“Evaluating the Sitting Behavior on Public Spaces”

Study case: Berlin, Germany

by

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To,

My honorable supervisor
Mr. Vertr. - Prof. Dr. Sven Schneider and Mr. Dr.-Ing. Martin Bielik,
without their kind support and motivation from the beginning until the end, this research would not be possible to finish successfully. I thank you both and appreciate your kind assistance.

My parents,
without their support, I will not be able to come this long way; they supported and inspired me in every aspect of life. I am proud of them.

My friends,
those who always believed in my ability and supported me during the most challenging period of life. I am lucky to have you all.

Thank you all from the core of my heart.

Sitting in public place, Görlitzer Park, Berlin. Digital Illustration.

Abstract

People's sitting behavior is an important phenomenon to observe in terms of any public place. Having a closer look at the topic always reveals some significant facts regarding public preferences of sitting in different locations of a public place. Despite having similar context, sometimes locations got more user preferences than the others in terms of sitting within the same public space. It would be handy for a designer to sort out the design features that mainly influence the public sitting behavior to manipulate the static activity and enhance the vibrance of any public space. A good public place is where people tend to stay longer, and sitting ensures the most extended stay period. In this regard, sitting is an influential spatial behavior to enhance the vibrance of any public space.

This research focuses on studying people's sitting behavior in several public places within Berlin and analyses the sitting pattern to sort out the influence of surrounding design features. It studies how people use urban public spaces for sitting and the factors that stimulate the use of these spaces. It also investigates why some locations of the same public space become mainly used, and some of them are less used due to the ideal combination of the influencing factors.

Empirical research was conducted to show a quantitative assessment of three public spaces having standard design features from three different locations within Berlin. An in-depth analysis was prepared based on existing knowledge and research evaluating the influential factors manipulating sitting behavior in public places. Later, user behaviors, sitting patterns, and activities of these three public spaces were surveyed following some mapping structure to analyze the significant features related to public sitting. A standard unit of mapping grid (i.e., 10m x 10m or 100sqm Cell) was considered for measuring attributes using parametric analysis tools related to the significant features that influence the sitting behavior among different locations within the selected public places. On-site observations regarding daily life in those public spaces were used to track down the sitting activities and gather necessary information regarding the influential design features. A decision tree model was trained to analyze and predict the most influential features of public sitting based on the final processed input data from the surveys.

The research outcome shows the most influential design features based on the decision tree predictions from different public place surveys. This trained decision tree model can be used further in the design process of a public place to predict sitting activities in any given location. Moreover, it can be used to get feedback as a designer on whether the public place design is suitable for sitting or not. The outcome of this research can be implemented further to increase the participant's willingness to use a public space for sitting activities. That means this scientific research can be used as a helping tool for stimulating sitting activities in public spaces that invite and engage people together to enhance public space's social interaction and vibrance.

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01.Introduction

1.1 Focus and Scope

Public spaces can often be used as an instrument to increase social cohesion and bonding among their users. However, most of the time, they remained underutilized. Due to the design, location, proper management, and use process, a public space might not utilize its full potential to develop social interaction between different user groups. As the design of a public space influences the public life quality of its inhabitants significantly, it is necessary to handle the design process and include the characteristics that help to evolve a public space into a good one.

In a public place, there will be provision for numerous activities to engage its users. Good public spaces are always able to catch the attraction of their users through the provision of diverse activities in an engaging way. Sitting, talking, playing and physical activities, social interaction, and communication through various events, listening to music, reading, relaxing, and many more activities can be listed for daily life in an urban public space. People would love to engage in these activities spontaneously, which evolves a public square or park into a good functionality. On the other hand, places that fail to attract people due to lack of activities and vibrance despite having potential can be defined as a failure. So, activities and vibrance are always essential to keep a public place alive.

