County provided no evidence of its own and did not argue that Rainbow was categorically ineligible for a tax exemption. Rather, the County asserted that to grant Rainbow's application for tax exemption as a seminary of learning, there would need to be evidence from the local school district proving that the programming paralleled offerings at the local public schools.

The tax court denied summary judgment to Rainbow and granted it to the County. The court found that Rainbow had to prove it reduced the

burden of public education by providing education that the public school system would otherwise have to provide, and prove that it provided a curriculum comparable to a public school. Because Rainbow did not provide supporting testimony from the local school district, the court held that Rainbow failed to meet its burden. Rainbow appealed.

The term “seminary of learning” is not defined by statute or in the state constitution, but historically a seminary simply meant an educational institution. In the context of secondary and post-secondary institutions, the state supreme court held that the purpose of the exemption was to lessen the tax burden imposed on Minnesota’s citizens by supporting institutions that provide at least some substantial part of the educational training that otherwise would be furnished by public schools. Vocational training programs, for example, failed that test because they did not teach enough different subjects to constitute a sufficiently general education. The test applied by the tax court here was consistent with those earlier cases.

The state supreme court disagreed with the tax court, though, that Rainbow had failed to show it was entitled to the exemption under that test. The tax court had focused on the lack of testimony from the local public schools, but this focus was on the wrong part of the inquiry. The test recognizes a policy goal of reducing public burden, but it does not require direct evidence of that goal. Rather, a quality general education will be assumed to reduce the public burden absent evidence to the contrary.

The tax court substantially increased the burden on the educational institutions. The County argued, and the tax court agreed, that the only way to demonstrate that a private educational program reduces the burden on the public school district is to have testimony from a local school official that the challenged program meets the standard. But that would condition a party’s ability to obtain an exemption not on the quality or

nature of its programs but on the willingness of disinterested public officials from an unrelated organization to involve themselves in litigation between counties and third-party educational programs. While such testimony may be helpful, the state supreme court held that it is certainly not required.

Properly framed, Rainbow presented uncontroverted evidence that it teaches a broad, general, and comprehensive education. Accordingly, Rainbow was entitled to summary judgment, and the tax court erred by denying it to Rainbow.

*Under the Rainbow Early Education Center v.  
County of Goodhue*  
Minnesota Supreme Court  
August 24, 2022  
978 N.W.2d 893

### **Lay property owner not qualified to testify as an expert about comparable sales**

In 1969, Phyllis and William Rausch bought a house on 20 acres of farmland in Linn County, Iowa. The family farmed the land and lived on it until 1977, then they converted the property to a rental property. The Iowa Department of Transportation (IDOT) condemned part of the land in 1990 and left the Rausches with 9.57 acres. The house was subsequently removed. The land is now vacant, undeveloped, and adjacent to a divided four-lane highway. The property is zoned commercial and is located near a retail development.

The property is owned by the family trust (Trust), which will eventually be evenly divided amongst the Rausches’ five children, one of whom is James Rausch. James had lived on the property, but then worked as a restaurant manager in Ohio, Minnesota, and Tennessee. Eventually he moved back to Iowa to take care of his mother, handling her bills and managing her assets, including 700 acres of farmland. When

Iowa's courts have long allowed landowners to testify about the value of their own property. Even if the owner is not an expert, the rule is based on the presumption that owners will be familiar with their own property and know its value.

Phyllis Rausch sold 76 acres of land, James studied other properties in the area to help decide where to reinvest the money; however, he is not an appraiser or a real estate agent.

In 2017, the City of Marion (City) condemned 0.63 acres of the Trust's property to extend a road to connect to the highway, which also required a temporary 0.76-acre construction easement. The road extension split the property into two parts separated by Armar Drive: a small triangular section (0.61 acres) and a larger section (8.33 acres). The Trust retained an appraiser who opined that the loss in value was \$280,625. The compensation commission awarded \$403,000 as just compensation. Nevertheless, the Trust was dissatisfied with the result and sought \$1,000,000 in damages. The Trust did not retain an appraiser willing to testify to a higher amount than \$403,000.

In the trial court, after the Trust failed to designate an expert, the City designated an expert who opined that just compensation was \$82,900, and the City moved to exclude any expert witnesses from testifying on behalf of the Trust. The court granted the City's motion to exclude.

The Trust then identified James as a witness. By request of the City, the court prohibited James from testifying about comparable sales because such testimony would not be based on his personal experience or familiarity with the transactions, and thus his testimony would be based on hearsay. As an offer of proof, which preserves evi-

dence for appeal, James described his investigation into other sales using the assessor's website to review public real estate records. He then compared each comparable property to the Trust's property on various factors.

At trial before the jury, James testified as an owner of the property, but the court renewed its ruling that James could not testify as to the comparable sales. So, James was limited to describing what he believed to be the value of the property and what he looked at to come to that conclusion. The jury awarded the Trust \$82,900 in damages, the amount recommended by the City's appraiser. The Trust appealed.

Iowa's courts have long allowed landowners to testify about the value of their own property. Even if the owner is not an expert, the rule is based on the presumption that owners will be familiar with their own property and know its value. Owners acquire knowledge of property values through life experiences in managing, owning, and enjoying their property. But the courts are divided on whether lay owners can testify about comparable sales to support their valuations. The question here was whether James was qualified to establish that three sales of commercial property he identified were comparable.

The supreme court agreed with the Trust that the trial erred in some respects. For example, the court erred by excluding James's testimony of comparable sales on hearsay grounds, because there is a hearsay exception for public records and records of documents that affect an interest in property. The court also found that James met the requirement for personal knowledge about the sales, because he reviewed the public land records and personally visited the properties. That gave him firsthand knowledge of the facts to which he was testifying, and the trial court erred by concluding James lacked personal knowledge because he was not the buyer or the seller in those transactions.

The supreme court did not, however, agree fully with the Trust. In a matter of first impression, the

court held that a lay opinion is permissible because the owner is presumed to know their own property, but only under some circumstances can that owner testify about specific comparable sales. Whether owners can expand their testimony beyond their lay opinion and testify about what they believe are comparable sales depends on the basis for that testimony. An owner who relies on technical or specialized knowledge to describe the comparability of properties or make adjustments to them “has moved into the realm of expert testimony and must qualify as such.” That is especially true of commercial property.

Here, James was not an expert. Property owners’ conclusions as to value are admissible not because the owners are experts but because they are owners. But here, the court was presented with “a former restaurant manager’s attempt to rely on sales of developed commercial property to support his valuation of his own undeveloped land.” Because James was not an expert, the trial court properly prohibited him from testifying about specific comparable sales. The trial court’s judgment was affirmed.

*In re Condemnation of Certain Rights  
in Land for Extension of Armar Drive*  
Iowa Supreme Court  
May 6, 2022  
974 N.W.2d 103

### **Maintenance and use of buildings are clear notice of adverse possession**

Alan and Lynne Sprinkle have owned forty acres of undeveloped land in Dale, Indiana, since 1970. Lot 83 in the Yellowbanks Recreational development sits adjacent to the Sprinkles’ property. A house was built on Lot 83 in 1980, and a number of sheds were constructed in 1990.

The deeds for the Sprinkles’ property and Lot 83 overlap, forming a right triangle on the edge of the Sprinkles’ property that is 17 feet wide and

185 feet long. The sheds and a corner of the house on Lot 83 encroach on the Sprinkles’ property. One of the sheds is entirely on the Sprinkles’ acreage and another shed was almost entirely on the Sprinkles’ acreage.

Kevin Kern bought Lot 83 in 2003. Kern believed he was purchasing the house and the sheds. In 2004, Kern discovered that one of the sheds was not on his property and that another shed was not entirely on his property. Kern stopped using the shed that was not on his lot. Kern believed that the owner of the Yellowbanks Recreational development owned the property where the sheds encroached, but after finding out that they did not own the property, Kern made no other attempts to discover who owned the property. Kern maintained the property by clearing brush and mowing the area around the sheds while he owned Lot 83.

Julie and Bruce Card purchased Lot 83 from Kern in 2014. Prior to the sale, Kern gave the Cards a survey completed in 1999, showing the house entirely within Lot 83’s boundaries. The sheds were not depicted on the survey, but the Cards believed that they were buying the land around at least one of the sheds. All taxes on the house and sheds were paid by Kern and the Cards.

In 2009, the Sprinkles had their parcel classified as “forest and wildland,” which provides property tax incentives. In 2018, the state reinspected the property as required by statute to maintain the classification, and using a GIS-enabled tablet, the inspector and the Sprinkles discovered that the Cards’ house and sheds were encroaching on the Sprinkles’ property. A survey later confirmed that fact.

The Sprinkles demanded that the Cards remove the sheds and their house from the property, but the Cards declined, maintaining that Kern had satisfied the elements of adverse possession, and that they had obtained title to the disputed property from Kern when they purchased Lot 83.

In April 2019, the Sprinkles filed suit against the Cards for civil and criminal trespass. The

Cards filed counterclaims asserting ownership over the property and seeking to quiet title. After a bench trial, the court concluded that the Cards proved all but the notice element of their adverse possession claim. The court entered judgment in favor of the Sprinkles, and ordered the Cards to remove the portion of their house and sheds located on the Sprinkles' property. The Cards appealed.

Among the elements necessary to prove an adverse possession claim in Indiana is "notice," i.e., the claimant's actions with respect to the land must be sufficient to give actual or constructive notice to the legal owner of the claimant's intent and exclusive control. Once the claimant has sustained his burden of establishing the requisite elements of adverse possession, fee simple title to the disputed land transfers to the possessor by operation of law and the original owner's title is extinguished.

On appeal, the Cards argued that the trial court's factual findings did not support its conclusion that the Sprinkles lacked notice of Kern's intent and exclusive control over the disputed property. The appellate court agreed.

Generally, maintenance activities in a residential area are a factor in a property dispute, but standing alone, they are not sufficient to support a divestiture of property based on adverse possession. But in this case, Kern used and maintained structures that encroached on the disputed property. And the character of Lot 83 was both residential and recreational, while the Sprinkles' property was wooded acreage. Only Kern and the Cards mowed and maintained the area around the house and the sheds, which clearly delineated the wooded and residential areas.

Moreover, Kern owned, maintained, and used the house and sheds for over ten years. The court of appeals noted that "it is hard to imagine a more open and notorious use of property than using and maintaining a home or storage building constructed on that property." The fact that the Sprinkles did not realize that a corner of the

house and the sheds rested on their deeded property does not negate Kern's adverse possession of the property.

For those reasons, the court concluded that the Cards proved that title to the property that the house and sheds sit upon transferred to Kern, because he adversely possessed them for the requisite ten years. Kern's title transferred to the Cards in 2014. Thus, the trial court erred by denying the Cards' counterclaims to quiet title to the property. The lower court's ruling was reversed.

*Card v. Sprinkle*  
Indiana Court of Appeals  
August 17, 2022  
2022 WL 3417954

### High-speed rail developer has eminent domain authority

Texas Central Railroad & Infrastructure Inc. (Texas Central) was formed in December 2012, and in January 2015, it amended its articles of incorporation to state that it was organized "to plan, build, maintain, and operate an interurban electric railroad." In September 2017, Integrated Texas Logistics Inc. (Texas Logistics) was formed "to construct, acquire, maintain, or operate lines of electric railway between municipalities of this state for the transportation of freight, passengers, or both."

Texas Central and Texas Logistics (collectively, TCR) are jointly working to build a high-speed railway between Houston and Dallas. Texas Central is primarily responsible for construction, including preconstruction activities related to design and right of way acquisition. Texas Logistics is to procure and maintain the rail infrastructure and rolling stock.

In January 2016, Texas Central began surveying land in connection with proposed routes for the project. James Miles owns 600 acres of property in Leon County, Texas, along the project's

preferred route. The planned railway would essentially bisect Miles's property with a 100-foot right of way. Miles refused to consent to a survey of his property and sued Texas Central for declaratory judgment that it lacked eminent domain authority. Texas Central counterclaimed for declaratory judgment that it is a railroad company and electric railway with eminent domain power; it also sought to enjoin Miles from interfering with its access to the property for survey purposes. Texas Logistics intervened in the suit and sought similar relief.

At the time of the summary judgment proceedings, TCR had spent over \$125 million on the project and completed over 2,000 surveys, executing hundreds of option contracts to purchase needed land along the route. However, TCR did not own any railroad tracks or rolling stock, had not constructed any train stations, and had secured only a small fraction of the necessary financing for the project. So, while TCR contended it satisfied the statutory requirements of a railroad company and an interurban electric railway company, Miles contended that TCR's plans were too speculative and relied on obsolete statutes.

The trial court granted Miles's summary judgment motion, declaring that neither Texas Central nor Texas Logistics qualified as a railroad company or an interurban electric railway company. TCR appealed, and the court of appeals reversed, holding that TCR had eminent domain power as both a railroad company and an interurban electric railway company. Miles appealed to the state supreme court.

In Texas, the power of eminent domain must be conferred by the legislature. At issue here are two legislative grants of eminent domain authority: a "railroad company" may exercise eminent domain power, including for purposes of surveying a route for a proposed railway, as can a corporation chartered for the purpose of constructing, acquiring, operating, or maintaining lines of electric railway between municipalities in the

state. The latter category is designated as an "interurban electric railway company." TCR has eminent domain authority if it qualifies under either provision.

The state supreme court found the interurban railway category dispositive, leaving the issue of whether the companies constituted a railroad company for another day. Looking at the plain language of the statute, the court noted that the rail project at issue plainly qualifies, as it is an electric railway between Houston and Dallas for the transportation of passengers. But Miles

[No provisions in the code place limits](#)

[on the speed a train may reach in traveling](#)

[along the anticipated railway, the size](#)

[of the train, or the distance between the](#)

[municipalities that the railway connects.](#)

asserted that modern high-speed rail cannot be shoehorned into the concept of an interurban railway law originally enacted in 1907. Miles argued that the concept of an interurban electric railway is a technical term that describes a specific kind of train: an urban trolley car that ran throughout cities in the late nineteenth and early twentieth centuries.

The court disagreed. Viewed as a whole, the statute is not limited in the way that Miles contends. No provisions in the code place limits on the speed a train may reach in traveling along the anticipated railway, the size of the train, or the distance between the municipalities that the railway connects. Moreover, the statutory scheme clearly envisions more than a "lumbering trolley car," since it allows right of ways of up to 200 feet in width and embankments. Those provisions are "wholly compatible" with the scale of the project

at issue, which will require 40-foot embankments and 100-foot right of ways. Thus, while it is true that some of the statute's provisions contemplate an interurban operating across the streets of a municipality, and while it is true that the modern conception of high-speed rail was not developed in 1907, the plain language of the statute nevertheless applies.

Miles also argued that, even if a high-speed rail operator could be an interurban electric railway company, Texas Central does not qualify simply by filing a charter purporting to be one. Rather, a private entity asserting eminent domain authority must demonstrate a "reasonable probability" that it will produce the public good for which such authority is sought. That probability here, Miles argued, was very low.

While the court agreed that merely claiming to be an interurban railway in a charter is not sufficient, there was no dispute that TCR was actually chartered for the statutorily authorized purpose of constructing, maintaining, or operating lines of electric railway between Texas municipalities and that they had engaged in activities in furtherance of that purpose. The reasonable-probability-of-completion test Miles proposed would constitute an improper judicial intrusion into the legislative sphere. Moreover, the court agreed with Texas Central that such a test would necessarily apply to both private and public entities exercising condemnation authority and would potentially imperil a number of large public infrastructure projects.

Ultimately, the state supreme court concluded that Texas Central and Texas Logistics have eminent domain authority under Texas law. The court of appeals' judgment was affirmed, and the trial court's ruling in favor of Miles was reversed.

*Miles v. Texas Central  
Railroad & Infrastructure Inc.*  
Texas Supreme Court  
June 24, 2022  
647 S.W.3d 613

### **Ground lease provisions not determinative of casino property value**

In 2008, PPE Casino Resorts Maryland LLC (PPE) sought to apply for a casino operator's license. As part of a complete license application, PPE needed to demonstrate it had the rights to a site on which to build a casino. After several unsuccessful attempts, PPE reached an agreement with Simon Property Group that gave PPE the right to build and operate a casino on a 9.28-acre site adjacent to the Arundel Mills Mall for a 99-year term.

The agreement was memorialized in a document titled "Ground Lease." By agreement, PPE would pay Simon a base rent of \$2 million per year that would increase 1% annually, plus 1% of gross retail sales and revenue of the casino, less an annual credit of \$1.5 million. The lease also ran with the land.

PPE was ultimately granted a casino license and built a casino on the property, which opened in June 2012. The construction triggered a new assessment of the property, which was determined by the Supervisor of Assessments (Supervisor) of Anne Arundel County (County) to be \$240.96 million for 2012 and 2013, and \$279.4 million for 2014. The Supervisor took the position that the terms of the ground lease represented the best and most accurate valuation of the property. Thus, all of the payments required under the ground lease were reflective of real property value.

PPE disputed the assessment. According to PPE, the ground lease encompassed a broader business relationship between PPE and Simon, and the payment streams encompassed intangible values beyond the value of the real property itself. PPE argued that the assessment should consider the ground lease, but also look to comparables sales of similar land that exclude intangible or business value. PPE contended the value should be \$172.4 million to \$191.45 million.

The state tax court largely agreed with PPE and assessed the value of the property in line

with PPE's proposed valuation. In reaching its result, the tax court asked directly whether a document self-titled "Ground Lease" should be used as a measure to assess the fair market value of the land for ad valorem tax purposes. The tax court analyzed the document and noted that it had features common in ground leases and business arrangements. The tax court observed that the payments under the lease were uncertain and depended on business outcomes that could not be predicted with precision. Given the only definite payment was \$2 million, less an annual credit of \$1.5 million, "arguably, the land was only worth a guarantee of \$500,000 annually." Ultimately, the tax court concluded that the terms of the ground lease were not actual evidence of what a willing buyer would pay a willing seller for this land.

The County appealed the tax court's valuation to the circuit court, which affirmed, and then it appealed to the state court of special appeals.

On appeal, the County took the view that the relationship embodied in the ground lease document is fundamentally a real estate transaction, not a broader business relationship. Accordingly, the revenue PPE pays each year to Simon under the ground lease reflects what a willing buyer would pay a willing seller for the property; therefore, the County believed the tax court erred by not relying on the ground lease agreement.

The court of special appeals disagreed. It said the tax court was required to consider the rent negotiated by the parties to the contract, and the tax court did not ignore or disregard the ground lease, as the County suggested. Rather, the tax court analyzed the document and highlighted several characteristics that it considered hallmarks of a typical ground lease. But the lease payment was variable throughout the duration of the lease and was directly correlated to the operation of the casino business enterprise. Moreover, because the casino had not yet even opened as of the January 1, 2011, valuation date,

the lease payments were entirely speculative on the lien date. It was therefore reasonable for the tax court to find that revenue projections increased the value beyond what a willing purchaser would pay for the land. The potential for large variations in income under the lease further showed that the lease was more reflective of the business than the property.

Ultimately, the appeals court concluded that the tax court's analysis was reasonable, and it had done what the law required—it analyzed the ground lease. But the law does not require the tax court to apply that contract rent as income attributable solely to the real property for tax assessment purposes. The tax court's judgment was affirmed.

*Anne Arundel County v.  
PPE Casino Resorts Maryland LLC*  
Maryland Court of Special Appeals  
November 2, 2021  
2021 WL 5071889

### **Exemption for city golf course**

In 2012, the City of Gulf Breeze, Florida (City) acquired property to treat and dispose of sewage and wastewater and to provide stormwater retention. The City also used the property for recreational purposes, namely the operation of a golf course with a driving range and clubhouse facilities. The City operated the golf course and clubhouse until September 2015, and between 2012 and 2015, the Santa Rosa County Property Appraiser (Property Appraiser) approved the City's applications for property tax exemptions.

After losing large sums of money operating the golf course, the City entered into an agreement with Tiger Point Golf Club (Tiger Point) in October 2015. The City retained ownership of the property and continued to use it for wastewater treatment, but Tiger Point was to manage

the day-to-day operations of the golf course. Tiger Point had the duty to pay all costs and expenses for operations and maintenance of the golf course and all City-owned fixtures and equipment. Tiger Point had the duty to hire, train, pay, and supervise all personnel and pay all taxes on the property. As compensation, Tiger Point was entitled to retain any profits generated from the golf course after paying the City an annual fee that included a flat dollar amount and percentage of gross golf course revenue.

Neither party disputed that providing recreational activities constitutes a public purpose. But the Property Appraiser argued that the situation here was different from a typical city-owned golf course.

In 2016, the City applied for a property tax exemption, which the Property Appraiser partially denied because it found that the City's agreement with Tiger Point was a lease. The City challenged the denial, and the special magistrate who conducted the hearing determined that the agreement was not a lease and ruled for the City. The Property Appraiser appealed, and the trial court again ruled for the City.

On appeal to the court of appeal, the Property Appraiser argued that the agreement with Tiger Point rendered the property taxable, because it was no longer used for municipal purposes. In Florida, all property owned by a municipality and used exclusively for municipal or public purposes is exempt from taxation. Neither party disputed that providing recreational activities constitutes a public purpose. But the Property Appraiser argued that the situation here was different from a typical city-owned golf course.

The court of appeal observed that a municipal-owned golf course, even if open to the public, is not used exclusively for a public purpose when it is operated by a private company that retains the profits generated from its use of the property. Tiger Point is entitled to retain any profits generated by its operation of the property, and Tiger Point bore the risk of any financial losses. The court stated that given Tiger Point's ability to retain the profits generated by the golf course, the property was not used exclusively for a municipal or public purpose. Whether the agreement was a lease or not is beside the point, and the court determined it did not need to decide that issue.

The court was careful to point out that municipal-owned properties do not always risk losing their tax-exempt status whenever they contract with private, for-profit property management companies. A municipality may enter into an agreement with a private company whereby the municipality pays the company a fee to manage the property, and the private company can generate profits under that agreement by collecting a management fee. But here, the City did more than enter a contract for Tiger Point to manage the golf course. The City converted the property to a private commercial enterprise. The City was not entitled to a tax exemption on the golf course.

*Brown v. City of Gulf Breeze*  
First District Court of Appeal of Florida  
March 2, 2022  
336 So.3d 1226

Note, on May 4, 2022, the court of appeal subsequently issued a decision on motions filed by the City. The court denied the City's motion for rehearing and granted the City's motion to certify the following "question of great importance" to the Florida Supreme Court: "Is a city's public golf course still being 'used exclusively by it for municipal or public purposes,' so that it remains tax exempt under Article XV, Section 3 of the

Florida Constitution, if the city turns the course and its appurtenant facilities over to a private business to operate and manage for the business's own profit or loss in return for an annual fee that the business pays to the city for the privilege?"

On August 18, 2022, the Florida Supreme Court accepted jurisdiction of this case as to the certified question of great public importance and set a briefing schedule.

*Brown v. City of Gulf Breeze*  
First District Court of Appeal of Florida  
May 4, 2022  
47 Fla. L. Weekly D 1010

*City of Gulf Breeze v. Brown*  
Supreme Court of Florida  
August 18, 2022  
2022 WL 3480269

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# Market Analysis Data Sources in Residential Appraising

by Mark R. Ratterman, MAI, SRA

## Abstract

Since 2019, the US residential real estate market has experienced significant changes, some COVID related, some mortgage rate related, and some supply chain related. This article looks at why data is important to residential appraisers in their analyses and what data sources are available to help ensure timely, accurate market analyses.

## Introduction

Market analysis is a basic part of an appraisal. No appraiser should provide an opinion of market value without having considered market trends. This is especially true in residential markets, where prices can rise or fall within a few weeks. While prices do not tend to fluctuate in residential markets like they do in the stock market, they can change rapidly because of changes in mortgage interest rates, the announcement of a major employer moving into or out of town, or even something like a sewer moratorium.

There has long been a common misconception in the United States that real estate prices do not fall and that they only increase. The recession of 2006–2008 more or less dispelled that thinking, at least temporarily, but rapid price increases for housing in subsequent years have reinforced that old belief. As a result, homeowners often think that appraisers understate their property's value and seldom think that they overstate the value. For this and other reasons, appraisers should do their due diligence, include market analysis in every appraisal, and provide data to support the market conditions on the effective date of appraisal.

One basic reason that residential appraisers must perform market analysis is to serve clients of

appraisal services (banks, investors, home buyers) who want to know how market trends will affect their housing investments. Residential appraisers can and should provide more sophisticated market analysis to meet clients' needs. Another reason why appraisers should perform market analysis and include it in their reports is to support the sales comparison adjustments made for the influence of market conditions. It is not the appraiser's job to restrain or hold the market back. An appraiser's job is to read the market, not influence the market.

## Market Study

As a formal process, *market analysis* is the investigation the appraiser performs to assess the market for the specific property being appraised. A *market study*, on the other hand, is a little different. A market study is an analysis of supply and demand and pricing for a specific property *type* in a specific area. Note that a market study looks at a *property type* rather than a specific *subject property*. A market study does not refer to a subject property; only the property type needs to be delineated or described by the analyst.

Market studies are useful to appraisers because studies performed by others can be easily quoted in appraisal reports. Market studies can also be

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easily performed and produce very accurate results using modern multiple listing service (MLS) systems.<sup>1</sup> Before the widespread use of computers to compile and organize market data, market reports would be difficult to create and often were not very timely. Today, an appraiser can search for all sales in a zip code area and easily download them into a spreadsheet program that allows for calculation of a mean, median, standard deviation, and other statistical measures. If the data is compiled over a period of time, a regression line can be drawn to show a trend in the median or mean average prices.

