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Improving Analysis

Dear Readers:

Welcome to the final 2019 issue of The Appraisal Journal. To close out the year, the Journal offers four feature articles—two addressing conditions that may give rise to price effects for residential properties and two addressing techniques for data analysis that maximize the usefulness of appraisal reports.

The first feature, “Challenges with Appraising in the Secondary/Tertiary Multifamily Rental Market,” by William J. Kimball, MAI, demonstrates how national indicators and statistical data from the internet can be analyzed and used to augment typical local market analysis.

The second feature, “The Tradeoff between Selling Single-Family Houses as Vacant or Lived-In: Evidence from the Bloomington-Normal Housing Market,” by Adebayo A. Adanri, PhD, SRA, and Han B. Kang, PhD, uses data from the local multiple listing service and a hedonic regression model to investigate whether occupancy status of homes impacts sale prices or time on the market.

The third feature, “Incorporating a Discussion of Risk in Appraisals: A New Direction for the Appraisal Industry,” by Martin A. Skolnik, MAI, points out that during an appraisal assignment, appraisers collect and discuss information on many risk factors that might tangentially describe the risk to the mortgage lender. Currently, various risk items are embedded in the report’s narrative. This article proposes a potential expansion of the appraiser’s scope of work, where the report evaluates and discusses the risks in a distinct discussion.

The final feature, “High-Voltage Transmission Lines and Residential Property Values in New England: What Has Been Learned,” by James A. Chalmers, PhD, summarizes research over ten years on the effects of high-voltage transmission lines (HVTLs) on residential property values in New England. While many large statistical studies have shown no price effects of transmission lines on house sale prices overall, this article presents a case study analysis that suggests a pattern where there is a likelihood of an HVTL effect on value for a subgroup of nearby properties.

As always, we welcome your comments and ideas regarding any aspect of The Appraisal Journal.

Stephen T. Crosson, MAI, SRA
Editorial Board Chair and Editor-in-Chief
The Appraisal Journal
Recent Court Decisions on Real Estate and Valuation

**Low-Income Housing Tax Credits not income in income approach in property tax valuation**

Eight partnerships built and operate affordable housing apartment complexes (Section 42 housing) in Lowndes County, Georgia, with the help of federal and state Low-Income Housing Tax Credits (LIHTCs). The partnerships executed restrictive covenants in connection with the LIHTCs. In an earlier case involving the same plaintiffs, the Georgia Supreme Court considered the status of the LIHTCs as part of the bundle of rights, interests, and benefits connected with the ownership of real estate. There the state supreme court had concluded that LIHTCs are a benefit connected to real estate, not intangible personal property. Thus, excluding LIHTCs from assessment of fair market value grants preferential treatment to those properties for property tax purposes.

Following that ruling, the state legislature amended the code to clarify that in establishing the value of any property subject to rent restrictions under the income approach, any income tax credits attributable to the property may be considered, provided that such tax credits “generate actual income to the record holder of title to the property.”

The County Board of Tax Assessors filed a declaratory judgment action asking the trial court to, among other things, allow LIHTCs to continue to be treated as regular income. The taxpayers argued that using the income approach and counting LIHTCs as actual income substantially inflated their tax assessments and negated the intended benefit of the credits. The trial court held that LIHTCs could be considered “actual income,” because excluding them would violate the uniformity provision of the state constitution.

The taxpayers appealed to the Georgia Supreme Court again, claiming that the trial court erred in concluding that LIHTCs constitute actual income in the income approach because those credits merely offset property owners’ and investors’ individual tax liability. The court first noted the statute provides that, when establishing the value of a Section 42 property under the income approach, assessors may consider LIHTCs attributable to the property, but only if the LIHTCs generate actual income to the record holder of title.

The court held that the most natural and reasonable way to interpret the phrase “actual income” would recognize that LIHTCs do not provide their recipients with actual income, but rather, when properly claimed by an owner or investor, LIHTCs merely reduce that person’s overall tax burden. Thus, by claiming these tax credits, investors do not receive more money from anyone; they merely pay less in taxes to the government.

The U.S. Supreme Court had previously concluded that a security owner’s receipt of federal tax benefits in the form of deductions and credits does not constitute income under “any reasonable definition.” Accordingly, the Georgia Supreme Court concluded that, although the LIHTCs do benefit investors by reducing their tax liabilities, they do not constitute income for those investors. Therefore, the state supreme court reversed the trial court’s conclusion to the contrary.

_Heron Lake II Apartments LP v. Lowndes County Bd. of Tax Assessors_  
Georgia Supreme Court  
September 23, 2019  
2019 WL 4892457
Value of a reversionary interest in a utility condemnation action

Cook Inlet Natural Gas Storage Alaska LLC (CINGSA) constructed a natural gas storage facility on the Kenai Peninsula. The facility stores natural gas collected from other sites by injecting it into a mostly depleted rock formation a mile underground so that it can be withdrawn in wintertime when the demand for natural gas exceeds what local production can immediately supply.

To ensure the efficient extraction of gas, the facility must maintain a minimum pressurization that, in turn, requires the facility to retain a minimum amount of gas in storage. This minimum amount of gas is called base gas. At the time CINGSA acquired the reservoir, some gas—called native gas—was left in the reservoir and could satisfy part of the need for base gas.

In developing the facility, CINGSA, as a regulated public utility, used the power of eminent domain to acquire the necessary property rights to operate the facility. Kenai Landing Inc. (KLI) owns a parcel of land overlying the gas reservoir. KLI acquired the property subject to an existing oil and gas lease that provided it would not terminate the lease as long as gas is being produced anywhere in the unit, i.e., the collection of different interest holders in a single consolidated unit. Separate from, and following, its condemnation action, CINGSA acquired the lessor and lessee rights under the lease, and the state agreed to sever the reservoir from the existing unit so it could be used for storage purposes.

CINGSA commenced a condemnation action, seeking to condemn an easement of gas storage to include the underground formations in the reservoir plus a buffer, and an easement in the mineral interests, which would allow CINGSA the use of all gas, oil, and other minerals located in the formation, including the use of native gas as base gas for the facility.

After CINGSA commenced its condemnation action, it discovered an isolated reservoir of gas, which increased the volume of native gas in the reservoir, including that underlying KLI’s property. The parties agreed that KLI had a right to compensation for the use of its property for underground gas storage, and a hearing was conducted to determine the appropriate compensation. A special master determined that KLI was entitled to $125,000 in compensation, which KLI appealed to superior court.

Each side presented expert testimony by appraisers and petroleum engineers. The court found CINGSA’s experts more credible and concluded that KLI was entitled to $65,000 for the gas storage rights. KLI appealed to the Alaska Supreme Court. The supreme court summarized the pertinent question as “what has [KLI] lost by virtue of CINGSA’s condemnation of an easement in the native gas for the duration of the lease?” The court concluded that the answer is “nothing.”

KLI did not focus on what it had lost by the condemnation, but on what CINGSA gained: the use of the native gas as base gas. The lease gave the lessee production rights, which CINGSA had by assignment, and gave the lessor a royalty interest, which had also been assigned to CINGSA. KLI’s current interest in the gas was simply a reversionary interest; it has no current right to extract or use the native gas or to block its production. CINGSA, by condemning the easement, gained the use of the native gas, but KLI did not lose anything since there was no evidence that the fair market value of its reversionary rights was affected in any way by CINGSA’s use of the gas for a nonconsumptive purpose.

KLI also argued that one of CINGSA’s valuation experts did not properly execute the income approach he claimed to use. That appraiser had looked at comparable leased properties, determined the revenue they generated for the les-
sors, and divided the revenue by the number of
leased acres to determine an annual per-acre
lease rate. KLI faulted this approach because the
leased properties were not leased on an annual
per-acre lease rate but generally included only a
nominal per-acre payment, generating most of
the revenues from storage and injection fees.

The record showed that CINGSA's expert's
method is the one actually used by the market
throughout the natural gas storage industry.
In contrast, the method proposed by KLI's
appraiser—a discounted cash flow analysis that
assumed certain hypothetical injection and
withdrawal rates for CINGSA's stored gas—was
"a novel approach that is not in use in the
storage industry." The superior court had found
that CINGSA's method was appropriate, and
the supreme court concluded that that finding
was not erroneous. The judgment in favor of
CINGSA was affirmed.

Kenai Landing, Inc. v.  
Cook Inlet Natural Gas Storage Alaska LLC  
Alaska Supreme Court  
May 24, 2019  
441 P.3d 954

Stabilized occupancy in mall
property tax appraisal

Powell Street I, LLC, owned a shopping center
that included one anchor tenant space and
twenty-one other retail spaces of varying sizes.
Of the shopping center's total 118,000 square
feet, the anchor space was 54,000 square feet.

On January 1, 2014, the anchor space was
vacant. A discount grocer had occupied the
anchor space for twenty-five years but had
vacated the property in January 2013 and ended
lease payments the following May. In addition,
three other spaces totaling 11,000 square feet
were vacant, resulting in an overall vacancy
rate for the center of 51% on January 1, 2014.
The leases for the remaining spaces included
clauses that modified their terms if the anchor
space was vacant, namely lower rent payments
or cancellation of the lease.

For the January 1, 2014, assessment date, the
Multnomah County Assessor initially assigned
the center a market value of $14.7 million, which
the taxpayer appealed. At trial before the Oregon
Tax Court, both the taxpayer and the Depart-
mament of Revenue on behalf of the assessor
presented appraisals. In the appraisals, both appraisers
used the fee simple estate as the basis for the val-
uation, which includes, when a leased property is
involved, the lessor's leased fee interest and the
lessee's leasehold interest.

Both appraisers reached similar conclusions
on several underlying facts. They agreed that the
center's highest and best use was its current use
as a shopping center and reached roughly similar
conclusions regarding the market rents per
square foot. Both appraisers agreed on a value of
$9 per square foot for the anchor space, and their
respective market vacancy levels were similar:
10% for the taxpayer's appraiser, and 8% for the
department's appraiser.

The primary dispute between the appraisers
was whether the shopping center should be val-
ued as if it did have a market vacancy rate, i.e.,
whether the property should be valued at stabi-
lized or nonstabilized occupancy. The taxpayer's
appraiser concluded that the property was not at
stabilized occupancy, because it was missing an
anchor tenant and had an overall vacancy rate of
over 50%, a significant deviation from market
vacancy rates. In contrast, the department's
appraiser concluded that the property should be
considered as stabilized, since tenant turnover
was normal market behavior and the anchor
space had been vacant for less than a year.

The difference in the appraisers' conclusions
about stabilization affected their respective appli-
cations of appraisal methodology. In the sales
comparison approach, the taxpayer’s appraiser examined comparable nonstabilized shopping centers—those exhibiting high vacancy rates—while the department’s appraiser considered stabilized centers with market levels of vacancy. In the income approach, the taxpayer’s appraiser deducted $4.71 million in projected stabilization costs (leasing commissions, rent concessions, and turnaround profit incentive), while the department’s appraiser made no deduction for costs needed to achieve stabilized market occupancy.

The tax court ultimately accepted the value found by the taxpayer’s appraiser. The court agreed that the substantial vacancy and missing anchor tenant seriously affected the market for the property. The tax court also rejected the department’s argument that the taxpayer had not valued the fee simple interest as required by Oregon law. The department and assessor appealed to the state supreme court.

The department argued that the tax court valued the property based on the taxpayer’s individualized ownership of the property rather than determining the market value of the property itself. The department contended that valuations of leased properties must always use market rent and market vacancy levels, even when a property’s actual rent or vacancy levels are substantially different. In other words, the department asserted that the substantial vacancy rate and missing anchor tenant are the atypical characteristics of the owner, not the property itself.

The Oregon Supreme Court largely agreed with the department’s underlying legal principles. The court noted that “the peculiarities of the actual owner of the property are not considered,” and, when the appraiser attempts to replicate the positions of a hypothetical buyer and seller, the hypothetical buyer and seller must be supposed to be “typical.”

However, the supreme court rejected the department’s conclusion that the vacancy rates in this case were a characteristic of the taxpayer rather than the property. The court accepted the department’s premise that, if an owner has an unusual skill level, either above or below that of a typical owner, then that might be a personal characteristic of the owner, not of the property. But using market rents, as both appraisers did, had the effect of eliminating from the valuation equation the owner’s personal skill in leasing the property.

The department did not present evidence that either the departure of the prior anchor tenant, or the fact that a new anchor tenant had not filled the space by the assessment date, had anything to do with the taxpayer. The vacancy was not a characteristic of the particular owner’s skill level; it was a characteristic of the property. Accordingly, the taxpayer’s deduction to account for stabilization was appropriate, and the supreme court upheld the tax court’s determination adopting the taxpayer’s appraised value.

Powell Street I, LLC v. Multnomah County Assessor
Oregon Supreme Court
July 25, 2019
445 P.3d 297

Taxation of possessory interest in aircraft hangar facility

Centennial Airport is owned by the Arapahoe County Airport Authority (Authority), which is a tax-exempt political subdivision of the State of Colorado. In 2006, the Authority leased seventy acres of airport land in Douglas County to Denver JetCenter (DJC) at a rate of five cents per square foot pursuant to a master lease. The initial term of the master lease is 40 years with optional extensions of another 50 years.

Under the terms of the master lease, DJC was required to construct or contract for the construction of certain improvements on the leased land. Those improvements include an aircraft
hangar facility. DJC may also enter into a sublease to provide some of the required improvements and service.

In 2011, DJC entered into a sublease with Rare Air to satisfy its obligation to construct the hangar. The sublease covered three acres of land, requiring rent payments of 35 cents per square foot with a base term of 25 years. The sublease obligated Rare Air to construct an aircraft hangar, storage, and office space. Rare Air is deemed to own and hold title to all improvements made by Rare Air until the expiration of the lease, at which time title will vest in DJC. Rare Air has the exclusive right to possess, use, operate, and receive revenues from the hangar facility.

The Colorado constitution directs that all real and personal property must be taxed unless it is exempted in accordance with law. As a result, buildings and structures are subject to taxation as real property unless exempted. For the 2015 tax year, the Douglas County Assessor valued Rare Air’s hangar facility at $2.87 million. Although Rare Air did not dispute that assigned value, it did claim that the hangar should be assessed to DJC’s leasehold interest in the seventy acres under the master lease. Douglas County agreed, but the Property Tax Administrator disagreed and denied the abatement of taxes. Rare Air appealed to the Board of Assessment Appeals, which upheld the Tax Administrator’s decision, and Rare Air appealed to the Court of Appeals.

At the Colorado Court of Appeals, Rare Air contended that DJC, not Rare Air, holds a taxable interest in the hangar facility. In weighing this argument, the court noted that Rare Air constructed the hangar at its own expense, and the sublease vests in Rare Air significant benefits of ownership in the facility. Rare Air also bears the burdens of ownership, including duties to maintain and insure the facility at its own expense, and, importantly, holds title to the hangar. Thus, while title to the hangar may vest in DJC upon the expiration of the sublease, there was no evidence in the record that any other person or entity other than Rare Air held title to the hangar in 2015.

Rare Air also argued that the assessment was not within the statutory grant of authorization for taxation of possessory interests. A possessory interest in public property is a private interest in government-owned property or the right to occupy or use government-owned property granted under a lease, permit, license, concession, or contract.

The court assumed, without deciding, that Rare Air’s interest in the hangar should be assessed as a possessory interest, but still rejected Rare Air’s contention that any such assessment is barred by statute. No special authorization by the legislature is required to tax possessory interests because they are, in themselves, real property interests subject to taxation. This includes real property interests like that held by Rare Air. Accordingly, the court concluded that Rare Air was properly assessed for its ownership interest in the hangar, which constitutes a taxable interest in real property, and the court affirmed the order of the Board of Assessment Appeals.

**Rare Air Limited, LLC v. Property Tax Administrator**
**Colorado Court of Appeals**
**August 29, 2019**
**2019 WL 4064961**

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**Consideration of terms of ground lease in valuing casino property**

PPE owns Maryland Live! Casino, which is situated adjacent to the Arundel Mills Mall (Mall) in Hanover, Maryland. The casino property consists of a seven-level parking garage and a 333,164-square-foot casino. The casino was constructed in 2009 after Maryland voters ratified a constitutional amendment authorizing
Following a proposal for the newly authorized terminals, PPE was selected as a video lottery provider. PPE negotiated a deal with the owner of the Mall to acquire a site at the Mall for the casino, executing a 99-year ground lease in April 2009, subject to various rights of termination.

Under the ground lease, PPE was required to make two annual payments. The first was a minimum annual rent of $2 million, less a credit for the cost of the parking garage built by PPE. The minimum rent was to increase by 1% every year. Additionally, PPE was required to pay 1% of annual gross revenues generated at the casino; thus, the second payment component is directly tied to the operation of the casino business.

The County Supervisor of Assessments (County) assigned a value of $220.9 million for the 2012 assessment, increasing to $264.4 million for 2014. PPE obtained an appraisal indicating a value of $172.4 million and $191.4 million in 2012 and 2014, respectively. Accordingly, PPE filed an appeal to the tax court, which ruled in PPE’s favor. The County appealed the decision to the local circuit court.

The County argued that the tax court erred by failing to consider the ground lease between PPE and the Mall. According to the County, controlling precedent holds that failing to consider the value placed on a property by parties to a leasehold contract is legally improper and at odds with the willing seller/willing purchaser approach to market value. As a consequence, the County argued that PPE and its landlord established the value of the property via their arm’s-length real estate transaction, which the tax court characterized as a “business arrangement.”

PPE argued that it and the tax court had both properly considered the ground lease in valuing the property, but that they permissibly chose instead to rely on a market analysis as the best indication of value. The tax court, when presented with competing valuations using different methodologies, chose PPE’s approach. According to the tax court, relying on the percentage rent was too speculative to form a basis for the valuation of the land.

The circuit court noted that the main issue in the case, as found by the tax court, was whether the self-titled ground lease should be used as a measure to assess the full market value of the casino property. The tax court, following precedent, concluded that while a lease must be considered for its effect on the value of a property, the precedent did not present a bright-line test. Here, there existed multiple compelling reasons why the lease should not be the sole controlling document in assessing the value of the property.

The circuit court agreed with PPE that the tax court properly chose not to rely on the ground lease due to the speculative nature of the rent for the property. When the ground lease was negotiated, the total rent value could not be known and thus could not be an expression of the land’s value as determined by the parties. The tax court properly held that, where the gross income and eventual rent payments are unascertainable at the time of a lease’s signing, the rental payments are not a reliable expression of the property’s value. Thus, the tax court did, in fact, consider the ground lease as was required, but permissibly chose not to rely on it.

Having found that the tax court did not err in its consideration of the lease, and finding the tax court’s reliance on the analysis prepared by PPE’s expert appraiser was proper, the circuit court affirmed the tax court’s ruling in favor of PPE.

PPE Casino Resorts Maryland, LLC v. Supervisor of Assessments of Anne Arundel County
Circuit Court for Anne Arundel County
August 9, 2019
Case No. C-02-CV-17-003899
Valuation of leasehold and docks in tax assessment of marina and yacht club

The Erie-Western Pennsylvania Port Authority owns waterfront property in Erie. The property has been leased to the Commodore Perry Yacht Club, a nonprofit corporation, since 1976. The property consists of three acres of dry land and thirteen acres of water lots. The Yacht Club paid $3,220 per year to the Port Authority, plus fixed rent (calculated in five-year increments) of $80 per boat slip. The Yacht Club, in turn, charged its members a fee based on the length of the member's slip or boat, whichever is larger, plus annual dues of $500.

The Yacht Club constructed a marina on the property, which uses a floating dock system to provide boat slips to its members. The Yacht Club also made improvements to the property, and the lease, which runs through 2025, provides that all buildings, improvements, and fixtures constructed or placed upon the leased premises shall remain the property of the Yacht Club, which is obligated to pay all real estate taxes.

In 2012, the Erie County proposed to assess the property at $963,200. The Yacht Club appealed, first to the Board of Assessment Appeals (Board), then to a trial court, asserting that the assessment was excessive. A school district intervened, requesting a higher valuation.

At trial, the school district and the Board filed a motion seeking to declare the floating docks as taxable real estate, to which the Yacht Club responded that the docks are personalty. The court held an evidentiary hearing, at which each of the three parties presented expert testimony. The School District's appraiser testified that the installation and removal of a floating dock system is very labor intensive, with electrical lines that cannot be easily disconnected. The docks would also have to be unbolted to separate the docks from the pilings or bulkheads. The Yacht Club's witness, however, testified that the docks were floated to staging areas, and the connection pins could be removed without special equipment. The trial court denied the motion to have the floating docks declared taxable realty.