Sitting is one of the most crucial stationary activities within a public place as it allows people to stay longer in a public place and got engaged with the surrounding environment. If people stay longer in a public place, it remains lively for an extended period, and there are always more chances available to create social interaction among the users. So, understanding people's sitting behavior is always vital for a planner to successfully approach an urban public place's design process. In order to generate a vibrant public space, sitting activities always play a crucial role. It enhances the possibility of longer staying of people within a place. If a public place is attractive for sitting, then it is evident that people will stay long and, in the process, get engaged with many other spatial activities which enrich the place's activeness.

Sitting is the critical link to many other spatial behaviors of a public place, such as social interaction, eating, drinking, listening to music, and many more. Sitting as a predominant spatial behavior always interconnects the other activities. It is closely related to the surrounding design features and other activities. So, understanding the significance of nearby design features on public sitting is essential to realize how people will react to a location of a public place in terms of giving sitting preferences. It would always be crucial for a planner to place the design features according to their significance and ideal combination with the other nearby features for encouraging sitting activities. So, it is vital to evaluate their impacts on the sitting behavior of public places. In this regard, evaluating the sitting activities and their interrelation along with the design features was considered crucial in this research.

William H Whyte's famous observations of plazas and parks suggested that people do not bother much regarding their sitting locations as long as they could sit somewhere. However, he also exemplified that, particular types of seating could revitalize a dying place. Seating that is well accessible, comfortable, well-maintained, and placed in the right locations is conducive to successful placemaking. Good public spaces provide people a choice of where and how they would like to sit. They ensure a wide range of seating options such as ledges, steps, benches, moveable chairs, and different places or locations within the same area, such as in the sun, in the shade, in groups, alone, close to the activity, or somewhat removed from the activity. Sitting provides people a level of social comfort by allowing them to choose their suitable location to stay and linger in a public space. So, considering sitting as an influential public space activity would provide scope for further research to evaluate a thriving public space.

1.2 Relevance and Importance

According to William H Whyte, People tend to sit most where there are places to sit. The most attractive fountains, the most striking designs, cannot induce people to come and sit if there are no places to sit (Whyte, 1980). So, it is essential for people to sit where there is enough provision of sitting in the first place. From the existing knowledge and research done by all the renowned urban planners and researchers, many essential factors can decide in shaping public sitting activities. There are physical factors such as design elements, surrounding environments, and so on. On the other hand, non-physical factors like surrounding activities, psychological comfort, social circumstances, etc., also act as defining components. The importance and relevance of these various aspects of public sitting were reflected in many existing pieces of research. Some of the most significant findings related to people's sitting behavior in a public place were accumulated and analyzed together in the literature review section.

Public spaces and sitting activities are strongly co-related. It is accounted as one of the predominant spatial activities within a public place. Being one of the most influential static activities, it always impacts other activities and behaviors of public space. As it ensures a more extended period of staying for people, lacking sitting activities hampers the vibrance of any public place. William H. Whyte once said it is difficult to design a space that will not attract people - what is remarkable is how often this has been accomplished (William H Whyte, 2012). Nowadays, public spaces seem to be designed as showpieces only to be looked at but not touched. They are neat and clean but empty, denoting "no people, no problem!". However, when a public space is empty, vandalized, or used chiefly by undesirables, it is generally a sign that something is very wrong with its design, its management, or both.

There are many reasons why a public place fails to attract people. One of the most significant causes among them is the lack of places to sit. Even though there is the provision of sitting, due to the lack of ideal positioning of the sitting furniture and combination with the surrounding design features, a public place fails to attract people to stay longer and sit. It results in a public place without people's presence and evolves as empty and barren space

without activity in the long run. So, evaluating the sitting behavior of public spaces is essential to rejuvenate a public space's activities and daily life. The design features of public places highly influence public sitting activities. The design features' impacts on sitting activity need to be appropriately analyzed to have a logical idea regarding their interdependence. This research was focused on generating a clear understanding of the significant impacts of design features on public sitting activities to help reduce the problem of dying public spaces without people and activities.

