Is there space for more art in Malmö?

A Cost Benefit Analysis for a museum relocation

By

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Abstract

This thesis presents a Cost Benefit Analysis of a potential relocation of Malmö Konst-
museum. The main purpose of this research is to inform decision makers and assist the
political discussion around this subject. In this study, the net social benefits are esti-
mated for both the new and current locations. On the benefit side, use value, non-use
value and museum revenues are accounted for, while on the cost side, construction and
operational costs are evaluated. The estimations of use and non-use values are based on
previous academic research on the valuation of museums through Contingent Valuation
and Travel Cost methods. The remaining estimations of costs and benefits are informed
by the current data available for Swedish museums and recent museum creations and
expansions. Based on this analysis, we recommend that from an economic standpoint
the museum should remain in its current location. The results show that free admission
maximizes the economic value of the art museum.

Keywords: Malmö, art museum, CBA, cultural economics, valuation

Acknowledgements

List of abbreviations

- CAD - Canadian Dollar

- CBA - Cost Benefit Analysis

- CVM - Contingent Valuation Method

- EUR - Euro

- IMF - International Monetary Fund

- MCPF - Marginal Cost of Public Funding

- NOAA - National Oceanic and Atmospheric Administration

- OECD - Organisation for Economic Co-operation and Development

- PPP - Purchasing Power Parity

- SEK - Swedish Krona

- SfMK - Stiftelsen för Malmö Konstmuseum

- TCM - Travel Cost Method

- WTP - Willingness to Pay

Contents

1 Introduction

Museum visits have increased over the last decades as the institutions broadened their reach to appeal to the masses rather than a small elite (Kulturanalys, 2019c). Instead of just conserving and displaying objects, museums are now branding themselves as being unique and interactive. Some museums have been viewed as economic engines transforming cities while others have been branded as failures when economic expectations were not met. Many museums have become iconic landmarks such as the Guggenheim in New York, the Louvre in Paris or Prado in Madrid and attract visitors from all over the world. Arts and culture have become an important driving force behind tourism and cities are adapting to meet the increasing demand of culture tourists.

In order to keep up with a rising demand for culture, a relocation of Malmö Konstmuseum has been discussed over the past decades. Malmö Konstmuseum is currently located in the 16th century building Malmöhus in the center of Malmö. Three different locations are being investigated for the new art museum; Nyhamnen, Rosengård and Triangeln. There is no final decision on the new museum location as of spring 2020, but a decision was taken in February by the Culture Department to conduct an extensive investigation of the different areas[1]. So far, the Department has only concluded that an easily accessible and central location is advantageous. There are no further specifications of the functions that the building will provide, but it has been expressed that it would be desirable for the museum to be a meeting place in the city.

The current location has been criticized for its conditions for displaying art. The indoor environment of the location has been pointed out as an issue, both due to humidity and seasonal temperature variations that are harmful for the displayed art. As a result, a limited part of Malmö Konstmuseum's art collection can be displayed according to the museum director, Kirse Junge-Stevnsborg. The currently available 2,000 square meters of exhibition area are also considered to be insufficient for the museum. There are some advantages at the current location, such as the museum occupying the space for free. Additionally, Malmö Konstmuseum benefits from its partnership with Malmö Museer by splitting operational costs for functions such as the entrance desk, which are shared between the art museum and the aquarium.

The purpose of this thesis is to evaluate whether or not the city of Malmö should conduct a relocation of its art museum. The topic was suggested by Stiftelsen för Malmö Konstmuseum (SfMK), a foundation advocating for a new art museum in Malmö. The foundation requested an analysis on the economic benefits of a relocation of Malmö Konstmuseum that is independent and free of political interests. We were motivated to aid (and spur) the political discussion in Malmö through a cultural economics lens. The aim of this thesis is to evaluate the net benefits of a relocation and provide a recommendation

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[1]Fördjupad lokaliseringsutredning för Malmö konstmuseum KN-2018-1143.

to the decision makers in Malmö.

A Cost Benefit Analysis (CBA) is an adequate tool to help decision making for public projects (Boardman, Greenberg, Vining & Weimer, 2018). By monetizing a project's positive and negative impacts to society, one can compare between multiple projects and select the one with the largest net social benefit. Due to most cultural assets being non-market goods, their valuation requires the assessment of both their economic and cultural values (Throsby, 2001). Cultural values from an art museum can for example be the beauty of the artworks or its historical connections. The economic values come from the services provided onsite, such as visiting it now or in the future. Cultural values are not fully captured by economic values, but it has become common to try to capture and monetize the economic effects of cultural assets. This can be divided into use value and non-use value. The use value is the direct consumption of the museum, such as visiting an exhibition or participating in a workshop. The non-use value stems from its presence in the community.

In order to provide a recommendation to Malmö City Council, the costs and benefits are modeled for both the proposed and current locations of Malmö Konstmuseum. The three proposed locations are not evaluated separately and instead the status quo and a generalized relocation are analysed. This analysis adopts a local and regional point of view to the valuation of costs and benefits and looks at a 55 year period between 2023 and 2077. The model is anchored on assumptions drawn from the academic literature on museum valuations and statistics from cultural spaces. A sensitivity analysis is conducted for key assumptions that are considered to be the most uncertain, volatile and impactful. An analysis on the optimal entrance fee for Malmö Konstmuseum is also performed.

From an economic standpoint, the decision makers in Malmö City Council are recommended to opt for the current location of the museum, due to its higher net benefits. In the base scenario, the net benefit reaches 939 million SEK for the current location against the 762 million SEK for a new location. In spite of there being higher benefits in the new location, these are not high enough to cover the construction costs and the higher operational costs in the new building. The sensitivity analysis shows that the new location is preferred if it leads to a permanent increase of at least 120,000 visitors. Free admission seems to maximize net benefit for both locations.

The discussion in Malmö City Council over the functions, location and size of the new building is ongoing, and as such some of this model's assumptions may prove to be inadequate as the decision process continues. The analysis presented in this thesis is based on the existing information available as of the first semester of 2020. It is recommended for decision makers to revisit the estimations of benefits and costs at a later stage once the main building characteristics are settled.

After the introduction, chapter 2 follows with background. Then chapter 3 presents

the concept of CBA and the literature review on cultural valuation and museum valuation studies. In chapter 4 the method is presented and discussed along with the data and validity. Chapter 5 holds the main results, sensitivity analysis and a discussion of the findings. Lastly, in chapter 6 a conclusion is reached and a recommendation about the project is made.

2   Background

Malmö Konstmuseum is located in Malmöhus Castle and has approximately 150,000 visitors per year. It has a collection valued between 1.2 and 1.6 billion SEK[2] with 40,000 pieces of design, crafts and art. The museum houses, among others, the largest contemporary Nordic art collections in the world, as well as the Russian collection from the 1914 Baltic exhibition. Malmö Konstmuseum is one of three spaces for art in Malmö, the others being Malmö Konsthall and Moderna Museet Malmö. In its current location, Malmö Konstmuseum shares the building with the aquarium of Malmö Museer[3]. The two institutions share an entrance fee of 40 SEK, granting access to all exhibitions of both museums. In Figure 1 it can be seen that the reported numbers of visitors for Malmö Konstmuseum and Malmö Museer are highly related. The visitor decrease in 2014 is due to Malmöhus being closed most of the year for renovating the aquarium.
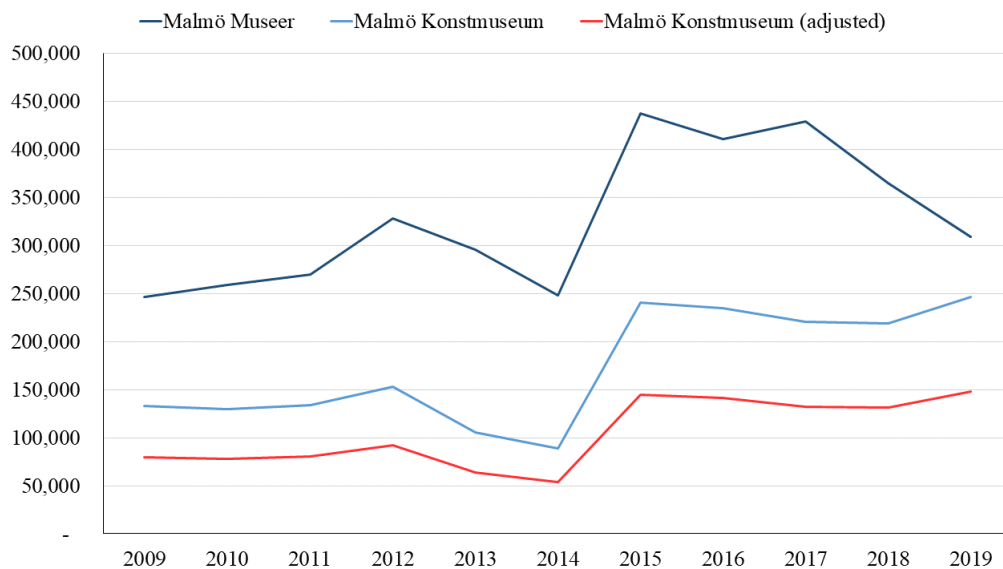
NOTE: The adjusted numbers correspond to 60 percent of the reported statistics. A discussion on why this treatment is applied can be found in 4.1 Data.

Figure 1: Visitors for Malmö Museer and Malmö Konstmuseum from 2009 to 2019

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[2]Estimation based on the accumulated art purchase value.

[3]Malmö Museer is a museum about history, science, technology and seafaring. It is spread across two main buildings, Malmöhus, which houses the aquarium, and Teknikens och Sjöfartens hus.

Three main locations have been considered for a new art museum; Nyhamnen, Rosengård and Triangeln, shown in Figure 2. Nyhamnen is a planned neighborhood created through the repurposing of one of the wharfs of the port of Malmö (Malmö Stad, 2019). This neighborhood will be located near Malmö Central Station and will include 800,000 square meters of new housing. The project was approved in the end of 2019 and its two larger areas are expected to be fully developed by 2035. Rosengård is an area of Malmö developed in 1960s and it currently houses a socially disadvantaged population (Stiftelsen The Global Village, 2019). Malmö City Council has been working on improving housing conditions and has been attempting to integrate the neighborhood into the city at large in order to reduce inequality (Malmö Stad, 2015; Malmö Stad, 2019). Triangeln is a central location served by a large train station through which most train services pass. The area is service oriented and includes a large shopping center and cultural spaces like Malmö Konsthall and Malmö Opera.