The trial court then conducted hearings on the value of the property. All three appraisers used the cost approach to value the buildings and improvements but differed widely in how they valued the land and water acreage.

The Board's appraiser testified that he did not consider the lease between the Port Authority and the Yacht Club; rather, he compared the subject property to waterfront properties that had actually sold. He used an income approach to set a value per slip by looking to the revenue a boat slip generates in the Erie marina market.

The Yacht Club's appraiser calculated the gross rent paid by the Yacht Club to the Port Authority and deducted 2% for expenses, which he then capitalized. He did not consider the annual slip fees collected by the Yacht Club, because he deemed the floating docks to be trade fixtures.

The School District's appraiser first set a leased fee value on the property based on the annual rent paid to the Port Authority, then valued the leasehold interest, calculating all potential income that the Yacht Club could derive as a for-profit marina. In his opinion, this methodology established the market price that a potential marina purchaser would be willing to pay.

The trial court upheld the Board's assessment. It rejected the Yacht Club's appraisal, because it did not consider the income the Yacht Club received from slip fees, which the court found integral to the valuation of a private marina. The court said that the Yacht Club appraiser engaged in an improper value-in-use analysis that resulted in an understated value. But the court also rejected the School District's appraisal because it also engaged in a value-in-use analysis based solely on the perspective of a for-profit marina.
motivated to charge for all possible forms of revenue. The court noted that the marketplace contains a blend of nonprofit and for-profit marinas, but neither appraiser provided a credible picture of this blended market. All of the parties appealed to the Commonwealth Court.

On appeal, the School District and Board argued that the trial court erred by concluding that the floating docks were not fixtures subject to real estate taxation. The court noted that chattel that is affixed to land can become real estate for tax assessment purposes, but the question of whether property is realty or personalty is based on the specific facts of the case. The court said that here it was undisputed that the water lots are land subject to real estate taxation, but the floating docks were not realty. The docks could be removed without damage to the land and could be adjusted to form different configurations; the lease even allows the Yacht Club to remove the floating docks at the end of the lease term. Thus, the court agreed with the trial court that the floating docks constituted personalty, not realty.

For its appeal, the Yacht Club argued that its leasehold interest was not taxable real estate. It argued that because its appraiser had valued the entire property—dry land and water lots—adding the leasehold interest results in the land being taxed twice. The School Board countered that the slip fees are tantamount to a lease—one that generates significantly more income than it pays in rent to the Port Authority.

The court held that the Yacht Club was proposing to assess the property by capitalizing the net rental income received by the Port Authority under the lease, but the Port Authority's leased fee interest alone is not determinative of the value of the marina. Also, although the Yacht Club's members do not execute a lease, they pay an annual fee to use and occupy a specified area within the water lots. Finally, the Yacht Club did not dispute that it had been paying below-market rent to the Port Authority and, thus, had a positive leasehold interest. Accordingly, the court upheld the trial court's decision, finding that the trial court properly considered the Yacht Club's leasehold interest and did not overvalue that interest.

Erie-Western Pennsylvania Port Authority v. Erie County Bd. of Assessment Appeals
Commonwealth Court of Pennsylvania
July 12, 2019
213 A.3d 1041

Proper measure of casualty damages needed for federal income tax deduction

The River Oaks neighborhood in Houston is often listed as one of the most exclusive and prestigious subdivisions in the United States. A famous architect designed several of the houses in the neighborhood, including the house owned by Petitioner.

The house was built in 1930 and included three-foot thick exterior walls, four bedrooms, six bathrooms, a living room with attached garden room in one of the turrets, and a library, among other features. The house also included art nouveau stained glass windows with an insured value of $1,200,000, as well as a 635-square foot basement wine cellar with nearly 6,900 bottles. The house was located on 4.89 acres that also included a reflecting pool, a heated in-ground swimming pool, and extensive gardens designed by a well-known landscape architect.

Petitioner purchased the property in 1998 for $9.25 million in as-is condition. In 2007, Petitioner listed the property for $18.5 million. On September 13, 2008, Hurricane Ike struck Houston, and the property sustained significant damage. Over thirty trees were lost, window panes were broken, the roof was damaged, and
the stained-glass windows were damaged. There was also water damage to the oak wood floors, and the basement wine cellar was flooded with three-foot deep water, which was not discovered until several days after the hurricane and allowed mold to form. Half the wine bottles were submerged in the fetid water, and asbestos was discovered shortly thereafter.

Four days after the storm, Petitioner filed a claim with his insurance company for hurricane damage and also filed a “Proof of Loss” with his flood insurance company, listing the actual cash value of all property of $15.46 million. Overall, the insurer paid Petitioner a total of $2.39 million. Petitioner took the property off the market to make the needed repairs, eventually selling it in 2014.

On Petitioner's 2008 individual income tax return, he claimed a casualty loss deduction of $888,345, reporting a fair market value before the casualty of $15.4 million and after the casualty of $12.25 million. After the IRS determined that Petitioner was not entitled to deduct a casualty loss for 2008, Petitioner protested. In 2016, Petitioner supplemented his petition seeking a casualty loss deduction in excess of the amount claimed on his 2008 return. Petitioner relied on a retrospective appraisal that determined a pre-casualty value of $18.468 million and post-casualty value of $11.081 million.

The appraiser had visited the property before the hurricane and also performed a full inspection in May 2009. Her appraisal included only the fee simple interest in the real estate, not intangibles, fixtures, or personal property. Her pre-casualty value of the improvements was $7.8 million, but this value dropped to $430,600 post-casualty. Thus, the 40% decline in total value actually reflected a 95% decline in improvement value after the hurricane.

Subject to certain limits, an individual is entitled to a deduction for any losses sustained during a year that are not compensated for by insurance.

To compute a casualty loss deduction, the taxpayer must establish the taxpayer’s basis in the property, its fair market value before casualty, and the value after the casualty determined by "competent appraisal.” A competent appraisal must recognize the effects of any general market decline affecting undamaged and damaged property, which may occur simultaneously with the casualty so any deduction is limited to the actual loss resulting from damage.

At trial, the Petitioner’s appraiser opined that the property was stigmatized as a result of the flooding and asbestos, leading to the diminution in value. Her post-casualty appraisal relied heavily on that stigmatization. However, she acknowledged that there was a general market decline in 2008, and all the sale prices of properties in the neighborhood declined from 2007 to 2008.

The tax court was not persuaded that Petitioner’s appraisals were reliable measures of Petitioner's casualty loss. Despite acknowledging that there was a general market decline in 2008, the appraiser did not include any post-hurricane sales of comparable properties in her paired sales analysis. Further, while the asbestos was discovered after the basement flooded, it was present in the house at the time Petitioner purchased it, and any diminution in value attributable to the asbestos was not part of the casualty loss.

In short, the tax court was not persuaded that the value of the property declined by 95% as the appraiser concluded, and if the value did decline that much, it was not solely due to the damage resulting from the hurricane. Accordingly, the tax court found that the Petitioner had not established his loss through a competent appraisal, and thus was not entitled to a casualty loss deduction for 2008.

_Taylor v. Commissioner of Internal Revenue_
U.S. Tax Court
August 19, 2019
T.C. Memo. 2019-102
In rails-to-trails cases, the measure of damages for just compensation is the difference between the value of a plaintiff’s land unencumbered by a railroad easement and the value of the plaintiff’s land encumbered by a perpetual trail use easement subject to possible reactivation as a railroad. However, it is widely accepted that such railroads are unlikely to be reactivated, so there is no real prospect that the property owners will ever again have unencumbered use of their property.

The testimony of the parties’ experts in this case revealed two major areas of dispute: identifying the property rights available to the landowners in the “after scenario” of the before-and-after method prescribed by the Uniform Appraisal Standards for Federal Land Acquisitions, and whether there were any compensable benefits of damages to the remainder parcel in the after scenario.

On the first issue, the plaintiffs’ appraiser opined that, as a result of the taking effected by imposition of the perpetual trail use easement, plaintiffs retained no valuable rights in the servient estate. The government’s appraiser opined that plaintiffs retained 15% of their fee simple property rights. The Court of Federal Claims agreed with the plaintiffs’ appraiser. He recognized that the possibility of the trail easement being extinguished was too remote to have any value. Accordingly, the plaintiffs retained no valuable rights in the land underlying the perpetual trail use easement. While plaintiffs may have nominal property rights in the burdened land, those rights have no pecuniary value and thus cannot impact the just compensation analysis.

The second area of disagreement between the parties concerned the benefits and damages to the remainder parcels. Just compensation for each plaintiff must be offset by any special benefits—a special and direct increase in value by the public improvement—whereas general benefits—those that result to the public as a whole—do not offset the compensation due. Just compensation also must include severance damages to compensate for the diminution in value in the owner’s remaining property resulting from the taking. Proper application of the before-and-after method should involve accounting for both special benefits and severance damages.

The government contended that the trail presents a special benefit of trail access to abutting residential property owners. The plaintiff, however, argued that the trail in the after condition is a general benefit and that better access than the public as a whole is not a special benefit. The court agreed with the plaintiffs that the presence of the trail represents a general benefit to the residential landowners in the neighborhood surrounding the trail, though the court agreed with the government that the presence of a general benefit does not, in itself, mean that adjoining properties cannot also be specially impacted. A particular parcel can experience special benefits or damages even while a general benefit is also present.
Finally, the court also found that, in general, landowners place value on having trails nearby, but do not want trails adjacent to, or running through, their properties. The plaintiffs expressed concerns related to privacy, safety, crime, law enforcement response times, trespassers, trash, and disturbance of farm animals by trail users, all of which could negatively impact the value of their property. Thus, while the presence of the trail is a general benefit to the community, the trail’s proximity is a special damage to adjacent landowners.

Based on the appraisal evidence, the court concluded that the plaintiffs had demonstrated that the residential parcels lost 20.5% of their land value by being adjacent to the trail. Plaintiffs were therefore entitled to just compensation based on the diminution in value between the before and after conditions, plus proximity damages, access damages, and cost-to-cure damages where appropriate.

Hardy v. United States
U.S. Court of Federal Claims
December 14, 2018
141 Fed.Cl. 1

Reliance on multiple witnesses in arriving at a condemnation value

The Utah Department of Transportation (UDOT) sought to construct a new freeway on the west side of Salt Lake County, so in 2011 it filed a condemnation action to acquire a strip of land that crossed property owned by LEJ Investments. At trial, UDOT and LEJ presented appraisals that described the property very differently.

UDOT depicted the property as a 353-acre vacant dry farm with no access roads and antelope still roaming the area. LEJ depicted the property as a budding real estate investment with immediate potential for mixed-use development. During trial, the mayor of the nearby city testified that the mixed-use development plans were consistent with the city’s plans for the area, even without the new freeway. The trial court rejected both parties’ valuations, ultimately awarding LEJ $13 million in compensation for the property. UDOT appealed to the Utah Court of Appeals.

On appeal, UDOT contended that the trial court misapplied the project-influence rule by relying on developments and comparables that existed after the freeway project began. Specifically, UDOT argued that the court should have excluded value increases resulting from development patterns that occurred after the freeway was announced and not relied on properties that were influenced by the freeway, which did not exist on the valuation date.

Although the court agreed that any enhancement or decrease in value attributable to the project for which the property is being condemned must be excluded in determining the value of the property, the court rejected UDOT’s argument, finding evidence in the record that the developments the trial court considered would have happened regardless of the freeway project. UDOT’s expert arrived at his conclusion by looking only to the city’s general plan for 2003, before the freeway was announced, but that assessment ignored the development that would have occurred without the freeway between 2003 and 2011.

UDOT also argued that the trial court’s calculation of severance damages was erroneous. In a takings action where the condemned property constitutes only a part of the property, a court also determines damages to the part of the property not actually taken. The measure of damages to the property affected, but not actually taken, is the difference in market value before and after the taking. Here, the trial court stated that neither side’s appraisals or conclusions were reliable, but the trial court used material from both appraisals to arrive at its conclusion.
The Court of Appeals characterized UDOT’s argument as essentially arguing that because the trial court did not adopt either expert’s appraisal in full, it could not rely on either appraisal. Although the trial court did not provide a detailed analysis explaining how it arrived at its value, UDOT did not show what facts the court should have relied on. Further, UDOT expressly invited the trial court to arrive at a range in between what the experts said based on the evidence. Accordingly, the Court of Appeals affirmed the trial court’s ruling.

Utah Department of Transportation v. LEJ Investments LLC  
Utah Court of Appeals  
November 8, 2018  
437 P.3d 569

Value of tenant’s rights in valuation of fee interest

KCP Hastings owns real property in Hastings, Minnesota, consisting of a shopping mall and surrounding parking lot. After Dakota County’s assessment of property taxes on the property for 2010, 2011, and 2012, KCP appealed the assessments to the tax court, which conducted a trial and adopted valuations that exceeded the original assessments. KCP appealed to the Minnesota Supreme Court, which ultimately remanded the case for further proceedings. [See “Cases in Brief,” Fall 2017.]

On remand, the tax court permitted both parties to supplement their appraisals with discounted cash flow (DCF) analyses. For 2010 and 2011, the tax court arrived at values between the parties’ respective appraisals, but for 2012 the tax court concluded a value above the county’s appraisal. KCP again appealed.

On appeal, the Minnesota Supreme Court began its analysis by noting that an appraisal may determine the value of the fee simple interest in property, or it may determine the value of some inferior interest. The tax court found that KCP’s appraisal was a leased fee appraisal rather than a fee simple appraisal, and therefore rejected it. On appeal, the parties disagreed about what interest KCP’s expert appraised.

To perform a DCF analysis, an appraiser needs to determine the projected cash flow of the property, which, in the case of a shopping mall, is primarily rent it collects from renting storefronts to tenants. To determine rental income, KCP’s expert predicted the terms of the leases the tenants would enter into during the ten-year period. The expert predicted that tenants would enter into five-year leases with constant rental rates for that term. This constant rent, the county alleged, resulted in a leased fee valuation.

A leased fee interest is the interest retained by a landlord after leasing a property to others. A leased fee interest is inferior to a fee simple interest, because it does not typically include the right of use and occupancy of the property. While tenants may have entered into multiyear leases with flat rental rates, those flat rental rates do not account for other existing interests in the property. Although the value of the leased fee interest may have remained constant over the five-year leases that formed the basis of KCP’s expert’s opinion, that does not mean the value of the fee simple interest likewise remained constant. On the contrary, the expert assumed market rents would increase by 3%.

The supreme court set forth a hypothetical of a $12,000-per-year lease. But for the multiyear, flat-rate nature of the leases, the space could be rented for (assuming a 3% growth in market rent) $12,000, $12,360, $12,730, and so forth. Over five years, KCP’s leased fee interest would be $12,000 in each of the five years, while the tenant could sell its interest (the right to use and possess the space) to a third-party tenant at the increasing market rent and collect the profits. By
failing to account for that value, KCP’s expert failed to include the value of the tenant’s right of use and possession, and consequently failed to value the leased fee interest.

The supreme court thus concluded that, by looking only at terms of leases KCP could enter into, and not factoring in growth that could occur if the property was unencumbered by those leases, KCP’s expert failed to determine the market value of the fee simple interest in the property.

The tax court also assigned value to a portion of the mall’s parking lot on the basis that it could be sold and developed as an outlot. On appeal, KCP argued that the outlot could not be sold and developed because of the minimum parking requirements in Hastings’s zoning code. The mall had only 700 parking spaces, including those in the outlot, so developing the outlot would have reduced the number of parking spots below the requirements of the zoning code.

The supreme court agreed with KCP that the tax court erred by considering the speculative possibility that a buyer of the outlot could seek a variance or enter into a reciprocal easement with KCP. Because there was no evidence that the zoning code would be changed or a variance would be granted, and because any development of the outlot would come with its own parking requirements, the supreme court held that the tax court erred in valuing the outlot based on the possibility of its sale and development.

KCP Hastings, LLC v. Dakota County
Minnesota Supreme Court
July 31, 2019
931 N.W.2d 773

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Challenges with Appraising in the Secondary/Tertiary Multifamily Rental Market

by William J. Kimball, MAI

Abstract
This article concerns the valuation of investment-grade and non-investment-grade apartments within secondary/tertiary markets. Despite access to increasing amounts of statistical data via the internet through national data sources, values still are primarily derived by local market activity. Outside information, however, can be supportive in some cases in valuation in secondary/tertiary markets. In this article, both local and national trends and patterns are analyzed to demonstrate how trending values and rates can be used to augment the typical valuation. Similarities and differences in local and national data are discussed as well as specific statistics. In the end, opinions of value can recognize both local and national indicators to better understand real estate values in local markets.

Introduction
The apartment market has been white-hot throughout most of the United States since 2010. The statistics are plentiful—from local newspapers, REITs, brokerage firms, accounting firms, and appraisal firms. Nationally, capitalization rates have steadily decreased and per-unit pricing has increased significantly. What is harder to quantify is the market activity in secondary/tertiary markets. Do non-primary markets parallel activity in major cities? And if so, what type of premium or discount is demanded from the market?

Appraisers may be faced with resolving such issues in a local appraisal assignment. For example, suppose an appraiser receives a call from Megga Bank about an appraisal that is needed as soon as possible. A local borrower has a 160-unit apartment complex under contract of sale and the only thing reportedly holding up the sale is the appraisal. The complex is one of the nicest buildings in the local market, and it is located in an area where most of the new commercial activity has occurred lately. The buyer has done his homework; he has gathered market studies and capitalization rates from the region, which point to a capitalization rate range just below 6%. Regional sales are as high as $185,000 per unit. With an indicated price of $190,000 per unit and a capitalization rate of 6.15%, the buyer believes he has a good deal. The bank wants to support this customer and asks the appraiser if he agrees with the buyer’s evaluation of the property in this market. The banker asks the appraiser point blank, do you think this deal will fly? This is certainly not an easy question to answer, but it can be a considerably less daunting task with the proper data in hand. Keep in mind that it is not just the data itself, but the nuances that come with the data that are key to providing a meaningful answer to the client.

The national apartment market contains approximately 11.1 million units, with about 200,000 to 250,000 new units added annually.1 Vacancy levels have remained at 4.5%+/- for several years, with rents increasing 3% to 5% per annum. However, according to the Emerging Trends in Real Estate 2019 report,2 vacancies could surpass 5% in the near future.

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1. REIS, 3Q 2018 Apartment Report (REIS Services, 2018).
In many larger cities, apartments are the most prevalent housing. Construction and demand have increased in markets but to different degrees. New single-family housing development has gone by the wayside in most urban and suburban markets, though recent hints of its return are evident. The millennials cohort has firmly established demand for upscale housing with uber-amenities, high walkability, and interconnected urban-chic housing in high-energy neighborhoods. This demand continues despite full employment with improving wages, which historically would have redirected young adults toward home ownership and the American dream.3

In the current real estate cycle, apartment construction peaked at 386,000 unit starts in 2015 nationally.4 According to Dodge Data and Analytics, the volume of commercial and multifamily construction starts in the United States was approximately $200 billion annually from 2016 to 2018.5

At the same time, the apartment market is a solid investment relative to alternative investment vehicles. The multifamily sector remains popular, with about $153.0 billion in sales in 2017, ahead of the office sector at $132.3 billion in sales for the same year.6 Only the industrial market of late has shown increased levels of transactions nationally (+22% according to Real Capital Analytics); all other real estate sectors have shown slight declines from peak levels. As the primary markets become saturated with new development, value-added activity, and investments, the secondary markets have seen increased investment activity.

### Local and National Data Comparison

The appraisal of an apartment building was once confined to research on local comparables within the same metropolitan area. This task has been transformed, however, into a complex financial analysis. It has been supplanted with the never-ending gathering of new and improved information. Web-based national data sources—such as Reis, CoStar, and Real Capital Analytics—easily provide information that brings investment options in Dallas alongside those in Buffalo. Readily available national data provides another tool for the appraisal of a local apartment building.

### Local Valuation

In terms of the local valuation of multifamily property, the analysis is both simple and complicated. Simply put, the national statistics are not directly applicable. Do they support trends in the property type and give direction of local indicators? Absolutely yes. Can they be directly applied to the local property? Absolutely not—a secondary/tertiary market has economic dynamics that do not compare to those of larger, more active markets.

The national overall capitalization rates summarized within surveys have varied as much as 235 basis points during the past two real estate cycles, while the local capitalization rates have varied by only 134 basis points. The national data reflects hundreds of sales and depicts a more detailed picture of the larger market. The local sales data has a more limited base, resulting in a more scattered representation. Clearly, the sales must be dissected individually to create credible comparisons. Those sales with similar-sized complexes and having similar ages, locations, and amenities must be investigated. A 50-unit complex built in the 1960s with a common boiler is obviously not comparable to a modern 200-unit project with pool, dog wash station, in-unit washer/dryer hookups, and individual HVAC units. Data representing average pricing typically includes all types of sales with such amenities; and the smaller the data sample, the greater the impact of a divergent sale.

