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POLICY RETROSPECTIVE

Public policy toward professional sports stadiums: A review

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Abstract
This article informs public policy toward professional sports stadiums, which state and local governments routinely subsidize. Our analysis provides a history of stadium construction and funding in the U.S., documenting trends that portend a forthcoming new wave of stadiums. Despite robust evidence that stadiums are not economic development catalysts and confer limited social benefits, public outlays persist and exhibit a positive growth trajectory, which could prove costly to government budgets in coming decades. We review contemporary justifications for public subsidies, focusing on proposed salutary development and budgeting strategies. Economic research continues to demonstrate that stadiums remain poor public investments, and optimal public funding of professional sports venues is substantially less than typical subsidy levels. We examine economic, political, and institutional factors that contribute to the disconnect between research and policy, and we provide recommendations to promote sound public policy.

INTRODUCTION

Research consistently demonstrates that professional sports stadiums generate little to no tangible economic impacts in host communities; therefore, typical public subsidies for the construction of new stadiums generally exceed any meager economic benefits they may confer (Bradbury et al., 2023a). Despite universal agreement among economists that sports venues represent poor public investments (U.S. Economic Experts Panel, 2017), elected representatives continue to subsidize their construction as economic development catalysts. Since 2000, state and local governments have committed $19 billion to fund new major league professional sports venues (approximately $330 million per facility) in the United States and Canada (Bradbury et al., 2023b). This figure does not include considerable subsidies provided to minor-league venues in smaller cities, which are often justified for similar reasons.

The historical 30-year replacement cycle for stadiums and the median age of existing facilities (24 years) indicate that a new wave of venue construction appears imminent, as many team owners deem venues opened during the last sports facility construction wave of the 1990s and 2000s to be obsolete. The anticipated widespread replacement of sports venues over the next two decades has the potential to impose substantial costs on taxpayers if the current practice of heavily subsidizing stadiums persists, especially as construction costs and public contributions continue to escalate. This paper aims to provide researchers, policymakers, and the general public with an updated understanding of the economics of sports stadiums, and the subsidies they regularly receive, in order to inform upcoming policy debates.

The failure of past stadium projects to spur economic growth has spawned new development and funding strategies, which have been touted as potential remedies that promote successful stadium projects. We show that alternative development approaches have not improved the economic fortunes of stadiums and that non-general-fund tax instruments intended to shift funding burdens away from local taxpayers serve only to create fiscal illusion, obfuscating the costs borne by local residents. We also highlight less-known research on the social benefits from civic pride and quality-of-life amenities that teams may provide, which estimates the intangible welfare gains from hosting teams to be insufficient to justify observed subsidy levels.

We begin with a review of historical trends in venue provision, describing their construction, replacement, and funding since the early 20th century. We then examine the economic arguments for subsidizing sports venues, and demonstrate their flaws, before evaluating claims that new development and funding strategies may allow stadiums to be worthwhile public investments. We examine reasons for the disconnect between research and policy regarding stadium subsidies, and we present several recommendations to improve public policy toward stadiums. We conclude the paper with a summary of findings, suggestions for future research, and guidance for connecting research to policy.

Trends in modern stadium construction

Three eras of construction (1909–2019)

The modern age of stadiums began in 1909, when baseball teams began transitioning from hosting games in impermanent wooden structures to durable concrete and steel ballparks.[1] Figure 1 tracks annual openings of stadiums and arenas that served teams in the four major U.S.-based sports leagues—Major League Baseball (MLB), National Basketball Association (NBA), National Football League (NFL), and National Hockey League (NHL)—which shows sporadic construction through the middle of the century and two distinct waves of construction peaking around 1970 and 2000. Table 1 reports real venue construction costs by decades and construction waves/eras, which we delineate by both timing and construction costs. Individual venue data are listed in Table A1 of the Appendix.[2]

The inaugural era of stadium construction progressed as teams opened their first modern facilities, with construction occurring in bursts before and after World War I, followed by intermittent openings after World War II through the 1950s. Most early venues were ballparks that primarily served MLB franchises but multipurpose facilities that hosted professional football, basketball, and hockey teams as

[1] Benson (1989) has provided thorough descriptions of baseball ballparks constructed through the 1980s, many of which hosted football teams, and Lowry (1986) and Gershman (1993) have provided additional documentation.

[2] A discussion of venue designations and costs appears in the Appendix, which is available at the end of this article as it appears in JPAM online. Go to the publisher's website and use the search engine to locate the article at http://onlinelibrary.wiley.com. In the data analysis we differentiate venue types by referring to large and mostly-outdoor venues that host baseball and football as "stadiums" and smaller enclosed venues that host basketball and hockey as "arenas." Era designations are subjective, and venues on the edges of our assignments could be classified appropriately as part of adjacent eras. For example, 1950s venues could be considered as the beginning of the second construction wave, but we classify them as part of the earlier era because their costs and basic designs are more similar to preceding facilities than the grandiose superstadiums that followed. Data are available for download from Bradbury et al. (2023b).

TABLE 1 Venue construction costs, by decade and era.

Decade	Wave/Era	Arenas opened	Arena construction costs			Stadiums opened	Stadium construction costs		
			Total ($)	Public ($)	Public (%)		Total ($)	Public ($)	Public (%)
				Median				*Median*	
1900s	First	1	*NR*	*NR*	*NR*	3	$30	$0	0%
1910s		1	*NR*	*NR*	*NR*	10	$15	$0	0%
1920s		6	$45	$0	0%	9	$14	$0	0%
1930s		3	$56	$39	50%	4	$30	$30	100%
1940s		4	$33	$33	100%	0	*NA*	*NA*	*NA*
1950s		3	$62	$62	100%	5	$58	$48	100%
1960s	Second	15	$106	$43	92%	13	$200	$173	100%
1970s		11	$116	$116	100%	14	$287	$287	100%
1980s		9	$153	$116	100%	4	$231	$147	54%
1990s	Third	28	$271	$26	17%	18	$342	$281	82%
2000s		11	$252	$212	81%	23	$572	$352	68%
2010s		9	$578	$343	48%	7	$1,146	$356	45%
2020s	Fourth	3	$1,392	$0	0%	5	$1,970	$750	42%
Construction wave			*Cumulative total*		*Median*		*Cumulative total*		*Median*
First	(1900s–1950s)	18	$641	$228	0%	31	$821	$503	0%
Second	(1960s–1980s)	35	$5,070	$3,206	100%	31	$9,688	$7,148	100%
Third	(1990s–2010s)	48	$17,342	$7,417	50%	48	$29,365	$15,677	72%
Total		104	$25,837	$10,851	73%	115	$52,039	$26,603	73%

Notes: Real 2020 dollars in millions. Not Recorded (*NR*). Not Applicable (*NA*).

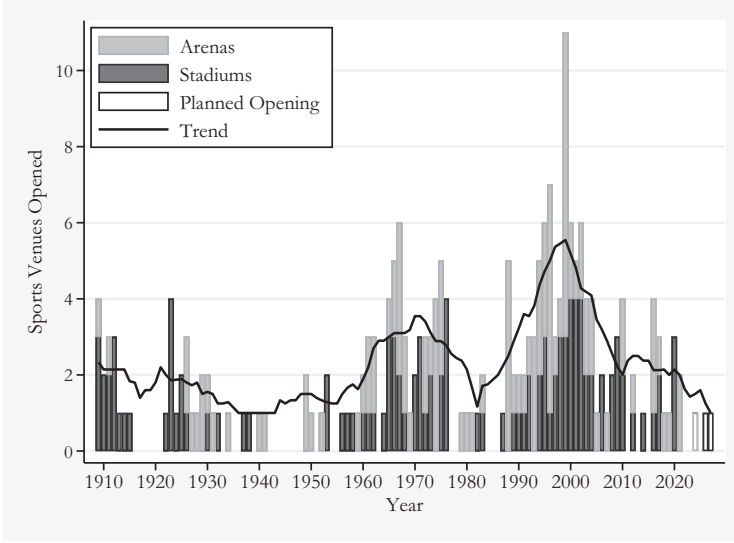

FIGURE 1 New stadiums and arenas, by year of opening (1909 to 2027).
Notes: The trend line reflects the moving 11-year average of all venues, centered around the year of observation.

regular tenants also opened during this era. Sports venues were almost exclusively privately financed until the 1930s, when they became largely public ventures.

A second wave of construction emerged in the 1960s, with team relocations (e.g., Candlestick Park and Dodger Stadium) and league expansions (e.g., Angel and Jack Murphy Stadiums) as leagues adjusted to accommodate new markets. Construction continued into the 1970s with the replacement of aging traditional venues by new modern "superstadiums" (e.g., Riverfront and Veterans Stadiums), which were often shared by several teams to maximize utilization. These large-scale multipurpose venues, some of which had domes (e.g., Astrodome and Kingdome) were more expensive than their predecessors, and their homogenous spartan architectural designs persisted into the 1980s. Though a shared facility was an attractive feature as a municipal funding project, the circular shape required to accommodate baseball and football was not ideal for spectators of either sport. Although the "cookie-cutter" stadiums of this era are often viewed with disdain from the present, they were considered architectural achievements when they opened, whose grand scale "evoked such awe and envy that every city with an ego had to have one" (Boswell, 1996, para. 6).

Following a period of limited venue openings during the 1980s, the U.S. experienced its third stadium construction wave, starting in the 1990s. While some new facilities of this era served expansion teams and franchise relocations, most new construction represented replacements for existing venues, many of which opened during the second construction wave, even though their predecessors remained structurally sound. The total number of venues increased since most shared stadiums were replaced with single-tenant facilities, giving each team owner dedicated control over stadium operations and providing an improved spectator environment. For example, multi-use Atlanta Fulton-County Stadium (built in 1965) was replaced by the Georgia Dome in 1992 to host the Atlanta Falcons and Turner Field in 1997 to host the Atlanta Braves. The third-wave surge peaked in the 2000s, with venue openings declining through the 2010s.

Stadiums of this era were also more extravagant than their predecessors, with fan-centric features and traditional architecture, exemplified by Baltimore Orioles's Camden Yards, which opened in 1992 as the first retro-style ballpark. Rather than generate added revenue through expanded bleachers, these venues created new income streams from premium amenities and complementary entertainment

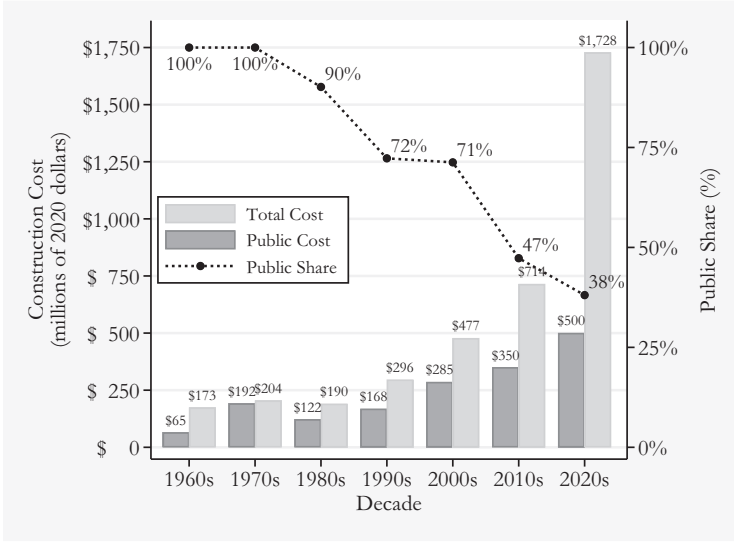

FIGURE 2 Median venue construction costs, by decade.

options (e.g., luxury suites, private clubs, and restaurants) that catered to a wealthy cohort of fans. Real costs of facilities climbed in each successive construction era; however, the third construction wave is notable for its ongoing cost escalation, as newer stadiums grew more opulent.

Sports venues remained almost entirely publicly funded from the 1930s through the 1970s, but cost sharing between teams and governments became more prevalent in the 1980s. Though several teams opened privately-financed facilities in the 1980s and 1990s (e.g., Detroit Pistons and Miami Dolphins), governments continued to bear the majority of funding costs into the next century. The median public share of venue construction costs declined from 70% in the 1990s and 2000s to approximately half of construction costs in the 2010s. Newly opened and planned venues in the 2020s have received roughly 40% of funding from taxpayers.

The decreasing government funding share of stadium construction may foster the misleading impression that public involvement in stadiums has fallen; however, Figure 2 shows that the average public contribution to professional sports venues has increased substantially since the 1980s. The declining public share of funding reflects the growth in overall capital construction costs, as stadiums have become more extravagant, which have outpaced the growth in government contributions.

