Urban environmental quality: a study on the economic valuation of urban green areas in Parque do Povo, Presidente Prudente-SP

Qualidade ambiental urbana: um estudo sobre valoração econômica de áreas verdes urbanas no parque do povo em Presidente Prudente – SP

Calidad ambiental urbana: un estudio sobre la valoración económica de las áreas verdes urbanas en el parque popular de Presidente Prudente-SP

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KEY-WORDS
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Abstract: This research aimed to monetarily quantify the indirect benefits arising from "Parque do Povo", in the city of Presidente Prudente - SP, as well as to characterize the socioeconomic profile of the user, discussing the attractions of the place. The research was carried out through 200 interviews with park users from December 2018 to March 2019. Valuations were performed using the Contingent Valuation Method (CVM) or Willingness to Pay (WP). Results have shown that 51% of those interviewed are willing to pay an amount for Park maintenance and conservation. The user's profile was composed of users with a high level of education (55.5% with higher education). Urban parks were identified as the main source of recreation on weekends, mainly due to the need for contact with vegetation, and considered as an important investment by 100% of respondents. Contingent Valuation Method (CVM) proved to be efficient for determining the monetary value of environmental benefits in urban areas, although it underestimates the total value.

PALAVRAS-CHAVE
Valoração ambiental; disposição a pagar; ativos ambientais.

Resumo: O presente estudo tem como objetivo quantificar monetariamente os benefícios indiretos advindos do "Parque do Povo", na cidade de Presidente Prudente - SP, bem como caracterizar o perfil socioeconômico do usuário discutindo os atrativos do local. A pesquisa foi realizada através de 200 entrevistas a usuários do parque de Dezembro de 2018 a Março de 2019. Para as análises foram utilizados o Método de Valoração Contingente (MVC) ou Disposição a Pagar (DAP). Os resultados mostram que 51% dos entrevistados estão dispostos

a pagar um valor para a manutenção e conservação do Parque. O perfil do usuário foi composto por frequentadores com alto grau de escolaridade (55,5% com ensino superior). Os parques urbanos foram apontados como a principal fonte de recreação nos finais de semana, devido principalmente, à necessidade de contato com a vegetação, e considerado como um investimento importante por 100% dos entrevistados. O Método de Valoração Contingente (MVC) se mostrou eficiente para a determinação do valor monetário dos benefícios ambientais em áreas urbanas, embora subestime o valor total.

Resumen: El presente estudio tiene como objetivo cuantificar monetariamente los beneficios indirectos derivados del "Parque do Povo", en la ciudad de Presidente Prudente - SP, así como caracterizar el perfil socioeconómico del usuario que discute las atracciones del lugar. La encuesta se realizó a través de 200 entrevistas con usuarios del parque desde diciembre de 2018 hasta marzo de 2019. Para los análisis, se utilizó el Método de Valoración Contingente (MVC) o Disposición para Pagar (DAP). Los resultados muestran que el 51% de los encuestados están dispuestos a pagar una tarifa por el mantenimiento y la conservación del parque. El perfil del usuario estaba compuesto por visitantes regulares con un alto nivel de educación (55.5% con educación superior). Los parques urbanos se identificaron como la principal fuente de recreación los fines de semana, principalmente debido a la necesidad de contacto con la vegetación, y el 100% de los encuestados los consideró una inversión importante. El Método de Valoración Contingente (MVC) demostró ser eficiente para determinar el valor monetario de los beneficios ambientales en las zonas urbanas, aunque subestima el valor total.

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Introduction

The environmental issue related to urban green areas is very complex due to the similarities and lack of consensus in the differences between terms, such as "green areas", "free areas", "free space systems", "urban forestry" and many others, allowing various interpretations and analysis perspectives. In general, green areas are defined as "places in the public domain with environmental attributes, fauna and flora, and which are found in urban areas, such as parks and squares, being capable of providing outdoor leisure activities" (Guzzo, 1999). According to article 8, paragraph 1, of CONAMA Resolution No. 369/2006, A green area in the public domain is considered to be "a space in the public domain that performs an ecological, landscape and recreational function, providing the improvement of the aesthetic, functional and environmental quality of the city, being endowed with vegetation and free spaces of impermeability" (BRASIL, 2006).

Law No. 9,985, of July 8, 2000, which institutes the National System of Conservation Units (SNUC), presents the definition of "park" — urban green area considered in this study — as a category of conservation unit that comprises the group of Integral Protection Units and has as its objective "the preservation of natural ecosystems of great ecological relevance and scenic beauty, enabling the carrying out of scientific research and the development of activities of education and environmental interpretation, recreation in contact with nature and tourism ecological" (Brasil, 2000).

With the current accelerated growth of cities, parallel to inadequate urban planning, natural green areas are being progressively reduced in the urban landscape. Most Brazilian cities are going through a period of intense urbanization, a factor that reflects negatively on the quality of life of the population (Loboda & De Angelis, 2005).