This discussion will provide insights about market analysis and highest and best use in residential appraisals. It is vital that appraisers are not the last to know when a real estate market has changed. To know when change occurs, appraisers must perform market analysis. Market analysis is a very appropriate topic in nearly all markets and in nearly all eras.

Readers should easily comprehend much of the material that follows, but other concepts will require focus and concentration. For example, *supply* and *demand* are commonly used terms that are easily understood, but *fundamental markets* and *asset markets* may be new concepts to many appraisers.

This discussion focuses predominantly on 1- to 4-unit residences. Note that apartment properties with more than four units are not categorized as “residential properties,” but rather as “residential investment properties.” Most federal regulations about real estate appraisal differentiate the markets in this way. In the past, appraisers referred to a single-unit detached home as a “single-family residence.” Recently, however, this term has been replaced with “single-unit residence” in the modern lexicon of appraisal terms. Unless otherwise noted, the definitions of terms in this article are taken from *The Dictionary of Real Estate Appraisal*, seventh edition, published by the Appraisal Institute. The examples presented have been designed to help residential practitioners understand difficult concepts and relate them to their own experiences. The focus on market analysis leads to a discussion of highest and best use analysis.<sup>2</sup>

## Market Analysis and Highest and Best Use Theory Overview

Why does residential real estate have value? It is a long-held economic principle that for a good or service to have value, it must have utility and benefit. A product or service only has value if it is desired, and that desire is based on utility. The most basic utility of residential real estate is providing shelter from the weather for occupants. This may seem obvious, but recognizing this essential function of residential real estate is critical to distinguishing between markets and understanding how and why some markets work the way they do. Market analysis is the study of market transactions, but it also must include study of the fundamental need for shelter.

The market value of nearly all property is based on the “present worth of future benefits.” The buyer of a multi-unit apartment building is not normally looking for a comfortable place to live, but rather a good yield on the investment in the future. In most markets, the majority of buyers of single-unit residences are looking for residences, not for income. However, if the subject property is located in a market with mostly investor-buyers, the opposite would be true.

The present worth of future benefits normally includes both interim (periodic) benefits and the value of the reversion (resale). For the owner-user buyer, the present worth of future benefits would be shelter for the period of ownership and the resale of the property at the end of the holding period. For the investor-buyer, the present worth of future benefits would be the cash flows during the holding period and the resale at the end of the holding period.

### Market Delineation

Market analysis begins with identifying the market that is going to be analyzed. There are many ways to break down a real estate market into its components. This section describes the many labels used in market analysis. However, in the remainder of the article, the most generic labels will be used to make the process of market delineation easier to comprehend. There may also be some repetition to clarify the points made.

1. A *multiple listing service* is a common arrangement in which a listing is not limited to one agent but is offered by other agents.

2. Many courses, seminars, and books do a good job of covering highest and best use, and readers may want to investigate these for additional discussion.

### The Fundamental Market and the Asset Market

Real estate market participants recognize the difference between the fundamental market and the asset market. The *fundamental market* is where primary demand comes from. The *asset market*, which is the focus in most 1- to 4-unit residential appraisals, is represented by the buyers and sellers of residential properties. These are usually, but not always, owner-users. In some markets, the typical buyer is an investor, and the user is a renter.

The fundamental market focuses on the real estate user, and the asset market focuses on buyers and sellers. These may or may not be the same people. So, real estate markets can be categorized into the two distinct groups of market participants:

1. **The fundamental market** has to do with the users of the property (space on the land or in buildings). This refers to the fundamental need for housing (shelter). Sale prices and rental rates are not a concern in an analysis of a fundamental market.
2. **The asset market** has to do with who buys and owns the property. This refers to *buyers and sellers* but not necessarily users of real estate. Unlike fundamental market analysis, asset market analysis involves the consideration of sale prices and rental rates.

The fundamental market for residential housing includes owner-occupied houses, tenant-occupied houses, apartments, mobile homes, houseboats, and other sorts of dwelling units. If the demand of users of the real estate falls, the price or rent for the real estate will also fall.

The asset market includes buyers and sellers but not necessarily the users of real estate. If a market is deluged with investor buyers who are not users of the houses, the prices of houses will increase accordingly, even if the rental/user market is weak. This does not normally happen because the lack of a fundamental (user) market will eventually cause investors to get out of the market as well.

### “For Sale” and “For Rent” Markets

In residential real estate markets, there are buyers and sellers, but also renters and landlords. A common way to look at residential real estate is to break it down into two categories based on these groups:

1. **The “for sale” market** consists of buyers and sellers who will pay to acquire the ownership rights to the subject property and will

also receive the right to resell it later. This may include the fee simple estate, a leased fee interest, or many interest subtypes (such as fee simple without mineral rights or fee simple subject to an easement). If there are too many buyers and not enough sellers, the “for sale” market will be undersupplied. Buyers in the “for sale” market may include users of the real estate, but this is not always the case.

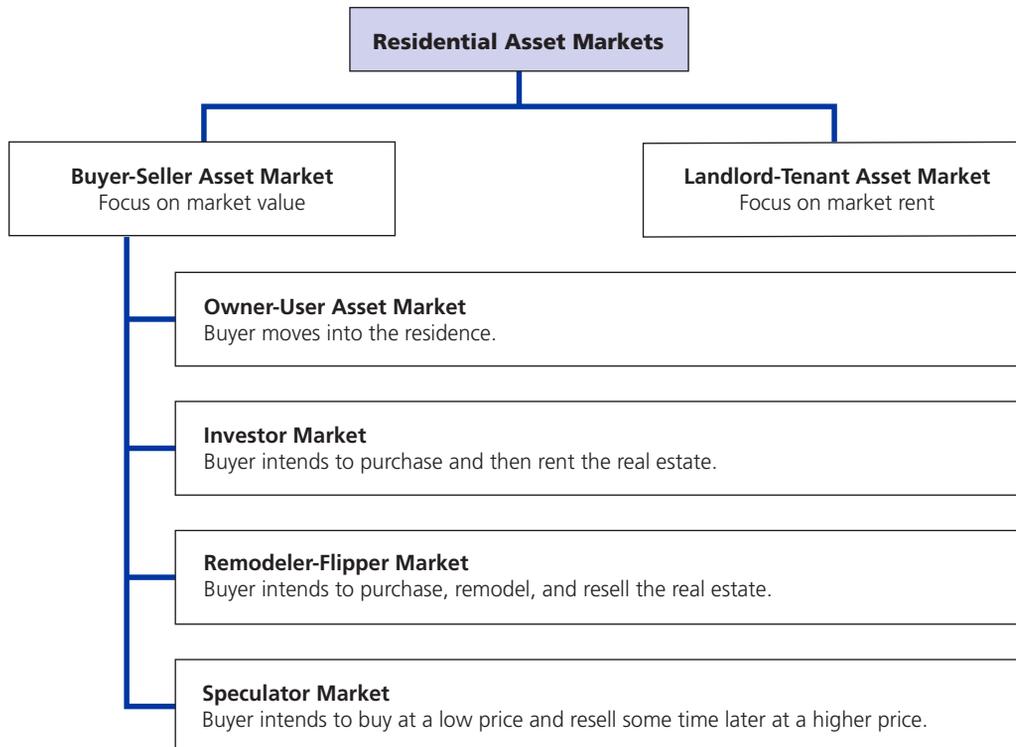
2. **The “for rent” market** consists of users of the property for a specified period of time. This market can also be called the “landlord-tenant market.” The property rights transferred in the “for rent” market do not include any rights beyond the term of the lease. If there are too many tenants and not enough rental properties, the “for rent” market will be undersupplied.

In the “for sale” market, the value is set at one price on the specified date. In the landlord-tenant market, the value is realized periodically over time. Rents can be paid in one lump sum in the beginning of a lease, but monthly rental payments are more common in residential markets.

### Buyer Segments: Owner-Users, Investors, Remodeler-Flippers, and Speculators

Another way to break down a residential asset market is by the *intent* of the buyer (Exhibit 1). Residential markets can be divided into four buyer segments:

1. **Owner-user market or owner-occupant market.** The owner-user market is the most common residential market segment. In this segment, the buyer purchases the real estate to move into that property. Buyers often use mortgage loans to pay for the property, and the condition of the real estate must be acceptable to mortgage lenders who may loan as much as 100% of the purchase price.
2. **Investor market.** In the investor-landlord market, the buyer intends to purchase the real estate for the purposes of renting it out. The condition of the real estate will vary because the purchaser is not intending to live there. The condition should be considered “rentable.” Receiving income over time and a lump sum at resale are the goals of buyers in the investor market.
3. **Remodeler-flipper market.** In the remodeler-flipper market, buyers intend to repair,

**Exhibit 1** Types of Residential Asset Markets

remodel, and resell the real estate as soon as possible to make a profit. The benefit for these buyers is short-term. They are not going to rent the property; instead, they will remodel and resell it.

4. **Speculator market.** The speculator market is usually a very small part of any market and includes buyers of residential real estate who purchase property with the intent of reselling it at a higher price immediately after purchase. These buyers do little or no remodeling work. They just perceive a rapid increase in the property's value, or they see potential that other market participants do not.

The buyer-seller asset market is focused on market value, which is the lump sum of money to be paid by the purchaser to acquire the rights to real estate. The landlord-tenant asset market is focused on market rent, which is the periodic payment of money in exchange for the right of occupancy of the real estate.

Immediately after the recession of 2006–2008, many residential asset markets saw two buyer

types. The first were owner-occupant buyers, who wanted properties with no deferred maintenance that met minimum lender requirements. The second market involved investors who paid cash and who would buy properties that needed repairs and did not qualify for mortgage loans. The investor market can include buyers who want to own a rental unit, but it can also include individuals who see an opportunity to make money by purchasing, repairing, remodeling, and then reselling properties. In the 2020s, investors who buy and rent single-unit residences have come to dominate some markets and may be involved in 50% of the sales.

### What Does Market Analysis Mean?

Residential real estate brokers commonly use the term *market analysis* to describe their valuation of real estate for listing and selling purposes. This is a service provided by brokers who are trying to solicit listings. The same term is used by appraisers, but with a much different meaning. In appraisal terms, a market analysis is a study of

market factors that influence market value, but it is not the process of developing or reporting the value opinion.<sup>3</sup>

An appraiser's market analysis is focused on supply and demand issues. It is an integral part of the development of an opinion of market value, but it does not focus on sale prices or rental rates. Rather, it is focused on the cause and effect of changes in supply and demand that influence sale prices or rental rates. In a real estate appraisal, market analysis does not mean developing or reporting an opinion of value, but it can mean developing and reporting a variety of information. Some examples of different types of market analyses follow.

- **Opinion of Market Supply.** An opinion of market supply can be the total number of units that exist in the market, or it can be the number of units on the market as of a specific date. The number of properties for rent can also be the focus of market analysis.
- **Opinion of Market Demand for a Specific Market.** An opinion of the market demand in a specific market can describe all housing in a geographic area (i.e., the fundamental need for shelter in the market) or it can describe the number of buyer-tenants in a market at the current time. Again, keep in mind that sometimes there will be two classes of possible buyers for the subject property; the first would be owner-users and the second would be investor-landlords. Depending on the market, one type of buyer may pay more than the other. The users of the real estate would also include renters.
- **Opinion of Market Trends.** An appraiser's opinion of market trends is probably the most important piece of information provided to lender-clients because the riskiest period for a lender on a residential mortgage loan is the first few years. During this period, the buyer has minimal investment, the value of the real estate has not increased much (or at all), and the supply and demand in that market may make selling the asset difficult if the lender becomes the owner in a foreclosure situation.
- **Opinion of Market Risks.** Markets can be stable and somewhat predictable, or they may be erratic and unpredictable. Markets that show erratic behavior are considered to be more risky; this is something that most clients usually want to know about.
- **Opinions of Most Likely Buyer.** It is not possible to know if a market is oversupplied or undersupplied unless the appraiser knows who the most likely buyer is and how many of those buyers can be found in the market. While this doesn't mean that appraisers need to know about personal characteristics of potential buyers, appraisers do need to know if the most likely buyer is an investor or an owner-occupant.
- **Opinion of Market Demographics with Regard to Income Levels.** Studying market demographics means learning about places of employment, income levels, educational levels, and similar information. For example, if 75% of the population in Smallburg earns less than \$75,000 per year, this suggests that there would be low demand for homes priced above \$2.0 million in that community. Keep in mind that when describing markets, it is not appropriate to refer to the owners or buyers for that market in terms of their personal characteristics. The market and neighborhood analysis should not discuss people or the things people do.

#### What Does Highest and Best Use Mean?

All market value appraisals require appraisers to develop an opinion of the highest and best use of the real estate. This is required because the definition of *market value* assumes the optimum price rather than a minimum price. Determining the highest and best use ensures that an appraiser does not value a 100-acre vacant parcel as though it is farmland when it meets the requirements for apartment development land and would sell for much more than farmland. Most definitions of *market value* state that it is based on an owner-seller and a buyer making decisions in their own self-interest. A highest and best use must be legally permissible, physically possible, financially feasible, and maximally productive.<sup>4</sup> In

3. When discussing factors that influence value, appraisers should make sure that all fair housing laws are considered. While information about race, religion, national origin, and even marital status are easily obtained, they are not factors to consider or report in an appraisal report.

4. For in-depth discussion of highest and best use, see Appraisal Institute, *The Appraisal of Real Estate*, 15th ed. (Chicago: Appraisal Institute, 2020), 305–334.

many cases, several different land uses may be feasible, but the one that results in the highest residual value to the land as of the effective date is the highest and best use. Market analysis and highest and best use analysis are inextricably linked because the value of a specific land use will be very much influenced by supply and demand in that market.

**Where Does Market Analysis Fit in the Appraisal Process and Highest and Best Use Analysis?**

The valuation process is illustrated in Exhibit 2. Market analysis and highest and best use analysis are shown in the middle of the illustration in the “Data Analysis” section. Under “Market Analysis,” three terms are listed: (1) demand studies, (2) supply studies, and (3) marketability studies. Supply and demand studies are fairly straightfor-

ward, but marketability study is not a term that most people know. The formal definition of *marketability analysis* in the appraisal literature is “the study of how a subject property competes in a market.” A market study does not need a subject property since it does not deal with a specific property but with the entire market. In contrast, a *marketability study* by definition relates to the market supply, demand, and pricing for a specific property. The Exhibit 2 illustration of the valuation process pairs highest and best use analysis with market analysis because they are linked. Highest and best use analysis is the process that identifies the market the subject property will compete in and from which comparable sales will be selected to provide evidence of the market’s reaction to this property within that use. Comparable sales should have the same highest and best use as the subject property.

**Exhibit 2** The Components of the Valuation Process

Identification of the Problem					
Identify the intended use	Identify the client and intended users	Identify the type and definition of value	Identify the effective date of the opinion	Identify the relevant characteristics of the property	Identify any assignment conditions
Scope of Work Determination					
Data Collection and Property Description					
<i>Market Area Data</i> General characteristics of region, city, and neighborhood		<i>Subject Property Data</i> Subject characteristics of land use and improvements, personal property, business assets, etc.		<i>Comparable Property Data</i> Sales, listings, offers, vacancies, cost and depreciation, income and expenses, capitalization rates, etc.	
Data Analysis					
<i>Market Analysis</i> Demand studies Supply studies Marketability studies			<i>Highest and Best Use Analysis</i> Land as though vacant Ideal improvement Property as improved		
Land Value Opinion					
Application of the Approaches to Value					
Sales Comparison Approach		Income Capitalization Approach		Cost Approach	
Reconciliation of Value Indications and Final Opinion of Value					
Report of Defined Value					

### Six-Step Analysis Process

Like most well-thought-out processes, a marketability analysis follows an accepted format. This sequence of steps ensures that specific tasks are completed in the most effective order. The six-step analysis process outlined below relates to a specific property, not the entire market. This analysis is designed to show the process an appraiser follows to identify and support the property's place in the market by asking the right questions about the property and its market.<sup>5</sup> Note that in this process some tasks are completed before others.

- Step 1.** Property productivity analysis (determine the product). Assess the assets and liabilities of the subject property and develop an opinion of where the property will fit in the real estate market.
- Step 2.** Delineate the market and market area (determine the market). Make a determination of where the comparable sales will come from; comparable sales should come from the same market as the subject property.
- Step 3.** Demand analysis (measure demand). Consider the amount of demand available in the market for the product.
- Step 4.** Supply analysis (measure competition). Consider the supply in the market. Determine if there is supply to satisfy the previously determined demand.
- Step 5.** Residual demand analysis (determine the market environment). Assess supply and demand to know how subject property fits into the market. Is there demand for more than what exists now?
- Step 6.** Subject marketability analysis (determine market capture). Decide how well the subject will fit into the market.

If the appraisal assignment is to develop an opinion of market value, then a highest and best use opinion is also necessary, which adds two more steps to the process. In *market value assignments* that require a highest and best use opinion, add the following steps:

#### Highest and Best Use Analysis

- Step 7.** Analyze the options available for the subject property. Give consideration to the

previously prepared market analysis and the strength of one option over another.

- Step 8.** Develop and discuss highest and best use conclusions.

### Two Types of Market Demand Studies

The demand studies appraisers perform in market analysis can be divided into two types: fundamental demand analysis and inferred demand analysis.

Fundamental demand analysis is the more detailed type of analysis and is a study of the basic demand for a product. A fundamental demand analysis is differentiated from an inferred demand analysis because it quantifies the current and forecasted demand of potential users for the subject property. In the residential market, this would *not* be a comparison of the number of homes for sale against the number of buyers in the market. Instead, it would be a comparison of the number of *all* of the homes in the market (not just the properties for sale) against the number of people in that market area who need that product (a dwelling). A fundamental demand analysis of a housing market would include single-family detached homes and also condominiums, apartment units, mobile homes, houseboats, and any other types of dwellings that exist in that market.

An inferred demand analysis, also called a *trend analysis*, is descriptive and relies on historical market data to support future projections of supply and demand. The focus of inferred analysis can be general, with selected comparable properties representing the larger market, or it can be more specific and include area-wide market data and subject-specific conclusions. Inferred market analysis is easy to do in residential markets because of the plethora of market data available in a uniform reporting format and the widespread distribution of that data. Real estate buyers, sellers, investors, brokers, appraisers, and lenders all use this data to educate themselves about market trends.

Market analysis may entail a fundamental demand analysis or an inferred demand analysis. While it may be developed by primary research on the part of the appraiser, it is more likely the result of computer analysis. Market analysis requires consideration of a community's basic industries as well as the migrations and exodus of people in the community.

5. For additional discussion of market analysis and marketability analysis, see *The Appraisal of Real Estate*, 15th ed., 274–303.

### **Economic Base of a Market**

Another factor in the analysis of the fundamental market is the economic base of a community. This information is now commonly compiled. Residential appraisers need to know about the economic base, which is made up of the industries and occupations that generate employment in the area. Basic industries are the businesses and employers that generate income from outside the community and bring it into a community. Basic industries are important because all communities rely on goods and services from outside their area, so the revenue flowing out must be replaced with revenue flowing in.

Communities strive to attract as many basic industries as possible. Service industries come and go depending on demand, but they are not courted and urged to move from one community to another.

Through the North American Industry Classification System (NAICS) system, the federal government compiles statistics about industries and businesses within a community. The NAICS information can be important to appraisers because it shows which industries are dominant in a particular market and will impact housing.

### **Externalities**

Another consideration in market analysis is the impact of external factors on the real estate market. Externalities can be both positive and negative for residential markets. Externalities in market analysis are those items outside the property, and often outside the subject property's market, that affect the demand or even the supply of real estate in the market.

The economic base of a community is significantly affected by external forces. Residential appraisers should follow reliable news sources to understand national, state, and local changes in government policy and trends in popular society that can affect the market.

A decline in mortgage interest rates has an almost immediate impact on residential real estate markets. If rates increase, the opposite occurs. If the country goes into a recession and nothing else changes, the demand for real estate tends to decline and the available supply increases.

Externalities can affect real estate significantly, so appraisers should subscribe to newspapers, trade publications, and other news sources. This is especially true for appraisers who work outside the area where they live, as they are especially

vulnerable to not knowing when economic conditions have changed.

**Key Points on Market Analysis.** Keep in mind that the term *market analysis* as used by real estate brokers describes their valuation of properties, but the term means something different to appraisers. Market analysis is tied to highest and best use analysis, and highest and best use analysis is a requirement for all market value appraisals.

### **Data Sources**

In years prior to the advent of personal computers, much market trend information was hearsay or anecdotal evidence, and it was often self-serving and wrong. A common sales strategy in industries—not just real estate—was to avoid saying anything negative about the market. As a result, a positive but erroneous attitude sometimes made its way into appraisal reports as evidence of market trends.

Today, the information necessary to do a market study in residential practice is almost all computerized and available to professionals in the market. The use of computers and the availability of electronic sales data have made the research necessary to do a market study possible. Appraisers today need to perform robust and resilient market analyses so that, when the market does change, they will know it and can report the results of market changes consistently from year to year. Quoting official real estate broker association reports can support the appraiser's conclusions and provide insulation from complaints from clients who may not want to hear that the market is in a downward trend.

### **Sources of Data for Market Studies**

Market studies of the for-sale market (or asset market) are reported by many organizations, including the following:

- National, state, and local Realtors associations
- The Federal Housing Finance Agency (a regulator of Fannie Mae and Freddie Mac)
- S&P CoreLogic Case-Shiller Home Price Indices
- National, state, and local home builder associations
- The US Census Bureau division of the Department of Labor

- Urban planning and zoning offices
- University planning and urban development departments

These data sources will be discussed more later in this article.

The data sources most appraisers use relate to the *asset market* (buyers and sellers of real estate, not necessarily users). The listings and sales information included in an MLS are not a reflection of the fundamental need for housing, but of the asset market. One common analysis is to compare the number of active listings with the sales rate for the last 12 months in the subject market. This does not show the fundamental need for housing. Rather, it shows the balance of homes for sale compared with the sales rate. It is quite possible to have an oversupply of homes for sale, but an overall housing market that is undersupplied.

Every appraisal requires some data research. Sometimes the effort is minimal, if the appraiser works in the area frequently and has most of the required information on file. Other appraisals require primary research beyond the MLS databases. Local databases are computerized in most markets, and there is an overall trend to consolidate the MLS systems rather than split them. However, in some markets, there is neither an MLS system nor any organized database to provide comparable sales or rental information. Appraisals in those markets require significant research, much of which will be primary research with market participants.

The amount of work needed to achieve similar results is significantly higher in markets without organized databases. In these markets, market analysis will be much more difficult, but not impossible. It may be hard to get down to a zip code level of analysis. The national or statewide databases available may or may not be directly applicable to the subject property's market, but appraisers will do what they can and no more. In markets with no organized and computerized databases, the expectations of the market and peers will be lower. In any case, the results of the market analysis should be described well in the

scope of work section of the appraisal. In other words, if an appraiser is in a market where there is no computerized database, this should be explained clearly in the scope of work section of the report so the reader does not expect substantial detail and support for the results presented.

## National Databases

### National Association of Realtors

The National Association of Realtors (NAR)<sup>6</sup> keeps statistics on homes sales and has done so for many years. Some people might think this is a compilation of direct counts of sales, but the statistics are often projections from samplings. The data is published on the NAR website at <https://www.nar.realtor/research-and-statistics>. This part of the NAR website includes studies of median prices, housing starts, and new home sales.

Exhibit 3, Existing Home Sales, is from the NAR website and includes the volume of sales by region and the median sale prices by region. The sale prices and volume do vary each year by season, and this data may or may not be adjusted for the seasonal rise and fall in the numbers. In many cases, seasonal differences are not due to the weather but the result of holiday spending, which may increase debt and deplete the availability of down payment money. The monthly sales compiled by NAR use an *r* and a *p* to indicate "revised" and "preliminary" data.

NAR also tracks the sales volume and average prices for condominiums and cooperatives (see Exhibit 4). Again, this data may or may not be seasonally adjusted and may be preliminary or revised data.

### Federal Housing Finance Agency

The Federal Housing Finance Agency (FHFA) is the regulator of government-sponsored enterprises (GSEs)<sup>7</sup> and has sales and refinance data on loans sold to or associated with Fannie Mae and Freddie Mac. This government agency keeps data on residential real estate transactions, but it is limited to sales and refinance data that involve these two entities. The data shown in Exhibit 5 was taken from the FHFA Housing Price Index Report.

6. The National Association of Realtors is a trade association for real estate professionals. The association started in 1908 and the current membership is about 1.5 million. Its website is <https://www.nar.realtor>.

7. FHFA is an independent agency created as part of the Housing and Economic Recovery Act of 2008 to regulate Fannie Mae, Freddie Mac, and the Federal Home Loan Banks. The agency merged the Federal Housing Finance Board (FHFB), the Office of Federal Housing Enterprise Oversight (OFHEO), and the GSE mission office of the Department of Housing and Urban Development (HUD).