NOTE: The map of Malmö Stad (2020) is used as a base for this figure.

Figure 2: Proposed and current locations for Malmö Konstmuseum

Figure 3 displays the visitor count for large art cultural spaces in Skåne. In the region there are four art museums; Malmö Konstmuseum, Moderna Museet Malmö, Skissernas Museum and Ystad Konstmuseum. The cultural spaces for art of relevance in the region include Dunkers Kulturhus, Kristianstad Konsthall, Lund Konsthall and Malmö Konsthall. The leading institution on visitor count is Dunkers Kulturhus, and it is likely

owing to the space's multipurpose function, hosting concerts, art exhibitions and other events. Within the city of Malmö, Malmö Konsthall has the most visitors, approximately 50,000 more than Malmö Konstmuseum and twice as many as Moderna Museet Malmö. Malmö Konsthall has an exhibition area similar to Malmö Konstmuseum, but is located in a more central location, while Moderna Museet Malmö has an exhibition area of 800 square meters and is located in the historical center. It should be noted that visitor comparisons between the different institutions should be made with caution, as their methods for counting visitors differ, some being counted automatically and others manually.
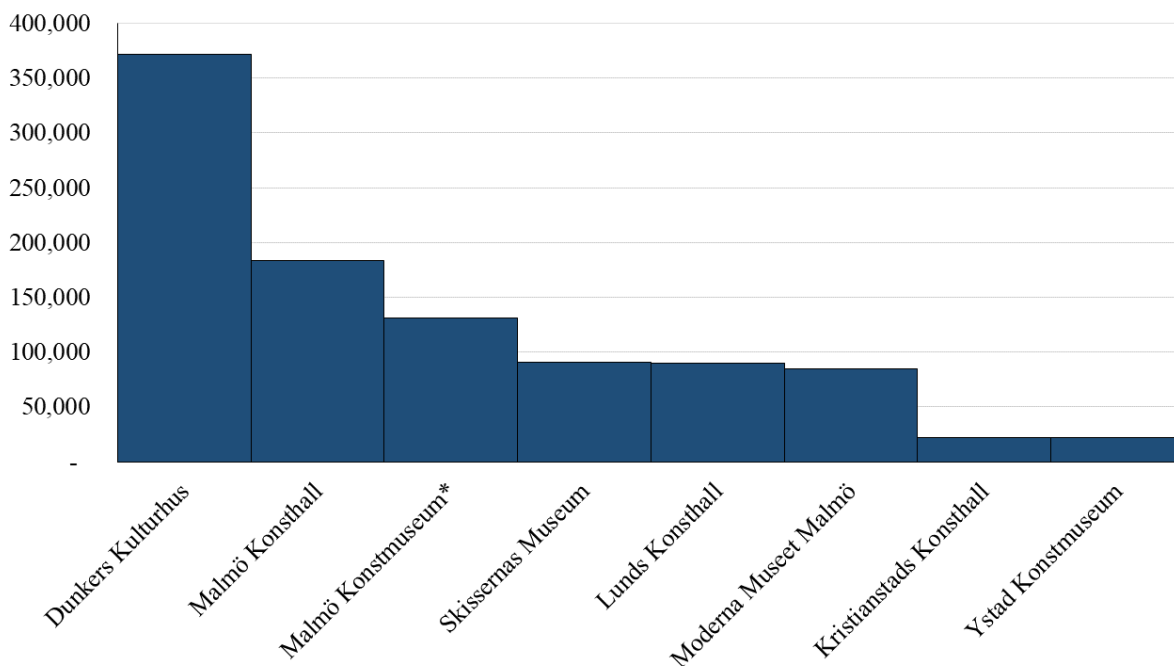
NOTE: *The number of visitors for Malmö Konstmuseum differs from public statistics and are instead adjusted to match the method in this report.

Figure 3: Number of visitors to the largest art dedicated spaces in Skåne in 2018

3 Literature review

A CBA is an analysis and evaluation of all benefits and costs of a specific project on all agents of society (Boardman et al., 2018). Utilizing this method, one can compare between multiple projects and select the one that returns the largest net social benefit. The authors note that this method has been popularized for its focus on efficiency and independence from political interests. The main steps in conducting a complete CBA are established by Boardman et al. (2018). Firstly, one should explain the purpose of the analysis, present a set of alternative projects and establish which elements of society have a standing on the issue being debated. After the main contextual background is defined, the analyst should predict and monetize all impacts over the lifespan of the project and categorize them. In order to ensure project comparability, it is then important to calculate

the present value of all costs and benefits for all the alternatives considered. The authors recommend a sensitivity analysis on the weaker assumptions utilized in the valuation of the project. Lastly, the writers state that the analyst should make a recommendation on which of the alternatives should be implemented.

Boardman et al. (2018) state that changes in net social benefits are used to evaluate which project to choose. The social net benefit is derived using microeconomic theory. In a CBA, the focus is on the demand for a good and the consumer (or producer) surplus it may generate. To know how the society values a good, the concept of Willingess-to-Pay (WTP) is used. This is the valuation of a good by the society, which also is the same as total benefit received from it. The consumer surplus comes from the value that exceeds the expenditure, hence the difference between the benefit and the price paid for it. On the cost side, all costs of the policy are taken into account. The costs are then deducted from the benefits and by doing this for all agents in society, the net social benefit is estimated.

When carrying out the evaluation of non-market goods, alternative ways are needed to size social surplus, since prices do not reflect a good's value (Boardman et al., 2018). In the case of cultural goods, in order to size social surplus, one should assess both their economic and cultural values (Throsby, 2001).

3.1   Economic and cultural values

There is a divergence between economic and cultural value that has been studied by economists for decades. The notion that a separation of the two concepts is necessary is emphasized by Throsby (2001). These values are derived differently, the cultural value comes from the cultural discourse while the economic value comes from market prices. Cultural and economic values do not fully encompass each other, although Throsby argues that cultural value can generate economic value in the society. Angelini and Castellani (2019) review the theoretical literature on economic and cultural value formation in art and argue that an artist's fame and talent are drivers of their work's economic and cultural values respectively. The authors further explore that cultural value is at least in part reflected in the economic value, thus making talent a component of economic value while excluding fame from cultural value. Klamer (2016) defends that the focus of cultural valuation should be on the cultural value rather than the economic value. According to the author, it is what the artist finds of value that is important, not the economic outcome of the art itself.

The complexity of cultural value makes it difficult to translate directly into economic terms. According to Throsby (2001), cultural value includes, among other, the aesthetic value, the symbolic value and the authenticity value. These values can be derived from the form of the artwork, a sense of identity or the uniqueness of an artwork. Snowball

(2011) recognizes that cultural value encompasses both intrinsic and instrumental value. The intrinsic value is the value intended by the art, such as the discussion stemming from the exhibition. The instrumental value is the side effects, such as the visitors spending money outside of the museum. The artworks and the institutional setting of an art museum comprise cultural value according to Throsby (2001). The author acknowledges that the exhibited artwork generates cultural value and the museum as an institution provides assistance in the formation of cultural values within the community.

The economic value from an art museum comes from both its assets, such as the buildings and the artwork, and the flows of services these generate (Throsby, 2001). Throsby identifies three different flows that are related to an art museum; excludable private goods, non-excludable public goods and beneficial externalities. The private goods are the value of the consumption experience for its visitors. It can be measured as the total value of the entrance tickets sold together with the consumer surplus or revenue surplus from the gift shop. The public goods are collective benefits arising from the museum for the community at the local, regional, national or international level. This has a wide range, all from the museum contributing to the public debate about art to the educational services provided by the museum. Lastly, the externalities may be generating employment or having other effects on surrounding businesses.

Examining these flows more closely, they can be categorized using economic measurements (Throsby, 2001). To begin, there is the use value, which is provided from the visitors to a museum. It is the consumption of goods and services directly related to the museum and its consumer surplus. The non-use value consists of three different values; existence, option and bequest value which are provided by both visitors and non-visitors. The existence value is the presence of the museum in the society. The option value stems from the idea that people may want to visit the museum some day, and would like to preserve that possibility. This could either be for themselves or on behalf of someone else. The bequest value comes from people's enjoyment in knowing that the heritage will be preserved for future generations. Lastly, the externalities are spillover effects from the heritage. Throsby points out that one needs to be cautious about the interpretations of the positive or negative externalities and spillover effects. He states that the *net* effects from a public investment would be similar with or without the construction of a museum, if the capital would be used for a similar project instead. This means that the externalities arising are not unique for a project, and that similar effects could be achieved by a different public investment.

The surveyed literature on cultural economics shows that there are different values found within culture that cultural economists have attempted to provide measurements for. Despite the lack of a clear quantitative way in how to value culture, Throsby's (2001) categorization of different flows is widely adopted in the economic valuation of museums.

