UNIVERSITY OF WARSAW | FACULTY OF ECONOMIC SCIENCES

WORKING PAPERS
No. 11/2025 (474)

BREAKING NEW GROUND IN HERITAGE VALUATION: A COMPREHENSIVE USE OF DISCRETE CHOICE EXPERIMENTS

MIKOŁAJ CZAJKOWSKI
BARTOSZ JUSYPENKO
BEN WHITE

WARSAW 2025

ISSN 2957-0506

WORKING PAPERS 11/2025 (474)

Breaking New Ground in Heritage Valuation: A Comprehensive Use of Discrete Choice Experiments

Mikołaj Czajkowski[1*], *Bartosz Jusypenko*[1], *Ben White*[2]

[1]*Faculty of Economic Sciences, University of Warsaw*
[2]*SurveyEngine GmbH, Germany*

**Corresponding author: mc@uw.edu.pl*

Abstract: This pioneering study employs stated preference methods, specifically discrete choice experiments, to evaluate public preferences for the protection of diverse cultural heritage assets in Victoria, Australia. By analyzing responses to a series of hypothetical policy scenarios, we uncover the economic values the public assigns to various heritage attributes, including condition, accessibility, and protection measures. Our findings emphasize the importance of both use and non-use values in shaping willingness to pay for heritage conservation. These insights are critical for developing more effective, community-aligned heritage policies that reflect the public's valuation of cultural heritage. This research marks a significant advancement in the application of discrete choice experiments for general heritage valuation, offering a robust framework for future studies and policy development in cultural heritage preservation.

Keywords: cultural heritage, historic preservation, built environment, non-market valuation, discrete choice experiment, public preferences

JEL codes: C51, H43, Z18, Q51

Acknowledgements: The authors would like to thank Marcus Spiller and Andrew B. Grear for their invaluable contributions, which significantly improved the quality of the paper. Mikołaj Czajkowski gratefully acknowledges the support of the National Science Centre of Poland (Opus, 2023/49/B/HS4/01655). Bartosz Jusypenko gratefully acknowledges the support of the National Science Centre of Poland (Preludium, 2021/41/N/HS4/04321). The survey data were collected as part of the project "Valuing Victoria's Heritage", commissioned by Heritage Victoria and the Heritage Council of Victoria.

1 Introduction

Cultural heritage encompasses the tangible and immovable assets created, used, or altered by humans, such as buildings, entire city or town structures, areas, landscapes, and other public spaces that form the built environment in which we live. The cultural significance of these assets is reflected in their aesthetic, historic, scientific or spiritual value for past, present and future generations (Australia ICOMOS 1999). Economically, most built heritage assets exhibit characteristics of public goods, warranting public sector involvement in their conservation (Navrud & Ready, 2002). This involvement is evidenced by the global commitment to finance heritage protection through public budgets, underscoring the crucial role of the public sector worldwide (Hutter & Rizzo, 1997; Rizzo & Mignosa, 2013).

Similar to natural resources, built heritage assets are limited, nonrenewable, and vulnerable to threats such as climate change, air pollution, mass tourism, and socio-economic upheaval, which can lead to their degradation or destruction (Mazzanti & Mourato, 2002). In response, UNESCO has enacted international legal conventions to mitigate such risks (Forrest, 2010), and the United Nations' Sustainable Development Goal 11 pledges to "strengthen efforts to protect and safeguard the world's cultural heritage" (UN, 2015, p. 24).

However, as the variety and complexity of cultural heritage assets grow, there is a need for heritage protection policies to shift away from traditional fabric-centered conservation models toward more holistic approaches that account for contemporary social needs and preferences (Harrison, 2013; Holtorf, 2015; Loulanski, 2006; Plevoets & Van Cleempoel, 2019). This is further compounded by a lack of empirical evidence, making it challenging to craft efficient policies (Avrami et al., 2019; Mason, 2008). Although economic tools like cost-benefit analysis are tailored to guide decision-making, they are often limited by their need for quantifiable data on both costs and benefits, which are hard to ascertain for non-market values such as cultural heritage (Navrud & Ready, 2002; Throsby, 2003).

To bridge this gap, stated preference (SP) methods, including discrete choice experiments (DCE) and contingent valuation (CV), have emerged as effective means for quantifying both use and non-use values of heritage assets, aiding in the comprehensive valuation of their social benefits (Carson et al., 2001; Hanley & Czajkowski, 2019). These methods have garnered

traction across various policy realms but are still underleveraged in the cultural sector, despite recommendations for their broader application (Champ et al., 2017).

This study introduces a novel application of DCE to assess the economic value of cultural heritage, using Victoria, Australia, as a case study. Through this approach, we reveal the public's valuation of different heritage attributes, offering critical insights for developing community-aligned heritage policies. We also discuss the methodological potential of DCEs to overcome challenges inherent in SP methods, such as issues with estimate transferability, and we contribute to the ongoing debate regarding the implicit cultural value embedded in economic valuations (Provins et al. 2008; Throsby, 2003; 2013; Throsby et al. 2021). Finally, through this study, we provide a comprehensive evidence base of value estimates for various types of heritage assets, including previously unexamined types such as industrial and religious assets (Lawton et al., 2021).

The article is structured as follows: Section 2 reviews previous SP-based valuations of cultural heritage, Section 3 describes our empirical investigation, Section 4 presents the results, and the final section summarizes our findings and their implications for policy and decision-making.

2 Stated Preference Valuation of Cultural Heritage

2.1 Overview of Stated Preference Methods in Heritage Valuation

SP methods, such as DCEs and CV, have become central to the economic assessment of non-market public goods such as cultural heritage. These methods are well-suited to capture the value individuals place on heritage assets by presenting them with hypothetical scenarios and asking them to make choices or state their willingness to pay for specified changes or preservation efforts (Champ et al., 2017; Johnston et al., 2017; Mariel et al., 2021).

However, heritage assets, characterized by their unique and often irreplaceable nature, present particular challenges for valuation. Their uniqueness is derived from their cultural significance, embodied not only in the physical characteristics of their fabric but also in intangible features like spiritual or symbolic associations and meanings that may vary between individuals or groups (Australia ICOMOS, 1999). This complexity makes it difficult to identify a common

denominator for valuation across different assets (Provins et al., 2008; Tuan et al., 2009; Throsby et al., 2003).

Traditional applications of SP methods in this field have predominantly focused on iconic sites, which are easily recognizable and thus more straightforward to describe in survey scenarios (Navrud & Ready, 2002; Throsby et al., 2021). However, this approach has limitations as it often overlooks the broader spectrum of cultural heritage assets, particularly those with ambiguous architecture, such as modernist or industrial buildings, complex historical meanings, such as assets from wartime periods, or those that might be less famous among tourists yet valued by other stakeholders for various reasons. Even though less prominent assets, including those of public utility, make up the majority of the heritage resource worldwide, they typically receive limited funding, which is instead directed toward maintaining World Heritage Sites or major national monuments.

Moreover, the substantial heterogeneity of heritage assets, the predominance of standalone units over groups or complexes, and their wide spatial dispersion make it challenging to define the scope of a heritage resource under a particular jurisdiction, such as in terms of size or area covered (Provins et al., 2008; Tuan et al., 2009). As a result, most traditional SP applications focus on individual sites (Wright & Eppink, 2016), considerably fewer on fairly homogeneous groups (e.g., Mourato et al., 2002; Morey et al., 2002), and only a few on policies targeting large portfolios of different assets (e.g., Alberini & Longo, 2009; Mourato et al., 2014).
The site and context specificity of available SP estimates limits their relevance for policy-making in cultural heritage, which often involves decisions affecting a wide range of assets dispersed across different regions or contained within broad administrative jurisdictions (Riganti & Nijkamp, 2005; Throsby et al., 2021). Identifying public preferences for the intrinsic qualities common to diverse heritage assets can guide more effective and sustainable policy-making, supporting broad-based heritage conservation strategies that accommodate diverse public values (Avrami, 2000; 2019; Mason, 2008; Wells, 2017).

DCEs, in particular, offer promising avenues for advancing heritage valuation. By allowing respondents to make choices based on a set of defined attributes, DCEs can delve into how specific characteristics of heritage sites influence consumer preferences and economic values. Nevertheless, the application of DCEs in cultural heritage has been limited, often constrained

by the difficulties in defining attributes that effectively capture the multifaceted nature of heritage assets.

Most DCE studies to date have focused on the quality of touristic services or infrastructural improvements, rather than on the preservation of the cultural assets themselves (e.g., Choi et al., 2010; Kinghorn & Willis, 2008). This focus has limited the potential of DCEs to inform broader heritage conservation decisions, which require an understanding of the intrinsic values of the assets beyond their utility for tourism or recreation.

In summary, while SP methods, particularly DCEs, hold substantial potential for the valuation of cultural heritage, their effectiveness depends critically on the way heritage assets are characterized and the attributes chosen for valuation. Enhancing these methods to capture the comprehensive values of cultural heritage can significantly aid in formulating policies that reflect the diverse preferences of the public and the multifaceted nature of heritage itself.

2.2 Challenges and Limitations of Conventional Stated Preference Studies

There is broad consensus that the practice of monetizing the costs of interventions while only qualitatively describing their benefits is flawed, underscoring the need for a consistent quantitative measure of these benefits (Atkinson et al., 2018). Although SP methods have been instrumental in deriving economic valuations for cultural heritage, which inherently lacks market prices, their conventional applications encounter several significant challenges that can limit their effectiveness and accuracy in capturing the true value of heritage assets.

To date, SP studies have concentrated on well-known, iconic sites that became tourist attractions and are easily identifiable by the public. While this approach simplifies the design of valuation scenarios, it introduces biases by predominantly capturing the values associated with high-profile assets that are not necessarily representative of less prominent assets or those of public utility. It also precludes disentangling values embedded in the intrinsic characteristics of assets from those arising due to prominence or media representation. These biases can skew policy decisions towards the preservation of major tourism attraction sites while neglecting others that may hold significant value for local community residents.

In addition, the method of presenting heritage assets in valuation studies can significantly impact the results. First, SP studies that name or iconize goods tend to report higher values

associated with these goods (Jacobsen et al., 2008; Jensen et al., 2019). In this vein, the psychological impact of recognizing a specific heritage site might lead to an overestimation of the economic value of this site. This effect arises because respondents may recognize and attribute a higher value to well-known sites, influenced by their prominence or media representation, which does not necessarily reflect their cultural or historical importance.
Second, there is evidence, that extrapolation of values estimated for iconic heritage is associated with substantial errors (Mourato et al., 2014; Tuan et al., 2009). To address these issues, there is a growing argument for a more generalized approach in SP surveys where assets are described by their intrinsic characteristics rather than their identities, which can help in reducing bias, increasing transferability of estimates and providing more balanced valuations across a range of heritage assets.

Moreover, SP methods often fail to capture the complex and multi-dimensional values associated with cultural heritage. These values include not only the direct economic benefits, such as tourism potential, but also more intangible benefits like aesthetic appreciation, historical significance, and social identity (Australia ICOMOS, 1999). The complexity of these values makes them difficult to encapsulate in a single, straightforward SP scenario, leading to potential underestimation of true heritage value (Throsby, 2013).

While some studies effectively measure use values associated with direct interactions with heritage sites, they often overlook non-use values, such as existence, bequest, and option values. These values represent the benefits people derive from simply knowing that a heritage asset exists, will be preserved for future generations, or might be used at a later date. The challenge lies in effectively incorporating these dimensions into valuation scenarios, which are crucial for comprehensive policy-making (Provins et al., 2008; Throsby et al., 2021).