The costs documented above reflect publicly-reported capital construction costs, which provide a consistent benchmark for observing how venue funding has changed over the history of modern stadium construction.[3] However, it is important to note that less obvious public contributions from land, infrastructure improvements, maintenance and operations, and tax abatements are often not reported. For example, Gillette Stadium (built in 2002) received no direct public funding toward stadium construction, but the New England Patriots benefited from $70 million in state-provided infrastructure improvements around the stadium (Cassidy, 1999). Long (2005, 2013) has found that unreported public contributions to sports venues can be substantial, increasing public obligations by between 25% to 40% above reported costs. Propheter (2023) estimated that the cumulative cost in forgone property taxes for all major league sports facilities through the end of their current leases is $18 billion, which translates to an annual public cost of $5.7 million per venue. In addition, many stadiums are financed using municipal bonds, with interest that is exempt from federal taxation. Drukker et al. (2020)

[3] Though a data set that includes unreported construction costs would be ideal, unreported costs are not ascertainable for older venues. Long (2013) documented unreported costs for a sample of venues that hosted major-league teams in 2010.

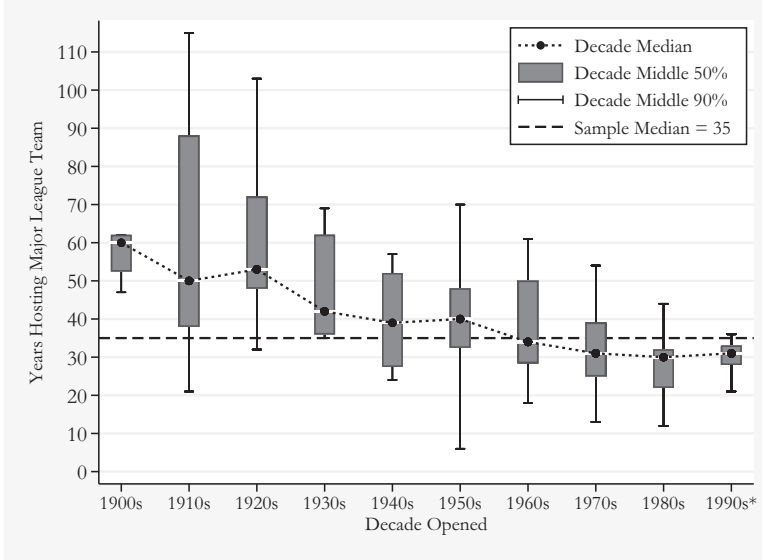

FIGURE 3 Venue hosting lifespans, by decade.

Notes: *Includes venues open prior to 1997 and venues scheduled to close.

estimated that the forgone revenue in federal tax collections from 2000 to 2020 was $4.3 billion. In addition, teams may receive ongoing operational subsidies after facilities have opened.

The next wave of stadium construction

Figure 3 shows that though stadiums built during the first half of the 20th century typically lasted 40 years or longer, the average length of time that facilities host major league teams has declined to approximately 30 years. Sports venues are large and expensive capital structures that are used less than most commercial buildings of similar size and cost; thus, their shrinking longevity as hosts is curious given improvements in construction materials and methods that ought to produce more durable structures.

Though many older venues continue to host major league teams, including stadiums from the first era of stadium construction (e.g., Fenway Park and Wrigley Field), owners commonly seek to replace host venues before their functional lives are exhausted. For example, the Texas Rangers opened new stadiums in 1966, 1994, and 2020 (mean hosting tenure 27.5 years), and the Atlanta Braves's last three stadiums opened in 1965, 1997, and 2017 (mean hosting tenure 26 years).

The premature replacement of functional sports facilities is incentivized by the "novelty effect"—the temporary boost in attendance and revenue that new venues experience during their first few years of operation, which diminishes rapidly within a decade of opening as facility novelty wanes. The phenomenon was first identified by Noll (1974) and has since been documented in numerous empirical studies of second-wave (Clapp & Hakes, 2005; Coates & Humphreys, 2005; Leadley & Zygmont, 2006) and third-wave (Bradbury, 2019, 2023a; Szymanski, 2023) venues.

Venue subsidies further encourage facility replacement by lowering the effective price of new stadiums to team owners. In addition, subsidies also may promote the "gold plating" of facilities with costly luxury amenities, which results from team owners designing stadiums without having to bear the full costs of construction (Quirk & Fort, 1997, p. 144). Consistent with this hypothesis, Propheter (2017) found stadium construction costs to be positively correlated with subsidy levels, which translated to

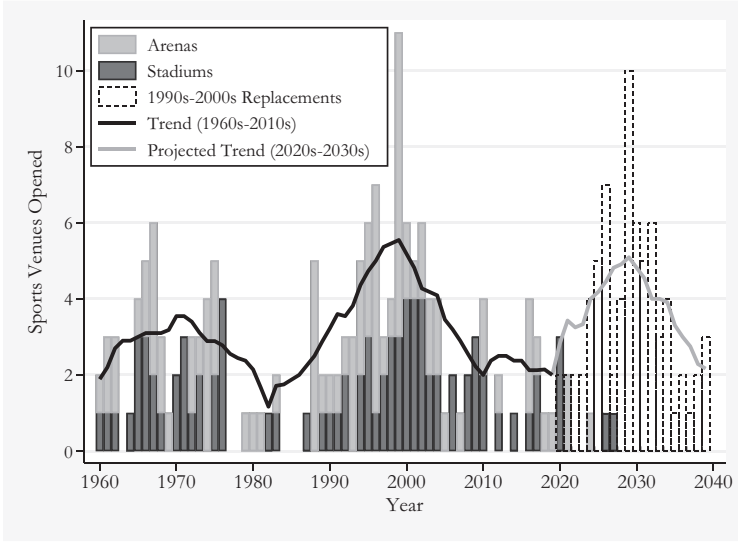

FIGURE 4 Observed and projected new stadiums and arenas, by year (1960 to 2039).

Notes: 2020 to 2039 forecast based on 30-year lifespan of venues opened from 1990 to 2009 that have not been replaced. Trends reflect 11-year moving average, centered around the year of observation.

an average of 38% higher construction costs in third-wave venues.[4] Baim (1994) similarly found that private facilities were constructed at 60% of the cost of public facilities, on average (p. 198). Though it is not clear if cost-sharing incentives cause higher construction costs, or if more expensive venues receive greater subsidies to cover their higher costs, subsidized venues tend to be more costly to build.

Figure 4 maps the previous two waves of sports venue construction along with a projection of future openings, which is based on the replacement of existing third-wave venues after 30 years. If the pattern of past construction waves that peaked in 1970 and 2000 continues, a 30-year replacement cycle of stadiums indicates that another wave of venue construction is anticipated to peak around 2030.

Several existing stadiums have undergone major renovations, which Propheter (2023) estimated extend a venue's hosting life by 15 years. Figure 5 presents a more complete description of the state of current venues, plotting the ages of current major-league facilities as of 2023, including years since their last major renovation, planned renovations, and planned replacements.

The median age of the existing 111 venues is 24 years. By 2030, 62 of these venues (31 arenas and 31 stadiums) will be at least 30 years old. Three teams will move into replacement venues—Los Angeles Clippers in 2024, Buffalo Bills in 2026, and Tennessee Titans in 2027—and 27 venues will have been renovated within the past 15 years.[5] In total, 32 venues (16 arenas and 16 stadiums) are on track to be at least 30 years old and operated at least 15 years without a major renovation by 2030. This represents a large cohort of stadiums that are likely to be replaced or receive significant refurbishments by the end of the decade.

At the current median level of public funding provided to venues opened in the 2020s ($500 million), replacing the 32 venues that will be at least 30 years old and have not received a renovation within the past 15 years would result in $16 billion in public funding. An additional 34 venues that opened in the 2000s will be 30 years old by 2040, whose replacement would translate to an additional $17 billion in subsidies. However, these estimates likely underestimate future public costs of stadiums

[4] Based on the estimate that per acre costs of stadiums are 4% higher for every dollar in public funds devoted to new stadium construction and the average acreage of 9.5 acres for venues in a sample that extends from 1987 to 2012.

[5] Renovation identification is explained in the Appendix.

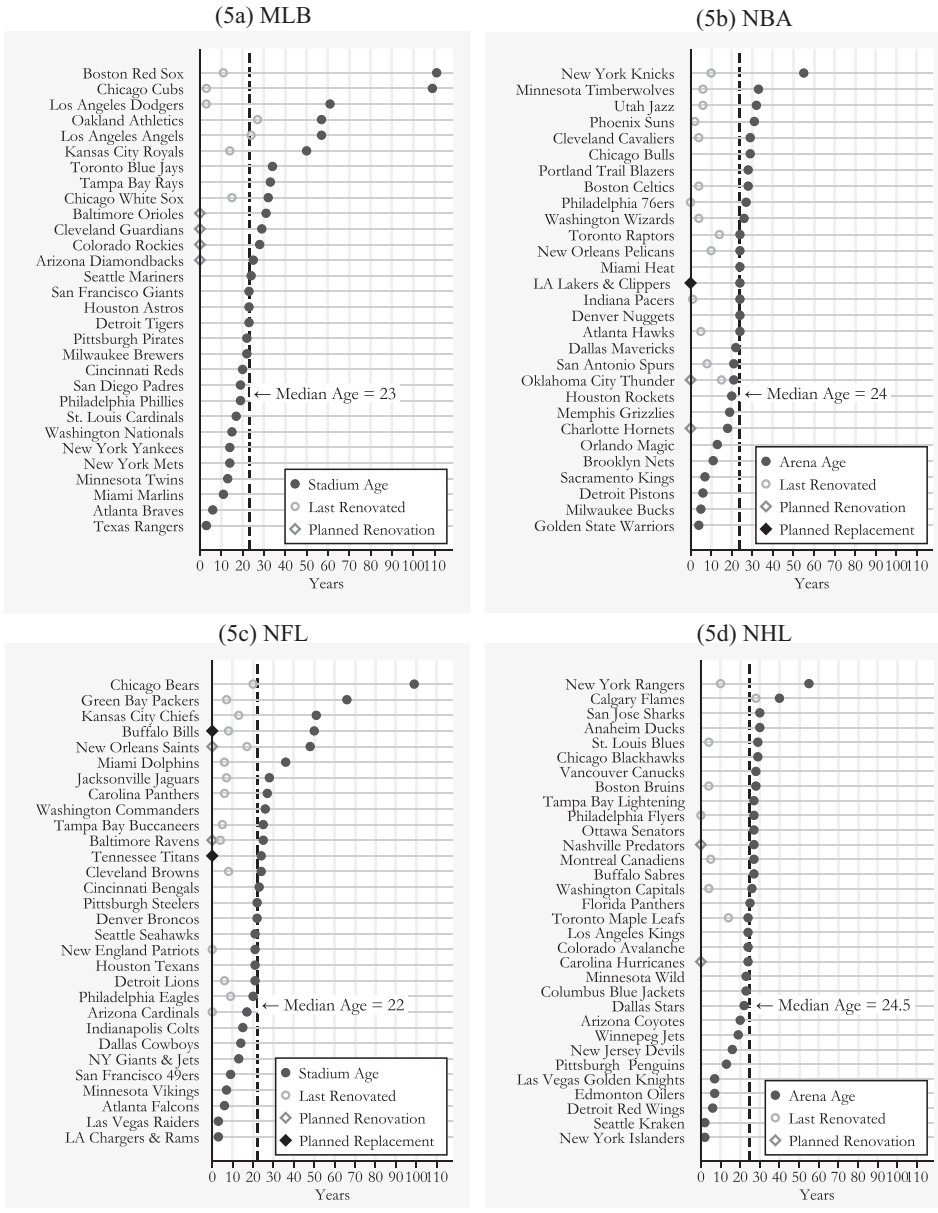

FIGURE 5 Ages of current major league venues in 2023.

based on existing trends of increasing construction costs and public contributions. For example, the Tennessee Titans are receiving the largest stadium subsidy to date of $1.26 billion to replace Nissan Stadium (built in 1999) with a new domed stadium (Stephenson, 2022). To put the public funding burden in a relatable context, the local government obligation of $760 million translates to approximately $2,600 per Metro Nashville household, and the $500 million state contribution represents an additional funding burden equivalent to $190 per Tennessee household. Annualizing the total public obligation to Nashville taxpayers over 30 years translates to $93 per household, which represents a non-trivial budget commitment.

Even when venues are not replaced, they often undergo costly renovations, which receive varying levels of public support that can rival public funding commitments for new venues. Thirty-seven current major league venues have experienced major renovations ranging from $51 million (Scotiabank Saddledome, in 1995) to $1.1 billion (Madison Square Gardens, in 2013), with the median being $151 million (in real 2020 dollars). Ten venues are currently undergoing or planning renovations ranging from $105 to $600 million. Recent examples of publicly funded renovations include $285 million going to renovate Cleveland's Progressive Field (opened in 1994 to host the Guardians) and $1.2 billion made available for upgrades to Baltimore's Camden Yards (opened in 1992 to host the Orioles) and M&T Bank Stadium (opened in 1998 to host the Ravens; Astolfi, 2021; Stole & Dance, 2022).

