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From industry to center for arts and culture: the impact of industrial heritage transformation on neighborhood house prices

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We examine how converting an industrial heritage site in Aarhus, Denmark, into a center for arts and culture affects nearby residents' welfare. Using a hedonic house-price model and a difference-in-differences design, we track apartment prices before and after the conversion. Prices within the neighborhood rose by 2.3–3 % relative to the rest of the city. This uplift represents a welfare gain of €17.5–21 million for the local community. As one of the few quasi-experimental evaluations of creative-led heritage revitalization, our study provides rigorous causal evidence of substantial indirect economic benefits. This evidence can guide future investments to convert disused industrial buildings into cultural and recreational spaces that serve local communities.

KEYWORDS

hedonic, valuation, culture investment, urban renewal, industrial, revitalization, heritage, gentrification regeneration

1 Introduction

As urban landscapes shift in response to global economic trends, many former industrial sites emerge as contested spaces, torn between preservation and modernization (Loures, 2015). This evolution challenges city planners: How can these historically significant areas be rejuvenated in a contemporary context? One promising avenue is the conversion of these industrial relics into cultural and arts hubs (Evans, 2009). While the aesthetic and societal benefits of such conversions are apparent (Di Prete, 2020; Dinardi, 2019; Swensen and Skrede, 2018), their economic impact remains underexplored. This paper therefore investigates whether these cultural and arts transformations yield tangible economic benefits for the surrounding community.

We use the conversion of an old freight train station in Aarhus, Denmark, as a case study to examine the economic implications of transforming industrial sites. This example underscores the important role that art and culture can play in the revitalization of industrial sites.

In the early 2000s, the municipal council of Aarhus joined forces with a philanthropic foundation to spearhead the revitalization of Aarhus's historic freight station. This initiative was not merely about refurbishment but a vision to elevate and nurture the city's creative and artistic community. In addition to creating dedicated gallery, studio, and performance spaces, the project aimed to revitalize the district by improving pedestrian pathways and public spaces that link it to the adjacent neighborhood. It achieved this while preserving the station's original brick facades, iron framework, and other defining industrial features (Culture Administration, 2008).

The transformation of the freight station brought forth new amenities and altered the local urban landscape. We identify four key enhancements to the neighborhood's attractiveness as a result of this transformation:

1. By converting the station to non-industrial uses, the project eliminated industry-related disturbances—such as noise and air pollution—and secured the site's permanent transition away from industrial operations.
2. Establishing the arts and culture center offers venues for skill development, cultural events, and communal gatherings, adding functional value to the space (Morrison and Dowell, 2015).
3. Increased visitor traffic potentially boosts local businesses and street-level activity, contributing to the neighborhood's enhanced livability (Glaeser et al., 2001).
4. With renewed appeal comes a potential shift in the residential landscape (Tiebout, 1956). As the area garners interest, it might attract a different socio-economic mix, possibly setting the stage for gentrification.

Our study seeks to quantitatively evaluate the neighboring households' valuation of these neighborhood enhancements. To achieve this, we employ the hedonic house price method. The estimation is specified with a difference-in-differences functional form, treating the freight train site's revitalization as a quasi-experiment. Our analysis views the transformation as a bundled good, where the four enhancements are considered together.

In the literature, few valuation studies exist on the revitalization of industrial buildings (Mesthrige and Poon, 2015). Even fewer studies examine the effects on property values from such transformations (e.g., Van Duijn et al., 2016; Van Duijn and Rouwendal, 2021; Mesthrige et al., 2018). Notably absent are valuation studies centered on art and culture-led redevelopment. Our study, which focuses on the representative case of the revitalization of the Aarhus freight station, aims to bridge this gap in the literature. This case demonstrates how converting industrial heritage sites into cultural hubs can catalyze urban regeneration in comparable post-industrial cities.

The remainder of the paper unfolds as follows. Section 2 presents a brief review of the existing literature. In Section 3, we describe the case study, and Section 4 outlines the survey area. Section 5 provides a detailed description of the data, while Section 6 explains the theoretical framework and methodology. The analysis and results are presented in Section 8. In Section 9, we discuss our findings, and Section 10 concludes the paper.