The highly context-specific estimates from conventional SP studies pose a problem for the generalizability of the findings, limiting their applicability to other heritage assets or broader policy contexts. The inability to apply these insights across different settings undermines their utility for comprehensive heritage conservation strategies (Provins et al., 2008; Riganti & Nijkamp, 2005; Tuan et al., 2009).

These challenges highlight the need for methodological innovations and a broader application of SP methods to more accurately reflect the diverse values of cultural heritage. We argue that

it is not the quantity of available SP studies, but the characteristics of the estimates they produce, that limit their transferability and policy relevance. Addressing these limitations will enhance the reliability of economic valuations and support more effective heritage conservation policies that are inclusive of all cultural assets, not just the most iconic ones.

2.3 The Need for a Broader Application of Discrete Choice Experiments

The limitations inherent in traditional SP methods, particularly their focus on single and iconic sites, underscore the necessity for a broader application of DCEs. DCEs offer several advantages that can effectively address the challenges identified in conventional SP studies, facilitating a more comprehensive and inclusive approach to valuing cultural heritage (Carson & Czajkowski, 2014; Hensher et al., 2015). The attribute-based approach to valuation, in which assets themselves are described using attributes, is advantageous in exploring the value of non-iconic heritage assets, providing a better understanding of public preferences (Carson & Czajkowski, 2014; Hensher et al., 2015).

Unlike traditional SP methods, DCEs allow for the valuation of a wide array of heritage assets, including non-iconic sites often overlooked in policy decisions. By utilizing a set of predefined attributes to describe heritage assets, DCEs enable respondents to consider a variety of asset characteristics in their valuation decisions. A set of DCE attributes can also be extended to represent means of protection for which respondents may assign values distinct from those resulting from the effects of implementation (Mariel et al. 2021). This attribute-based approach helps capture the full spectrum of heritage values, from physical features to intangible cultural significance, providing a broader understanding of what the public values (Champ et al., 2017). DCEs enhance the precision of valuation by allowing researchers to isolate the impact of individual attributes on overall heritage value. This methodological granularity is crucial for understanding how different aspects of cultural heritage, such as architectural style, historical relevance, or accessibility, contribute to public valuation. Such detailed insights are instrumental for crafting targeted conservation policies that address specific public preferences and needs (Mariel et al., 2021).

Moreover, DCEs are adept at incorporating non-use values into heritage valuation. By presenting respondents with scenarios that include options for preserving heritage assets for future generations or maintaining them without direct use, DCEs can effectively capture

existence, bequest, and option values. This comprehensive valuation approach ensures that all facets of heritage value are considered in economic assessments, providing a more robust basis for policymaking (Johnston et al., 2017).

The flexible design of DCEs allows for the creation of valuation scenarios that can be standardized across different contexts, reducing the site-specific biases prevalent in traditional SP studies. This standardization is crucial for developing scalable and transferable policy solutions that can be applied across various heritage conservation contexts, thereby enhancing the efficiency and effectiveness of heritage management practices (Provins et al., 2008).
By broadening the scope of valuation to include a diverse range of heritage assets, DCEs provide policymakers with a more comprehensive understanding of public preferences. This enriched understanding aids in the formulation of balanced heritage conservation strategies that are aligned with societal values and priorities, ensuring that heritage policies are inclusive and equitable.

2.4 Methodological Innovations in Stated Preference Studies

A key innovation in the application of DCEs is the shift from focusing solely on iconic, easily recognizable heritage sites to including a broader range of heritage assets. This approach involves defining heritage assets through a range of attributes representing generalized characteristics, rather than their notoriety or visibility. This attribute-based approach enables the acknowledgement that all heritage types likely have different properties. By doing so, it mitigates the bias towards well-known sites and allows for a valuation that encompasses a wider spectrum of cultural heritage, thereby capturing a more representative sample of public values (Carson & Czajkowski, 2014).Further developments in DCE methodology include the refinement of attribute sets that capture the multifaceted nature of cultural heritage and its protection measures more comprehensively. The set of attributes can be extended beyond physical characteristics to include elements such as historical significance, cultural and social values, accessibility, and preservation conditions. By quantifying how each attribute influences valuation, DCEs provide nuanced insights crucial for crafting targeted conservation policies that address specific public preferences and needs (Champ et al., 2017).

The use of mixed-method approaches has also become more prevalent in DCEs. Combining quantitative data from choice experiments with qualitative insights from focus groups or

interviews enriches the understanding of why certain attributes are valued. This integrative approach adds depth to the quantitative findings and informs the design of subsequent valuation studies, improving both their accuracy and relevance (Johnston et al., 2017).

Advances in experimental design techniques have enhanced the efficiency of data collection and analysis in DCEs, reducing the cognitive burden on respondents and maximizing the reliability of the collected data. Techniques such as efficient design and adaptive choice-based conjoint analysis have enabled researchers to tailor scenarios more closely to individual preferences, capturing more precise valuation data (Mariel et al., 2021).

Additionally, DCEs have been increasingly used to capture non-use values, which are difficult to measure but essential for a complete economic evaluation of heritage assets. By including options in choice sets that reflect existence, bequest, and option values, DCEs assess the public's WTP for the preservation of heritage that they may never personally use, but value for its cultural significance or for future generations (Hensher et al., 2015).

These methodological innovations not only enhance the accuracy and applicability of SP studies in cultural heritage valuation but also broaden their impact on policy-making. By providing a clearer picture of how various publics value different aspects of cultural heritage, these advances help policymakers design more effective and responsive conservation strategies. The adoption of DCEs in cultural heritage valuation not only addresses the limitations of traditional SP methods but also aligns with modern conservation needs by providing detailed and nuanced social insights. This broader application is essential for developing sustainable heritage policies that reflect the complex and varied values that society places on cultural heritage.

2.5 Case Studies and Applications

The practical application of DCEs in cultural heritage valuation is illustrated through various successful case studies. However, only a handful of them extended their evaluation scope beyond touristic services. These examples validate the methodological innovations discussed earlier and demonstrate how DCEs can provide actionable insights for heritage conservation policy. Despite focusing on major tourist attractions, the selected case studies highlight the flexibility of the DCE approach, demonstrating how it can be tailored to address pressing policy or managerial dilemmas across a range of contexts.

For instance, Lourenço-Gomes et al. (2014) evaluated the preservation of landscape qualities in the Alto Douro Wine Region in Portugal, which contribute to its recognition as a World Heritage Site. Mazzanti (2003) explored preferences for increased conservation spending for Villa Borghese Park in Italy. Kinghorn and Willis (2008) not only examined user-oriented attributes but also the continuation of excavations at Vindolanda in the United Kingdom, highlighting the quasi-option value associated with the potential acquisition of further information from additional archeological investigations.

In a similar vein, Lundhede et al. (2013) assessed archaeological artefacts from Stone Age villages in Denmark. The study reveals the general public's strong valuation of artefacts buried within the topsoil, thus not accessible to visitors, highlighting a broader, country-wide interest in preservation and emphasizing that the market for heritage protection extends well beyond tourism-driven demand. Despite the challenges posed by the iconization of sites, these studies highlight DCE's effectiveness in capturing public valuations across various heritage types. This, in turn, paves the way for more generalized approaches that expand DCE design to encompass a broader range of heritage assets.

One notable application is the study conducted by Throsby et al. (2021), which utilized DCE to assess the economic value of major historic buildings in Australia. This study adpoted the attribute-based approach to de-iconize and describe assets in general terms, significantly expanding the range of assets valued under a single study. It also highlighted how DCE could be used to quantify the public's valuation of different attributes, capturing the complex values associated with heritage, including aesthetic, social, architectural, and historic aspects. By identifying the most valued attributes, policymakers can allocate resources efficiently, ensuring that conservation efforts align with public preferences.

These case studies successfully incorporated both use and non-use values, demonstrating that people place significant value on preserving cultural heritage for future generations, beyond just the direct benefits of tourism. Furthermore, they exemplify the versatility and effectiveness of DCE in capturing the complex values associated with cultural heritage. By applying DCE to various heritage assets and incorporating a broad range of values, these studies provide robust data that can significantly influence heritage conservation policies, ensuring they are well-informed and aligned with public values.

2.6 Implications for Heritage Conservation Policy

The application of DCEs in cultural heritage valuation has profound implications for heritage conservation policy. By providing a detailed understanding of public preferences and the economic value of different heritage attributes, DCEs enable policymakers to make more informed decisions, leading to more effective and sustainable heritage conservation practices. DCEs allow policymakers to identify which attributes of heritage assets the public values most, such as architectural style, historical significance, or accessibility. This detailed understanding can guide the prioritization of conservation efforts to align with public interests and maximize the impact of limited resources. For example, if DCE findings highlight a high public value for accessibility, policies could focus on improving access to heritage sites, thereby enhancing their value and encouraging public engagement.

Moreover, by quantifying the economic value of heritage sites, DCEs provide a robust basis for balancing development pressures with conservation needs, particularly in urban areas. This economic data supports the argument for preserving cultural heritage against short-term economic gains and can underpin legislative changes that promote stronger protection laws, tax incentives for preservation, or increased government funding for heritage conservation.

The adoption of DCEs can also promote sustainable tourism by helping design heritage sites that cater to both conservation and tourism needs. Understanding how various attributes affect visitor satisfaction and willingness to pay enables policymakers to implement improvements that enhance visitor experiences without compromising the site's integrity and cultural significance.

On a broader scale, the insights from DCEs are invaluable for shaping global heritage conservation policies. They can foster international cooperation to preserve cultural heritage by providing a basis for international agreements on conservation standards and practices.

As the concluding part of our discussion on the utility of DCEs in cultural heritage valuation, it is clear that these methods not only overcome the limitations of traditional SP methods but also significantly enhance the policy-making process. By ensuring that conservation strategies are well-informed, targeted, and inclusive, DCEs help preserve the rich tapestry of cultural heritage

for future generations. This broader application is essential for developing sustainable heritage policies that accurately reflect the complex and varied values that society places on cultural heritage, ensuring that heritage conservation remains a dynamic and responsive field.

3 Empirical investigation

3.1 Overview of the Empirical Framework

The study was commissioned by the Heritage Council of Victoria and Heritage Victoria and aimed to explore the preferences and willingness to pay (WTP) of residents for changes in the legal protection status of various heritage assets across the state. The chosen approach integrated a DCE into a broader survey framework, ensuring that public opinions on heritage conservation were captured with both depth and precision.

Heritage protection in Victoria operates under a dual-tiered system. Places deemed significant at the state level appear in the Victorian Heritage Register (VHR), while locally significant assets are protected under heritage overlays administered by local governments. The VHR currently encompasses more than 2,400 heritage places, while local councils manage over 170,000 listings, including buildings, landscapes, and historically significant sites like shipwreck protected zones (Heritage Council of Victoria, 2024).

The survey adhered to standard SP methodologies outlined by Johnston et al. (2017) to ensure methodological rigor and representativeness. Respondents first completed demographic screening questions, carefully aligned with the latest census data, to match the sample's composition with Victoria's population. They were then introduced to the study's purpose, informed about the bodies funding the research, and assured of their confidentiality. Following this introduction, a series of warm-up questions assessed participants' views on current levels of heritage protection and public expenditures in this area, ensuring that respondents were engaged and prepared for the main valuation exercise.