In summary, if governments continue to subsidize stadiums as they have, the public cost of anticipated replacements and renovations of these venues would be substantial.

Is there an economic case for stadium subsidies?

Like most private businesses, professional sports teams fund their operations from consumer sales, and the revenue generated by hosting sports games reflects the direct consumption benefits to area residents. In market economies, profitability determines firm survival and market efficiency; however, stadium proponents uniformly tout the generation of a wide array of additional economic and social benefits as justification for subsidies for new stadiums. Fans readily accept such claims at face value, and local media often amplify them. Making informed public policy decisions requires a comprehensive assessment of both claimed future benefits by subsidy proponents and research-based evidence established by retrospective data analysis. This section contrasts these two competing cases to provide context for future policy decisions in this area.

Economic benefits to metropolitan areas

The earliest publicly-funded sports venues represented public works projects funded entirely by governments for the good of the community. Public stadiums were built as multipurpose venues to host community events, which gradually came to be used by professional sports teams, such as the Los Angeles Memorial Coliseum in 1923 and Chicago's Soldier Field in 1924. Stadiums were justified as civic assets, like roads, parks, and other community amenities, not engines of economic development.

During the second construction wave, municipalities began to construct venues for the sole purpose of serving professional sports teams, with the hope of boosting a host city's image and economy. For example, Atlanta Mayor Ivan Allen, Jr. recruited MLB and NFL teams with the promise of building Atlanta-Fulton County Stadium in 1965. Allen claimed that the stadium brought the city $18 million in "new money" annually, but that: "the real value of it all was less tangible. All of the growth indexes in the world couldn't do what major-league sports did in awakening the people of Atlanta and the rest of America to the fact that we really were a major-league city now" (Allen & Hemphill, 1971, p. 153). However, like most publicly-financed venues, the stadium was not a profitable financial venture, generating insufficient revenue to cover fixed costs and operating expenses (Baim, 1994).

The economic development rationale for funding stadiums became more prominent in the 1980s as a potential solution to the "urban scissors crisis" of declining municipal budgets from reduced federal grants and falling tax collections (Baade & Dye, 1988). Government officials viewed stadiums as magnets that could attract new commercial activity into cities to replace lost tax revenue. In addition to promoting a city's "big-league" status, stadium-related spending was projected to ripple out to benefit the wider region through assumed multipliers—where each dollar spent generates more than one dollar of economic activity as it is recirculated within the community—thereby growing employment, income, property values, and tax revenues. Therefore, supporters often contend that stadiums

are worthwhile public investments because they generate positive development externalities that are not fully captured by franchise owners.

During this era, economists began to study the economic impact of stadiums. We briefly summarize the general research findings here, which are more thoroughly described in several literature surveys (Bradbury et al., 2023a; Coates, 2007; Coates & Humphreys, 2008; Humphreys, 2019). Economists focused their analyses on comparing historical outcomes from metropolitan areas with and without teams and venues to assess the impact of hosting professional sports on various measures of economic wellbeing, such as employment, income, and spending (Baade, 1996a; Coates & Humphreys, 1999; Hudson, 1999). This strategy permitted the identification of economic benefits from teams/stadiums that might derive directly from a fiscal stimulus and indirectly through the attraction of new businesses and residents from an enhanced reputation as a big-league city. These studies found little to no tangible economic benefits accrued to communities from hosting professional sports teams. By the beginning of the 21st century, economists were largely in agreement that stadiums were poor public investments (Noll & Zimbalist, 1997; Whaples, 2006), and more recent studies continue to confirm these findings.

The consistent empirical findings are not surprising, because the expectation that stadium-related spending should encourage new economic activity is not supported by economic theory. Most fan spending derives from existing area residents who reallocate their spending from other local leisure consumption options; therefore, spending at sports events largely crowds out other local spending and does not represent net new spending to the area. To view stadium-related spending as new spending commits the basic economic fallacy of "the seen and the unseen," confusing observed concentrated spending at sports events as new spending, without accounting for the opportunity cost of reduced spending flowing to other local merchants, which is difficult to observe because of the broad dispersion of lost revenue across many businesses (Bastiat, 1850/1995).

The econometric findings invalidated the prospective approach typically employed in commissioned economic impact studies, often presented to support proposed stadium projects, which rely upon input-output multipliers to forecast spending on future venue events that induces subsequent rounds of spending that ripples out to the wider economy. However, this approach fails to account for the counterfactual returns to alternate investments. An equivalent level of spending on other public projects (e.g., infrastructure, public safety, and education), or returned to local taxpayers for private use, should generate no less than equivalent economic activity, and there is no theoretical reason to expect larger multipliers from sports consumption.

Empirical estimates indicate that sports spending may have smaller multipliers than alternative consumption (Coates & Humphreys, 2003). This likely occurs because a significant portion of team revenue covers labor costs for players who often do not live in host communities; therefore, revenue that flows to players does not contribute the continued circulation of local spending like spending that supports workers in other occupations. Furthermore, sports spending does not constitute a significant portion of local economic activity. For example, even the $5.5 billion cost of the 2020 SoFi Stadium complex—the most expensive stadium project ever constructed—represents 0.49% of Los Angeles GDP, and the combined annual total revenue collected by the Rams and Chargers ($1.1 billion) represents 0.1% of GDP.[6] As Coates and Humphreys (2003) described, "The ripples of jobs and earnings creation from the sports environment are like those of a tiny pebble tossed into the ocean on the tides, inconsequential in any practical sense" (p. 191).

Even if there is no ex-ante expectation for tangible fiscal returns through catalyzed economic development, some level of public subsidies may still be justifiable. Matheson (2019) offered two reasons why public funding of sports venues may improve social welfare. First, a stadium may foster sub-local development in areas that communities wish to improve. Second, major league teams provide social benefits as public goods and through quality-of-life externalities, which exceed the explicit consumption value expressed through attending games, purchasing merchandise, or consuming local media broadcasts. If teams provide sufficiently large intangible spillovers, then corrective subsidies to

[6] MSA GDP from Bureau of Economic Analysis (2023). Team revenue estimates from Forbes (Ozanian & Titelbaum, 2022). Revenue estimates from all sources, not just stadium revenue.

avoid the undersupply of venues by private businesses may be justified. Extensive economic research explores both rationales.

Localized development

Even though stadiums may not benefit consumers and businesses in broad metropolitan areas, it may be possible to justify stadium subsidies on the grounds that they promote desirable localized development. By anchoring entertainment, business, or residential districts, sports venues may redevelop a blighted area or create a new local amenity that benefits the wider community.

Some researchers and urban planners remained skeptical of early studies that found limited economic benefits from stadiums, because the venues examined often existed in isolated and suburban settings that inhibited their development prospects. These skeptics argued that modern stadium designs that were properly integrated into urban environments could catalyze localized development and generate a positive return on public investments (Chema, 1996; Santo, 2005). For example, Nelson (2001) presented empirical estimates to support the hypothesis that stadiums generate positive effects on cities when they are located in urban areas and infers that stadiums promote healthy downtown development, which is an asset to the entire metropolitan area. Rosentraub (2014) similarly posited that stadiums can anchor urban development projects that strengthen a city's core with a cultural asset that attracts new residents, ultimately generating net positive fiscal returns.

Wassmer (2001) pointed to an error in Nelson's (2001) empirical approach that stadium supporters often make when attributing the growth of an area to a stadium development: stadiums tend to be placed in areas that are economically strong or primed for development. Subsequent studies using modern empirical techniques designed for eliciting causal inference do not find strong evidence of large development effects near venues. When observed, these effects are small and limited to sports-complementary businesses in the immediate vicinity of the facility (Harger et al., 2016; Stitzel & Rogers, 2019). Stadiums do not appear to improve the fortunes of business districts (Bradbury, 2022c; Propheter, 2020), and levels of attracted new spending have been insufficient to cover the costs of public investment (Bradbury, 2023b).

It is also naïve to assume that external development spillovers from stadiums are necessarily net-beneficial. Stadiums have both positive and negative effects on the localized agglomeration of commercial and residential activity, and the net effect depends on the characteristics of nearby service providing firms (Humphreys & Zhou, 2015b). Though complementary establishments like restaurants and bars may benefit from customers being attracted to the area by stadium events, corresponding congestion and related nuisances disrupt non-complementary businesses that are deterred from locating or remaining in the area. For example, it is difficult for grocery stores, retail outlets, and commercial offices to operate around game-day traffic; therefore, they are not likely to locate near a new stadium. These businesses are not merely displaced by complementary establishments, but the presence of a stadium may prevent commercial activities that residential and business communities need to thrive. The model developed in Humphreys and Zhou (2015b) also predicts that local prices increase after a new facility opens in an area with no existing service providing firms, which benefits firms but not local residents. The expected localized development effects of a stadium on the surrounding area are not unambiguously positive.

Intangible social benefits

Even if stadiums do not produce economic benefits, community members may value living in cities with professional sports franchises, which may justify using public funds to subsidize host stadiums as public goods. The intangible benefits that professional sports may confer on local residents are more difficult to identify than general measures of economic wellbeing, but economists have developed sev-

TABLE 2 CVM-estimated mean non-use benefits of hosting a major league team.

Location	League	Non-use value ($)	Construction costs ($)		Non-use value (%)		Study
			Total	Public	Total	Public	
Pittsburgh	NHL	$33	$254	$243	13%	14%	Johnson et al. (2001)
Jacksonville	NFL	$37	$171	$156	21%	23%	Johnson et al. (2007)
Jacksonville*	NBA	$23	$216[†]	$149[†]	11%	15%	Johnson et al. (2007)
Portland*	MLB	$74	$350[‡]	$235[‡]	21%	31%	Santo (2007)
Indiana	NFL	$75	$821	$707	9%	11%	Swindell et al. (2008)
Calgary[#]	NHL	$26	$194	$194	13%	13%	Johnson et al. (2012)
Edmonton	NHL	$26	$555	$403	5%	7%	Johnson et al. (2012)
Mean					*13%*	*16%*	

Notes: Construction costs of current/proposed venues reported in millions of real US dollars for year survey was administered.
*Proposed team/venue.
[†]Cost estimates derived from mean of NBA arenas opened in surrounding five years (Dallas, San Antonio, Oklahoma City, Houston, Memphis).
[‡]Projected cost of stadium reported in Santo (2007).
[#]Proposed venue that was not constructed, costs for existing arena.

eral empirical strategies to quantify the social benefits. We describe findings from studies employing three empirical approaches: survey-based estimates, amenity benefits capitalized into property value, and preferences revealed through voting.

Survey-based estimates

The Contingent Valuation Method (CVM) employs community surveys to ask area residents a series of objective questions about how much they would be willing to pay for the presence of sports teams/venues (Johnson & Whitehead, 2000). CVM is widely used by environmental economists for valuing environmental amenities, whose existence people may value but do not purchase through markets, which is similar to the intangible benefits from hosting professional sports teams. Though CVM is an imperfect method whose ability to elicit truthful and useful responses from survey participants has been questioned (Hausman, 2012), many researchers continue to defend CVM as an appropriate and useful tool for its difficult task, while acknowledging its limits (Walker & Mondello, 2007; Whitehead et al., 2016).

Table 2 presents CVM estimates of non-use benefits associated with hosting major league teams from several published studies. The estimates are consistent across venues, with non-use values of approximately 13% of total capital construction costs and 16% of public contributions. Thus, estimates from CVM studies suggest that intangible social benefits of hosting professional sports teams are well below levels needed to justify typical subsidies.

Property values

Another strategy for identifying social benefits from stadiums focuses on analyzing the relationship between hosting teams and local property values. Following Oates (1969)'s conjecture that the value

of public services should be capitalized in land prices (e.g., homes zoned for better public schools sell for higher prices than similar homes in less desirable school districts), if local residents value living in a community with local professional sports teams, then this preference ought to be reflected in local home prices. Several studies identify positive correlations between sports venues and residential property values (Carlino & Coulson, 2004, 2006; Feng & Humphreys, 2012, 2018; Keeler et al., 2021; Tu, 2005); however, even when associations are observed, the direction of causality remains unclear. Stadium sites are often located in low-income areas likely already primed for redevelopment even absent a new facility. Existing site characteristics appear to explain much of the observed improvement in property values near new venues (Huang & Humphreys, 2014).

Other studies find mixed (Dehring et al., 2007; Neto & Whetstone, 2022; Propheter, 2021), null (Bradbury, 2022a; Coates et al., 2006) and even negative (Humphreys & Nowak, 2017; Joshi et al., 2020) effects of sports venues on nearby property values. Stadiums also generate negative externalities from crime, traffic, and pollution, which impose significant costs on residential and commercial neighbors. Increased criminal activity associated with sporting events is especially well-documented (Block, 2021; Humphreys & Pyun, 2018; Kalist & Lee, 2016; Mares & Blackburn, 2019; Pyun, 2019). As we note in the section "Localized Development," event congestion also creates nuisances for businesses whose operations are not complementary to the commercial agglomerations that stadiums create, which may deter some firms from locating in the area due to business disruptions. Overall, findings from research on property values does not provide strong evidence that stadiums confer substantial intangible benefits that justify large public subsidies.