**Exhibit 3** Existing Home Sales

Year	U.S.	Northeast	Midwest	South	West	U.S.	Northeast	Midwest	South	West	Inventory	Mos. Supply
2019	5,340,000	690,000	1,250,000	2,290,000	1,120,000	*	*	*	*	*	1,390,000	3.9
2020	5,640,000	700,000	1,330,000	2,460,000	1,150,000	*	*	*	*	*	1,060,000	3.1
2021	6,120,000	750,000	1,400,000	2,710,000	1,260,000	*	*	*	*	*	880,000	2.3
	<b>Seasonally Adjusted Annual Rate</b>					<b>Not Seasonally Adjusted</b>						
2021 May	5,920,000	750,000	1,340,000	2,630,000	1,200,000	528,000	61,000	121,000	237,000	109,000	1,210,000	2.5
2021 Jun	5,970,000	760,000	1,360,000	2,630,000	1,220,000	615,000	76,000	147,000	268,000	124,000	1,230,000	2.5
2021 Jul	6,030,000	740,000	1,390,000	2,650,000	1,250,000	584,000	74,000	140,000	252,000	118,000	1,310,000	2.6
2021 Aug	5,990,000	730,000	1,380,000	2,640,000	1,240,000	576,000	75,000	140,000	246,000	115,000	1,280,000	2.6
2021 Sep	6,180,000	750,000	1,420,000	2,730,000	1,280,000	546,000	69,000	131,000	233,000	113,000	1,260,000	2.4
2021 Oct	6,190,000	740,000	1,450,000	2,720,000	1,280,000	526,000	67,000	127,000	224,000	108,000	1,230,000	2.4
2021 Nov	6,330,000	740,000	1,470,000	2,830,000	1,290,000	503,000	63,000	120,000	219,000	101,000	1,110,000	2.1
2021 Dec	6,090,000	730,000	1,450,000	2,690,000	1,220,000	513,000	68,000	118,000	228,000	99,000	880,000	1.7
2022 Jan	6,490,000	780,000	1,500,000	2,940,000	1,270,000	352,000	45,000	73,000	163,000	71,000	850,000	1.6
2022 Feb	5,930,000	690,000	1,330,000	2,700,000	1,210,000	352,000	37,000	71,000	171,000	73,000	850,000	1.7
2022 Mar	5,750,000	660,000	1,270,000	2,610,000	1,210,000	456,000	47,000	93,000	218,000	98,000	930,000	1.9
2022 Apr r	5,600,000	670,000	1,310,000	2,480,000	1,140,000	463,000	48,000	103,000	213,000	99,000	1,030,000	2.2
2022 May p	5,410,000	680,000	1,240,000	2,410,000	1,080,000	498,000	56,000	116,000	225,000	101,000	1,160,000	2.6
vs. last month:	-3.4%	1.5%	-5.3%	-2.8%	-5.3%	7.6%	16.7%	12.6%	5.6%	2.0%	12.6%	18.2%
vs. last year:	-8.6%	-9.3%	-7.5%	-8.4%	-10.0%	-5.7%	-8.2%	-4.1%	-5.1%	-7.3%	-4.1%	4.0%
year-to-date:						2.121	0.233	0.456	0.990	0.442		

Note: Annual inventory figures are from December of each year

**Sales Price of Existing Homes**

Year	Median				
	U.S.	Northeast	Midwest	South	West
2019	\$271,900	\$300,800	\$212,900	\$236,100	\$400,900
2020	296,700	337,900	233,200	258,800	444,800
2021	350,700	386,400	260,400	309,200	545,500
	<b>Not Seasonally Adjusted</b>				
2021 May	355,000	383,800	268,900	310,900	559,200
2021 Jun	366,900	411,800	278,600	321,100	569,400
2021 Jul	364,600	410,600	274,100	318,300	569,000
2021 Aug	361,500	407,100	270,000	316,700	563,100
2021 Sep	355,100	386,400	263,300	314,600	555,900
2021 Oct	355,700	378,300	259,300	320,500	559,000
2021 Nov	358,200	381,300	258,500	325,800	558,800
2021 Dec	358,800	385,200	254,600	326,600	557,700
2022 Jan	354,300	382,000	245,300	321,600	550,500
2022 Feb	363,700	383,100	248,400	333,200	573,300
2022 Mar	379,300	390,900	268,600	346,900	611,600
2022 Apr r	395,500	411,100	282,200	360,000	627,700
2022 May p	407,600	409,700	294,500	375,000	633,800
vs. last year:	14.8%	6.7%	9.5%	20.6%	13.3%

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**Exhibit 4** Existing Condominium and Cooperative Sales

Year	Seasonally Adjusted Annual Rate					Not Seasonally Adjusted					Inventory	Mos. Supply
	U.S.	Northeast	Midwest	South	West	U.S.	Northeast	Midwest	South	West		
2019	579,000	106,000	72,000	270,000	131,000	*	*	*	*	*	175,000	4.3
2020	578,000	103,000	74,000	275,000	126,000	*	*	*	*	*	179,000	4.1
2021	707,000	124,000	86,000	347,000	150,000	*	*	*	*	*	119,000	2.7
2021 May	720,000	120,000	90,000	360,000	150,000	65,000	10,000	8,000	33,000	14,000	173,000	2.9
2021 Jun	730,000	130,000	80,000	360,000	160,000	73,000	12,000	9,000	36,000	16,000	170,000	2.8
2021 Jul	710,000	110,000	80,000	360,000	160,000	68,000	12,000	8,000	33,000	15,000	176,000	3.0
2021 Aug	690,000	120,000	80,000	340,000	150,000	66,000	12,000	8,000	31,000	15,000	172,000	3.0
2021 Sep	700,000	130,000	80,000	340,000	150,000	61,000	12,000	7,000	28,000	14,000	166,000	2.8
2021 Oct	690,000	130,000	80,000	330,000	150,000	58,000	12,000	7,000	26,000	13,000	163,000	2.8
2021 Nov	700,000	120,000	90,000	340,000	150,000	53,000	11,000	7,000	26,000	9,000	149,000	2.6
2021 Dec	680,000	120,000	90,000	340,000	130,000	56,000	12,000	7,000	28,000	9,000	119,000	2.1
2022 Jan	740,000	140,000	100,000	350,000	150,000	39,000	7,000	5,000	19,000	8,000	108,000	1.8
2022 Feb	660,000	120,000	100,000	300,000	140,000	40,000	6,000	5,000	20,000	9,000	109,000	2.0
2022 Mar	630,000	120,000	90,000	280,000	140,000	53,000	8,000	7,000	26,000	12,000	118,000	2.2
2022 Apr r	620,000	110,000	80,000	290,000	140,000	54,000	8,000	7,000	27,000	12,000	123,000	2.4
2022 May p	610,000	110,000	80,000	280,000	140,000	56,000	9,000	8,000	26,000	13,000	132,000	2.6
vs. last month:	-1.6%	0.0%	0.0%	-3.4%	0.0%	3.7%	12.5%	14.3%	-3.7%	8.3%	7.3%	8.3%
vs. last year:	-15.3%	-8.3%	-11.1%	-22.2%	-6.7%	-13.8%	-10.0%	0.0%	-21.2%	-7.1%	-23.7%	-10.3%
year-to-date:						0.242	0.038	0.032	0.118	0.054		

Note: Annual inventory figures are from December of each year

**Sales Price of Existing Condo and Co-op Homes**

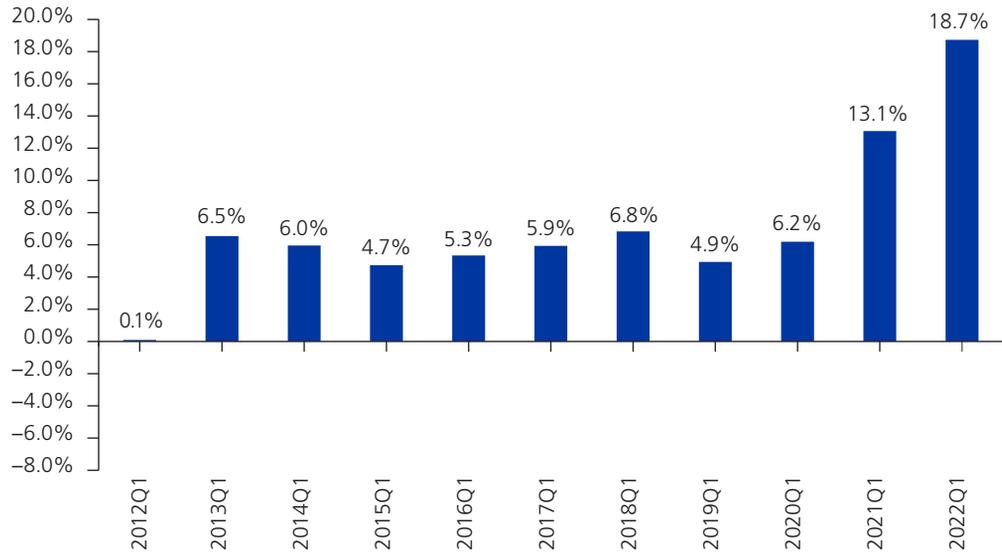
Year	Median				
	U.S.	Northeast	Midwest	South	West
2019	\$249,500	\$294,900	\$184,400	\$193,500	\$369,900
2020	266,300	313,700	192,300	210,900	390,200
2021	302,200	344,900	216,700	253,400	448,000
2021 May	309,900	357,000	228,500	253,500	451,700
2021 Jun	318,200	368,500	230,200	260,100	455,900
2021 Jul	313,900	362,000	223,500	259,900	461,000
2021 Aug	309,600	356,300	217,500	258,100	463,700
2021 Sep	302,200	339,700	215,000	259,100	458,800
2021 Oct	300,500	336,500	209,700	259,800	464,200
2021 Nov	304,000	333,900	212,400	269,600	458,800
2021 Dec	307,200	345,200	213,000	267,400	455,800
2022 Jan	304,300	338,500	212,100	265,700	462,300
2022 Feb	313,100	337,500	213,700	274,400	486,400
2022 Mar	330,300	353,200	234,900	286,800	511,300
2022 Apr r	345,700	371,100	241,200	298,500	516,800
2022 May p	355,700	400,400	243,800	307,400	515,800
vs. last year:	14.8%	12.2%	6.7%	21.3%	14.2%

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### Exhibit 5 Home Price Appreciation and Price Change

#### House Price Appreciation over Previous Four Quarters for U.S.

Purchase-Only FHFA HPI® (Seasonally Adjusted, Nominal) through 2022Q1

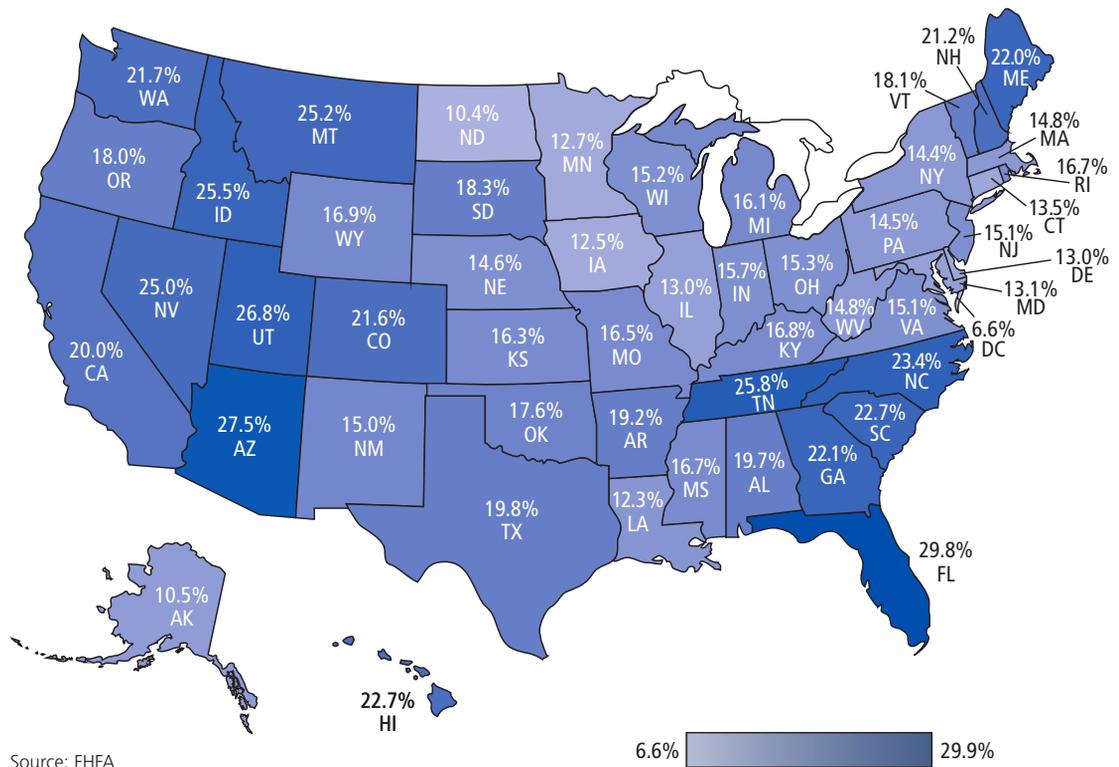


Source: FHFA

#### Four-Quarter House Price Change by State

Purchase-Only FHFA HPI® (Seasonally Adjusted, Nominal)

U.S. Four-Quarter Appreciation = 18.7% (2021Q1–2022Q1)



Source: FHFA

**S&P Core Logic Case-Shiller Index**

The Case-Shiller Index is a housing price index (not median prices) that tracks residential real estate sales and resales.<sup>8</sup> Exhibit 6 is data from their website for the Dallas, Texas, area. The Case-Shiller Index measures sales and resales of the same property to give an indication of market change. The base year is 2000, but this process dates back to January 1987. Research was also done to calculate back to the year 1890. The data

relies on sales and resales and was not relevant until the resales started to occur in numbers, so the launch date was December 18, 2006. Note that the graph shows the Dallas index and also the 20-city composite data. This index can be influenced by changes in property condition and adverse conditions of sale, e.g., foreclosures sales, sales under duress. The process does try to compensate for the unusual condition, but sometimes that identifier is not readily given or apparent.

**Exhibit 6 S&P CoreLogic Case-Shiller Dallas Home Price Index**

<b>S&amp;P Dow Jones Indices</b>	<b>Real Estate</b>
<b>S&amp;P CORELOGIC CASE-SHILLER DALLAS HOME PRICE NSA INDEX</b>	
A Division of S&P Global	

**Description**

The S&P CoreLogic Case-Shiller Dallas Home Price NSA Index measures the average change in value of residential real estate in Dallas given a constant level of quality.

**Quick Facts**

CALCULATION FREQUENCY	Monthly
CALCULATION CURRENCIES	USD
LAUNCH DATE	December 18, 2006
FIRST VALUE DATE	January 31, 2000

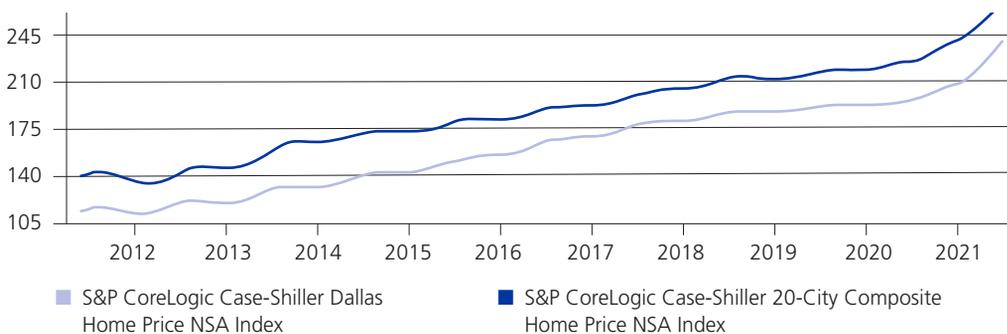
For more information, including the complete methodology document, please visit: <https://bit.ly/3eEeyG1>

All information for an index prior to its Launch Date is hypothetical back-tested, not actual performance, based on the index methodology in effect on the Launch Date.

Back-tested performance reflects application of an index methodology and selection of index constituents with the benefit of hindsight and knowledge of factors that may have positively affected its performance, cannot account for all financial risk that may affect results and may be considered survivor/look ahead bias. Actual returns may differ significantly from, and be lower than, back-tested returns. Past performance is not an indication or guarantee of future results. The back-tested data may have been created using a "Backward Data Assumption". For more information on "Backward Data Assumption" and back-testing in general, please see the Performance Disclosure at the end of this material.

**Historical Performance**

Depending on index launch date, all charts below may include back-tested data.



8. <https://www.spglobal.com/spdji/en/index-family/indicators/sp-corelogic-case-shiller/sp-corelogic-case-shiller-composite/#indices>.

Researching sales and resales of the same property is a tool that any appraiser can use when the data is available. Residential appraisers are used to researching sales and resales of the same property, but they may not realize that this research can provide support for market conditions adjustments. Exhibit 7 is an example of that procedure. Exhibit 8 graphs the data from the table in Exhibit 7. It is important to note that the line for Sale 2, the property that sold in 2009 and then again in 2021, is much less steep. This is because the line is straight from point A to point B, which

is misleading. The market was probably weaker from 2009 to 2015 and then trended up after that, like the trend lines for the other sales. Sale 4 has the steepest line because that property had a total remodel between the two sales.

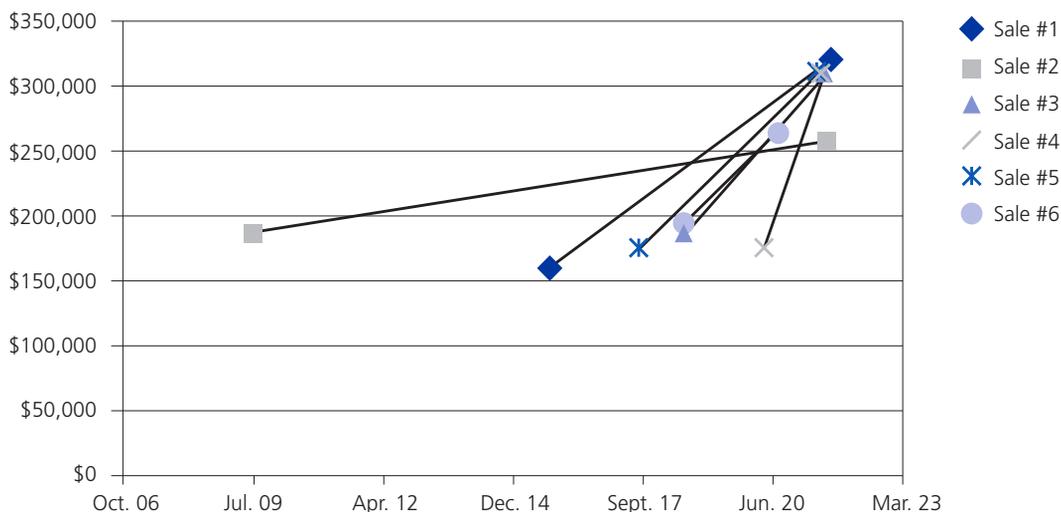
**US Census Bureau**

The United States Census Bureau also compiles data for building permits state by state and data on average and median home prices around the United States. The data in Exhibit 9 on building permits by region and state comes from various

**Exhibit 7 Sales and Resales**

	Sale 1	Sale 2	Sale 3	Sale 4	Sale 5	Sale 6
Old sale	9/25/15	6/25/09	7/27/18	4/18/20	8/25/17	8/3/18
New sale	9/21/21	8/5/21	7/29/21	7/12/21	6/2/21	7/21/20
Difference	2,188 days	4,424 days	1,098 days	450 days	1,377 days	718 days
Months	71.89	145.35	36.07	14.78	45.24	23.59
Old sale	\$160,000	\$188,000	\$188,000	\$156,000	\$175,000	\$195,000
New sale	\$320,000	\$257,680	\$310,000	\$340,000	\$309,800	\$264,000
Difference	\$160,000	\$69,680	\$122,000	\$184,000	\$134,800	\$69,000
Less remodeling	-	-	-	\$(120,000)	-	-
Adjusted resale difference	\$160,000	\$69,680	\$122,000	\$64,000	\$134,800	\$69,000
Overall change	100.00%	37.06%	64.89%	41.03%	77.03%	35.38%
Monthly change	1.3911%	0.2550%	1.7989%	2.7749%	1.7027%	1.5000%
Annual rate of change	16.6933%	3.0600%	21.5869%	33.2991%	20.4319%	18.0003%

**Exhibit 8 Sales and Resales Graphed**



**Exhibit 9** New Privately Owned Housing Units Authorized

**Unadjusted Units for Regions, Divisions, and States  
05 2022**

	Current Month						Year to Date					
	Total	1 Unit	2 Units	3 and 4 Units	5 Units or More	Num. of Structures with 5 Units or More	Total	1 Unit	2 Units	3 and 4 Units	5 Units or More	Num. of Structures with 5 Units or More
<b>United States</b>	148984	95355	2854	1880	48895	1847	739748	473997	13052	8955	243744	8965
<b>Northeast Region</b>	10895	5797	374	250	4474	280	60675	25699	1712	1003	32261	1347
New England Division	3144	1858	110	80	1096	79	15973	7955	604	282	7132	335
Connecticut	342	223	8	3	108	12	1875	1127	122	13	613	51
Maine	639	529	14	11	85	9	3212	1868	82	29	1233	46
Massachusetts	1482	555	52	57	818	47	7970	2723	272	177	4798	183
New Hampshire	369	330	12	6	21	4	1605	1283	58	46	218	20
Rhode Island	128	91	16	3	18	1	501	419	48	11	23	2
Vermont	184	130	8	0	46	6	810	535	22	6	247	33
Middle Atlantic Division	7751	3939	264	170	3378	201	44702	17744	1108	721	25129	1012
New Jersey	2239	1251	96	24	868	84	15375	6041	510	180	8644	471
New York	3325	1124	98	42	2061	76	18785	4509	344	239	13693	349
Pennsylvania	2187	1564	70	104	449	41	10542	7194	254	302	2792	192
<b>Midwest Region</b>	22239	13001	448	476	8314	317	95204	54561	2436	1876	36331	1271
East North Central Division	11668	7583	244	308	3533	189	50976	32223	1226	1103	16424	727
Illinois	1702	897	40	95	670	28	8351	4250	172	386	3543	119
Indiana	2848	2117	30	4	697	37	13229	8981	264	38	3946	138
Michigan	2386	1598	32	56	700	27	9056	6356	138	249	2313	101
Ohio	2305	1723	26	138	418	54	11709	7715	176	391	3427	248
Wisconsin	2427	1248	116	15	1048	43	8631	4921	476	39	3195	121
West North Central Division	10571	5418	204	168	4781	128	44228	22338	1210	773	19907	544
Iowa	1257	857	20	15	365	16	5086	3513	184	84	1305	50
Kansas	739	584	72	9	74	3	4473	2534	556	35	1348	38
Minnesota	3607	1631	22	32	1922	39	14495	6086	96	104	8209	141
Missouri	1779	1119	48	17	595	17	9169	5171	196	147	3655	116
Nebraska	1069	489	12	3	565	12	5386	2382	94	226	2684	92
North Dakota	340	267	18	3	52	3	932	827	40	3	62	5
South Dakota	1780	471	12	89	1208	38	4687	1825	44	174	2644	102
<b>South Region</b>	81228	55286	1228	493	24221	768	403037	283492	4964	3252	111329	3684
South Atlantic Division	46032	30721	372	201	14738	440	223091	154969	2184	1208	64730	2034
Delaware	606	582	12	0	12	1	2856	2735	98	0	23	2
District of Columbia	540	14	4	0	522	5	1762	155	30	0	1577	20
Florida	20152	12635	184	123	7210	199	92971	63764	1094	543	27570	820
Georgia	5973	4419	58	21	1475	53	32354	22476	234	344	9300	348
Maryland	1517	1008	2	0	507	13	9291	4913	10	3	4365	91
North Carolina	8648	6084	42	3	2519	89	43508	31626	218	52	11612	340
South Carolina	4192	3547	46	51	548	30	21174	17590	212	241	3131	170
Virginia	4004	2073	18	3	1910	48	17516	10247	230	21	7018	231
West Virginia	400	359	6	0	35	2	1659	1463	58	4	134	12
East South Central Division	7644	6432	168	116	928	56	40284	32470	456	568	6790	371
Alabama	1788	1540	54	17	177	6	8992	7858	94	53	987	19
Kentucky	1251	916	58	45	232	13	5598	4281	208	116	993	76
Mississippi	830	785	6	7	32	4	3849	3619	20	38	172	25
Tennessee	3775	3191	50	47	487	33	21845	16712	134	361	4638	251
West South Central Division	27552	18133	688	176	8555	272	139662	96053	2324	1476	39809	1279
Arkansas	1745	961	94	68	622	28	6778	4480	236	267	1795	102
Louisiana	1478	1295	46	7	130	6	7612	6837	236	28	511	31
Oklahoma	1411	1045	70	0	296	7	6428	5578	248	45	557	27
Texas	22918	14832	478	101	7507	231	118844	79158	1604	1136	36946	1119
<b>West Region</b>	34622	21271	804	661	11886	482	180832	110245	3940	2824	63823	2663
Mountain Division	18309	11804	344	257	5904	213	97926	63669	1890	1260	31107	1283
Arizona	5264	3834	172	8	1250	45	28789	21221	1056	107	6405	233
Colorado	4583	2384	90	92	2017	55	23809	12578	424	193	10614	360
Idaho	2160	1388	30	90	652	28	9772	6466	92	401	2813	163
Montana	531	249	12	13	257	15	2690	1521	104	83	982	62
Nevada	1641	1282	10	13	336	17	10729	7081	78	158	3412	189
New Mexico	1004	618	0	0	386	7	4613	3558	0	10	1045	28
Utah	2890	1830	22	37	1001	45	16430	10271	94	254	5811	243
Wyoming	236	219	8	4	5	1	1094	973	42	54	25	5
Pacific Division	16313	9467	460	404	5982	269	82906	46576	2050	1564	32716	1380
Alaska	148	109	8	7	24	3	657	486	22	33	116	11
California	10263	6022	202	239	3800	176	50209	30084	1056	761	18308	828
Hawaii	193	105	54	0	34	3	1602	865	134	0	603	21
Oregon	1448	1033	42	14	359	27	8156	5081	164	102	2809	166
Washington	4261	2198	154	144	1765	60	22282	10060	674	668	10880	354

sources. Exhibit 10 summarizes the same data in an easy-to-read graph. Look at the building permits issued in Minnesota, Washington, and Oregon; it is somewhat surprising to see how low the permit activity is for California and Colorado.