3.2 Estimating the economic value of museums

A general overview of how the economic values are derived from visitors and non-visitors through different methods is shown in Figure 4. The use and the non-use values are estimated using different approaches. The first step to monetize the use value is to elicit the WTP from visitors (Throsby, 2003)[4]. One way of doing this is by surveying visitors on site asking them to valuate the visit in monetary terms using Contingent Valuation Method (CVM). Since the consumer surplus cannot be assumed to be equal to the price of the commodity, it must be elicited from the visitors. The value that exceeds the entrance fee is then evaluated as consumer surplus. Another method to measure the use value is to utilize Travel Cost Method (TCM) (Armbrecht, 2014). This is done by surveying visitors and asking for the total cost of visiting the attraction, including travel costs. To estimate the non-use value, CVM can be used surveying both visitors and non-visitors (Throsby, 2001). The survey is formulated to capture how much someone is willing to pay in taxes or donations in order to preserve the attraction. To get the non-use value of visitors, a survey can be conducted on site before or after someone's visit. To get the non-use values from the population as a whole, a random sample can be drawn and surveyed, via for example telephone interviews. This method gives a representative non-use value for an attraction if the population as a whole is taken into consideration.
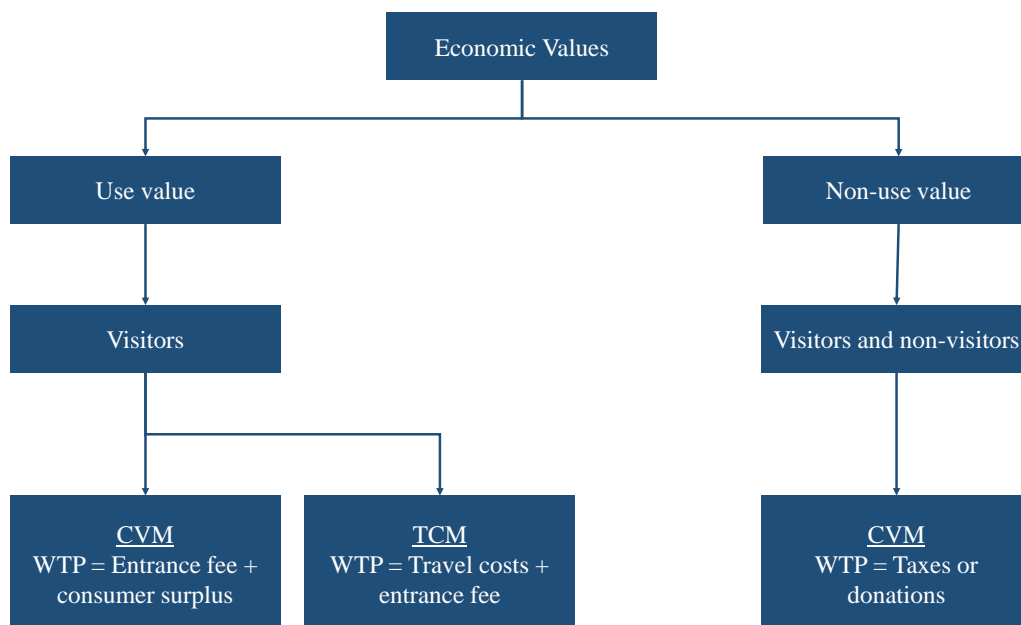
NOTE: CVM stands for Contingent Valuation Method. TCM stands for Travel Cost Method. WTP stands for Willingness to Pay.

Figure 4: How economic values are derived using CVM and TCM

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[4]While most authors choose to inquire over the WTP, surveys on willingness to accept should return a similar result provided that there are no subject misconceptions (Plott & Zeiler, 2005).

The CVM has been criticized by several economists for its shortcomings, but it is still considered to be one of the best methods to retrieve the value from non-market goods (Carson, 2012). Throsby (2003) notes how individuals may not have the capacity to correctly estimate their personal WTP when an asset has externalities, leading to an underestimation of cultural goods. Bedate, Herrero and Sanz (2009) show that individuals who are uncertain of their reply are likely to display above average WTP. Hansen (1997) has found that an anchoring value introduces a bias to the respondents WTP as it influences the valuation[5]. Additional criticisms to the method can be seen in the Report of the National Oceanic and Atmospheric Administration (NOAA) Panel on Contingent Valuation (Arrow, Solow, Portney, Leamer, Radner & Schuman, 1993). Since the CVM is highly reliant on the individual's ability to express its true WTP, there seems to be both a positive and negative bias from the method. Recent developments of this method have been working towards circumventing bias and have concluded that a good survey design may overcome many of the previously reported issues.

Unlike the CVM, TCM is based on revealed preferences, and therefore less prone to value estimating biases. However, from a theoretical standpoint, it might still be inadequate to estimate consumer surplus, as visitors may have been willing to pay more than they did for their visit. Furthermore, as mentioned by Armbrecht (2014), this method is only usable whenever a visitor is traveling exclusively to visit one location. The author notes that if the visitor is having more than one experience in that trip, then their travel costs need to be partitioned. Thus, in spite of being based on revealed preferences, its other biases and limitations make this method largely context dependent.

There is an ongoing debate on how and when to use a certain method, but cultural economists have settled that both CVM and TCM are valid approaches to estimate economic values in cultural assets. CVM has the flexibility of being utilized for measuring both use value and non-use value. However, the external validity has been found to be low (Plaza, 2010) and a meta-analysis covering more than 50 CVM studies shows no pattern over what museum characteristics drive WTP for museums (Noonan, 2003). TCM has the advantage of capturing the revealed preferences, but only for the total experience. The literature shows that no method is better than the other for capturing the economic values within culture, it is highly contextual and depends on the purpose of the study.

Other approaches to measure use and non-use values for cultural assets have also been utilized by researchers. Recent attempts using Life Satisfaction Approach have been conducted (del Saz-Salazar, Navarrete-Tudela, Alcalá-Mellado & del Saz-Salazar, 2019). This method estimates both use value and non-use value, based on the individual's self reported satisfaction. A Discounted Cash Flow method has been utilized to measure the

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[5]In Hansens's study, the anchoring value arise by first stating how much the residents pay in taxes, and then follow up with a question on the WTP. The responded might believe that the stated value is the true cost, preventing the respondent to reveal its true WTP.

economic impact of the Guggenheim in Bilbao (Plaza, 2010), however this method seems to have limited adoption in cultural economics.

3.3 Empirical valuation of use and non-use benefits

One of the earlier applications of CVM and TCM to a museum was carried out for the Musée de la civilisation of Quebec City, Canada by Martin (1994). In this study, the author looks at both the use and non-use values. The author estimates the average WTP for use value through a TCM survey for museum visitors (8.4 CAD), and the average WTP for the non-use value through a CVM survey to the residents within the province of Quebec (2.6 CAD). In the CVM questionnaire, respondents were asked how much they were willing to pay in taxes to maintain all the museums in Quebec. The author then attributes a share of the average WTP to the museum, based on the share of total museum visits. Martin (1994) finds that the subsidies that the museum currently receives (18.4 million CAD) are lower than the benefits that it provides (19.7 million CAD), arguing that the museum subsidies are of adequate size.

More recently Bedate et al. (2009) have examined the WTP for a one-time donation to a modern art museum located in Valladolid, Spain. They use CVM in order to estimate the WTP but they also include questions about how certain someone is about their valuation of the museum. A common trend within CVM is to remove so called "protest responses" when someone has valued the asset equal to zero. In their study, the authors challenge this practice by proposing instead to remove low certainty responses. They find that including a question on how certain the respondent is reduces the overestimation of the value and improves the overall result of the CVM. They also find that non-users value the museum less than users. One issue that can be identified with the authors' approach is that a certain part of society might feel more confident in their opinions, therefore biasing survey randomization attempts. In another study, the authors find some robustness of WTP to intertemporal preference changes (Bedate, Herrero and Sanz, 2012). Nevertheless, a decrease was recorded for the average WTP in their second sample of the citizens of Valladolid from 21.4 EUR to 12.9 EUR.

In Sweden, two valuations of museums have been conducted, one for the Nordic Watercolor museum in Tjörn, outside of Gothenburg (Armbrecht & Andersson, 2010) and one for the Museum of World Culture in Gothenburg (Lampi & Orth, 2009). Armbrecht and Andersson (2010) carry out a CVM to estimate the use value asking museum visitors how much they would be willing to pay to visit the museum (87 SEK). To get the non-use value, Armbrecht and Andersson use a CVM and conduct telephone interviews to a representative sample of persons within the municipality of Tjörn and the region of Västra Götaland. The respondents are asked questions to gather their WTP for their existence, option and bequest values separately (70 SEK, 133 SEK, 108 SEK). The authors find

a large non-use value, noting that it was higher for those who had visited the museum. Lampi and Orth (2009) use a CVM approach to estimate the use value by asking open-ended questions about how large of an entrance fee visitors would be willing to pay, obtaining a mean of 57 SEK. The CVM was conducted right before the introduction of an entrance fee, and shortly after they surveyed the visitors again. The authors find that imposing an entrance fee changes the socioeconomic composition of the museum visitors.

4 Method

In this thesis, a CBA was adopted in order to provide an impartial analysis of whether the museum should be relocated or not. The model presented in this section should aid the political discussion in the city of Malmö, by monetizing the benefits and cost in the two locations. This analysis takes a local perspective sizing the benefits for the populations of Malmö and Skåne. A local focus was chosen for this analysis since the new museum would be a municipal investment, and the primary focus of a municipal government is to improve the quality of life of its citizens. By choosing a local focus, economic spillover effects are accounted for, while benefits from citizens outside of the region are not taken into consideration (Boardman et al., 2018).

This analysis is focusing on a period of 55 years between 2023 and 2077, with 5 years expected to be the required time to set up the museum and 50 years of operational activity. This time span was chosen as it is thought that a decision for an investment of this magnitude is expected to take some more years in terms of bureaucracy, political discussion and budget allocation. Additionally, 2028 was selected for the first year of operations as it seems likely that Malmö City Council would want to open the museum prior to Sweden hosting 2029's European Capital of Culture. Lastly, a 50 year time span was chosen for the museum to pay back its initial investment, as this is thought to be the lifespan of the constructed building without requiring major renovations.

In this report, not only is the hypothesis of a new museum location valued, but also the counterfactual scenario of how much value would be generated if the museum stayed in its current location. Under this alternative scenario, current benefits and costs are trended outwards following the same methodology that is applied for the new location. It is considered relevant to account for this alternative as even if the project has a positive net benefit, it may still be lower than the net benefit of the art museum in its current state. As such, our recommendation for the City Council is determined based on which of the two alternatives has the higher net benefit.

The model constructed for this CBA estimates separately the number of visitors, use value, non-use value, entrance fee revenues, other revenues, construction costs and operational costs. The benefits in this CBA are given by the use value, the non-use value,

the entrance revenues and the other revenues, while the costs correspond to the rubrics of operational costs and construction costs. The net benefit are given by the sum of the benefits minus the sum of the costs, while the benefit-cost ratio is calculated by dividing the sum of the benefits by the sum of the costs. The use and non-use values are modeled based on estimations provided by previous research, while the remainder of the costs and benefits were for the most part based on statistical inputs. More information on the individual estimations of the various rubrics are provided in their respective sub-sections.

The underlying assumptions for the modeling of the CBA can be seen in Table 1. The assumptions under the category "valuation assumptions" are applied consistently throughout the various rubrics of the model. All aggregated estimates provided in this report are reported in their present value (2019 value) and are discounted at a 3.5 percent rate[6]. This discount rate is given by the Ramsey equation[7] and it is expected not to differ substantially from the long term real interest rate. If we assume a 1.5 percent average yearly inflation rate based on the median inflation rate for the last 30 years, by definition the nominal interest rate is 5 percent. In this model, use value, non-use value, revenues and operational costs increase yearly proportionally with inflation rate, while construction costs pay interest rate equal to the nominal rate across the time frame of the project. Lastly, a MCPF coefficient is applied to all costs that are dependent on public funding. This coefficient is meant to represent the excess burden that occurs when governments collect taxes. Browning (1976) notes its importance by referring that income taxes distort the optimal choice of labor supply, and as such there is an inherent burden to tax collection. The MCPF is generally assumed to be 1.3 in Sweden (Trafikverket, 2018), meaning that for every crown that is collected, 0.3 crowns are lost. The remainder of the assumptions presented in Table 1 are discussed in detail in the following sub-sections.