The DCE, central to the survey's design, was introduced after respondents had been provided with essential background information on Victoria's heritage protection system. Detailed instructions and an example choice card familiarized participants with the decision-making tasks they would undertake. This preparatory phase minimized confusion and maximized data

reliability by clearly explaining the attributes under consideration, the nature of hypothetical protection scenarios, and the mechanism of the choice tasks.

After completing the DCE, respondents answered questions regarding their involvement in heritage-related activities, civic engagement, community group participation, and tourism habits. Standard socio-demographic data were also collected at this stage. Incorporating these contextual variables ensured that the resulting dataset could support a comprehensive analysis of the factors influencing public preferences and WTP for heritage conservation.

By maintaining a clear sequence from demographic screening to attitudinal questions, followed by the core valuation exercise and concluding with socio-demographic and contextual inquiries, the survey instrument was designed to accurately reflect the public's preferences regarding heritage conservation in Victoria. The subsequent sections detail the DCE methodology, explain the attribute selection process, and describe the analytical techniques used to interpret the gathered data, thus providing a full understanding of how the empirical investigation was conducted.

3.2 Attribute Selection and Justification

The selection and definition of attributes for the DCE were driven by the aim of assessing public preferences and WTP for overall heritage conservation in Victoria. This section elaborates on the attributes chosen, the rationale for their selection, and their detailed implementation in the survey design.

Heritage assets were grouped into three major categories: Buildings, Historic Sites, and Landscapes; each with distinct types to capture the variety of heritage values and characteristics: Buildings: Included various types such as Residential, Commercial/Retail, Industrial, Places of Worship, Hotels, Schools, Banks, and more, each reflecting different uses and historical contexts.

Historic Sites: Encompassed locations like Settlement Sites, Military Sites, Goldrush Sites, Mining Sites, and Shipwrecks, each associated with significant historical events or eras.

Landscapes: Covered types like Industrial/Mining Landscapes, Agricultural Landscapes, Natural Landscapes, and specific features like Trees, Bridges, and Lighthouses, highlighting the environmental and aesthetic aspects of heritage.

These types were chosen to reflect the broad spectrum of heritage assets managed in Victoria, ensuring that the DCE covered a representative sample of examples across the state.

In addition to the heritage types, incorporated into the design as the only category-specific attribute, a set of generic attributes was applied to all categories, allowing for a standardized assessment of public valuation across different scenarios. The generic attributes and their levels used in the study are presented in Table 1.

Table 1. Generic attributes and their levels for heritage asset valuation.

Attributes	**Attribute levels**
Age	• 19th century (1803-1900) • Early 20th century (1901-1918) • Interwar period (1919-1945) • Post war (1946-70) • 1971 to present
Condition	• Excellent condition - structurally sound, well maintained, weather-tight, with no or minor repairs needed • Good condition - structurally sound, reasonably maintained but in need of minor or localised repair • Poor condition - deteriorating structure, showing signs of a lack of general maintenance • Very poor condition - structural failure or clear signs of structural instability, or serious loss of weather-tightness
Access	• Public access – free • Public access – with entry fee • Public access – for commercial purposes • Private access only
Distance	From <1 to >100 km
Number of places	From 1 to 10
Protection	• Inclusion in National Heritage Register (National Significance) • Inclusion in Victorian Heritage Register (State Significance) • Inclusion in local heritage overlay (Local Significance)
Development	• Subject to approval - any building or site alterations or additions or developments on the land are undertaken sympathetically, subject to permit approval • Exterior subject to approval - exterior alterations to the listed place are subject to permit approval, internal changes have no permit requirement or are subject to specified permit exemptions; changes must be sympathetic and additions should not be easily visible from the street • No development permited
Control of visitation	• The number of visitors to the site/place is restricted by management to protect the integrity of the building. • No
Control of traffic	• Vehicular and or pedestrian traffic is restricted around the place/site to either protect the structural integrity of the site/place or to contribute to a quiet atmosphere. • No

Control of noise	• The surrounding environment is regulated to restrict noise and sound pollution impacting on people's experience of the site/place. • No
Security measures	• Measures taken to secure the asset from damage such as fire, flooding, theft and vandalism • No special security measures
Cost	1, 2, 5, 10, 20, 50, 100, 200 AUD

Note: Levels used as the baseline (reference) for dummy-coded attributes are indicated in **bold**.

The key innovation we introduce is a typology of heritage assets, structured into broad categories and more specific types. Categories are defined based on fundamental characteristics and group assets in a way that ensures most attributes are meaningful for comparisons within a category but not across categories. Types, on the other hand, refer primarily to original functions and architectural features. In practice, the categories divided the valuation exercise into distinct parts, with the corresponding types integrated into the respective experimental designs.

This approach allows us to address the substantial heterogeneity of heritage resources, a major challenge identified in earlier valuation studies. By introducing this typology, we reduced constraints on the selection of generic attributes, ensuring they are applicable to each type and meaningful within each category. Qualitative interviews conducted prior to the main study confirmed that the proposed typology is meaningful and credible to respondents, while stakeholder consultations affirmed its practical applicability to real-world decision-making scenarios.

Overall, the selected attributes are directly linked to key policy areas in heritage conservation, such as funding allocation, access regulations, and preservation standards. By analyzing how respondents value different attribute levels, policymakers can gain insights into public priorities and preferences, guiding more effective and targeted conservation strategies. This attribute-based approach within the DCE not only captures the complexity of public preferences but also provides a robust framework for quantifying the economic value of different conservation outcomes. The findings from this analysis can help in formulating policies that align with public values and effectively contribute to the sustainable management of heritage resources.

3.3 Survey Design and Implementation

The survey was designed to align with established SP methodologies to accurately reflect the public's preferences regarding heritage conservation in Victoria. The design was based on

guidelines provided by Johnston et al. (2017), ensuring a robust framework that facilitates the collection of meaningful data.

The survey began with demographic screening questions about age, gender, and residence, calibrated to align with the most recent census data. This was crucial for ensuring that the sample was representative of Victoria's general population, providing a sound basis for extrapolating the findings to the broader community.

Participants were introduced to the study's purpose and the funding bodies, establishing transparency and setting a formal tone. They were informed that their responses would remain confidential and that the survey was advisory in nature, aiming to establish trust and encourage thoughtful and honest responses. Warm-up questions followed, exploring respondents' attitudes towards current levels of heritage protection and public expenditure on heritage conservation. These questions served to engage participants and prime them for the more detailed queries that would follow.

The core component of the survey was the DCE, where participants were provided with detailed information about Victoria's heritage protection system. Before the choice tasks, participants received concise background information essential for making informed decisions. Detailed instructions on navigating the choice exercise were provided, including an explanation of the attributes involved and an example choice card. This preparation aimed to minimize confusion and maximize the accuracy of the data collected, as outlined by Carson and Czajkowski (2014). In the DCE, respondents were presented with various hypothetical scenarios involving different heritage protection options. Each scenario described specific heritage places or objects that were currently under consideration for inclusion in one of the heritage registers and subject to additional protection measures. Participants were asked to choose whether they supported each scenario, including its associated cost per household, or not. We adopted an approach that evaluates investment around an individual heritage asset of a specific type and set of characteristics, rather than a policy simultaneously targeting thousands of assets. This approach allowed for a more precise asset presentation and aligned closely with common policy decisions, such as extending legal protection to an additional asset or approving a specific development project.

A binary choice format – one program option with protection and an "opt-out" no protection option – was used to reduce respondents' cognitive load and to align with incentive compatibility recommendations, ensuring that respondents' choices revealed their true preferences. In addition, although the scenarios were hypothetical and not indicative of actual planning measures, respondents were informed that their responses could influence future policy and practices for managing and conserving Victoria's heritage, affecting the scope of protection. This ensured respondents saw the survey as consequential and that they valued the outcomes (Vossler et al., 2012, Vossler & Watson, 2013, Zawojska & Czajkowski, 2017).[1]The attributes and their levels were integrated into choice cards, where each card presented a scenario combining different attributes at various levels. The experimental design was optimized for D-efficiency to ensure that the estimates of the model parameters would be as precise as possible, given the constraints of the study design (Scarpa & Rose, 2008). The attribute levels were combined in a way that maximized the information gain per respondent, facilitating robust statistical analysis and meaningful policy insights. Respondents were asked to choose their preferred scenario from each set, providing insights into their trade-offs and preferences. Figure 1 presents an example of a choice card.

Defining categories determined the design of the valuation exercise, which was structured into sequences corresponding to each category. Each sequence included four choice tasks.

[1] It is important to note that the provision of protection promises continuation rather than gain, while the lack of protection translates to loss rather than continuation (Provins et al. 2008). Therefore, highlighting not only potential outcomes under protection but also no-protection scenarios in a SP survey becomes particularly important in the heritage context (Navrud and Ready 2002; Mariel et al. 2021). We emphasized that choosing not to support a proposed program means that a given asset would lack legal protection and could be altered or possibly demolished within the normally applicable building regulations.

Figure 1. Example of a choice card (Shipwreck).

In our study, we introduced indicative imagery primarily to reinforce the information conveyed by the type attribute. This was intended to reduce potential noise associated with varying interpretations of its text representation due to individual differences in knowledge and experience. Hence, the imagery served as a supplement and should not have independently altered utility. Additionally, imagery was intended to enhance respondent engagement and reduce potential survey fatigue caused by the extensive number of attributes and attribute levels we used. Images were selected from the VHR database by project stakeholders. We applied a subtle filter to each photo to prevent drawing respondents' attention to details. We ensured that features described by attributes other than type were not represented in the provided imagery.
The inclusion of imagery in DCEs raises controversies, and its impact on preferences remains ambiguous (Patterson et al., 2017). In some studies, images are used to illustrate differences between current state and proposed changes by altering original pictures according to varying attribute levels (e.g., Ferretti et al., 2017; Morrey et al., 2002). Other studies use visual aids instead of text or numerical representations to convey the attribute level, which is believed to improve comprehension and response quality (e.g., Bateman et al., 2009).

We acknowledge that the inclusion or exclusion of imagery could potentially bias results in two ways. When imagery is included, respondents might base their choices on the visual appeal of

the pictures. Conversely, when imagery is absent, respondents may perceive certain types – especially those covering a wide range of objects (e.g., residential landscapes) – differently than intended. To mitigate both biases and ensure robust results, we implemented a specific strategy involving two experimental treatments. The first one was to present an alternative image, randomly selected from the same database as the main image chosen by stakeholders. Additionally, we included an option with no image. Image treatments were assigned to choice tasks in a randomized and controlled manner. Examples of images related to each of these treatments are provided in Figure 2.

Figure 2. Image examples: Residential Landscape.

The experiment was conducted in a public setting with a proposed one-time progressive tax increase to fund protection measures. We opted for a coercive payment mechanism and ensured respondents that costs would be borne by all taxpayers if the government proceeded.[2] We chose a one-time levy as it more realistically aligns with the implementation of a specific project compared to repeated taxation. Similar mechanisms have been used in Australia for actual projects and valuation studies (e.g., Throsby et al. 2021). Respondents were instructed to evaluate each choice scenario independently, treating each one as a separate decision-making situation. This meant they did not declare their WTP for one program and then consider additional payments for another. As a result, the tax levy remained consistent and non-cumulative across scenarios. Supporting a protection measure (at a cost) was therefore akin to

[2] While voluntary payments are often preferred in heritage valuation literature due to distrust in local authorities (e.g., Santagata & Signorello, 2002) or aversion to mandatory payments (e.g., Salazar & Marques, 2005), they likely lead to strategic behavior that undermines incentive compatibility (Carson, 1997; Carson & Louviere, 2011; Johnston et al., 2017; Vossler & Holladay, 2018; Wiser, 2007).

a “vote” rather than an automatic implementation of conservation policy or a budgetary commitment in subsequent tasks (Carson et al., 2014).