2 Literature review

Only a few studies have investigated the impact of industrial revitalization on the surrounding housing market (van Duijn et al., 2016; Mesthrige et al., 2018). Van Duijn et al. (2016) investigated the redevelopment of industrial heritage in the Netherlands. They found a negative pricing effect before the redevelopment projects, none during construction, and a positive effect post-construction, but only in the largest cities. Immergluck (2009) also found positive house price effects of the redevelopment of an industrial site. He investigated the impact of a municipality-led redevelopment of an abandoned rail line in Atlanta, Georgia, USA. He found an information effect, as house prices rose in the area before the redevelopment when information about the project was shared with the public. Lastly, Mesthrige and Poon (2015) report negative impacts from redeveloping old industrial buildings in Hong Kong. They demonstrate that both the type of revitalization (e.g., conversion to residential versus commercial use) and the scale of the project influence the magnitude of these price effects, with larger-scale interventions exerting more pronounced downward pressure on property values.

The previously mentioned studies all use the hedonic pricing method, which we also apply in the present study. Other studies of urban amenities, like cultural events have used stated preference methods (Howie et al., 2010) as well as non-economically driven methods that aim at describing the change in urban "value" in a broader perspective, e.g., sociology, planning, and political science (Penića et al., 2015; Stern and Seifert, 2009; Ryberg-Webster and Kinahan, 2014). The advantage of using the hedonic pricing method relative to stated preference studies is that it can deliver two principal outputs - the capitalized value of the redevelopment and its associated welfare gains - which serve as standard metrics in cost–benefit analysis.

Revitalization of industrial sites comes with the benefit of decommissioning industrial facilities. De Vor and De Groot (2011) find negative but highly localized, externalities of living close to industrial sites in the Netherlands. Furthermore, Leigh and Coffin (2005) and Navratil et al. (2018) investigate the impact of brownfields on house prices and find a negative price premium. Linn (2013) uses the hedonic method to investigate the effect of mitigating health-related uncertainty and liability in development via brownfield certification and government clean-up. The potential contamination is found to be a driver of negative property prices in other hedonic studies (e.g., Haninger et al., 2017; Ma, 2019). Thus, a positive effect of industrial revitalization projects is partly reflected in the removal of public bads (Van Duijn et al., 2016).

A different strand of literature considers the value of living close to non-industrial cultural heritage. A review of studies up until 2002 can be found in Navrud and Ready (2002). In a more recent study from the Netherlands, Lazrak et al. (2014) find that people are willing to pay an additional 0.28% for each additional cultural heritage building within a 50 m radius. In another study from the Netherlands, Koster et al. (2016) investigated how the view of historical amenities, including listed buildings, influences house prices. They found that people are willing to pay an additional 3.5% for properties with a view of historic amenities. Like the present study, Koster and Rouwendal (2017) use temporal variation to study the effect on house prices from investments in cultural heritage. Using a repeat-sales approach, they aim to disentangle the direct and indirect effect of government spending on listed buildings in the neighborhood and find an increase in house prices of 1.5–5.5% per 1 million euros invested per square kilometer. Other studies include, e.g., Moro et al. (2013) and Franco and Macdonald (2018). Our study resembles these papers in that the object of investigation has been deemed worth protecting for future generations. Similarly, the non-use effect is likely highly localized. However, in our case, in addition to preserving a built heritage, the project also creates a new public good and removes a bad.

Finally, this paper also examines the wider societal implications of increasing house prices following the project. Culture-led regeneration and art as a driver for urban development have previously been described in the qualitative literature, with Zukin (1982) as an early example. Bridge (2006) and Ley (2003) describe the different stages of artist-led gentrification. In the first stage, artists move into inexpensive, poor-condition properties in old working-class or industrial districts and add a new aesthetic—often with minimal capital investment. In the next stage, the neighborhood's newly established cultural amenities and distinctive aesthetic become capitalized into higher property values. As a result, higher-income professionals are drawn to the area by its creative character, further driving up prices. Ultimately, the increased housing prices and commodification of cultural assets are likely to crowd out the artists themselves (Mathews, 2010). Cameron and Coaffe (2005) describe how artist-led gentrification is used actively by public agencies that fund cultural facilities and public art to promote urban regeneration, called third-wave gentrification. The case mirrors how art production drives both private consumption—through residents engaging with gallery and studio spaces—and public promotion via exhibitions, festivals, and media outreach. Third-wave gentrification is also described by Mathews (2010) who discusses how public art, art festivals, and art infrastructure play an increasingly important role in public policy, urban planning, and the publicly driven regeneration of cities. However, the present study is, to our knowledge, the first study to evaluate local economic impacts of art-led gentrification.