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[6]This discount rate was chosen as it is commonly adopted by the Swedish government for infrastructure projects (Trafikverket, 2018). This makes it comparable to other projects the local government may be deciding over.

[7]The Ramsey equation estimates the social discount rate as a function of time preference, risk, the marginal utility of consumption and growth in per capita consumption.

Table 1: List of assumptions

Valuation assumptions	
Social discount rate	3.5%
Inflation rate	1.5%
Nominal interest rate	5.0%
MCPF	1.3
Building assumptions	
New exhibition area (sqm)	5,000
New gross floor area (sqm)	16,667
Exhibition area as a share of gross floor area	30%
Demand assumptions	
New location's visitor increase	100,000
Yearly increase in visitors	2,277
Decrease in visitors per 10 SEK entrance fee increase	-6,470
Share of local visitors	50%
Use and non-use value assumptions	
Individual WTP for use value (SEK per 1,000 visitors)	0.33
Individual WTP for non-use value (SEK per 1,000 visitors)	0.26
Share of non-use value for regional inhabitants	50%
Share of adult population out of total population	78%
Other assumptions	
Share of Malmöhus visitors that visit the museum	60%
New location's share of costs covered by other revenues	20%
Current location's other revenues (2019 values, thousand SEK)	1,000
Construction costs (2019 values, thousand SEK per sqm)	31
New location's yearly operational costs (2019 values, thousand SEK)	27,392
Current location's yearly operational costs (2019 values, thousand SEK)	18,713

4.1 Data

The main data source utilized in this study are provided by Kulturanalys, an authority responsible for compiling statistics for cultural spaces. Three main datasets from this authority are utilized, one panel compiling operational results for state, regional and municipal museums between 2014 and 2018[8], one database including the number of visitors for state, regional and municipal museums between 2003 and 2017, and lastly a dataset covering detailed information for state museums. The museums were categorized into art museums and other museums based on their primary function and a list of the 237

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[8]This dataset is not publicly available and was requested from Kulturanalys.

museums can be found in Table 10 in Appendix B. Macro level data are sourced from publicly available sources. Historical inflation rates were sourced from the International Monetary Fund (IMF), Purchasing Power Parity (PPP) and exchange rates were retrieved from Organisation for Economic Co-operation and Development (OECD) and population statistics for Sweden and its forecast until 2070 were sourced from Statistics Sweden. Additionally, local museums and cultural spaces were inquired for data on visitors, costs and revenues[9].

Significant flaws were detected while utilizing the existing data for museums, primarily due to misreporting from the individual museums. Some of the most relevant limitations that may undermine this analysis are driven by fluctuation in response rates to the data collection survey, differing methods of counting visitors, as well as irregularities in how the survey was filled across different years.

The data on visitors reported to the statistics authorities by Malmö Konstmuseum are also believed to deviate from the true number, as it does not differentiate between visitors to the art museum and to the aquarium. As a result, it was decided to debase to 60 percent of the reported number of visitors to the institution up to 2019. Due to the uncertainty of this ball park estimate, a sensitivity analysis is conducted for this assumption. The reasons motivating such a harsh reduction in visitors are related to the naturally very different crowds that an art museum and an aquarium attract. Firstly, the typical art museum visitor is characterized by an older age (Kulturanalys, 2019c), while an aquarium tends to be more popular with children, reducing the likelihood of a visitor of Malmöhus visiting both spaces, even if included in the same ticket. Secondly, the interest in revisiting an aquarium by families is likely higher than an art museum with a small area allocated to temporary art exhibitions. Thirdly, the average entrance fee based on end year results for 2019 is much lower than 40 SEK, and it likely indicates a high share of children visiting the space, further motivating the other arguments stated.

4.2   Use and non-use values

The definition of use and non-use values in this study generally follows the definitions provided by Throsby (2001). Under this method, use value reflects the consumption value that people retrieve when they visit the museum area, while non-use value refers to the passive use and encompasses existence, option and bequest values. When it comes to externalities and spillover effects, while the author defends that those are separate from non-use value, it seems unlikely that survey respondents will be able to isolate them from their WTP for non-use. In a climate where tourism becomes increasingly important, it seems likely that individuals' willingness to pay taxes for culture is at least in part related

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[9]The contacted institutions were Dunkers Kulturhus, Kristianstad Konsthall, Lunds Konsthall, Malmö Konsthall, Malmö Konstmuseum and Malmö Museer.

to economic spillovers. Henceforth, it is decided not to separately value externalities, both due to Throsby (2001) arguing that similar projects will have similar spillover effects and also to evade double counting of benefits.
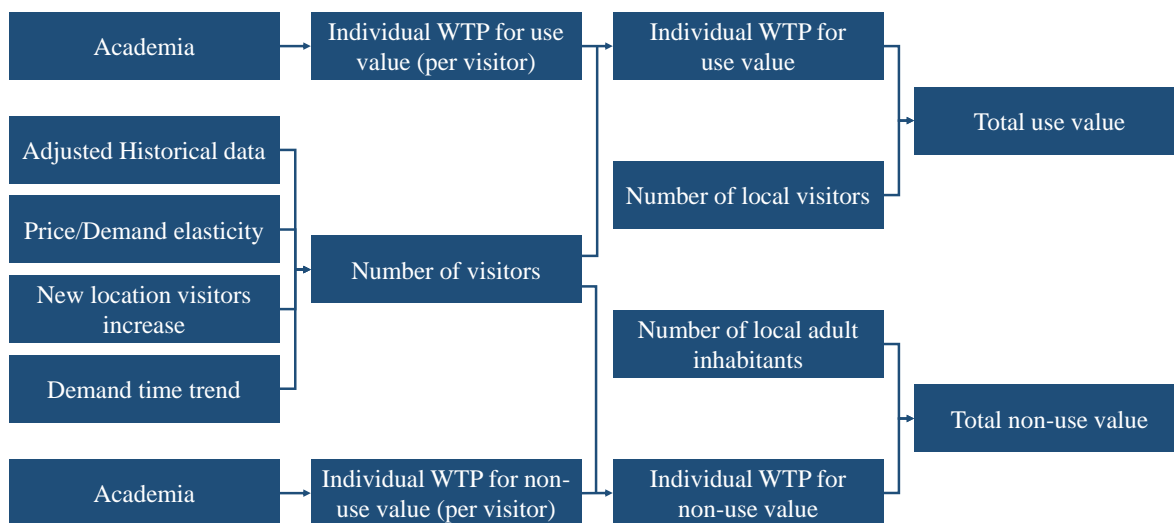

Figure 5: How use value and non-use value are modeled

A general overview of how the number of visitors and the use and non-use values were modeled is provided in Figure 5. The first column displays the basis for the estimations of the number of visitors and the individual WTP for use and non-use values. In the second column, the assumptions utilized as the base for the model are presented. In order to compare results between different contexts, it is assumed that WTP will on average increase proportionally to the number of visitors a museum has. The number of visitors is estimated by four main drivers, adjusted historical data, price/demand elasticity, the increased demand in the new location and the time trend in demand. In the third column, the individual WTP is presented in absolute value for the scale of Malmö Konstmuseum utilizing the number of visitors for the new and current locations. The variables number of local visitors, corresponding to the number of visitors that come from Skåne and number of local adult inhabitants, corresponding to the regional adult population are presented. In the last column, the total use value is calculated by multiplying the WTP by the number of local visitors. The total non-use value is given by multiplying the number of adults in the region by their WTP for non-use value.

Estimates of the WTP for use value and non-use value were selected from the existing literature in academia and adjusted to 2019 Swedish prices. The studies' results were converted to SEK and adjusted for inflation and PPP. Out of the existing literature, studies that referred to non-museum cultural spaces or of culturally distant countries were excluded. In order to improve comparability between estimates across different museum sizes, it was decided to divide the WTP results by the number of yearly visitors

that the museum had at the time of the survey. While the existing literature has not studied the relation between WTP and number of visitors, it seems reasonable to assume that the two are positively correlated. Even though the popularity of a museum is not an adequate measurement for a museum's cultural value, it seems to be a reasonable measurement for its economic value. A highly visited museum signals a higher profile or prestige, and can therefore motivate individuals to visit or preserve it. The WTP for non-use value is also likely to be higher for popular museums, as large tourist attractions tend to have spillover effects to the rest of the economy. This method also allows for the new location to be valued more highly per capita than the current location, which would be expected. Other variables other than number of visitors are also likely to affect WTP for the various museums, but are not readily available.

The studies sourced for the estimations of the individual use value and non-use value are displayed in Table 2 in local currency, SEK and SEK per 1000 visitors. The WTP for the use and non-use values are given by the average value of the rightmost values, column 3 in Table 2. The individual WTP for the use value is estimated to be 0.33 SEK per 1000 visitors[10] and is based on two Swedish studies for the Nordic Watercolor museum and the Museum of World Culture and one TCM study for the Musée de la civilisation in Canada (Armbrecht & Andersson, 2010; Lampi & Orth, 2009; Martin, 1994). The WTP for the non-use value is 0.26 SEK per 1000 visitors and is based on the CVM studies of the Nordic Watercolor museum in Sweden, the National Museum of Sculpture in Spain and the Musée de la civilisation in Canada (Armbrecht & Andersson, 2010; Bedate et al., 2012; Martin, 1994). The estimate from Armbrecht and Andersson (2010) is based on the average of the existence, option and bequest values[11]. While this estimate comes off as an outlier in Table 2, due to being significantly larger, it was ultimately not discarded as it is the only one taken from a Swedish context. The estimate by Bedate et al. (2012) was drawn from a weighted average of their two CVM surveys. It was furthermore divided by 50 (the equivalent to a museum building lifespan), as the study surveyed the population on a one time donation. The assumptions for the WTP for use and non-use values are revisited in the sensitivity analysis, due to their high importance in the estimation of the net benefits.

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[10]This means that if the museum attracts 100,000 visitors, each individual would be willing to pay 33 SEK to enter.