Faced with this urban reality, changes in the landscape stand out, with the consequent impairment of the quality of the physical environment and poor quality of life. The verification of the environmental quality of cities is increasingly evident and important, as it is in the urban space that environmental problems generally reach greater amplitude, noting the concentration of pollutants in the air and water, the degradation of the soil and subsoil, as a result the intensive use of territory by urban activities (Lombardo, 1985). The World Health Organization indicates that at least 10 m² of green area per inhabitant would be necessary in urban spaces to have environmental quality (Raimundo; Sarti, 2016).

Despite the concept of urban environmental quality is often cited in the scientific literature and legislation (Buccheri-Filho; Tonetti, 2011), in practice few actions are converged to improve the environmental conditions of urban space, among them the creation of public green areas. These areas, because they are in places where arboreal vegetation predominates, provide numerous benefits that ensure the environmental quality of the urban space, such as thermal comfort, stabilization of surfaces through the fixation of the soil by plant roots, attenuation of air pollution, sound and visual and shelter for fauna (Nucci, 2008; Estêvez & Nucci, 2015).

In addition, they are fundamental in the urban fabric, acting as an indicator of quality of life, as they are closely linked to leisure and recreation for the population (Nucci, 2008), and because they are places of social interaction and expression of community life. For Muñoz and Freitas (2017), green areas in cities are relevant for purifying the air, absorbing carbon dioxide, reducing noise pollution, maintaining

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microclimate balance, among other benefits.

In light of the above considerations, it becomes necessary to carry out studies that discuss the role of green areas in urban space, as well as their contributions to the environmental quality of cities and to the quality of life of the population, as well as reflections on the importance of municipal planning and policies public services, in building environmentally healthy and sustainable cities. Thus, the article aims to monetarily quantify the indirect benefits arising from "Parque do Povo", city of Presidente Prudente - SP using the Contingent Valuation Method (CMV), as well as to characterize the socioeconomic profile of the user of the place.

Environment Economic Valuation

The environmental crisis that the world is going through has been established, insofar as limited environmental resources are available in opposition to an increasingly consumerist society, whose aspirations are unlimited. Thus, the importance of protecting and preserving the environment became the scene of numerous and exhaustive discussions, evidencing concerns about the future of humanity.

Environmental economics applied to economic theory in discussions of environmental use and preservation has the main objective of valuing and/or correctly allocating natural resources in productive and consumption activities, seeking to justify measures aimed at sustainable development. However, valuing environmental assets is not a trivial task since most of them have zero price and are not traded in the market (Martins, 2007).

Recognizing that biodiversity, natural resources and environmental services have economic functions and positive economic values, and that treating them as a zero price is a very high risk of depleting them, or managing them unsustainably, it is important to value correctly the natural environment and integrate these correct values into economic policies, thereby ensuring better allocation of resources (Mattos, 2005).

In order to achieve sustainable development, along the lines of ecological economics, it becomes necessary for environmental goods and services to be incorporated into the economic accounting of countries. Ecological economics comprises the monetary valuation of environmental services (positive) and externalities (negative), as well as physical assessments of the environmental impacts of the human economy, measured through social indicators (Agarwal, 2010; SPASH, 2009). Thus, ecological economics is a transdisciplinary field of study that combines participatory multi-criteria evaluation methods (Munda, 2008) definitively breaking away from neoclassical environmental and natural resource economics (Spash, 2012) Ecological economics encompasses monetary valuation as well as physical assessments of environmental impacts on the human economy (Temper & Martinez-Alier, 2013).

To determine the economic value of an environmental resource is to estimate its monetary value in relation to other goods and services available in the economy. Between consumers' willingness to pay for the benefits of consumption and companies' willingness to offer, it is what defines the prices and quantities traded in the market (BrandlI, 2006).

The most used concept in valuing natural assets is the willingness to pay, which people reveal when using an environmental resource, considering their budget limit, their preference, their altruism, their income and other attitudinal factors (Borges, 2011). The need to conceptualize and attribute

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economic value to natural resources is basically based on the fact that the majority of environmental goods and services (parks, recreation areas and other public or private natural resources for collective use) and the functions provided to human beings by natural environment are not traded in conventional markets, therefore there are no indications of value (Borges, 2011).

According to May & Lustosa (2003) environmental analysis consists of an interdisciplinary activity, which involves economic and ecological aspects in order to obtain the value of environmental resources as a whole, requiring cooperation and coordination between the groups involved.

For Motta (2006), the economic value of environmental resources is derived from all their attributes and, second, that these attributes may or may not be associated with a use. That is, the consumption of an environmental resource takes place through use and non-use.