The survey concluded with questions related to respondents' involvement in heritage-related activities, community groups, governance, and tourism. Coupled with standard socio-demographic information, these questions provided additional contextual data for a comprehensive analysis of the factors influencing heritage conservation preferences.

Throughout the survey implementation, quality control measures were in place to ensure high data integrity. Adjustments based on preliminary feedback from pilot testing, which included cognitive interviews and pre-tests, helped refine the survey questions and the structure of the DCE. This iterative process fine-tuned the survey instrument to the specific context of heritage conservation in Victoria, assuring effectively capturing the preferences of the public.

3.4 Data collection and sample

The survey instrument underwent a comprehensive pretesting process to ensure its effectiveness and appropriateness for capturing public preferences regarding heritage conservation in Victoria. This process included focus groups, cognitive interviews, verbal protocols, and reviews by external experts in non-market valuation and cultural economics. These steps were crucial for verifying that the survey met quality criteria for SP surveys and was suitable for the specific context of this study.

Additionally, the survey was reviewed by project stakeholders to confirm its relevance and compliance with current policy and practice. Among other measures, the attribute matrix was verified with a sample of assets from the official heritage register. This collaborative approach ensured that the survey addressed pertinent issues in heritage conservation and aligned with the objectives of the funding bodies. Following these reviews, the survey was piloted with 500 respondents to assess its clarity and to econometrically test the design of the DCE. Feedback from the pilot study was used to refine the survey instrument, making necessary adjustments to improve question wording, layout, and the overall flow of the survey.

The main survey was conducted over a three-week period in October 2017. Respondents were recruited from two accredited online panels to ensure a diverse and representative sample.

Participants were incentivized for their involvement, which helped to encourage participation and completion of the survey. The survey was administered using the Computer-Assisted Web Interview (CAWI) method, allowing respondents to complete the survey online at their convenience while ensuring consistency in the data collection process.

To enhance data quality, several measures were implemented during the survey administration. Device access was restricted to larger screens, such as computers and tablets, to ensure that all participants viewed the survey in a format that effectively displayed choice cards and imagery, particularly important for the DCE. A 30-minute timeout was enforced to mitigate the risk of excessively long or abandoned sessions, which could indicate disengagement or technical issues. Furthermore, all open-ended responses were manually reviewed after data collection to identify and exclude interviews containing nonsensical or irrelevant answers, thereby maintaining the integrity of the data.

Sampling was guided by considerations of political jurisdiction in heritage decision-making and geographic proximity to the heritage assets, as recommended by Champ et al. (2017) and Mariel et al. (2021). Consequently, the target population comprised adult residents of Victoria, aged 18 years and older, who provided a verified postal code within the state. While acknowledging that residents of other Australian states and visitors might also value Victoria's heritage sites, focusing on Victorian residents ensured that the sample reflected those most directly impacted by heritage policies in the state.

To achieve a sample representative of the Victorian population, quotas based on age and gender were applied according to the 2016 census data. This stratified sampling approach ensured that the demographic distribution of the sample closely matched that of the general population. The final sample included participants from various age groups, genders, and locations within Victoria, providing a broad cross-section of perspectives on heritage conservation.

A total of 1,612 usable responses were collected, resulting in a robust dataset for analysis. This sample size was sufficient to provide statistically significant results and allowed for detailed econometric modeling of preferences and WTP estimates. The substantial number of responses also facilitated the examination of preference heterogeneity and the testing of various model specifications in the subsequent statistical analysis.

By ensuring that the sample accurately reflected the age and gender distribution of Victoria's general population, the study enhanced the generalizability of its findings. The representative nature of the sample strengthens the credibility of the results and supports their application in informing heritage conservation policies within the state.

3.5 Statistical analysis

For modelling choices and to recover estimates of willingness to pay for changes in each attribute, we base our approach on random utility theory (McFadden, 1973). In this model, the utility of the individual *i* resulting from choosing alternative *j* in situation *t* can be expressed as:

$$V_{ijt} = ac_{ijt} + \mathbf{bX}_{ijt} + e_{ijt}, \quad (1)$$

where the utility expression is assumed additively separable in the cost of the alternative, c_{ijt}, and other attributes, $\mathbf{X}_{ijt}$; a and $\mathbf{b}$ denote the corresponding parameters; and e_{ijt} is a stochastic component allowing for factors not observed by the econometrician to affect individuals' utility and choices. The researcher does not observe e_{ijt}, however, they are able to assume its distribution. Depending on this assumption, the model can be transformed into different classes of choice models. Assuming that the stochastic component e_{ijt} follows an independent and identically distributed extreme value (type I) distribution, it leads to the logit probability specification, used in simple conditional logistic regressions, with a probability of choosing alternative j from a set of J available alternatives:

$$P_{ijt}(a,\mathbf{b}) = \frac{\exp\left(ac_{ijt} + \mathbf{bX}_{ijt}\right)}{\sum_{k=1}^{J} \exp\left(ac_{ikt} + \mathbf{bX}_{ikt}\right)}. \quad (2)$$

Given that we are interested in deriving willingness to pay values from choices, based on respondents willingness to trade off increases in any of the Heritage (?) attributes against increases in the monetary attribute c_{ijt}, it is convenient to introduce the following modification of (1), which is equivalent to using a money-metric utility function (in our case, it means estimating the parameters in WTP space; Scarpa et al., 2008; Train & Weeks, 2005):

$$U_{ijt} = \sigma a\left(c_{ijt} + \sigma \mathbf{b}\boldsymbol{X}_{ijt}\right) + \varepsilon_{ijt} = \lambda\left(c_{ijt} + \boldsymbol{\beta}\boldsymbol{X}_{ijt}\right) + \varepsilon_{ijt} \quad (3)$$

In this specification, by rescaling the utility function, the vector of parameters, $\boldsymbol{\beta} = \mathbf{b}/a$ can be directly interpreted as a vector of the implicit prices (marginal WTPs) for the non-monetary attributes, $\mathbf{X}_{ijt}$, facilitating an interpretation of the results.

An inconvenient assumption of this simple (multinomial logit) model is the independence and identical distribution of the error term for all of the alternatives and respondents, as well as identical preferences of different respondents – the same coefficients λ and $\boldsymbol{\beta}$ in the utility function for all individuals. One way of relaxing this assumption – that is, allowing for some level of (unobserved) preference heterogeneity and, possibly, correlations between the alternatives and choice tasks – is to is to include consumer-specific parameters, λ_i, $\boldsymbol{\beta}_i$, which leads to a Mixed Logit Model (MXL). A commonly used approach is to make mixing distributions continuous. If individual parameters are assumed continuously distributed following a parametric distribution specified *a priori* by a modeler, $[\lambda_i, \boldsymbol{\beta}_i] \sim f(\bar{\boldsymbol{\beta}}, \boldsymbol{\Sigma})$, with means, $\bar{\boldsymbol{\beta}}$, and variance-covariance matrix, $\boldsymbol{\Sigma}$, the random parameters mixed logit model is formed (RP-MXL, Hensher & Greene, 2003). In RP-MXL, the probability of making given choices in a set of T situations, is a weighted average of standard logit probabilities and it can be presented as:

$$P_i(\theta) = \int \left(\prod_t \sum_j I_{ijt} P_{ijt} \left([\lambda, \boldsymbol{\beta}] \right) \right) f\left([\lambda, \boldsymbol{\beta}] | \theta \right) d[\lambda, \boldsymbol{\beta}], \qquad (4)$$

where I_{ijt} equals 1 if individual i has chosen alternative j, and it equals 0 otherwise. The utility function for respondents is analogical to an MNL model, except for the fact that the vector of the parameters $[\lambda_i, \boldsymbol{\beta}_i]$ can vary for different respondents.

The model is estimated using the maximum likelihood method for the utility function parameters, conditional on individuals' observed choices and attribute levels associated with choice alternatives. Estimating the RP-MXL model requires the use of simulation methods because the integral in (4) does not have a closed form. We can thus apply a simulation procedure in which $[\lambda_r, \boldsymbol{\beta}_r]$ is drawn from $f\left([\lambda_r, \boldsymbol{\beta}_r] | \theta \right)$ and, for each $[\lambda_r, \boldsymbol{\beta}_r]$ the logit formula is calculated. The simulated probability is given by the average over R draws:

$$\hat{P}_i(\theta) = \frac{1}{R} \sum_{r=1}^{R} \left(\prod_t \sum_j I_{ijt} P_{ijt} \left([\lambda_r, \boldsymbol{\beta}_r] \right) \right). \qquad (5)$$

$\hat{P}_i(\theta)$ is an unbiased estimator of $P_i(\theta)$ by construction. The simulated probabilities can then be used in a log-likelihood function (McFadden & Train, 2000). In the simulation, we used 10,000 scrambled Sobol draws (Czajkowski & Budziński, 2019).

4 Results

4.1 Determinants of Willingness to Pay

This section presents the main findings from the econometric models, focusing on the determinants of respondents' WTP for the protection of cultural heritage assets in Victoria. Given that each category has distinct properties, threats, protection strategies, and development options, we chose to analyze them separately. By defining a specific context, these categories allow for a more accurate interpretation of estimates for generic attributes within each category, rather than across them. Accordingly, we calculated separate models for each category. The estimated coefficients from three MXLs, presented in Table 2, directly translate into monetary values expressed in Australian Dollars (AUD), facilitating the interpretation of results in terms of WTP.

The models exhibited good fit to the data, as evidenced by well-behaved model fit statistics (see Table 2). The log-likelihood values at convergence, pseudo-R^2 measures, and information criteria (AIC and BIC) indicate that the models explain the observed choices well. We performed validity checks by estimating alternative model specifications, including different distributions for random parameters and alternative nesting structures. The models presented here offered the best fit to the data and proved robust across various specifications.

The estimated models also revealed substantial preference heterogeneity among respondents, as indicated by the large and statistically significant standard deviations of the random parameters (WTP estimates) for most attributes (see Table 2). This suggests that there is considerable variation in how different individuals value various aspects of heritage conservation. While our models capture this heterogeneity at the population level, further exploration of the sources of this heterogeneity – such as socio-demographic characteristics or attitudinal variables – could provide deeper insights. However, such an analysis extends beyond the scope of this paper and is explored in detail in the online appendix.

Table 2. Results of the MXL models in WTP space (in AUD).