3 Case description

The freight train station was built in 1923 and remained open and in use until 2006. In 2004, the city council decided to create a center for arts and culture, and the municipality purchased the freight station in 2008. The transformation of the freight station started in 2010 and was concluded in 2012.

After the revitalization, the building opened with art, craft, and design workshops. The center contains office communities, a concert venue, a film workshop, and a film school. In 2023, the site was home to 70 different creative and cultural businesses. These businesses employ 200 people and host about 400 yearly events, workshops, conferences, meetings, etc. (The Godsbanen Organisation, 2025).

The old freight station area is approximately 43,000 square meters. The main building of the freight train station is 2,300 square meters. Other buildings make up approximately 5,000 square meters (Realdania, 2025). The freight train station is located in an old industrial district along the Aarhus River, surrounded by the inner ring road, the railway, and the city center. With the development of the freight station and the neighboring plots of the former Ceres brewery and old timber trade area, the site has evolved from an industrial district to mixed housing, education, and commercial functions. The first apartments were erected in 2016. By the end of our data period, urban development was still incomplete, with several parcels undeveloped.

4 Survey area

The neighborhood affected by the revitalization project is depicted as the red-shaded area in Figure 1. It is separated from the rest of the city by railway lines, major roads, and the Aarhus River. The apartments in the impacted neighborhood enter into our model as the treatment group in Equation 1, while the rest of the survey area is the control group. We test the sensitivity of our results to the choice of control group by estimating models using two distinct survey areas: the area within the inner ring road and the larger area within the outer ring road. Van Duijn et al. (2016) use houses within 1 km of industrial heritage as the treatment group and houses located from 1 to 2 km as the control group.

The ring roads outline different levels of urbanization. The inner ring represents the city center consisting of multi-story buildings, while the outer ring represents a larger urban area with suburban characteristics consisting of single-family houses, row houses, and apartment blocks.

5 Data

Data was collected from the Danish Public Information Server (OIS) (SKAT, 2018). Data contains records from the Building and Housing Register (BBR) on the structural characteristics of all buildings in Denmark, and the Public Sales and Assessment Register (SVUR), which contains all sales. Spatial variables were created from the Danish spatial database (SDFE, 2018), and the Central Business Register (CVR), which contains all businesses registered in Denmark (DBA, 2018).[1]

The sales data were geocoded using the Geocoding toolbox in ArcGIS and then combined with spatial data. This process produced a comprehensive dataset for each sold property, incorporating structural, neighborhood, and environmental characteristics. Variables for distance to parks and infrastructure were calculated as Euclidean distances measured using the Rgeos package (Bivand and Rundel, 2018) in the R environment (R Core Team, 2019). The treatment and control areas were digitalized as polygons by hand in QGIS before performing an overlay analysis in R. For a complete list of variables (see Appendix A).

The complete dataset consists of apartments sold between 2001 and 2018. After summary inspections of the data, only apartments sold at a price above 13,333 EUR and below 2 million EUR were included in the analysis. Extreme-sized apartments were also removed, i.e., apartments below 10m^2 or above 800m^2. These outliers are unlikely to represent transactions in the typical housing market.

6 Theory and methods

To estimate the effect of the revitalization project on housing prices, we apply the hedonic pricing method. We treat the intervention as an indivisible bundle of interdependent attributes—such as improved aesthetics, new amenities, and cultural uses—that together define the good of interest. These attributes operate jointly and cannot be meaningfully disentangled, therefor our

1 All the listed data sources has since been moved to a new hub for all publicly avalibale data in Denmark (https://datafordeler.dk/).