[11]In the paper, the author presents the WTP for non-use value as the sum of the estimates for existence, option and bequest values. For this CBA, an average of the three coefficients was chosen instead, as the surveyed individuals may struggle to differentiate between the three values.

Table 2: Studies utilized for the estimation of the individual WTP for use value and non-use value

Use value

Author	Year	Country	Method	(1)	(2)	(3)
Armbrecht & Andersson	2010	Sweden	CVM	87	98	0.56
Lampi & Orth	2009	Sweden	CVM	57	69	0.30
Martin	1994	Canada	TCM	8.4	101	0.13

Non-use value

Author	Year	Country	Method	(1)	(2)	(3)
Armbrecht & Andersson	2010	Sweden	CVM	104	117	0.67
Bedate et al.	2012	Spain	CVM	0.3	6	0.08
Martin	1994	Canada	CVM	2.6	31	0.04

NOTE: (1) refers to the WTP estimate in local currency taken from the study, (2) refers to the WTP estimate in SEK 2019, (3) refers to the WTP estimate in SEK 2019 per 1000 museum visitors in the survey year.

The total social surplus for the use value is derived from the number of visitors from Skåne that are expected to have visited the museum that year times the individual WTP estimate. It was assumed that 50 percent of visitors would be local, based on survey data for Moderna Museet Malmö (Kulturanalys, 2019b) and adjusted upwards to reflect a local focus of Malmö Konstmuseum.

The surplus for the non-use value is estimated by multiplying the number of adult residents by the WTP estimate for each year. In this model, a more conservative approach was taken when estimating the social surplus for the non-use value when compared to the literature. Some previous estimates of social surplus have considered that inhabitants of the region would be willing to pay the same amount as the inhabitants of the city the museum is located in (del Saz-Salazar et al., 2019). Given that Malmö consists of 25 percent of Skåne's population, we considered that it would be more realistic to assume that someone from outside of the city would be willing to pay half as much as a citizen in Malmö. This assumption is further backed up by the findings of Armbrecht and Andersson (2010) that the WTP for regional inhabitants in Västra Götaland was about half that of the inhabitants of Tjörn.

The new museum location is assumed to bring a permanent increase of 100,000 visitors (a 64 percent increase) to Malmö Konstmuseum compared to the current location. As a result, the museum would expect around 250,000 visitors in its first year[12]. This

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[12]For comparison, the number of visitors of the largest art museums in Sweden are: Moderna Museet, 562,000 (2018); Göteborgs Konstmuseum, 218,000 (2018); Prins Eugens Waldemarsudde, 374,000 (2017).

assumption is based on the success of previous museums that changed their location or upgraded their facilities in the Nordic countries. While museum press releases that are found in news point towards visitor numbers doubling upon reopening[13], there is a likely upward bias since cases of bigger success are more heavily publicized. In order to account for this uncertainty, a sensitivity analysis is performed for this variable. Aside from the flat increase in visitors, it is also assumed that for every operational year the number of visitors increases by 2,277. This estimate can be seen in Table 8 in Appendix A and is based on the trends in visitors to state, regional and municipal museums from 2003 to 2017[14].

The estimations for Malmö and the rest of Skåne's population until 2077 are based on Statistics Sweden forecasts for the Swedish population[15]. The share of adults out of the total population is assumed to be 78 percent based on 2019 statistics for Skåne. Although this share is expected to increase due to an aging population, it was ultimately decided to keep it constant since it would affect the results marginally.

4.3   Museum revenues

Museums generally have some forms of income that are independent of public funding, which may come from entrance fees, renting part of their building to cafés or shops, private sponsorship, among others. These are of relevance to a CBA, not only because they increase the institution's revenues, but also because there is a cost to public funding. These revenues are important to account for in a CBA, as they are not typically encapsulated in survey estimations of non-use value. In this sub-section, the method behind the estimation of entrance fee revenues and other revenues is presented.

In the base scenario, free admission is assumed for Malmö Konstmuseum. In its current location, Malmö Konstmuseum shares a 40 SEK entrance fee with Malmö Museer, giving out reduced admission to certain population groups. Within Skåne, most art museums and galleries are free, with the exception of Dunkers Kulturhus, Skissernas Museum and Ystads konstmuseum that have entrance fees of 100 SEK, 80 SEK and 50 SEK respectively. In order to estimate which entrance fee is optimal for Malmö Konstmuseum, a sensitivity analysis is performed.

In modeling the impact of entrance fees on costs and benefits, two main effects are taken into account, the impact of entrance fees on number of visitors and the revenues from those fees. The first effect is estimated using panel data containing number of visitors and average entrance fees for adults per year for state, regional and municipal

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[13]Such is the case for Nationalmuseum's reopening or Bildmuseet's relocation.

[14]The estimate for the whole sample is chosen over the art museums due to the higher statistical significance and the much larger sample size.

[15]The forecast is available until 2070 and is trended outwards to 2077 based on the yearly percent change for the last available data point.

museums. By utilizing museum and year fixed effects, an estimate of -6,470 visitors decline per 10 SEK entrance fee is computed, further estimates can be seen in Table 9 in Appendix A[16]. The second effect is estimated by simply multiplying the entrance fee by the number of non-local visitors expected. Local visitor entrance fees are not included here to evade double counting, since they are already encompassed in use value estimations. This method is applied to both locations, in order to ensure comparability between the two.

A rubric of other revenues is estimated to represent other sources of non-public funding for the institution. It is assumed that 20 percent of operational costs that the museum would face in the new location are covered by non-funding income. This share is the average for municipal museums with over 50,000 visitors between 2014 and 2018. These revenues can come from services, from renting out a part of the building to private businesses or from attracting new private funding due to the larger scale of the museum. In its current location, Malmö Konstmuseum earns one million SEK in other revenues, coming mainly from services. This value is expected to remain stable over the timespan of the project.

4.4 Construction cost

The construction cost is sensitive to the size and the function of the building. In order to estimate the total construction costs, the size of the museum has to be acquired. The exhibition area is assumed to be 5,000 square meters, as this has been expressed by SfMK as a minimum for what is needed to display different exhibitions and artworks from the collection. Depending on what is included in the building (administration, storage, external area such as café or meeting space) the gross floor area can vary significantly. Compiled estimates from other museums show that assuming an exhibition area of 30 percent of the gross floor area seems to be reasonable. Thus, the gross floor area for the building is estimated to be 16 667 square meters.

Three different locations have been debated for the art museums in Malmö. Although there are advantages and disadvantages for each of the locations, these are not considered in the estimations of construction costs. Since there are no preliminary construction cost estimates provided by the Culture Department for any of the locations, secondary data have been used to generate them. Due to this uncertainty, the construction cost is included in the sensitivity analysis conducted in the results section. The estimates for construction costs come from similar projects that have taken place in the Nordic countries within the last two decades[17]. The cost per square meter estimates were

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[16]The sample including all museums is preferred due to higher statistical significance and sample size.

[17]ARoS in Aarhus, Bildmuseet in Umeå, Kalmar Konstmuseum in Kalmar and World Culture Museum in Gothenburg.

adjusted to 2019 Swedish prices and then averaged. The estimates were converted to SEK and adjusted for inflation and PPP.

The estimated construction cost for our model is 31 thousand SEK per square meter. The total construction costs are then calculated by multiplying the gross floor area with the construction cost per square meter and the MCPF. It is assumed that a loan is taken in 2023 and is fully paid until 2077. The loan payments are structured using a principal payment in equal parts applying a 5 percent nominal interest rate.

4.5   Operational cost

The estimation of operational costs for a new art museum comes from the average of the reported operational costs over the period 2014-2018 for a selection of museums in Sweden, utilizing data from Kulturanalys. Operational costs are defined as the total costs of having the museum running for a year and aggregate personnel, venue, financial and other costs.

Since the sample compiles a high variety of museums, a sample trimming was necessary to find comparable institutions to an art museum the size of Malmö Konstmuseum. Museums chosen for this sub sample have at least 50,000 visitors per year the majority of the years within the 2014-2018 time frame. If the data for either visitors or costs have been missing, an average has been calculated and imputed. If a museum did not report their cost for more than three years, it was removed from the sample. Museums that have been heavily impacted by renovations or been temporarily closed were also removed. Open air museums and parks have been excluded along with other specialized museums due to their differing cost structure. After trimming, the sample includes 36 museums, as can be seen in Figure 6 in Appendix A. The mean total cost for the sample is 30 million SEK and the median is 27 million SEK per year. The total cost is expressed in SEK and without VAT. The median estimation was selected for the modeling operational costs in this study as the base value in 2019. However, there is no way to know if this estimate is close to the true operational cost the new museum would face. Therefore, this variable is included in the sensitivity analysis, where both a higher and lower operational cost will be tested.

A sample of only art museums and galleries was also considered following a similar method as stated above, compiling 17 art museums, displayed in Figure 7 in Appendix A. The average total cost for art museums is 14 million SEK and the median is 11 million SEK indicating that there is a lower cost associated with an art museum or gallery. However, this sub sample lacks large art institutions in Sweden, such as Moderna Museet and Nationalmuseum, which implies that the cost is not representative for art museums in general. Due to this small and non-representative sample of art museums, this estimate for operational costs is not utilized in our model.

In its current location, Malmö Konstmuseum is assumed to have 19 million SEK yearly operational costs. Out of these, 12 million SEK correspond to monetary operational costs, while 6.5 million SEK correspond to the non-monetary cost of occupying a public space and paying no rent for it. The monetary costs are based on the operational costs the museum had in 2019, roughly 70 percent being personnel costs. The art museum shares some operational costs with Malmö Museer, such as the front desk which is shared with Malmö Museer's aquarium. The non-monetary cost is sized through the estimation of the rent that an institution should pay for a location that size. The valuation is based on an average between the median venue costs that Swedish museums faced in 2018 and the current rent that Malmö Konsthall pays[18]. Since this corresponds to a non-monetary cost, the MCPF coefficient is not applied to this cost.

4.6 Sensitivity

In this CBA, a sensitivity analysis is conducted for the assumptions that are considered to be the most uncertain, volatile and impactful for modeling purposes. A partial sensitivity analysis is chosen due to the limited information available for some of the assumptions at hand. This analysis consists of observing how the net benefit changes as one of the underlying assumptions of the model is altered. Breakeven points are also found to determine the value an assumption needs to take for the net benefit to be zero or for a location to be preferable to the other. High and low scenarios are proposed to explore the impact of potentially misspecified assumptions on net benefits. A scenario is considered high when the net benefits are higher than in the base scenario and it is considered low when the net benefits are lower.