Voting

Public votes on stadium proposals offer another channel for uncovering the social value that residents place on hosting sports teams. If spillover benefits accrue mostly to nearby residents, then it is reasonable to expect voters who live closer to venues to be more supportive of subsidies. Instead, there is likely a NIMBY ("not in my back yard") effect in which residents prefer to live at an intermediate distance from stadiums, which permits an easy commute to stadium events but is far enough away to avoid the disruptions associated with events (Ahlfeldt & Maennig, 2012; Horn et al., 2015).

Evidence on the existence of social benefits as reflected in stadium subsidy votes is mixed, as past proposals have both passed and failed (Brown & Paul, 2002; Fort, 1997). Though the successful approval of stadium subsidies via direct democracy may reflect some public support for public funding, their discrete up-or-down outcomes limit their usefulness in estimating social value. In addition, public votes and polling regarding stadium subsidies indicate that voters do not strongly support using taxpayer dollars to build stadiums (further discussed in the section "Govern Stadium Policy through Direct Democracy"), which is consistent with social benefits being limited.

NEW DEVELOPMENT PROJECTS AND FUNDING STRATEGIES

Though research consistently finds that sports venues do not generate large economic benefits, stadium advocates routinely dismiss retrospective research findings as inapplicable to their specific proposed project, because it includes novel elements and unique site characteristics, which proponents assert will promote salutary outcomes. For example, Chema (1996) stated, "there is no merit in extrapolating from the flying saucers of Pittsburgh, Cincinnati, Philadelphia, etc., and drawing conclusions as to the public return from investment in today's Camden Yards and Jacobs Field" (p. 20). Stadium proposals increasingly employ dedicated tax instruments that subsidy proponents claim will keep stadium funding costs off general taxpayers. We evaluate several popular stadium development plans and funding mechanisms touted as strategies to overcome the general economic impotence of stadiums in affecting local economies.

Ancillary development

Urban redevelopment

Sports venues that opened in the middle of the 20th century were designed to support the country's growing automobile culture, resulting in stadiums that were isolated in moats of parking lots that may have hindered any development spillovers they might have produced. As a remedy, many third-wave stadiums were designed and promoted as novel projects integrated into the existing urban environment that would revitalize the surrounding area. Baltimore's Camden Yards (built in 1992), Cleveland's Gateway Sports and Entertainment Complex (built in 1994, includes Progressive/Jacobs Field and Rocket Mortgage FieldHouse), San Diego's Petco Park (built in 2004), and Denver's Coors Field (built in 1995) were all touted as examples of stadiums capable of catalyzing urban redevelopment. Little retrospective empirical evidence supports these claims.

Chapin (2004) concluded, "Camden Yards cannot be considered a successful urban redevelopment catalyst," because it "experienced only modest and very localized success" and "did not catalyze a dramatic transformation" of the area (p. 210). Chapin's review of the Cleveland project was similarly dour: "the Gateway district has thrived at the expense of other areas in downtown Cleveland," reflecting the reallocation of urban activity rather than spurring new development (p. 206). Erie et al. (2010) found San Diego's ballpark project was "a net drain" on taxpayers, who were "left to absorb the fiscal fallout" during the financial crisis that followed; furthermore, the gains mostly accrued to the baseball team owner, who benefited from subsidies and surrounding development rights (p. 670).

Denver's lower downtown (LoDo) resurgence is sometimes credited to the opening of Coors Field; however, LoDo redevelopment in 1988 pre-dates the opening of the ballpark by several years, and the stadium lies on the periphery of the district. Most of the restaurants in the area opened prior to the ballpark's arrival and much of the development of the area has occurred away from the ballpark rather than adjacent to it (Delaney & Eckstein, 2003b, pp. 114–118). The widespread belief that placing stadiums in urban environments can redevelop urban areas to promote new economic activity is mostly anecdotal and lacks strong empirical support.

Mixed-use real estate districts

Several recent and proposed stadium projects have included associated real estate developments designed to complement game-day operations as well as promote commercial activity on non-game days. In 2022, the Virginia legislature considered funding a billion-dollar stadium for the Washington Commanders that would include a mixed-use stadium district. The bill sponsor argued: "They're no longer building stadiums that are just surrounded by huge parking lots…There will be hotels, retail. It's almost a mini city" (Arzate, 2022). In Nashville, state and local governments pitched the construction of a new domed Tennessee Titans stadium as the centerpiece of a broad area redevelopment district, with the expectation that the new government-funded development would support the stadium (Mazza, 2022).

Truist Park, built in 2017, represents the most prominent recent example of an ancillary mixed-use real estate development strategy used to justify public subsidization of a new stadium. The Atlanta Braves stadium is a part of The Battery Atlanta, a mixed-use campus containing hospitality, retail, and residential space. Following the announcement of the project, the team executive who negotiated $300 million in public funding boasted that the novel integrated development project would differentiate it from past stadium boondoggles:

> the tired old story pontificated by certain professors is there's been some carnage in these deals. There's no doubt and no debate to that fact. [Truist] Park, as a standalone sports venue (without the mixed-use component), like every one of these, probably cannot pen-

> cil out financially…we're going to build a city and we're going to create tons of jobs, tons of density and year-round tax revenues. And that's what's going to make this whole formula set a new standard and result. (Murphy, 2019a)

This prediction did not prove accurate, as the stadium-led project has so far run an annual deficit of approximately $12 to $15 million for the funding County (Bradbury, 2022b, 2023b).

Similar mixed-use developments have been proposed for minor-league facilities, such as Polar Park in Worcester, Massachusetts, where a city-hired consultant endorsed the ballpark district project based on "the solid expectation that it won't cost the Worcester taxpayers one penny," asserting that it "promises to generate net funds to support additional city services in the areas of education, infrastructure and security" (Zimbalist, 2018). The anticipated development failed to appear as promised, and the project has yet to generate the revenues needed to service the debt issued to finance the project (Koczwara, 2022). Baumann and Bradbury (2023) provided an in-depth review of the commissioned pro forma model used to forecast the success of ancillary stadium developments, and concluded that the projected benefits derive primarily from unrealistically sanguine assumptions.

Though stadium development districts have been described as a novel approach to address the lack of tangible economic benefits, the concept is not new. The St. Louis Brown's first iteration of Sportsman's Park (built in 1890) was marketed as "the Coney Island of the West," with a honky-tonk, amusement park rides, a "wine room," a racetrack, and often combined games with other events (Benson, 1989, p. 347). Examples of subsequent stadiums that have incorporated external development projects include the Astrodome (which was part of the larger Astrodomain development that opened in 1965), Gila River Arena and State Farm Stadium anchored the Westgate Entertainment District (which opened in 2006), and Crypto.com Arena added the L.A. Live entertainment complex in 2007. Overall, the only evidence of positive economic performance of stadium-anchored external developments is purely anecdotal.

The observed failure of ancillary real estate developments to enhance the economic contributions of stadium projects is not surprising. A greater development footprint surrounding the stadium does not change the basic economics of stadium-related consumption: spending in and around stadiums largely displaces existing local commerce rather than creating new economic activity, just like other stadium spending. As Wassmer et al. (2016) explained:

> new real estate development adjoining a professional sports venue results from simply a move of economic activity away from other sites within the jurisdiction. Unless residents perceive this intrajurisdictional shift in economic activity as a social benefit, this is a zero-sum gain for the jurisdiction. (p. 258)

Negative externalities associated with stadium events may also deter certain types of business agglomeration, further contributing to poor economic outcomes experienced by ancillary stadium developments. The districts themselves may generate substantial additional costs for construction, operation, maintenance, and public services, which create an additional burden for taxpayers. The fiscal consequences of associated developments may be exacerbated by the common practice of diverting tax revenue from stadium districts to fund stadium construction and operations, as discussed in the section on "Special District Taxes." Sub-local development surrounding stadiums has been quite limited; therefore, there is little reason to expect stadium-anchored or community-integrated developments to improve the economic fortunes of stadiums.

Fiscal illusion and alternate funding mechanisms

Local governments typically fund public projects using general property and sales tax revenues, which has proved to be unpopular with voters when funding sports venues. In an attempt to allay public

concerns regarding the burdens that stadiums place on local taxpayers, elected officials often rely on alternate funding mechanisms that they claim do not impact local residents. For example, Nashville's mayor defended his Tennessee Titans stadium subsidy proposal by stating, with careful precision: "I will not sell public land, raise the sales tax, or spend your property tax dollars to fund the stadium. Tourists and spending around the stadium will pay for this project, not your family" (Cooper, 2022).

The notion that a municipality can collect hundreds of millions in new tax revenue at no cost to jurisdiction residents by exporting costs to visitors or creating new tax revenue streams represents a dubious claim. Every jurisdiction operates with a stock of wealth and flow of income from which taxes may be collected to fund public services. No matter what tax instruments a government employs to underwrite stadium expenses, the local nature of stadium commerce means that most of the revenue collected will come from local residents and businesses. The incidence of these alternate revenue sources may be difficult for the general public and policymakers to observe, which fosters the perception that the project does not impose a burden on taxpayers. Instead, the designated revenue streams serve to obscure the true burden to taxpayers by creating *fiscal illusion* (Buchanan, 1987).

We examine several types of taxes that have been used to fund new stadium projects. We focus on their desirability in terms of funding new stadium projects and describe the incidence of these taxes in the local economy and beyond.

Venue taxes

Taxes assessed on ticket sales and other in-stadium purchases represent use taxes.[7] Use taxes conform to the benefit principle of taxation, the idea that tax burdens should fall on beneficiaries of the public projects they support. However, this property alone does not make stadium funding through venue taxes desirable. Even though venue taxes are paid by stadium patrons, they represent an opportunity cost to local taxpayers: stadium spending diverts tax revenue that would have been collected through other local commerce to funding the stadium. This results in less available tax revenue for other government services funded by general property and sales taxes, which will necessitate compensating tax increases to recuperate lost tax revenue or reduced services.

In addition, publicly funding a new stadium with a use tax is inconsistent with the primary market-failure justification for subsidizing stadiums. If venue attendees can adequately fund the stadium directly through a use tax, then there is no need to collect taxes to subsidize it. Successfully funding a stadium through use taxes demonstrates that it is feasible for the team/tenant to self-fund construction and operations.

Another relevant issue is that the organizations (NFL, FIFA) that allocate mega-events (Super Bowls, World Cups) to cities, frequently touted by subsidy advocates as future drivers of tax revenue, often require that venue taxes be exempted for their events as a pre-condition for consideration as a host.

Special district taxes

Assessing special taxes within a geographic area surrounding a sports venue provides the appearance of a use tax. Advocates often describe tax revenue collected in special districts as being paid only by stadium patrons, which funds the upkeep of the stadium and surrounding area. A proposed new Washington Commanders stadium in Virginia was to be funded through sales tax revenue generated in a new commercial district surrounding the stadium. Its legislative sponsor claimed that, because the tax revenue would be collected from a new dedicated revenue stream, it "does not create a penny of debt backed by the Commonwealth" and would not cost the taxpayers "a nickel" (Arzate, 2022;

[7] Use taxes differ from venue-derived revenue and rental payments stipulated in leases, which represent private contributions to venue funding.

Fortier et al., 2022). However, this logic confuses special district tax collections with net new revenue to the community.

As explained in the section on "Mixed-Use Real Estate Districts," local residents make up the vast majority of surrounding developments' customers, which means that spending within the stadium district crowds out other existing local spending. Taxes on district spending generate government revenue from reallocated consumption, which reduces tax collections from sales that occurred previously at existing local businesses in the jurisdiction. For example, diners who patronize restaurants within the stadium district would otherwise have purchased meals in local restaurants located outside the district, which would have generated tax revenue to the general fund to support public services. The diversion means the municipality must fund existing public services through added taxes or reduced services.

Stadium district taxes should not be viewed as use taxes paid by stadium customers. The Atlanta Braves' Truist Park is partially funded through a new tax on firms within a pre-existing business district that covers approximately seven square miles around the stadium. However, surrounding business district property values did not increase following the announcement or opening of the new stadium, an outcome inconsistent with increased commercial prospects in the area (Bradbury, 2022c). While some entities that pay these taxes may experience increased revenue from patrons attending games—though studies discussed in the "Localized Development" section indicate limited spillovers—most businesses in the new tax district operated long before the stadium opened and continue to earn income from economic activity unconnected to the stadium development. These local firms also compete with new businesses operating within the team-owned development, which their taxes subsidize. In total, the collections fund nearly half the County's stadium contribution, and this revenue could have been used to fund other government priorities.