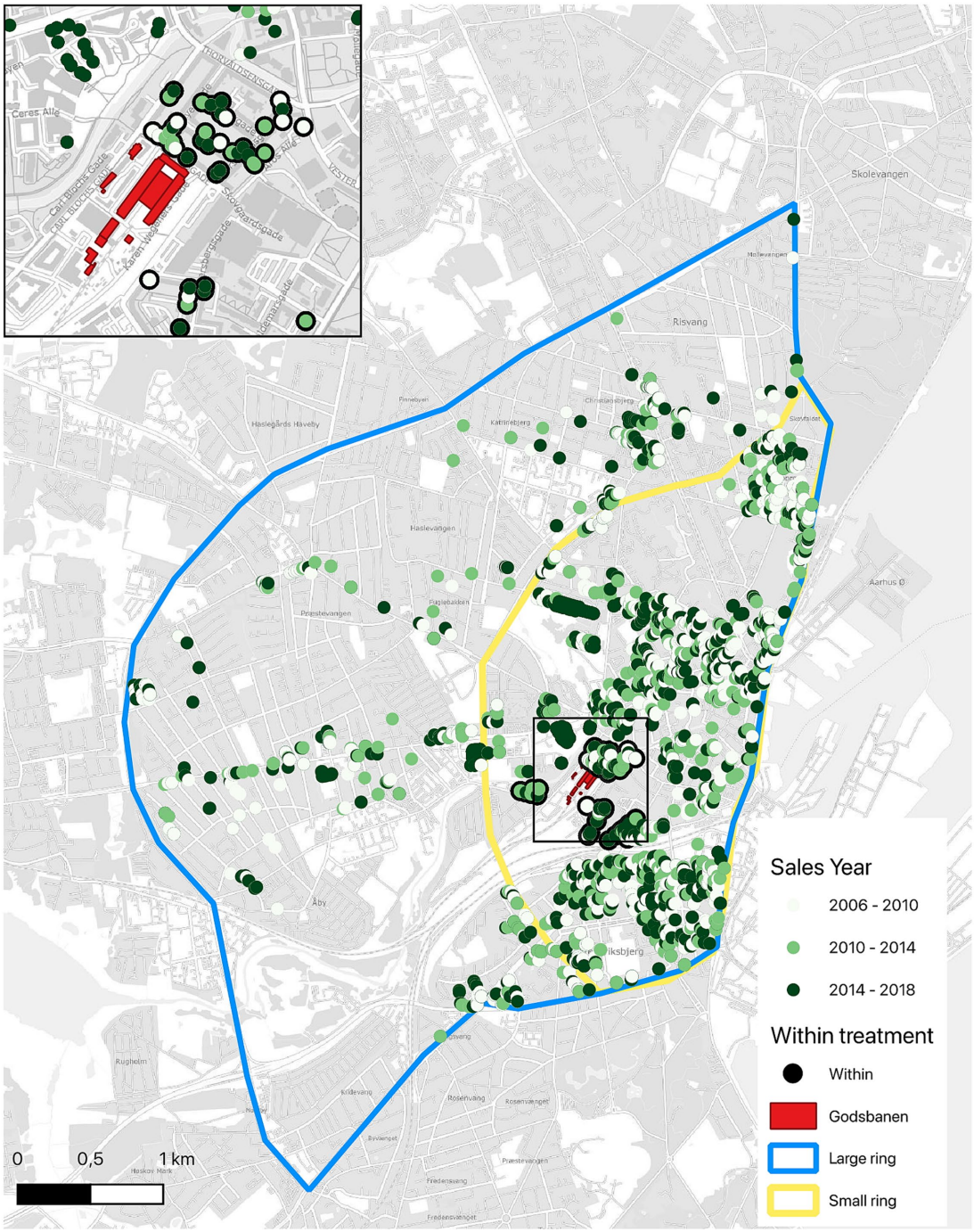

FIGURE 1
Map of Aarhus City with the study cite (red), treated sales (blak circumference), and the two different control areas (blue and yellow).

welfare-economic interpretation applies broadly to similar industrial heritage conversions.

The hedonic house price method builds on a theoretical framework developed by Rosen (1974). The reasoning behind the method is that the price of a house is a function of the characteristics and qualities of the house. Some of the characteristics are related to the property itself (the type of building, size, etc.), and others are related to the surroundings—as you "buy" access to surroundings when buying a house. Therefore, the benefits of investment in urban development are likely to affect house prices.

The housing market consists of a continuum of matches between utility-maximizing home buyers and profit-maximizing home sellers. In the housing market, we observe a large number of houses with different characteristics sold at different prices. It is thus possible to isolate the average marginal price for an extra level of each characteristic.

To estimate the welfare-economic benefit of an industrial revitalization project, we use a difference-in-differences hedonic house price model (Parmeter and Pope, 2013). This quasi-experimental approach is often used in empirical analysis in

situations where controlled experiments are not possible (Huntington-Klein, 2022). The intuition of this model is that the development in house prices after the investment is estimated and compared with matching areas where no investment has taken place. The objective is to establish causality. However, unobserved events, global or local, can influence house prices in the same direction at the same point in time.