Despite these differences, the urge to compare numbers is great, especially in the current envi-

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Environment where investing in real estate has gone beyond trendy. Data comparison is critical to facilitate transactions. Although the data can be plentiful, the application can be complex. The vast majority of the data pertains simply to capitalization rates, which investors strongly rely upon. At the same time, appreciation has become not only investors’ friend, but their crutch. National purchasers are rarely satisfied with current cash flow returns for the long term. Regardless, the combination of strong historical trends and appreciation and little recognition of irrational exuberance has become the norm in the current cycle.

Comparison of Capitalization Rate Data
The most common means of apartment valuation is the income capitalization approach to value. The Appraisal Institute describes the income capitalization approach as “specific appraisal techniques applied to develop a value indication for a property based on its earning capability and calculated by the capitalization of property income.” Investors are typically concerned with the future income potential of a property and the reliability of that income stream. Considerations include the durability, variability, and stability of the income. In addition to supply and demand, the analysis examines risk factors such as vacancy increases in the market, anticipated capital expenditures for the subject property, tenant turnover in the market compared to the subject property’s history, changing tides of investors (both local and national), interest rate fluctuations, alternative property investments, economic conditions, and more.

The most common means of converting future benefits to present value is through the application of an overall capitalization rate. Therefore, appraisers need to be aware of the strengths and weaknesses of capitalization rate data and how to make optimal use of this information. To illustrate the similarities and differences seen in apartment sector data, a comparison was developed utilizing market-derived capitalization rates representative of Upstate New York and various national statistics, as shown in Exhibit 1 and Exhibit 1a.

In the exhibits, the national data from the Integra-Syracuse database includes hundreds of multifamily sales per year, exclusive of sales in major markets, such as New York City, Los Angeles, and Philadelphia. The sales span the 48 contiguous states. Sales with 30 or more units are included, with no exclusions based on age of building. Sales with subsidized or rent-controlled housing have been excluded to the extent possible.

The data from the national publications—PwC/Korpacz and IRR Viewpoint—focuses more on institutional-grade property. PwC/Korpacz and IRR Viewpoint (published by Integra Realty Resources) include data from the major markets that indicate higher pricing; the major market data tends to be superior to the local and national data that includes sales of smaller and older product.

The local data from the Integra-Syracuse database includes dozens of sales per year within the Upstate New York market, inclusive of urban and suburban activity. (The Upstate New York market is loosely defined as that area outside of and north of the New York City metropolitan area.) Sales were found to be valid but were not all fully verified. The data is not represented to be comprehensive, but rather representative of market conditions from a uniform sampling.

As shown in Exhibit 1, capitalization rates in 2002 are fairly similar across the board, with a range from 8.56% to 9.00%, a variance of less than 5%. This period is well before apartment investment became trendy and billions of dollars were raised publicly for such investments.

The exhibit also shows that only five years later the market had changed drastically, with a range of capitalization rates from 5.75% to 8.87% in 2007, a variance of over 50%. The range of rates demonstrates the tremendous amount of capital then being allocated to the apartment market sector. The real estate investment trust (REIT) market further reveals the growing interest in commercial real estate. From 2002 to 2006, US REITs grew from $161.9 billion to $438.1 billion, or more than

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Exhibit 1  Comparison of Local and National Capitalization Rates for Apartments

![Graph showing comparison of capitalization rates](image)


Source: Integra-Syracuse; Integra IRR Viewpoint; PwC/Korpacz Real Estate Investor Survey

Exhibit 1a  Comparison of Local and National Capitalization Rates for Apartments—Data Summary

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<th>Integra Viewpoint (%)</th>
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170%, representing one of the fastest-growing periods of real estate investments ever seen.

The data in the exhibits covers various economic cycles, highlighted by the recession of 2008–2009. Although the recession nationally is well depicted with the spike of capitalization rates in 2009, it is not as well defined within the data for the Upstate New York market, where the local reaction is depicted as delayed and muted. While the same trends are apparent locally and nationally, the timing is significantly different. Even the steadily declining capitalization rates from 2002 to 2007 are not as evident in this local market. While national rates dropped 186 basis points in this period, the local market dropped only 13 basis points, with variations in between. The differences between the national and local data continued post recession. Subsequent to the peak of rates in 2009, national capitalization rates dropped 147 basis points through 2017. The local market, however, dropped only 88 basis points, demonstrating similar patterns but different correlations based on the available information.

Also of note are the fluctuating local rates of return in contrast to the neatly ordered returns in the national data. The national data reflects the supply and demand factors of numerous national participants, with statistically more meaningful transactions. The national market is more homogeneous as a whole, with funds chasing relatively similar market conditions that result in similar returns.

The local data is an indication of actual transactions within a relatively small market that is far from standardized in terms of supply and demand or economic factors. (The number of local sales ranged from 12 to 45 per annum, while the national sales ranged from 200 to 500 annually.) Although the data presented cannot be considered conclusive within the market, it is certainly representative. In general, local product tends to be older, due to only a recent spurt of new construction. As might be expected, older projects require greater maintenance, repairs, and capital improvements. In many cases, the older apartments suffer from functional obsolescence, due to inefficient common areas, lack of individual utility meters, and dated design and appeal. Also, the older local data would tend to be inferior to the more-timely national data and therefore would tend to create more risk and uncertainty in a project. The data uncertainty explains, in part, the higher capitalization rates locally and, in turn, lower unit prices. The national market, in contrast, is more conventional and newer with less risk; this is demonstrated by the national market’s quicker recovery after the recession.

It is also interesting to note that the range of overall rates created by the PwC survey ranged from 3.5% to 7.5% in 2017. The local sales’ capitalization rates averaged 7.8% for the same period, which is well outside of the PwC range, indicating further disparity between the indicators from a national and local investor perspective.

Comparison of Per-Unit Price Data

A comparison of per-unit pricing is presented next to further illustrate the differences in information garnered from national publications and from local data.

Summarized in Exhibit 2 and Exhibit 2a are average national apartment prices on a per-unit basis compared to average local market prices. In both sets of data, the general trend is upwards. The data is never fully adequate to explain all movements but is reasonable to depict trends. As with the previous comparison of capitalization rate data, there are concerns related to the more limited data set for the local sales as well as the differences of building types, ages, and conditions, but the trends are well in-line with one another. The clear takeaway again is that the local market responds in a more muted manner than the national market. Also, this data is raw and cannot be used for any type of direct comparison.

The initial pricing for all sales in the market in 2002–2003 indicates only a 22% difference between the national and local data; however, by the end of the period depicted, the difference increased to 43%, as shown in the 2016–2017 averages. The fundamental cause of the difference is supply and demand. In those areas where the income levels and job growth are below
**Exhibit 2** Comparison of Local and National Average Price Per Unit for Apartments

![Graph showing comparison of local and national average price per unit for apartments over time, with shaded area indicating recession period. Source: Integra-Syracuse](image)

**Exhibit 2a** Comparison of Local and National Average Price Per Unit for Apartments—Data Summary

<table>
<thead>
<tr>
<th>Year</th>
<th>Local ($)</th>
<th>National ($)</th>
<th>Difference ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>32,832</td>
<td>46,725</td>
<td>13,893</td>
</tr>
<tr>
<td>2003</td>
<td>41,296</td>
<td>44,037</td>
<td>2,741</td>
</tr>
<tr>
<td>2004</td>
<td>49,942</td>
<td>60,164</td>
<td>10,222</td>
</tr>
<tr>
<td>2005</td>
<td>54,362</td>
<td>68,048</td>
<td>13,686</td>
</tr>
<tr>
<td>2006</td>
<td>56,583</td>
<td>70,787</td>
<td>14,204</td>
</tr>
<tr>
<td>2007</td>
<td>64,112</td>
<td>73,297</td>
<td>9,185</td>
</tr>
<tr>
<td>2008</td>
<td>54,344</td>
<td>71,058</td>
<td>16,714</td>
</tr>
<tr>
<td>2009</td>
<td>53,960</td>
<td>65,864</td>
<td>11,904</td>
</tr>
<tr>
<td>2010</td>
<td>53,556</td>
<td>69,612</td>
<td>16,056</td>
</tr>
<tr>
<td>2011</td>
<td>54,009</td>
<td>81,311</td>
<td>27,302</td>
</tr>
<tr>
<td>2012</td>
<td>50,347</td>
<td>93,815</td>
<td>43,468</td>
</tr>
<tr>
<td>2013</td>
<td>56,144</td>
<td>86,717</td>
<td>30,573</td>
</tr>
<tr>
<td>2014</td>
<td>70,666</td>
<td>95,026</td>
<td>24,360</td>
</tr>
<tr>
<td>2015</td>
<td>76,416</td>
<td>118,104</td>
<td>41,688</td>
</tr>
<tr>
<td>2016</td>
<td>65,152</td>
<td>99,386</td>
<td>34,234</td>
</tr>
<tr>
<td>2017</td>
<td>81,101</td>
<td>109,919</td>
<td>28,818</td>
</tr>
</tbody>
</table>
average—such as the Upstate New York blue collar market—demand is more moderate. This caused the local market to improve more slowly than the fast-moving national market. Although the general trends are similar, the pricing in one market does not lend itself to direct application in the other market. Again, this can be attributed to a number of variables, including average age, condition, project amenities, rental rates, and size of the properties.

The 160-unit project postulated at the beginning of this article is under contract for $190,000 per unit, or $30,400,000. For that transaction, a 43% variation in per-unit pricing equates to a swing in value of approximately $13,072,000. As the difference in national and local sales widens, the room for error widens as well.

**Comparison of Average Capitalization Rates and Ten-Year Treasuries**

Capitalization rates can be summarized to provide value indicators. A *capitalization rate* is “the ratio of one year’s net operating income provided by an asset to the value of the asset; used to convert income into value in the application of the income capitalization approach.” The current, historically cheap, financing is a national phenomenon that has positively affected markets. Buyers have been able to pay higher prices for real estate due to the low cost of capital. Per-unit apartment pricing has increased dramatically due to just this one factor, without consideration of any increases in apartment rents. Investors have been comfortable with this situation since 2002 until the recent upticks in rates. In Exhibit 3, ten-year Treasury bond rates have been summarized to give a broad indication of mortgage rates, and the graph shows a slightly erratic decline. The Treasury rate is also compared to national capitalization rates, where a more steady decline is demonstrated. Exhibit 3a shows the raw data used to develop the graph’s trend lines.

In Exhibit 3, the graph shows that although the trends are similar, the Treasuries’ movements are more erratic. From 2002 to 2017, Treasuries dropped 261 basis points, while national capitalization rates dropped a still substantial 224 basis points. More telling is that from the peak of the last real estate cycle in 2007 Treasuries dropped 233 basis points, while local capitalization rates, after fluctuating, dropped only 106 basis points.

The conundrum is with the local sales—why a drop of only 106 basis points, or less than one-half the drop in the national capitalization rates and Treasury rates? The obvious answer is, because that is what the market indicates. And ultimately, that is what every appraisal should do—reflect the market.

The more difficult explanation concerns the comparison with the larger, national market. The national statistics are more widely available and the starting point for potential valuation. If capitalization rates can be less than 6% in neighboring New Jersey, how much different can they be 200 miles away in Central New York? As it turns out, they can be very different. To fully understand the apparent discrepancies, one needs to look back further in the local market as well as the national market.

Overall capitalization rates in Central New York were historically higher in the years prior to 2002. The market was considered to be very soft. In a soft market, transactions are less frequent, more erratic, and harder to quantify. In fact, in Central New York prior to 2002 the overall capitalization rates were well into double digits. In such a market, the statistics become less meaningful and use of judgment becomes much more critical. This is the case in any market where change is significant or where there is a real weakness that is demonstrated by a lack of active market participants.

For the project postulated at the beginning of this article with a $30,400,000 contract, the difference in capitalization rates can be tremendous. Based on the 6.15% contract capitalization rate, the net operating income (NOI) is $1,869,600. A difference of only 25 basis points creates a value change of more than $1 million ($1,869,400 / 6.4% = $29,212,500), which may be enough to make or break the deal.

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Exhibit 3  Comparison of Local and National Average Apartment Capitalization Rates and Ten-Year Treasury Rates

![Graph showing comparison of local and national average apartment capitalization rates and ten-year treasury rates over years 2002 to 2017. The graph includes a shaded area representing a recession period.](chart)

Source: Integra-Syracuse; Federal Reserve

Exhibit 3a  Comparison of Local and National Average Apartment Capitalization Rates and Ten-Year Treasury Rates—Data Summary

<table>
<thead>
<tr>
<th>Year</th>
<th>Local Capitalization Rates (%)</th>
<th>National Capitalization Rates (%)</th>
<th>Ten-Year Treasury (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>9.00</td>
<td>8.80</td>
<td>5.04</td>
</tr>
<tr>
<td>2003</td>
<td>9.00</td>
<td>8.46</td>
<td>4.05</td>
</tr>
<tr>
<td>2004</td>
<td>8.25</td>
<td>7.66</td>
<td>4.15</td>
</tr>
<tr>
<td>2005</td>
<td>8.57</td>
<td>7.02</td>
<td>4.22</td>
</tr>
<tr>
<td>2006</td>
<td>7.62</td>
<td>6.94</td>
<td>4.42</td>
</tr>
<tr>
<td>2007</td>
<td>8.87</td>
<td>6.94</td>
<td>4.76</td>
</tr>
<tr>
<td>2008</td>
<td>8.99</td>
<td>7.25</td>
<td>3.74</td>
</tr>
<tr>
<td>2009</td>
<td>8.69</td>
<td>8.03</td>
<td>2.52</td>
</tr>
<tr>
<td>2010</td>
<td>8.79</td>
<td>7.63</td>
<td>3.73</td>
</tr>
<tr>
<td>2011</td>
<td>9.15</td>
<td>7.01</td>
<td>3.39</td>
</tr>
<tr>
<td>2012</td>
<td>8.01</td>
<td>6.71</td>
<td>1.97</td>
</tr>
<tr>
<td>2013</td>
<td>8.01</td>
<td>6.88</td>
<td>1.91</td>
</tr>
<tr>
<td>2014</td>
<td>8.08</td>
<td>6.70</td>
<td>2.86</td>
</tr>
<tr>
<td>2015</td>
<td>7.89</td>
<td>6.45</td>
<td>1.88</td>
</tr>
<tr>
<td>2016</td>
<td>7.90</td>
<td>6.54</td>
<td>2.09</td>
</tr>
<tr>
<td>2017</td>
<td>7.81</td>
<td>6.56</td>
<td>2.43</td>
</tr>
</tbody>
</table>
Economic Factors

The national and regional economies play an important role in most real estate purchases. As *The Appraisal of Real Estate*, fourteenth edition, states, “The economic health of a region depends on the status of its economic activity, which in turn encompasses the economic activities in individual areas and communities within the region's geographic boundaries.”

Population and employment trends tend to be the most critical in identifying the economic health of a market. While the national trends have been steadily positive, Upstate New York has seen steady declines in these indicators, which is also common to the Northeast region as a whole. Upstate New York’s stagnant population growth reflects the slow population growth generally in the Northeast—the result of a simultaneous movement of jobs and people to the South and West regions of the United States. Over the past hundred years, there has been a gradual exodus of people from the densely populated Northeast, where population historically centered around a few key port cities.

More recently, the simultaneous shift of population and employment out of the Northeast has accelerated. People have been moving to locations that offer desirable amenities, such as a favorable climate, and to areas where employment opportunities abound. At the same time, employers have been moving to lower-cost areas and to locations with large and growing populations. As people pursue jobs and employers pursue workers, the population and employment forces have become intertwined and have gained momentum.

The loss of employment in the Northeast has, in part, tracked the fate of manufacturing, historically an extremely important source of jobs. In 1950, nearly 40% of the nation’s manufacturing jobs were in the Northeast; today, only 20% of manufacturing jobs can be found there. The loss in manufacturing employment in New York has been greater than the national average; while US manufacturing employment fell by 24.3% from 2001 to 2017, in New York manufacturing fell by 36.5%.  

Service sector employment that supports manufacturing, such as transportation and warehousing jobs, has followed suit.

This overly simple analysis provides enough evidence to demonstrate the significant difference in local markets and their divergence from the overall national scene. Drilling down further would reveal additional factors such as neighborhood trends, planned development, adjoining/neighboring properties, and a host of other considerations that can directly impact a property’s value. Even within a regional market, pockets of growth may be readily evident as a result of nearby colleges, recreational centers, and developing businesses.

What Is the Value?

To answer the question of the banker who pointedly asks whether an investment transaction will fly, the appraiser should give a “maybe” or “possibly” or even “it is not out of the question.” Without direct knowledge of the property and its historical financial statements, it is guesswork to provide a specific opinion of value at that point.

An alternative is to provide the client with market information that can assist it in evaluating value. The potential problem here is the same as the initial problem. The familiarity with the market—and in turn the specific data—can be limited. A property may fall into the very bottom of the market value range, where only certain comparable sales would apply. Conversely, the project may truly be superior to all of the buildings that sold and actually command rates that are beyond what the immediate data indicates. In those cases, a greater amount of judgment is required.

The example’s apartment complex was described as one of the nicest and newest buildings in town, so it should command premium pricing. The difficulty in the valuation is to locate comparables that are truly comparable. This is no small feat when appraising in a suburban community such as this, which did not see new construction in earnest from the 1990s to 2010. Therefore, the analysis is a process of inclusion—with a wide net for ample information—and then exclusion.

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of those sales that are not meaningful. To better understand the local market dynamics, a summary of local comparable sales is developed as well as a brief summary of the data for the subject property under contract (Exhibit 4).

As noted in Exhibit 4, the subject is newer than all the comparable sales, and it has an NOI per unit that exceeds the market range. The four listed comparable sales range from $117,188 to $185,897 per unit, averaging $157,495 prior to adjustments; the subject contract of sale is outside of this range. The indicated capitalization rates from the market bracket the subject’s indicated capitalization rate of 6.15%, ranging from 5.62% to 6.75% and averaging 6.07%. The subject indicators are outside of, or at the top end of, the market’s value indicators. It can be difficult to convince a client that such peak numbers are valid and within the realm of reason.

Data on newly built multifamily housing sales would be more representative value indicators for the subject. One problem is that these transactions were only a small portion of all the sales that could be included. With the number of sales reduced greatly, the fluctuation of pricing is more evident, and in turn, not as statistically meaningful. This data is still a valuable indicator of value in the market, however.

**Comparison of Local and National Per-Unit Sale Prices for Newer Apartments**

As previously mentioned, sales from larger primary/urban markets, such as Boston, New York, Chicago, and Los Angeles, were not included within the national sales data; in other words, the data reflects only sales from suburban/secondary markets. For the per-unit price sale analysis shown in Exhibit 5, only improved sales that were ten years old or less were included. For instance, in 2006–2007, sales of buildings that were constructed from 1996 to 2007 were included; and for 2016–2017, sales of buildings that were constructed from 2006 to 2017 were included. Due to the limited pool of sales in

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**Exhibit 4** Summary of Comparable Apartments and Subject Market Data

<table>
<thead>
<tr>
<th>No.</th>
<th>Name/Address</th>
<th>Sale Date; Status</th>
<th>Yr. Built; % Stories; % Occ.</th>
<th># Units; Rentable SF; Avg Unit SF</th>
<th>Effective Sale Price</th>
<th>$/Unit: $/SF</th>
<th>NOI/Unit: NOI/SF; Exp Ratio</th>
<th>Exp Ratio</th>
<th>Cap Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clare Court</td>
<td>1/8/18 Closed</td>
<td>2008</td>
<td>144</td>
<td>$25,800,000</td>
<td>$179,167</td>
<td>$10,079</td>
<td>46%</td>
<td>5.62%</td>
</tr>
<tr>
<td></td>
<td>313 Clare Court</td>
<td></td>
<td></td>
<td>3</td>
<td>135,993</td>
<td>$189.72</td>
<td>$10.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upstate NY</td>
<td></td>
<td></td>
<td>96%</td>
<td>944</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Betz Apartments</td>
<td>12/15/17 Closed</td>
<td>2016</td>
<td>78</td>
<td>$14,500,000</td>
<td>$185,897</td>
<td>$11,154</td>
<td>48%</td>
<td>6.00%</td>
</tr>
<tr>
<td></td>
<td>5589 Elizabeth Street</td>
<td></td>
<td></td>
<td>3</td>
<td>97,083</td>
<td>$149.36</td>
<td>$8.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upstate NY</td>
<td></td>
<td></td>
<td>100%</td>
<td>1,245</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>TMK Mansions</td>
<td>2/17/17 Closed</td>
<td>2016</td>
<td>64</td>
<td>$7,500,000</td>
<td>$117,188</td>
<td>$7,910</td>
<td>49%</td>
<td>6.75%</td>
</tr>
<tr>
<td></td>
<td>103 Marie Lane</td>
<td></td>
<td></td>
<td>2</td>
<td>72,000</td>
<td>$104.17</td>
<td>$7.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upstate NY</td>
<td></td>
<td></td>
<td>95%</td>
<td>1,125</td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>4</td>
<td>Bridgemar Landing</td>
<td>4/15/16 Closed</td>
<td>2005</td>
<td>220</td>
<td>$32,500,000</td>
<td>$147,727</td>
<td>$8,734</td>
<td>49%</td>
<td>5.91%</td>
</tr>
<tr>
<td></td>
<td>415 Bridgemar Road</td>
<td></td>
<td></td>
<td>3</td>
<td>277,049</td>
<td>$117.31</td>
<td>$6.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upstate NY</td>
<td></td>
<td></td>
<td>89%</td>
<td>1,259</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subject</td>
<td>Under Contract</td>
<td>2018</td>
<td>160</td>
<td>$30,400,000</td>
<td>$190,000</td>
<td>$11,685</td>
<td>46%</td>
<td>6.15%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>198,400</td>
<td>$153.23</td>
<td>$8.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98%</td>
<td>1,240</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Upstate New York, the comparable sales over two years were grouped together. Data from earlier years was nonconclusive for new multifamily construction in the market. This data is not presented as inclusive of all sales, but it was found to be representative of the market an appraiser might find available for an assignment.