In this sense, according to Chan et al. (2016) the assessment of the economic value of environmental resources can be based mainly on two main classes of values: the intrinsic value of natural capital, regardless of its use by human beings, and the instrumental value. Instrumental value is determined based on the services and benefits that nature can provide to humans (Justus et al., 2009). Promoting the complementary relationship that allows citizens to value natural resources, to maximize the result in their individual value chain (Chan et al., 2016). In this regard, the proposal to conceptualize value systems should improve the idea of valuation, integrating both instrumental and intrinsic value. Some studies recognize a third class of value, the relational value, linked to the social interactions between humans and nature. Relational value presents a distinct

domain and can fill the gap left by the dichotomy between instrumental and intrinsic value (Klain et al., 2017; Pascual et al., 2017).

The instrumental value of an urban park is not only its current economic value due to its demand for recreation or physical activity practices, but aesthetically valuable for all individuals who experience it or want this structure to be preserved for future generations.

In this context, the contingent valuation method (CVM) allows capturing the variations of individuals in their willingness to pay or to accept a given environmental resource, in relation to variations in its availability (Motta, 1998).

The main existing methods for estimating the direct use value of environmental goods can be done through direct methods that represent the revealed behavior of the object to be studied. These methods are divided according to the preference revealed through real markets, for example, through hypothetical markets such as the Contingent Valuation Method (CVM).

The CVM's main objective is to measure the particular willingness of individuals to pay for changes in the quantity or quality of goods or services by a hypothetical market (Romeiro & Maia, 2011) and this is a methodological privilege of flexibility (Aragão & Araújo, 2019). Abedini et al. (2016) and Baral et al. (2017) used the contingent valuation method to estimate the average willingness to pay or economic values of parks or protected areas.

Nature never had its "real" value measured and computed in this unfair accounting, where profits are individualized and socio-environmental costs, on the contrary, socialized.

There are several values associated with the establishment of protected natural areas (a park, for example): conservation value; scientific and educational value; historical and cultural value; aesthetic value;

economic value; recreational and therapeutic value; spiritual and intrinsic value (Barros, 2003).

According to Motta (1997), it is initially necessary to disaggregate the Economic Value of the Natural Resource (EVNR) into Use Value (VU) and Non-Use Value (VNU). Use value can be disaggregated, in turn, into (Chart 1):

Direct Use Value (DUV): when there is currently an individual use of a natural resource through a production or consumption activity, for example, in the form of extraction or visitation.

- Indirect Use Value (IUV): in this case, when the current benefit of the resource derives from ecosystem functions, for example, climate stability due to the preservation of forests and preservation of water sources.
- Option Value (OV): the individual assigns value in direct or indirect use that may be captured in the near future and whose preservation may be threatened. For example, the benefit arising from drugs developed on the basis of medicinal properties, not yet discovered, of plants from tropical forests and genetic diversity.
- Non-Use Value (or passive value) or Existence Value (EV): value dissociated from use and derived from a moral, cultural, ethical or altruistic position in relation to the rights of existence of non-human beings or the preservation of other natural wealth, even if these do not represent current or future use for the individual. For example, the natural areas with scenic beauty and protection of whales.

Chart 1
General taxonomy of the economic value of the environmental resource.

GENERAL TAXONOMY OF THE ECONOMIC VALUE OF THE ENVIRONMENTAL RESOURCE			
Economic Value of the Environmental Resource			
Use Value			Non-Use Value
Direct Use Value	Indirect Use Value	Option Value	Existence Value
Environmental goods and services appropriated directly from the exploitation of the resource and consumed today	Environmental goods and services that are derived from ecosystem functions and appropriate and consumed indirectly today	Environmental goods and services for direct and indirect uses to be appropriated and consumed in the future	Value not associated with current or future use and which reflects moral, cultural, ethical, or altruistic concerns

Source: Motta, 1997.

In the case of recreational and tourist activities such as parks, for example, this can be done by estimating the willingness to pay (WTP) for the preservation/conservation of these benefits by users (visitors).

Thus, an expression for EVNR would be as follows:

EVNR = (DUV + IUV + OV) + EV

Note, however, that one type of use may exclude another type of use of the environmental resource. For example, the use of an area for agriculture excludes its use for conservation of the forest that covered this land. Thus, the first step in determining the EVNR will be to identify these usage conflicts. The second step will be the determination of these values (Motta, 1997). Environmental goods or products can be defined as those materializable goods that are provided by nature for consumption or commercialization and for which it is possible to establish a commercialization

price for having use value and estimable exchange value (Motta, 1997).

Environmental services are not materializable. They are those services provided by nature or provided by the ecosystem that regulate human life and activity on the planet. According to Faucheux & Noël (1995), environmental services are "non-tradable environmental functions".