The theoretical outline relies on the assumption of a marginal change in the attribute. This assumption might not hold. In the case of non-marginal change, the assumed equilibrium in the housing market may not be stable. However, if the impact of the non-marginal change is localized, Bartik (1988) and Palmquist (1992) argue that the slope of the ex-ante parameter estimate of a hedonic house price model can serve as an upper bar approximation of a welfare change. Localized means that the change in the level of the public good does not affect the equilibrium house price function. Under such circumstances, Bartik (1988) and Palmquist (1992) both reason that the ex-ante MWTP estimate would reflect the welfare change that households' experience, given the caveat that households do not have decreasing utility of consumption. This caveat seems unlikely to be true. The implications are that the actual welfare change will be lower than the ex-ante parameter estimate of the hedonic house price model - the difference resulting from a function of households' decreasing utility of consumption.

The revitalization project's footprint covers just 8% of properties in our outer survey area and 12% within the inner ring. This zone is strictly bounded by major roads and freight rail lines, forming a clearly defined neighborhood enclave. Given its small size and distinct borders, we assume any price effects will be localized and relatively minor compared to the broader housing market. Thus, the event will likely not alter the equilibrium, and the price function will not change. In this case, we can interpret the ex-post estimate as similar to if it were a marginal change. However, changes in household preferences during the study period might have caused the price function to shift, thereby conflating the implicit price for the revitalization with changes in the preferences for the amenity in question or substitutes. To control for this general change in the price function, we perform a test described in the model section below (section 6.1).

6.1 House price model

We estimated the impact of the industrial revitalization project using a difference-in-difference hedonic house price model with a spatio-temporal lag term. The model uses a linear OLS estimator with a semi-log functional form. The model specification was:

$$\begin{aligned}\log\left(P_{ijt}\right) = {} & \beta_0 + \beta_1\, neighborhood_j + \beta_2\, opening_t \\ & + \beta_3\, neighborhood_j * opening_t + \beta_4 time_t \\ & + \beta\, \boldsymbol{X}_{it} + \rho \inf o_i + u_{ijt}\end{aligned} \tag{1}$$

Where P_{ijt} is the price for each sold apartment, i, in neighborhood j in the year t, and X_{it} is a matrix of housing characteristics, e.g., proximity to infrastructure and green areas and size. The subscript includes t to capture repeat-sales. The β's are the parameter estimates, which indicate the effect of the associated variable. The housing characteristics concerning the revitalization are spelled out: $neighborhood_j$ is a dummy variable, which takes the value of 1 if the apartment is located in the neighborhood impacted by the revitalization project and 0 otherwise. The variable $opening_t$ is a dummy variable describing the period after the opening of the arts and culture center. The interaction term $neighborhood_j * opening_t$ captures the effect of the opening on the apartments in the neighborhood while the possible uniqueness of the neighborhood and opening period are controlled for separately. This way, the interaction term captures the effect of the opening of the arts and culture center.

We tested a model specification where we let the model shift with the period after opening, thereby allowing for a non-stable hedonic equilibrium throughout the investigated period. This method has been highlighted in, e.g., Bishop et al. (2020) and Banzhaf (2021) and means interacting the $opening_t$ variable with our matrix X_i. This lets the model capture potential changes in preferences for other housing characteristics and the price equilibrium over time as a consequence of the revitalization.

To account for spatial autocorrelation (Von Graevenitz and Panduro, 2015), a range of spatial econometric techniques have been developed. In our analysis, we address this issue by incorporating postal-code fixed effects to absorb unobserved neighborhood-level spatial dependence. Moreover, we include ρ as a parameter estimate of the information effect, $info_i$, the households obtain by looking at the prices of similar houses. The variable $info_i$ is constructed by first restricting the sample of sold properties in time and space. For each house, we restrict the informational sample to properties sold within a 1 km radius and during the 365 days preceding its transaction date. Then, from the restricted sample, we identify the median price of the five nearest apartments. The five nearest apartments are found using propensity score matching. Each sold apartment is matched based on size, age, number of rooms, distance to nature, and urban diversity.[2]

7 Results

We estimated two house price models that cover different extents of the control area, the inner ring road and the outer ring road (Figure 1). The results are presented in Table 1 for selected variables. The full result of the estimation can be found in Appendix B. The results are presented with robust standard errors in parenthesis. All coefficients of interest are statistically significant except one, with two significant only at the 10% level; furthermore, all display the expected signs.