	Buildings		Historic Sites		Landscapes	
	Mean	St. deviation	Mean	St. deviation	Mean	St. deviation
Type - Residential Building	-71.55***	113.25***				
	(0.44)	(0.02)				
Type - Commercial/Retail Building	-68.45***	67.33***				
	(0.80)	(0.17)				
Type - Industrial Building	-45.54***	103.66***				
	(0.72)	(0.22)				
Type - Place of Worship	-47.27	51.06				
	(84.97)	(61.73)				
Type - Hotel	13.27***	93.28***				
	(0.86)	(0.50)				
Type - Hall	-54.23***	55.25***				
	(0.68)	(0.50)				
Type - School/Education facility	-23.81***	68.15***				
	(0.68)	(0.07)				
Type - Bank	-58.07***	95.76***				
	(1.47)	(3.48)				
Type - Garden	-10.39***	45.40***				
	(0.60)	(0.34)				
Type - Transport Station	6.79***	14.40***				
	(0.71)	(0.20)				
Type - Hospital	-37.78***	162.83***				
	(0.10)	(0.02)				
Type - Police/Gaol	10.85***	133.87***				
	(0.37)	(0.39)				
Type - Post Office	1.58**	22.94***				
	(0.78)	(0.11)				
Type - Courthouse	18.88***	97.04***				
	(0.41)	(0.71)				
Type - Theatre	-1.71***	133.69***				
	(0.46)	(0.28)				
Type - Sports Center	-104.13***	98.28***				
	(0.35)	(0.39)				
Type - Gallery	25.70***	157.37***				
	(0.25)	(0.19)				
Type - Library	-27.66***	34.90***				
	(0.30)	(0.15)				
Type - Settlement Site			-0.14	27.57***		
			(0.18)	(0.16)		
Type - Military Site			57.94***	140.61***		
			(0.17)	(0.09)		
Type - Goldrush Site			38.68***	94.54***		
			(0.42)	(0.16)		
Type - Mining Site			-49.91***	153.94***		
			(0.11)	(0.04)		
Type - Shipwreck			16.88***	120.65***		
			(0.09)	(0.07)		
Type - Industrial/Mining Landscape					-177.25***	267.37***
					(0.14)	(0.03)
Type - Agricultural Landscape					-90.91***	92.92***
					(0.18)	(0.16)
Type - Residential Landscape					-76.58***	82.56***
					(0.11)	(0.05)
Type - Natural Landscape					-51.12***	92.85***
					(0.20)	(0.03)

Type - Trees					15.28*** (0.28)	104.48*** (0.00)
Type - Bridge					18.97*** (0.13)	150.72*** (0.13)
Type - Wall					-89.33*** (0.27)	103.52*** (0.10)
Type - Lighthouse					81.66*** (0.22)	160.36*** (0.16)
Type - Roadway/Avenue					-39.11*** (0.18)	87.61*** (0.09)
Type - Pier/Wharf					-24.94*** (0.23)	33.46*** (0.07)
Age - 19th century (1803-1900) vs. 1971 to present	49.41*** (0.34)	5.60*** (0.15)	27.03*** (0.15)	84.44*** (0.08)	80.90*** (0.20)	114.77*** (0.21)
Age - Early 20th century (1901-18) vs. 1971 to present	34.48*** (0.25)	33.17*** (0.06)	22.34*** (0.09)	47.17*** (0.04)	37.15*** (0.18)	15.77*** (0.06)
Age - Interwar period (1919-45) vs. 1971 to present	28.36*** (0.27)	5.75*** (0.23)	25.23*** (0.13)	40.61*** (0.14)	2.67*** (0.09)	22.65*** (0.05)
Age - Post war (1946-70) vs. 1971 to present	12.37*** (0.04)	2.69*** (0.11)	14.96*** (0.08)	32.46*** (0.09)	16.11*** (0.20)	111.42*** (0.10)
Condition - Excellent vs. Very poor	69.85*** (0.06)	118.40*** (0.01)	23.84*** (0.05)	81.97*** (0.04)	44.66*** (0.04)	23.87*** (0.12)
Condition - Good vs. Very poor	34.32*** (0.06)	101.49*** (0.09)	24.30*** (0.12)	2.76*** (0.16)	37.23*** (0.09)	39.42*** (0.03)
Condition - Poor vs. Very poor	14.76*** (0.27)	2.02*** (0.16)	-8.34*** (0.05)	28.02*** (0.11)	11.13*** (0.06)	79.40*** (0.02)
Rating - National vs. Local Significance	-7.95*** (0.07)	68.75*** (0.12)	-6.34*** (0.04)	25.73*** (0.16)	2.53*** (0.04)	99.93*** (0.07)
Rating - Victorian vs. Local Significance	19.87*** (0.27)	45.40*** (0.05)	-11.53*** (0.06)	66.71*** (0.06)	0.66*** (0.03)	77.10*** (0.08)
Protection Type - Sympathetic Interior and Exterior development vs. No development	11.90*** (0.08)	84.52*** (0.08)	-3.95*** (0.18)	61.10*** (0.04)	-5.30*** (0.16)	103.81*** (0.03)
Protection Type - Sympathetic Interior development vs. No development	28.27*** (0.25)	54.55*** (0.50)	-21.70*** (0.06)	69.53*** (0.06)	11.56*** (0.11)	68.58*** (0.03)
Distance (100 km)	-28.42*** (0.05)	149.80*** (0.02)	22.01*** (0.12)	124.36*** (0.03)	-31.96*** (0.11)	123.37*** (0.02)
Control of visitation	8.41*** (0.10)	143.32*** (0.09)	27.88*** (0.07)	71.64*** (0.07)	6.23*** (0.07)	31.11*** (0.05)
Control of traffic	24.82*** (0.04)	90.80*** (0.09)	27.24*** (0.07)	80.03*** (0.11)	19.71*** (0.04)	111.20*** (0.05)
Control of noise	12.05*** (0.03)	90.57*** (0.02)	8.81*** (0.11)	89.21*** (0.11)	6.79*** (0.05)	64.56*** (0.02)
Security measures	12.88*** (0.11)	93.89*** (0.02)	-7.84*** (0.08)	50.53*** (0.03)	-3.87*** (0.03)	53.50*** (0.01)
Access - public free vs. no	21.58*** (0.08)	77.70*** (0.12)	8.71*** (0.11)	40.30*** (0.04)	24.00*** (0.14)	78.53*** (0.04)
Access - public with entry fee vs. no	12.76*** (0.11)	96.21*** (0.13)	36.94*** (0.06)	72.63*** (0.07)	1.09*** (0.02)	5.03*** (0.10)
Access - commercial vs. no	23.03*** (0.15)	25.03*** (0.30)	18.38*** (0.08)	38.71*** (0.07)	5.32*** (0.03)	56.54*** (0.04)

Number of places	0.97*** (0.01)	11.32*** (0.04)	0.27*** (0.01)	20.00*** (0.01)	2.58*** (0.02)	19.46*** (0.01)
- Cost (10 AUD)	123.53*** (0.05)	3.79*** (0.10)	204.62*** (16.92)	79.24*** (5.81)	93.08*** (33.65)	33.55*** (7.27)
Model diagnostics						
LL at convergence	-3803.89		-3859.82		-3989.46	
LL at constant(s) only	-4360.33		-4470.72		-4465.04	
McFadden's pseudo-R^2	0.1276		0.1366		0.1065	
Ben-Akiva-Lerman's pseudo-R^2	0.5698		0.5618		0.5504	
AIC/*n*	1.2033		1.2126		1.2559	
BIC/*n*	1.2852		1.2672		1.3210	
n (observations)	6452		6452		6452	
r (respondents)	1613		1613		1613	
k (parameters)	78		52		62	

Notes: Standard errors are given in brackets. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively. Dummy coded levels of the 'Type' attribute are included instead of the alternative specific constant. WTP for all attributes are assumed to follow a normal distributions, except for cost, which is assumed to follow a lognormal distribution (the estimates of the underlying, preference-space equivalent, normal distribution are provided).

Type of Asset

Within each category – Buildings, Historic Sites, and Landscapes – the type of asset had a significant impact on preferences for the protection program, often outweighing other attributes. The effects varied notably across asset types, with WTP estimates ranging from negative to positive values (relative to the opt-out option of no protection). For instance, in the category of Landscapes, respondents exhibited a negative WTP of -177.25 AUD for the protection of Industrial/Mining landscapes, indicating a preference against allocating resources to this type of assets. Conversely, they were willing to pay 81.66 AUD for the protection of Lighthouses, reflecting a strong positive valuation for another type within the same category.

Among Buildings, the lowest WTP values were observed for Sports Centers (-104.13 AUD) and Residential Buildings (-71.55 AUD), suggesting that respondents placed less importance on protecting these types of assets. In contrast, high WTP values were recorded for Galleries (25.70 AUD) within the Buildings category, indicating strong public interest in preserving these structures. Similarly, in the Landscapes category, Agricultural Landscapes (-90.91 AUD) and Walls (-89.33 AUD) received low WTP values, while Lighthouses (81.66 AUD) were highly valued. For Historic Sites, Military Sites had a high WTP (57.94 AUD), whereas Mining Sites had a negative WTP (-49.91 AUD).

It is important to interpret the WTP for a specific asset type cautiously. These values represent the alternative-specific constants in the models and thus reflect not only the WTP for protecting a particular type of asset (given the reference values of other attributes) but also the overall preference for choosing a protection program over the opt-out option of no protection.

Asset Attributes

All other attributes included in the models were also found to be significant determinants of WTP. A consistent trend observed across categories was that respondents attributed higher WTP to older assets. This was most evident for Buildings: compared to buildings constructed from 1971 onward (the reference level), respondents were willing to pay 49.41 AUD more for protecting buildings from the 19th century (1803–1900), 34.48 AUD more for early 20th-century buildings (1901–1918), 28.36 AUD more for buildings from the interwar period (1919–1945), and 12.37 AUD more for post-war buildings (1946–1970). Similar patterns were observed for Landscapes and Historic Sites, although with slight variations. For Historic Sites, assets from the 19th century and the interwar period were valued most highly, while for Landscapes, assets from the 19th century were most preferred.

Regarding the condition of the assets, respondents generally exhibited a preference for protecting sites in better condition. Despite the intuition that sites in poor condition may require more protection and potentially larger subsidies, the majority of respondents were willing to pay more for the legal protection of sites in excellent condition. This trend was consistent across all three categories, with a particularly strong preference observed for Buildings. Respondents were willing to pay 69.85 AUD more to protect buildings in excellent condition compared to those in very poor condition.

Access and Use Preferences

Access modes also significantly influenced WTP. All forms of public access were generally preferred over private access, regardless of the asset category. However, relative preferences among the different access modes varied across categories. For Historic Sites, public access with an entry fee was most favored, with respondents willing to pay an additional 36.94 AUD, suggesting an acceptance of user-pays principles for these assets. In contrast, for Landscapes, entry fees were nearly as unfavorable as private access, with a minimal WTP of 1.09 AUD.

Free public access was clearly preferred for both Landscapes and Buildings over all other access modes, indicating a strong desire for unrestricted public enjoyment of these heritage assets. Additionally, respondents supported the maintenance of commercial buildings and historic sites, reflecting an appreciation for assets that serve ongoing functional roles in the community.

Quantity and Proximity Effects

The impact of the number of protected places was generally small. For Buildings and Historic Sites, WTP increased by less than 1 AUD per additional asset protected – specifically, 0.97 AUD and 0.27 AUD, respectively – suggesting diminishing marginal utility for additional sites. For Landscapes, WTP increased by 2.58 AUD per additional asset, indicating a slightly higher marginal value for protecting more landscapes.

Proximity to the respondent's residence also affected WTP. For Buildings and Landscapes, respondents valued assets closer to them more highly, with WTP decreasing by 28.42 AUD and 31.96 AUD, respectively, for every additional 100 kilometers from their residence. This finding aligns with the concept of distance decay, where the value attributed to an asset decreases with increasing distance. However, for Historic Sites, the relationship between WTP and distance did not confirm to distance decay. Instead, respondents' WTP increased by 22.01 AUD for every additional 100 kilometers from their residence to the asset location, indicating a possible perception of greater significance for distant historic sites.