Visitor taxes

State and local governments often fund new stadiums using taxes assessed on hotel stays and car rentals. For example, Houston funds its major league sports venues through 2% hotel and 5% car rental taxes. Subsidy proponents frame visitor taxes as desirable quasi-use taxes because sports events do attract some tourists who stay in hotels and rent cars. These tax instruments are politically popular because they appear to export the tax burden onto non-residents. For example, following the approval of a hotel tax to fund a new Atlanta Falcons stadium, the city's mayor issued a press release stating revenue would come "almost exclusively…from visitors and tourists, not residents of the City of Atlanta" (Atlanta Mayor's Office of Communications, 2015).

The fact that statutory responsibility for paying a tax does not determine who bears the cost of the tax is a well-established result in economics. The tax burden, in terms of who is made worse off, derives from price elasticities of the taxed good or service. This lesson of tax incidence is so widely understood by economists that it is included as a key part of the introductory microeconomics course curriculum. Unfortunately, elected officials responsible for fiscal policy appear to be unaware of, or simply ignore, this important public finance concept.

In the case of hotels, taxing guests raises the effective price of room stays, which deters marginal guests from renting rooms. Hotel owners respond by lowering pre-tax prices to compensate for the tax, which reduces their revenue. The tax burden experienced by guests (through higher prices) and hotel owners (through lower revenue) depends on the relevant demand and supply elasticities, with the least price-sensitive party bearing the larger share of the tax. It is unlikely that hotel demand is perfectly inelastic, which is necessary for the full tax burden to be exported to visitors. Hotels have a fixed supply of rooms that generate revenue only when occupied; therefore, the supply of rooms is likely inelastic enough to incentivize hotel owners to lower pre-tax prices in an attempt to retain guests, which imposes significant burdens on local hotel operators. Relative demand and supply elasticities for hotel stays differ by location and have not been precisely estimated in the literature; however,

empirical evidence suggests that hotel tax burdens are not fully exported to consumers (Collins & Stephenson, 2018).

In addition, it is incorrect to view hotel and rental car taxes as being assessed on stadium patrons. Most stadium spectators are residents who do not stay in hotels, and most hotel and car rental customers do not attend stadium events. Local businesses often rent rooms and cars for out-of-town employees and clients who travel to the city to transact business, and low-income residents often live in extended stay hotels that are subject to hotel taxes. Many local businesses and residents rent cars for their own use, for personal trips, or when experiencing car trouble. A large number of local residents contribute to hotel and rental car taxes that fund stadiums as buyers and sellers; thus, the notion that hotel and car rental taxes export costs to non-residents is based on a faulty understanding of tax incidence.

A related argument for taxing visitors is that new venues are likely to be awarded the rights to host future mega-events such as the NFL Super Bowl or NCAA Final Four, which will contribute to tax funding for the new stadium. In addition to evidence from economic studies showing that mega-events do not yield substantial economic impacts (Baade & Matheson, 2016; Scandizzo & Pierleoni, 2018), large revenue gains from an influx of hotel guests attending mega-events would not generally be expected. Event visitors may fill some otherwise-vacant hotel rooms, but they also displace would-be guests who would have travelled to the city absent the mega-event, which results in the net gain in room rentals being considerably smaller than the total rooms rented during the event. Mega-events may produce limited temporary boosts in hotel tax collections, but the revenue gains are small in comparison to hundreds of millions of dollars provided in new venue subsidies.

Heller and Stephenson (2021) estimated that the 2017 Super Bowl in Houston increased local hotel revenue by $44 million above what it would have been absent the event. That means the 2% hotel occupancy tax assessed to fund Super Bowl host NRG Stadium translated to roughly $880,000 in additional tax revenues, which represents less than 0.3% of the $310 million in public funds used to construct the new venue in 2002.

Subsidy proponents often use tourism impacts to justify new stadium projects; however, economic research finds a weak relationship between venue-hosted events and hotel outcomes and generated tax revenue. Estimated occupancy effects of sports events have been modest, and incremental tax receipts are typically insufficient to cover construction costs of sports venues (Depken & Stephenson, 2018). Also, visitors are not distributed evenly across nearby hotels, even though hotel taxes are often assessed over a broad jurisdiction. While hotels near venues may experience a small influx of additional guests and increased revenue from hosted events, hotels further away may be harmed, which can result in a net negative overall effect in the jurisdiction (Chikish et al., 2019). Overall, no strong evidence exists to expect additional tourist-driven revenue to justify new stadium subsidies.

Sin taxes

Excise or "sin" taxes on items such as alcohol, tobacco, and gambling have been assessed to fund new stadiums in multiple jurisdictions. Sin taxes raise tax revenue efficiently from highly-price-inelastic goods while not being observable in property tax bills and purchases involving general sales taxes. Following the failure of a property tax referendum in Cleveland, stadium subsidy supporters proposed a tax on alcohol and cigarettes to fund new baseball and basketball venues after focus group research found voters were more amenable to sin taxes than general sales taxes (Delaney & Eckstein, 2003b, p. 70). The revised referendum passed with 52% of the vote (Fort, 1997, p. 172).

Excise taxes are primarily paid by local residents, and tobacco and gambling taxes are more heavily borne by low-income citizens. The connection of the taxed goods to sports consumption is tenuous, and using sin tax revenue to fund community health services would be more consistent with a public goal of promoting community wellbeing than subsidizing a new professional sports stadium. Sin tax revenue also has the opportunity cost of funding other publicly provided projects that are likely to offer higher returns on investment like health care and public safety.

Business taxes

Taxes on businesses represent another mechanism that has been used to fund new stadiums, primarily as a means to avoid collecting more general fund taxes. Washington, DC implemented a gross receipts tax on all business in the District that generated more than $5 million per year to fund the construction of Nationals Park. There is no economic justification for assessing this specific tax to fund a stadium, as nearly all the gross receipts tax revenue is unconnected to the new stadium these revenues fund. The tax serves to distort local business purchases, creating a burden shared by local merchants and customers who are largely resident taxpayers.

Reallocating existing revenue

Governments have also used existing surplus funds and revenue streams to finance stadiums, claiming that the venue was funded without tax increases. After allocating $565 million in casino revenues from the Seneca Nation of Indians to fund the new Buffalo Bills stadium, New York's governor stated that the allocation of the revenue meant "the direct hit to taxpayers is significantly less" (Zremski, 2022, para. 4). Though no new taxes were assessed to generate this revenue, the opportunity cost to taxpayers is the same, because the state could have reduced other assessments or funded other public projects with higher social returns than a new stadium. When government funds are used to fund public projects, it represents an opportunity cost to taxpayers and is not windfall revenue.

Summary of new development and funding strategies

Though many new stadium designs have been proposed and implemented to foster surrounding development, the economic fortunes of stadiums remain dismal: "Even as empirical methods improved, the findings remained largely consistent across this broad and vibrant literature" (Bradbury et al., 2023a, p. 1422). The persistent economic findings support the economists' theoretical assessment that most stadium spending is reallocated local spending, and thus the proposed new development strategies are not capable of stimulating substantial economic growth. It has been well established that stadiums are poor drivers of economic growth, and thus it is unlikely that design adjustments can overcome the underlying economic reality. Furthermore, economic studies show that most sports spending is reallocated local spending; thus, any tax revenue generated from stadium-related commerce or other new taxes comes from local residents and does not provide windfall revenue to fund stadium projects.

EXPLAINING THE DISCONNECT BETWEEN RESEARCH AND POLICY DECISIONS

That governments continue to subsidize stadiums contrary to the expert consensus that stadiums are poor public investments raises the question as to why policymakers continue to devote tax dollars to fund sports venues. Bradbury et al. (2023a) posited several explanations for this "public funding paradox," which we extend and examine more thoroughly below. In addition to the long-recognized economic and political advantages that teams have in bargaining for subsidies, recent analysis suggests that stadiums subsidies are fostered by local economic development policymaking environments of U.S. cities, which tend to be dominated by influential insiders who are predisposed to favor stadium projects.

Market power of monopoly sports leagues

Professional teams possess significant market power that derives from sports leagues operating as natural monopoly cartels, which have withstood antitrust challenges (Neale, 1964; Surdam, 2015). Strong consumer preferences for local franchises and the restriction of competitive alternatives provides owners the opportunity to pit host markets against each other to extract substantial subsidies from residents through relocation and relocation threats.

The strategy of relocating to markets that would subsidize team operations began with the Boston Braves, who were lured to Milwaukee in 1953 by the promise of a publicly provided stadium, and then relocated again in 1966 to Atlanta for the same reason. Once moves to cheaper public facilities became common, owners began to use relocation threats to extract taxpayer subsidies from host communities without having to move; for example, the Chicago White Sox received $157 million in public assistance to replace Comiskey Park after threatening to leave the city (Smith, 1986). The anticompetitive environment creates incentives for rent extraction, which are formalized by Humphreys and Zhou (2015a).

However, communities also provide significant public funding for new stadiums without relocation threats. Recent examples of teams that received stadium subsidies that were not seeking to move include Atlanta Falcons (2017, $700 million), Buffalo Bills (2026, $850 million) New York Mets (2009, $141 million), New York Yankees (2009, $293 million), Tennessee Titans (2027, $1.26 billion), and Texas Rangers (2020, $500 million). Though one may argue that the relocation option provides an implicit threat, teams do not openly shop relocating to new markets like they once did.

The recent paucity and ineffectiveness of relocation threats at extracting subsidies may be because leagues have expanded into most major markets where major-league teams wish to be located; therefore, relocation targets involve smaller markets and speculative proposals that are not perceived as credible. Relocation threats may be further undermined by the precedent of leagues expanding to replace teams that departed from demonstrated viable markets. For example, Cleveland (Browns), Houston (Texans), and Charlotte (Bobcats/Hornets) ultimately received replacement expansion franchises soon after losing their last teams, albeit with public funding.

The fact that public allocations continue to grow absent relocation threats indicates that market power is not a primary reason for the continued prevalence of subsidies. As we discuss in the "Local Growth Coalitions" section, community relationships play an important role in fostering public support for subsidies. In current local policymaking environments, relocation threats may damage social bonds with citizens who feel spurned by a local team they have long supported.[8]

Political bargaining asymmetries

Political bargaining asymmetry offers an intuitively appealing explanation for persistent stadium subsidies because it conforms to well-known political-economy models of concentrated benefits and dispersed costs (Becker, 1983; Olson, 1965; Peltzman, 1976). By their nature, stadiums have a concentrated interest group of supporters. Team owners, proprietors of complementary businesses (e.g., concessions and hospitality operators), and sports fans benefit from subsidies collected from a tax base dispersed widely across the polity. A team owner receiving several hundred million dollars in subsidies ought to be willing to expend considerably more resources to lobby local representatives and voters than individual taxpayers who bear a small share of the overall public cost; thus, subsidies may be a product of the inherent inequities in bargaining strengths of stadium subsidy beneficiaries and opponents.

[8] For example, a Philadelphia stadium booster stated that they avoided relocation threats because "the people of Philadelphia will say 'F— you, move the teams. Move.' Whether they mean it or not" (Delaney & Eckstein, 2003b, pp. 179–180).

Though bargaining asymmetry favors teams in a political lobbying game, and stadium boosters outspend opponents in stadium advocacy campaigns, subsidy determination tends not to be a lobbying contest between support and opposition interest groups in which team owners outspend a poorly organized opposition coalition. Even though team owners are the chief beneficiaries of stadium subsidies, they often play little role in advocating for public funding. Instead, subsidy advocacy is typically spearheaded by a "local growth coalition" of community insiders who have considerable influence over local economic development policy (Delaney & Eckstein, 2003b).

Local growth coalitions

Sociologists Kevin Delaney and Rick Eckstein (2003b) made a compelling case that local growth coalitions constitute the primary drivers of stadium subsidies. Their hypothesis rested on careful case studies of stadium subsidy campaigns in multiple U.S. cities based on extensive interviews with key decision-making participants in which they observed influential local elites shepherding subsidy proposals through the political process. Local growth coalition advocacy offers an attractive explanation for stadium subsidies because it accurately describes the process through which stadium policy gets determined in practice and offers a reason for their persistence, despite the widespread understanding that subsidies represent bad policy.

Delaney and Eckstein (2007) described local growth coalitions as "institutional and ideological alliances between and among headquartered local corporations, local government, and the local mainstream media" which "articulate and influence social policies intended to stimulate economic growth within certain prescribed parameters." These parameters "favor large, visible projects that will attract new corporations to the city, and real estate policies that increase exchange value" (pp. 334–335).

Local growth coalitions differ from traditional lobbying, where advocacy and opposition groups compete to influence policymakers, because the coalition exists as an informal community institution whose approval is prized by elected officials. While a local growth coalition may lobby on behalf of team owners, its influence differs from traditional lobbying in that the coalition represents a bellwether constituency that shapes the policymaking environment. Its membership is typically not partisan and claims to promote a neutral pro-community agenda. Coalitions may tout fiscally conservative principles, such as low taxes, but they may also advocate on behalf of special bond issues and tax increases that support schools and infrastructure projects. Rather than out-lobbying the opposition, a powerful local growth coalition suppresses opposition arguments through its pre-existing dominance of the local policymaking environment. Even a well-organized opposition group will have difficulty defeating proposals supported by the local growth coalition because politicians who oppose the coalition risk losing the backing of an important constituency in other matters.