In four of the six periods, the national sales data indicates higher per-unit pricing than the local sales and it predominantly represents the higher price bracket; nonetheless, the local sales trend in the same direction. Note should be made of the limited local data available for such an analysis. The number of local sales ranged from 1 to 8 per two-year period, while the national sales ranged from 40 to 110 per two-year period. The case can easily be made that the national sales from larger markets are reflective of value and/or value trends in the local market for newer product. In the absence of sales in the immediate local market, there is strong support for utilizing the parallel value trends to support conclusions.

**Exhibit 5** Local and National Average Price Per Unit for Newer Apartments

<table>
<thead>
<tr>
<th>Period</th>
<th>Local Sales ($)</th>
<th>National Sales ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006–2007</td>
<td>82,777</td>
<td>94,749</td>
</tr>
<tr>
<td>2008–2009</td>
<td>79,861</td>
<td>79,816</td>
</tr>
<tr>
<td>2010–2011</td>
<td>111,495</td>
<td>81,641</td>
</tr>
<tr>
<td>2012–2013</td>
<td>81,005</td>
<td>167,329</td>
</tr>
<tr>
<td>2014–2015</td>
<td>150,580</td>
<td>151,387</td>
</tr>
<tr>
<td>2016–2017</td>
<td>141,669</td>
<td>195,712</td>
</tr>
</tbody>
</table>

Source: Integra-Syracuse
There is certainly greater risk in relying on 1 to 3 local sales; the national sales can give significant and direct support for value in such as case. Note, it is not just the fact that the national sales buildings are newer; they are also more similar to the subject than those in the “all apartment sales” database in terms of condition, unit sizes, rent levels, and even project size.

In smaller markets, without ample sales, additional information from outside of the market is obviously needed. Options for supplementary data include information on national averages of similar product or sales from similar markets/economies outside of the subject market. In the end, greater reliance is likely to be placed on fewer sales than some would prefer.

**Comparison of Local and National Capitalization Rates for Newer Apartments**

The historical capitalization rates from the markets offer a glimpse of changing investor patterns. Bifurcated local and national capitalization

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**Exhibit 6** Comparison of Local and National Capitalization Rates for Newer Apartments

<table>
<thead>
<tr>
<th>Period</th>
<th>Capitalization Rate Averages—Local (%)</th>
<th>Capitalization Rate Averages—National (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006–2007</td>
<td>9.65</td>
<td>5.95</td>
</tr>
<tr>
<td>2010–2011</td>
<td>8.55</td>
<td>6.56</td>
</tr>
<tr>
<td>2012–2013</td>
<td>8.00</td>
<td>6.22</td>
</tr>
<tr>
<td>2014–2015</td>
<td>6.17</td>
<td>5.86</td>
</tr>
<tr>
<td>2016–2017</td>
<td>6.36</td>
<td>5.68</td>
</tr>
</tbody>
</table>

Source: Integra-Syracuse
rates slowly converged (Exhibit 6) as pricing in the multifamily sector escalated and investors who were priced out of primary markets sought higher returns in secondary or tertiary markets. Capitalization rates in the local markets dropped to the levels seen in the bigger markets as competition increased. Until there is a market change, this trend is expected to persist as investors continue to seek higher returns. For example, GlobeSt.com has reported, “In 2016, almost half of our survey respondents saw the greatest opportunities going forward in urban markets, but this number dropped in our next two surveys to around 20 percent. During the same period, those seeing the greatest opportunities in secondary and tertiary markets rose from 20 percent to 40 percent.”

As the larger market moves, so moves the local market; the national capitalization rates can provide direct or indirect support for a local valuation, as shown in Exhibit 6. Since the Great Recession, there has been a strong market for multifamily properties. Prices have continued to increase in the face of ample demand and a dearth of product. Capitalization rates have compressed in most markets to where risk premiums are mitigated to the point where Class A and Class B properties might be viewed the same. But as the economic cycle plays out and interest rates increase, there will be upward pressure on capitalization rates, and investors will at some point return to greater discretion in the market. Until then, the appraiser can merely reflect the market.

Case Study Conclusion
Market change is constant; appraisers need to be students of the market. Market contradictions will forever face appraisers and investors. Reportedly, $266 billion of private investor “dry powder” is targeting real estate, increasing expectations that both debt and equity capital will become oversupplied. Conversely, decelerating transaction volume has been in place since 2015 and investors report the highest level of “sell” interest since 2006. Given the differing signals, the question of whether the market will strengthen or weaken is not simple to answer.

In our example involving Megga Bank’s potential loan, the appraiser should apply the indicators from the market as best, and as carefully, as possible. Does the bank have a great deal with a value of $190,000 per unit based on a capitalization rate of 6.15%? Only through additional due diligence can that be determined. The appraiser can provide support for the value parameters that apply to this deal. Yes, the given numbers are not out of line with the market and could be a market transaction that is typical. The national data bolsters the local data, because there are more transactions, and the transactions are generally more similar to the subject. While the $190,000 per-unit pricing appears to exceed the local market range, in fact it is actually below the national average for the 2016–2017 period. The indicated capitalization rate of 6.15% is below the average within the local market but is actually above the average of the national data.

Summary
While the national apartment market is widely recognized as having been extremely strong, there can be risk in applying overall trends to individual properties. However, trends and values based on similar attributes can in fact prove helpful in valuing a building where local comparable sales are wanting, either from a smaller market size or the uniqueness the subject property in the specific market.

Low interest rates have stimulated the multifamily market, but the positive effects can vary drastically from one location to another. Capitalization rates for newer multifamily housing have compressed in a uniform manner nationally, but that may not be the case locally. In the early 2000s, the market showed signs of uniformity; greater fluctuations and variations are now evident locally and are harder to quantify. In the fight for continued higher returns over the past ten years, investors have turned to the secondary markets. Without question, the valuation issues are best addressed by local information. If the local market is thin, regional and then national

market information can be relied upon in some instances. The answers to the questions in the market are derived from direct involvement with a number of transactions to determine the appropriate tool or tools to apply to a specific property. Overall capitalization rates are heavily relied upon by investors, as discussed in this article. However, the judgment and experience of the local appraiser is always critical to the outcome of the analysis.

**About the Author**

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**Additional Resources**

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

**Appraisal Institute**
- Education
- Lum Library External Resources Knowledge Base [Login required]
  - Information Files—Economic data
  - Information Files—Residential properties
- Professional Practice

**Builder Online—Local housing data**
https://www.builderonline.com/local-housing-data

**CoreLogic Insights—Perspectives on housing economies and property markets**
https://www.corelogic.com/insights-index.aspx

**Federal Reserve of St. Louis**
- Economic Research Publications
  https://research.stlouisfed.org/publications/
- FRED Economic Data
  https://fred.stlouisfed.org/

**National Association of Home Builders—Housing economics**
https://www.nahb.org/research/housing-economics.aspx

**National Real Estate Investor—Multifamily property news, information, and analysis**
https://www.nreionline.com/multifamily

**US Census Bureau Center for Economic Studies—Research**
https://www.census.gov/programs-surveys/ces/research.html
The Tradeoff between Selling Single-Family Houses as Vacant or Lived-In: Evidence from the Bloomington-Normal Housing Market

by Adebayo A. Adanri, PhD, SRA, and Han B. Kang, PhD

Abstract
A widely held view in the residential brokerage industry is that vacant homes have longer marketing times and sell at a price discount compared to non-vacant single-family homes. The purpose of the current study is to explore whether this widely held view is true for the Bloomington-Normal, Illinois, market area. The study uses data from the local multiple listing service, and the analysis employs a hedonic regression model. Findings from the study show that vacant homes have longer marketing times than non-vacant homes, but occupancy status has no significant effects on home sale prices, which is a departure from the generally held view that vacant homes sell at a discount.

Introduction
Selling a house can be a stressful exercise because of the various issues and decisions that surround it. Sellers try to minimize the sale time and maximize the net gain from the sale of a house. Sellers consider whether to use a broker or real estate agent; previous studies have shown that listing a property through a broker or real estate agent could expose the property to a large pool of buyers. However, there have been limited studies on the most effective and efficient approach to selling a house.

The purpose of the case study presented in this article is to explore whether vacant houses have fewer days on the market or sell at a higher price compared to non-vacant houses. The study is guided by the market theory that suggests sellers desire to sell at the highest price and in the shortest time possible, while buyers are guided by the desire to choose, from the available homes in the market, a property that maximizes the utility derived from housing. Based on this theory, and assuming all else are equal, the objectives of the study are to find (1) whether selling a house as vacant (at the time of sale) reduces the number of days the property is on the market, and (2) whether vacant homes sell at a premium or discount compared to non-vacant homes. In other words, do vacant houses have fewer days on the market and sell at a higher sale price compared to non-vacant comparable houses?

The study hypothesis is that vacant houses do not have fewer days on the market and do not sell at a higher price compared to non-vacant houses. A hedonic regression model is used for the analysis. The study used the median days on the market and median sale price to explore whether vacant houses sell faster than non-vacant houses, while median sale price was used to explore whether vacant homes sell at a

premium compared to non-vacant houses. The study used 2016 home sales data extracted from the Bloomington-Normal (Illinois) Association of Realtors (BNAR) multiple listing service (MLS). Bloomington-Normal is a twin city area in central Illinois, about 130 miles south of Chicago, with a population of approximately 170,000. Major employers include State Farm Insurance, Country Financial, and Illinois State University.

**Literature Review**

One theory in the real estate literature is that vacant houses do not show as well as occupied houses. According to Peng and Cowart, vacant homes experience longer marketing periods because they generally do not have a warm emotional appeal to buyers compared to non-vacant homes; they also note that the absence of furniture makes homes look smaller rather than bigger. To address this type of concern, it is not uncommon for real estate brokers or agents to stage vacant homes in order to create emotional appeal to prospective buyers.

Other factors may affect a home's marketing period. One school of thought is that seller motivation determines how long a property stays on the market. The research shows that sellers who at the time of listing had a planned move date are inclined to sell more quickly than those that have no time constraints. In general, the shorter the planned time to move, the shorter the duration of the marketing time. Another factor that impacts marketing time is overpricing.4 Findings by Knight suggested that overpricing is costly to the seller both in time and money. Although properties with high initial pricing stay longer on the market, the literature suggests that it is the seller motivation that ultimately determines the listing price and how long a property stays on the market.5

**Analytic Approaches**

Most existing studies have used a hedonic model to predict property sale prices using the factors of seller motivation and time on the market. According to Taylor, a hedonic model is an indirect valuation method where the value that consumers place on certain characteristics is inferred from observable market transactions rather than direct observation.6 Cannaday and Kang note that “the word hedonic has to do with pleasure; i.e., a hedonic price is related to the pleasure derived from the various attributes of a given commodity.”7 Hedonic analysis is a statistical model that describes the relationship that exists between a property’s characteristics and its sale price. The existing studies, however, have noted the likely difficulties with using statistical models for real estate analysis because the models are prone to problems related to multicollinearity and stability of the regression parameters.8 Find-

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5. Benefield and Hardin, “Does Time-on-Market Measurement Matter?;” Johnson, Benefield, and Wiley, “The Probability of Sale for Residential Real Estate”; and Glover, Haurin, and Hendershott, “Selling Time and Selling Price.” Benefield and Hardin observe that although “time-on-market” is a frequently analyzed outcome in residential literature, there is no consensus agreement on its definition and how it is calculated.


ings from these studies show that nonlinear regression models are superior to linear models. Kang and Reichert suggest the use of ridge regression methods to reduce adverse effects of multicollinearity that are common in linear models. They note that the regression parameters must be stable in order to use the same adjustment factor over time, because the stability of the regression coefficient as well as prediction accuracy is sensitive to the form of functional form and estimation techniques. Their analysis found that in most cases, nonlinear models are more effective than linear models and that ridge regression techniques were superior to ordinary least squares (OLS), but there was no functional technique or functional form that was superior in all aspects. Therefore, the analyst would have to choose between minimizing the average prediction error and maximizing prediction stability.

In their 2004 Appraisal Journal article, Peng and Cowart used a hedonic model to examine if vacant houses in Lexington, Kentucky, sell for less and/or remain on the market longer than occupied homes. Their hypothesis was that vacant houses would have a higher rate of time dependence than occupied houses. The study used the 1999 MLS data from Lexington, Kentucky. Peng and Cowart observed that there is little guidance within economic theory on choosing variables for inclusion in the hedonic equation, and that while it may be ideal to include all housing-related characteristics that may affect value in the analysis, “some attributes cannot be easily defined or measured.”

The Peng and Cowart study included attributes for “occupancy status, the number of days on the market, whether the house has sold, the asking and selling prices, and housing attributes” (p. 235). Findings in that study indicated that vacant houses in the Lexington market generally sold for less and stayed on the market longer than non-vacant houses.

Ottensmann, Payton, and Man employed a hedonic model in a study of the housing price impact of location relative to employment in Marion County (Indianapolis), Indiana. That study used data on house prices and housing characteristics derived from the Metropolitan Indianapolis Board of Realtors (MIBOR) multiple listing service (MLS). This data was supplemented with information on neighborhood characteristics using the mean average SAT score for the school district in which the property is located, as well as tax rates, to explore urban location and housing prices using a hedonic model. Housing characteristics used in the study include number of bedrooms, square footage (i.e., above-grade gross living area), age, lot size, and presence of various amenities. The data used in the study was derived from the 1999 home sales recorded in the MIBOR’s MLS, which captured 80% of all sales in the market area. Findings from the study showed that the measures of location were statistically significant predictors of sale prices in the same manner as housing characteristics are predictors of sale prices, but the effects of neighborhood characteristics are smaller. The study revealed that as distance and commute time increase from the commercial centers, there was a decrease in home price; in other words, there was an inverse relationship between distance or travel time and house price, which creates a tradeoff between price and commute time.

**Case Study**

The objectives of the current study are to explore whether vacant houses have a longer marketing time and sell at a discount compared to non-vacant houses in the Bloomington-Normal (Illinois) housing market. Vacant homes as used in this study means non-occupied homes, whether they are staged (furnished) or not staged (unfurnished) for marketing purposes. The local multiple listing service considers vacant homes as unoccupied homes; it does not differentiate whether the homes were furnished or unfurnished. The study is intended to build on the prior studies by Peng and Cowart and by Ottens-


mann, Payton, and Mann, and to provide the local market participants with information to make rational decisions when selling a house.

**Study Methodology**

The hedonic model is a well-established and accepted methodology in the real estate literature. The study uses hedonic regression models to explore the research questions: Do vacant houses have fewer days on the market, and do vacant houses sell at a higher or lower price compared to non-vacant houses? The null hypothesis was that vacant houses do not have fewer days on the market and they do not have a higher sale price compared to non-vacant houses.

**Data.** The study used 2016 data from the Bloomington-Normal multiple listing service (MLS). The search criteria included the following characteristics: Type = House; Status = Closed; Closed Date = 01/01/2016 through 12/31/2016; City = Bloomington and Normal; New Construction = No; Feature = Not REO/foreclosures. The resulting data set included 1,763 listings of existing single-family homes. New construction and REO/foreclosure sales were excluded from the data set because new construction is generally vacant at the time of sale. Transactions involving properties that were bank-owned, short sales, or foreclosures were excluded from the data set because those types of sales involve conditions and motivations that are different from typical market sales. The data was screened for zoning, and one of the sales was removed from the data set because its C-1 office zoning classification, leaving a total of 1,762 closed sales, which represents 41% of all deeds recorded in the McLean County Recorder’s office in 2016. The sale prices in the data set ranged from $9,000 to $999,000, with a median sale price of $163,000. The median days on the market for the houses in the data set was 34 days. The breakdown of the sales by zip code is presented in Table 1. The data set fairly represents every neighborhood and geographic area in the twin cities of Bloomington and Normal. Missing data (e.g., lot size) was researched and manually added using information obtained from the township and county assessors’ online database and the county GIS.

Variables. For operational analysis, the sale price was defined as the dependent variable. The independent variables include occupancy status, days on market, number of stories, age, gross living area, total rooms, number of bedrooms, number of bathrooms, number of half baths, number of garages, and how sold. Descriptions of each of the variables are shown in Table 2. Table 3 summarizes the data for each of the variables for all home sales as well as for only vacant homes and only occupied homes.

**Results**

The variable Sale Price was regressed against the Vacancy variable (1 for vacant, 0 occupied) along with the independent variables of physical characteristics, such as Story, Gross Living Area, Garage, Bathroom, Age, and Cumulative Days on the Market. Table 4 reports ordinary least square (OLS) regression results using all samples (1,762 sales) in the data set. Table 5 reports the estimated results using a selected sample of homes with sale prices ranging from $100,000 to $300,000. The sample size in Table 5 was reduced to 1,527 by deleting sale transactions for very small and large homes. The average sale price of the selected sample was about $190,000.

As shown in Table 4, the Vacancy variable was not statistically significant, meaning that a home’s status as vacant or occupied had little effect on selling price, holding all other independent variables in the model constant. The other independent variables were highly significant at the 95% confidence level. The Story

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Homes Sold in Bloomington and Normal in 2016 by Zip Code and Occupancy Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zip Code</td>
<td>Vacant</td>
</tr>
<tr>
<td>61701</td>
<td>208</td>
</tr>
<tr>
<td>61704</td>
<td>213</td>
</tr>
<tr>
<td>61705</td>
<td>61</td>
</tr>
<tr>
<td>61761</td>
<td>246</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>728</strong></td>
</tr>
</tbody>
</table>

variable indicates that two-story homes have less value than other styles. The Gross Living Area, Garage, and Bathroom variables have significantly positive signs as expected. It implies that a larger house with more garages and bathrooms sells at a higher price. The Cumulative Days on Market variable (CDOM) has a negative sign and is statistically significant, meaning that the longer the property is on the market, the lower the sale price. The CDOM result is not surprising as a seller may be more willing to reduce the selling price if a property is not sold within a reasonable period. The $F$-value in each table is very high, implying that the model is significant at the 90% confidence level or higher.

In the study, two regressions also were run with Cumulative Days on Market as the dependent variable. This variable was regressed against the same independent variables as in the first regression model and Lot Size. Table 6 reports the regression results using samples of all 1,762 homes sold, while Table 7 reports the same results using the selected sample of homes with sale prices ranging from $100,000 to $300,000 (1,527 sales). Note that the Vacancy variable is highly significant and carries a positive sign, as shown in Table 6. This implies that vacant homes take longer to sell, holding all other independent variables in the model constant. The Gross Living Area variable is positive and highly significant as expected. The estimated results in Table 7 are similar to the Table 6 results. The $F$-value in each table indicates that the model is highly significant, with values at least at a 90% confidence level.