The US Census Bureau also tracks house sales by region (see Exhibit 11). Again, this is sales data so it is not a reflection of the fundamental supply or demand for housing, but of the activity in the asset market for single-unit residences. Exhibit 12 graphs the regional data from the table.

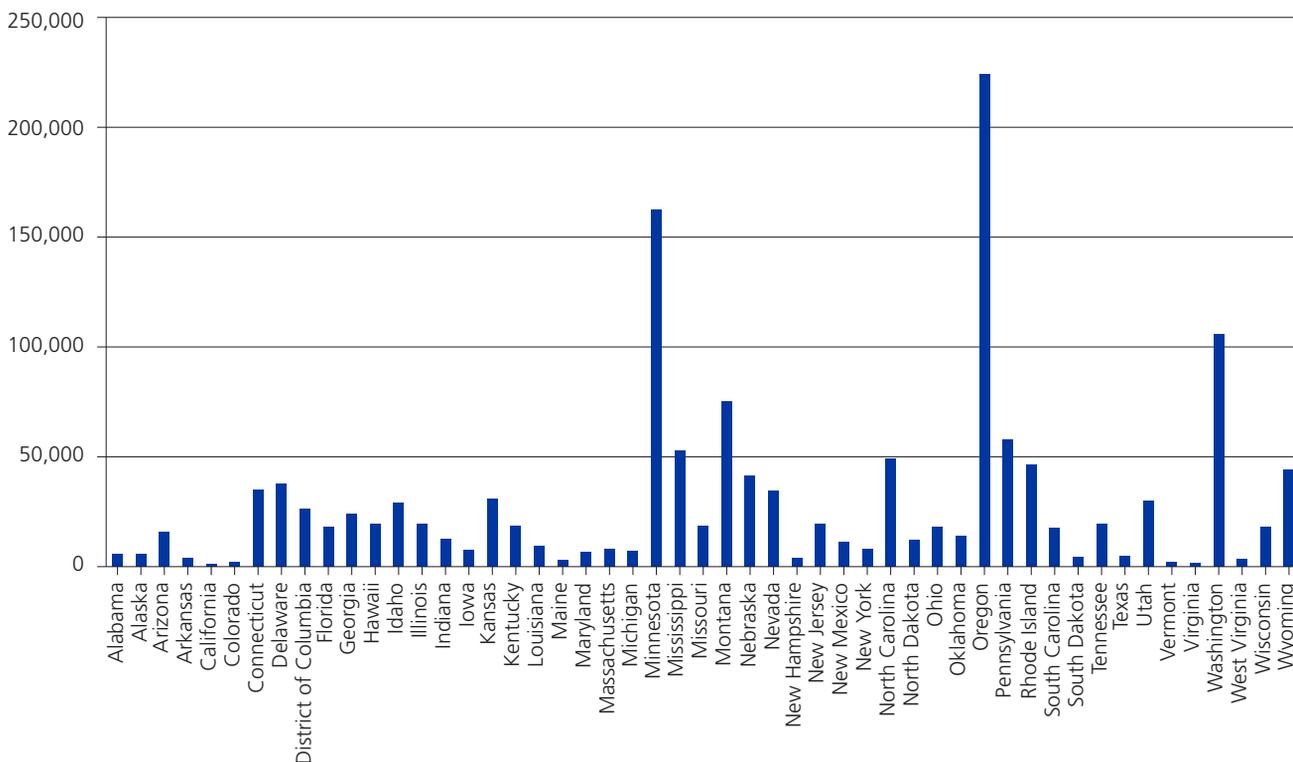
The US Census Bureau also keeps statistics on various housing characteristics, as illustrated in Exhibit 13.<sup>9</sup> Exhibit 14 shows the number of new homes built with air-conditioning. This is an example of a change in requirements or attitudes making this feature standard in single-unit residences. Is this a reflection of changes in

demand for the feature or the lower cost of the feature? At one time, a heater was an option for new cars, but a heater became a standard feature in the 1930s.

The graph in Exhibit 15 was created from the data in Exhibit 14. Look at this graph's vertical line (commonly called the y-axis). The range shown is from 0% to 100%, but what if the range shown was reduced to 60% to 100%? The graph in Exhibit 16 has that modification. The graphs are based on the same data and show the same trend, but the trend line is much steeper in the second graph. Appraisers must be careful when reviewing statistical data to differentiate between apparent trends and actual trends in the data.

The census data also shows the lot sizes for new homes in the US and by region. Exhibit 17 shows lot sizes for new US houses. This data is displayed as a graph in Exhibit 18 using Microsoft Excel.

**Exhibit 10** Housing Units Authorized by State



9. Available at <https://www.census.gov/construction/chars/>.

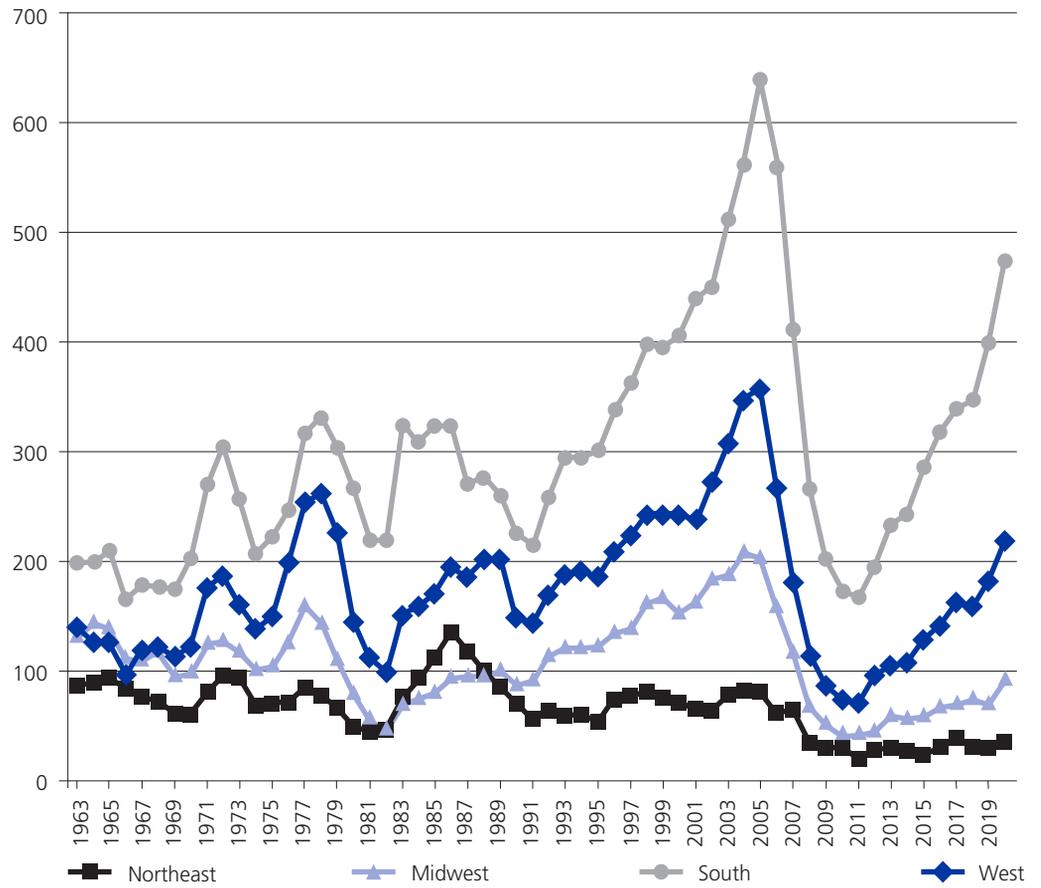
**Exhibit 11** US Census Data, Houses Sold by Region**Annual Data**

Components may not add to total because of rounding. Number of housing units in thousands.

Period	United States	Sold during period, not seasonally adjusted				Period	United States	Sold during period, not seasonally adjusted			
		Northeast	Midwest	South	West			Northeast	Midwest	South	West
1963	560	87	134	199	141	1992	610	65	116	259	170
1964	565	90	146	200	129	1993	666	60	123	295	191
1965	575	94	142	210	129	1994	670	61	123	295	191
1966	461	84	113	166	99	1995	667	55	125	300	187
1967	487	77	112	179	119	1996	757	74	137	337	209
1968	490	73	119	177	121	1997	804	78	140	363	223
1969	448	62	97	175	114	1998	886	81	164	398	243
1970	485	62	97	175	114	1999	880	76	168	395	242
1971	656	82	127	270	176	2000	877	71	155	406	244
1972	718	96	130	305	187	2001	908	66	164	439	239
1973	634	95	120	257	161	2002	973	65	164	439	239
1974	519	69	103	207	139	2003	1,086	79	189	511	307
1975	549	71	106	222	150	2004	1,203	83	210	562	348
1976	646	72	128	247	199	2005	1,283	81	205	638	358
1977	819	86	162	317	255	2006	1,051	63	161	559	267
1978	817	78	145	331	262	2007	776	65	118	411	181
1979	709	67	112	304	225	2008	485	35	70	266	114
1980	545	50	81	267	145	2009	375	31	54	202	87
1981	436	46	60	219	112	2010	323	31	45	173	74
1982	415	47	48	219	99	2011	306	21	45	168	72
1983	623	76	71	323	152	2012	368	29	47	195	97
1984	639	94	76	309	160	2013	429	31	61	233	105
1985	688	112	82	323	171	2014	437	28	59	243	108
1986	750	136	96	322	196	2015	501	24	61	286	130
1987	671	117	97	276	202	2016	561	32	69	318	142
1988	676	101	97	276	202	2017	613	40	72	339	163
1989	650	86	102	260	202	2018	617	32	76	348	160
1990	534	71	89	225	149	2019	683	30	72	399	186
1991	509	57	93	215	144	2020	822	37	93	474	218

Note: Estimates prior to 1999 include an upward adjustment of 3.3 percent made to account for houses sold in permit-issuing areas that will never have a permit authorization.

**Exhibit 12** US Census Data, Houses Sold by Region, Graphed



See Exhibit 11 for data components.

**Exhibit 13** US Census Data, Annual Characteristics New Housing**Overview**

This page provides national, annual data on the characteristics of new privately-owned residential structures, such as square footage, number of bedrooms and bathrooms, type of wall material, and sales prices. Many characteristics are available at the region level. The data are from the Survey of Construction (SOC), which is partially funded by the Department of Housing and Urban Development (HUD).

**Annual Characteristics of New Housing**

- Highlights of 2021 Characteristics of New Housing
- Single-Family Interactive House Infographic

Item	Single-Family Completed	Single-Family Sold	Multifamily Units	Multifamily Buildings
Age-Restricted	<a href="#">XLS</a> [54kb]	<a href="#">XLS</a> [63kb]	<a href="#">XLS</a> [49kb]	
Age-Restricted Starts			<a href="#">XLS</a> [49kb]	
Air-Conditioning	<a href="#">XLS</a> [139kb]	<a href="#">XLS</a> [90kb]	<a href="#">XLS</a> [72kb]	<a href="#">XLS</a> [95kb]
Bathrooms	<a href="#">XLS</a> [171kb]	<a href="#">XLS</a> [126kb]	<a href="#">XLS</a> [94kb]	
Bedrooms	<a href="#">XLS</a> [150kb]	<a href="#">XLS</a> [89kb]	<a href="#">XLS</a> [101kb]	
Bathrooms by Bedrooms	<a href="#">XLS</a> [125kb]	<a href="#">XLS</a> [85kb]		
Construction Method	<a href="#">XLS</a> [104kb]			<a href="#">XLS</a> [73kb]
Contract Price	<a href="#">XLS</a> [68kb]			
Contract Price per Square Foot	<a href="#">XLS</a> [50kb]			
Design (Apartments or Townhouses)			<a href="#">XLS</a> [83kb]	
Exterior Wall Material – Primary	<a href="#">XLS</a> [227kb]	<a href="#">XLS</a> [143kb]		
Exterior Wall Material – Secondary	<a href="#">XLS</a> [139kb]	<a href="#">XLS</a> [150kb]		
by Brick Primary Wall Material	<a href="#">XLS</a> [93kb]	<a href="#">XLS</a> [79kb]		
by Fiber Cement Primary Wall Material	<a href="#">XLS</a> [83kb]	<a href="#">XLS</a> [72kb]		
by ‘Other’ Primary Wall Material	<a href="#">XLS</a> [88kb]	<a href="#">XLS</a> [76kb]		
by Stucco Primary Wall Material	<a href="#">XLS</a> [92kb]	<a href="#">XLS</a> [79kb]		
by Vinyl Primary Wall Material	<a href="#">XLS</a> [93kb]	<a href="#">XLS</a> [80kb]		
by Wood Primary Wall Material	<a href="#">XLS</a> [97kb]	<a href="#">XLS</a> [81kb]		
Financing	<a href="#">XLS</a> [148kb]	<a href="#">XLS</a> [123kb]		
Fireplaces	<a href="#">XLS</a> [152kb]	<a href="#">XLS</a> [90kb]	<a href="#">XLS</a> [83kb]	<a href="#">XLS</a> [70kb]
Floors/Stories	<a href="#">XLS</a> [61kb]	<a href="#">XLS</a> [76kb]	<a href="#">XLS</a> [95kb]	<a href="#">XLS</a> [85kb]
Foundation	<a href="#">XLS</a> [157kb]	<a href="#">XLS</a> [117kb]		
Foyer	<a href="#">XLS</a> [103kb]			
Framing	<a href="#">XLS</a> [93kb]	<a href="#">XLS</a> [99kb]	<a href="#">XLS</a> [49kb]	<a href="#">XLS</a> [58kb]
Heating Fuel	<a href="#">XLS</a> [188kb]	<a href="#">XLS</a> [140kb]	<a href="#">XLS</a> [101kb]	<a href="#">XLS</a> [83kb]
Heating System	<a href="#">XLS</a> [175kb]	<a href="#">XLS</a> [132kb]	<a href="#">XLS</a> [49kb]	<a href="#">XLS</a> [68kb]
Heating Fuel by Heating System	<a href="#">XLS</a> [156kb]	<a href="#">XLS</a> [134kb]	<a href="#">XLS</a> [96kb]	
Homeowners’ Association	<a href="#">XLS</a> [85kb]	<a href="#">XLS</a> [69kb]		
Laundry	<a href="#">XLS</a> [105kb]		<a href="#">XLS</a> [70kb]	<a href="#">XLS</a> [58kb]
Lot Size	<a href="#">XLS</a> [96kb]	<a href="#">XLS</a> [127kb]		
Metropolitan Area	<a href="#">XLS</a> [98kb]	<a href="#">XLS</a> [76kb]		
Outdoor Features	<a href="#">XLS</a> [102kb]	<a href="#">XLS</a> [83kb]		
Parking	<a href="#">XLS</a> [207kb]	<a href="#">XLS</a> [115kb]		<a href="#">XLS</a> [68kb]
Sale Price	<a href="#">XLS</a> [186kb]			
Sale Price Per Square Foot	<a href="#">XLS</a> [186kb]			
Sewer	<a href="#">XLS</a> [103kb]			
Square Feet	<a href="#">XLS</a> [258kb]	<a href="#">XLS</a> [176kb]	<a href="#">XLS</a> [116kb]	
Units per Building			<a href="#">XLS</a> [128kb]	<a href="#">XLS</a> [138kb]

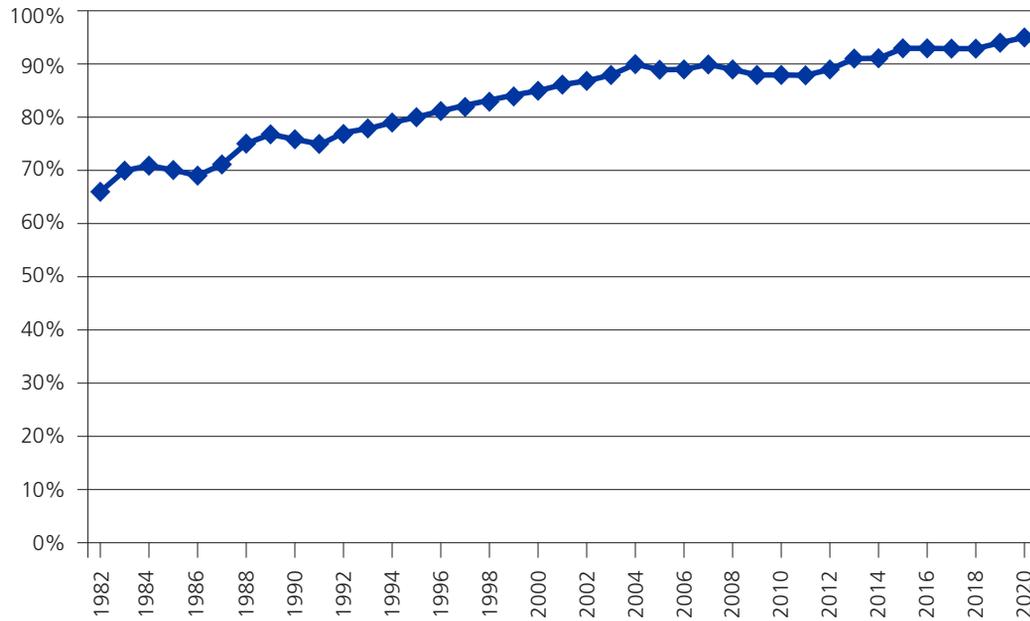
Source: <https://www.census.gov/construction/chars/>

**Exhibit 14** US Census Data, Presence of Air-Conditioning in New Single-Family Houses Completed in the US

Components may not add to totals because of rounding. Percents computed from unrounded figures.

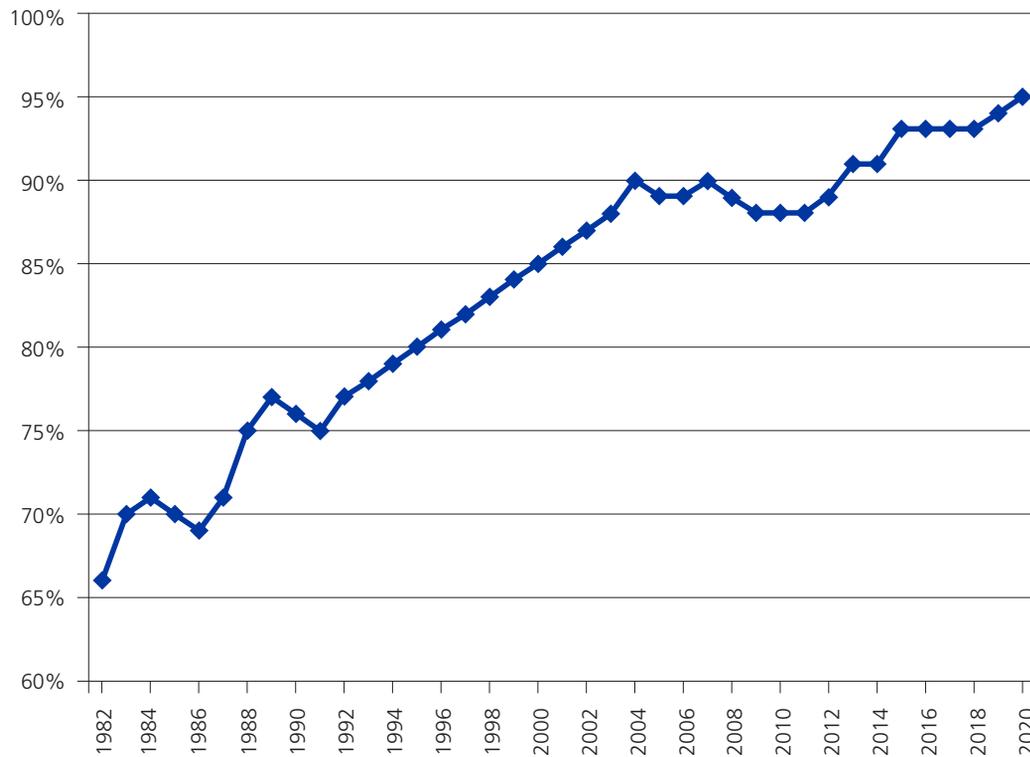
Year	Number of Houses (in thousands)			Percent Distribution		
	Total	With Air-Conditioning	Without Air-Conditioning	Total	With Air-Conditioning	Without Air-Conditioning
1973	1,197	582	616	100	49	51
1974	940	451	489	100	48	52
1975	875	403	473	100	46	54
1976	1,034	511	523	100	49	51
1977	1,258	679	579	100	54	46
1978	1,369	797	572	100	58	42
1979	1,301	784	517	100	60	40
1980	957	598	358	100	63	37
1981	819	530	289	100	65	35
1982	632	416	216	100	66	34
1983	924	642	282	100	70	30
1984	1,025	723	302	100	71	29
1985	1,072	746	326	100	70	30
1986	1,120	775	346	100	69	31
1987	1,123	801	322	100	71	29
1988	1,085	810	275	100	75	25
1989	1,026	785	241	100	77	23
1990	966	731	235	100	76	24
1991	838	628	210	100	75	25
1992	964	738	225	100	77	23
1993	1,039	806	234	100	78	22
1994	1,160	912	248	100	79	21
1995	1,066	846	219	100	80	20
1996	1,129	916	213	100	81	19
1997	1,116	917	199	100	82	18
1998	1,160	957	203	100	83	17
1999	1,270	1,072	198	100	84	16
2000	1,242	1,060	181	100	85	15
2001	1,256	1,081	175	100	86	14
2002	1,325	1,155	170	100	87	13
2003	1,386	1,223	164	100	88	12
2004	1,532	1,378	153	100	90	10
2005	1,636	1,463	173	100	89	11
2006	1,654	1,476	179	100	89	11
2007	1,218	1,093	125	100	90	10
2008	819	727	92	100	89	11
2009	520	460	61	100	88	12
2010	496	436	60	100	88	12
2011	447	395	52	100	88	12
2012	483	432	51	100	89	11
2013	569	518	51	100	91	9
2014	620	565	55	100	91	9
2015	648	600	48	100	93	7
2016	738	686	53	100	93	7
2017	795	742	53	100	93	7
2018	840	783	57	100	93	7
2019	903	849	54	100	94	6
2020	912	870	42	100	95	5
2021	970	927	43	100	96	4

**Exhibit 15** Percentage of New Houses with Air-Conditioning



See Exhibit 14 for data components.

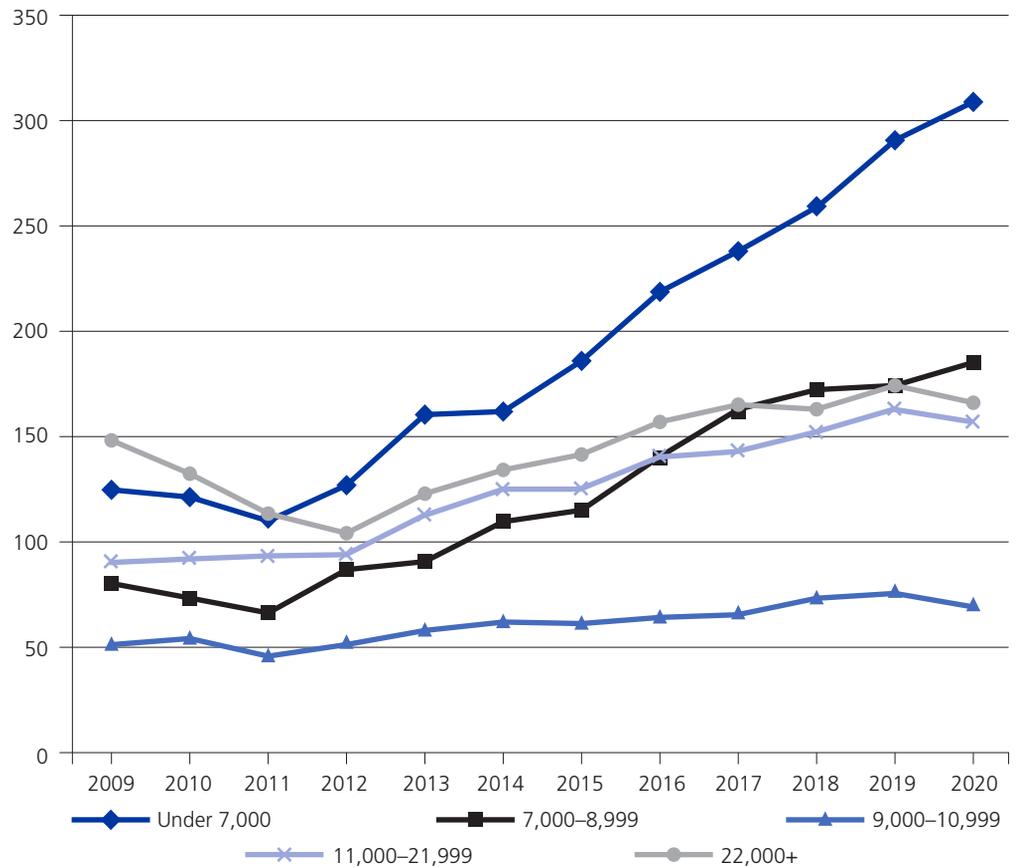
**Exhibit 16** Percentage of New Houses with Air-Conditioning (Modified Range)



**Exhibit 17** Lot Sizes of New US Houses Completed

Year	Number of Houses (in Thousands) by Lot Size (in Square Feet)						Percent Distribution					
	Total	Under 7,000	7,000 to 8,999	9,000 to 10,999	11,000 to 21,999	22,000 and over	Total	Under 7,000	7,000 to 8,999	9,000 to 10,999	11,000 to 21,999	22,000 and over
2009	494	125	80	51	90	148	100	25	16	10	18	30
2010	473	121	73	54	92	132	100	26	15	11	19	28
2011	427	110	66	46	93	113	100	26	16	11	22	26
2012	464	127	87	52	94	104	100	27	19	11	20	22
2013	544	160	91	58	113	122	100	29	17	11	21	22
2014	593	162	109	62	125	134	100	27	18	10	21	23
2015	628	185	115	61	125	141	100	30	18	10	20	22
2016	720	218	140	64	141	157	100	30	19	9	20	22
2017	775	238	162	66	143	165	100	31	21	9	18	21
2018	817	258	172	73	152	163	100	32	21	9	19	20
2019	878	290	174	76	163	174	100	33	20	9	19	20
2020	888	309	185	70	157	166	100	35	21	8	18	19
2021	939	340	204	72	153	170	100	36	22	8	16	18

**Exhibit 18** Lot Sizes of New US Houses



**Local MLS**

Most residential appraisers can find support for market trends within their local MLS systems. Many MLS systems will have preset graphs that can be copied into appraisal reports (sometimes with permission). Exhibit 19 is a preset graph for zip code 46123.