Local business leaders typically make up local growth coalitions, but they often include other influential community members, such as politicians, community organizers, labor union officials, and media members. Business leaders may view sports as directly beneficial to their personal financial interests, because the presence of a pro team signals that the city is a desirable place to live and work to highly sought-after business professionals whom they want to recruit and retain. They view local sports franchises as assets that attract talented young professionals, who are likely consumers of sports events and stadium amenities (Delaney & Eckstein, 2007). Opulent modern venues that emerged in the 1990s also provide a comfortable environment for casual business networking (Baade, 1996b). Coalition members further benefit from unique perks that teams provide, such as special access to exclusive events, celebrity athletes and spectators, and high-end amenities. Thus, coalition members benefit directly through their sports consumption, which is subsidized by tax contributions from the general public.

The coalition adeptly exploits local support networks like chambers of commerce, executive groups, and community booster organizations to mobilize and promote favorable policies. Its success at garnering subsidies is facilitated by the community standing of its members, who appear independent

of the team owner. Delaney and Eckstein (2003b) observed "non-sports corporations can more easily obfuscate their vested interests in new stadiums and portray their advocacy as being in the best interest of the entire community" (p. 3).

The dominance of local growth coalitions in guiding economic development policy makes it difficult for policy debates over the desirability of public stadium investments to occur, because "municipalities are not neutral referees in these stadium initiatives but are clearly predisposed toward building publicly financed stadiums. … this has become the *default* policy" (Delaney & Eckstein, 2007, p. 334, emphasis original). Successful local growth coalitions put stadium subsidy critics—including economists who have studied the economic impacts of sports events and venues extensively—in a position where they must "un-convince" influential insiders with little interest in digesting evidence contrary to the proposal that a new subsidized stadium represents sound economic development policy. According to Delaney and Eckstein (2007), "From a growth coalition perspective, opponents of publicly financed stadiums must fight city hall, whereas proponents of publicly financed stadiums are already aligned with city hall" (p. 335–336). Perl et al. (2018) explained that common core beliefs, even mistaken beliefs, are the glue that bind local advocacy coalitions together, and maintain their durability.

The observed importance of local growth coalitions in stadium campaigns offers a compelling explanation as to why governments continue to subsidize stadiums contrary to the advice of economic experts. It also suggests that coalition members, not just elected representatives, need to be convinced that stadiums are not worthwhile public investments.

Economic development practitioners

Urban economic development practitioners (e.g., agency directors, local development authorities, and chambers of commerce) represent another important group of contributors to stadium subsidy deals. Economic development officials frequently work with team owners and local growth coalitions to promote stadium subsidies to elected leaders. Rubin (1988) found that these quasi-public bureaucrats tend to favor business interests when arranging public-private partnerships, because businesses provide clearly defined demands (e.g., public funding, tax exemptions, relaxing regulations) that are bureaucratically feasible and easily observable.

Rubin (1988) posited that the uncertainty inherent in private sector business activity and demand for government accountability creates a "subtle process of system bias" that supports projects favored by the business community, even though they are unlikely to generate substantial economic impacts. This results in a "shoot anything that flies; claim anything that falls" (Rubin, 1988) policymaking approach where economic development officials often end up working on behalf of private companies to reach agreements to support commercial projects.

The qualities that favor business interests in local economic development policy also create a favorable environment for stadium subsidy proposals, especially in the presence of a strong local growth coalition. Stadiums represent large capital projects that provide highly visible commercial activity and tangible evidence of success for economic development practitioners, even though economists consistently demonstrate that this commercial activity largely represents a reallocation of existing local spending. Furthermore, arranging large economic development deals brings prestige and perks that come with the deal-making process, such as attending exclusive events, personal interactions with prominent individuals, and flattering media coverage.

Commissioned economic impact reports

A commissioned economic impact report that forecasts the proposed stadium's strong financial prospects represents a key component in all stadium subsidy advocacy campaigns. Rather than providing an objective evaluation of an economic development project, like peer-reviewed studies published

in academic outlets, for-hire consultants produce these "studies" to justify using tax dollars to fund a new stadium as a good public investment. Professional consulting firms often produce these advocacy reports, but moonlighting academic researchers and university-affiliated centers are often contracted to lend credibility to the report's dubious conclusions. Stadium boosters likely commission private economic impact reports because voters view public funding of stadiums more favorably when they are framed as economic development catalysts (Connolly & Touchton, 2020). Commissioned impact studies are promoted to the community, local media, local growth coalition members, and elected representatives as proof of a stadium's favorable economic prospects.

Commissioned economic impact studies typically eschew established methods employed in academic studies, which estimate economic effects through retrospective analysis of observed outcomes. Consultant reports present speculative projections of future economic impacts, often employing commercial input-output computer models not used in academic research, and declaring the calculations to be validated by the proprietary software packages they employ. Rarely are the methods and assumptions explained sufficiently to defend the estimates as credible, nor do study authors explore why forecasts of positive benefits differ from consensus academic findings from objective research. Economists who have scrutinized commissioned reports consistently find them to be flawed, regularly committing basic errors such as incorrectly identifying costs as benefits, overestimating benefits and underestimating costs, confusing gross and net spending, using excessive multipliers that inflate growth expectations, and relying on unrealistic assumptions about future economic development (Baumann & Bradbury, 2023; Crompton, 1995; Hudson, 2001; Wassmer et al., 2016).

Even though the biases and flaws of commissioned studies are widely known, they appear to be effective at promoting a positive public perception of stadium proposals. Delaney and Eckstein (2003a) surmised that the esoteric nature of quantitative economic and financial analyses promotes their fallacious credibility: "The economic issues are complex enough so that it doesn't take much to obfuscate matters a little more and send relatively well-informed citizens running for cover" (p. 202). Studies may highlight unique attributes of the specific stadium project that permit its outcome to be different. Policymakers, local growth coalition, and community members who are predisposed to view stadium proposals positively are thus able to dismiss the wealth of evidence regarding the dismal economic performance of past stadiums.

Advocacy reports are also produced for a lay audience as public relations documents, with executive summaries that highlight favorable forecasts of economic benefits and press releases using graphics and quotable passages for media coverage. Commissioned studies may highlight unique attributes of a proposed project that except it from consensus research findings, which are asserted to be inapplicable. Commissioned studies also benefit from short decision-making time frames from arbitrary deadlines and vague team relocation speculation, which allow policymakers to accept a commissioned report's favorable findings as expedient confirmation of their pro-stadium policy preference.

Media coverage

Delaney and Eckstein (2008) observed that local media play an influential role in shaping public perception of stadium proposals; therefore, the above-mentioned factors that favor the adoption of stadium subsidies may be muted or intensified by press coverage. Critical reporting can impede a stadium project when the local growth coalition is weak, but uncritical media often becomes "the primary institutional booster" (p. 72). Recent research identifies an important role for misinformation and "fake news" in affecting policy. Nyhan (2020) reported that public misperceptions often derive from prominent politicians, pundits, interest groups, and media outlets, and notes that elites often play a key role in popularizing fallacious information.

The willful ignorance embraced by local growth coalition members undermines the assumed rationality of objective policy evaluation to promote actions based on misleading evidence subject to manipulation (Perl et al., 2018). Deliberately and unintentionally, media coverage may exacerbate

public and policymaker misunderstandings of the actual returns to public stadium investments, which promotes bad policy. We discuss three types of biased media coverage of stadium projects that may contribute to the perception that subsidizing stadiums is a reasonable or desirable policy.

Uncritical reporting: Just the facts

The most basic form of uncritical media coverage is limiting reporting to basic facts regarding a proposed stadium deal without including context regarding potential policy implications. Reporting may include relevant financial figures, logistics regarding political hurdles for approval, and schedules for stadium construction with little policy commentary. In some cases, economic impact estimates from advocacy reports may be repeated without external validation of credibility, and press release statements from stadium boosters are quoted in stories without critical assessment.

For example, coverage of a proposed Tennessee Titans stadium in Nashville's flagship newspaper, *The Tennessean*, described the proposed new stadium as "a centerpiece for Nashville's imagined future" in its headline, and provided only positive commentary from the team's president and Nashville's mayor, who brokered the deal (Mazza, 2022). The article describes the $760 million in municipal government funding covering the cost of the new domed stadium as "a fraction of the cost [of the $2.1 billion total]…using revenue bonds to be repaid with future tax proceeds from the project" (para. 10) and repeats a booster talking point that the proposal represents a "financing strategy that doesn't require any taxpayer investment" (para. 5).

While the statements about tax revenue collection mechanisms are technically true, the notion that public funding does not require any taxpayer investment is not. The revenue bond funds would come mostly from existing local commerce reallocated to a new dedicated tax district (see the section "Special District Taxes"). In this case, the reporter passes along intentionally misleading statements without checking the dubious assertions made by biased sources, which may influence readers who assume that these claims were evaluated for credibility.

Uncritical reporting of claims by stadium subsidy advocates may be inadvertent and derive from the intermittent nature of new stadium construction projects. New stadium proposals occur infrequently so local media outlets do not employ reporters dedicated to covering these proposals. Instead, local news reporting comes from journalists who cover a range of subjects like local government, business, and sports, which results in reporting by individuals who likely lack familiarity and interest in the economics of stadiums. Uninformed media members may be more apt to accept non-credible estimates from commissioned reports, press releases, and booster talking points intended for quotation in news stories. In addition, reporters may seek help in understanding the financial complexities of the deal from local growth coalition members who previously served as reputable sources on other local development matters.

Reporters may defend their reporting as objective because they merely act as a conduit for information relayed from other sources without judgement. However, the end result is that favorable future outcomes become a public focal point in the debate. The claim that a new stadium *could* generate a $100 million impact in the local economy because a commissioned report declared it to be a possibility may be interpreted as a reasonably likely outcome by readers, when the most credible benchmark expectation based on actual research is much lower.

False balance or "bothsidesism"

Another bias in media coverage of stadium proposals stems from media portrayal of pro- and anti-subsidy arguments as equally reasonable points of view, providing "balanced" coverage as part of a neutral presentation, without conveying that the overwhelming expert consensus rejects arguments made by stadium subsidy proponents. Media outlets typically report newsworthy but dubious claims

from non-experts with caution. For example, most credible media outlets do not report contrarian claims regarding global warming, vaccination risks, and election fraud without explicit caveats that such claims are unsupported by evidence and contrary to the opinions held by most subject experts. In our experience, skeptical questioning and fact-checking of non-credible claims made by stadium subsidy proponents occurs infrequently.

False balance is particularly harmful in spreading misinformation regarding the economic impacts of stadiums due to the prevalence of advocacy reports. Pitting privately-commissioned studies against academic research creates the illusion of equal credibility, and sometimes stories are framed to present the economic consensus as merely one skeptical voice. For example, local coverage of a commissioned economic impact study paid for by team owners explained the conflict between the study and academic research findings with the headline: "What are the Buffalo Bills and a new stadium worth? Why the economics are hard to calculate" (O'Shei, 2021), even though economists have had no difficulty in calculating the actual impacts to be small or non-existent. This frames the disparity in assessments as a simple disagreement among equally-informed points of view to uninformed readers. This language suggests that a reasonable person could expect a positive economic impact from a new stadium when consensus economic evidence reaches the decidedly opposite conclusion.

Editorial sycophants

Local growth coalitions often include media members who actively use their position to influence the community's perception of a proposed stadium project. Media members may personally benefit from anticipated networking opportunities and see sports as a product that attracts readers and viewers, supporting their advertising business. This relationship results in what Delaney and Eckstein (2007) described as "ideological convergence" with the local growth coalition about the "proper" vision of stadium-driven economic development, which editors and reporters seem predisposed to believe. This results in biased news coverage that portrays stadium proposals favorably through "uncritically reproducing press releases from stadium advocates and covering the "dog and pony" shows, such as ground-breaking ceremonies," which disseminates the pro-stadium vision throughout the community (p. 341).

In their case studies, Delaney and Eckstein documented that media outlets often went beyond omitting critical coverage and presenting criticism as false balance; instead, local media became "editorial sycophants for proponents of new publicly subsidized stadiums and ridiculed opponents as short-sighted and selfish" (Delaney & Eckstein, 2003b, p. 18). For example, the publisher of *The Buffalo News* participated in a group of local executives working with the Buffalo Bills's owner to advocate for a new subsidized stadium (Miner, 2022). The newspaper published several pro-stadium editorials, ultimately describing the subsidies as "a good deal" and "fair to all" (Editorial Board, 2022). This stands in stark contrast to the opinion issued by a prominent stadium economics expert, who declared the Bills stadium deal to be "one of the worst deals for taxpayers I've ever seen" in a widely circulated essay (Matheson, 2022). The publisher's conflict of interest as an active participant in the stadium advocacy group was not revealed in news stories. Favorable support from editorial boards is common and perhaps influential in the process. In every city they studied, Delaney and Eckstein (2003b) found that "the main local newspaper editorially favored using public dollars for private stadiums" (p. 193).