1.3 Research Gap

Various researches and articles described different strong influences behind sitting activities in public places. There could be many explanations for various reasons and stimulating factors that might affect human psychology to choose a place to sit in a particular location of a public place. In terms of sitting place preference, it does not have the same facts that influence the behavior every time. It might vary from square to square, specific location to location, and so on. Existing researches and studies indicated several influential factors that manipulate the public sitting phenomenon. These significant factors were classified as physical, environmental, psychological, and into many more categories. However, the most influential factors are the design features of a public place which directly impacts and manipulates the public sitting activities. Though existing research and studies demonstrated the impacts of these influential factors on public sitting, there were lacking in terms of accumulating all of them together and analyzing their interrelations for a public place.

As the design of public places has a significant influence over public life quality, it is necessary to handle the design process carefully and include the characteristics that help to evolve a public place into a good one. As discussed earlier, one of the characteristics of a good public place is having adequate sitting and ideal surroundings. In this regard, the necessity of an analysis tool for predicting sitting behavior in a public space while designing is always advantageous and beneficial for the designers. Though existing researches indicated the influential factors on public sitting in different dimensions, there is an opportunity to accommodate all the significant design features and their impacts on public sitting together to generate a tool or method of evaluating the sitting behavior based on the existing knowledge and daily life experiences from different public places. All the scattered information and research can be combined to generate suggestions and guidelines for generating successful public places by initiating more sitting activities. So further research in this context would be beneficial to generate essential guidelines for initiating sitting activities in public places and bridge the gaps between the existing knowledge and the practical situations on day-to-day life in different public places.

1.4 Questions and Objectives

Many factors define sitting behavior in a public place. Among them, design features and elements are the physical factors that directly influence sitting and other spatial activities. It is necessary to experience daily life in public places to understand how different design features influence the sitting pattern. At the same time, non-physical factors such as the

activities of other users can also be a vital point for a visitor to consider a place where he might sit. Accumulating all the necessary characteristics of different design features which play a deciding role in shaping public sitting behavior would be an excellent tool for any designer to predict sitting activities in any given location of public places. It helps to initiate a successful design of a future urban public place and at the same time revitalize an existing dead public space by stimulating its sitting activities. Intending to find how different design elements influence public sitting behavior, this research aims to observe on-site activities in three different urban public places in the city of Berlin. Sitting activities and the surrounding features, design elements, and nearby spatial activities were traced following several mapping structures to prepare the input data charts. In order to reach a specific decision regarding the design elements mostly shaping public sitting preferences, a decision tree method was used. The decision tree model was trained and fed all the collected data to predict the sitting behavior and its relations to the most significant surrounding features. Based on the decision tree predictions, logical explanations were analyzed to determine the best possible combinations of predicted design features to evaluate public sitting preferences on different public place locations. The main research questions were,

- What are the major design features that influence sitting activities in a public place?
- How do these influencing design features interact with each other to enhance the sitting preference of any specific location of a public place?

1.5 Overview of the General Structure

The whole dissertation is divided into five major parts. It starts with the introduction, which helps to introduce the topic and its relevance to the reader. It allows the reader to get along with the topic and its research focus, importance in the relevant field, and overall objectives following the literature review, methodology, result, and conclusion chapters. The literature review aims to gather some significant research, opinions, and existing knowledge complimenting the topic of public sitting behavior from the existing publications, books, and articles by famous sociologists, urban planners, and psychologists. This chapter focuses on and analyses various theories based on human psychology and the philosophy of sitting in a public place to merge them into scientific speculations to organize and filter out the existing knowledge regarding the most influential factors that manipulate public sitting. The methodology chapter describes how the survey structure was formulated to approach the analysis part. The data collection structure was initiated based on a quantitative analysis method that mainly collects data through on-site observations from several public places. The analysis and result chapter describes the used method of analysis and its results. A decision tree structure was used to analyze and predict the most influential design features on public sitting. The discussion follows the interpretations of the results, their interrelations, and shortcomings of the research, which is complemented in the conclusion chapter describing the future scope of using this research as a helping

tool in the field of urban planning to predict sitting behavior to evolve vibrant public space design and ensure maximum sittability.