This graph shows that the median price in this zip code in January 2011 was about \$140,000 and the median price in August 2021 was approximately \$285,000. This is an overall rate of change of 103.57% over 127 months, which is calculated as follows:

$$\begin{aligned}
 & \$285,000 - \$140,000 = \$145,000 \\
 & \$145,000 / \$140,000 = 1.0357 = 103.57\% \\
 & 103.57 / 127 = 0.815523\% \text{ per month} \\
 & 0.815523 \times 12 = 0.09786277, \text{ or } 9.78628\%
 \end{aligned}$$

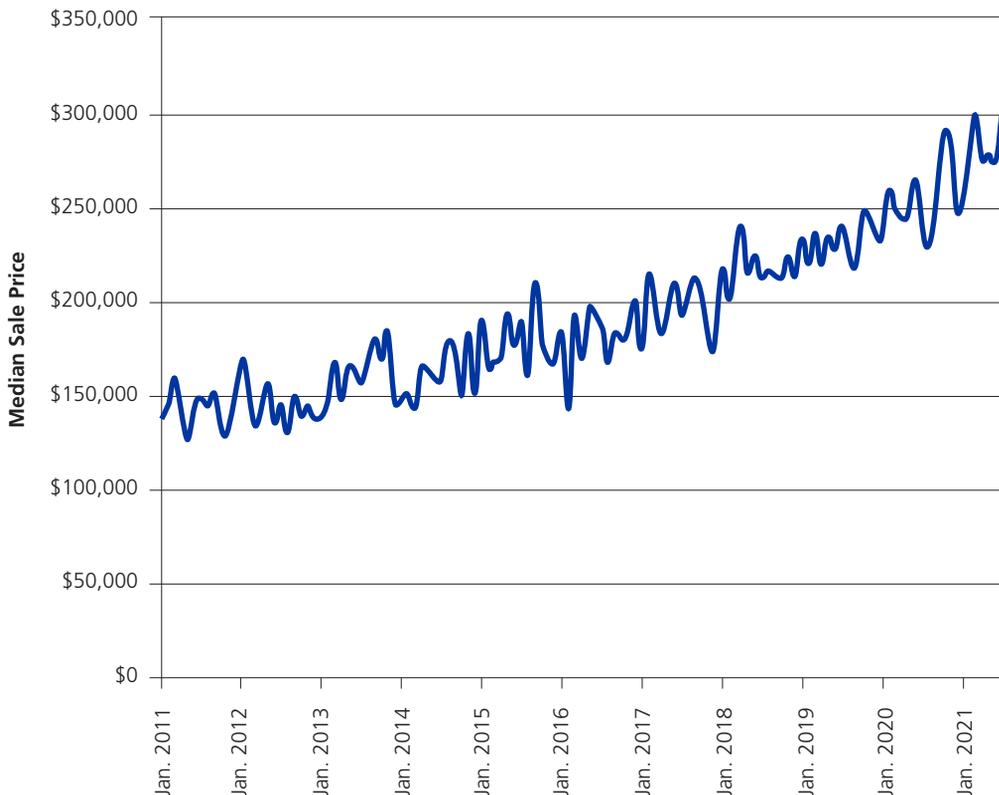
Once the appraiser is skilled in the use of the MLS system, this graph can be created in seconds and put in a report to show support for a market conditions adjustment. The land area can be more specific than the zip code if needed, but zip codes are the easiest to use.

MLS data is available from the National Association of Realtors, but the national data usually lacks the focus necessary to support conclusions in a local market.

**Local Builders Association**

Data from local builders can be used also. The data in Exhibits 20, 21, and 22 was researched by an appraiser to support an adjustment for market conditions over time.

**Exhibit 19** Historic Sales Price Trend



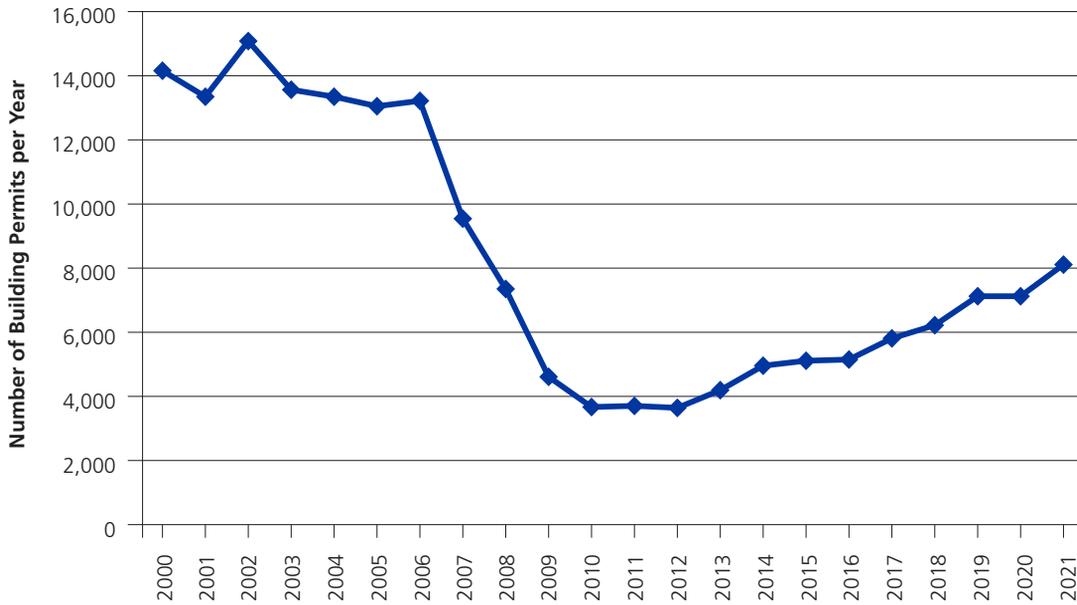
Time frame is from Jan. 2011 to Aug. 2021  
 County or parish is in the list (click to view)  
 Postal code is '46123'  
 Results calculated from 8,943 listings

Source: Indianapolis MIBOR Realtor Association - Matrix-CoreLogic

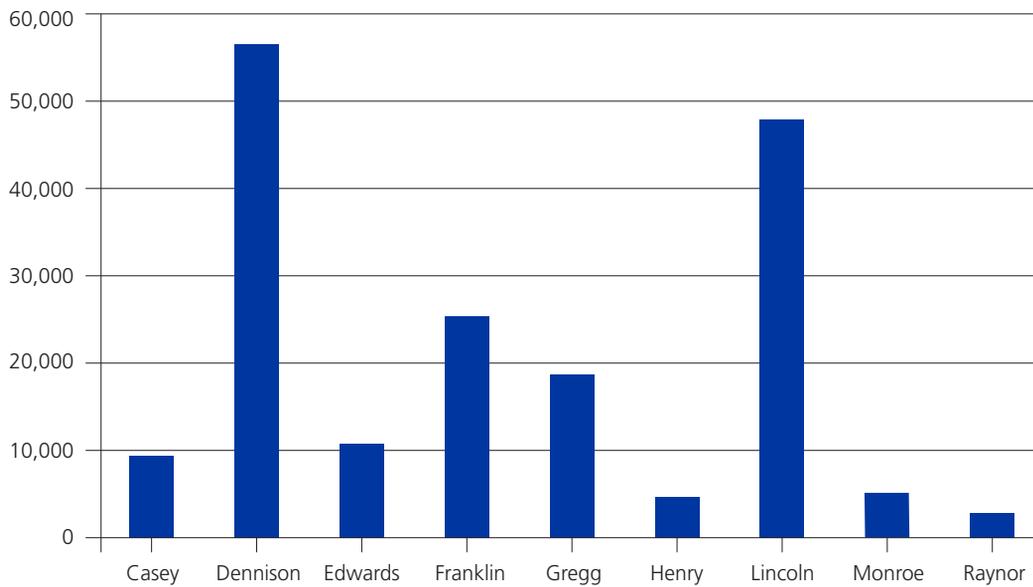
**Exhibit 20** Bigtown MSA SFR Building Permits

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Casey	582	435	452	426	494	547	590	429	443	312	272	304	307	358	490	424	383	402	411	448	455	511	9,485
Dennison	3,802	3,509	3,772	3,463	3,655	3,731	3,608	2,778	2,412	1,584	1,372	1,354	1,413	1,690	1,899	1,833	1,908	2,196	2,232	2,577	2,660	3,033	56,481
Edwards	411	592	909	870	794	862	762	564	413	165	150	132	154	195	264	350	360	400	459	592	622	711	10,761
Franklin	1,828	1,736	1,963	2,054	2,044	1,825	1,934	1,284	996	654	632	569	525	606	695	749	719	932	956	882	880	990	25,453
Gregg	1,447	1,394	1,369	1,064	1,030	1,478	1,504	1,152	700	446	241	383	409	493	623	629	583	594	705	800	805	900	18,749
Henry	297	339	278	327	561	484	589	326	208	104	59	122	64	48	83	97	83	113	95	129	135	159	4,700
Lincoln	4,892	4,582	5,583	4,616	4,225	3,590	3,637	2,532	1,892	1,077	772	729	607	628	731	812	885	948	1,106	1,357	1,257	1,465	47,922
Monroe	557	522	511	492	357	316	292	160	137	84	88	91	111	101	124	114	103	127	175	169	191	145	5,111
Raynor	283	224	217	214	194	204	286	160	107	85	43	39	44	53	73	65	73	88	107	112	119	145	2,935
Total	14,129	13,333	15,054	13,526	13,352	13,037	13,202	9,514	7,331	4,564	3,625	3,720	3,614	4,182	4,959	5,084	5,118	5,776	6,198	7,072	7,102	8,105	181,597

**Exhibit 21** Building Permits Bigtown MSA



**Exhibit 22** County-by-County Building Permits Bigtown MSA Since 1999



## Conclusion

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This article has talked about data sources for residential housing statistics. The sources available to an appraiser will vary from market to market, depending on the sophistication and computerization of the sales data. If a market still keeps listings and sales on small sheets of paper that are distributed to brokers, the market data will be poor. If the area belongs to an MLS system, the data will normally be on computer and can easily

be used to support the appraiser's conclusions. For residential appraisers with skeptical underwriters or clients, the easiest way to support the market trends and the rate of market conditions adjustments is probably to use preset graphs from the MLS system or to provide sales and resales of the comparable sales in the appraisal report. The analysis of sale and resale data does require more work, but it is very logical and local, and most residential appraisers have to research this information anyway.

## About the Author

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**Mark R. Ratterman, MAI, SRA**, has been a real estate appraiser and broker in Indianapolis since 1979. He initially worked as a residential broker only but soon moved on to focus on real estate appraisals. He has written ten books about real estate and appraisal with a focus on both residential and nonresidential topics.

Additionally, Ratterman has written courses and seminars for the Appraisal Institute and has been a teacher of appraisal courses and seminars for over thirty-five years. He has lectured in forty-five states and four foreign countries and has written over twenty seminars for both online and classroom presentation. He has been published many times in *The Appraisal Journal*. Ratterman lives in the Indianapolis area. His contact information is listed on the Appraisal Institute website ([www.appraisalinstitute.org](http://www.appraisalinstitute.org)) and can be located by clicking on "Find an Appraiser."

## Additional Resources

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Suggested by the Y. T. and Louise Lee Lum Library

### Appraisal Institute

- **Education**

- Appraising Condos, Co-Ops, and PUDs*
- Market Analysis in Volatile Markets*
- Residential Market Analysis and Highest & Best Use*
- Residential Report Writing & Case Studies*
- Residential Sales Comparison & Income Approach*
- Residential Site Valuation & Cost Approach*

- **Lum Library, External Resources, Resource Links [Login required]**

- Knowledge Base Bibliographies
  - Appraisal applications & reports/comparable sales
  - Economic data
  - Residential properties
  - Value

- **Publications**

- Market Analysis for Real Estate*, second edition
- Residential Property Appraisal*
- Subdivision Valuation*, second edition
- Valuation by Comparison*
- Valuation of Condominiums, Cooperatives, and PUDs*

# The Challenge of Inflation for Real Estate Professionals

## About This Column

The “Economic Perspectives” column offers insights by guest columnists on factors currently at play in economics, real estate, and financial markets. This edition of “Economic Perspectives” looks at the implications of governmental inflation policies for real estate markets and investments.

## Market Changes

For the first time in a generation, the issue of inflation has stepped to the fore in the thinking of policy makers, business executives, the commentariat, and the general public. Real estate is not to be left out of the conversation. As is almost always the case in the current hyper-politicized environment, inflation has become a partisan flashpoint and what passes for analysis often produces more heat than light. The goal of this article is to provide a sober contribution to a discussion that I consider vitally important as both an economist and a real estate professional.

To set the context, Americans have enjoyed a long period of disinflation. *Disinflation* is an awkward term that most people never use in their daily vocabulary. It refers to a rate of inflation that is still positive (that is, greater than the zero representing price stability) but is slowing over time.<sup>1</sup> In the mid-1980s when I prepared the annual *Landauer Real Estate Market Forecast*, dis-

inflation or the subsidence of price increases from the double-digit levels earlier in that decade were very much part of the conversation across property markets.<sup>2</sup>

## Hedging

In the early years of organized real estate institutional investing, the case for adding real estate as an asset class hinged on two premises.<sup>3</sup> The first was the diversification benefit of real estate when combined with stocks, bonds, and other investible assets. The second was real estate’s purported ability to serve as an inflation hedge.

Technically speaking, real estate does not function as a “hedge” in the way financial analysts understand the term. A *hedge* is a financial strategy that involves taking a position in a related asset that offsets the risk involved in a primary asset. Mathematically, an investor seeks a negative correlation between the two assets, often in the form of financial derivatives, such that there is a mitigating effect if the primary asset suffers a

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Opinions presented in this article are solely those of the author and do not constitute legal or financial advice.

1. Disinflation, or slowing inflation, is not the same as *deflation*, which is an absolute reduction in the levels of prices across the economy. This is a far more dangerous and rarer phenomenon, because deflation constitutes a disincentive for investment, potentially derailing economic growth as in the Great Depression. Deflation, and its winners and losers, is examined in detail in A. Gary Shilling, *Deflation* (Short Hills, NY: Lakeview Publishing Co., 1998).
2. Those *Market Forecast* discussions have helped inform the current commentary. The *Market Forecast* publications are archived on my website at <https://bit.ly/3CLYdrW>.
3. This roughly coincided with the establishment of the National Council of Real Estate Investment Fiduciaries (NCREIF).

loss of value. While such strategies can be used in real estate, and often are, that is not what was meant when real estate (particularly commercial properties) were described as “inflation hedges.”

Investors understood that there were certain features in commercial property investments that offered a degree of protection against the impact of inflation. Office leases, for example, can use escalation clauses to pass along increased operating expenses, in whole or in part, to tenants, thus protecting net operating income against rising labor, materials, or utility prices. Shopping centers with percentage rent clauses can capture a portion of increased merchant sales if consumer prices rise and tenant gross incomes push above a prescribed breakpoint. Net leasing, a feature in a variety of commercial property types but especially common in industrial property, transfers operating expense risk to the occupier while providing owners with a bond-like return. While not hedges as contemplated in financial engineering tools such as derivatives, these common features of commercial leases provide some insulation against inflation’s potential for eroding the property bottom line. The textbook *The Appraisal of Real Estate* discusses such features in its sections on lease analysis.<sup>4</sup>

### Leverage

Broadly speaking, inflation is an outright risk for lenders but may be an opportunity for borrowers. In an inflationary era, borrowers can secure funds that they will pay off in cheaper dollars over the term of the loan. Astute lenders, of course, price anticipated inflation into the interest rate. But if inflation beyond the scale that is originally underwritten erupts in the economy, borrowers not

only reap the operating expense benefits described above but the real (inflation-adjusted) payments they are obligated to make actually decline over time. And, if market rents rise in consonance with general inflation, property owners may realize gross revenue that is higher (in nominal or non-inflation-adjusted dollars) than projected in their original pro forma investment analyses.

Although inflation is typically considered an undesirable economic phenomenon, there are manifestly some winners and losers as the level of inflation fluctuates.

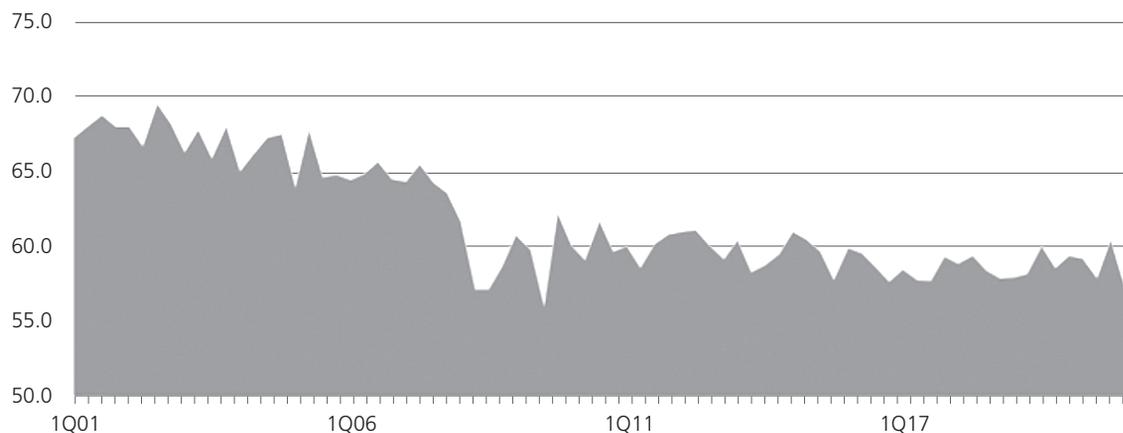
Given the relatively high degree of leverage that characterizes real estate, it is no wonder mixed asset investors consider commercial property not only as a diversifier but also as a kind of hedge in their portfolios. In short, although inflation is typically considered an undesirable economic phenomenon, there are manifestly some winners and losers as the level of inflation fluctuates.

Lending institutions are hardly blind to such basic economic considerations.<sup>5</sup> One widely used real estate academic textbook<sup>6</sup> decomposes the pricing of mortgage interest rates into six factors: the risk-free (Treasury) rate; the inflation premium; timing (the yield curve); default risk; yield degradation (or expectation of delinquency/default); and an illiquidity premium. Taken at face value, such a stacking of components in the

4. See *The Appraisal of Real Estate* (Chicago: Appraisal Institute, 2020), 413–458.

5. For a sophisticated mathematical approach—typically well understood by finance professionals—see Chris Marrison, *The Fundamentals of Risk Measurement* (New York: McGraw-Hill, 2002).

6. David Geltner, Norman G. Miller, Jim Clayton, and Piet Eichholtz, *Commercial Real Estate: Analysis and Investments*, 3rd ed. (Mason, OH: OnCourse Learning, 2014), 468.

**Exhibit 1** Loan-to-Value Ratio Trend, 2001–2020

Source: *Real Estate Capital Markets: Evolution, Structure, Participants*, preliminary edition, Cognella Inc., 2022.

interest rate would seem to provide lenders with adequate protection—a substantial risk premium pricing inflation and other variables into rates, thus safeguarding their mortgage assets. Nevertheless, a thirty-year empirical study of commercial mortgage default rates has shown that lenders face borrower failures at a shockingly high rate (15.2%) with loss severity exceeding 30%.<sup>7</sup> The authors of that study, Esaki and Goldman, examine a period that was secularly disinflationary, but characterized by significant real estate and capital market volatility. From today's perspective, it seems that the discipline of the textbook construction of a well-priced mortgage interest rate falls prey over market cycles to lenders' desire to maintain market share by competing on price to meet loan volume targets. As shown in Exhibit 1, following the global financial crisis (GFC) of

2007–2008 that was triggered by US subprime mortgage abuses, lenders adjusted their loan-to-value rates substantially to reflect such risks.<sup>8</sup>

#### Impacts of Adjustments

Two points should be made about the impacts of such adjustments in real estate finance on inflationary forces in the economy. The first is the obvious fact that nothing in business remains static. The second is that inflation affects real estate in ways far beyond merely altering line items of operating expense.

**Rate Desynchronizing.** On the first point: the risk-free rate represented by government securities is in itself a variable subject to policy change. The Federal Reserve (Fed) adjusts its discount rate periodically to target its dual economic man-

7. Howard Esaki and Masumi Goldman, "Commercial Mortgage Defaults: Thirty Years of History," *CMBS World* (Winter 2005): 21–29.

8. Data source, ACLI *Commercial Mortgage Commitments* (Historical) as of second quarter 2021. Graphic reprinted from Merrie Frankel, Hugh Kelly, and Constantine Korologos, *Real Estate Capital Markets: Evolution, Structure, Participants*, prelim. ed. (San Diego: Cognella Inc., 2022), 69.

date: price stability and maximum sustainable employment.<sup>9</sup> Tightening and loosening monetary policy to achieve these ends depends upon the Fed's reading of current and anticipated economic conditions, and it is executed by interest rate management and by the buying and selling of securities through the Federal Open Market Committee (FOMC). There is an essential need for the Fed to be flexible in responding to economic change, and this necessitates periodic adjustments in the interest rate environment.

For real estate, which competes in the capital markets, there is also the issue of asset price inflation, a much trickier discussion, one that the Fed is often loathe to discuss publicly. For appraisers, at the present moment, this is a discussion which cannot be avoided.

According to the theory whereby a multifactor risk premium sits atop the foundation of the risk-free rate, we might expect that when Fed actions influence an upward or downward shift in the Treasury rates, market rates such as mortgage interest rates would adjust accordingly. But, in the immortal words of Gershwin, "it ain't necessarily so." In economists' jargon, market interest

rates are "inelastic" relative to the risk-free rate. That is, changes in mortgage rates (and the related capitalization rates in commercial property markets) do not adjust equally as the Fed alters policy. A lack of synchronicity can lead to risk premiums that at times can be very generous to investors but at other times can reflect an inadequate pricing of risk that leads to losses, as Esaki and Goldman found in their research.

**Asset Pricing.** This leads us fairly directly to the second point about inflation rate adjustments: there are inflationary impacts beyond simply inputs for operating expense costs.

For most people, general measures such as the consumer price index published by the US Bureau of Labor Statistics or the gross domestic price index published by the US Bureau of Economic Analysis are more than enough statistical information on economic inflation. And for real estate practitioners, these are the measures that capture the relevant impacts on the costs of managing property.

But for real estate, which competes in the capital markets, there is also the issue of asset price inflation, a much trickier discussion, one that the Fed is often loathe to discuss publicly. For appraisers, at the present moment, this is a discussion which cannot be avoided.

Let's take housing as a first case in point. The August 30, 2022, release of the S&P Global/Case-Shiller Home Price Index reported a one-year price increase of about 18% for US residences. Over five years, the price change averaged 9.9%, and over ten years the price change averaged just under 8%.<sup>10</sup> In other words, housing

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9. The Fed continuously considers the balancing act implied by the dual mandate, which was articulated by Congress in 1977 but has been part of the Fed's economic considerations since its establishment under the Federal Reserve Act of 1913. See "Statement on Longer-Run Goals and Monetary Policy Strategy" (<https://bit.ly/3g3WSDO>) for a contemporary discussion of the Fed's perspective on its dual mandate and approaches to implementation.

10. See S&P CoreLogic Case-Shiller Home Price Indices for data and discussion, <https://bit.ly/3rNAlhj>.

inflation registered a multiple of consumer price inflation for more than a decade, spurred by home mortgage rates impacted by Fed policy holding the risk-free rate near the zero bound.