IMPROVING STADIUM POLICY

Ideally, state and local governments should not subsidize professional sports venues, because they generate limited economic benefits and largely transfer taxpayer dollars to wealthy owners of private businesses. In light of the fact that past research findings have not been successful at affecting policy, we offer the following recommendations to moderate and stem the undesirable proliferation of stadium subsidies.

Identify key players in the subsidy determination process

Understanding the persistence of stadium subsidies requires recognizing the people and institutions that shape these policies. The market power of sports leagues and political bargaining advantages provide leverage for teams to extract public funding from communities, but they do not appear to be the main drivers of stadium subsidies. Local growth coalitions of insiders play a central role in promoting stadium subsidies, often with strong support from local economic development bureaucrats. As Long (2013) observed:

> Special authorities and districts—variously labeled sports, tourism, recreation, exhibition, etc.—are generally associated with the highest levels of public subsidy and the worst deal outcomes, because the very formation and presence of these agencies tends to cement notions of major league sports facilities as civic infrastructure. (p. 188)

Long (2013) also found that subsidy levels in public-private stadium partnerships increase when higher levels of government become involved. This creates political advantage by dispersing the public funding burden over a larger tax base, because state and county jurisdictions also have greater fiscal capacities to absorb large subsidies, which many cities may be unable to cover. State governments committed significant funding to recent stadium deals in Buffalo and Nashville, and discussions regarding proposed new stadiums in Nevada (relocation of Oakland Athletics) and for the Washington Commanders (Maryland and Virginia) have occurred primarily at the state level. The highly-localized effects of stadiums appear at odds with state level involvement: no strong welfare justification exists for citizens of Memphis or New York City to fund replacement of NFL stadiums in Nashville or Buffalo. This suggests that factors other than social welfare concerns drive these policy decisions.

Providing better information to influential insiders may promote better policy; however, the observed strong predisposition of local growth coalition members to favor subsidies likely limits the effectiveness of this channel. Policymakers and media should be aware that seemingly disinterested community leaders and economic development practitioners tend to favor stadium projects. Longer decision-making time frames and more open policy discussions that involve the wider community may curtail the outsized influence that local insiders have on elected representatives.

Learn from good and bad stadium projects

Baim (1994) estimated the fiscal impacts of 15 stadium projects that opened from the 1950s through the early 1980s, finding all but one venue generated net fiscal losses. The exception is Dodger Stadium (1962), which is a private facility that received limited public support from donated land.[9] Overall, Baim found that private stadiums tended to be constructed at a lower cost than public facilities, which is consistent with the experience among more recent stadiums for which construction costs are positively correlated with subsidy levels (Propheter, 2017).

Baim (1994) reported that Denver's Mile High Stadium (1968), Baltimore's Memorial Stadium (1953), and the Minneapolis Metrodome (1982) approached break-even returns. Their simple low cost construction, favorable lease terms, and ability to host multiple events helped push these venues toward profitability, which may have produced net positive returns had they continued to operate. However, the spartan multipurpose designs that made them more prudent public investments led to their replacement by amenity-laden single-sport venues. At the other end of the spectrum, the Oakland-Alameda County Coliseum (1966), Caesers (Louisiana) Superdome (1976), Atlanta-Fulton County

[9] The provided Chavez Ravine site included the significant social cost of displacing several long-standing Mexican-American communities that resisted their removal (Nusbaum, 2020).

Stadium (1965), and Buffalo's Highmark (Rich) Stadium (1974) "were so ill advised that they not only fail to cover their fixed costs, but are running operating losses as well" (Baim, 1994, p. 166).

Baim (1994) noted that the financial returns of these facilities were heavily determined by the lease terms. For example, the fortunes of the Atlanta and Oakland stadiums were worsened by lease renegotiations that diverted greater revenue from their municipal owner to the teams. Long (2013) observed that, despite the high public share of the Metrodome's construction costs (90%), the lease terms granted its public landlord such a large share of team revenue that it made it one of the relatively better stadium deals at the time.

Lease duration also impacts the public burden by granting teams leverage to bargain for further concessions. Stadiums are expensive capital investments with limited use beyond hosting the team(s) for which they were constructed. A stadium lease term shorter than the debt repayment schedule places the public owner at a disadvantage. Losing the major tenant(s) before the facility is paid off leaves the funding jurisdiction responsible for debt and maintenance obligations that can amount to several hundreds of millions of dollars without benefitting from financial and social contributions the team(s) may provide. For example, the Atlanta Braves signed a lease with the City of Atlanta to play in Turner Field for 20 years, with an option to extend the lease for another 20 years. As expiry neared, the team demanded $150 million in renovations as a condition for renewal. When the city balked, the team moved to a newer subsidized stadium in a suburban jurisdiction, leaving the city with a tenantless 20-year-old MLB stadium (Leslie, 2013).

Stadium leases often include "first class" clauses that require the funding jurisdiction to subsidize refurbishments to maintain facility quality equivalent to the top stadiums in the league. These clauses obligate governments to commit to additional funding that may not have been considered when the stadium funding deal was approved. The requirements are often not well understood by approving representatives or widely reported in the media, and the obligations only become apparent when the team informs its government landlord of its responsibility many years later.

Elected representatives are generally as amenable to approving subsidies for venue renovations as they are for construction funding. For example, the Charlotte City Council approved $215 million for renovations to the Spectrum Center (opened in 2005) in 2022. This subsidy exceeded the amount the Charlotte Hornets's consultants determined to be contractually obligated by $42 million (Bruno, 2022). In some cases, franchise-requested renovations generate leverage for teams to obtain funding to build a new facility. This occurred in Nashville where the NFL team requested a large subsidy to renovate Nissan Stadium (opened in 1999) only to parlay the request into an even bigger subsidy to build a new replacement stadium (Stephenson, 2022).

Improve transparency

The true public cost of stadium subsidies is often obscured by fiscal illusion. Allocating subsidies from a myriad of sources makes quantifying public subsidy burdens difficult, especially when indirect contributions (e.g., donation of land, infrastructure improvements, and tax exemptions) are often not included in publicly-reported accounting (Long, 2013). Local governments may raise revenue through tax instruments that provide the appearance of being paid by non-residents (e.g., hotel and car rental taxes) when incidence burdens are not fully exported, or revenues from stadium districts and excise taxes may be treated as windfall revenue without opportunity costs.

Subsidies are also often administered through complex funding agreements and quasi-public entities like stadium authorities, where public costs are not obvious. We present two illustrative examples. The Atlanta Falcons received $200 million in bonds to help fund Mercedes-Benz Stadium (2017); however, the team retains perpetual access to the dedicated funding from hotel tax revenue after the bonds are paid off, which has a net present value of $700 million to the team owner (Tucker, 2016). The widely reported $114 million public funds devoted to Levi's Stadium (2014) does not include the $213 million in additional tax exemption benefits that shell ownership by the Santa Clara Stadium Authority provides the San Francisco 49ers (Baumann et al., 2020). In both cases, the complex finan-

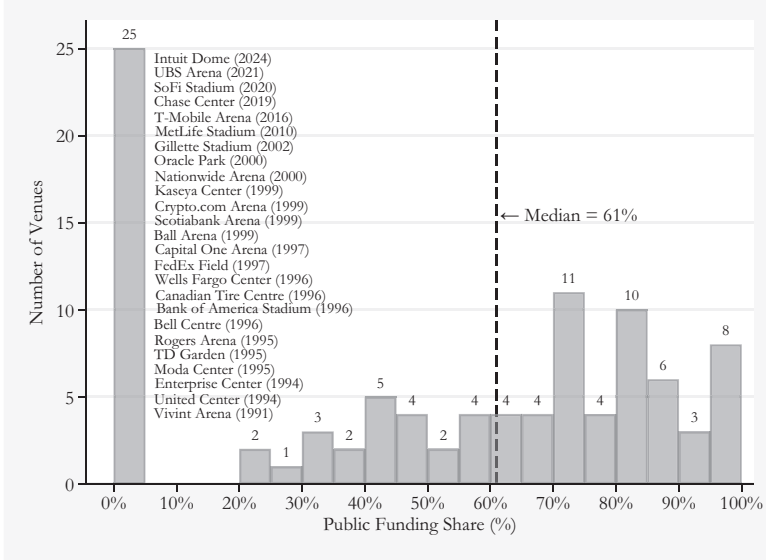

FIGURE 6 Public funding share of current/future venues opened since 1990.

Notes: Listed venues received 5% or less public funding. Table A1 in the Appendix provides funding details for all venues.

cial arrangements have resulted in the lower dollar amounts often being interpreted as the public cost of the subsidies, which understate the total financial burdens to the funding jurisdictions.

Funding stadiums through complex financial arrangements serves to distort the cost burden to taxpayers. When subsidies are provided, explicit dollar amounts should be allocated through transparent mechanisms in order to avoid creating the fiscal illusion that the taxpayer burden is lower than it is. Because most venue-related economic activity derives from local residents, the costs of associated taxes are borne mostly by locals.

When evaluating the public costs of funding stadiums, it is important to remember the economists' adage: there is no such thing as a free lunch. Devoting hundreds of millions of dollars to construct a new stadium necessarily requires raising the required funding from taxpayers or forgoing an equal amount of other government or private activity. Using non-traditional tax instruments for raising revenue may affect the intrajurisdictional distribution of costs, but it does not lessen the public burden.

Benchmark subsidies to social benefit estimates

No economic justification exists for subsidizing professional sports venues at observed levels. However, economists have identified positive social benefits from new stadiums that may justify low levels of public funding, with an estimated average non-consumption value amounting to less than 15% of total construction costs (Table 2). This suggests that public contributions to professional sports venues should be limited to tens of millions rather than the hundreds of millions of dollars typically provided.

Despite pervasive subsidization, some stadiums get built using low levels of public subsidies, consistent with the estimated value of social benefits that local professional sports teams generate. Figure 6 reports the distribution of public funding shares for reported construction costs for current and future professional sports venues opened since 1990. The median public share of funding is 61% but there is also a large concentration of venues—25 of 98, and listed by name in the figure—built with reported

public funding accounting for 5% or less of total construction costs. Teams can, and do, pay for their own facilities.[10]

This suggests that limited complementary public contributions to stadium projects—such as the donation of low-value public land, facilitating infrastructure, planning resources, fee waivers, etc.—are more appropriate than substantial financial subsidies. That franchise owners have been willing to construct stadiums and arenas with limited public assistance to serve franchises in all sports leagues and different-sized markets demonstrates that professional sports teams are capable of funding their venues with public contribution levels that are consistent with the value of intangible social benefits they confer on host communities. However, this does not mean that public subsidies should necessarily be provided for social welfare reasons. Even if limited spillover benefits exist, subsidies are no more warranted for sports venues than they are for other private businesses that confer inframarginal external benefits on the surrounding community that typically operate without public assistance (e.g., fine restaurants, amusement parks, and shopping malls).

Improve media coverage by clearly and actively disseminating evidence

Researchers should play a larger role in disseminating their findings beyond publishing academic papers and expecting media outlets to report only credible peer-reviewed results. Knowledgeable experts have a responsibility to respond to faulty reporting and refute misinformation with evidence. We concur with Williamson (2016): "the scientific process doesn't stop when results are published in a peer-reviewed journal. Wider communication is also involved, and that includes ensuring not only that information (including uncertainties) is understood, but also that misinformation and errors are corrected where necessary" (para. 8). Perl et al. (2018) argued that even though misinformation may be entrenched by core advocacy coalition beliefs, researchers have an important role to play in combatting it: "Policy scientists and scholars have a responsibility to explain and help society and policymakers understand policymaking in an era of truthiness and how they can deal with the growth, especially, of willful ignorance and obliviousness" (p. 596).

While economists understand the relevance of opportunity costs and displacement effects, non-economists are less familiar with these concepts. The general public may struggle to understand the true costs of public subsidies, which are often funded through opaque fiscal mechanisms and involve difficult to observe financial returns. Researchers need to be patient and clear in explaining economic concepts in ways that the general public and policymakers can comprehend. It would be helpful for researchers to clearly explain why large economic benefits from new stadiums are not expected rather than focus only on existing empirical evidence, which can be dismissed as arcane ivory tower contrarianism. Pointing out that stadium-related spending largely represents a redirection of existing local spending in and around the stadium on game days conveys more information than focusing on the role played by unobservable forgone consumer spending at other local merchants.

We think it is important to encourage better media reporting on stadium deals, especially when bias in coverage may be inadvertent due to the infrequency of new stadium deals in any city. Reporters should acknowledge the strong consensus in economic research that stadiums are poor public investments and treat this consensus the same way they treat expert conclusions on other subjects rife with misinformation, such as climate change, vaccine efficacy, and voter fraud. They also have a responsibility to inform the public that decades of evidence does not support the claim that stadiums promote economic development when covering stadium proposals.