The variables included in Table 1 represent the relevant difference-in-difference variables that describe the impact of the revitalization investment after the project. The period 2011–2018 represents apartments sold after the period after the project's completion. The estimated results indicate that there is a positive effect of the change. We find that the effect of the opening is a

2 Count the number of different business categories within 1,000 meters.

TABLE 1 Selected parameter estimates and model diagnostics for the two models.

	Outer ring model	Inner ring model
Freight station neighborhood × 2011–2018	0.030*** (0.013)	0.023** (0.011)
Info, ρ	0.167*** (0.006)	0.137*** (0.007)
Observations, n	9,742	7,112
R^2	0.652	0.596
Adjusted R^2	0.652	0.595

The full set of model estimates can be found in Appendix B. *$p > 0.1$; **$p > 0.05$; ***$p > 0.01$. Robust standard errors in parenthesis. Log (price) as the dependent variable.

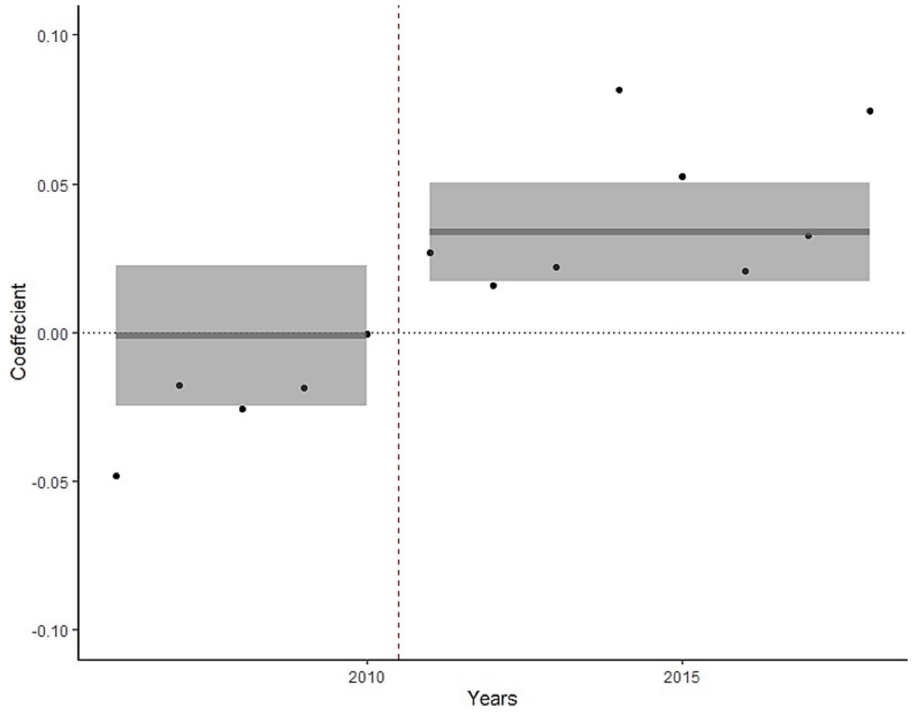

FIGURE 2
Difference-in-differences estimate for apartments sold in the freight train neighborhood relative to the control area year by year.

2.3–3% increase in apartment prices for the impacted neighborhood. Furthermore, both models have a reasonable explanation power.

The prices in the control and treatment areas did not differ before the event, as illustrated in Figure 2, which plots the difference-in-differences estimates. This indicates that the assumption of a parallel trend of treated and not treated sales in difference-in-differences estimation holds (Huntington-Klein, 2022). The full model is found in Appendix Table 7.

To ensure the robustness of the model estimates, we varied the spatial outline of the neighborhood specification. We re-estimated the model using a 500 m ring buffer for a more restrictive neighborhood definition and an 800 m buffer for a broader definition. A pattern similar to the one presented in Table 1 was found for all alternative definitions of the treatment area.

We also tested the sensitivity of the model by introducing a pseudo-event in the city center of Aarhus during the period from 2012 to 2018. This accounts for non-existing events in other areas of the city. We did not find an effect of the pseudo-event giving even further authority to the estimated effect of the opening of the freight train to the public. The treatment and event were modeled using a similar difference-in-difference approach as outlined in Equation 1. This test was done to ensure that the impact of the revitalization project found in the model was not part of a city-wide price trend. We found that the parameter estimates for completion of the revitalization project in Table 1 were stable with the additional pseudo-event specification.