The assumptions that qualify for partial sensitivity analysis are the new location visitors increase, the WTP estimates, the share of Malmöhus visitors that visit Malmö Konstmuseum, the new location operational costs and the construction costs (Table 3). The high and low scenarios for the visitor increase for the new location correspond to a deviation of 50,000 visitors off the base value. The scenarios for the WTP estimates correspond to the highest and lowest estimates retrieved from academic valuations (Table 2). The estimates for the operational costs are retrieved from subtracting and adding the standard deviation in operational costs for museums in Sweden. Lastly, the construction costs are based on the lowest and highest estimates found for similar projects in the Nordic countries in the past two decades.

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[18]Malmö Konsthall has an exhibition area of 2,000 square meters, similar in size to Malmö Konstmuseum's in Malmöhus.

Table 3: High and low scenarios for key assumptions

Sensitivity Assumptions	Low	Base	High
New location's visitor increase	50,000	100,000	150,000
Individual WTP for use value	0.13	0.33	0.56
Individual WTP for non-use value	0.04	0.26	0.67
Share of Malmöhus visitors that visit the museum	50%	60%	70%
Construction costs	42	31	25
New location's yearly operational costs	44,421	27,392	10,364

NOTE: High and low scenarios refer to whether the net benefit will be higher or lower than in the base scenario. Individual WTP for use value and non-use value are given by SEK per 1,000 visitors. Construction costs are presented in thousand SEK per square meter. New location's yearly operational costs are stated in thousand SEK.

An additional sensitivity analysis is performed concerning the entrance fee for Malmö Konstmuseum. Six different entrance fees are tested ranging from 0 SEK to 100 SEK in 20 SEK intervals. The alternative that provides the highest net benefit for both the new and current locations is recommended.

4.7   Validity and limitations

The focal point of this thesis within the conducted CBA is the valuation of use and non-use values, owing to the complexity of evaluating cultural assets. Due to the lack of a decision as of spring 2020 on what type of building would be constructed, assumptions concerning operational costs, construction costs and non-entrance revenues were based on observable data for other comparable museums in Sweden and the Nordic countries. Policy makers are advised to revisit cost and revenue estimations once the project settles on a specific form regarding the location, building size and other businesses that may operate in the facilities.

An obstacle to the valuation of this art museum is the low number of economic valuations of museums that can be utilized to estimate WTP. Concerns over the external validity and measurement errors of WTP undermine this CBA, and make this a difficult asset to valuate. Conducting a Contingent Valuation survey to the population of Malmö was considered in order to circumvent low external validity, but was ultimately dismissed. Carrying out a survey during the COVID-19 crisis would likely result in downward biased results, due to the current economic downturn. As a result of the CVM and TCM criticisms, the presented use and non-use benefits should be seen as an approximation to their true value rather than a perfect representation.

One of the challenges to the validity of this study is underlined by the inaccurate measurement of museum level data in the collected statistics, as mentioned in the data

section. The need to alter statistics to make them more representative of reality has made the validity of the analysis more dependent on ball park estimates. This is a second best situation, that is believed to be more realistic than blindly utilizing the existing statistics.

Another challenge to internal validity of this CBA is tied to the still unknown effects of COVID-19 on society. In this CBA we do not consider a long term change in consumer preferences based on the current pandemic, as it is expected that by 2028 the effects of this shock will have dissipated.

The aspect of art depreciation is not something that is explored in this CBA due to the imprecision in the valuation of the museum's collection. Nevertheless, it is possible that the unfavorable environmental conditions of the current museum space accelerate the rate of depreciation of the exhibition pieces. Future costs associated with stabilizing the environmental conditions are also not explored in this CBA.

The opportunity cost of land use for both the new and current locations are not analysed in this thesis. Both the current location and the new potential locations are on public land. This cost is not possible to size in this CBA given the assymetric information over what other possible uses the various locations would receive. The decision makers in Malmö City Council are tasked to compare the evaluation of Malmö Konstmuseum with the evaluations of competing projects for the various locations.

Lastly, this thesis does not explore thoroughly matters of equity, due to the added level of complexity it would bring to the model. Despite the general interest in the literature in exploring how an increase in entrance fees decreases visitor variety (Frey and Steiner, 2012; Lampi & Orth, 2009), not much has been concluded on how museum location has affected equity. While on one hand it is possible to view the positioning of a museum in a low income area of the city as beneficial to those living there, it may also result in gentrification.

5 Results

In Table 4 it can be seen that in the base scenario, the net benefit of the current museum location outweighs that of relocation. Both cases of the new and old venues display positive net benefits of 762 million SEK and 939 million SEK respectively, with the current location providing a substantially higher benefit-cost ratio. A permanent increase of 100,000 visitors in the new location would result in approximately 255,000 visitors the first year of operations, further reaching 365,000 by 2077. On the benefit side, the new location would provide higher benefits across all valuation categories. It can also be noted that according to the model, the total non-use value for residents in Skåne outweigh that of the residents of Malmö, in spite of a lower per capita benefit. The other revenues rubrics is unsurprisingly larger for the new location, as a much bigger building would

open possibilities for the museum administration to rent out their facilities to private enterprises. On the cost side, the construction costs are expected to rise up to around 800 million SEK, while the present value operational costs in the new location are about 50 percent higher than in the current location. Although the new location provides a significant increase in benefits, they are not high enough to outweigh the increased costs.

Table 4: Net social benefits from a local and regional perspective for a museum with free admission

Million SEK	New location	Current location
Benefits		
Use value	488	238
Non-use value for Malmö residents	729	508
Non-use value for Skåne residents	1,093	761
Entrance fee revenues	0	0
Other revenues	148	27
Total benefits	**2,458**	**1,535**
Costs		
Construction costs	778	0
Operational costs	919	596
Total costs	**1,697**	**596**
Net benefit (Benefits - Costs)	**762**	**939**
Benefit-cost ratio (Benefits / Costs)	**1.4**	**2.6**

NOTE: The results displayed in this table are in present value following a 3.5 social discount rate. The time span of this analysis corresponds to 55 years, from 2023 to 2077.

5.1 Sensitivity analysis

The results for the partial sensitivity analysis in Table 5 display a higher net benefit for the current museum location across most scenarios. The assumptions for which sensitivity analysis is performed are the permanent increase in visitors from the museum relocation, the two WTP assumptions for use and non-use values respectively, the share of Malmöhus visitors that go to Malmö Konstmuseum, the construction costs of the new location and the operational costs in the new location. In the high scenario, the net benefits are displayed for more optimistic values of each individual assumption, while for the low scenario, the net benefits are presented for a more conservative assumption values. In the high scenarios, a higher permanent increase in visitors, a higher individual WTP for non-use value and lower operational costs at the new venue result in a higher net benefit for the new location. The higher WTP for use value and the lower construction

costs also nearly bridge the gap between the two projects. The adjustments to the share of Malmöhus visitors that go to Malmö Konstmuseum alter the magnitude of the net benefits but only marginally reduce the gap between locations. The breakeven points for the cases in which the new location is preferred to the current one are 120,000 visitor increase, 0.36 individual WTP for non-use value and 21 million SEK yearly operational costs. In the low scenarios of the sensitivity analysis, the current location is preferred to the new location for all six key variables. In those scenarios, in the case of a low non-use value WTP, the net benefits for the new and current locations are also negative. The breakeven points for the net benefits to be positive are an individual non-use WTP of 0.15 per 1000 visitors for the new location and an individual non-use WTP of 0.07 per 1000 visitors for the current location.

Table 5: Net social benefits from a local and regional perspective for high and low scenarios with free admission

Million SEK	New location	Current location
High scenario		
New location's visitor increase	**1,196**	939
Individual WTP for use value	1,097	**1,103**
Individual WTP for non-use value	**3,563**	2,891
Share of Malmöhus visitors that visit the museum	973	**1,129**
Construction costs	922	**939**
New location's yearly operational costs	**1,241**	939
Low scenario		
New location's visitor increase	349	**939**
Individual WTP for use value	464	**794**
Individual WTP for non-use value	-784	**-138**
Share of Malmöhus visitors that visit the museum	555	**755**
Construction costs	497	**939**
New location's yearly operational costs	282	**939**

NOTE: Bold font indicates largest net social benefit. High and low scenarios refer to whether the net benefit will be higher or lower than in the base scenario. The results displayed in this table are in present value using a 3.5 social discount rate. The time span of this analysis corresponds to 55 years, from 2023 to 2077.

To see how the museum is affected by an entrance fee, the current entrance fee of 40 SEK was introduced into the model. Table 7 shows how the benefits and costs change for the new and current location. The new location has a net social benefit of 682 million SEK while the current has 837 million SEK. Introducing an entrance fee of 40 SEK would

generate a revenue for the museum which would be 105 million SEK for the new and 70 million SEK for the current location. Additionally, one can observe that the use and non-use values are still higher for the new location, but are negatively affected by the introduction of an entrance fee, compared to no entrance fee in shown in Table 4.

Table 6: Net social benefits from a local and regional perspective for a museum with a 40 SEK entrance fee

Million SEK	New location	Current location
Benefits		
Use value	415	188
Non-use value for Malmö residents	672	451
Non-use value for Skåne residents	1,007	676
Entrance fee revenues	105	70
Other revenues	148	27
Total benefits	**2,348**	**1,412**
Costs		
Construction costs	778	0
Operational costs	887	575
Total costs	**1,665**	**575**
Net benefit (Benefits - Costs)	**682**	**837**
Benefit-cost ratio (Benefits / Costs)	**1.4**	**2.5**

NOTE: The results displayed in this table are in present value using a 3.5 social discount rate. The time span of this analysis corresponds to 55 years, from 2023 to 2077.

Table 7 shows the net benefit for various entrance fees. The results demonstrate that the net benefits are highest when the entrance fee is zero. In the model, the relationship between the entrance fee and the net social benefit is non-linear and negative. When the entrance fee increases, the marginal decrease in the net benefit increases. In this model, the negative effect from a decrease in visitors is larger than the positive effects from the gains in revenues from entrance fees and from the reduction in the cost of public funding.

Table 7: Net social benefits from a local and regional perspective for various entrance fees

Entrance fee (SEK)	New location	Current location
0	**762**	**939**
20	724	890
40	682	837
60	636	779
80	585	717
100	530	650

NOTE: Bold font indicates the entrance fee that returns highest net social benefit. The results displayed in this table are in present value using a 3.5 social discount rate. The time span of this analysis corresponds to 55 years, from 2023 to 2077.