### Table 2 Variable Descriptions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
</tr>
<tr>
<td>Sale Price</td>
<td>Sale price recorded in MLS</td>
</tr>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
</tr>
<tr>
<td>Occupancy Status (Vacancy)</td>
<td>Binary variable: 1 if house is vacant; 0 otherwise</td>
</tr>
<tr>
<td>Days on Market (DOM)</td>
<td>Number of days that a property listing is on the market</td>
</tr>
<tr>
<td>Cumulative Days on Market (CDOM)</td>
<td>Number of cumulative days on the market, i.e., the total number of days a listing or multiple listings of the same property are on the market. This accounts for price reduction due to overpricing or relisting of a property either as a result of change in listing broker or property having a new listing number</td>
</tr>
<tr>
<td>Story</td>
<td>Binary variable: 1 if two story, 0 otherwise</td>
</tr>
<tr>
<td>Age</td>
<td>House age in years</td>
</tr>
<tr>
<td>Gross Living Area (GLA)</td>
<td>Above-grade living or finished area in square feet</td>
</tr>
<tr>
<td>Finished Area in Basement</td>
<td>Below-grade living or finished area in square feet</td>
</tr>
<tr>
<td>Total Room</td>
<td>Total number of rooms above grade</td>
</tr>
<tr>
<td>Bedroom (BR)</td>
<td>Number of bedrooms above grade</td>
</tr>
<tr>
<td>Bathroom (BA)</td>
<td>Number of bathrooms above grade</td>
</tr>
<tr>
<td>Half Bath</td>
<td>Number of half baths above grade</td>
</tr>
<tr>
<td>Garage (GR)</td>
<td>Number of garages</td>
</tr>
<tr>
<td>Lot Size</td>
<td>Lot size in square feet</td>
</tr>
<tr>
<td>How Sold</td>
<td>Binary variable: 1 if purchased with cash or conventional financing; 0 otherwise</td>
</tr>
</tbody>
</table>

Note: The Occupancy Status (Vacancy) variable indicates that two-story homes have less value than other styles. The Gross Living Area, Garage, and Bathroom variables have significantly positive signs as expected. The Cumulative Days on Market variable (CDOM) has a negative sign and is statistically significant, meaning that the longer the property is on the market, the lower the sale price. The CDOM result is not surprising as a seller may be more willing to reduce the selling price if a property is not sold within a reasonable period. The $F$-value in each table is very high, implying that the model is significant at the 90% confidence level or higher.
Table 3  Descriptive Analysis—Mean, Median, and Standard Deviation

<table>
<thead>
<tr>
<th>Variable</th>
<th>All Sales (N = 1,762)</th>
<th>Vacant Houses (N = 728)</th>
<th>Occupied Houses (N = 1,034)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Std. Dev.</td>
</tr>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sale Price ($)</td>
<td>185,617</td>
<td>163,000</td>
<td>93,645</td>
</tr>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupancy</td>
<td>0.41</td>
<td>0</td>
<td>0.49</td>
</tr>
<tr>
<td>DOM</td>
<td>62</td>
<td>34</td>
<td>83</td>
</tr>
<tr>
<td>CDOM</td>
<td>74</td>
<td>40</td>
<td>97</td>
</tr>
<tr>
<td>Lot Size</td>
<td>11,229</td>
<td>8,510</td>
<td>14,666</td>
</tr>
<tr>
<td>Story</td>
<td>1</td>
<td>1</td>
<td>0.50</td>
</tr>
<tr>
<td>Age</td>
<td>38</td>
<td>24</td>
<td>55.50</td>
</tr>
<tr>
<td>GLA</td>
<td>1,762</td>
<td>1,641</td>
<td>673</td>
</tr>
<tr>
<td>Finished Area in Basement</td>
<td>554</td>
<td>550</td>
<td>500</td>
</tr>
<tr>
<td>Total Room</td>
<td>9</td>
<td>8</td>
<td>44.55</td>
</tr>
<tr>
<td>Bedroom</td>
<td>4</td>
<td>3</td>
<td>0.86</td>
</tr>
<tr>
<td>Bathroom</td>
<td>2</td>
<td>2</td>
<td>0.78</td>
</tr>
<tr>
<td>Half Bath</td>
<td>1</td>
<td>1</td>
<td>0.58</td>
</tr>
<tr>
<td>Garage</td>
<td>2</td>
<td>2</td>
<td>0.75</td>
</tr>
<tr>
<td>How Sold</td>
<td>1</td>
<td>1</td>
<td>0.38</td>
</tr>
</tbody>
</table>

Table 4  Estimated Results of OLS Regression:
All Sample Sales (Dependent Variable: Sale Price)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected Sign</th>
<th>Coefficient</th>
<th>T-Value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>–</td>
<td>–7,858</td>
<td>–1.13</td>
<td>0.26</td>
</tr>
<tr>
<td>Vacancy</td>
<td>–</td>
<td>–607.0</td>
<td>–0.23</td>
<td>0.82</td>
</tr>
<tr>
<td>Story</td>
<td>–</td>
<td>–43,744</td>
<td>–14.11</td>
<td>0.00**</td>
</tr>
<tr>
<td>GLA</td>
<td>+</td>
<td>88.7</td>
<td>28.82</td>
<td>0.00**</td>
</tr>
<tr>
<td>Garage</td>
<td>+</td>
<td>18,451</td>
<td>8.09</td>
<td>0.00**</td>
</tr>
<tr>
<td>Bathroom</td>
<td>+</td>
<td>20,083</td>
<td>8.13</td>
<td>0.00**</td>
</tr>
<tr>
<td>Age</td>
<td>–</td>
<td>–692.1</td>
<td>–12.52</td>
<td>0.00**</td>
</tr>
<tr>
<td>CDOM</td>
<td>–</td>
<td>–24.45</td>
<td>–1.98</td>
<td>0.05**</td>
</tr>
<tr>
<td>F-Value</td>
<td>705.2</td>
<td></td>
<td></td>
<td>0.00**</td>
</tr>
<tr>
<td>R²</td>
<td>0.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>1,762</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5  Estimated Results of OLS Regression:
Selected Sample Sales (Dependent Variable: Sale Price)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected Sign</th>
<th>Coefficient</th>
<th>T-Value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>–</td>
<td>–12,669</td>
<td>–1.59</td>
<td>0.11</td>
</tr>
<tr>
<td>Vacancy</td>
<td>–</td>
<td>2,633</td>
<td>0.91</td>
<td>0.36</td>
</tr>
<tr>
<td>Story</td>
<td>–</td>
<td>–47,377</td>
<td>–14.31</td>
<td>0.00***</td>
</tr>
<tr>
<td>GLA</td>
<td>+</td>
<td>91.18</td>
<td>27.51</td>
<td>0.00***</td>
</tr>
<tr>
<td>Garage</td>
<td>+</td>
<td>19,253</td>
<td>7.02</td>
<td>0.00***</td>
</tr>
<tr>
<td>Bathroom</td>
<td>+</td>
<td>20,132</td>
<td>7.45</td>
<td>0.00***</td>
</tr>
<tr>
<td>Age</td>
<td>–</td>
<td>–692.4</td>
<td>–10.55</td>
<td>0.00***</td>
</tr>
<tr>
<td>CDOM</td>
<td>–</td>
<td>–35.1</td>
<td>–2.53</td>
<td>0.01***</td>
</tr>
<tr>
<td>F-Value</td>
<td>529.9</td>
<td></td>
<td></td>
<td>0.00***</td>
</tr>
<tr>
<td>R²</td>
<td>0.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>1,527</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Statistically significant at the 95% level
*** Statistically significant at the 99% level

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**Conclusion**

This study is based on the theory that sellers seek to maximize the net gain from selling a house by choosing a listing price that balances the marginal cost of continuing the search with the benefit of shortening the listing period. This suggests that a typical seller would like to sell at the highest price and in the shortest time possible. The purpose of the study is to examine whether vacant houses have fewer days on the market and sell at a higher price compared to non-vacant houses. The null hypothesis was that vacant houses do not have fewer days on the market and they do not have a higher sale price compared to non-vacant houses. The 2016 Bloomington-Normal, Illinois, MLS data was used for the study. The study assumes that the sample houses in the data set are reasonably priced and in move-in condition.

The findings from the study show that vacant homes have a longer marketing time (days on the market) than non-vacant houses. This finding is consistent with findings by Peng and Cowart in their analysis of the Lexington, Kentucky, housing market. However, contrary to the Peng and Cowart findings, which suggest that vacant houses sell for less, the current findings from the Bloomington-Normal housing market did not reveal any statistically significant difference between the sale prices of vacant and non-vacant houses. This study result highlights the principle that real estate markets are local and the impact of characteristics varies by location. In accounting for the differing results in the current study and the Peng and Cowart study, it should be noted that there is a difference in the size of the Lexington, Kentucky, housing market relative to the Bloomington-Normal, Illinois, housing market. In addition, the two studies were undertaken during periods with different residential housing market conditions.

**Limitation of the Study**

The current study has a number of limitations. It did not factor in the cost of maintaining vacant buildings until they are sold or measure the inconvenience to the property owners during open houses or showings to prospective buyers. The expenses of maintaining vacant buildings and the inconvenience cost to property owners are factors that could come into the decision process.
of whether to keep a house vacant or not at the time of sale. The study assumed that the sample houses are habitable and do not require major repairs or renovation at the time of listing. The study also did not specifically address the effect of staging and whether that impacts marketing time. These are all possible areas for future research. In addition, the use of a non-linear regression model is another area for possible future research.

About the Authors

Adebayo (Bayo) Adanri, PhD, SRA, earned his doctorate degree in public policy and administration from Walden University, Minneapolis, Minnesota, and received a master's degree in urban planning from the University of Illinois at Urbana-Champaign. He is the president and chief executive officer of Planning and Valuation Consultants, Inc., a firm of urban planners, real estate consultants, and public policy analysts office in Normal, Illinois. Adanri has published more than ten peer-reviewed articles and has a book chapter to his credit. Contact: adebayo.adanri@gmail.com

Han B. Kang, PhD, received a doctorate degree in finance from the University of Illinois at Urbana-Champaign. He is a professor at the Department of Finance, Insurance and Law at Illinois State University at Normal, where he has taught various corporate finance, insurance, and real estate courses for over thirty-five years. Kang has published more than forty-five articles in various academic and trade association journals. Contact: hbkang@ilstu.edu

Additional Resources

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

Appraisal Institute
- Education
  Residential Applications: Using Technology to Measure and Support Assignment Results

- Lum Library Knowledge Base [Login required]
  Information Files—Residential properties

CoreLogic HPI—Home price trends

HousingEconomics.com—NAHB housing statistics

National Association of Realtors—Research and Statistics
  https://www.nar.realtor/research-and-statistics

Redfin—Data Center
  https://www.redfin.com/blog/data-center

US Census Bureau Center for Economic Studies—Data and Research
  https://www.census.gov/programs-surveys/ces.html

Zillow
- Average Time to Sell
  https://www.zillow.com/sellers-guide/average-time-to-sell-a-house/

- Housing Data
  https://www.zillow.com/research/data/
Incorporating a Discussion of Risk in Appraisals: A New Direction for the Appraisal Industry

by Martin A. Skolnik, MAI

Abstract
Risk is an ongoing discussion in the mortgage lending industry, both across property types and geography, and on a property-specific basis. During an appraisal engagement, appraisers collect and discuss many risk factors that might tangentially describe the risk to the mortgage lender, but the appraiser’s analysis of risk is embedded into the report’s narrative and not a distinct discussion. This article outlines a framework for a potential expansion of the appraiser’s scope of work (and new business opportunities) to evaluate and discuss risks, which might affect how lenders analyze the subject property, and also result in a more uniform consideration of mortgage risk. This framework would also provide a new value-added opportunity between lenders and appraisers beyond what is typically part of appraisal reports.

Introduction
Traditionally, commercial appraisers have been engaged by lenders to provide a written credible opinion of market value for an income-producing property that is used as part of the loan package as support for a lending decision. In a customary 100- to 150-page narrative appraisal report, the focus of the lender-client primarily has been on the appraiser’s estimate of market value, which is used in conjunction with loan-to-value criteria and information from the income approach to help inform the lender of the property’s debt coverage capabilities. Appraisals for income-producing properties are typically used by lenders to identify the value portion in the loan-to-value analysis, and the net operating income in the debt coverage ratio analysis.

Since the Great Recession of 2008, however, there has been considerably more focus in the commercial lending industry on factors beyond a property’s market value and its net operating income. The industry is placing considerable emphasis on identifying risks associated with the loan, with the borrower, and with the property. It is here that there is a disconnect between the needs of lender-clients and appraisers’ traditional appraisal report writing and analytical focus.

Descriptive versus Analytical Appraisal Reports
A commercial mortgage lender typically reviews an appraiser’s report and extracts the estimate of value and the net operating income as part of its underwriting analyses. However, the data and analyses within the report could be useful to the lender for much more than just those numbers, and the appraiser could be a more significant contributor to the lender’s underwriting process.

A flaw in contemporary appraisal reports is that there are pages and pages of description (i.e., description of the subject’s regional market and local market, its site and improvement characteristics, zoning, and property taxes), but there is little discussion of how this material has been used by the appraiser and very little about its applicability to the valuation of the subject property. Even though many appraisers title...
these sections as “analytical” (i.e., market analysis, site analysis, zoning analysis), these sections are descriptive, not analytical.

Examples of where analytic information could enhance descriptive information and help the lender-client assess risk include the following:

- **Flood zone**—The appraiser might *describe* a property as being in a 100-year floodplain and also *analyze* or discuss its impact on market value.
- **Zoning**—An appraiser might *describe* a property as being legally nonconforming and also *analyze* or discuss the valuation implication or investment risk of such a classification.
- **Market/Geographic**—An appraiser might *describe* the subject property’s metropolitan area in detail and also *analyze* the subject property’s location within or outside a redevelopment zone.
- **Data**—The appraiser might *describe* capitalization rate data taken from a published survey and also *analyze* or discuss the risk that the survey is weak for the subject property’s use, type, or location.
- **Comparable sales**—The appraiser might *describe* the comparable sales’ characteristics and also *analyze* or discuss the risk implications if the most recent comparable sales transferred significantly before the date of value.

The list of examples could be extensive. The point is, the contemporary appraisal report is becoming increasingly a descriptive document, not an analytical document structured to assist the lender-client with its decision making. As data continues to become inexpensive and widely available, this trend toward descriptive reports will continue, to the detriment of the appraisal industry and to its lender-clients who would benefit from analytical assistance in identifying risk in their lending activities.

**One Size Does not Fit All**

Appraisal reports from commercial appraisal firms are fairly uniform in their composition regardless of the firm or the client’s intended use. For example, the format of an appraisal report for lending purposes looks, feels, and reads very similar to an appraisal report developed for condemnation purposes, for a property tax assessment appeal, or for bankruptcy or foreclosure. This inhibits the appraisal report’s practical usefulness to the lending industry. If all reports are formatted the same, with most data from the same providers (making the data ubiquitous), and the analytics within the report indistinguishable between firms, then it is clear why a lender might view only a few numbers in a report as being germane to its underwriting efforts. The analytical and evaluation needs of a lender-client are different from those of a tax appeal client, so why are the underlying data, discussion, analyses, and reporting formats similar?

**Identification of Risk**

In 1996, Eric T. Reenstierna observed that an appraiser traditionally is asked what a property is worth, but the appraiser should analyze more than just the property’s value. Reenstierna states:

> The simplicity of the question masks larger issues. Value is complex. To discuss value for buyers, sellers, and lenders properly requires that appraisers not only provide a one-number answer but address value in its complexity. To the extent that appraisers can address not only the simple question but also the need for risk assessment that gives rise to it, they can provide their clients with more comprehensive services that are better suited to those clients’ needs.¹

What if an appraisal for lending purposes focused on analysis of risk in addition to providing an estimate of market value? The components of the analysis are already enumerated in the appraisal, so the appraiser would only need to incorporate an analytical framework for the measurement and discussion of these risk elements.

Appraiser training has focused on providing analytical tools to assist the appraiser in developing a credible opinion of market value. However, a comparison of the needs of the lender-client with the techniques and focus of appraiser training suggests there is a gap between the lenders’ needs and the appraisers’ report. This gap is

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quickly rendering the usefulness of the traditional appraisal report moot and shunting the valuable analytical skills of the typical appraiser to the side.

In 1935, Frederick M. Babcock recognized that the techniques used in loan selection are central to conducting mortgage investment activities and the determination of mortgage risk. He observed:

[A] proposed mortgage cannot represent an investment loss until some future time and the hazard of loss exists from the time of commitment until recovery of investment has been made. Past situations and present conditions provide clues to the nature of the mortgage risk, but the determination of mortgage risk involves forecasting. Prediction and the weighting of probabilities forms the essence of mortgage-risk rating and appraisal procedure.²

Babcock also identified some of the components of mortgage risk, including troublesome collection experience, expenses associated with foreclosure, costs necessary to rehabilitate a property after foreclosure, loss of income during the period before resale, and potential losses from not fully recovering the outstanding mortgage balance.³

During the loan underwriting process, a commercial mortgage lender is trying to identify issues to mitigate the various risks of the loan. Putting a more contemporary slant on Babcock’s conclusions, some of these risk-related issues include the following:

- The risk that the appraiser’s estimate of market value is too aggressive or too conservative
- The risk that the appraiser’s estimate of market value is not adequately supported and is not credible
- The risk that the borrower will not repay the loan
- The risk that the borrower cannot repay the loan
- The risk that the property will not produce sufficient income to repay the loan
- The risk that the property’s operations will not provide a significant cushion in case the income and expense estimates are not met
- The risk that the local, regional, or national demographic might shift, causing a disturbance to the income and expense estimates
- The risk that new properties might be built nearby to compete with the subject for tenants
- The risk that older properties nearby might be renovated to compete with the subject for tenants
- The risk that the property’s physical nature might change, which might result in the income and expense estimates not being met
- The risk that the property might be affected by outside physical forces, which might cause the income and expense estimates not to be met
- The risk that the borrower might not be able to refinance the loan at the end of the mortgage term due to rising interest rates
- The risk that the borrower might not be able to acquire other funds during the term of the loan to keep the physical condition of the property competitive
- The risk that the borrower or investor has tied up its money in the subject property for the long term while interest rates fluctuate on competitive investments resulting in opportunity cost losses

These issues can be summarized into six primary types of risk associated with the valuation of an investment property:⁴

1. Market Risk. Risk that net operating will be affected by changes in the market (e.g., shifts in demand, supply, or both), influenced by the type and location of the property and by its stage in its life cycle.
2. Financial Risk. Risk related to the use of debt to finance an investment, including the risk of default, unanticipated prepayment, or contractual financing terms that cannot respond to interest rate changes.
3. Investment Risk/Capital Market Risk. Risk that market value will be affected by changes in capital markets, such as changes in mortgage yield rates, equity yield rates, overall yield rates, or overall and terminal capital-

⁴. For additional discussion, see Appraisal Institute, The Appraisal of Real Estate, 14th ed. (Chicago: Appraisal Institute, 2013), 158–159.
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ization rates. Risk also may be related to changes in levels of interest rates, availability of capital (both mortgage and equity), and rates of return for alternative investment opportunities.

4. Physical Risk/Environmental Risk. Risk that the market value of a property will be affected by its physical environment, such as abnormal deterioration due to man-made circumstances, natural hazards, or inattention by ownership/management, and costs associated with dealing with potential environmental problems.

5. Operational Risk/Management Risk. Risk that the property management cannot ensure the property meets its operating goals, such as income and expense targets including rents, occupancy, cash outlays, and net operating income.

6. Valuation Risk. The risk that the appraiser’s estimate of market value, valuation assumptions, and conclusions are not adequately supported or sustainable due to these other risks.

Components of Risk Analysis
Babcock observed that “mortgages do not fall into two simple classes: the good and the bad.” He noted that there is a degree of risk in the lending process and the task of the mortgage lender is to “determine the extent to which they are relatively good.” (Emphasis in original). In his 2006 Appraisal Journal article on risk assessment, Barrett A. Slade stated,

risk is the possibility that an investment’s actual return may be different than is expected, including the possibility that some or all of the original investment may be lost. Therefore, prudent investment analysis requires that this uncertainty be examined so that appropriate steps may be taken to mitigate the potential loss.

Risk analysis has three components: (1) identification of the risk, (2) assessment of the probability of the risk occurring, and (3) assessment of the impact of the risk. These three components can be visually presented subjectively as probabilities in a nine-box matrix analysis as shown in Exhibit 1.

Framework for Risk Analysis for Appraisals

The scope of this article does not include a discussion of the merits, factors, detail, or application of economic or quantitative modeling to analyze and describe risk associated with a property valuation. However, a basic qualitative framework can be developed without modeling or statistics to provide lenders with the appraiser’s interpretation of the risk factors based on the data, discussion, and conclusions within the appraisal development process.