Legal Protection Measures

Preferences for the means of legal protection varied by asset category. For Buildings, respondents clearly preferred protection through state heritage registers over national registers or local overlays, with national listings being the least preferred option (negative WTP of -7.95 AUD for national vs. local, and positive WTP of 19.87 AUD for state vs. local). For Historic Sites, protection through local heritage overlays was slightly preferred over national and state listings, with negative WTP for both national (-6.34 AUD) and state listings (-11.53 AUD) compared to local significance. In the case of Landscapes, inclusion in any of the three registers was generally viewed as similarly effective, as evidenced by minimal differences in WTP coefficients (2.53 AUD for national vs. local, 0.66 AUD for state vs. local).

Development Restrictions and Control Measures

Respondents expressed specific preferences regarding development restrictions. For Historic Sites, there was a preference for a complete ban on development, as indicated by negative WTP values for allowing development with restrictions (-3.95 AUD for sympathetic interior and exterior development, -21.70 AUD for sympathetic interior development only, both compared to a complete ban). If any development was allowed, respondents preferred that permission be required for works involving both interiors and exteriors over permission required for exteriors only.

For Landscapes, respondents slightly favored allowing alterations to the interior without a permit, with a positive WTP of 11.56 AUD for sympathetic interior development compared to no development, and a negative WTP of -5.30 AUD for sympathetic interior and exterior development. In contrast, for Buildings, a complete ban on development was the least preferred option, and the highest WTP of 28.27 AUD was associated with requiring permission for interior development only, suggesting respondents favored some level of controlled development.

Control Measures

Control measures to protect heritage assets also influenced WTP. For Buildings, respondents declared an average WTP ranging from 8.41 AUD to 24.82 AUD per control measure implemented, such as visitation control (8.41 AUD), traffic control (24.82 AUD), or noise control (12.05 AUD). For Historic Sites, WTP was positive for all controls, with values of 27.88 AUD for visitation control, 27.24 AUD for traffic control, and 8.81 AUD for noise control. In the case of Landscapes, traffic control was valued similarly (19.71 AUD), but WTP for visitation (6.23 AUD) and noise controls (6.79 AUD) was less substantial.

Interestingly, WTP for security measures was positive for Buildings (12.88 AUD) but negative for Historic Sites (-7.84 AUD) and Landscapes (-3.87 AUD), suggesting differing perceptions of the necessity of security measures across asset types. This could indicate that respondents believe security measures are more crucial for buildings than for historic sites or landscapes.

Overall, the results indicate that respondents' WTP for heritage conservation is significantly influenced by the type of asset, its attributes (such as age and condition), access modes, proximity, legal protection measures, and development restrictions. The preferences expressed highlight the public's valuation of older assets, assets in excellent condition, and those that are publicly accessible, especially free of charge. These findings provide valuable insights for policymakers to design heritage conservation programs that align with public preferences and willingness to pay, ensuring that resources are allocated to projects with the greatest societal value.

4.2 Effects of Imagery on Preferences

We next examine the impact of including images in the DCE on respondents' WTP for the protection of heritage assets. Specifically, we compare the results across different image treatments – the main image (selected by stakeholders), an alternative image (randomly selected), and no image – to determine whether the presence and type of imagery influenced preferences and WTP estimates.

To assess the picture effect, we estimated models that included interaction terms between the image treatments and the asset types. We then calculated the mean WTP for each asset type under each image treatment. These results are presented in Table 3, with standard errors provided in brackets. Full modeling results are available in the online appendix.

Table 3. Mean WTP (in AUD) for asset types under different image treatments

	No picture	Main image	Alternative image
	Buildings		
Type - Residential Building	-115.02*** (3.44)	-135.30*** (1.35)	-26.60*** (3.34)
Type - Commercial/Retail Building	-139.05*** (5.66)	-122.47*** (1.79)	-29.55*** (2.30)
Type - Industrial Building	-145.13*** (3.40)	65.55*** (1.87)	-104.35*** (3.95)
Type - Place of Worship	-161.09*** (4.86)	-76.88*** (4.23)	65.33*** (7.51)
Type - Hotel	-57.86*** (3.15)	8.62*** (2.81)	13.99*** (2.97)
Type - Hall	-165.37*** (2.47)	7.41*** (1.73)	-4.65 (3.26)
Type - School/Education facility	-87.03*** (2.25)	-8.95*** (2.10)	-36.39*** (3.20)
Type - Bank	-167.36*** (2.46)	-18.07*** (1.70)	-113.77*** (8.19)
Type - Garden	-49.52*** (1.90)	48.14*** (1.39)	-111.57*** (1.98)
Type - Transport Station	-79.44*** (2.40)	19.30*** (2.03)	44.24*** (12.18)
Type - Hospital	-218.95*** (2.65)	-38.97*** (1.97)	-82.06*** (2.28)
Type - Police/Gaol	-33.82*** (4.63)	-4.00 (2.54)	-3.30 (3.24)
Type - Post Office	-127.96*** (3.06)	40.33*** (2.02)	-72.40*** (3.89)
Type - Courthouse	-37.43*** (3.47)	-7.96** (3.25)	68.44*** (5.34)
Type - Theatre	10.40 (10.12)	-58.41*** (2.72)	81.51*** (3.58)
Type - Sports Center	-221.80*** (2.63)	-153.48*** (1.87)	-99.57*** (3.77)

Type - Gallery	-95.06*** (5.69)	171.56*** (3.16)	-69.05*** (4.40)
Type - Library	-82.66*** (6.53)	-47.65*** (1.87)	-27.31*** (7.05)
	Historic Sites		
Type - Settlement Site	67.19*** (0.01)	-34.96 (0.00)	-32.25 (0.01)
Type - Military Site	44.42*** (0.01)	71.31*** (0.00)	2.44*** (0.00)
Type - Goldrush Site	12.08*** (0.01)	32.10*** (0.01)	57.43*** (0.01)
Type - Mining Site	-50.60 (0.00)	-92.80 (0.00)	-20.01 (0.00)
Type - Shipwreck	32.09*** (0.00)	1.60*** (0.00)	12.16*** (0.00)
	Landscapes		
Type - Industrial/Mining Landscape	-107.34*** (0.60)	-177.25*** (0.36)	-139.14*** (1.23)
Type - Agricultural Landscape	-50.22*** (0.31)	-90.91*** (0.23)	-65.00*** (1.16)
Type - Residential Landscape	-78.69*** (0.36)	-76.58*** (0.22)	-86.60*** (0.30)
Type - Natural Landscape	-61.12*** (1.38)	-51.12*** (1.28)	-67.99*** (2.64)
Type - Trees	-44.29*** (0.20)	15.28*** (0.18)	-17.85*** (0.47)
Type - Bridge	10.02*** (1.30)	18.97*** (0.59)	4.54*** (1.33)
Type - Wall	-65.07*** (1.54)	-89.33*** (0.44)	-63.23*** (0.70)
Type - Lighthouse	69.23*** (0.25)	81.66*** (0.11)	118.29*** (2.37)
Type - Roadway/Avenue	-100.20*** (0.75)	-39.11*** (0.08)	-59.16*** (0.13)
Type - Pier/Wharf	-71.76*** (0.40)	-24.94*** (0.37)	-53.51*** (0.47)

Notes: Standard errors are given in brackets. ***, *, and * represent significance at the 1%, 5%, and 10% levels, respectively. Full modeling results are available in the online appendix.

Our analysis revealed that the inclusion of images had a significant effect on respondents' WTP for many asset types, indicating that imagery can influence preferences in a DCE. To determine whether aesthetic bias was present, we compared WTP estimates between the main image and alternative image treatments. Significant differences between these treatments suggest that respondents' preferences were influenced by the visual appeal or specific content of the images, rather than just the asset type itself.

For many asset types, we observed significant differences in WTP between the main and alternative image treatments. For example, for Residential Buildings, the WTP under the main image was - 135.30 AUD, while under the alternative image, it was -26.60 AUD. This substantial difference suggests that the image used influenced respondents' valuation of residential buildings. Similarly, for Industrial Buildings, the WTP shifted from a positive value of 65.55 AUD under the main image to a negative value of -104.35 AUD under the alternative image, indicating a strong impact of the image on preferences. These significant differences indicate the presence of aesthetic bias, where respondents' valuations were affected by the particular images shown. However, for some asset types, such as Police Stations/Gaols, the differences between the main and alternative images were not statistically significant, as indicated by the absence of significance stars for some estimates. This suggests that for these types, the specific image used did not significantly influence respondents' WTP.

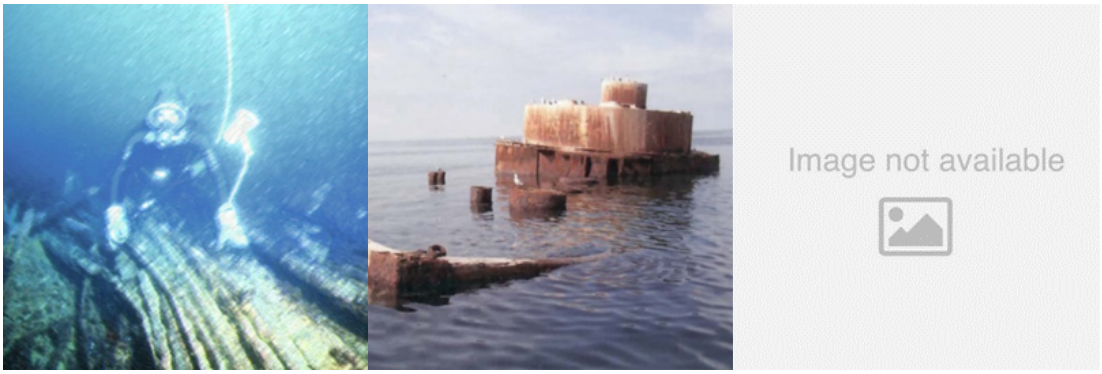
The 'No Image' treatment allows us to examine the effect of providing no visual aid, relying solely on the textual description of the asset type. Comparing WTP estimates between the 'No Image' and image treatments helps us understand whether images aid in conveying information effectively.

For several asset types, we observed significant differences in WTP between the 'No Image' and image treatments. For instance, for Galleries, the WTP without an image was -95.06 AUD, whereas with the main image, it increased dramatically to 171.56 AUD. This suggests that the image greatly enhanced respondents' perception of galleries, possibly by providing visual cues that highlighted the cultural significance of these assets. Similarly, for Halls, the WTP shifted from a negative value of -165.37 AUD without an image to a positive value of 7.41 AUD with the main image, indicating that images helped respondents appreciate the value of halls.

Conversely, for some asset types, the absence of an image resulted in higher WTP. For Settlement Sites, the WTP without an image was 67.19 AUD, while with the main image, it was -34.96 AUD (not significant). This suggests that the word label 'Settlement Site' evoked a higher valuation than when an image was provided, possibly because the image did not align with respondents' expectations or reduced the perceived significance.

To illustrate the impact of imagery further, we examine the case of Shipwrecks. The WTP estimates were 32.09 AUD without an image, 1.60 AUD with the main image, and 12.16 AUD with the alternative image. The higher WTP without an image suggests that the word label 'Shipwreck' evoked a strong positive valuation, which diminished when images were provided. The images used are presented in Figure 3. The main image depicted a completely submerged shipwreck, which may have reduced perceived accessibility or appeal. The alternative image may have presented a different perspective, but both images resulted in lower WTP compared to the 'No Image' treatment. This indicates that the images may not have matched respondents' mental images or expectations of shipwrecks, leading to a decreased valuation.

Figure 3. Images of Shipwrecks.



Note: The left image is the main image selected by stakeholders; the right image is the alternative image randomly selected.