5.2 Discussion

The main results of the analysis conducted for the art museum in Malmö indicate that from an economic standpoint, the museum relocation should not be conducted. While arguments can be made to consider a wider time frame or some liquidation value for the project, the main results presented seem to represent the most accurate depiction of the expected outcome. An analysis of the added cultural value of expanding the current museum should be conducted as recommended by Throsby (2001).

The three high scenarios that return a higher net benefit for the new location have seemingly different likelihoods of becoming a reality. The increase in visitors generated by expanding the facilities of the art museum is likely the closest to reality. A permanent increase in visitors in the new location of about 120,000 (reaching 275,000 in the opening year of 2028) does not differ largely from the base scenario. While such numbers of total visitors have been reached by Dunkers Kulturhus, the multipurpose nature of that space is the main driver for high visitor numbers. Ensuring that the new museum location provides either a multipurpose space or a higher interest in revisiting the museum would aid the museum administration in achieving this higher target. The likelihood of the scenario for a high individual WTP for non-use value is compromised by the unrepresentative context for the Nordic Watercolor Museum in Tjörn. While the study having a Swedish background provides some similarity in context, other local factors likely overinflate the estimate for Malmö's context. Tjörn is a smaller municipality with a 24 percent higher median income than that in Malmö. Since museum visitors in Sweden tend to be high income (Kulturanalys, 2019c), the WTP for an art museum in Tjörn is likely to be higher than in Malmö. The last case corresponding to the new museum having a lower operational cost is also of a lower likelihood. The 21 million SEK of yearly operational

costs breakeven point is hard to reach. Whilst there are many art museums in Sweden with costs lower than 21 million SEK, most have exhibition areas under 2,000 square meters. It seems unrealistic to assume that operational costs would remain that low once the museum starts operating in a location with a much higher surface area.

The low scenarios help re-insure Malmö City Council that either project's estimated net benefit has a high level of robustness to assumption misspecifications. A low WTP for non-use value is the only result that shows a project with a negative net benefit. This scenario would happen if the population in Malmö were to value a new museum in a similar magnitude to the citizens of Valladolid in Spain or Quebec in Canada. Given that the existing studies for Sweden seem to display a higher WTP per visitor, the breakeven points for WTP of 0.07 per 1000 visitors and 0.15 SEK per 1000 visitors are likely verified in this context. The low scenarios emphasize that under a conservative approach, the current location is preferred.

As is shown in the results, having free admission causes the highest social benefits for Malmö Konstmuseum, however there may be other advantages and disadvantages to having an entrance fee. Instituting free admission would ensure that visitors would not be excluded on the basis of an entrance fee and would potentially widen the museum's audience. Studies on the subject of imposing an entrance fee show that the socioeconomic composition of the visitors change (Lampi & Orth, 2009) and that individuals which subjectively assess the entrance fee as a high barrier make fewer visits to a museum than those who do not (Kirchberg, 1998). Implementing an entrance fee would allow for a higher financial self-reliance for Malmö Konstmuseum and could act as a signal for the museum's value for less informed visitors. The implementation of an entrance fee may also be an effective way to deal with overcrowding, which may occur if free admission is implemented. On the topic of equity, O'Hagan (1995) defends that there are reasons other than price to why the low-income earners do not visit museums. Henceforth, implementing free admission would put pressure towards inequality, since tax money will be allocated to a resource consumed by the high-income earners. Alternative ways of pricing a museum visit have also been proposed. In order to deal with overcrowding, implementing an exit fee where the price is calculated from the time spent in the museum could be the fairest way of pricing (Frey & Steiner, 2012). Another option for collecting revenues would be to have a donation box at the exit of the museum, however research has found that under that model contributions are low and do not add up to the individual WTP (Neuts, 2020). The free admission reform for state-owned museums has provided some insights in what effects to expect when removing an entrance fee in Sweden. The museums have reported that it has become easier to reach out to different groups and to attract more visitors. This however, has resulted in higher maintenance costs and lost revenues, leaving the museum with a smaller budget to operate on (Riksrevisionen, 2019).

One last aspect that could sway the discussion around the relocation of the art museum is tied to the internal validity of this study. The results presented in this thesis correspond to an approximation of the net benefits of a museum relocation given the information available at the current state of the political discussion. The decision makers discussing this project should not only revise construction and operational costs once the location and contents of the project are settled, but also evaluate the state of the current building. Concerns over whether the current museum location has conditions for displaying art for 50 more years or over the costs of art depreciation from poor environmental conditions should be evaluated by field specialists.

6 Conclusion

From an economic standpoint, the decision to relocate the current art museum in Malmö does not seem to correspond to an efficient allocation of resources. Given the existing information about the project and the previous research on the valuation of cultural assets, the net benefit of relocating the museum is lower than if it continues to operate in its current location. Based on the assessment of high and low scenarios, there are some contexts for which the relocation could be the optimal choice. Out of these, only one seems plausible, that the new location provides a permanent increase of at least 120,000 visitors.

In the matter of entrance fee, it seems that a free admission policy is optimal for Malmö Konstmuseum. In spite of there being benefits in reducing dependence on public funding, it appears that the benefits gained from an increase in visitors outweigh entrance fee revenues. Other factors concerning equity, signaling of value, overcrowded exhibitions and increased operational costs could motivate having an admission fee.

This thesis was conducted prior to a final decision on location, size and function of the new building and as such revisiting the estimations on costs and benefits at a later stage is recommended. Technical assessments over the costs of art depreciation and the costs associated with the current environmental conditions of the museum should be conducted. At last, due to the dichotomy between cultural and economic values, an assessment of the gain in cultural value from displaying a larger part of the art collection should be conducted (Throsby, 2001).

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A   Appendix: Auxiliary estimations

Table 8: Average increase in visitors per year for museums in Sweden 2003-2017.

	(1)	(2)
Independent variable	Visitors	Visitors
Year	2,277***	610
	(562)	(1,387)
Observations	2,289	394
Number of museums	223	34
Museum fixed effects	Yes	Yes
*** p<0.01, ** p<0.05, * p<0.1		

NOTE: Column 1 includes all state, regional and municipal museums in Sweden for which Kulturanalys has compiled data and column 2 only includes visits to art museums. Robust standard errors are in parentheses.

Table 9: Price elasticity of demand for museums in Sweden 2014-2018.

	(1)	(2)
Independent variable	Visitors	Visitors
Entrance fee	-647*	713
	(347)	(524)
Observations	548	93
Number of museums	187	31
Museum fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
*** p<0.01, ** p<0.05, * p<0.1		

NOTE: Column 1 includes all state, regional and municipal museums in Sweden for which Kulturanalys has compiled data and column 2 only includes visits to art museums. The variable entrance fee is measured in SEK. Robust standard errors are in parentheses.
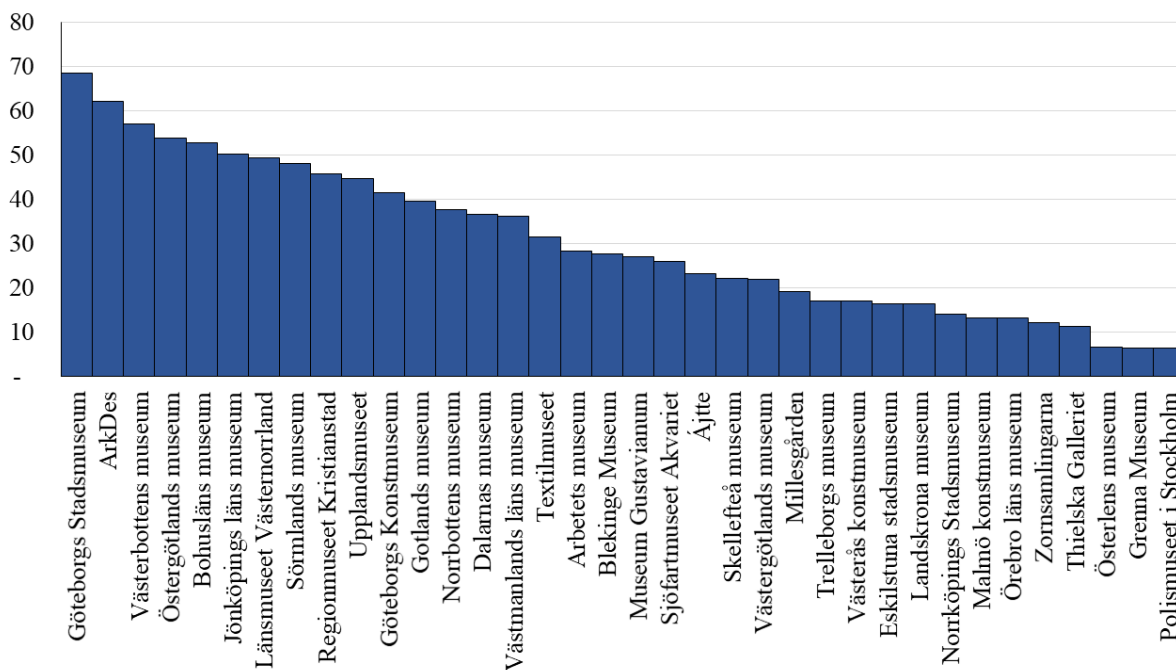
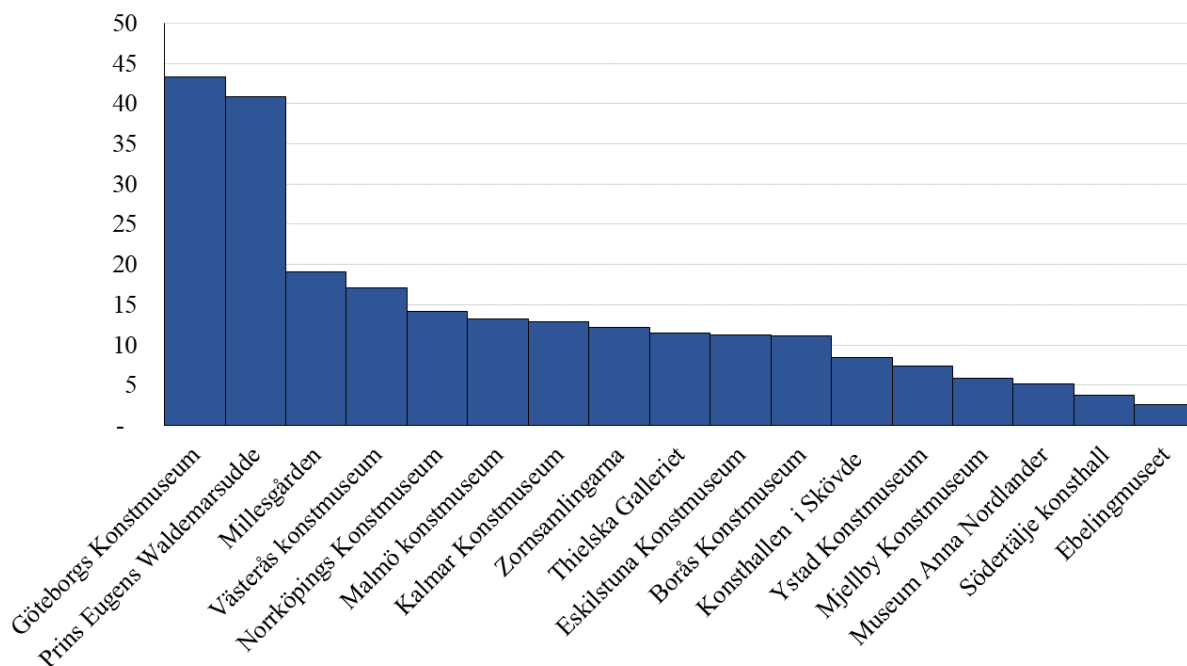Figure 6: Average annual total costs for selected museums in Sweden 2014-2018 (2019 values, million SEK)