According to Fearnside (2006), the types of environmental services are:

- Biodiversity – stock of chemical elements and genetic material stored in the ecosystem. The beneficiaries of biodiversity are local and global: the local beneficiaries benefit from the genetic material of the fauna and flora necessary for the readaptation of the systems that suffer from forest and agricultural management, while the global beneficiaries are those who will, in the future, become benefit from the use of biodiversity for economic purposes (e.g. new medicines). Biodiversity is not an exchangeable or replaceable service, as its degradation can become irreversible;
- Carbon – it is an interchangeable service, as it can be stored in different ways (example: in the forest it has the same effect on the atmosphere as stored underground as a fossil fuel), which differ in terms of the time in which the carbon is retained;
- Water cycle – the increase or decrease in rainfall is established by the degree of degradation of forest areas, which can increase the desertification of regions, such as changing the concentration of rains and storms in other regions.
- Current Ecological Economics

also posits that technology and income distribution determine the equilibrium position in the quantities of environmental goods and services used. The amount of technologies and income should adjust to the amount of natural resources available. Without a collective intervention by society that defines the scale of what is considered sustainable, environmental quality (determined by environmental degradation) tends to remain in the short term, leaving aside what will affect beings in the long term (Motta, 1997).

According to Motta (1997), as society increases its economic standards, environmental degradation decreases, as this society begins to implement institutional policies, such as:

- Environmental laws;
- Economic incentives for corporations, so that they turn their internal policy to sustainability;
- Taxation of natural resources to the population.

However, when these costs are outweighed by the population, these reforms do not contribute to avoiding environmental problems. As everyone has equal rights to restrict the use of natural resources, this will only affect the economically less favored classes (Motta, 1997).

In this way, a country can establish greater or lesser rigidity of environmental laws in its constitution - or that this severity of laws is not fulfilled in practice, due to lack of supervision or corruption. Although Brazilian environmental legislation is quite complete, it has not been effective in containing environmental degradation in the country. Therefore, more efficient mechanisms are needed to achieve the goal of creating a culture of sustainability and respect for the environment and also for

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legislation; culture is responsible for the creation of an ecological subject (Zamian, 2007).

Why attribute value to natural resources?

The need to conceptualize and attribute economic value to natural resources is basically based on the fact that most of the environmental goods and services (parks, places for recreation and other public or private natural resources for collective use) and the functions provided to humans by the natural environment are not traded in conventional markets, thus there are no indications of value. Thus, valuing natural resources and inserting this amount in the economic analysis constitutes attempts to correct negative market trends (Romeiro et al. 2001; Motta 2001).

Valuation methods can be classified into production function methods and demand function methods. Those of the production function are divided into methods of marginal productivity and markets for substitute goods (replacement, defensive spending or avoided and control costs) (Motta, 2011). In marginal productivity, the quantity or quality of an environmental resource is related to the production of another product with a defined price in the market (Araújo, 2013). In the market for substitute goods, if a private good or service has an environmental resource as a substitute, market prices of this private good or service are used to estimate the economic value of the environmental resource (shadow prices).

Demand function methods are divided into complementary goods market methods (hedonic and travel cost prices) and contingent valuation methods. These methods are based on the assumption that "the variation in the availability of the environmental resource changes the willingness to pay or accept from economic agents in relation to that resource or its complementary private good", that is, the economic values (shadow prices) are estimated based on demand functions derived from "markets for private goods or services complementary to the environmental resource or hypothetical markets built specifically for the environmental resource under analysis" (free translation) (Motta, 2011, p. 184).

Motta (1997, 2006) explains that demand function methods make it possible to obtain measures of individuals' willingness to pay (or accept) referring to variations in the availability of the environmental resource and, through these measures, it is possible to estimate variations in the level of well-being by the excess of satisfaction that the consumer obtains when he pays a price (or pays nothing) for the resource below what he would be willing to pay.

Motta (1997) also comments that price formation happens differently depending on the type of product. The value of something, then, is related to its correspondence with a human need. It was with Adam Smith that the perception that there is a dualism in the question of value began – the use value and the exchange value of a good.

Another aspect should also be considered, in order to attribute economic value to environmental goods: the Greening of the Economy. Developed countries have public policies, in the sense of clean and recycling – clean and recyclable –, so that, when it is impossible to internalize the costs of recycling, they opt for the less expensive procedure (Motta, 1997).

Classification of Environmental Valuation Methods

As for the classification of environmental valuation methods, Nogueira,

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Medeiros and Arruda (2000) observe that there is no universally accepted classification of environmental economic valuation techniques. Maia (2002) and Dlamini (2012), for example, distinguish valuation methods into direct and indirect (Graph 1). Direct methods seek to capture people's preferences using hypothetical markets (CVM) or complementary goods markets to obtain individuals' Willingness to Pay (WP) for the environmental good or service. Therefore, the so-called indirect methods seek to obtain the value of the resource through a production function, relating the impact of environmental changes to products with market prices (Han et al., 2011; Laurila-Pant et al., 2015).

Graph 1
Environmental Valuation Methods.
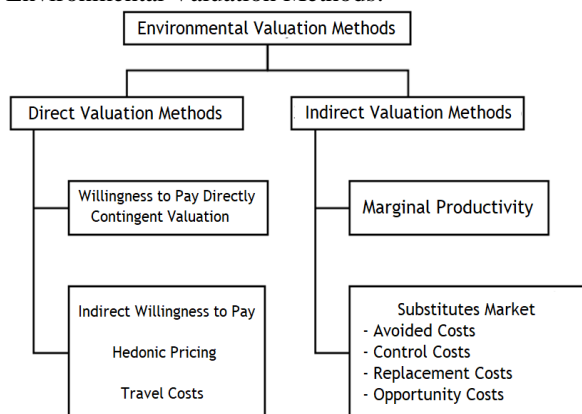
Source: Adapted from Maia (2002).