02.Literature Review

2.1 Public Spaces and Sitting

Public spaces and sitting are highly interrelated to each other. It can be considered as one of the essential stationary activities that occurred in a public place. Being one of the most influential spatial behaviors, it always helps shape other activities and behaviors of public space. Several factors also determine public sitting. Many renowned urbanists and sociologists had done researches regarding the topic of public sitting and its characteristics. As this research focuses on defining the factors shaping public sitting behavior in urban public spaces, some of the most relevant thoughts and ideas are collected together to generate some testable hypotheses. It is logical to organize the existing knowledge into several sequences to guide the reader towards the hypotheses. This literature review chapter is divided into several parts associated mainly with the characteristics and theories that define how people use public space in terms of sitting and the physical and psychological reasons that shape this phenomenon according to the existing research and articles.

What drives a person to choose a place to sit in a particular location of a public place? There could be many explanations for various reasons and stimulating factors that might affect the psychology of a human being. In terms of sitting place preference, it does not have the same facts that influence the behavior every time. It might vary from square to square, specific location to location, and so on.

Figure 1: Sitting in public Place

Various researches and articles describe different strong influences behind it. However, in general, many researchers stated that human psychology will always look for a place to sit at the first point. If there is no room to sit, then the discussion regarding the factors of influence will be meaningless. People tend to sit most where there are places to sit (William H Whyte, 1980). According to **William H Whyte**, sitting places are the most crucial issue to grow people's interest to sit. It does not matter if there are many details present in the surroundings and activities going on in the near vicinity. In his iconic book, **The Social Life of Small Urban Spaces,** he clearly stated that the most attractive fountains, the most striking designs, cannot induce people to come and sit if there is no place to sit (William H Whyte, 1980). Once there is a provision for sitting, which is available spaces to sit, there will be the question of having a preference over different locations. What do typical people think before choosing a place to sit in a public space? What manipulates their mind to prefer a position where they can sit with both physical and psychological comfort? The discussion is broad in terms of explaining all the possible influencing factors. Existing knowledge narrates those factors shaping public sitting behavior can be classified into several categories or groups. It might be physical factors such as design features, surrounding natural and artificial elements, environmental factors, or something related to human psychological comfort. At the same time, it might be the surrounding activities or other spatial behavior of the public square or plaza. Moreover, all the stated facts can have an accumulated impact altogether. It continuously varies from place to place and location to location. As this research topic focuses on the most influential features complimenting public sitting behavior, it is important to briefly discuss some of the existing research and ideas narrated by famous urbanists and sociologists regarding the facts mentioned above.