Exhibit 1 Nine-Box Risk Analysis Framework

<table>
<thead>
<tr>
<th>Impact of the Risk</th>
<th>Probability of the Risk Occurring</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Medium/Low</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

7. The nine-box matrix (sometimes referred to as nine-blocks) was developed by the consulting firm McKinsey & Company based on a paper by Frederick W. Gluck, “The Evolution of Strategic Management,” reprinted in the June 2000 McKinsey Quarterly under the title “Thinking Strategically.” Originally, the nine-box analysis was used to evaluate the strengths and weaknesses of a business unit along two dimensions: the unit’s competitive strength in the industry (the X-axis of the matrix) and the attractiveness of the unit (the Y-axis). In the 1980s, the nine-box concept was adopted by Jack Welch at General Electric to evaluate leadership potential of its management staff and for succession planning, by correlating an employee’s performance (X-axis) and leadership (Y-axis). For additional discussion, see https://mck.co/2BMq95r. Today, the matrix is used to analyze a wide range of business functions to identify probability of outcome strategies. Some companies have expanded the matrix into a 25-block matrix for a more granular analysis of possible outcomes.
Although each property type has its own inherent risk structure (i.e., multifamily operational risk would be more susceptible to fluctuations in marketwide employment than, say, an industrial warehouse), there are common risk factors across most real estate types that can be evaluated using this framework.

The evaluation of risk might be based on the appraiser’s research into recent economic or physical trends at or near the property and consider the probability of those trends continuing. The appraiser also might catalog and evaluate the probability of prospective events, such as planned changes to the subject property or to competitive properties, and marketwide events and impacts. For example, suppose a standard risk evaluated by the appraiser is the subject property’s location in a floodplain. If the subject is located within a fifty-year floodplain, but the building is constructed on twenty-foot stilts and has substantial storm water management ponds or bulkheads, then perhaps the probability of the risk is high but the impact of the risk is low, resulting in an overall medium/low affect. Or, suppose a multifamily property is located in a market that a large multinational organization is considering as one of three finalists for relocation of its corporate headquarters, which could add 20,000 professional jobs in the market. The probability of this event could be high and the impact of the event on the subject’s market value could be high, too, so then the overall effect would be very high.

Exactly how a risk analysis would be incorporated into the appraisal report for a property can be the subject of further discussion and refinement. The categories of risk discussion and evaluation in a report may vary with the property type, but the six core risk categories that were previously described would include the following elements:

1. Market Risk
   - Changes in supply—for example, building permits for this property type and for complementary-use properties
   - Changes in demand—for example, employment trends

2. Financial Risk
   - Number or rate of foreclosures for this property type and in this market
   - Availability of foreclosed properties

3. Investment Risk/Capital Market Risk
   - Depth and availability of the commercial mortgage-backed securities market
   - Stability of long-term interest rates
   - Availability of financing for the property type
   - Activity in the secondary mortgage market

4. Physical Risk/Environmental Risk
   - Location in a geologically sensitive area
   - Location in a floodplain
   - Recent or prospective weather activities, such as hurricanes or blizzards
   - Property-specific experience, including physical condition at the time of appraisal and proposed repairs or capital improvements by management or ownership

5. Operational Risk/Management Risk
   - Experience of the property’s management and owner
   - Amount (scope and cost) of necessary repairs
   - Observed deferred maintenance
   - Occupancy trends in the market and submarket

6. Valuation Risk
   - Adequacy, availability, and validity of the appraiser’s data
   - Availability of the subject property’s past financial statements and validity of these materials
   - Depth of the appraiser’s property inspection
   - Experience of the appraiser in this property type and market competency
   - Clarity of the appraiser’s data, discussion, and analysis

There are certainly more risk categories and items than mentioned in this list, but this is a starting point for the risk analysis conversation.

**Communicating the Nine-Box Risk Analysis**

A method for communicating the results of the appraiser’s evaluation of risk might include a series of nine-box matrix evaluations, one for...
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Each risk category. The matrix evaluations would be supported by (1) a discussion of the factors that the appraiser considered in developing the risk evaluation, and (2) the data, discussions, and analyses collected and presented in the body of the valuation section of the appraisal report. The following examples offer what might be considered as a skeleton for a discussion of Operational Risk/Management Risk (Example 1) and for Market Risk (Example 2).

Example 1, Operational Risk/Management Risk. Operational risk/management risk is the risk that the property’s management cannot meet the property’s operating goals, such as income and expense targets, rents, occupancy, cash outlays, and net operating income. For this risk analysis example, assume the following information is known:

- The 500-unit multifamily subject property has been continually operated by the same property management firm for the past five years with increasing rents and stabilized occupancy every year.
- Last year, management noted a potential roof deterioration issue and contracted to have it corrected within two months.
- This firm has ten other similar properties in its portfolio in this market with similar operational success.

In the nine-box analysis for operational risk/management risk for the subject (Exhibit 2), management would have a medium impact on risk but the probability of management failure for this property is low, so the resulting overall operational risk/management risk is medium/low.

Example 2, Market Risk. Market risk is the risk that the subject will be affected by changes in supply and demand in the subject’s submarket or in its larger metropolitan statistical area. Market risk is influenced by the type and location of the property and by its life cycle stage. In this example, the report’s analysis of market risk could state the following related to supply and demand:

Supply. A review of the county’s building permit queue (discussed on page XX of this appraisal) shows that a large number of flex-office/industrial projects are in the preliminary plan approval stage (X number of potential square feet) and the typical time from preliminary approval to actual construction in this county is X months/years. Additionally, there are six new flex-office/industrial projects that have received final plan approvals, and according to their developers, four projects (representing X square feet) have financing in place to begin construction.

As noted in the cost approach section of this appraisal (page X), there have been only two similarly zoned land sales in this metropolitan area in the past three years for new development, and these represent a total of X square feet of space that would be competitive with the subject. One of these land sales has preliminary plan approval for X square feet of competitive space and is located in the same business park as the subject with better visibility and signage potential.

Demand. As noted in the market analysis section, the vacancy rate is 18% for similar or competitive properties in the subject’s market, up from 15% in 2017 and 12% in 2016, which indicates demand for flex-office/industrial space is decreasing in this market.

Also noted, recent leasing data for this type of space indicates that rents dropped 5% in 2018, 5% in 2017, and 2% in 2016, which also reflects the weakening demand for competitive space. The lease for the subject’s largest tenant, occupying 38% of space, expires in nine months and the tenant has indicated it is moving to a competitor’s space and will not renew.

As discussed in the improvement description section of the report, the subject was constructed in 1983 and has multiple deferred maintenance observations, which make the subject less competitive against new developments in this market.

The imbalance between supply and demand noted in the appraiser’s report indicates that the subject property has the potential for increasing competition in the short-term, which might affect its ability to stabilize occupancy and rents. There
also is diminishing demand for space in the overall market and in the subject’s specific location. Consequently, the nine-box analysis for market risk (Exhibit 3) indicates there is a high probability of market risk and a probability of high impact, so the resulting market risk is very high.

The appraiser could perform a similar analysis for the other five risk categories, as well as any additional risks that may have applicability to the subject. The appraiser then could draw a conclusion of overall risk based on the evaluation of all the analyzed risks.

### Exhibit 3 Framework for Market Risk Analysis

<table>
<thead>
<tr>
<th>Impact of the Risk</th>
<th>Medium</th>
<th>High</th>
<th>Very High</th>
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<tbody>
<tr>
<td>High</td>
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<tr>
<td>Medium</td>
<td>Medium</td>
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<td>Low</td>
<td>Very Low</td>
<td>Medium/ Low</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
</table>

**Professional Practice**

A discussion of risk is not typically part of the appraiser’s scope of work nor is it an item that many appraisers include in their analysis. A discussion of risk is sometimes implied in the appraiser’s narrative, but it is rarely an explicit discussion since the appraiser’s primary focus is on providing the client with an estimate of market value, supported by the material used or researched by the appraiser to develop that estimate.

The appraisal industry, aligned with both academia and the mortgage lending industry, could develop a more formalized and rigorous process for identifying and quantifying elements of risk that are important to the lending decision. A consistent framework also could be developed for reporting the analysis of the risk elements and the related conclusions. Additionally, the appraisal industry could develop educational programs jointly with the mortgage lending industry to provide guidance or training to appraisers and other risk practitioners to assist the commercial mortgage industry in identifying and mitigating risk in its lending activities.

### Conclusions and Next Steps

Appraisers do not have a crystal ball, but the evaluation of past and prospective events in a risk analysis is not so different from an appraiser’s evaluation of past and prospective events in developing a discounted cash flow or in developing a prospective value upon completion of certain improvements. The appraiser has expertise in data collection and analysis, which can be brought to this type of risk evaluation.

Identifying and evaluating risk is a central function of the underwriting process and an imperative of a successful mortgage lending enterprise. Certainly, underwriting a loan involves issues and concerns not covered by an appraisal, including evaluation of the borrower’s financial history and the capabilities of any counterparty to the loan, evaluation of the operating history of other properties from this same borrower, and consideration of other potential business opportunities with the borrower. But, incorporating the identification and evaluation of risk as part of the appraisal process and report could be a significant component of a healthy mortgage lending industry.

An appraisal report with the appraiser’s evaluation of risk would not constitute the be all and end all of risk assessment, but it would contribute a formalized analytical structure using data mostly already being collected by the appraiser and using the professional capabilities of the appraisal industry. In turn, this would have a significant impact on the quality of loan origination and post-origination monitoring and loan surveillance.

The process of identifying and quantifying risk will inevitably evolve from the suggested qualitative framework to new analytics and machine learning as tools and techniques mature. There needs to be coordination with mortgage industry groups, such as the Mortgage Bankers Association; regulatory agencies, such as the FDIC and OCC; and the government-sponsored enterprises, such as Freddie Mac and Fannie Mae. These appraisal stakeholders are an important element in successfully incorporating a meaningful risk evaluation framework into commercial appraisal engagements.

SEE NEXT PAGE FOR ADDITIONAL RESOURCES >
About the Author

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

Appraisal Institute
• Education
  ▪ Advanced Concepts and Case Studies
  ▪ Commercial Real Estate Training: Appraisal Engagement, Appraisal Reviews, and Evaluations
• Lum Library, External Resources, Knowledge Base [Login Required]
  ▪ Economic data
  ▪ Special-use properties/commercial

CBRE—US Research and Reports
https://www.cbre.us/research-and-reports

CoStar—Comps
https://www.costar.com/products/costar-comps

Mortgage Bankers Association—Commercial/Multifamily Research
https://www.mba.org/news-research-and-resources/research-and-economics/commercial/-multifamily-research

Oracle—Crystal Ball risk modeling
https://www.oracle.com/applications/crystalball/

Society of Industrial and Office Realtors—Commercial Real Estate Index
https://www.sior.com/resources/commercial-real-estate-index
High-Voltage Transmission Lines and Residential Property Values in New England: What Has Been Learned

by James A. Chalmers, PhD

Abstract

This article summarizes work over ten years on the effects of high-voltage transmission lines (HVTLs) on residential property values in New England. It identifies what is often presumed—there are some properties for which HVTLs are sufficiently intrusive that their market value is affected. Since the class of affected properties is small, little insight into their defining characteristics has been possible in statistical studies. In the research presented in this article, however, a more traditional case study approach is employed, and a remarkably consistent pattern emerges that gives guidance to situations where there is a significant likelihood of an HVTL effect on value. The research results offer important support for the valuation of properties along existing HVTL corridors and for anticipating effects of proposed projects both in new and existing corridors.

Introduction

The generation and transmission of electrical energy is in a period of rapid change in the United States. The decommissioning of aging coal-fired and nuclear power plants combined with new, and in many cases, more decentralized generating sources is creating the need for significant upgrade and expansion of the electric grid. These projects are frequently controversial, and the possible effect on property values remains a high-profile and poorly understood issue.

The value effect issue is complex because it has two very distinct but interrelated parts. The first issue is the effect of one or more existing high-voltage transmission lines (HVTLs) on residential property values. The second, and increasingly prominent, issue is the incremental effect of system upgrades when existing corridors are reengineered to carry increased loads. The purpose of this article is to address both the issues and examine the implications for the evaluation of proposed projects.

The research has been carried out in the context of three large projects.

• Project 1: 2008 Massachusetts and Connecticut Study. The first research project involved the 2008 statistical analysis of over 1,200 home sales during 1998–2007 in four Massachusetts and Connecticut study areas. The results of that research were published in The Appraisal Journal in 2009.¹ For purposes of discussion, this study will be referred to as the “2008 Massachusetts/Connecticut Study.”

• Project 2: New Hampshire Research Study. The second research project involved a case study of residential sales in New Hampshire; this research was carried out in 2013 to 2018. Due to the low density of housing develop-

High-Voltage Transmission Lines and Residential Property Values in New England: What Has Been Learned

Exhibit 1 HVTL Research Locations

Exhibit 1 shows the locations of the statistical study areas and the 120 case study transactions in the research projects. The purpose of this article is to synthesize the findings from these research initiatives, with an emphasis on their implications for the evaluation of value impacts of proposed high-voltage transmission line projects.

Research Background

Literature Review

The prior research on the effects of HVTLs on property value has been exhaustively reviewed in the professional literature and will not be repeated here. There are two recent articles, however, that deserve mention. The first article reports on research by Tatos, Glick, and Lunt, and appeared in the Summer 2016 issue of The Appraisal Journal. The approach there was unique in that data were collected for approximately 125,000 sales in Salt Lake County, Utah, over a period of fourteen years. Sale price was related to approximately 450 property characteristics (for example, it included eighteen floor variables—cherry, oak, maple, carpet, tile, laminate, slate, etc.).

While this approach is remarkable in the number of observations studied and the large number


of control variables, its application to the HVTL issue is limited because of the lack of site-specific measurements (which is understandable given the number of observations) of the key HVTL-related variables. The three critical drivers of HVTL effect on residential property values are generally assumed to be proximity, visibility, and encumbrance, and there are shortcomings with each of these measures in the Tatos, Glick, and Lunt study. Specifically, in that study there are no visibility measures; there is an easement variable, but as the authors note, it is not clear whether it refers to all easements on the property or to some subset of the easements; and finally, there is no distance measure from the home to the ROW—rather there is a separate distance measure to every line. As a result, there is no distinction between proximity to two 115 kV lines in the same corridor or to two 115 kV lines in separate corridors. The authors acknowledge that additional refinements of the data could address the easement issue and the proximity issue, but the critical visibility question is very difficult to resolve without a site visit.

A second study of note, by Wyman and Mothorpe, shares some similarities with the Salt Lake County study in that it uses public domain property records and GIS databases to look at a large number of transactions. The subject of this study is over 5,000 vacant lot sales that took place over the period 2000 to 2016 in Pickens County, South Carolina. Unlike the Salt Lake County study, which is cautious in drawing conclusions with respect to HVTL price effects, the Pickens County study finds a 44.9% pricing discount for properties adjacent to transmission lines and a 17.9% discount for non-adjacent properties up to 1,000 feet from the HVTL.

It should be noted that development in Pickens County is extremely diverse. Its western boundary is Lake Keowee, which has been successfully developed into several ultra-high amenity golf course/lakefront communities where lots sell from low- to mid-six figures. Clemson University is located in the southwest corner of the county. The southeastern portion of the county is oriented to the Greenville metropolitan area and its strong manufacturing base. Moving north to the central and eastern portions of the county, development patterns are more scattered and very rural, and property values are low. In this broad and very heterogeneous context, all vacant lot sales of properties with fewer than 20 acres were studied over a seventeen-year period. However, there are no controls for zoning, highest and best use, or for the extent to which certain residential lots benefit from extensive infrastructure and amenity improvements. The lots presumably range from commercial, industrial, agricultural, and residential highest and best uses. Further, those lots with a residential highest and best use have a range of current uses, from unimproved rural acreage to improved residential lots in amenity-rich subdivisions. The study includes some controls, but these do not adequately account for the lack of uniformity in the study properties. Also, as with the Salt Lake County study, there are issues with the three critical HVTL variables of distance, visibility, and encumbrance. Distance is measured from the centroid of the parcel, which on large parcels may be a poor proxy for the likely home site. Visibility is calculated from viewshed analysis that relies on topographic and land cover data sets that lack the granularity to support reliable inferences with respect to individual properties. Finally, there is no encumbrance measure. This research advances interesting ideas for using increasingly rich geocoded databases, but such databases require refinement before they can make a significant contribution to understanding of HVTL effects on residential property values.

The central message from the literature continues to be that about half of the statistical studies find some measure of adverse property value effects and half do not. Where negative effects are found, they are small (usually in the 1% to 6% range), and the effects diminish rapidly with


7. Multi-parcel sales and parcels that resold within six months were excluded, but there was no additional screening to eliminate sales that do not meet the usual criteria of a fair market sale, e.g., related parties, retitling to trusts, short sales, REO sales, etc.

8. The case study research indicates that detailed property-specific and transaction-specific data play a critical role in reaching conclusions about HVTL impact. Given the impracticality of developing information with that specificity for very large data sets, the methods being developed in these studies may have more useful application in other types of investigations.
distance. Most troublesome is that there is no explanation for the variability in the research findings. It follows, therefore, that residential property value effects on nearby properties cannot be presumed. It is also the case that the absence of effects cannot be presumed. The research has not produced results that are sufficiently robust or consistent to allow generalization to unstudied situations.

Study Methodology

Statistical Analysis. Ever since William Kinnard’s pioneering work in this area, the dominant research methodology related to HVTL effects has been multiple regression analysis applied to large numbers of property sales located in the vicinity of an HVTL. While this was a major step forward from what historically amounted to anecdotal accounts, the research frequently suffered from a lack of precision in measuring the key variables that determine the extent to which an HVTL intrudes on a property—namely, proximity of the house to the ROW, visibility of structures and conductors, and the extent to which the property is encumbered by the ROW easement. Since these variables are correlated with one another, each must be clearly defined if its independent effect is to be ascertained. It is also the case that the results have to be interpreted as a kind of average. If statistical analysis identifies property value effects, that does not rule out the fact that some properties are likely unaffected. Unfortunately, the statistical analysis does not help identify the conditions that may be responsible for these exceptions.

Notwithstanding these concerns, regression analysis is the most reliable way to answer the question of whether there are systematic, measurable effects of HVTL proximity, visibility, or ROW encumbrance on residential property values. It was in that context that the statistical analysis was undertaken in the 2008 Massachusetts/Connecticut study.

Case Study Approach. After the publication of the results of the 2008 Massachusetts/Connecticut case study in The Appraisal Journal, North-Western Energy commissioned a similar study for Montana. The study area for that research covered several hundred miles of sparsely populated rural area across the center of Montana, from the Colstrip generating stations in southeastern Montana to Thompson Falls near the Montana-Idaho border. Given the small number of observations and the heterogeneous mix of property types in that study area, it was impossible to conduct the statistical analysis used in other HVTL studies. That led to the development of the case study approach discussed in this article.

The case study approach relies on a combination of tools to come to a conclusion with respect to whether an HVTL has influenced the sale price or the marketing time in a particular transaction. The four basic components of the case study are as follows: the facts of the sale, the physical relationship of the property to the HVTL, interviews with transaction participants, and appraisal evidence of the market value of the property independent of HVTL influence. Upon consideration of all four components, an opinion is rendered as to whether or not the transaction was influenced by the HVTL or whether the evidence does not support a conclusion one way or the other.

Where it is concluded that the sale price was adversely affected by the HVTL, the best evidence of the magnitude of the effect is the difference between the appraised value independent of HVTL influence and the sale price. However, that difference must be interpreted cautiously.

10. It is possible that the variability in findings is more related to how the variables are defined and measured than to any underlying difference in the key behavioral relationships.
14. The interviews were not scripted but involved an open-ended discussion that centered on whether the listing price, time on market, or ultimate negotiation over sale price were, in the opinion of the respondent, influenced by the HVTL.
15. The appraisal evidence requires a retrospective appraisal at the date of sale of the transaction in question using comparable sales that have no HVTL influence.
because sale price can diverge from an opinion of market value for many reasons, including scarcity of comparable sales in some of the study areas for some of the time periods, no interior inspection possible at the date of valuation, varying negotiating skills and motivational factors of the participants, and the influence of other property or locational factors that are particularly difficult to determine in a retrospective appraisal.