Valuation methods can be direct and indirect and rely on techniques that allow the attribution of monetary value to the goods and services evaluated. Faced with the possibility of economically valuing environmental resources, the question arises as to which method is most appropriate. This concern is recurrent, as there is no consensus regarding the methodologies commonly used with regard to their efficiency in fulfilling the intended purpose. Therefore, no valuation methodology has been fully accepted

(Nogueira; Medeiros; Arruda, 2000; Falco et al., 2013).

Environmental economic valuation methods are analytical mechanisms that serve as a framework for decision-making in the field of public policies, since, according to Nogueira, Medeiros and Arruda (2000, p. 1), "although limited, the calculated monetary values are useful tools in public policy decisions, as the comparison with alternative applications allows the choice of projects with greater potential for social welfare gain" (free translation). Thus, when deciding on one of the methods, aspects such as the validity of the observed results, the consequences of the reliability of the estimates, the degree of certainty and identification of the biases involved must be taken into account (Nogueira; Medeiros; Arruda, 2000).

According to Falco et al. (2013), there are three methodologies that stand out in the environmental assessment, namely: the Contingent Valuation Method (CVM), the Travel Cost Method (TCM) and the Hedonic Pricing Method (HPM). The first one, CVM, depends on a hypothetical simulation of the market, for which questionnaires are used that extract from the interviewee their Willingness to Pay (WP) to maintain the current availability of environmental resources and also obtain, with this method, the Willingness Receivables (WR) from people that allow a reduction in the amount of natural assets (Falco et al., 2013).

The second method, TCM, takes into account the demand for a given activity in a given region and the costs incurred by the visitor to benefit from this resource (Motta, 1997, 2006; 2011; Falco et al. 2013); and finally; the third method, HPM, uses real estate prices as a parameter for the value of natural assets in a given location. Thus, the price of the property is proportional to the value of the environmental attributes that surround the considered property (Souza; Ávila; Silva, 2007).

Among the valuation methods, the Contingent Valuation Method (CVM), due to its characteristics and specificities, is the most suitable as a tool to be used due to the objective proposed in this study. It is noteworthy that, like any method, its use has advantages and disadvantages, however it is the only one that captures values of existence of environmental goods and services and is adaptable to most environmental approach problems (Barbisan et al., 2009; Laurila-Pant et al., 2015).

According to Mattos (2002), the proposal for monetary evaluation of natural resources arises with the aim of showing the economic value of an environment and the irrecoverable damage that may occur if it is destroyed.

An environmental good (biodiversity component) or environmental service (social favoring of the environmental resource) is of great importance for the survival of species. This importance translates into moral, ethical and economic values. According to May (1995) "the economic value of an environmental good is its contribution to social well-being", that is, the conversion of monetary values (prices) to environmental goods.

The growing concern with nature is due to an increasingly widespread consensus that humanity will be leading to an irreversible situation of shortage if it continues indiscriminately using raw materials, energy and releasing all kinds of effluents into the environment (Clemente, 1994). From this concern with the scarcity of natural resources and the future of the next generations, the concept of sustainable development and the rational use of environmental assets arose (Maia, 2002).

Based on this argument, some authors - including Casimiro Filho (1998) and Motta (1997) - use economic instruments to assess monetarily the impacts of environmental degradation, as well as the reduction in the well-being of individuals generated by this.

Economic valuation appears as a tool used to assign values to goods and services provided by the environment, as a way to capture the costs and benefits arising from variations in the quantity and quality of these goods and services (FINCO, 2002).

Environmental valuation can address issues ranging from broader and more general problems, such as, for example, a large area of the Amazon where they seek to estimate the environmental damage caused by devastation, to more specific problems, such as the environmental impacts caused by a particular project or enterprise (SEKIGUCHI, 2002).

Methodological elements of the research

The research was carried out through eld work, the technique used was the application of a questionnaire to the visitors of Parque do Povo, in order to reveal the preferences of the Park's visitors in their willingness to pay (WP) for the use or preservation of an environmental asset.

The method used was Contingent Valuation, which is based on the estimate of willingness to pay (WP) for the uses of Parque do Povo. They consist of surveying, collecting, preparing and analyzing data, to reveal consumer preferences through quantitative questionnaires, which seek to capture the WP for the use or preservation of an environmental good. The Contingent Valuation Method (CVM) is one of the criteria adopted for economically valuing environmental liabilities. According to Silva et al (1999, p. 254), the contingent valuation method "estimates the implicit price of things through the concepts of substitution and complementarity. It is carried out through popular consultation and statistical treatment of the results of this consultation." (free

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translation).