Figure 7: Average annual total costs for selected art museums and galleries in Sweden 2014-2018 (2019 values, million SEK)

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B Appendix: List of museums in Sweden

Table 10: List of museums and their categorization

Name	Type
Ájtte	Other
Alingsås museum	Other
Alsters herrgård	Other
Arbetets museum	Other
ArkDes	Other
Armémuseum	Other
Astrid Lindgrens näs	Other
Avesta Visentpark	Other
Bergrummet	Other
Bergslagens medeltidsmuseum	Other
Bildmuseet	Art museum
Biotopia	Other
Bjuvs Gruvmuseum	Other
Blekinge Museum	Other
Bohusläns museum & konsthall	Other
Bollnäs museum & konsthall	Art museum
Borås Konstmuseum	Art museum
Borås museum	Other
Borgholms Slott	Other
Carolina Rediviva	Other
Dalarnas museum	Other
Dalslands Konstmuseum	Art museum
Dansmuseet	Other
Djurgårdslinjen	Other
Drottningholms Slottsteater	Other
Ebelingmuseet	Art museum
Edsbyns museum	Other
Eketorps borg	Other
Ekomuseum Bergslagen	Other
Eksjö museum	Other
Elfstrands krukmakerimuseum	Other
Enköpings museum	Other
Eriksbergs museum	Other
Eskilstuna Konstmuseum	Art museum
Eskilstuna stadsmuseum	Other
Etnografiska museet	Other
Evolutionsmuseet	Other
F7 Gårds och flottiljmuseum	Other
Falbygdens museum	Other
Falkenbergs museum	Other
Flygvapenmuseum	Other

Forsviks Industriminnen	Other
Forum för levande historia	Other
Fotevikens museum	Other
Fredriksdal museer och trädgårdar	Other
Friluftsmuseet Gamla Linköping	Other
Friluftsmuseet Gammelgården	Other
Friluftsmuseet Hägnan	Other
Fågelmuseet	Other
Färgargården	Other
Försvarsmuseum Boden	Other
Gällivare museum	Other
Gamla Uppsala Museum	Other
Glasbruksmuseet i Surte	Other
Glimmingehus	Other
Gotlands museum	Other
Grenna Museum	Other
Gripsholms slottsförvaltning	Other
Gustavianum	Other
Gustavsbergs Porslinsmuseum	Other
Göteborgs konstmuseum	Art museum
Göteborgs Stadsmuseum	Other
Göthlinska gården	Other
Hallands Konstmuseum	Art museum
Hallands kulturhistoriska museum	Other
Hallwylska museet	Other
Hammarö Skärgårdsmuseum	Other
Havets Hus	Other
Helsingborgs museum	Other
Historiska museet	Other
Hylténs industrimuseum	Other
Hälsinglands museum	Other
Härjedalens fjällmuseum	Other
Hörby museum	Other
Idrottsmuseet i Göteborg	Other
Inlandsbanemuseet	Other
Jamtli	Other
Jussi Björlingmuseet	Other
Järnvägens museum Ängelholm	Other
Järnvägsmuseet	Other
Jönköpings läns museum	Other
Kalmar Konstmuseum	Art museum
Kalmar läns museum	Other
Karlsborgs Fästningsmuseet	Other
Karlsund Tekniska Kvarnen	Other
Katrineholms konsthall	Art museum
Klasro skolmuseum	Other

Klenshyttan	Other
Klostret i Ystad	Other
Konsthallen i Skövde	Art museum
Kristinehamns konstmuseum	Art museum
Krusenstiernska gården	Other
Kulbackens museum	Other
Kulturen i Lund	Other
Kulturens Hus	Art museum
Kulturhuset Oskarshamn	Other
Kulturhuset Pigalle	Other
Kulturmagasinet i Helsingborg	Other
Kulturparken Småland	Other
Kungajaktsmuseet Älgens Berg	Other
Kungl. Husgerådskammaren	Other
Kungl. Myntkabinettet	Other
Kunskapens Torg	Other
Kvinnohistoriskt museum	Other
Köpings Museum	Other
Landskrona museum	Other
Lindesbergs museum	Other
Livrustkammaren	Other
Ljusdalsbygdens museum	Other
Lomkällan	Other
Lunds Universitets Historiska Museum	Other
Långbans gruvby	Other
Länsmuseet Gävleborg	Other
Länsmuseet Västernorrland	Other
Malmö konstmuseum	Art museum
Malmö museer	Other
Malungs hembygdsförening	Other
MAN - Museum Anna Nordlander	Art museum
Marinmuseum	Other
Medelhavsmuseet	Other
Medicinhistoriska museet i Helsingborg	Other
Medicinhistoriska museet i Stockholm	Other
Medicinhistoriska museet, Göteborg	Other
Mentalvårdsmuseet	Other
Millesgården	Art museum
Mjellby Konstmuseum	Art museum
Moderna museet Malmö	Art museum
Moderna museet Stockholm	Art museum
Motala Industrimuseeum	Other
Museet i Leksands kulturhus	Art museum
Museum Gustavianum	Other
Museum Tre Kronor	Other
Mångkulturellt centrum	Other

Mölndals stadsmuseum	Other
Nationalmuseum	Art museum
Naturhistoriska museet i Göteborg	Other
Naturhistoriska riksmuseet	Other
Naturum Nationalparkernas hus	Other
Naturum Ottenby	Other
Norbergs kommuns museer	Other
Nordiska museet	Other
Norrbottens museum	Other
Norrköpings Konstmuseum	Art museum
Norrköpings Stadsmuseum	Other
Nynäs Slott med park	Other
Olle Olsson Hagalund	Art museum
Ornässtugan	Other
Orsa Kulturhus	Art museum
Polismuseet i Stockholm	Other
Porfyr- och Hagströmmuseet	Other
Postmuseum	Other
Prins Eugens Waldemarsudde	Art museum
Regionmuseet Kristianstad	Other
Regionmuseum Västra Götaland	Other
Riksidrottsmuseet	Other
Roslagsmuseet	Other
Rydals museum	Other
Röhsska museet	Other
Scenkonstmuseet	Other
Sigtuna Museum	Other
Siljansfors Skogsmuseum	Other
Silvermuseet i Arjeplog	Other
Sjöfartmuseet Akvariet i Göteborg	Other
Sjöhistoriska museet	Other
Skänninge museum	Other
Skansen	Other
Skellefteå museum	Other
Skissernas museum	Art museum
Skogsmuseet i Lycksele	Other
Skoklosters slott	Other
Skövde stadsmuseum	Other
Smålands museum	Other
Sollefteå museum	Other
Spårvägsmuseet	Other
Statens försvarshistoriska museer	Other
Statens historiska museer	Other
Statens maritima museer	Other
Statens maritima och transporthistoriska museer	Other
Stockholms läns museum	Other

Stockholms medeltidsmuseum	Other
Stockholms Stadsmuseum	Other
Strängnäs museum	Other
Stripa Gruvmiljö	Other
Sundsvalls museum	Other
Svartviks industriminnen	Other
Sveriges Järnvägsmuseum i Gävle	Other
Sveriges Rundradiomuseum	Other
Sveriges vägmuseum	Other
Söderhamns Stadsmuseum	Other
Södertälje konsthall	Art museum
Sörmlands museum	Other
Technicus i Mittsverige AB	Other
Teckningsmuseet i Laholm	Art museum
Teknikland, Östersund	Other
Tekniska museet	Other
Textilmuseet	Other
The Glass Factory - Glasmuseet i Boda	Other
Thielska Galleriet	Art museum
Tidaholms museum	Other
Tjärnö Akvarium	Other
Torekällbergets museum	Other
Torsby Finnskogscentrum	Other
Trelleborgen	Other
Trelleborgs museer	Other
Tumba Bruksmuseum	Other
Tycho Brahe-museet	Other
Tändsticksmuseet	Other
Upplandsmuseet	Other
Uppsala Konstmuseum	Art museum
Uppsala linneanska trädgårdar	Other
Uppsala medicinhistoriska museum	Other
Vadsbo museum	Other
Vallby Friluftsmuseum	Other
Vasamuseet	Other
Verket	Other
Vetlanda museum	Other
Vilhelmina museum	Other
Visualiseringscenter C	Other
Vänermuseet	Other
Världskulturmuseet	Other
Värmlands museum	Other
Västarvet	Other
Västerås konstmuseum	Art museum
Västerbottens museum	Other
Västergötlands museum	Other

Västmanlands läns museum	Other
Wadköping	Other
Ystads konstmuseum	Art museum
Ystads Stadsmuseum	Other
Zoologiska museet	Other
Zornsamlingarna	Art museum
Äskhults by	Other
Örebro Konsthall	Art museum
Örnsköldsviks museum och konsthall	Other
Östasiatiska museet	Other
Östergötlands museum	Other
Österlens museum	Other

NOTE: A museum is categorized as an art museum if its primary function is to display art. The categorization is made by the authors.