In addition to bringing consumer price inflation down, Fed policy (intentionally or unintentionally) is in the process of taking the air out of an asset price bubble as well.

While home prices in summer 2022 remained elevated, data from the National Association of Realtors (NAR) showed existing home sales in August 2022 were down 19.9% from the same month in 2021, as rising mortgage rates acted as a drag on transaction activity.<sup>11</sup> Meanwhile, NAR's Housing Affordability Index slipped from 146.5 in July 2021 to 102.2 in July 2022, as household incomes failed to keep pace with surging inflation in home prices.<sup>12</sup> Even with the lag associated with mortgage rate inelasticity, Fed policy has its effects on residential market asset pricing.

The same appears to be true in the commercial property sector. The appreciation component of the NCREIF Property Index stood at 256.35 as of the second quarter 2022, up a robust 16.9% in a year, and having had an average annual gain of 5.9% over the past ten years. Capitalization rate data reported in NCREIF's Key Performance Indicators put multifamily capitalization rates at 3.4%, versus a five-year average of 4.0% and a ten-year average of 4.6%. The comparable statis-

tics for industrial assets are a stunning 2.9% for second quarter 2022, versus a five-year norm of 4.2% and a ten-year mean of 4.8%.<sup>13</sup>

At press time, the Fed had already elevated the Federal Funds rate in three 75 basis point increments this year, and now sets its target at 3.0% to 3.25% (as a risk-free benchmark). Therefore, it is difficult to see how commercial property capitalization rates can be maintained at any reasonable level of risk premium into the immediate future. Thus, in addition to bringing consumer price inflation down, Fed policy (intentionally or unintentionally) is in the process of taking the air out of an asset price bubble as well. This can be seen simultaneously in other parts of the capital markets, such as stock equities and bond prices. If the words of Fed Chair Jerome Powell are to be heeded, the central bank will be pursuing a hawkish policy on inflation "until the job is done," even if its rates rise above 4.5% in 2023.

## The Business Cycle and the Valuation Outlook

US gross domestic product contracted in the first two quarters of 2022. Although not officially a recession indicator, such a contraction, if continued, is bound to result in reduced employment, investment, and household income while "the job is getting done" by the Fed. Recessions, it need not be said, are negative events for real estate markets and amplify the risk of value declines. This is the lesson of history, and the expected economic consequence of wringing inflation expectations out of spending and pricing patterns that have become dependent upon

11. August 2022 existing-home sales data available at <https://bit.ly/3RShrR1>.

12. NAR housing affordability data available at <https://bit.ly/3EDQgeu>.

13. Statistics were sourced from the NPI detailed report for Second Quarter 2022 and the KPI data analytics available (members only) on NCREIF's website.

fiscal and monetary stimulus since the end of the GFC more than a decade ago.

While this should be a time of sobriety, it is not a time for panic, nor a time for long-range pessimism. After all, we have ample experience with cyclical change. By official count, there have been no fewer than eleven recessions since 1948, and each has been followed by a period of growth lasting substantially longer than the downturns. We have likewise seen a rise and fall in real estate prices in relation to the overall business cycle and should not be surprised to find the property markets undergoing an adjustment period that could be painful.

Operationally, property owners need to employ the tools at their disposal to mitigate the currently high inflation. But they, and asset managers of property portfolios, also need to take appropriately defensive steps to safeguard value as asset pricing adjusts. It is unlikely that such an adjustment will be as dire as that experienced

during the GFC, in my judgment, if cash flow management remains disciplined and equity owners work hand-in-glove with lenders. Lenders have long since learned that taking assets in foreclosure is generally a step that presages further value declines.

For appraisers, then, this is a particularly fraught time. Valuation is unquestionably a by-the-numbers practice. But it is not a simplistic exercise in arithmetic. Interpreting market data is not merely a matter of ascertaining averages, nor is it a trending of past data uncritically into the future. Rather, appraisal at a properly sophisticated level is a reflection of the mind of the market. In time of dislocation such as the present period's policy reaction to heightened inflation, valuers need to be particularly sensitive to the thinking of buyers and sellers, in addition to the data being surfaced in transactions. Here is where appraisal shows itself to be a professional discipline, not simply a mathematical exercise.

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### **About the Author**

**Hugh F. Kelly, PhD, CRE**, has been the principal of Hugh Kelly Real Estate Economics, based in Brooklyn, New York, since early 2001. From 1978 to 2001 he worked in Landauer Associates' Valuation and Technical Service division and was the principal author of the firm's annual real estate market forecast and served as its chief economist. Kelly holds a PhD in real estate and the built environment from the University of Ulster, Northern Ireland. A member of the Counselors of Real Estate since 1989, he served as its international chair of the board in 2014. His book, *24-Hour Cities: Real Investment Performance, Not Just Promises*, won the 2017 Gold Award from the National Association of Real Estate Editors. **Contact: [hughkelly@hotmail.com](mailto:hughkelly@hotmail.com)**

# Author! Author!

## Practical Advice on Developing a Manuscript for Submission to *The Appraisal Journal*

### Abstract

Real estate professionals are encouraged to write for *The Appraisal Journal*. Publishing in the *Journal* is a personally and professionally satisfying accomplishment. This article offers advice from an experienced author and Editorial Board member on writing and submitting articles to the *Journal*.

### Introduction

Writing an article is a lot like writing a demonstration report for designation: most would love to do it, but few get around to actually writing anything and fewer still finish. Those who eventually do finish, however, invariably experience a great sense of personal satisfaction and discover they have learned a lot in the process. I published my first *Appraisal Journal* article forty years ago. Since then, I have been fortunate to have published twenty-five articles in the *Journal*. In the process I also have learned quite a lot about how to do it. A few painful but invaluable lessons were involved. The discussion here is an attempt to share some of what I learned in hopes of making your journey to publication in the *Journal* easier.

### Getting Started

The first thing to do is to read one or two of the award-winning articles from *The Appraisal Journal*. The winning articles are announced in the Spring issue each year. Award categories include most outstanding article published during the previous year (Armstrong/Kahn Award); best article by a practicing appraiser (Swango Award); and best article by an academic (Richard U. Rat-

cliff Award). A list of recent award-winners is shown in Exhibit 1. Take a look at articles that most closely fit your background and topic. This will give you a sense of what a successful article looks like.

Next, carefully read the *Journal's* Manuscript Guide, which appears at the back of most issues as well as on the *Journal's* web page (<https://bit.ly/39W03Wd>). The Manuscript Guide explains aspects of writing such as the style, content, and the recommended length of manuscripts, and lists the required submission elements, including a cover letter, short abstract, brief biography, etc. The Manuscript Guide also discusses footnotes and directs you to the online *Chicago Manual of Style* for guidance. Finally, it tells you where and to whom to email the manuscript when you are ready to submit.<sup>1</sup>

### Research and Outline

One of the biggest stumbling blocks to writing an article is finding a good topic. Rely on your experience. Focus on topics you are familiar with. What interesting issues or problems have you encountered recently? Almost all my articles have been about topics I encountered while doing routine assignments. Most of the issues I

1. If you have questions related to any aspect of writing for *The Appraisal Journal* or want to discuss article development, contact the *Journal's* managing editor at [TAJ@appraisalinstitute.org](mailto:TAJ@appraisalinstitute.org) for helpful advice.

**Exhibit 1** Recent *Appraisal Journal* Award-Winning Articles

<b>Year</b>	<b>Armstrong/Kahn Award</b>	<b>Swango Award</b>	<b>Richard U. Ratcliff Award</b>
2021	<b>"National Park Concessions: Valuation Concepts, Issues, and Controversies"</b> Richard J. Roddewig, JD, MAI (Winter 2021)	<b>"Valuation of Accessory Dwelling Units"</b> Sandra K. Adomatis, SRA (Fall 2021)	<b>"Land Values and External Obsolescence"</b> Stanley D. Longhofer, PhD (Spring 2021)
2020	<b>"Golf Course Communities as Multisided Markets: Ownership Implications"</b> Bruce K. Cole, PhD, and David B. Hueber, PhD (Spring 2020)	<b>"Timing Is Everything: The Role of Interim Use in the Highest and Best Use Conclusion"</b> David C. Lennhoff, MAI, SRA, and Richard L. Parli, MAI (Summer 2020)	<b>"Perspectives on the Assembled Workforce in Real Property Valuation"</b> Kimberly K. Merriman, PhD, and Leonard J. Patcella, MAI (Summer 2020)
2019	<b>"Improving Market Analysis in Commercial Real Estate Appraisal Assignments"</b> David W. Koepke (Winter 2019)	<b>"Residential Government Agency Requirements and Case Studies on Measuring Market Reaction to Energy-Efficient Features"</b> Sandra K. Adomatis, SRA (Winter 2019)	<b>"The Tradeoff between Selling Single-Family Houses as Vacant or Lived-In: Evidence from the Bloomington-Normal Housing Market"</b> Adebayo A. Adanri, PhD, SRA, and Han B. Kang, PhD (Fall 2019)
2018	<b>"Using the Income Approach for Minority Interests"</b> Dennis A. Webb, MAI (Spring 2018)	<b>"Market Value: What Does It Really Mean?"</b> Michael V. Sanders, MAI, SRA (Summer 2018)	<b>"Environmental Risk Premiums and Price Effects in Commercial Real Estate Transactions"</b> Thomas O. Jackson, PhD, MAI, and Chris Yost-Bremm, PhD (Winter 2018)
2017	<b>"Market Equilibrium Analysis"</b> Richard L. Parli, MAI, and Norman G. Miller, PhD (Fall 2017)	<b>"The 50% FEMA Rule Appraisal"</b> Patricia Staebler, SRA (Fall 2017)	<b>"Appraisal of Residential Water View Properties"</b> Chris Mothorpe, PhD, and David Wyman, PhD (Spring 2017)
2016	<b>"An Analysis of Solar Home Paired Sales across Six States"</b> Sandra K. Adomatis, SRA, and Ben Hoen (Winter 2016)	<b>"Is Excess Rent Intangible?"</b> Stephen D. Roach, MAI, SRA, AI-GRS (Spring 2016)	<b>"An Empirical Study of the Impacts of an Express Rail Line on Property Prices—Hong Kong Evidence"</b> K. F. Man, PhD, and Peter P. Y. Mok (Summer 2016)
2015	<b>"What's So Special about Special-Purpose Property?"</b> Ron Throupe, MAI, Kay Zhang, and Xue Mao (Summer 2015)	<b>"A Discussion of Excess Land Concepts and Theory"</b> Joseph M. Webster, MAI (Spring 2015)	<b>"Reported Price Errors: A Caveat for Appraisers"</b> Marcus T. "Tim" Allen, PhD, Kenneth M. Lusht, PhD, MAI, SRA, and H. Shelton Weeks, PhD (Fall 2015)
2014	<b>"Qualitative Analysis in the Sales Comparison Approach Revisited"</b> Gene Rhodes, MAI (Fall 2014)	<b>"The Appraisal of Power Plants"</b> Mark Pomykacz, MAI, and Chris Olmsted (Summer 2014)	<b>"Land Rush! Winners and Losers in the New Century"</b> Barrett A. Slade, PhD, MAI (Winter 2014)
2013	<b>"One Step Further—Implementing the Recommendations of Guide Note 12"</b> Kerry M. Jorgensen, MAI, and Stephen F. Fanning, MAI (Summer 2013)	<b>"The Trouble with Rates in the Subdivision Development Method of Land Valuation"</b> Brian J. Curry, MAI, SRA (Spring 2013)	<b>"The Impact of Relative Size on Home Values"</b> Paul K. Asabere, PhD, and Forrest E. Huffman, PhD (Winter 2013)
2012	<b>"Price, Value, and Comparable Distinctions in Distressed Markets"</b> William G. Steinke, SRA (Spring 2012)	<b>"Market Conditions Adjustments for Residential Development Land in a Declining Market"</b> Robert M. Greene, PhD, MAI, SRA (Winter 2012)	<b>"The Effects of Mineral Interests on Land Appraisals in Shale Gas Regions"</b> Joseph B. Lipscomb, PhD, MAI, and J. R. Kimball, MAI (Fall 2012)

All *Appraisal Journal* articles are available through the Lum Library on the Appraisal Institute website.

have written about are ones that, at the time of the assignment, I didn't know what I didn't know—it was only during the assignment that I developed an understanding about the issues. When this happens to you, chances are there are other professionals who also don't know they don't know. Sometimes the topic begins with just a kernel of an idea that subsequently develops into a more substantial one; however, I have had a few cases where it turned out there just was not enough substance for an entire article. The idea or topic has to be sufficient to meet the required length of an acceptable article. Don't think you can get away with just dragging out a minor thought—that will not work.

You will find a list of suggested article topics in most issues of the *Journal* under “Article Topics in Need of Authors”; these are topics that have been identified as ripe for discussion. See if any of these are a good fit for your interests. You might also contact the Appraisal Institute's Lum Library and ask the head librarian for topics he would recommend based on inquiries the library has received.

Once you have identified a topic of interest that you want to address, do a thorough background study and literature search. You need to show the substantive basis for what you say in the article; it is not appropriate to use your personal experience as the sole foundation for the discussion. This involves learning what already has been written on the topic. You might be amazed, and perhaps a little disappointed, at how many “new” ideas have already been thoroughly treated. Unless you have a new take on these topics, you should probably choose another one.

The Lum Library is a good starting point for your literature search. To take full advantage of the library resource you will need to become familiar with how it works. Fortunately, on the library's homepage you will see the link to “Instructions.” Click on that and you will get access to a thorough tutorial on using the library's features. Another article in this issue, “Using the

Lum Library Research Features,” gives you a head start in accessing the library's amazing database.

In your research results, note those articles or books you may want to cite in your article. Read them thoroughly. Consult *The Chicago Manual of Style* for proper format for footnotes to sources (<https://bit.ly/3eiM04j>); alternatively, look in recent *Journal* issues and note how the footnotes

Most of the issues I have written about are ones that, at the time of the assignment, I didn't know what I didn't know—it was only during the assignment that I developed an understanding about the issues.

handle citations. It is likely some resources cited in other articles will appear in your article, such as *The Appraisal of Real Estate*, *The Dictionary of Real Estate Appraisal*, and the *Uniform Standards of Professional Appraisal Practice* (USPAP). If you do cite these popular texts, be sure to consult the most recent editions as their content can change considerably with each new edition. Very little detracts more than references to out-of-date materials.

Once you have completed the research, which may include anecdotal evidence too (by which I mean your own original research of market participants as opposed to something previously published), create a loose outline of the article. Start with general topics to establish an order, then flesh them out with subheadings. Organize your thinking so that the points you want to make are fully and clearly developed. I cannot emphasize enough the importance of a good outline. Also, remember, you can always move the subtopics around once you have the article laid out in outline form. I recall one draft article that

### Quick Tips on Article Writing

- Choose a topic you've seen in your work.
- Read what others have said about the topic.
- Check the Manuscript Guide for article requirements.
- Draft a summary statement on what the article will address.
- Sketch out an outline listing the main points to cover.
- Draft paragraphs on the main points.
- Use subsections to explain and expand main points.
- Reread your draft article.
- Rearrange paragraphs and add/delete material to strengthen your points and improve understanding.
- Ask someone with expertise to read the draft and give feedback on areas that need polishing.
- Revise article to improve flow and reader understanding.
- Reread article. Check for weak spots in discussion. Check grammar and spelling.
- Submit to *The Appraisal Journal* as explained in the Manuscript Guide.

I gave to an associate to read. He liked the concluding paragraph very much and recommended switching it with the opening paragraph. That minor tweak made a big difference in catching readers' attention.

Do not worry about a title. Label the article with something related to the content, but do not spend time at this point trying to refine it. A catchy title can be advantageous but that should come last. Also, it is worth noting, titles are a lot like college majors: they usually change several times before a final one is settled on.

### Consider a Coauthor

More than half of the articles I have published in the *Journal* were cowritten. I find different viewpoints can lend a lot of variety to the thinking. The back and forth between you and your coauthor also serves as a great check on content. Furthermore, some topics lend themselves par-

ticularly well to joint authorship. For example, I wrote an article awhile ago about expert testimony for which I sought out the contribution of an attorney I had worked with. I wrote from the perspective of an expert witness, he from that of an attorney. It worked quite well to balance the topic.<sup>2</sup> Another piece I cowrote with an instructor on the topic of a course we frequently taught together, and still another was written with an academic who participated with me on an assignment. Regardless, be sure the coauthor is committed to investing the necessary time and effort. Next decide who will do what. Once the work is divided up, each author should write their part then send it to the other. A meeting should then be held to discuss content, and one of the authors selected to merge the material. At this point, the emerging article goes back and forth between authors until a final is reached, at which time both authors closely read it a final time. One side note: I will caution that writing with more than one coauthor can be very challenging. It can work, but it is going to take more effort to get everyone going in the same direction than writing with just one other author.

### Draft Manuscripts

Many new writers try to create the finished product on the first draft. Resist perfection, especially at this point in the process. In my experience, stubbornly trying to be perfect with the first try is a major obstacle to ever finishing. Instead, I recommend writing in drafts to let the article evolve. Just get something on paper with the first draft. If you reach a stumbling block just write around it. You can always go back and refine it later. I often go through several drafts before reaching a final version. You will find you come up with new ideas to improve what you have written when you return to it after putting

2. David C. Lennhoff and James P. Downey, "Litigation Lessons: A Practical Guide to Expert Testimony," *The Appraisal Journal* (Summer 2012): 217–222.

it aside for a day or so. That said, it is easy to find an excuse not to finish writing. Set a schedule for completion and stick to it. Be disciplined with your writing.

Plan on about 3,000–5,000 words. You can periodically check your word count using Word by clicking the “Review” link, then “ABC 123 Word Count.” Anything up to 8,000 words is acceptable to the *Journal*. Most manuscripts under 3,000 usually are considered too short for a feature article, although they may find a place in the “Notes and Issues” column.

### **A Few Words about Style, Grammar, and Format**

The *Journal* has incredibly good editors. I can guarantee they will make your article better than it was when first submitted. That said, your chances of success with a submission are greatly diminished if your writing style is sloppy. Do not make broad undocumented generalizations like “most,” “obviously,” or “clearly.” Similarly, pay attention to grammar. I use four style and grammar manuals on a regular basis: *The Elements of Style*, *The Handbook of Good English*, *The Elements of Grammar*, and *The Chicago Manual of Style*.<sup>3</sup> You do not need the most recent editions of these texts, as much of the content in the manuals stays pretty static. These and other manuals are available online or at local bookstores. They explain basic rules of grammar as well as style tips. For example, in Strunk and White’s *The Elements of Style* you will find the following suggestions as well as many more:

- Write as plainly as you can.
- Avoid fancy words and overused expressions.
- Don’t overwrite or overstate.
- Don’t affect a breezy manner.

- Use figures of speech sparingly.
- Prefer standard English to the offbeat.<sup>4</sup>
- Be clear.
- If you can make your point with fewer words, do it.

As to order of content, you want a strong introductory paragraph that includes a thesis statement. It should not be a repeat of the Abstract. Follow that with paragraphs with clear major headings and subheadings. End with a concluding paragraph that restates how you developed your thesis. Include examples and exhibits where appropriate. Mini case studies work well if you are writing about things such as a specific appraisal problem. Use Word’s “References > Insert Footnote” function, which will automatically renumber footnotes if you rearrange text. In regard to layout, do not fuss with fancy formatting or fonts. If the article is published, the *Journal*’s designers will add their expert touch to make everything look professional and compliant with *Appraisal Journal* style.

### **The Final Manuscript**

Once you think you have a good manuscript, I strongly recommend you ask a couple of trusted colleagues to read it—preferably others with proven experience with writing articles. Ask them to be frank. The object here isn’t to get a pat on the back. Ask them to challenge your logic and research, correct any grammar flaws, and make suggestions about style. It is easy to fall in love with your own writing. It is also dangerous. Be self-critical. Listen to the feedback carefully and with an open mind.

Do not send a rough draft to the *Journal* with the expectation that they will fix it up. Send only

3. William Strunk Jr. and E. B. White, *The Elements of Style*, 4th ed. (New Upper Saddle River, NJ: Pearson Education Inc., 2000); Edward D. Johnson, *The Handbook of Good English* (New York: Simon and Schuster Inc., 1991); Margaret Shertzer, *The Elements of Grammar* (MacMillan Publishing Co., 1996); and *The Chicago Manual of Style*, 17th ed. (Chicago: University of Chicago Press, 2017).

4. Strunk and White observe that “The young writer...will hear the beat of new vocabularies....the problem for the beginner is to listen to them, learn the words, feel the vibrations, and not be carried away.” (Page 81)

what you think in your mind is a finished product. Staff and reviewers will have recommendations for revision, but they are not looking to be your coauthor. They expect a quality product. Lesser effort will likely result in the rejection of the manuscript.

Once you think you are ready to submit, again put the manuscript aside for at least a day. Return to it and read it from the very beginning all the way through. Pretend you have not read it before. Muster the energy to polish your work by adding or deleting text as necessary. At this point, I recommend using the “Read Aloud Speech” function in Word to help with refinements. Click on the Review tab then on “Read Aloud Speech”; Word will then read the document to you. Hearing it recited is very helpful in gauging how the discussion flows.

Do not skip the final refinement. Although you will be eager to submit, it is far better to get the manuscript in very good shape rather than submit it prematurely. That said, seeking perfection is admirable but can result in never finishing. As I previously mentioned, writing an article is a lot like writing a demonstration report, and notably shares all the pitfalls. Many professionals aspiring to a designation fail to earn one because they cannot manage to finish the report. The same risk is true of article writing.

### **What to Expect during Manuscript Review**

After you submit your manuscript to *The Appraisal Journal* you will receive an acknowledgment from *Journal* staff, and then the review process will begin.

The first thing that needs to be said about the review process is you must be patient. The reviewers are volunteers with other demands on their schedules. The full review will take time, maybe even months if manuscript revisions are needed. To help keep things moving forward, be sure to respond promptly to any requests from the reviewers and staff. Delays in responding slow progress.

Your manuscript will be sent to peer reviewers by the managing editor. The reviewers are assigned reviews based on expertise and may include academics, designated appraisers, and possibly outside experts. A list of the members of the review panels is shown with the *Journal*'s masthead at the beginning of each edition of the *Journal*.

**Do not skip the final refinement. Although you will be eager to submit, it is far better to get the manuscript in very good shape rather than submit it prematurely.**

You as the author do not get to pick the individuals who will be reviewing your manuscript. The manuscript review process is double-blind; that is, you will not know who is doing the review, and the reviewers will not know who wrote the manuscript until it is published. This system is designed to eliminate favoritism and bias.

The process works as follows. The reviewers—there are often three to five—will receive your manuscript from the *Journal*, read it, make comments, and respond to the editor with a recommendation to either accept as is (highly unlikely the first go-round), revise, or reject. You will not hear from the *Journal* until all the reviewers have completed their reviews. If you are asked to revise and resubmit the manuscript, the managing editor will send the reviewers' questions and comments to you.

The reviewers have been instructed to be professional, nonpersonal, and encouraging. There is no room on either side of the review for anger or attitude. Prepare yourself accordingly. Be open-minded as you read the comments and be professional and courteous in your responses. The goal is to have a collegial exchange that results in the

best possible article. Do not take the comments as a personal affront or challenge; the comments—since they are entirely via email—can easily be taken in an unintended way. In this respect, they are a little like an appraisal review. It is easy to feel anger at the appraisal reviewer because he or she does not like everything about your appraisal. The same applies to a manuscript review. Remember, a cooperative attitude will get you closer to publication.

After the editor receives your review responses and the revised manuscript, both will be sent back to the reviewers. This round of reviews generally takes less time than the first go-round. If there are additional questions, respond promptly, honestly, candidly, and professionally. Don't be reluctant to make recommended changes—often the reviewers' suggestions improve the manuscript. You will be notified if at this point a decision to accept or reject is made.

Once accepted, the article will be included in an upcoming issue. The published article will first appear on the Appraisal Institute website in the Publications section; there, click on *Appraisal Journal* then on "Current Issue." Once you read the published article, there is a good chance you will think all that review actually resulted in a better product than the one you initially submitted. It is a proud moment to see the work in print, especially your first one.

## Summary and Conclusions

It is not easy to get an article published in a journal as prestigious as the Appraisal Institute's. Your journey toward publication will go better if you follow recognized steps in article writing: formulate an idea or a topic, then research your topic and develop an outline to guide your writing. Use the review comments to refine

the article's topic discussion. The results will be better if you make a commitment to seeing it through with a formal schedule of work, disciplined writing, and tenacity in the review process. Is it worth it? Yes, without reservation! The personal satisfaction of developing an idea that is carried all the way to publication is enormous. You will be recognized as an individual with expertise in the article topic. Publishing a peer-reviewed article, especially in *The Appraisal Journal*, is a legitimate, rewarding, and worthwhile accomplishment.<sup>5</sup>

### About the Author

**David C. Lennhoff, MAI, SRA, AI-GRS**, is a principal with Lennhoff Real Estate Consulting LLC, which is officed in Gaithersburg, Maryland. His practice centers on litigation valuation and expert testimony relating to appraisal methodology, USPAP, and allocating assets of a going concern. He has taught nationally and internationally for the Appraisal Institute. International presentations have been in Tokyo, Japan; Beijing and Shanghai, China; Berlin, Germany; Seoul, South Korea; and Mexico City, Mexico. He has been a development team member for numerous Appraisal Institute courses and seminars and was editor of its *Capitalization Theory and Techniques Study Guide*, third edition. He was the lead developer for the Appraisal Institute's asset allocation course, *Fundamentals of Separating Real and Personal Property from Intangible Business Assets*, and edited the two accompanying business enterprise value anthologies. He also authored the Appraisal Institute's *Small Hotel/Motel Valuation* seminar. Lennhoff is a principal member of the Real Estate Counseling Group of America, a national organization of analysts and academicians founded by the late William N. Kinnard Jr., PhD. He is a past editor-in-chief and frequent contributor to *The Appraisal Journal*, and a past recipient of the *Journal's* Armstrong/Kahn Award and a two-time winner of the Swango Award. **Contact:** [david.lennhoff@gmail.com](mailto:david.lennhoff@gmail.com)

5. Appraisal Institute Designated members and Practicing Affiliates may earn AI CE credit for authoring articles published in *The Appraisal Journal*.