Contingent Valuation Method (CVM) is normally used to measure environmental damage, however in this research the object of study (Parque do Povo) the situation is not a study on environmental damage, but a verification of environmental perception and valuation of this perception in this space. It is important to highlight that contingent valuation is the only method of economic values that measures use and non-use values.

In this sense, the fragility of using the CVM in this research is due to the valuation analysis built based on subjective values of environmental perception and comparative values to the market price. This approach, using CVM, seeks to associate the practice of using the environmental service with the willingness to pay for this service, taking the example of using an urban park.

Questionnaire was applied to 200 visitors, in the morning and afternoon of the week between December 2018 and March 2019. The questions in the questionnaires refer to gender, age group, schooling, residence, frequency, assessment of preservation of the place, safety and attractiveness. The Committee for Ethics in Research (CEP) CAAE 02837218.2.0000.5515 approved this research.

In addition to the WP, other important factors that determine demand were identified, such as the socio-economic characteristics of users and the attractions of the place. Thus, the questionnaire was divided into 4 parts: identification; characteristics of the interviewee; recreational activity; and contingent valuation (willingness to pay).

On the contingent valuation method (CVM) in which respondents answer "yes" or "no" to the monetary value pre-selected by the interviewer and respondents randomly choose whether they are willing to pay a certain amount to enjoy the benefits of the park. When the interviewee answered "yes" to paying for the use of park services, the presentation of monetary values to be chosen by the user followed: R$1,00, R$5,00, R$10,00, R$15,00, R$20,00 and R$30,00.

It should be noted that there are some types of bias in the research, among them, denial due to protest vote, a signal that normally occurs when the visitor does not want to answer the random value designated in the central question.

Results have been submitted to an econometric analysis, in order to derive average values of the Willingness to Pay (WP) bids. The literature suggests that familiarity with the measurement object may present reasonable results (Pearce, 1993, p.116).

To calculate the Willingness to Pay (WP), the formula suggested by Motta adapted by Finco is used (2011):

$$WP = [\Sigma WP / (ni/N) \times 100] \times M$$

Onde:
WP = Total amount of willingness to pay
Σ = Sum
ΣWP = Sum of provisions payable per individual
ni = Number of respondents willing to pay
N= Total number of people interviewed
M = Estimated number of visitors to the recreational area during the study period
In order to obtain the willingness to pay (WP) value, open values were used (how much in reais R$, the person would be willing to pay per year for maintenance and conservation of the park), in Brazilian currency (real).

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Research object: "Parque do Povo" in Presidente Prudente-SP

"Parque do Povo", a public space, was born from the process of urbanization and channeling of the initial section of the Stream "Córrego do Veado". In 1976, the City Hall presented to the population the launch of the Project called "Fundo de Vale", justifying the need to carry out a process of reurbanization of the bottom of the valley, which presented itself as an obstacle to the development of the city (Bortolo, 2012).

In 2001, the local municipal administration launched the revitalization campaign, asking the population for suggestions, through an insert distributed by a city newspaper: "This campaign aimed to make the largest public and leisure space in the municipality more beautiful. Let's turn it into a postcard. Join!". The public space of Parque do Povo underwent renovations, which began in 2003, with the installation of various equipment, such as new walking lanes and benches, playground facilities and public restrooms. According to Silva (1994), the need to improve sanitation and the road system – which, according to the elaboration team of the Master Plan of Presidente Prudente, in 1968, did not contribute to the city's territorial expansion. In view of this, "the Parque do Povo project was seen as a 'requirement of progress', and this was the main discourse that supported its implementation" (Silva, 1994, p.35).

The area covered by the project had approximately 460 thousand m². The program involved channeling and straightening the section of the Stream "Córrego do Veado" between Brasil Avenue and Manoel Goulart Avenue (direction NW–SE). As well as the installation of infrastructure, leisure equ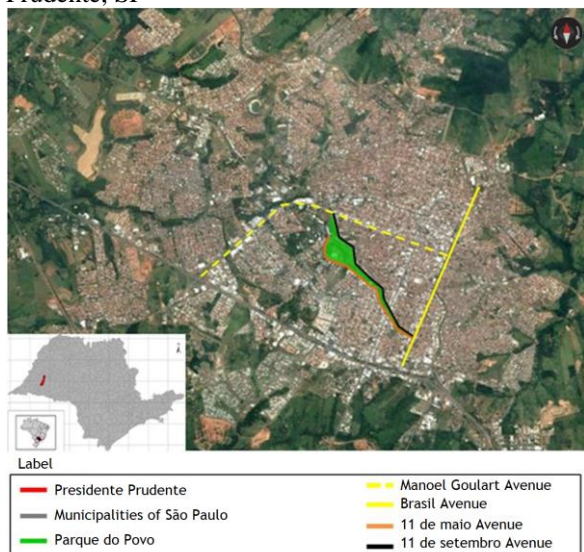ipment (Olympic swimming pools, multi-sports courts, cycle track, athletics track, model airplanes), services (snack bars and bars), implementation of two rapid transit lanes and green areas in this valley floor until then degraded – a forest of five bushels, with the planting of more than 60 thousand trees (SILVA, 1994; VAZ, 1999).