As a final robustness check, we estimated the model without interacting the *opening*, variable with the other explanatory variables as proposed by Banzhaf (2021). This procedure slightly reduced the size of the parameters of the model but did not change the conclusion of the model significantly. Hence, the revitalization was a localized event that did not shift the overall hedonic price equilibrium, and the estimated results can be interpreted as a welfare-economic measure rather than a property capitalization event. Both sets of estimates can be obtained on request from the authors.

8 Model interpretation

Following our estimation, we conduct a welfare-economic impact assessment based on hedonic estimates to quantify the project's overall benefits. The intention is to show how hedonic studies can be used in policy applications such as cost–benefit analyses, cost-efficiency analyses, or other planning tools.

The model estimates in Table 1 indicate that apartment prices increased by 2.3–3% in the neighborhood close to the renewed freight train station, based on sales of privately owned apartments. There are 2,514 apartments located in this neighborhood. This number contains privately owned, community-owned, and non-profit apartments/public housing. Based on the estimated model, the apartments in the neighborhood close to the freight train station have predicted selling prices ranging from 0.05 to 2 million EUR with a mean price of 0.30 million EUR regardless of ownership type. Prices for each apartment in the freight train neighborhood were predicted by fixing the transaction date to June 2018. We applied the two hedonic models from Appendix B, with all estimates expressed in 2018 prices. The predicted prices were multiplied by the parameter estimate for the interaction term between the project period and the freight station neighborhood dummy. These values were then aggregated across all 2,514 apartments. The estimated additional price increase after project completion for the average apartment corresponds to 27,000–29,000 EUR relative to similar apartments that were not impacted by the revitalization project. In total, the aggregated increase in price for the 2,514 apartments ranges from 17.5 to 21.4 million EUR, depending on the model/control area.

The effect of the revitalization project was calculated using Equation 2:

$$Impact = \sum_{i=1}^{N} \hat{P}_i * \hat{\beta}_4 \tag{2}$$

In a welfare-economic context, the price increase can be interpreted as the lower-bound of the actual change in welfare (Banzhaf, 2021; Kuminoff and Pope, 2014). The implication is that the 17.5–21.4 million EUR represents a lower-bound estimate of the true welfare-economic impact for all houses in the neighborhood. This does not include the use-value for visitors not living in the neighborhood.

In contrast to the welfare gains estimated in Table 2, the project was funded with € 8.24 million from Realdania (2025). Our calculation indicates that this investment in the revitalization of the freight train station has been a net benefit from a welfare-economic point of view.

9 Discussion

Living in the neighborhood affected by the revitalization of the industrial freight train station has become more attractive following the opening of the arts and culture center. Apartment prices in this area rose by 2.3–3% relative to the rest of Aarhus, reflecting the neighborhood's enhanced appeal. This increase can be interpreted as an aggregated welfare gain of 17.5–21.4 million EUR for all households in the impacted neighborhood. The increase in house prices is in line with some of the previous findings on the impact of industrial heritage (Van Duijn et al., 2016) and non-industrial cultural heritage (Koster et al., 2016), but contradicts the study by Mesthrige et al. (2018), who does not find a positive externality if revitalization. Koster et al. (2016) find a 3.5% price premium for apartments with a view of a historic building. Van Duijn et al. (2016) find an effect of 3% price increase after the completion of the revitalization in the preferred model specification. Van Duijn et al. (2016) estimate a total effect of 129–484 million EUR (in 2013) for 25 projects throughout the Netherlands. The positive effect of industrial renewal in the Netherlands is persistent - or even increasing - over time but driven only by projects in larger cities. Although this approach can indicate some general trends for projects of this type, local differences between projects might lead to false conclusions as the result is an average estimate. As a result, they only include projects from the largest cities in their cost–benefit analysis. In contrast, our study only includes one site, which makes the result easier to use for single-site benefit transfer studies, as the similarity of sites is easier to judge (Johnston et al., 2015). Given the absence of consensus on the welfare-economic effects of industrial revitalization, our study offers a valuable contribution this sparse body of literature.

We assume that the revitalization of the old freight train station into an arts and culture center is a bundled good for residents in the neighborhood. The bundled good is a combination of access to arts and cultural services, the removal of industrial activities and brownfields, and increased livability and services in the area, potentially leading to gentrification. The estimated price changes are likely due to a combination of all these distinct characteristics. Our estimate reflects the value of the revitalization as a unified bundle of interdependent features, enabling its application to and comparison with similar industrial heritage conversion projects.