# Using the Lum Library Research Features

Appraisal is based on well-recognized principles, theory, techniques, and data. The Appraisal Institute's Y. T. and Louise Lee Lum Library is a comprehensive source of information on all these aspects of appraisal. Appraisal professionals and authors are encouraged to use the Lum Library as a critical resource in their work.

Although members of the public can research the library, only Designated members, Candidates for designation, Practicing Affiliates, and Affiliates have full access to materials. Therefore, the first step is to log in on the Appraisal Institute website at [www.appraisalinstitute.org](http://www.appraisalinstitute.org). Then click on the "Lum Library" tab at the top of the page. Clicking on that tab will take you to the Lum Library homepage; there you will see your name at the top right of the page, which means you are signed in. The Lum Library homepage has an "Instructions" link; by clicking on that you will see instructions on performing a search, navigating results, and using the LibertyLink mobile app.

## Conducting a Search

To get the most out of your research efforts, it is important to be familiar with the various information sources available in the Lum Library and how to search and access the information offered by each source.

Take a look around the Lum Library homepage (Exhibit 1) to become acquainted with the library's features and search options. Starting at the top, you will see a lightbulb icon immediately to the right of your name; clicking on that icon will take you to the Lum Library Knowledge Base page. The Knowledge Base alphabetically lists appraisal topics from "agricultural properties" to "value" and includes previously researched and curated search results with links to outside materials on each topic. If you are not sure which appraisal topic

covers your issue of interest, you can perform a keyword search of the Knowledge Base.

Also on the Lum Library homepage, near the top center you will see a large dark blue section with tabs that let you select the type of search you want to perform. The options here are

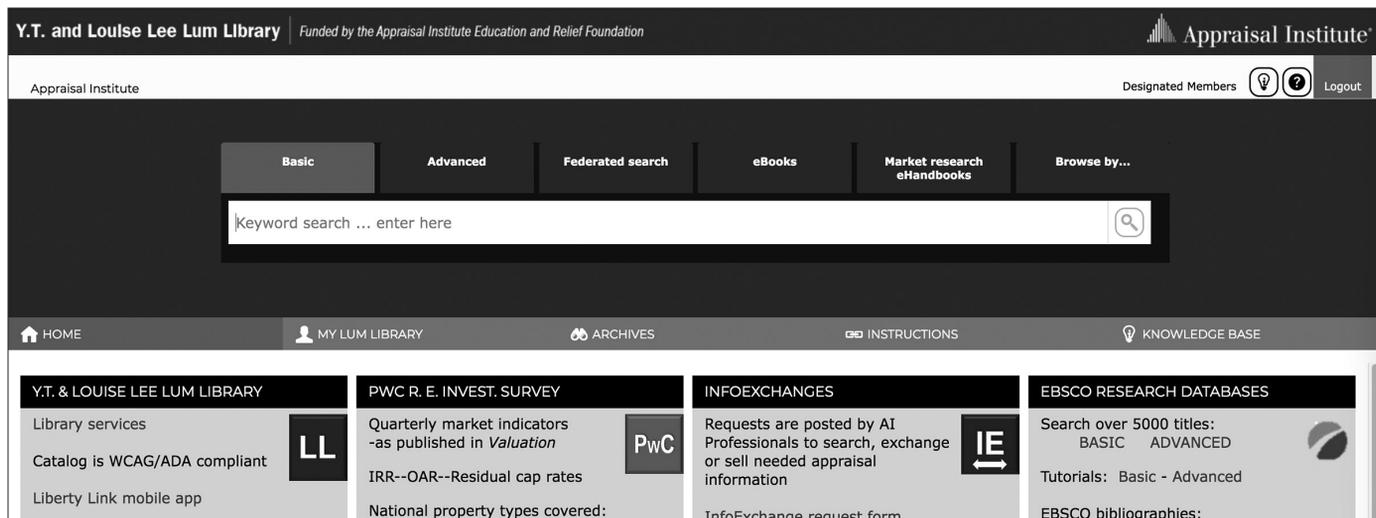
- **Basic search**—search performs a keyword search.
- **Advanced search**—search provides specific fields (e.g., author, title, year, document type) to further focus your search.
- **Federated search**—searches multiple databases at once, including the Lum Library, Business Source Corporate Plus, EBSCO Business Source Ultimate, and Associations Unlimited. This search function is only available to Designated members.
- **E-books search**—a basic search of the Lum Library e-book collection.
- **Market Research E-handbooks search**—a basic search limited to search of the Lum Library e-handbook collection.
- **Browse by search**—a basic search that allows you to select a single field in the bibliographic record (e.g., author, series, subject, title) to limit the keyword search.

Each of these search functions is described in the following discussion.

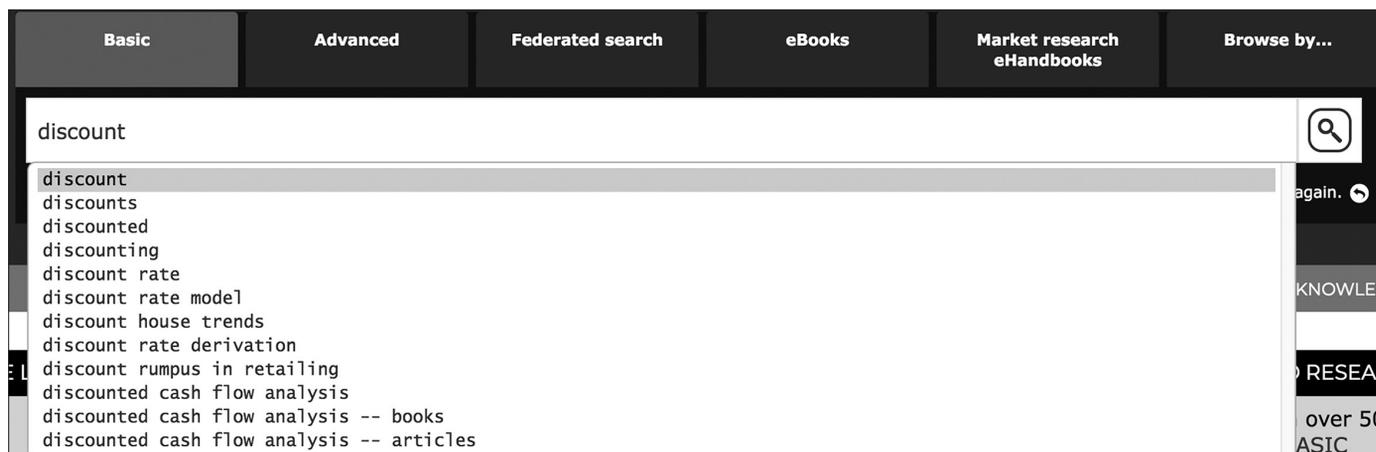
### The Basic Search

Exhibit 2 shows an example of how inputs for a Basic Search will be displayed. In the example, the keyword "discount" has been typed into the search box. A "predictive" drop-down list then appears beneath the search box, showing possible related terms that will be included in the search results. You can narrow your search—and search results—by selecting one of the sub-terms shown. Then click on the magnifying glass icon at right to run the search.

**Exhibit 1** Lum Library Homepage



**Exhibit 2** Basic Search Screen Input for Keywords



**The Advanced Search**

The Advanced Search option allows you to narrow your search (and results) by being more specific as to the terms and documents that are to be researched. The search options are selected on the Advanced Search screen, which is shown in Exhibit 3.

The first way to narrow your research is by tailoring the keyword(s) entered in the search box. For example, in the search box multiple words can be entered within quote marks to designate a search term or phrase, such as “market analysis.” Also, a Boolean operator—such as “AND,” “OR,” “NOT”—can be used between words to include or

### Exhibit 3 Advanced Search Screen Options

The screenshot displays the 'Advanced' search tab. At the top, a search bar contains the query: "service stations" OR "gasoline". Below this is a 'New Search' panel with a close button (X). The panel includes the following elements:

- Search operators:** A dropdown menu currently showing 'and (find all words)'.
- Include document in keyword search:** A checked checkbox.
- Title ... enter here:** An empty text input field.
- Author .. enter here | to browse authors ->:** A text input field with a binoculars icon to its right.
- Subject .. enter here | to browse subjects ->:** A text input field containing 'Convenience stores' and a binoculars icon to its right.
- Year From:** Two empty text input fields separated by a hyphen.
- Select document type:** A dropdown menu with the following options: All, Articles (highlighted), Audiobook, Books.

exclude concepts that may be associated with the keyword. For example, a search of the term “easement” will yield many more results than a search of “easement NOT railroad.”

The Advanced Search offers other options to tailor the search. In the Search Operators drop-down box, you can choose to search for a phrase, an exact word match, or any words in a phrase. You can also indicate if you want the search to scan entire documents for the keyword of interest or just search the catalog record for that term—this is helpful if your term is common and you need to limit your search to documents that primarily focus on the topic rather than just mention it. If you need help in pinpointing the exact name of the subject or author to be researched, the Advanced Search screen has a helpful browse feature. Click on the binoculars icon shown near the “Subject” box or “Author” box, and a search screen will pop up that allows you to enter a term or author and then see a list of related terms or names. In Advanced Search,

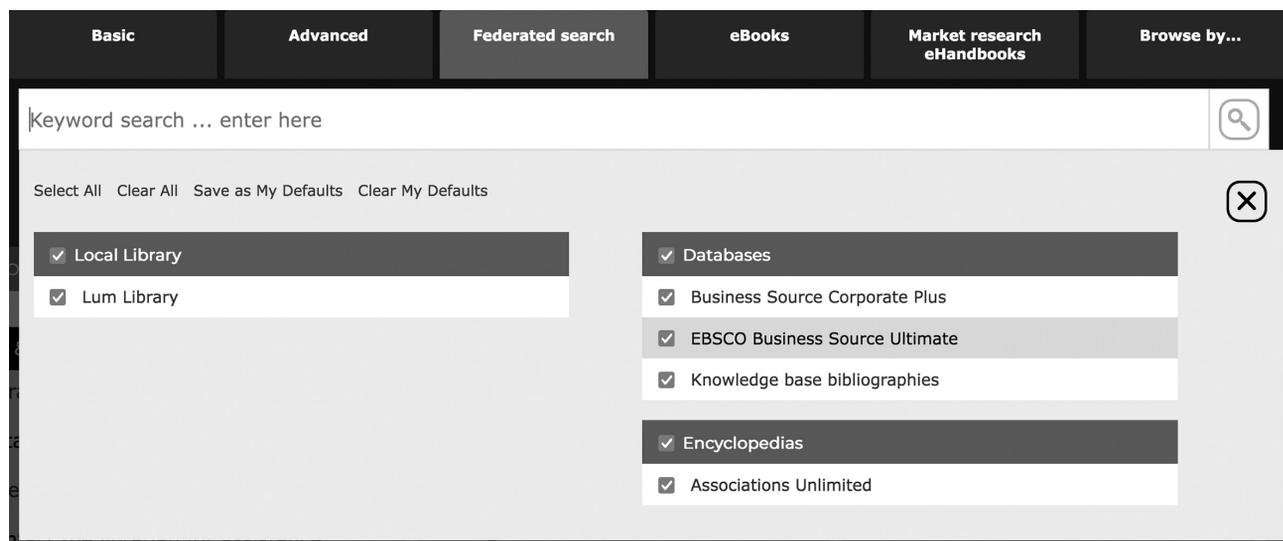
you also can select the types of documents that you want to search: books, e-books, articles, newsletters, papers, etc.

After you have crafted your search terms and selected your search options, click on the “X” icon to close the selection screen, then click the magnifying glass icon to run the search. To select two or more document types, hold down the Ctrl key and click with the mouse the multiple document types to search.

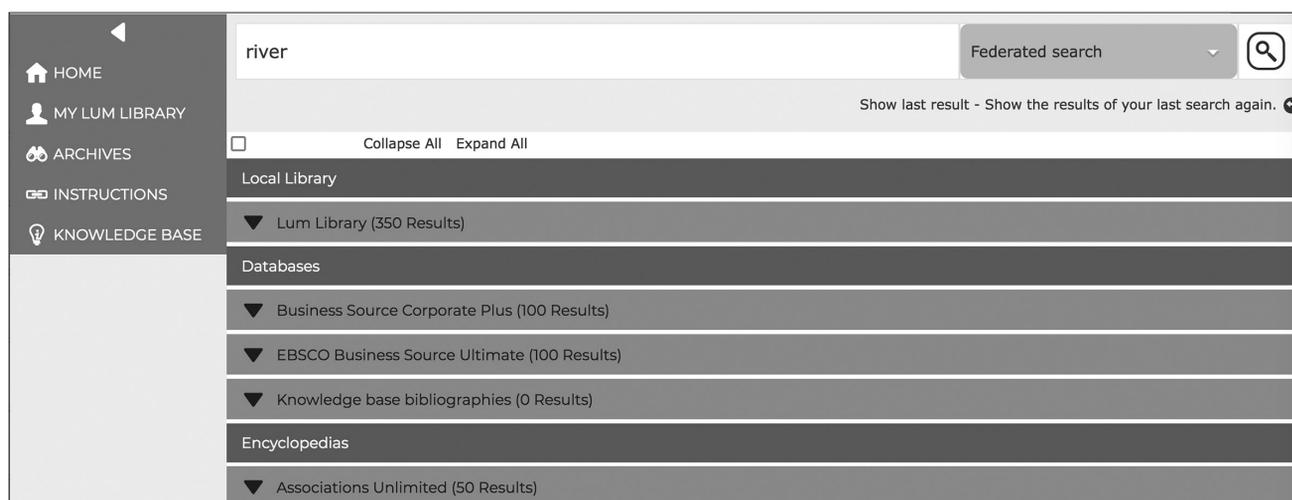
#### The Federated Search

The Federated Search is a quick way to find out everything on a topic to assist with constructing a more focused search. As with the Basic and Advanced Searches, you enter a term or phrase into the search box (Exhibit 4). Place terms in quote marks to search the terms together in a phrase, i.e., “market analysis.” Otherwise both terms would be searched as if they are independent—market or analysis. Next select the sources that should be searched; the Federated Search screen defaults to

#### Exhibit 4 Federated Search Screen Options



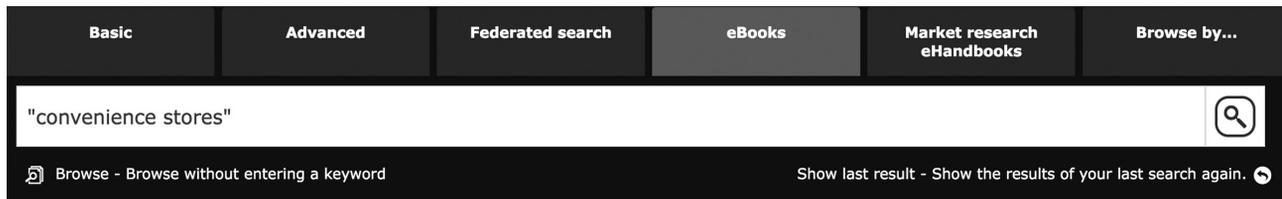
#### Exhibit 5 Federated Search Results Example



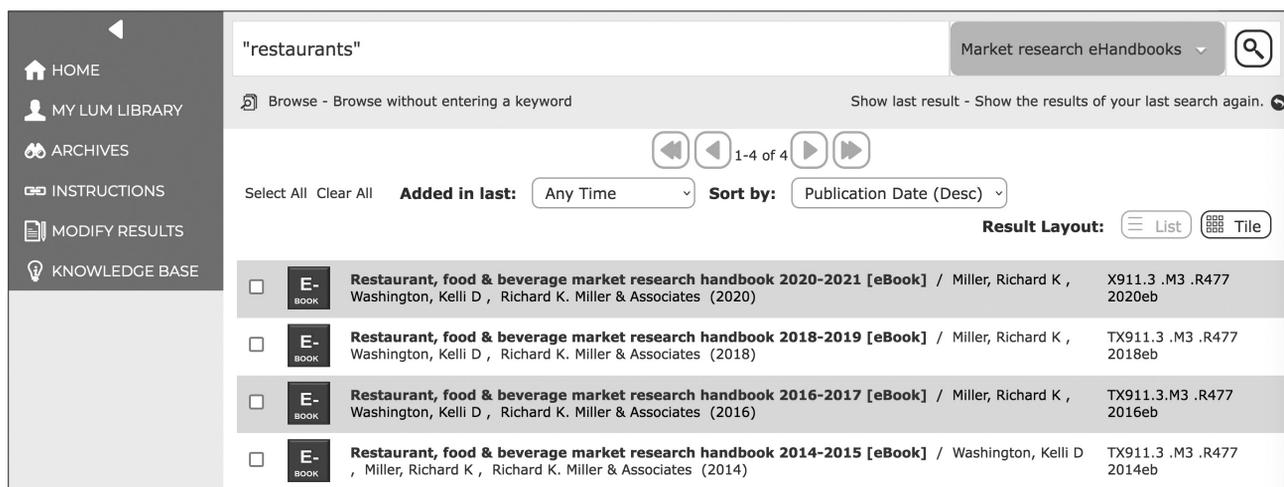
all sources, but you can deselect any sources that are not of interest. Click the “X” to close the Federated Search options screen, then click on the magnifying glass icon to run the search.

The results of the Federated Search will be displayed as shown in Exhibit 5. Note that the library navigation bar is displayed at the left. After the name of each listed source, you

**Exhibit 6** E-books Search Screen



**Exhibit 7** Market Research E-handbooks Search Results Example



will see the number of results. Click on the triangle in front of each source to display a drop-down list of results from that source. You can click on any title in the drop-down list to open that item.

**E-books and Market Research E-handbooks Searches**

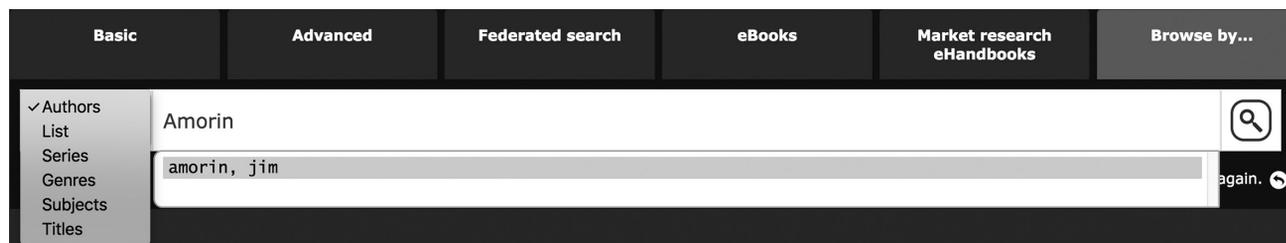
Searches of e-books and market research e-handbooks are conducted in the same way. Click on the tab to open the search screen, then type in the keywords for your search (Exhibit 6). You also can browse a list of *all* e-books or *all* e-handbooks by simply clicking on the magnifying glass without entering a keyword.

The search results screen (Exhibit 7) will show a list of materials—e-books or e-handbooks, respectively. Each item title in the list is a live link; clicking on a title will give you access to that item.

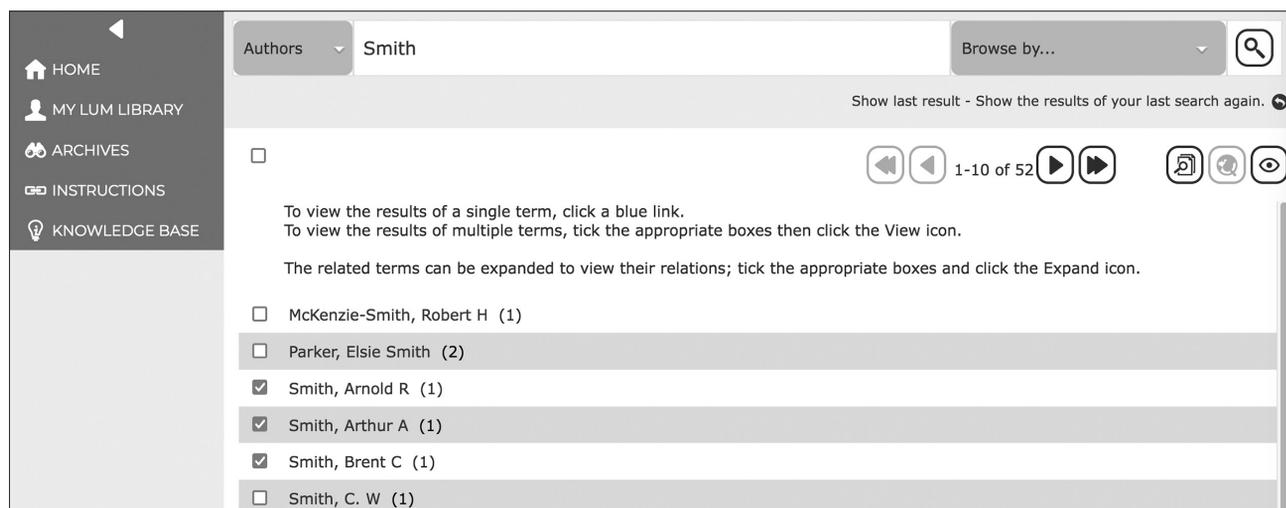
**The Browse By Search**

The Browse By search allows you to research a keyword (or name) by location or source category: authors, list, series, genres, subjects, or titles (Exhibit 8). Click on the Browse By tab to open the search screen, then click on the gray drop-down box to the left of the keyword entry box to select your search location option. Click on the magnifying glass icon to run the search.

## Exhibit 8 Browse By Search Screen



## Exhibit 9 Browse by Name Search Results Example



In the results list (Exhibit 9), check the box before an item to see the related material. If more than one item is of interest, click on the view button (eye icon) to display all the selected items as one search result.

## Navigating Search Results

After you run your search, the results display will have a variety of components. These components will help you zero in on items that are most pertinent to your research project.

### Results List

Exhibit 10 shows an example of a results list for an Advanced Search of articles on the subject “expert testimony.” This search produced 350 relevant articles. Since this list includes many items, the researcher will want to use the navigation features to help assess the usefulness of results to the specific research. At center of the display, near the total number of titles, are arrows that allow the researcher to page forward and backward through the results list. Immediately below the arrows is a “sort by” drop-down box that allows the researcher to organize the results

## Exhibit 10 Advanced Search Results Example

The screenshot shows a search interface with the following elements:

- Search Bar:** Contains the query "expert testimony" and a search icon.
- Advanced Search:** A dropdown menu labeled "Advanced" is open.
- Navigation:** A bar with "Show last result - Show the results of your last search again." and navigation arrows.
- Page Info:** "1-10 of 350" with navigation arrows.
- Filters:** "Select All Clear All", "Added in last: Any Time", and "Sort by: Publication Date (Desc)".
- Result Layout:** Buttons for "List" and "Tile".
- Results List:** A list of six articles, each with a checkbox, a descriptor icon (A), and the title/author/date information.
  - A** **Market rent and highest and best use : joined at the hip?** / Diskin, Barry A , Parli, Richard L , Roach, Stephen D & Lennhoff, David C (2022)
  - A** **Reasonably probable? Possibly** / Lennhoff, David C & Parli, Richard L (2021)
  - A** **Lisa Desmarais talks USPAP and her esteem for the valuation profession [For what it's worth]** (2021)
  - A** **2020 Swango Award : David C Lennhoff, MAI, SRA, AI-GRS, and Richard L. Parli, MAI** (2021)
  - A** **Valuation of private golf and country clubs for ad valorem taxation** / Hirsh, Laurence A (2021)
  - A** **In the hot seat** / Christensen, Peter T & Konikoff, Paula K (2021)

displayed by date, classification, author, popularity, and more.

Note that each item listed is preceded by a descriptor icon. In the Exhibit 10 list, the boxed initial "A" in front of a title denotes that the item is an article. (In this example the search was limited to articles; therefore all items are preceded by an "A.") If books had been included in the search, they would be denoted by a "B" or an "E-Book." Other types of materials, such as newsletters and papers, are similarly denoted in search results lists.

Each item in the results list shows title, author information, and date/year of publication. The titles in the list are live links—hover your cursor over a title and a pop-up window opens with the full library record, including the detailed citation, abstract, list of article headings and exhibits, and

author information. To hold open the citation record screen, click the pushpin icon at the top left. To view the full text of an item in the list, double click on the title. A screen will open for the individual item, displaying the citation along with an image of the PDF (Exhibit 11). At this point you can scroll through the document using the slider to the right of the article image or search for a specific word or phrase. You also can print the PDF or download it to your computer. In the Exhibit 11 pop-up screen, note at the top left there are two navigation arrow buttons. You can use these to advance to the next article record in the search results list or to move back to the previous record. Click on the "X" at the top of the pop-up screen to close that article record and return to the complete search results list.