Parque do Povo (see Figure 1) is an example of the administrative political position adopted by the local government in the production of urban space to promote the "appreciation" of a specific area, arising from the process of urbanization and canalization of a section of the "Córrego do Veado. This Stream is located in the Southeast region of the city, through a project called "Fundo de Vale" presented to the population by the City Hall in 1976), justified by the "need for urbanization of the valley floor, which presented itself as an obstacle to the development of the city" (BORTOLO, 2013).

It is important to highlight that the implementation of Parque do Povo also triggered a process of private appropriation of benefits related to the social production of urban space and a process of real estate speculation in the region. However, it is important to highlight that the methodological options considered for the research did not take into account the asymmetries of power, wealth and political influence of the actors interested in valuing the park; this was not the object of study.

Parque do Povo in Presidente Prudente-SP receives an average of 10,500 visitors per month (PRESIDENTE PRUDENTE CITY HALL, 2018) 200 questionnaires were applied. The opening hours of Parque do Povo are uninterrupted as it is an open area, with no visitation fee. The hours of greatest flow of people often occur in the afternoon. At other times, there is a lower flow of users during the week.

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Figure 1
Location of Parque do Povo in Presidente
Prudente, SP

Label

▬ Presidente Prudente	▬ Manoel Goulart Avenue
▬ Municipalities of São Paulo	▬ Brasil Avenue
▬ Parque do Povo	▬ 11 de maio Avenue
	▬ 11 de setembro Avenue

Source: Dice da research.

Results presentation and discussion

Among the visitors, the largest proportion is female users with 57.5% of the total and males with 42.5%. The age group of users in the range of 18 to 30 years represents 28% of the total number of users. With 14.5% in the age group between 31 and 40 years; 22.5% in the age group of 41 to 50 years; with 21.5 % between 51 and 60 years old; 11% between 61 and 70 years old; and 2.5% for the group of over 70 years old.

According to the marital status of the visitors, the majority of people who frequent the park are married (56%), 38% are single, 3% are widowed and 3% are divorced.

Regarding the analysis of the educational level of the interviewed park users, it can be seen that most of the visitors have a university degree (55.5%), 6% are graduates, but we also have a considerable number of people with high school level (37%) (Table 1).

Relating the age group with the possibility of payment, in Table 2 it is observed that despite the majority being

willing to pay for the preservation and maintenance of the park, age influences the acceptance of paying, that is, the older the visitor, the greater the acceptance to pay. The 18-30 age groups had the same rate of payment acceptance and non-acceptance (about 14%); there was a greater acceptance of payment (14.5%) for the maintenance and conservation of the park in the 51-60 age group (Table 2).

Table 1
Education level of visitors from Parque do Povo, Presidente Prudente-SP, 2019.

Education Level	%
Elementary School	1,5
High School	37,5
Higher Education	55,5
Graduate Program	6,0

Source: Dice da research.

In the study by Morgado (2011), the main independent variables that most influence the Willingness to Pay (WP) are the education level, income and occupation, since they have the highest multiple correlation coefficient, respectively. With regard to education and WP, Araújo (2016) observed a predominance of individuals who claim to have Completed High School (37%), followed by people who declare to have Completed Higher Education (21%), not observing, therefore, significant relationship between education level and WP.

Table 2
Age group in terms of acceptance of the possibility of paying for maintenance and conservation of Parque do Povo, Presidente Prudente-SP, 2019.

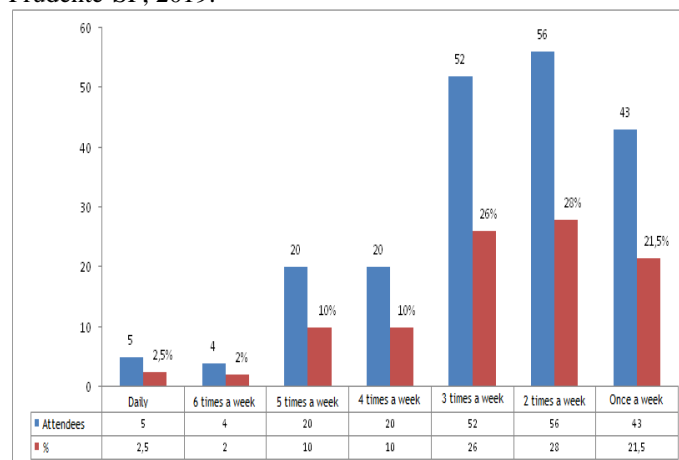| Age (Years)	Yes (%)	No (%)
18 – 30	13,5	14,5
31 – 40	5,0	9,5
41 – 50	12,5	10
51 – 60	14,5	7,0
61 - 70	4,0	7,0
>70	1,5	1,0

Source: Dice da research.