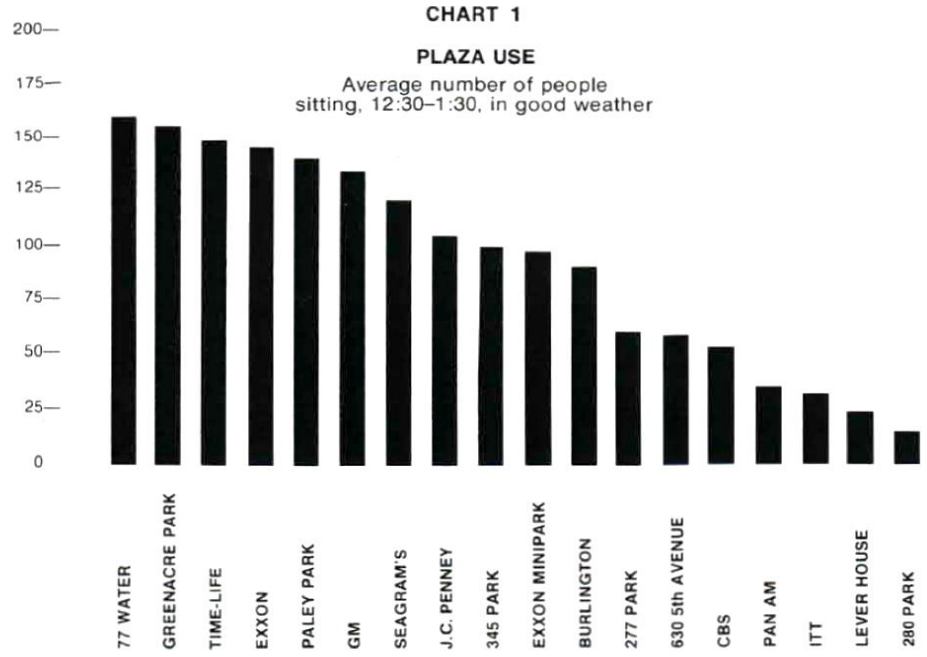

Figure 2: Bar chart showing average number of Plaza use for several public plazas in New York.

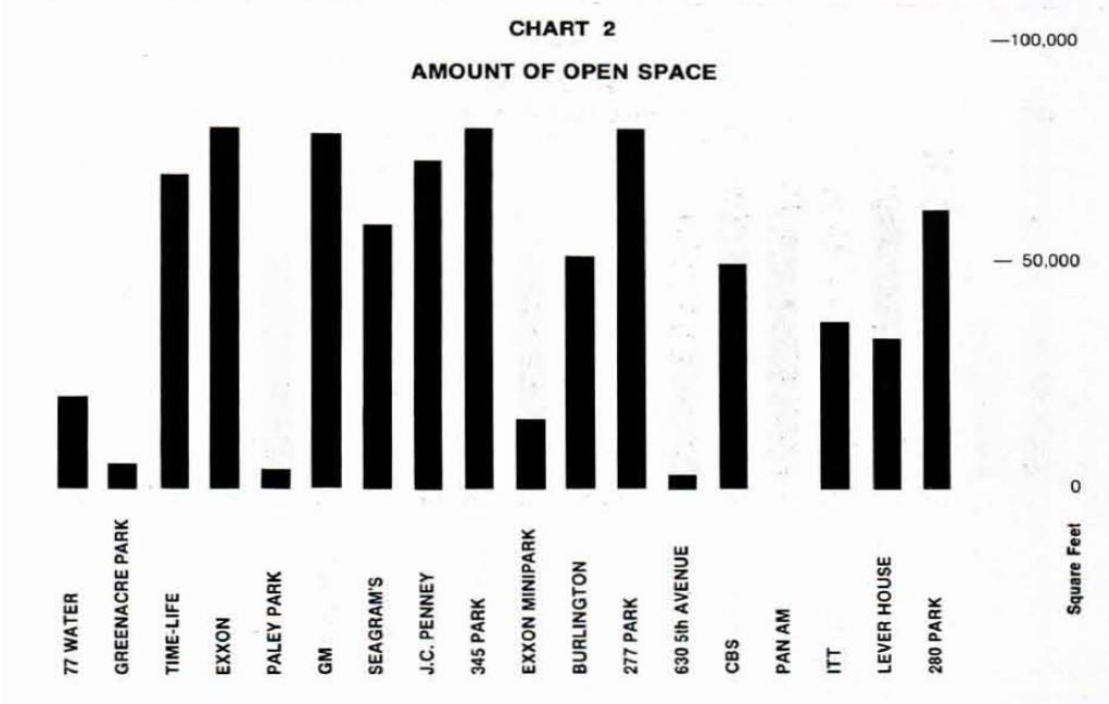

Figure 3: Bar chart showing the amount of available open spaces in those public plazas.