If factors other than visual appeal were involved, they might relate to the decreased use value of protecting a submerged shipwreck. While submerged shipwrecks may have historical significance, they are less accessible to the general public, potentially reducing their perceived value. However, existing evidence shows that people often express positive WTP for heritage objects that cannot be seen or accessed directly, due to their existence, bequest, and option values (Lundhede et al., 2013). This suggests that the negative impact of the main image might be more related to how the image conveyed the asset's characteristics rather than the asset's inherent value.

Overall, our findings indicate that imagery can significantly impact respondents' WTP in a DCE, with the effect varying across asset types and image treatments. For Buildings, the presence of images greatly influenced respondents' valuations. In many cases, images shifted WTP from negative to positive values or vice versa. This suggests that visuals play a crucial role in conveying the heritage character and appeal of these assets. The large differences in WTP between image treatments highlight the potential for aesthetic bias.

For Historic Sites, the impact of images was mixed. For some types, like Military Sites and Goldrush Sites, images increased WTP. For others, like Settlement Sites and Shipwrecks, WTP was higher without images, indicating that the word labels alone were more effective in conveying value. This could be due to the evocative nature of these terms, which may stimulate respondents' imagination and personal associations more effectively than images.

For Landscapes, images generally influenced WTP estimates, but the direction and magnitude varied across asset types. For example, for Trees, the WTP without an image was -44.29 AUD,

which shifted to a positive WTP of 15.28 AUD with the main image. This suggests that the image enhanced valuation by highlighting the aesthetic or environmental significance of trees as heritage assets.

The significant differences between WTP estimates under different image treatments underscore the importance of carefully selecting images in DCEs. Images should accurately represent the asset types and avoid introducing unintended information that could bias responses. In some cases, images may inadvertently include features not intended to be part of the valuation, such as weather conditions, human activity, or surrounding environments, which could influence preferences. In conclusion, the inclusion of images in DCEs can influence respondents' preferences and WTP estimates, highlighting the need for careful consideration in survey design. While images can enhance understanding and engagement, they may also introduce biases if not appropriately selected or if they convey unintended information.

To mitigate potential biases, it is essential to choose images that are representative and neutral, ensuring they align closely with the word labels and do not introduce extraneous information. Pretesting images through focus groups or pilot studies can help assess how images are perceived and whether they influence preferences beyond the intended attributes. Additionally, considering the necessity of images for each asset type is crucial; for assets where word labels suffice or where images may introduce bias, it may be preferable to omit images to avoid unintended influences on WTP.

Future research should explore methods to minimize aesthetic bias and investigate the role of imagery in preference formation across different types of heritage assets. Understanding how images interact with textual descriptions can enhance the reliability of DCEs in capturing true preferences, ultimately informing more effective heritage conservation policies.

5 Discussion and Conclusions

This study introduced a new and versatile DCE framework to value heritage assets. Rather than focusing on known, iconic sites, we adopted a de-iconized approach, classifying assets into broad categories (buildings, historic sites, and cultural landscapes) and describing them through a standardized set of attributes (including age, condition, accessibility, and various protection measures). This approach allowed us to estimate WTP for a wide array of heritage asset types,

extending beyond the scope of most existing studies. In this sense, our study provides insights comparable to a meta-analysis of estimates from multiple valuation studies and do not reflect the results of any single heritage valuation study focused on an individual property.

Our results confirmed that respondents assign significant economic value to heritage protection. Older, well-preserved assets and those offering free or convenient public access were particularly valued. Notably, certain asset types that might be considered iconic or culturally significant (e.g., lighthouses, galleries, goldrush-era historic sites) were favored, while others (e.g., industrial landscapes, banks, hospitals) received lower or even negative WTP values, underscoring the complexity of public preferences. We also found that preferences vary across policy instruments – such as local, state, or national heritage listings – and that development controls and visitor management measures can influence public valuations. Additionally, the introduction and nature of imagery significantly affected WTP, highlighting the importance of presentation and framing in SP surveys.

Overall, this study provides robust evidence that heritage conservation preferences reflect differences in asset types, attributes, accessibility, and policy settings, as well as respondent interpretation and learning effects. Furthermore, the results reveal that members of the general public assign both use and non-use values to the existence of a range of assets, emphasizing a shared agreement on preserving cultural heritage for future generations through public funding. These findings contribute new insights to the literature on non-market valuation of cultural heritage and demonstrate that DCEs can serve as a powerful tool to inform heritage protection strategies.

The diverse valuation patterns observed across asset types and attributes suggest that policy decisions should not rely solely on iconic examples or assumptions about what the public values. By quantifying WTP for different types of heritage assets and associated management strategies, policymakers can better align conservation priorities with community preferences. Negative valuation observed for certain types indicate that cultural significance of these types can be communicated more effectively to enhance their value recognition, which might be an indication of managers of such places.

The strong preference for older, well-preserved assets and publicly accessible sites indicates that investment in maintenance and interpretation could yield high social returns. Additionally,

public acceptance of entry fees for certain historic sites suggests that targeted user-pays mechanisms may be viable for managing visitor pressure or funding conservation initiatives. On the other hand, the dramatically lower valuation of modern properties we observe is aligned with the notion in heritage discourse that the public tends to underestimate newer heritage forms. These places, especially those lacking public access, could gain greater recognition through thoughtful adaptive reuse strategies that ensure both desired functionality and continued maintenance. The preferences regarding legal protection measures and development controls indicate that flexible, context-specific policies – such as focusing development restrictions on exteriors or encouraging adaptive reuse of interiors – can enhance public support. These insights can guide not only local and state-level decision-making in Victoria but can also inform heritage policy elsewhere. The flexible DCE approach can be adapted to other regions, asset typologies, or cultural contexts, enabling international and comparative assessments that reflect local values and conditions.

Methodologically, this research advances the application of DCEs to cultural heritage valuation by developing a classification system that avoids relying on site-specific identifiers. Instead, we employed an industry-informed hierarchical framework and generic attributes, enabling a more generalizable approach to valuation. This design mitigates the bias often introduced when valuing well-known, iconic sites and fosters a broader understanding of what society values in its collective heritage.

The observed distance effects across categories highlight the importance of carefully determining population catchments when designing an SP study. The results suggest that the value of buildings and landscapes may be better assessed with a focus on local populations, while historic sites could be more effectively evaluated using broader, possibly national samples. However, this may vary depending on context and country. Regardless, we observe that the market for heritage preservation extends well beyond visitors for all heritage categories. As such, we recommend using samples that are representative of the selected population and employing coercive payments aligned with incentive compatibility criteria to reveal true preferences and provide accurate estimates of heritage value.

The study also incorporated experimental treatments, including the use of imagery, to examine how visual aids influence SPs. Our findings reveal that images can lead to preference updating, aesthetic biases, and changes in WTP. This underscores the importance of careful image

selection, pretesting, and possibly controlling for imagery effects in future DCE studies. The approach taken here, with its large design space and exploration of new asset types, provides a template for future research that seeks to capture the complexity of cultural heritage values.

While our approach is innovative, it is not without limitations. First, the absence of a standardized, universally accepted heritage typology required us to rely on local industry "know-how" and a heritage register particular to Victoria, Australia. Applying our results directly to other contexts or countries would require adapting the typology and attributes to reflect regional heritage characteristics and stakeholder priorities.

Second, we focused on protection scenarios rather than restoration, adaptive reuse, or other policy interventions. Preferences might differ if respondents were asked about improving condition or investing in interpretive facilities. Third, we assumed that individuals could correctly interpret and value the cultural significance embedded in the attributes presented. While we controlled for biases and included imagery, inherent complexities in cultural valuation remain. Finally, we cannot determine with certainty what determines the low marginal value of additional place protected. Reasons we consider include respondents viewing similar assets as substitutes, behavioral biases such as the warm glow or embedding effect affecting preferences, or income effects and changing preferences, where WTP for additional extensions decreases due to a reduced budget and the amount of assets already protected. These factors should be kept in mind when interpreting and transferring our results.

Future research could build on this work in several ways. First, extending the approach to different regions or countries – potentially with more diverse asset typologies – would offer comparative insights and help refine universal guidelines for heritage valuation. Incorporating more attributes, such as architectural styles or specific cultural uses, could further illuminate the subtle drivers of WTP. Investigating restoration scenarios or adaptive reuse projects could reveal whether preferences shift when the public is offered tangible improvements or creative re-purposing of heritage assets.

Employing mixed methods (e.g., combining DCEs with qualitative interviews) may provide richer contextual understanding of cultural value formation. Visual assessment research can play a significant role in refining or expanding heritage typologies for future valuation, based

on public recognition and interpretation. By further exploring the visual characteristics that people associate with different types of heritage—such as architectural style, materials, or surroundings—research can offer valuable insights into how people perceive and categorize heritage sites and cultural expressions. This understanding can, in turn, inform and enhance heritage valuation practices. Moreover, further exploration of non-use values, including bequest and existence values, would enrich our understanding of intangible benefits.

Finally, continued examination of how imagery and other survey design elements influence SPs would help refine best practices for eliciting valid and reliable WTP estimates. For example, research could further explore the relationship between preferences for heritage conservation and space, and how these align with political jurisdictions, to guide assumptions on the extent of the market in future heritage valuation studies.

We believe this study is a step forward in applying SP methods to heritage valuation. By employing a flexible DCE framework that encompasses a wide range of asset types and attributes, we have demonstrated that public valuations of heritage are complex, diverse, and contingent on both the qualities of the assets and the management strategies proposed. The findings highlight the importance of incorporating community values into heritage decision-making to ensure that conservation policies and investments resonate with the public's cultural priorities.

Ultimately, the insights gleaned here emphasize that cultural heritage is not a static commodity; it is shaped by changing social values, knowledge, and contexts. Integrating public preferences into heritage conservation efforts is not only a matter of good policy-making – it is essential for sustaining the cultural richness and historical continuity that heritage represents. By continuing to refine and expand these valuation methodologies, we can better support informed, community-driven stewardship of cultural heritage, both now and in the future.

References

Alberini, A., & Longo, A. (2009). Valuing the cultural monuments of Armenia: Bayesian updating of prior beliefs in contingent valuation. Environment and Planning A, 41(2), 441-460.

Atkinson, G., Groom, B., Hanley, N., & Mourato, S. (2018). Environmental valuation and benefit-cost analysis in UK policy. Journal of Benefit-Cost Analysis, 9(1), 97-119.

Australia ICOMOS. (1999). The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance. Burwood: Australia ICOMOS. http://australia.icomos.org/wp-content/uploads/BURRA-CHARTER-1999_charter-only.pdf

Avrami, E., Mason, R., & de la Torre, M. (2000). Values and heritage conservation: Research report. Los Angeles: The Getty Conservation Institute.

Avrami, E., Macdonald, S., Mason, R., & Myers, D. (2019). Values in heritage management: Emerging approaches and research directions. Los Angeles: The Getty Conservation Institute.

Bateman, I. J., Day, B. H., Jones, A. P., & Jude, S. (2009). Reducing gain–loss asymmetry: a virtual reality choice experiment valuing land use change. Journal of environmental economics and management, 58(1), 106-118.

Carson, R. T., & Louviere, J. J. (2011). A common nomenclature for stated preference elicitation approaches. Environmental and resource economics, 49, 539-559.

Carson, R. T. (1997). Contingent Valuation and Tests of Insensitivity to Scope. In: R. Kopp, W. Pommerhene, & N. Schwartz (Eds.), Determining the Value of Non-Marketed Goods: Economic, Psychological, and Policy Relevant Aspects of Contingent Valuation Methods (pp. 127-163). Dordrecht: Springer Netherlands.