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The survey results show that 51% of those interviewed are willing to pay an amount for the maintenance and conservation of Parque do Povo in Presidente Prudente. Thus, the average willingness to pay (WP) found for the public willing to pay was R$ 5.30 per person. Thus, expanding the average value of the WP (R$ 5.30) to the estimate of the annual population of visitors (10,500), we obtained an aggregated annual value for Parque do Povo of R$ 667,800.00.

Other studies that evaluate WP showed significant results by the surrounding community in three Private Municipal Natural Heritage Reserves (PMNHR) in Curitiba, as a subsidy for their financial sustainability (FLORES et al., 2017). Since the daily WP analysis, 65% of respondents are willing to pay for PMNHRs. Of these 65%, the most frequent value classes were R$ 5.00, (33.33%) followed by R$ 10.00 (11.67%). The results regarding perceptions about life in the park show an expressive relationship with age group, that is, a very democratic space for all ages. Throughout the surveys, it can be observed that the importance of green areas for the well-being of the population is indisputable, since 100% of the interviewees were in favor of this type of investment (parks and municipal forests).

The main justification is due to the frequency of visits to the park, mainly for walking, where the majority of respondents reported visiting the park twice (28%) and three times (26%) a week (Graph 2), indicating the importance of Parque do Povo for the practice of regular physical activity (Silva; Reis; Petroski 2009; Salvador et al., 2009).

Graph 2
Visit frequency to Parque do Povo, Presidente Prudente-SP, 2019.

	Daily	6 times a week	5 times a week	4 times a week	3 times a week	2 times a week	Once a week
Attendees	5	4	20	20	52	56	43
%	2,5	2	10	10	26	28	21,5

Source: Dice da research.

The occupation of the Park by users takes place in a diversified way, ranging from leisure, circulation, commerce, among others. In a study carried out in the same park, Arana and Xavier (2018) observed that the night period was the most frequented by visitors (53%), followed by the afternoon period (23%), morning (16%) and midday (8%). Regarding the level of activity found in the park, both on weekdays and weekends, moderate activities prevail (54%), followed by sedentary activities (27%) and finally vigorous activities (19%).

The survey revealed that 51% of those interviewed are willing to pay some amount for the preservation and maintenance of Parque do Povo. It was observed that despite the majority being willing to pay for the preservation and maintenance of the park, age influences the acceptance of paying, that is, the older the user, the greater the acceptance of paying. The 18-30 age groups had the same rate of payment acceptance and non-acceptance (about 14%). The age group of 51-60 showed there was a slightly higher acceptance of payment (14.5%) for maintenance and conservation of the park, as well as the results regarding perceptions about life in the park, showed an expressive relationship with the age group, that is, a

very democratic space frequented by people of different ages.

On the other hand, 49% of the interviewees did not accept the proposal to pay for park maintenance, since, they were supported by the opinion, mainly, that access to urban parks should be free and that maintenance is an obligation of the public power (35%). Equally important were restrictions on personal income and mistrust of the misuse of funds raised, with 36% of nominations each. Respondents who opposed the proposal corresponded to 8% of those who said no.

In this sense, it is important to highlight that in the current scenario, park users recognize its value as an environmental urban heritage for the municipality and created in 2017 the Associação Amigos do Parque do Povo, AAPP, constituted to work in partnership with the municipal government, with entrepreneurs and other public and private institutions (AAPP, 2023). The AAPP established itself as a landmark in the development of citizenship and environmental and social responsibility in the municipality; seeking actions that promote the strengthening of Parque do Povo as an instrument for promoting people's health and quality of life. In addition to being an example and encouragement for similar initiatives having the possibility to prosper and benefit other green areas in Presidente Prudente-SP.

Despite the Contingent Valuation Method being more used to verify environmental damage, the research verified that the concern with the environment through the Park's visitors demonstrated a greater environmental perception, that is, the people that frequent the Parque do Povo are relating more health and quality of life with green areas.

Final Considerations

The valuation method used in this research, Contingent Valuation Method (CVM), reveals that Parque do Povo in Presidente Prudente-SP has an annual value corresponding to R$ 667,800.00. Obtaining a reference value for Parque Povo could provide subsidies to the public authorities and guide the management process of this urban green area. The application of economic instruments is a way of economically assessing the amount of compensation for socio-environmental damages.

Thus, given the difficulty of defining a value for a green area, it can be said that this value defined for the park calculated through the Contingent Valuation Method (CVM), is not a value used to meet the financial needs of the Park. However, it corresponds to the expectations of the visitors, who indicate the importance that the Park represents to them, through the generation of well-being they perceive. In addition, this value can be used to subsidize public policies that serve to improve and preserve the environmental quality of Parque do Povo. In this perspective, there is a need for further research in the field of environmental valuation in urban green areas, so that their presence can be more valued, not only from an environmental perspective, but also from an economic perspective.

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