As property prices increase, low-income residents may be forced to move out due to rising rents, house prices, and living costs. Studies suggest that minorities and low-income individuals have fewer options to relocate within the city compared to wealthier residents (Hwang and Ding, 2020). When they are forced to move, they often end up in neighborhoods with lower socioeconomic status, which exacerbates segregation and residential sorting.

TABLE 2 Effect of the Freight train station project on the 2,514 apartments.

Model	Min. price	Mean price	Median price	Max. price	Capitalization impact
Outer ring	0.001	0.27	0.26	0.53	21.4
Inner ring	0.003	0.29	0.28	0.46	17.5

All prices are in mill. EUR in 2018 prices (1 EUR = 7.5 DKK). The prices are predicted based on the models.

Homeowners capture the benefits of revitalization through increased equity as property values rise, while renters—who lack ownership—only enjoy any improvements temporarily and often face even higher rents over time. Gentrification can also lead to a loss of cultural diversity as wealthier residents move in and change the character of the neighborhood (Mathews, 2010) and tend to attract people with similar preferences. As an example, gentrification might also cause local stores catering to long-term residents to close (Glaeser et al., 2023). The empirical findings by Glaeser et al. (2018, 2023) using Yelp data suggest that gentrifying neighborhoods see a faster growth in both the number of retail stores but also business closure rates than their non-gentrifying areas. However, they find little evidence that gentrification and the opening of bars, cafes, and restaurants are associated with changes in retail mix or prices, suggesting that the loss in welfare for long-term residents is limited. Whether the demography of the area has changed post-revitalization will require further analysis utilizing socio-demographic data in a residential sorting analysis (Tiebout, 1956; Bayer and Timmins, 2005; Kuminoff et al., 2013).

We analyze the projects' impact using the difference-in-differences technique. The challenge of defining an appropriate control group in a difference-in-difference analysis extends to other studies of renewal or revitalization projects. The difference-in-differences method relies on the research design specification capturing the changes. In our case, an important assumption is parallel trends in price development between the districts before the revitalization project. The parallel trend assumption might be discussed from an urban planning perspective, but on average, prices in the neighboring area were not different from the rest of the city before the revitalization.

The revitalized freight station opened in its new form in March 2012 after 2 years of construction. However, in 2004, the municipality set the goal of transforming the site into an art center. Thus, ample time existed for market expectations to form about the effect of the renovation. If this were the case, the expectations would be reflected in the housing prices already before the completion of the project, and we might not be able to see an effect of the opening. Year-by-year estimation of the difference-in-differences revealed an increasing effect in prices already in the year before the official opening in March 2012. Thus, the opening of the arts and cultural center is modeled as occurring in 2011, despite the official opening in March 2012. In the analysis, the period 2006–2010 is the baseline. We found that the house prices in the neighborhood decreased during the construction period compared to control areas. Our results indicate that apartment price effects did not materialize until 2011—shortly before the center's completion in March 2012—suggesting that market responses were driven by the project's realization rather than by early anticipation.

We only consider the indirect benefits of the revitalization project—essentially the access value that residents "purchase" through proximity—rather than the use value derived from actually attending events or workshops. For households in the impacted neighborhood, this premium captures the convenience of on-site amenities and the savings on travel time and costs. Non-residents, by contrast, must incur additional transportation expenses to access the same cultural and arts services, and those travel-related benefits are not reflected in our hedonic estimates. Including these direct-use benefits would increase the calculated welfare gain.

10 Conclusion

In this paper, we investigate the indirect impact of revitalization using the hedonic house price method with difference-in-differences identification approach. Our findings provide a unique perspective on the value of industrial revitalization projects, adding to the limited literature in this field. Our results show that revitalization can positively impact community welfare, contributing to the overall development of the area.

These findings have important implications for decision-makers, as they can inform future revitalization projects and lead to better allocation of resources for community development. Our study highlights the importance of considering indirect economic effects when evaluating the success of revitalization efforts and underscores the need for continued research in this area. We further discuss and highlight some of the methodological cautions that should be taken when using the difference-in-differences method to evaluate the impact of cultural heritage.

Overall, this research contributes to the understanding of the complex relationships between revitalization and economic outcomes and provides valuable information for policymakers, planners, and practitioners. Our results should encourage further exploration of this important topic and lead to the development of more effective and sustainable revitalization strategies.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

LM: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. ML: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. TP: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/frsc.2025.1522520/full#supplementary-material

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