Carson, R. T., Flores, N. E., & Meade, N. F. (2001). Contingent valuation: controversies and evidence. Environmental and resource economics, 19, 173-210.

Carson, R. T., & Czajkowski, M. (2014). The discrete choice experiment approach to environmental contingent valuation. In: S. Hess & A. Daly (Eds.), Handbook of Choice Modelling (pp. 202-235). Cheltenham: Edward Elgar Publishing.

Carson, R. T., Groves, T., & List, J. A. (2014). Consequentiality: A theoretical and experimental exploration of a single binary choice. Journal of the Association of Environmental and Resource Economists, 1(1/2), 171-207.

Champ, P. A., Boyle, K. J., & Brown, T. C. (2017). A Primer on Nonmarket Valuation. Amsterdam: Springer.

Choi, A. S., Ritchie, B. W., Papandrea, F., & Bennett, J. (2010). Economic valuation of cultural heritage sites: A choice modeling approach. Tourism management, 31(2), 213-220.

Czajkowski, M., & Budziński, W. (2019). Simulation error in maximum likelihood estimation of discrete choice models. Journal of Choice Modelling 31:73-85.

Ferretti, V., Bottero, M., & Mondini, G. (2014). Decision making and cultural heritage: An application of the Multi-Attribute Value Theory for the reuse of historical buildings. Journal of Cultural Heritage, 15(6), 644–655. https://doi.org/10.1016/j.culher.2013.12.007

Forrest, C. (2010). International Law and the Protection of Cultural Heritage. Oxon and New York: Routledge.

Hanley, N., & Czajkowski, M. (2019). The Role of Stated Preference Valuation Methods in Understanding Choices and Informing Policy. Review of Environmental Economics and Policy, 13, 248 - 266.

Harrison, R. (2013). Forgetting to remember, remembering to forget: late modern heritage practices, sustainability and the 'crisis' of accumulation of the past. International Journal of Heritage Studies, 19(6), 579-595.

Hensher, D., & Greene, W. (2003). The Mixed Logit model: The state of practice. Transportation 30:133-176.

Hensher, D., Rose, J., & Greene, W. (2015). Choosing. In Applied Choice Analysis (pp. 16-29). Cambridge: Cambridge University Press.

Heritage Council Victoria. (2024). Victorian heritage database. https://vhd.heritagecouncil.vic.gov.au/about

Holtorf, C. (2015). Averting loss aversion in cultural heritage. International Journal of Heritage Studies, 21(4), 405-421.

Hutter M., & Rizzo, I. (1997). Economic Perspectives on Cultural Heritage. London: Macmillan.

Jacobsen, J. B., Boiesen, J. H., Thorsen, B. J., & Strange, N. (2008). What's in a name? The use of quantitative measures versus 'Iconised'species when valuing biodiversity. Environmental and resource economics, 39, 247-263.

Jensen, A. K., Johnston, R. J., & Olsen, S. B. (2019). Does one size really fit all? Ecological endpoint heterogeneity in stated preference welfare analysis. Land Economics, 95(3), 307-332.

Johnston, R., Boyle, K., Adamowicz, W., Bennett, J., Brouwer, R., Cameron, T., Hanemann, M., Hanley, N., Ryan, M., Scarpa, R., Tourangeau, R., & Vossler, C. (2017). Contemporary guidance for stated preference studies. Journal of the Association of Environmental and Resource Economists, 4(2), 319–405.Kinghorn, N., & Willis, K. (2008). Valuing the components of an archaeological site: An application of Choice Experiment to Vindolanda, Hadrian's Wall. Journal of Cultural Heritage, 9(2), 117-124.

Lawton, R., Fujiwara, D., Arber, M., Maguire, H., Malde, J., O'Donovan, P., Lyons, A., & Atkinson, G. (2020). DCMS rapid evidence assessment: Culture and heritage valuation studies - Technical report. Simetrica Jacobs. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/955142/REA_culture_heritage_value_Simetrica.pdfLoulanski, T. (2006). Revising the concept for cultural heritage: the argument for a functional approach. International journal of cultural property, 13(2), 207-233.

Lourenço-Gomes, L., Pinto, L. M. C., & Rebelo, J. F. (2014). Visitors' preferences for preserving the attributes of a world heritage site. Journal of Cultural Heritage, 15(1), 64-67.

Lundhede, T., Bille, T., & Hasler, B. (2013). Exploring preferences and non-use values for hidden archaeological artefacts: a case from Denmark. International Journal of Cultural Policy, 19(4), 501-530.

Mariel, P., Hoyos, D., Meyerhoff, J., Czajkowski, M., Dekker, T., Glenk, K., Jacobsen, J. B., Liebe, U., Olsen, S. B., Sagebiel, J., & Thiene, M. (2021). Environmental valuation with discrete choice experiments: Guidance on design, implementation and data analysis (p. 129). Springer Nature.

Mason, R. (2008). Be interested and beware: Joining economic valuation and heritage conservation. International Journal of Heritage Studies, 14(4), 303-318.

Mazzanti, M. (2003). Valuing cultural heritage in a multi-attribute framework microeconomic perspectives and policy implications. The Journal of Socio-Economics, 32(5), 549-569.Mazzanti, M., & Mourato, S. (2002). Economic Valuation of Cultural Heritage: Evidence and Prospects. In M. de La Torre (Ed.), Assesing the Values of Cultural Heritage. Los Angeles: The Getty Conservation Institute.

McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), Frontiers in Econometrics (pp. 105–142). New York: Academic Press.

McFadden, D., & Train, K. (2000). Mixed MNL Models for Discrete Response. Journal of Applied Econometrics 15:447-470.

Morey, E., Rossmann, K., Chestnut, L., & Ragland, S. (2002). Valuing Reduced Acid Deposition Injuries to Cultural Resources: Marble Monuments in Washington, D.C. In S. Navrud & R. C. Ready (Eds.), Valuing Cultural Heritage: Applying Environmental Valuation Techniques to Historic Buildings, Monuments and Artifacts (pp. 159-183). Cheltenham: Edward Elgar.

Mourato, S., Fimereli, E., Contu, D., Gaskell, C., & Boniatti-Pavese, C. (2014). The economic benefits of cultural built heritage interiors conservation from climate change damages in Europe: Final report. Grantham Research Institute on Climate Change and the Environment. https://www.climateforculture.eu/index.php?inhalt=downloadandfile=pages/user/downloads/project_results/D_06.1_final_publish.pdf

Navrud, S., & Ready, R. C. (2002). Valuing Cultural Heritage: Applying Environmental Valuation Techniques to Historic Buildings, Monuments and Artifacts. Cheltenham: Edward Elgar.

Patterson, Z., Darbani, J. M., Rezaei, A., Zacharias, J., & Yazdizadeh, A. (2017). Comparing text-only and virtual reality discrete choice experiments of neighbourhood choice. Landscape and Urban Planning, 157, 63-74.

Peacock, A., & Rizzo, I. (2008). The heritage game: economics, policy, and practice. Oxford: Oxford University Press.

Plevoets, B., & Van Cleempoel, K. (2019). Adaptive reuse of the built heritage: Concepts and cases of an emerging discipline. Routledge.

Provins, A., Pearce, D., Ozdemiroglu, E., Mourato, S., & Morse-Jones, S. (2008). Valuation of the historic environment: The scope for using economic valuation evidence in the appraisal of heritage-related projects. Progress in Planning, 69(4), 131–175.

Riganti, P., & Nijkamp, P. (2005, August 23–27). Benefit transfers of cultural heritage values: How far can we go? [Paper presentation]. 45th Congress of the European Regional Science Association: Land Use and Water Management in a Sustainable Network Society, Amsterdam, The Netherlands. http://hdl.handle.net/10419/117506

Rizzo, I., & Mignosa, A. (2013). Handbook on the economics of cultural heritage. Cheltenham and Northampton: Edward Elgar.

Salazar, S. D. S., & Marques, J. M. (2005). Valuing cultural heritage: the social benefits of restoring and old Arab tower. Journal of cultural heritage, 6(1), 69-77.

Santagata, W., & Signorello, G. (2002). Individual preferences and allocation mechanisms for a Cultural Public Good: Napoli Musei Aperti. In S. Navrud & R. C. Ready (Eds.), Valuing Cultural Heritage: Applying Environmental Valuation Techniques to Historic Buildings, Monuments and Artifacts (pp. 238-253). Cheltenham: Edward Elgar.

Scarpa, R., & Rose, J. M. (2008). Design efficiency for non-market valuation with choice modelling: how to measure it, what to report and why. Australian journal of agricultural and resource economics, 52(3), 253-282.

Scarpa, R., M. Thiene, & Train, K. (2008). Utility in Willingness to Pay Space: A Tool to Address Confounding Random Scale Effects in Destination Choice to the Alps. American Journal of Agricultural Economics 90:994-1010.

Throsby, D. (2003). Determining the Value of Cultural Goods: How Much (or How Little) Does Contingent Valuation Tell Us? Journal of Cultural Economics, 27(3–4), 275–285.

Throsby, D. (2013). Assessment of value in heritage regulation. In I. Rizzo & A. Mignosa (Eds.), Handbook on the Economics of Cultural Heritage (pp. 456-469). Edward Elgar Publishing.

Throsby, D., Zednik, A., & Araña, J. E. (2021). Public preferences for heritage conservation strategies: a choice modelling approach. Journal of Cultural Economics, 45, 333-358.

Train, K. E., & Weeks, M. (2005). Discrete Choice Models in Preference Space and Willingness-to-pay Space. In: R. Scarpa & A. Alberini (Eds.), Applications of Simulation Methods in Environmental and Resource Economics (pp. 1-16). Dordrecht: Springer.

Tuan, T. H., Seenprachawong, U., & Navrud, S. (2009). Comparing cultural heritage values in South East Asia–Possibilities and difficulties in cross-country transfers of economic values. Journal of cultural heritage, 10(1), 9-21.

United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development (UN Doc. A/RES/70/1). https://sdgs.un.org/sites/default/files/publications/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf

Vossler, C. A., Doyon, M., & Rondeau, D. (2012). Truth in consequentiality: theory and field evidence on discrete choice experiments. American Economic Journal: Microeconomics, 4(4), 145-171.

Vossler, C. A., & Watson, S. B. (2013). Understanding the consequences of consequentiality: Testing the validity of stated preferences in the field. Journal of Economic Behavior & Organization, 86, 137-147.

Vossler, C. A., & Holladay, J. S. (2018). Alternative value elicitation formats in contingent valuation: Mechanism design and convergent validity. Journal of Public Economics, 165, 133–145.

Wells, J. C. (2017). How are old places different from new places? A psychological investigation of the correlation between patina, spontaneous fantasies, and place attachment. International Journal of Heritage Studies, 23(5), 445-469.

Wiser, R. H. (2007). Using contingent valuation to explore willingness to pay for renewable energy: a comparison of collective and voluntary payment vehicles. Ecological economics, 62(3-4), 419-432.

Wright, W. C., & Eppink, F. V. (2016). Drivers of heritage value: A meta-analysis of monetary valuation studies of cultural heritage. Ecological Economics, 130, 277-284.

Zawojska, E., & Czajkowski, M. (2017). Re-examining empirical evidence on stated preferences: importance of incentive compatibility. Journal of Environmental Economics and Policy, 6(4), 374–403.

University of Warsaw
Faculty of Economic Sciences
44/50 Długa St.
00-241 Warsaw
www.wne.uw.edu.pl
ISSN 2957-0506