There is a tendency to mischaracterize the case study approach as anecdotal, but it is much more than that. It is based on an empirical foundation regarding the facts of the sale and the physical relationship of the property to the HVTL, the opinions of the market participants, and the market data as presented in the retrospective appraisal. The challenge with the case study approach lies in the level of generalization that can be attached to the findings. The number of observations is likely to be small relative to statistical studies; so, the conclusions that usefully can be drawn from the approach depend on the care with which the studies are carried out and the consistency of the conclusions. As a practical matter, however, it is the only feasible approach in the context of an environment like rural Montana.

In 2013, Northern Pass Transmission, LLC; the Public Service Company of New Hampshire (Eversource Energy); and National Grid USA commissioned development of a research base that would address the effects of HVTLs on residential property values in New Hampshire with particular attention to the incremental effect of additions to an existing corridor. The study areas in New Hampshire presented many of the same issues of low-density residential development and heterogeneous housing stock that had been encountered in the Montana research. Statistical analysis could have been carried out in southern New Hampshire around Concord, but that would have addressed only a very small subset of the potentially affected areas. Based on these facts, a case study approach was indicated and analysis of 78 transactions provides the base on which conclusions were reached, as reported in the New Hampshire Research Report.17

In 2016, Eversource Energy commissioned similar research to provide additional information with respect to its Massachusetts and Connecticut service territories, particularly in eastern Massachusetts and south-central Connecticut. Development densities in both areas were capable of supporting the statistical analysis, but the insights gained in the New Hampshire case studies were sufficiently valuable that a case study approach was pursued as well.

The purpose of this article is, therefore, to convey what has been learned from the statistical studies in Massachusetts and Connecticut combined with the case studies carried out in New Hampshire and in Massachusetts and Connecticut.

Study Summaries

The methodology and findings of the previously referenced studies are thoroughly documented in the 2009 Appraisal Journal article and the New Hampshire and Massachusetts/Connecticut Research Reports. The objective here is to provide a summary of those findings with particular emphasis on the way in which the research can be applied to the evaluation of proposed projects.

2008 Massachusetts/Connecticut Statistical Study

The 2008 Massachusetts/Connecticut statistical study looked at over 1,200 sales in four study areas: Hartford, Connecticut; Springfield, Massachusetts suburbs; western Connecticut; and two southwestern Boston suburbs. The sales all occurred over the period 1998–2007. The HVTL variables included continuous distance from the street curb opposite the front door to the ROW centerline, distance zones (0–75 meters, 76–150 meters, and greater than 150 meters), number of structures visible, weighted 16. It should be noted that although understanding the effects of existing HVTLs on property values is a necessary first step, the important policy question is often the incremental effect of system upgrades in existing corridors, sometimes referred to as “corridor upgrades” or “corridor intensification.”

17. The New Hampshire Research Report addresses two additional research initiatives: the Subdivision Studies and the Market Activity Analysis. The Subdivision Studies look at the timing and prices at which lots sell in subdivisions where some lots are encumbered or adjacent to an HVTL and other lots are not. The Market Activity Analysis looks at days on the market and sale-price-to-list-price ratios for properties in different distance zones from an existing HVTL ROW. These studies provide additional information but do not figure directly in the conclusions on HVTL effects on property values and therefore are not discussed further here.
number of structures visible, and square footage of lot encumbered by the ROW easement. The results of the 2008 Massachusetts/Connecticut statistical analysis showed no systematic pattern of statistical significance with respect to either the proximity or the visibility variables. The only variable that appeared to have a systematic effect was the encumbrance variable, which always entered with a negative sign and was statistically significant in two of the four study areas.

**2018 Massachusetts/Connecticut Statistical Study**

In the 2018 Massachusetts/Connecticut statistical study, eight study areas were selected for statistical analysis: one on Cape Cod; three in Boston; one in Springfield, Massachusetts; and three in southern Connecticut. A total of over 1,800 sale properties were inspected, and HVTL-specific data were collected and public record data assembled from the multiple listing service and property record cards. The three key HVTL-related variables—proximity, visibility, and encumbrance—were investigated using both a distance zone model and a continuous distance model.  

The data set for each of the study areas represented the universe of market sales of properties located within 1,000 feet of the ROW segment in question for the period 2009–2015. The results revealed no consistent, measurable effect of HVTL proximity, visibility, or encumbrance on the sale price of residential properties in the study areas over the time period studied. Without getting into the detailed results, of the more than 80 estimated coefficients on the HVTL variables, only four variables were significant at the 5% level and one of those had an unanticipated sign.

**Case Studies: New Hampshire and Massachusetts/Connecticut**

There are 78 case study transactions reported in the New Hampshire Research Report and 42 transactions reported in the 2018 Massachusetts/Connecticut Research Report. In New Hampshire, the transactions represent all the sales of encumbered or adjacent properties in the designated study areas and time period. In Massachusetts and Connecticut, because the number of candidate transactions was large, the case study sales were randomly selected from the total number of encumbered and adjacent properties in each of the eight study areas in the designated time period.

Exhibit 2 summarizes the New Hampshire case study results. Each cell represents the total number of case study transactions that fell into the indicated visibility and distance category as well as the distribution of the cases showing whether an adverse sale price effect of the HVTL was indicated, was not indicated, or was indeterminate. The cell in the lower right shows the total of 78 transactions and the overall result that an adverse sale price effect was concluded for 12 sales, with an absence of effect concluded in 54 sales, and an indeterminant effect in 12 sales.

Most striking is the consistency associated with the cases in which a sale price effect was concluded. Eleven of the 12 affected properties had homes located within 100 feet of the ROW boundary; the exception was a home located 106 feet from the ROW. The results were similar for visibility, where 10 of the 12 affected properties had clear visibility of a structure from the perimeter of the house and the two exceptions had partial structure visibility. Further, all of the

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19. Proximity was measured as the shortest distance from the house to the ROW boundary. The visibility measure was defined as follows:
   - Clearly Visible: unobstructed view from the outside perimeter of the house of all portions of a structure to which conductors are attached.
   - Not Visible: no portion of a structure visible from the outside perimeter of the house.
   - Partially Visible: all other conditions, i.e., obstructed view of a structure or unobstructed view but not of all portions of the structure to which conductors are attached.
20. In cases where there was well-supported but conflicting evidence, the result was reported as indeterminate. The conflict was typically between the interview evidence and the appraisal evidence although the physical relationship of the property to the HVTL was also often a consideration. There was no tendency for the evidence type to be aligned with any particular conclusion. Sometimes the interview evidence suggested a price effect, but the appraisal evidence did not support that conclusion. In other cases, the appraisal evidence indicated a sale price effect, but that was contradicted by the interview evidence. In the case of conflicting evidence, consideration was given to trying to determine which of the conflicting evidence should be given greater weight but that immediately became very subjective, so where the evidence was conflicting the cases were set aside as indeterminate. In most cases (100 of 120), the evidence all pointed in the same direction, supporting an opinion of “effect” or “no effect” and those concurring cases are the cases on which the discussion is focused.
properties are encumbered by the ROW easement. Note that proximity of 100 feet or less, combined with clear visibility and encumbrance, did not uniformly result in a sale price effect. However, the fact that 9 of the 17 properties with clear visibility and encumbrance show a price effect strongly suggests that the combination of these property attributes significantly increases the probability of an HVTL effect on sale price.

Exhibit 3 summarizes the proximity, visibility, and encumbrance attributes of the 12 New Hampshire case study properties for which it was concluded that the HVTL influenced the sale price in the transaction. For affected properties, the average distance of homes from the ROW boundary was 42 feet, with predominantly clear visibility of structures, and encumbered area averaging 40% of the property.

The results for the 42 Massachusetts/Connecticut case study properties are presented in the same format in Exhibit 4 and Exhibit 5. As shown in Exhibit 4, 21 of the 42 properties were concluded to have no adverse sale price effect, 8 of the properties had indeterminate effects, and for 13 properties it was concluded that there was an adverse effect of the HVTL on the sale price. All of the 13 properties concluded to have an adverse price effect had homes within 100 feet of the ROW with the exception of Sale 24, which was 110 feet from the ROW. Further, HVTL structures were clearly visible for 8 of these properties and partially visible for 5 others.

Exhibit 5 summarizes the HVTL variables as they affect the 13 properties where sale price effects were found. As in the New Hampshire study, the affected Massachusetts/Connecticut properties had homes sited very close to the edge of the ROW with structures that are partially or clearly visible; all but 3 affected properties were encumbered by the ROW easement. The homes affected by price impacts averaged 47 feet from the ROW, had clear or partial view of structures, and on average had 36% of their lot encumbered by the ROW. Again, it appears that close proximity of the house to the ROW combined with structure visibility and encumbrance significantly increases the likelihood of sale price effect due to the HVTL.

### Exhibit 2 Case Study Results for New Hampshire by HVTL Visibility and Distance of Home from ROW

<table>
<thead>
<tr>
<th>Visibility</th>
<th>Sale Price Effect*</th>
<th>Distance from ROW</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0 to 100 ft</td>
<td>101 to 200 ft</td>
</tr>
<tr>
<td>Not Visible</td>
<td>No:</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Indeterminate:</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Yes:</td>
<td>0</td>
<td>Total 1</td>
</tr>
<tr>
<td>Partially Visible</td>
<td>No:</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Indeterminate:</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Yes:</td>
<td>2</td>
<td>Total 10</td>
</tr>
<tr>
<td>Clearly Visible</td>
<td>No:</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Indeterminate:</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Yes:</td>
<td>9</td>
<td>Total 17</td>
</tr>
<tr>
<td>Totals</td>
<td>No:</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Indeterminate:</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Yes:</td>
<td>11</td>
<td>Total 28</td>
</tr>
</tbody>
</table>

* "No" means study concluded there was no sale price effect.

"Indeterminate" means a sale price effect could not be concluded one way or the other.

"Yes" means the study concluded there was an adverse sale price effect.
### Exhibit 3  HVTL-Related Variables for New Hampshire Case Study Properties with Sale Price Effects

<table>
<thead>
<tr>
<th>Property No.</th>
<th>Address</th>
<th>Town/City</th>
<th>Distance of Home to ROW Boundary (ft)</th>
<th>% of Property Encumbered by ROW</th>
<th>No. of Structures on Property</th>
<th>Visibility of Structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Long Street</td>
<td>Webster</td>
<td>19</td>
<td>71.2</td>
<td>15</td>
<td>Clear</td>
</tr>
<tr>
<td>14</td>
<td>Horizon Drive</td>
<td>Goffstown</td>
<td>24</td>
<td>46.3</td>
<td>2</td>
<td>Clear</td>
</tr>
<tr>
<td>15</td>
<td>Bixby Farm Lane</td>
<td>Bedford</td>
<td>60</td>
<td>76.9</td>
<td>1</td>
<td>Clear</td>
</tr>
<tr>
<td>A1</td>
<td>Autumn Street</td>
<td>Windham</td>
<td>93</td>
<td>48.6</td>
<td>1</td>
<td>Partial</td>
</tr>
<tr>
<td>31</td>
<td>NH Rte 175</td>
<td>Thornton</td>
<td>28</td>
<td>3.2</td>
<td>0</td>
<td>Clear</td>
</tr>
<tr>
<td>32</td>
<td>Sunrise Hill Road</td>
<td>Thornton</td>
<td>106</td>
<td>6.9</td>
<td>0</td>
<td>Clear</td>
</tr>
<tr>
<td>41</td>
<td>Lark Street</td>
<td>Franklin</td>
<td>0</td>
<td>75.2</td>
<td>1</td>
<td>Clear</td>
</tr>
<tr>
<td>44</td>
<td>Holt Drive</td>
<td>Concord</td>
<td>7</td>
<td>61.9</td>
<td>2</td>
<td>Clear</td>
</tr>
<tr>
<td>A4</td>
<td>Ridgecrest Drive</td>
<td>Greenland</td>
<td>0</td>
<td>23.6</td>
<td>3</td>
<td>Clear</td>
</tr>
<tr>
<td>A7</td>
<td>New Road</td>
<td>Newmarket</td>
<td>11</td>
<td>19.0</td>
<td>1</td>
<td>Clear</td>
</tr>
<tr>
<td>B5</td>
<td>Back Road</td>
<td>Dover</td>
<td>91</td>
<td>20.4</td>
<td>0</td>
<td>Partial</td>
</tr>
<tr>
<td>B15</td>
<td>Gorton Drive</td>
<td>Danville</td>
<td>66</td>
<td>29.3</td>
<td>2</td>
<td>Clear</td>
</tr>
</tbody>
</table>

Mean — — 42.1 40.2 — —

### Exhibit 4  Results for Massachusetts/Connecticut Case Studies by HVTL Visibility and Distance of Home from ROW

<table>
<thead>
<tr>
<th>Visibility</th>
<th>Sale Price Effect*</th>
<th>Distance from ROW</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0 to 100 ft</td>
<td>101 to 200 ft</td>
</tr>
<tr>
<td>Not Visible</td>
<td>No:</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Indeterminate:</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes:</td>
<td>0</td>
<td>Total 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total 1</td>
<td>0</td>
</tr>
<tr>
<td>Partially Visible</td>
<td>No:</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Indeterminate:</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Yes:</td>
<td>4</td>
<td>Total 7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total 7</td>
<td>0</td>
</tr>
<tr>
<td>Clearly Visible</td>
<td>No:</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Indeterminate:</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Yes:</td>
<td>8</td>
<td>Total 16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total 16</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>No:</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Indeterminate:</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Yes:</td>
<td>12</td>
<td>Total 24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total 24</td>
<td>1</td>
</tr>
</tbody>
</table>

* "No" means study concluded there was no sale price effect.

"Indeterminate" means a sale price effect could not be concluded one way or the other.

"Yes" means the study concluded there was an adverse sale price effect.
Exhibit 6 shows the combined results of the case studies in New Hampshire and Massachusetts/Connecticut and gives additional insight into the likelihood of sale price effects as proximity and visibility increase. In the table, the proximity and visibility attributes of the 23 total cases in which sale price effects were found are compared to the total number of cases in each attribute cell. Cases where no conclusion was reached (indeterminate cases) are set aside in this table since the object is to show the percentage of cases in which a sale price effect was found relative to the total number of cases in which a conclusion was reached.

Given the relatively small number of observations, the probabilities cannot be generalized, but it appears that properties with homes beyond 100 feet from the ROW have a very small chance of sale price effect. However, that changes significantly for encumbered properties with homes less than 100 feet from the ROW that also have clear or partial structure visibility; for properties with both attributes the incidence of adverse price effect ranged from 46% to 59%.

As suggested in the initial discussion of the case study approach, the only evidence of the magnitude of the sale price effect is the difference between the retrospective appraised value and the sale price. This difference needs to be interpreted cautiously given the variety of influences on a transaction that can cause a sale price to diverge from a market value opinion. In the cases where it was concluded that an adverse sale price effect had occurred due to the HVTL, the difference ranged from 1.6% to 17.9% and averaged 9.5% for the New Hampshire cases; in the Massachusetts/Connecticut cases the difference ranged from 2.8% to 10.9% and averaged 5.9%.

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21. Up to this point, the discussion and tables have made reference to all 120 case study properties where a total of 25 cases concluded that the HVTLs were responsible for an adverse effect on the sale price, 75 concluded that the sale price was not affected by the HVTLs, and for 20 cases the evidence was mixed and a conclusion could not be drawn one way or the other. In the tables and discussion that follow, the 20 indeterminate cases are set aside, and the analysis focuses only on the 100 cases in which it was possible to come to a conclusion with respect to the HVTL effect.
Results Implications for Evaluation of HVTL Effects on Residential Property Values

What has been learned from the New England statistical and case study research related to HVTLs and residential property values? The following five key points can be drawn from the research results.

1. Based on the multiple regression analysis, there is no statistically significant evidence in the 12 urban and suburban neighborhoods studied in Massachusetts and Connecticut of consistent, measurable adverse effects of HVTLs on the market value of nearby residential properties. When careful onsite observations of distance of the home from the ROW boundary, structure visibility, and extent to which the property is encumbered by the HVTL ROW are combined with data for location, property-specific characteristics, and conditions of sale data in multiple regression analyses, there is no suggestion of consistent, measurable effects of HVTL-related variables on the market value of nearby properties.

   Appropriate interpretation of this result is subject to two important points. First, this does not mean that the direction of the effect of HVTLs on the desirability and value of residential property is not negative. It just means that the weight given this factor relative to all other variables that go into the decision to purchase a home is apparently too small to materially affect market value. Second, this result is not inconsistent with the sometimes spirited reaction of existing property owners in the face of a proposed change in the external environment of their homes. Their personal reaction to the change from the “before condition” to the “after condition” on the subjective value of the property to them is quite different from the reaction of the market to the “after condition” as measured by objective market data. There are apparently enough participants in the market for whom HVTLs are not a material consideration, or for whom the benefits of access to the ROW outweigh negative aspects of the HVTL, that no consistent, measurable effect of the HVTL on market value is found.

2. The case study research suggests there is a unique combination of HVTL proximity, visibility, and encumbrance that significantly increases the probability of an adverse sale price effect. The statistical studies are best able to answer the question of whether HVTLs result in consistent, measurable effects on the market value of nearby residential properties, but the absence of statistically significant adverse effects does not suggest...
that there are no affected properties. Because the number of potentially vulnerable properties is usually small in the statistically analyzed data sets, there may be insufficient data to isolate those affected properties. This possibility is buttressed by conversations with brokers and appraisers who are confident that an HVTL can be sufficiently intrusive on some properties to cause market value effects. Unfortunately, the statistical analyses do not give any insight into the characteristics of these outlier properties.

As explained above, the case study approach was originally designed as a pragmatic response to the sparse and heterogeneous development patterns in Montana and northern New Hampshire. It was designed to focus on the sale of properties most likely to have experienced HVTL effects, namely properties either encumbered by the ROW or adjacent to the ROW. The expectation was that the study area could then be expanded if warranted by the results from these most proximate properties. The Montana cases involved a variety of property types allowing only limited generalizations, but the 78 New Hampshire cases all involved residential properties and were remarkably consistent in their findings. It was the combination of close proximity, clear visibility of structures, and significant levels of encumbrance that significantly increased the likelihood of a market value effect.

The findings in New Hampshire led to the replication of the case study approach in the Massachusetts and Connecticut research, which reinforced confidence in the generalizations drawn from the New Hampshire research. As shown in Exhibit 6, which combines all the case study data, 23 of 44 properties (52%) in which the home was located within 100 feet of the ROW boundary and structures were either clearly or partially visible were judged to have experienced adverse sale price effects. In contrast, of the 41 cases with homes farther than 100 feet from the ROW boundary and either no or partial structure visibility, not a single case was judged to have experienced a sale price effect. The results are even more striking when looking at all 25 cases (which include 2 cases with homes at 106 and 110 feet from the ROW boundary, respectively) for which adverse sale price effects were concluded. These properties had homes that were very close to the ROW—44 feet on average—and had unobstructed views of structures in 18 of the cases and partial views in the other 7 cases.

The graph in Exhibit 7 illustrates the high correlation of home proximity to the ROW boundary, with a case study conclusion that there was an adverse effect of the HVTL on sale price. Proximity, visibility of structures, and encumbrance are highly correlated, so it is difficult to know the independent influence of each. The
literature shows that visual intrusion, health effects concerns, and precluded development rights or other significant impacts to a property’s utility or use associated with a ROW easement are all prominently mentioned concerns. It is also the case that despite structure visibility and/or encumbrance, in the absence of proximity, there is not a single case where an adverse price effect was concluded. Only when all three attributes were present (with the exception of three properties that met the proximity and visibility criteria but were not encumbered by the ROW easement) was an adverse price effect found. It must also be emphasized that when these attributes were present, there were still many cases (about half for properties with homes within 100 feet of the ROW) for which it was concluded that there was no adverse effect of the HVTL on the sale price.

3. For encumbered properties with homes within 100 feet of an existing HVTL ROW boundary and clear or partial structure visibility, the probability of a sale price effect, should they be sold, is indicated by the research to be in the range of 46% to 59%, depending on structure visibility. It is not possible to predict an adverse price effect for the sale of any particular property. The results of an individual sale will depend on the specific motivational factors influencing the parties, negotiating skills, and market conditions as they affect the range of product available in the market at the time. The research just indicates that the likelihood of effect goes up significantly if the noted conditions are present.

The implications of the findings are directly relevant to the construction of a new, overhead HVTL corridor in an area with established residential development. These cases are increasingly rare, but if such a project were being analyzed, the issue would be the number of properties with homes within 100 feet of the ROW boundary with anticipated partial or clear visibility of structures once the line was constructed. For such a project, aggressive mitigation measures could be considered for potentially affected properties; routing, structure type, location, and landscape screening are the principal mitigation measures.