[10] Reported costs used in this analysis for historical comparison purposes often underestimate total actual public commitments. Using Long (2013)'s more comprehensive estimates of the public share that include in-kind and associated public contributions, the public share for the facilities included in Long's review ranges from 0% to 28%, with a median of 15%. Only five venues among this group were purely privately financed: Nationwide Arena, Scotiabank Arena, Canadian Tire Centre, Bell Centre, and Rogers Arena. The venues all host NHL teams, and the latter four arenas serve Canadian cities.

TABLE 3 Evaluative questions for commissioned economic impact studies.

1. Does the study adjust for the inappropriateness of counting nonlocal casuals, nonlocal time switchers, and local residents who would have spent regardless?	11. Does the study use an income multiplier and report its value (of any type)?
2. Does the study adjust for the possibility of redistributed labor?	12. Is the logic of the chosen multiplier clearly stated and reasonably defended?
3. Does the study adjust for the possibility of import substitution?	13. Does the study incorporate future economic development into its impact estimates?
4. Does the study adjust for the possibility of crowding out?	14. Are assumptions about the probability of development and magnitude of investment explicit?
5. Does the study adjust expenditure and employment estimates for novelty effects?	15. Does the study discuss shifting economic activity within a jurisdiction as a benefit?
6. Does the study discuss specific types and sources of intangible social benefits?	16. Does the study discuss project benefits in the context of public costs?
7. Does the study use a survey of residents to determine the importance of intangible social benefits?	17. Does the study discuss capital and ongoing costs such as facility construction, future renovations, land acquisition, infrastructure improvements, municipal services, and transaction costs?
8. Does the study use a survey of residents to gauge the importance of a team or an event to the community?	18. Does the study calculate expenditure estimates based on different assumptions about the percentage of attendees that are nonlocal casuals, nonlocal time switchers, and local residents?
9. Does the study use a survey of residents to gauge the importance of a team or an event relative to other community goals?	19. Does the study calculate expenditure and employment effects with different multipliers?
10. Does the study estimate a specific impact for only the jurisdiction(s) subsidizing the venue/event?	20. Does the study calculate real estate development impacts based on different probabilities of development actually occurring and based on different investment levels?

Notes: Questions from Wassmer et al. (2016).

Journalists should provide critical coverage of commissioned economic impact studies including outside evaluations from objective academic economics experts with no conflict of interest regarding the project. Reporting projected positive impacts qualified with modifiers like "could" or "may," or attributing estimates of future benefits to other sources (e.g., "according to a report from the local convention and visitors bureau") does not absolve reporters from their responsibility to scrutinize the claims made by subsidy proponents. Reporters should point out when economic impact estimates are forecasts, recognizing that the projections are speculative and often turn out to be incorrect. A norm of not reporting estimates from commissioned economic impact studies that appear to be non-credible should exist.

Wassmer et al. (2016) provided a set of questions (Table 3) for quickly evaluating the credibility of economic impact studies, which media members and policymakers can use to evaluate the credibility of commissioned reports. This evaluation rubric may help non-economists identify common flaws in commissioned studies, and thus lessen their influence and better inform the public.

Govern stadium policy through direct democracy

Election results and polling surveys of the general public do not support the common belief that elected representatives favor stadium projects to pander to voters. A 2017 survey of U.S. adults conducted by researchers at Seton Hall found that 75% of respondents opposed publicly funding stadiums to attract professional sports teams (Ricciardelli, 2017). A poll conducted by Global Sport Institute (2022) at

Arizona State University found that even though a plurality of respondents believed teams provide economic and cultural benefits to communities, 56% opposed raising taxes to subsidize professional sports facilities.

Substantial subsidies to construct new stadiums for the Buffalo Bills and Tennessee Titans were both approved by state and local representative bodies; however, polls showed overwhelming public opposition to both deals. For the Bills stadium, which received a majority of its funding from the state, 63% of New York voters opposed public funding, and 68% from upstate New York were more strongly opposed (Glynn, 2022). Sixty-two percent of Tennessee voters opposed the state-level subsidy going to the Titans stadium, and 52% of Metro Nashville voters opposed the local contribution (Friedman, 2022; Mealins, 2023). In 2023, Tempe City Council put a referendum before voters to fund an NHL arena project for the Arizona Coyotes. Despite the unanimous support of local elected leaders and the pro-stadium campaign out-spending the opposition 20:1, the referendum was defeated in a landslide—less than 45% of voters supported the proposal (Kmack, 2023).

Politicians who support stadium deals have also been punished by voters for going against their wishes. In 2016, the Cobb County Commission Chairman who negotiated the Truist Park deal with the Atlanta Braves was ousted from office by a grassroots candidate running on an anti-stadium platform (Gargis, 2016). Wisconsin State Senator Georgia Petak was recalled by voters after reneging on a promise to vote against Milwaukee Brewers stadium funding (Walters, 1996). Some communities may support stadium proposals, but public sentiment appears to be not generally favorable of devoting tax dollars to funding professional sports venues.

Direct democracy offers a means for voters to express their preferences about stadium funding proposals. During the 1980s and 1990s it was common for stadium deals to be decided through initiatives and referendums. Sixty percent of the 40 public votes on stadium proposals held between 1984 and 2000 passed, with the opposition being outspent 72:1, on average (Brown & Paul, 2002). However, the use and success of ballot measures to approve stadium proposals has become less common: from 2005 to 2017, only 6 of 36 new stadium or stadium renovation proposals were decided via direct democracy (Kellison & Mondello, 2014).

The shift from direct to representative democracy approval likely reflects the diminished prospects of having voters directly approve subsidy proposals. As one stadium team executive explained, "we're not doing a referendum because that's code for kill in our business. We cannot get past the negative narrative noise … when it's being churned by the media" (Murphy, 2019b, para. 9). Of the 125 stadium subsidy proposals considered between 1982 to 2013, 58% of the 57 ballot measures passed, with an average approval of 51%, while all but three of the 68 proposals evaluated only by elected bodies were approved (96%), with 80% support (Propheter & Hatch, 2015). Even when voters reject stadium proposals, representative bodies often find a way to fund stadium projects through other means. For example, when voters rejected subsidies for new facilities in Charlotte (2001), Milwaukee (1995), Phoenix (1989), Pittsburgh (1997), and Seattle (1995), government officials used alternate means to subsidize the projects anyway (Brown & Paul, 2002).

The willingness of elected officials to thwart the explicit preferences of voters further highlights the preferences of politicians to support stadium subsidy projects, which explains why stadium boosters prefer to seek approval from friendly representative bodies rather than attempt to persuade voters, who view stadium subsidies as corporate welfare. This raises the question as to why elected representatives seem to view stadium subsidies more favorably than the average voter. Matsusaka (2020) found that elected representatives generally support median voter preferences, but frequently vote against constituent wishes, consistent with a "trustee" view of representative democracy, in which legislators vote according to their personal preferences rather than follow their constituents' desires.

Politicians tend to be wealthy, educated, and male—a demographic that likes sports—therefore, it is not surprising that most elected representatives are amenable to sports subsidy proposals (Gewiese & Rau, 2023; Motel, 2014). Professional sports teams can offer perks to small groups of local council members and state legislators through events and experiences (e.g., luxury boxes, meeting celebrity athletes, access to exclusive events) to curry favor when representatives evaluate their subsidy requests.

Teams cannot make similar offers to a majority of the electorate. Furthermore, sporting events offer a focal point for local growth coalition members that fosters mutual support to shape local policy.

Direct democracy mechanisms tend to have a moderating effect on all public spending and promote policy that is more likely to be congruent with majority preferences (Matsusaka, 2018). While it may seem odd that pro-stadium forces can outspend opponents by large margins and still lose, or barely win, the power of money to influence public votes appears limited, especially in regards to business policy (Matsusaka, 2020). As Gerber (2011) observed, "if voters do not like what initiative proponents are selling, not even vast amounts of campaign spending can get them to vote for a new policy" (p. 6).

Determining stadium subsidies through plebiscites is both desirable, from a social welfare perspective, and practical. Stadium subsidy costs are borne by the entire polity. Seeking the consent of voters confirms their willingness to pay for subsidies. By its nature, construction of sports venues is not an urgent matter requiring quick public approval; thus, decision-making costs are low. Stadium subsidy supporters often insist on expedient consideration of their proposal, but such claims nearly always reflect false urgency from self-imposed deadlines. Few, if any, negative policy or welfare consequences would result from approving a stadium subsidy too slowly.

Ballot questions also provide more time for careful public deliberation and allow voters the opportunity to weigh costs and benefits of a stadium project before casting a vote, which is something that subsidy-seeking teams wish to avoid. When voters deem stadium subsidies to be too large, they can be voted down and resubmitted at lower levels or funded using alternate means to seek deals that are more palatable to the general population. For example, failed stadium proposals assessed by ballot measures in Cleveland (1984), Houston (1999), and San Francisco (1987) resulted in subsequent revised proposals that voters found acceptable and approved (Brown & Paul, 2002).

Few barriers exist to keep stadium subsidy proposals from being put before voters at the ballot box. Even in jurisdictions with limited direct democracy mechanisms, advisory referendums can be used to inform policymakers about voter preferences. But direct democracy alone cannot solve the stadium subsidy problem. The history of the votes in San Francisco, including the team seeking support in other Bay Area cities, suggests sports franchises will do their best to extract the largest subsidy voters will accept. Fort (1999) also identified the power inherent in setting the terms of a ballot measure, like what happens if the measure fails. Additionally, any subsidy proposal on the ballot may suffer from problems like fiscal illusion. For example, the ballot measure that ultimately passed in Houston in 2000, after a failed measure in 1999, gained voters' support by dropping a proposed tax on tickets and replacing it with taxes on hotel stays and rental cars.

CONCLUSION

The extensive body of research on the economic impact of stadiums demonstrates that professional sports venues generate limited economic and social benefits, which fall far short of the large public subsidies they typically receive. Stadium subsidies transfer wealth from the general tax base to billionaire team owners, millionaire players, and the wealthy cohort of fans who regularly attend stadium events. Despite the widespread consensus among economists that stadium subsidies represent poor public policy, state and local governments continue to subsidize venue construction with funding that now routinely exceeds $1 billion per new facility. This practice highlights the immediate public policy relevance of stadium subsidies since a new wave of stadium construction appears imminent based on the median age of existing sports facilities (24 years) and the typical 30-year stadium replacement cycle.

The sustained disconnect between academic research and policy decisions about stadium subsidies underscores the importance for researchers to do more to influence policy outcomes. Simple recapitulation of empirical research may appear esoteric and disconnected from the practical matter of deciding on the size of a subsidy for the local team to the general public and policymakers. Directing policymakers and taxpayers to the large body of academic research containing evidence documenting

the complete lack of economic impact from stadiums does not appear to foster wide understanding or agreement. We encourage researchers to consider presenting their findings in layman's terms that are more easily understood by the general public and policymakers. It is also important to emphasize the theoretical reason why stadiums tend not to boost local economies: stadiums fail to catalyze economic development because most stadium-related spending reflects the reallocation of consumer spending from other local establishments at some other time to the stadium and surrounding establishments on game day.

In addition, researchers should not allow privately-commissioned advocacy studies to be presented unchallenged. Commissioned reports with favorable economic impact projections appear to be an effective mechanism for advancing stadium subsidy campaigns. Researchers should actively engage policymakers, media members, and the general public to point out the flaws inherent in these speculative projections that are often touted as equivalent to rigorous academic research and interpreted as certain outcomes.

As a potential institutional reform, communities should assess all stadium proposals through referendums and initiatives, a once-common practice which has declined over the last few decades. Public votes ensure that subsidies are congruent with voter preferences and allow time for careful consideration of all relevant costs and benefits, so that voters can make informed decisions. Direct democracy may also reduce the influence of insider groups that have been successful in encouraging representative bodies to approve stadium subsidies and gives greater voice to grass-roots coalitions. The decision about whether or not to subsidize the construction of a new sports stadium is not time sensitive—despite common claims of false urgency made by subsidy proponents—and thus stadium proposals should receive patient consideration given the consistent poor returns to public investments in stadiums.

Although the research regarding the economics of stadiums is vast, we encourage scholars to continue to analyze the economic effects of stadiums using modern methods and novel data, since this topic remains a relevant subject of public policy. The design of new stadium projects continues to evolve, thus analysis of new projects using improved empirical methods provides updated credible information on the efficacy of stadium investments, even though findings of salutary returns are inherently unlikely. Studies that provide a better understanding of the distribution of costs and benefits throughout tax jurisdictions and estimates of social benefits would also be welcome and can help guide policy.

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DATA AVAILABILITY STATEMENT

Data on stadium construction and funding are available in a public database: https://www.openicpsr.org/openicpsr/project/193067/version/V1/view.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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