**Exhibit 11** View and Navigate Full Text Example**Conclusion**

The Appraisal Institute's Lum Library is a repository of over ninety years of appraisal knowledge. Appraisal professionals benefit from access to this resource. In the Lum Library, you will find information on most aspects of valuation. You also may be inspired to add new information by contributing an article to *The Appraisal Journal*.

The library's search parameters are specifically tailored to the categories and concepts that appraisers frequently use. In this way, a Lum Library search is much more efficient than an

internet Google search. And personalized help is available. If your Lum Library search does not produce the information that you need, the library's trained staff is available to assist you.

**About the Author**

**Eric B. Goodman** is Senior Manager of the Y. T. and Louise Lee Lum Library. He received an MS in library science from Florida State University. Goodman has been with the Appraisal Institute for over thirty years.

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### From Our Readers

#### **“PFAS Contamination and Residential Property Values: A Study of Five US Sites within the Assessment Stage of the Remediation Lifecycle”**

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##### **To the Editor**

PFAS is an emerging contaminant, so I read with interest the article “PFAS Contamination and Residential Property Values” (Winter 2022, 26–50) by Orell C. Anderson, MAI, Chris Yost-Bremm, PhD, Stephen G. Valdez, Jason Borrás, and Tara Harder.

In that article, Anderson et al. identified five commercial, industrial, or military source sites associated with PFAS contamination. The study’s stated purpose was to measure any effects of public knowledge of PFAS contamination on local real estate values surrounding the five sites. Among other things, the article states that the subject properties include contaminated non-source homes. Using multiple regressions, the study compares “test” residential properties within 1.5 miles of the source properties to “control” properties located within 10 miles, excluding the 1.5-mile properties. The five studies do not reconcile, but result in neutral, positive, and negative impacts on value.

The authors use multiple regressions to attempt to address PFAS contaminant price impacts. Multiple regressions can be an outstanding valuation resource in environmental cases. However, the authors omit paired-sales, sale-resales, case studies, and simple regressions techniques, which also can be used in such studies. All considered, there are foundational study-design issues that merit discussion.

Scientific assessments performed by qualified environmental engineers, regulatory agencies, toxicologists, or other environmental experts are important considerations in a credible environmental diminution-in-value study. An environ-

mental engineer or other sources are necessary to determine the concentrations of hazardous substances and whether they pose a health risk. USPAP Advisory Opinion 9 (AO-9), “The Appraisal of Real Property That May Be Impacted by Environmental Contamination,” makes this clear. It defines *environmental contamination* as “adverse environmental conditions resulting from the release of hazardous substances into the air, surface water, groundwater, or soil. Generally, the concentrations of these substances would exceed regulatory limits established by the appropriate federal, state, and/or local agencies.”

In the Anderson et al. article, however, there is no scientific validation; therefore the properties cannot be termed “contaminated.” The authors have no knowledge of the pathways to exposure or if the test or control properties have PFAS contamination. The article’s stated hypothesis is that “residential properties within a 1.5-mile radius of the source of PFAS contamination are impaired with either environmental contamination (as non-source properties) or with environmental risk (as adjacent or proximate properties).” (Pages 28–29) This hypothesis is challenging from two perspectives. First, a scientific hypothesis is typically a premise that is tested to see if it is true or false, yet the authors do not do that; they do not determine if the subject properties are non-source, adjacent, or proximal but merely pronounce that they are. Second, and more concerning, the article claims that some of the subject residences are environmentally contaminated as non-source properties. (Page 29). By definition, non-source properties are “environmentally contaminated”; USPAP AO-9 states “non-source sites are sites onto which contamination, generated from a source site, has migrated.”

Several questions can be asked. How can the authors study environmental issues without any

environmental testing of the subject properties or understanding potential exposure pathways? How do the authors know that the residential subject properties include environmentally contaminated non-source properties? While the authors mention media reports that may provide the public with general information, do the media reports identify any specific subject properties that are at risk for contamination and do buyers and sellers know the environmental status of the properties?

The authors attempt to address these issues by stating “it is not the role of the real estate appraiser to determine whether a property is contaminated.” (Page 28) On this point, they are technically correct; however, this does not mean that there is no need for an appraiser to obtain this information from qualified experts. As USPAP AO-9 states, “since the appraiser is usually not an expert on the scientific aspects of contamination, experts from other fields will typically provide this information. Appropriate regulatory authorities should also be consulted to confirm the presence or absence of contamination.” In the case study, the authors do not rely on any such specialists or obtain information from regulatory authorities. Instead, the article states “from a valuation perspective, whether a property is physically contaminated is not as important as whether there is an observable market perception of environmental risk.” (Page 28) Anderson et al. base the premise that environmental testing is unnecessary upon USPAP AO-9’s definition of *environmental risk*, which states as follows.

Environmental Risk: The additional or incremental risk of investing in, financing, buying, or owning property attributable to its environmental condition. The risk is derived from perceived uncertainties concerning:

1. the nature and extent of the contamination;
2. estimates of future remediation costs and the timing;
3. potential for changes in regulatory requirements;
4. liabilities for cleanup (buyer, seller, third party);

5. potential for off-site impacts; and
6. other environmental risk factors, as may be relevant.

The authors rely on the words “perceived uncertainties” to bypass environmental tests, regulatory agency data, or environmental reports. However, USPAP AO-9 makes clear that environmental risk is the “perceived uncertainties” toward “the nature and extent of the contamination,” not the “perceived uncertainties” toward properties where the nature and extent of the contamination is unknown. With no basis to designate the residential properties as contaminated, uncontaminated, non-source, or impaired sales areas, there is no framework to conduct a diminution-in-value study. The problem is compounded by the lack of verification of any market knowledge for the transactions. While the media may provide general awareness, this does not constitute the knowledge required to evaluate whether the sale transaction meets the conditions of market value.

Given these factors, Anderson et al. cannot claim they are studying the perceptions of residential properties in proximity to source properties during the assessment stage. First, the five residential study areas lack assessments or have scant information. Second, some of the subject properties are categorized as non-source, which by definition represents contaminated properties, but this simply is unknown. Third, contaminated plumes, rivers, and municipal waterlines can travel miles. The study’s 1.5-mile and 10-mile criteria amount to guesswork and are not based on environmental science. With no knowledge of the actual environmental conditions, the study is based upon a foundational error wherein the actual environmental status of the test or control properties is not known.

Valuation studies should be based upon a solid foundation. Proper real estate valuations should incorporate the essential scientific elements, including environmental resources, such as Phase I or Phase II studies, test data, toxicology

reports, transfer disclosure statements, regulatory test data, household water tests, or the verification of the market data with market participants such as local brokers or agents. This study did not address these.

The level of market knowledge is fundamental and relates to the basic definition of *market value* and “knowledgeable buyers and sellers.” For example, if a house sits on oil reserves, but the seller and buyer do not know, the sale price may not reflect the additional value of those reserves. Similarly, if contaminants are present on a property, but the buyer and seller do not know, the sale price may not reflect the effect of those contaminants. Anderson et al. bypass this step and substitute media articles for an examination of the level of market awareness. The media does not constitute disclosure for a specific transaction, and so the authors do not know whether the sale prices reflect market value with knowledgeable buyers and sellers. Anderson et al. could have analyzed the transfer disclosure statements (TDSs) or directly verified the seller and buyer knowledge with brokers or agents.

The procedures for environmental studies involving residential properties are well-established. An environmental study may start with identifying the source, non-source, adjacent, and proximal properties, the pathways to human exposure (e.g., air, soil, surface water, or groundwater), the regulatory setting, and the market awareness (e.g., TDS or direct verification). Test properties are then compared to control properties. The test properties include the non-source (contaminated) or adjacent/proximal properties (uncontaminated but at risk). The test properties are then compared to the control properties (similar houses with no known or disclosed contamination).

The Anderson et al. study does not do this. With no environmental information, the authors do not know if the property comparisons are among contaminated or uncontaminated properties. Furthermore, the subject test properties are

described as environmentally contaminated non-source properties without any support. USPAP AO-9 sets forth the criteria for environmental contamination appraisals. Indeed, USPAP AO-9 is a critically important resource in diminution-in-value studies.

Randall Bell, PhD, MAI  
Dana Point, California

#### To the Editor

The *Appraisal Journal* article “PFAS Contamination and Residential Property Values” (Winter 2022) is of interest given the importance of valuing properties affected by these contaminants. The five case studies presented in this article, however, do not reconcile or indicate any trends as to the effects of environmental contamination on property values. Exhibit 2 sets forth conflicting “positive,” “negative,” and “neutral” findings among the different case studies and the log and linear regression models. This raises questions regarding the structure of the studies. As the authors note, “While the Subject and Control Area boundaries are clearly delineated, they may not necessarily correspond to the area that is truly impacted. A *more credible analysis* of the market area would likely involve delineation according to a *recognized zone of contamination*, such as a plume map. The lack of any mapping is a limitation of this study.” (Page 26, emphasis added.)

I believe a credible study would know whether or not the contaminant of concern is present at the property being studied, or proximate, and if the buyer(s) and seller(s) were aware of its presence or lack thereof so that the appraiser could determine whether the sale of the property satisfied the prerequisites for market value. Without that information, how can the extent to which perceived risks and uncertainties impacted sale prices be measured? The authors did not identify whether PFAS is present in the test or control areas, and they did not consult any environmental data for the properties, although they acknowl-

edge that “incorporation of contamination plume maps and zones of potential environmental risk established by qualified environmental experts... would ...enhance the accuracy of the analysis.” (Page 29) Without information regarding the presence of PFAS at the specific properties, and knowledge of such presence or lack thereof in the transactions, the studies may be comparing contaminated properties to contaminated properties and uncontaminated properties to uncontaminated properties. This is a meritless exercise when measuring perceived risks and uncertainties of a detrimental condition.

The authors compound this issue when they say that the studies include “non-source” properties, which USPAP Advisory Opinion 9 (AO-9) describes as “sites onto which contamination, generated from a source site, has migrated,” indicating that PFAS is present at those properties. Nevertheless, the extent of the detrimental condition for the properties is unknown. The article’s hypothesis is that “residential properties within a 1.5-mile radius of the source of PFAS contamination are impaired with either environmental contamination (as non-source properties) or with environmental risk (as adjacent or proximate properties).” (Pages 28–29) This hypothesis is never evaluated, and at best, is a hypothetical condition.

Even though the authors lack knowledge about the presence of PFAS at the properties studied, they assume that the market participants are aware of its presence. The authors state that they are studying “public awareness” and “community awareness”; however, these terms are misleading. For example, on a public level there could be awareness that there had been a wildfire in Malibu, California, but that does not provide property-specific information to inform a potential buyer. Furthermore, the authors note “the

five states studied in this research have seller disclosure laws that include environmental contamination, even if knowledge can be gleaned broadly from market awareness via the media.” (Page 43) However, one must be aware of a condition in order to disclose it. An analysis of transfer disclosure statements (TDSs) or verifications with transaction participants are both ways to study actual market awareness. Simply looking at the media is not enough, because media coverage does not inform whether the actual market participants had the requisite knowledge. As Robinson and Lucas state in their *Appraisal Journal* article, “an appraiser should be careful not to assume that the mere existence of media attention indicates widespread public knowledge.”<sup>1</sup>

The case studies’ conclusions lack credibility. The authors state that single uniform conclusions cannot be drawn when it comes to real estate values and that the results of this study should not be generalized across geographies. The authors caution that “the property effects associated with PFAS discovery in an area are highly individualized to the specific region and circumstances of that market, and any conclusions about effects on home values from PFAS in one real estate market are not a one-size-fits-all conclusion for another.” (Page 43) Contrary to the position taken in this article, I believe valuation professionals can reconcile data to give a single uniform estimate of value and case studies can be credibly used across different geographies. As I stated in my previous *Appraisal Journal* article, “In sciences, the reconciliation process of multiple sets of data is referred to as triangulation, which is a well-known strategy to increase the reliability and validity of a study. When applying the results of environmental case studies, an appraiser should consider whether the case studies are similarly situated with respect to the subject property(ies) and

1. Rudy R. Robinson III and Scott R. Lucas, “Seller Disclosure and Buyer Knowledge: How They Affect Market Value,” *The Appraisal Journal* (Spring 2007): 135.

environmental condition...case studies do not need to be in the same area as the subject property(ies), and data limitations usually necessitate searching a broad geographical area....the objective is to find case studies that are similar on some level.”<sup>2</sup> Sanders states in his *Appraisal Journal* article, “case study properties need not be in the same area as the subject property, and data limitations usually necessitate searching a broad geographical area. While the circumstances surrounding the loss in value may be similar, properties selected for case studies are in many cases not directly comparable to the subject.”<sup>3</sup>

All considered, the PFAS article does not present reliable studies. The authors do not know the contamination status of the properties being compared. They assume market participants are aware of the presence or lack thereof of PFAS, which is colorless and odorless,<sup>4</sup> while they themselves lack awareness of its presence at specific properties. Based on the issues raised, the case studies’ findings should not be considered representative of real estate valuation.

Michael Tachovsky, PhD  
Dana Point, California

#### To the Editor

I was eager to gain a better understanding of PFAS contamination and its effects on real estate values from the recently published *Appraisal Journal* article “PFAS Contamination and Residential Property Values” (Winter 2022). This article raises several questions and concerns, however, regarding the interpretation and usefulness of its empirical results due to its lack of precision.

The overall study design is puzzling. The

authors correctly observe that “incorporation of contamination plume maps and zones of potential environmental risk established by qualified environmental experts—which were not available for this study but may be required under certain assignments—would therefore enhance the accuracy of the analysis.” (Page 29) But here, the lack of knowledge regarding the level and location of verified contamination negates the justification for the study. The authors acknowledge that they do not know where the contamination is located throughout the sample residential properties. To compensate for this, they define, without explanation, contaminated areas as circles with 1.5-mile radii circumscribing a designated source. However, contamination plume maps typically show that the effects of local topography and geology are essential in locating actual contamination. The fact that the study produces “little to no evidence of diminution” is expected, given the study’s design flaw.

Additionally, the study includes Mather, California, and Mesa, Arizona. Both sites have other environmental issues unrelated to the PFAS contamination. Specifically, each has National Priorities List (NPL) sites in proximity to the PFAS source properties. The regression models do not control for these NPL sites and related conditions.

In conclusion, the study’s topic is essential and needs to be better understood. However, the design flaw of this study renders the empirical results and the accompanying conclusions deficient.

Steven Ferraro, PhD  
Dana Point, California

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2. Michael Tachovsky, “Environmental Dead Zones: The Evaluation of Contaminated Properties,” *The Appraisal Journal* (Spring 2021): 112.

3. Michael V. Sanders, “Post-Repair Diminution in Value from Geotechnical Problems,” *The Appraisal Journal* (January 1996): 61.

4. Washington State Department of Health, “PFAS,” accessed November 18, 2020, <https://www.doh.wa.gov/CommunityandEnvironment/Contaminants/PFAS>.

**To the Editor**

The study presented in *The Appraisal Journal* article “PFAS Contamination and Residential Property Values” (Winter 2022) suffers from inadequate experimental design. The study’s selection of experimental and control groups (sampling protocol or data collection) is inconsistent with accepted property characterization and market delineation practices. There was no reported confirmation or verification of underlying data that was supplied by a third-party vendor. Due to the experimental design problems and various other deficiencies, the study produces outcomes and conclusions that cannot be relied upon.

Applied statistics recognizes that sampling protocols (data collection) must be tailored to the population in question (i.e., stratified sampling). Residential submarkets rarely develop as radii, nor do they exist in the shapes of circles and doughnuts. The experimental and control groups used in the PFAS study are aggregated over rivers, highways, and other features that typically separate residential market areas. The summary statistics presented in Exhibit 1 of the article indicate extreme heterogeneity within all of the aggregated groupings used in the study. For example, in the Mather, California, case study, home prices ranged from \$25,500 to \$90,900,000. It is troubling that there was no attempt to delineate this market. No log transforms, varying of radii, or other blunt force tools of statistics can substitute for proper characterization of the population in question, which in this case are residential real estate markets. Allegedly impacted properties should be characterized, and control areas should be determined, using accepted practices of market delineation. An artificial comparison of impacted circles to control doughnuts devoid of market delineation and recognition of basic submarket boundaries is unlikely to find an effect even if one exists.

The study uses data compiled by a third-party vendor that extracts property data from county

recorder offices. There is no discussion regarding how this data is extracted or how individual counties may treat or classify data potentially impacted by contamination. The use of third-party vendor data without any verification or independent confirmation raises questions about its reliability. The study mentions that all of the states considered have environmental disclosure laws, but there is no mention of whether any of the allegedly impacted sales had such disclosure. It is unknown whether the public knowledge ever rose to a level that necessitated seller disclosure. Since there was no discussion of this element of verification, I assume there was no such disclosure; therefore, it is a stretch to characterize the experimental groups as being in any stage of a contamination life cycle, including assessment.

The study appears to be plagued by unreal results. The study’s model found a “significantly positive” market response to PFAS contamination in Madison, Wisconsin, which seriously undermines the credibility of the methods and techniques employed. Do homebuyers in Madison consider PFAS an amenity? If the answer is probably not, then the study’s model is detached from the reality it is attempting to measure.

In my view, the most common problem with statistical modeling in appraising is the abandonment of property characterization and market delineation practices. Relevant sale transactions are critical and must reflect the market response the appraiser or analyst is attempting to measure. Absent property characterization, market delineation, and data verification there is no evidence the sales used in the study were relevant. No conclusions can be drawn from this study regarding market responses (or the absence thereof) to PFAS for property in any stage of contamination. Nevertheless, this study will likely be cited if it is perceived to serve one side’s interest in a future dispute. Although my formal education is in mathematics and statistics, as an appraiser I’ve come to realize that a small amount of good data is superior to a large amount of bad. The tools of

statistics are useful only when the data set or sample collection follows recognized practices of property characterization, data verification, and market delineation.

Matt Trimble, MAI  
Oklahoma City, Oklahoma

### Authors' Response

Thank you to the writers of the letters to the editor for commenting on our *Appraisal Journal* article, "PFAS Contamination and Residential Property Values: A Study of Five US Sites within the Assessment Stage of the Remediation Lifecycle" (Winter 2022). We welcome this opportunity to respond. First, we feel it is imperative to note that three of the four letter writers (Bell, Tachovsky, Ferraro) are principals from the same litigation consulting firm, Landmark Research Group LLC, which currently is, and has a multi-year history of, providing expert witness consulting services for law firms that represent property owners under various class action lawsuits, litigating for property damages due to alleged PFAS contamination. Consistent with *The Appraisal Journal's* disclosure policy, we believe that the letter writers' retention by plaintiffs in ongoing PFAS litigation is a fact that should be disclosed. Similarly, Mr. Trimble self-identifies as specializing in real estate damages consulting.

Many of the comments provided could be addressed by a closer reading of our original article. For instance, Mr. Ferraro states that two areas, Mather and Mesa, had existing contamination. We identified this limitation for these areas and expressly cautioned in the interpretation of the results for them, as discussed in the article. (Page 34) Similarly, Mr. Trimble is concerned about outliers but omits mention that we excluded any outlier observations with absolute residuals of greater than three standard devia-

tions—page 36 discusses procedural details. We can reaffirm that this excludes the data Mr. Trimble appears most concerned about, and this can be verified by noting that the sale counts used in each model are less than the counts shown in Exhibit 1. We agree that plume or zone of contamination maps and delineation should ideally be used in such analysis. As the article states, "incorporation of contamination plume maps and zones of potential environmental risk established by qualified environmental experts—which were not available for this study but may be required under certain assignments—would therefore enhance the accuracy of the analysis." (Page 29) For this reason, we are not sure what additive value these comments present.

There are, however, a few criticisms that we would respectfully like to differ from or clarify. Mr. Trimble complains that the vendor for our data, which amalgamates public property records from various tax assessors, cannot be relied upon because tax assessors may "treat" potentially contaminated property differently. Mr. Trimble does not elaborate on what he means by "treat," but if he is referring to the possibility that assessment values may change based on contamination status, we agree that is possible. However, we do not use assessment values in our study—we use sale prices from market transactions.

Mr. Bell suggests that the study omits other techniques such as paired sales or case studies as not valid. We have said no such thing. Rather, we do note that caution and rigor be applied in the analysis of case studies from different times and/or geographies. This is not controversial. In fact, in his 2002 *Appraisal Journal* article with Thomas Jackson, Mr. Bell states, "case studies being utilized must have similar property, market, and environmental characteristics to the subject property.... Therefore, their applicability must be carefully examined."<sup>5</sup> Mr. Bell's letter also is criti-

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5. Thomas Jackson and Randall Bell, "The Analysis of Environmental Case Studies," *The Appraisal Journal* (January 2002): 86; emphasis in original.

cal that we have omitted these other techniques. Our PFAS study is an observation of the market data surrounding known source properties. The market data-based approach taken in the study is an example of an accepted methodology that is

The letter writers wrongly assert that we have deemed all the properties within the five study areas as contaminated non-source properties. In fact, the study hypothesizes that there would be non-source, adjacent, and proximate properties within the study areas.

considered a primary method in the study of values. In his book, *Real Estate Damages*, third edition, Mr. Bell states, “Generally, case studies are used when there is a lack of direct market data or when analyses of direct market data need additional support.”<sup>6</sup> It would have been an omission to jettison both the available direct market data and the hedonic regression in lieu of more limited case study or paired sales techniques.

The letter writers wrongly assert that we have deemed all the properties within the five study areas as contaminated non-source properties. In fact, the study hypothesizes that there would be non-source, adjacent, and proximate properties within the study areas. Adjacent and proximate properties are, by definition, not contaminated. Additionally, the study is performed in the context of the assessment stage, where the exact

nature and extent of contamination is not completely known and where risk takes the form of “perceived uncertainties.”<sup>7</sup>

Additionally, Mr. Bell and his colleagues take issue with the precise boundary of properties that are contaminated, noting that plume maps, if available, would be an improvement (and we agree), but they omit discussion of our Exhibit 5, which displays the results using various buffer zones, which represent concentric geographic areas sandwiched between Subject and Control areas that are removed from the data prior to conducting the analysis. In this approach, we increase the buffer zone in quarter-mile increments, each time re-estimating our model. The greater the buffer zone, the less of a chance that a contaminated property gets inadvertently classified as an uncontaminated one, and thus provides a cleaner differentiation between price effects in affected versus unaffected areas; this is described in the article on page 36 as less “bleed-through.” Yet for every one of the five areas, in three different variations of the model using quarter-mile increments, the conclusions from the model remain unchanged from the primary results. This suggests that the letter writers’ primary concern—that delineation between contaminated and uncontaminated areas is not precise enough—is not a primary factor driving the study results.

Some of the remaining comments from the letter writers are insightful. However, these really go to our already-stated limitations of the study and, consequently, serve more as suggested opportunities for future research and publication. For instance, the commentators note that we could have analyzed the transfer disclosure statements of individual participants, conducting in effect an individualized, property-by-property paired sales analysis.

6. Randal Bell, *Real Estate Damages*, 3rd ed. (Chicago: Appraisal Institute, 2016), 40.

7. USPAP Advisory Opinion 9, Line 78.

We absolutely agree that assessing individual disclosure could be a useful study, but given its scope and level of involvement, such an undertaking, with its fundamentally alternative methodological design, would best be served by a separate research endeavor. Also, put simply, their suggested level of detail for this academic study was impractical for us, given data availability and the magnitude of time that would be required for an individual property analysis in this number of study areas, with concomitant hundreds of thousands of disclosures to review and/or property owners/brokers to interview. Direct verification of considered market data would be foundational if performing a paired sales or sale-resale analysis that uses a smaller number of sales, but it is impractical in a regression study that draws upon thousands of transactions.

In sum, the letter writers' comments suggesting alternative approaches using peer-supported practices or even their own novel methods and techniques with their concurrent unique benefits and limitations would better take the form of future peer-reviewed articles as opposed to letters to the editor. The publication process

is long, rigorous, and peer-reviewed, whereas comments on existing articles require nothing more than an opinion. The potential impact of PFAS on property value is a complex and demonstrably contentious appraisal issue. We do not pretend that our article is the final say in the matter. For this reason, we welcome future peer-reviewed academic contributions in this regard by the letter writers as well as the wider set of practicing appraisers.

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*Stephen G. Valdez  
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*Jason Borrás  
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New York, New York*

### **Erratum**

In the article "PFAS Contamination and Residential Property Values: A Study of Five US Sites within the Assessment State of the Remediation Lifecycle" (Winter 2022), the author bio for Orell Anderson should have read as follows:

**Orell C. Anderson, MAI, FRICS, ASA**, is president of Strategic Property Analytics Inc., and specializes in real property damage economics. As a forensic appraiser and expert consultant, he has worked on some of the largest climate, environmental, and terrorist cases in recent times. He is co-chair of the American Bar Association's Litigation Subcommittee on Environmental Damages and Eminent Domain. His research on environmental contamination has been published by the International Right of Way Association, the American Bar Association, and the Appraisal Institute; he also is a contributing author to *Real Estate Damages: An Analysis of Detrimental Conditions* and *Real Estate Damages: Applied Economics and Detrimental Conditions* (second edition). **Contact: [orell@strategicpropertyanalytics.com](mailto:orell@strategicpropertyanalytics.com)**

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Nancy K. Bannon  
Managing Editor



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