4. In the future, the most common HVTL proposals will involve changes to existing HVTL corridors. In these cases, there is the possibility of incremental property value effects to the extent that there is an increase in the number of properties with homes within 100 feet of the ROW boundary combined with partial or clear structure visibility. If there are no changes in the ROW boundaries associated with a project, then there will be no change in the location of homes relative to the boundary, and the number of homes within 100 feet of the boundary and the extent to which they are encumbered will not change. But the visibility of structures could change. If, for example, the number, location, or height of structures changes, it is possible that some properties will have increased visibility of the structures. The result of the project then would be to increase the probability of a sale price effect in the event that the properties affected were sold.

5. System upgrade projects may create changes in the opinion of existing property owners, but for the case studies described here, the number of lines, line voltage, or height and type of structure appears not to affect market value once proximity of the home to the ROW and visibility of structures are accounted for.

For an existing property owner living very close to the ROW with an unobstructed view of one or more structures, adding a line to the ROW with perhaps taller structures could be a significant change in the visual environment, and owners may represent that the value of their property (subjectively to them) has been seriously diminished; whether the market value of their property actually has been affected is a different matter.

22. It should also be noted that the 100 feet and structure visibility criteria are not absolute, bright-line criteria. They simply reflect the empirical reality as understood today. Future research might indicate a broader or narrower range for these variables. Proximity of the home to the ROW boundary should also be recognized as a proxy for the complicated set of positive and negative effects of any given HVTL corridor that involve corridor utility (trails, open space, view corridors, etc.) and corridor intrusion (aesthetic, noise, health effects concerns, etc.). These effects may be influenced by both the location of the corridor and its characteristics including its width, number of lines, line voltages, types of structures, location of structures, and visibility of structures. Given sample size constraints, it may not be possible to identify the independent effects of these highly intercorrelated variables.
Given the prevalence of changes to existing corridors as opposed to the development of new corridors, this is a very important question. Evidence on this point to date comes from the case study research where there does not appear to be an association of sale price effects with the intensity of corridor development. The case studies cover a wide range of corridor types. The best controlled situation is in the New Hampshire studies where there are 24 properties along what was called Corridor 1. This corridor is typically 350 feet wide and contains a 450 kV DC line and two 230 kV lines, all on steel lattice structures ranging from 65–95 feet high. There also are 28 case study properties along what was called Corridor 2. That corridor runs roughly parallel to Corridor 1 but is typically only 150 feet wide and contains one 115 kV line on either 55-foot wood H-frames or 75-foot steel poles. Despite the substantial difference in the intensity of development in these two corridors, there was no discernible difference in the occurrence of sale price effects. There were four cases along each corridor where adverse sale price effects due to the HVTL were concluded. Because of its importance, this is a topic that merits additional research. Given that many upgrade projects have been carried out recently, it may be possible to find same-property sale and resale cases that span the time period of an upgrade project.

The research reviewed in this article provides guidance in answering both questions.

First, despite the generalization appropriately based on the statistical analyses, there is a small set of properties—defined by close proximity of the home to the ROW, visibility of structures, and encumbrance—for which there is a significant probability of an adverse sale price effect should they be sold. The research summarized in this article provides guidelines in identifying the properties that fall into this group. The answer to the second question then depends on whether the system upgrade changes the number of properties that fall into the set of vulnerable properties and on the extent to which the effects of the project can be mitigated.

It has always been difficult for appraisers to develop market evidence to adjust for external obsolescence. The prevalence in the literature of statistical studies is of interest but beyond the scope of nearly all appraisal assignments. An appropriate response, which aligns with traditional practice, would be to extract appropriate adjustments from something akin to the case study approach. The benefit of the research summarized here is that it suggests that the critical variables to control for are encumbrance, distance of the home from the ROW boundary, and the visibility of structures. For example, in appraising a property with a home 75 feet from a ROW with an unobstructed view of structures, the research suggests looking for two or three comparable properties that had recently sold that are similarly located with respect to an existing HVTL. The next step would be to conduct a simple analysis of each based on interviews with the participants and analysis of similar sales unaffected by an HVTL that occurred in the same period. The results of that exercise could then be evaluated in comparison to the results as reported here, with attention to the similarity of the study areas in question. A final conclusion could then be reached as to whether an adjustment is warranted, and if so, its magnitude.

1. Does the absence of consistent, measurable effects ensure that no properties are adversely affected?
2. Can the incremental value effects of system upgrades in existing HVTL corridors be anticipated for nearby residential properties?

The research reviewed in this article provides guidance in answering both questions.

Conclusion

There has been a continuing effort by appraisers and real estate economists to use statistical techniques to answer the question of whether HVTLs affect residential property values. Depending on the geographic area of interest, there may be useful research that can help answer that question. In the case of Massachusetts and Connecticut, there are now 12 study areas that have been investigated with the uniform result of no statistically significant proximity, visibility, or encumbrance effects. But this leaves two important questions unanswered:
About the Author
James A. Chalmers, PhD, has a doctorate in economics and is a certified general real estate appraiser in Arizona. During 1990–2002, he led the real estate damages practice at Coopers & Lybrand and, after its merger, at PricewaterhouseCoopers. Since retiring from PwC in 2002, he has continued to consult in the area of real estate damages as the principal of Chalmers & Associates, LLC, located in Billings, Montana. Contact: jameschalmers@vcn.com

Acknowledgments
It is not practical to individually identify the many firms and individuals who have assisted in this research, but without their enthusiastic and diligent support over the past ten years, this research would not have been possible. Their contribution is gratefully acknowledged.

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

Appraisal Institute
Lum Library, Knowledge Base [Login required]
Information Files—Real estate damages/proximity impacts

Electric Power Research Institute—Research
https://www.epri.com/#/research/landing

Federal Energy Regulatory Commission—Electric Smart Grid

National Association of Regulatory Utility Commissioners—CPI Library
https://www.naruc.org/cpi/cpi-library/

US Department of Energy—Electric Power
https://www.energy.gov/science-innovation/electric-power

US Energy Information Administration—Electricity
http://www.eia.gov/electricity
From Our Readers

“Animal Operations and Residential Property Values”

To the Editor
I am writing to comment on the article “Animal Operations and Residential Property Values” (Winter 2015), by John A. Kilpatrick, PhD, MAI. In that article, Mr. Kilpatrick defines animal operations (AOs) as “facilities in which animals are raised or brought for slaughter. The common denominator is a large perpetual inventory and density of animals.” (Page 41) In his article, he cites seven peer-reviewed economic studies; however, my reading of those studies indicates that the text of the studies cited does not reflect what is stated in this article. To demonstrate the discrepancies, the following compares quotes from Mr. Kilpatrick’s article with the specific content in the studies cited.

Mr. Kilpatrick states, “Kuethe and Keeney find that the negative impacts of AOs are comparable to those generated by industrial waste, solid waste, and septic waste facilities.” (Page 45) Table 3 of the Kuethe and Keeney study summarizes the impacts of the various sources of externalities, showing that industrial waste and septic waste facilities negatively impacted houses of all prices. Kuethe and Keeney find, however, that AOs negatively impacted more expensive houses (those with prices in the 60%–100% quantiles) but did not negatively affect lower-priced homes (those in the 10%–50% quantiles).

Mr. Kilpatrick also states, “Kim and Goldsmith analyze property values of 2,155 homes located within 3 miles of an AO in North Carolina. The principle focus of their study is spatial hedonics, and within a 3-mile area they find the average impact to be negative 18%. At 1 mile, they find the impact is negative 23.5%.” (Page 45) However, Kim and Goldsmith actually write, “Property values declined per hog by –$0.51 at 0.75 mile, –$0.68 at 1 mile, and $0.53 at 1.25 mile in the linear Box-Cox model estimates. Compared to the linear Box-Cox model spatial lag property value loss estimates decreased $.04 (8%) to –$0.47 at 0.75 mile, $.16 (24%) to –$0.52 at 1 mile, and $.11 (21%) to –$0.42 at 1.25 mile. The impact on the value of the median house ($63,520) 1 mile from a swine facility with 10,000 head fell from –$6,800 to –$5,200, or 23.5%. Thus, not accounting for spatial autocorrelation in the form of spatial lag dependence overstated the negative impact of hog farms on neighboring housing values by 18% on average.”

Two errors occur in the above summaries of the research. First, when Kim and Goldsmith mention 23.5% they are comparing two different econometric models, not the impact on housing prices. The impact was not a 23.5% decrease in value. The impact of accounting for spatial autocorrelation (a better econometric model) was that the negative impact was decreased 23.5%. In other words, by using a more accurate model, the overestimation of a model without spatial auto-

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correlation overestimated the negative impact of AOs on housing values. Using the wrong model had “overstated the negative impact of hog farms on neighboring houses by an average of 18%.” Second, Kim and Goldsmith state, “Our estimate of a –$0.52 per hog, or –$5,200 (–8.2%) per house, impact on the value of a house located 1-mile from a swine facility is consistent with the results of previous research.” They find an 8.2% negative impact rather than “the average impact to be negative 18%.”

Mr. Kilpatrick also references a case study by Isakson and Ecker; he states, “The study shows large adverse impacts for houses located within 3 miles and directly downwind from a CAFO—a loss of value of as much as 44.1%.” (Page 45) Isakson and Ecker write, however, “Houses directly downwind and within 2 miles [emphasis added] of a CAFO can suffer as much as a 44.1% loss in value (but, only one house is essentially (89.1°) directly downwind and within 2 miles of a CAFO). At the average wind-angle (33.95°), the loss in value for houses within 2 miles of a CAFO is slightly over 16.6%. ... Houses directly downwind within 3 miles of a CAFO (holding CAFO size constant) suffer a maximum loss in value of 9.9%, while at the average wind angle they suffer a 3.7% loss in value.” Mr. Kilpatrick’s mixing of 3 miles with the statement of a house within 2 miles and directly downwind greatly inflates the conclusions of Isakson and Ecker.

In the case study reports, Mr. Kilpatrick also mixes two studies’ results, which creates an incorrect conclusion. Mr. Kilpatrick writes, “A 1996 study by Padgett and Johnson finds that homes within 0.5 mile of a CAFO decrease in value by 40%, and homes within 1.0 mile decrease in value by 30%, within 1.5 miles by 20%, and within 2.0 miles by 10%. Palmquist, Roka, and Vukina quantitatively determine that AOs depress nearby home values. They develop a model to measure the spatial impacts of AOs and, like Padgett and Johnson, find differential value impacts at 0.5, 1.0, and 2.0 miles.” (Page 44) This statement is problematic on two accounts. First, Mr. Kilpatrick attributes Padgett and Johnson’s findings to a report by Weida (cited in footnote 39) without independent confirmation of their study’s findings. Second, Palmquist, Roka, and Vukina, in their Table 4, find housing values lose a maximum of 8.44% for houses within one-half mile. Even if the characterization of the Padgett and Johnson results is correct, to state that Palmquist, Roka, and Vukina have conclusions like Padgett and Johnson is incorrect.

The Kilpatrick article also summarizes the findings of Herriges, Secchi, and Babcock as reported in their 2003 working paper; he states, “Results from this study indicate that a moderate-size facility has a value impact up to –6% within 1.5 miles and –26% within 0.25 mile.” (Page 47) However, Herriges, Secchi, and Babcock in Table 8 of their 2005 published article on this study actually report that a moderate-sized facility at 1.5 miles has no statistically significant impact on housing values. The only

5. Note, Weida in his paper misspells the study author’s name; the correct spelling is “Padgitt.”—Ed.
statistically significant estimate of decrease in value for an AO 1.5 miles away from a house is 4%, not 6% as reported by Mr. Kilpatrick, for a large, not moderate-sized, facility. Herriges, Secchi, and Babcock also report in Table 6 of their 2005 published article that the largest statistically significant estimate of decrease in value for an AO 0.25 mile away from a house is 16%, not 26% as reported by Mr. Kilpatrick for a moderate-sized facility.

Mr. Kilpatrick writes that a study by Ready and Abdalla “determines ‘only landfills have a worse effect on adjacent property values,’” and “‘a sewage treatment plant has less depressing effects on nearby housing prices than a factory farm operation,’” with the quotation marks in the Kilpatrick article indicating a direct quote from the Ready and Abdalla article; however, neither of the statements in quotation marks appears in the Ready and Abdalla article.

Ready and Abdalla estimate the loss from AOs distanced from 500 meters to 1,200 meters from a house as ranging from 1.6% to 6.4%, and for landfills, from 3.8% to 12.4%.\(^8\) Landfills have approximately twice the impact on housing values. The comparison to landfills without presenting the actual estimates is misleading. Ready and Abdalla find “proximity to sewage treatment plants is not significantly related to house price.” They never compare their estimates of sewage treatment to those of animal production facilities (and the phrase “factory farm” is never used by Ready and Abdalla). The counterintuitive conclusion that landfills have no statistically significant impact on housing values is discussed in Ready and Abdalla in a way that would call into question the quote that Mr. Kilpatrick attributes to them.

In addition to peer-reviewed articles, the Kilpatrick article cites non–peer-reviewed economic studies (footnotes 8–11, 24–25, 34–35, 37, 46, 47 of the article). What follows are some errors in the discussion of these studies as reported.

The article states, “Hamed, Johnson, and Miller quantify both the average value impact of an AO as well as the impact by distance with a study of 99 rural, non-family real estate transactions of more than one acre near an AO. Thirty-nine of the properties in the study included a residence. An average residential parcel within 3 miles of an AO experienced a loss of about 6.6%. However, if that parcel was located within 0.10 mile of the AO (the minimum unit of measure in the study), then the loss in value was estimated at about 88.3%.” (Page 44) Mr. Kilpatrick uses the loss figure “88.3%” three different times in his discussion. The precision of the 88.3% figure makes the reader think this must be authoritative; however, this misrepresents the findings of the Hamed, Johnson, and Miller study, which does not include these statements in the report of the research.\(^9\)

Mr. Kilpatrick also writes, “Taff, Tiffany, and Weisberg perform a hedonic price analysis on 292 rural residences in Minnesota and find a statistically significant pricing impact related both to the existence of an AO as well as the distance to the AO.” (Page 44) The surrounding text leads

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the reader to assume that the “significant pricing impact” is negative. In his 2001 article on animal feeding operations, Mr. Kilpatrick similarly wrote that Taff, Tiffany, and Weisberg found a statistically significant pricing impact related both to the existence of a CAFO as well as the distance from the CAFO.” (Page 305) Given the surrounding text, the implication is that the researchers found a negative price impact—however, Taff, Tiffany, and Weisberg state the opposite: “The conclusion is striking: for this study area, nearby feedlots do influence property values—positively.” A subsequent Letter to the Editor related to Mr. Kilpatrick’s 2001 Appraisal Journal article corrected that error in the 2001 article; however, the error is repeated in his 2015 article.

Mr. Kilpatrick also states, “Gomez and Zhang study 1,106 rural communities and conclude that economic growth rates in communities with conventional farming are 55% higher than in those with AOs…Gomez and Zhang state that AOs exacerbate the economic negative impact by importing large quantities of pollution and the attendant costs.” (Page 43) The estimate of 55% higher economic growth, however, is not found in the paper by Gomez and Zhang. Instead, Gomez and Zhang state “among rural towns, growth was higher in hog producing towns in [sic] than in other rural towns (1.55% versus 0.50%). Considering only hog producing towns, those classified as with moderate concentration have experienced higher growth than rapid-concentration towns (1.93% versus 1.20%).” Mr. Kilpatrick also states that the Gomez and Zhang finding “repli- cates those of an earlier study by Abeles-Allison and Connor, which showed AOs have the effect of crowding out more traditional farmers and decreasing purchases from local stores.” (Page 43) Abeles-Allison and Connor, however, actually conclude that “larger operations will spend more in total dollars in their community. [Emphasis added] The input expenditure per hog declines as economies of management and size are attained.” For their estimate of impact of AO on housing values they state, “for every hog added to an area, value for each property in the entire survey area declines 43 cents.” [Emphasis added] Their results show no distinction between large and small (described as “traditional farms” by Mr. Kilpatrick) operations.

Raymond Massey, PhD
Extension Professor, University of Missouri

Author’s Response
First, I want to thank Professor Massey for reinvigorating this article and giving me the opportunity to share it with a new group of Appraisal Journal readers. One or two of his comments were pertinent, particularly his notation concerning the Weida footnote of Padgett and Johnson, which is very useful.

More to the point, though, is the fact that my article was designed with the practicing appraiser

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in mind, to give the appraiser in the field some resources to which to refer when faced with one of these problems. Indeed, there is no doubt that these animal operations have an impact on surrounding economies and property values, as Professor Massey would clearly agree. For example, in his 2005 article on manure management he directly addresses the increased concentration in the livestock industry, and states that this “limits the ability of these farmers to take a systems approach.” An issue paper that he coauthored addresses property value issues; it specifically says, “Studies indicate that large livestock production facilities lower the value of residences within 4.8 kilometers (km; three miles) of the facility.”

A review of the literature that he coauthored reports on fourteen studies and finds, “Seven of the 14 studies indicated that AFOs reduced nearby residential property values, and five indicated that AFOs have the potential to either increase or decrease housing values depending on AFO size, concentration or species.” Hence, it appears Professor Massey and I would agree that animal operations are an increasingly difficult problem for proximate property values.

Professor Massey’s letter takes issue with finer points of some of the articles I cited. For example, I report a fairly straightforward interpretation of the Kim and Goldsmith (2009) study, while he would prefer to wade deeper into the “linear Box-Cox model spatial lag property value loss estimates…” and the notion that “…spatial autocorrelation in the form of spatial lag dependence overstated the negative impact of hog farms on neighboring housing values by 18% on average.” I strongly doubt this 18% overstatement, if indeed real, detracts from the core findings of the original article. Indeed, even Kim and Goldsmith confirm that their findings reveal a negative impact on house values, as Professor Massey in fact notes. I further appreciate his mention that the Isakson and Ecker article adds the caveat of “within 2 miles” rather than “within 3 miles.” I would note that in my experience as an appraiser dealing with these situations, this is not a very important point. However, I will correct future discussions of such studies.

Referencing the 2005 Herriges, Secchi, and Babcock article, Professor Massey appears to be more interested in the provable statistical significance rather than the more interesting economic realities revealed by this study. Admittedly, the statistical significance may be of interest from a purely academic perspective, but not so much for an appraiser faced with the need to compute an adjustment from a handful of matched pairs.

The remainder of Professor Massey’s letter includes a number of misstatements. For example, he calls into question the report of the Hamed, Johnson, and Miller (1999) article; however, the average land value in that study was $1,709, and those authors’ own Figure 1 (Page 9) shows that land value, with houses, at 0.1 miles from a CAFO is approximately $200 per acre, for

a loss of 88.2%. With that in mind, I am not sure to what he is referring. Professor Massey makes note of my citation of the Taff, Tiffany, and Weisberg (1996) study. He admits that I quote them correctly but then suggests that quoting them makes an implication that I clearly do not attempt to make. In short, he objects to something I never stated. He also comments on the use of the Gomez and Zhang (2000) study. He does not refute my interpretation of that study, only that my interpretation (an extrapolation of their math to a 55% loss) does not specifically appear in their paper. Finally, he appears to disagree with my interpretation of the Abeles-Allison and Connor (1990) study—I note that smaller farms are more traditional than larger ones. Having grown up on a farm, and having learned at a very early age to help my grandfather feed his hogs, I will stick with my interpretation.

I appreciate this opportunity to respond to Professor Massey’s comments. On the whole, this exchange shows the value of this journal, where different sides of important issues can be discussed for the benefit of professionals in our industry. While I would note that Professor Massey is not an appraiser, I welcome his comments and the opportunity to revisit this study.

John A. Kilpatrick, PhD, MAI
Seattle, Washington

Erratum
In the article by Gary E. Heiland II, “Property Rights Brought to Light: Principles and Misconceptions” (Summer 2019), the statement on page 190 should have read as follows:

Additionally, forty-one individual appraisal regulatory agencies in the United States and Puerto Rico have “real estate” in their names.
Announcement of Scholarship Awards

Transforming Our Future

Each year, the Appraisal Institute Education and Relief Foundation (AIERF) awards scholarships and grants to qualified individuals for education or work in the field of real estate. The AIERF is pleased to announce the winners of its 2019 scholarships. For more information on the Appraisal Institute Education and Relief Foundation and the scholarships, visit aierf.org.

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### AIERF Appraisal Institute Course Scholarship

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### AIERF Minorities and Women Appraisal Institute Course Scholarship

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Risk Management for Real Estate Appraisers and Appraisal Firms

by Peter T. Christensen, Esq., with contributing author Claudia L. Gaglione, Esq.

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