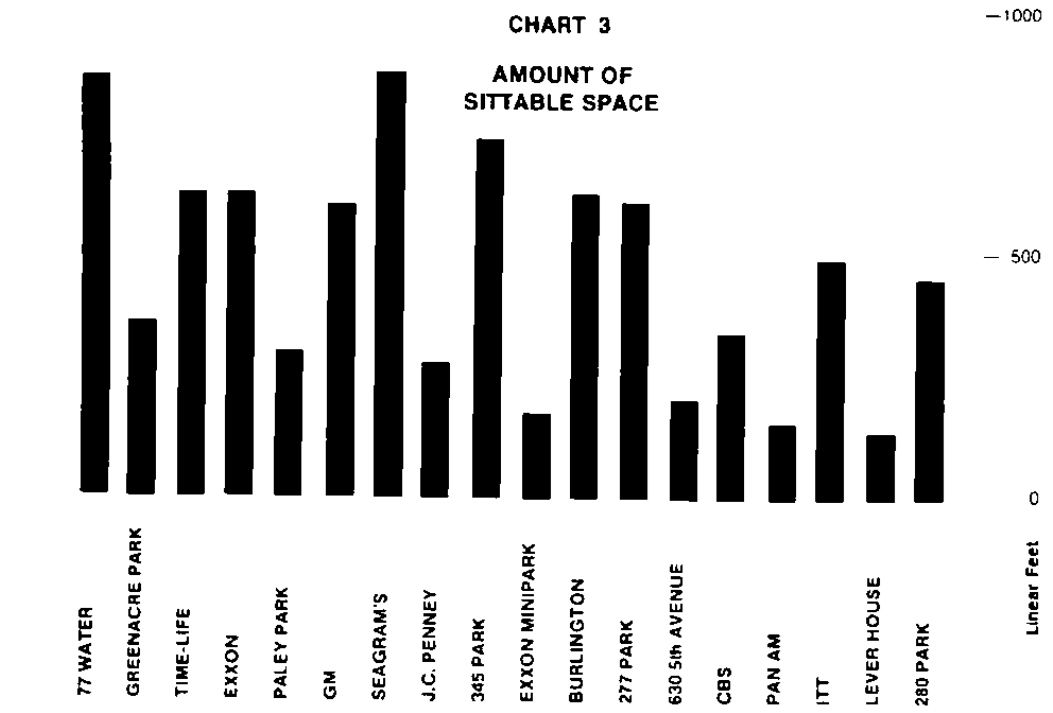

Figure 4: Bar chart showing the amount of sittable spaces in those urban plazas.

Fig 2-4: Showing the relations of public space user density vs the number of open spaces and sittable spaces available for several parks in New York, Source: The Social Life of Small Urban Spaces, (William H Whyte, 1980) The three-bar chart describing the facts that where there is more sittable spaces available the more user density was experienced.

2.2 Factors Shaping Sitting Behavior in Public Space

As discussed earlier, the factors those stimulating sitting activities within a public space can be classified into different divisions according to the existing literature based on the topic. Usually, the designed features, surrounding elements can be classified into physical factors. On the contrary, environmental factors such as Sunlight, shadow, rain, etc., can be categorized as non-physical factors. Moreover, there could also be a division of factors those impacting human psychological comfort to affect sitting activities.

2.2.1 Environmental Factors / Non-physical Factors

Usually, these factors are associated with environmental issues complementing the physical factors or designed elements within the public place. **Whyte** studied Sun as the first factor during his time-lapse videos prepared for the book **The Social life of Small Urban Spaces**. He mentioned that the possibility of the Sun is a crucial factor shaping the public sitting. It is the quality of experience that can be much greater when there is the Sun. For then, you have a choice – of Sun, or shade, or in-between. The best time to sit beneath a tree is when there is sunlight to be shaded from (Whyte, 1980). So, a point to be noted about the presence of sunlight in a public space which enhances the sitting experience with the compliment of shadow. People would love to sit under the Sun during the winter. Again, a gentle shadow would be much nicer if it reduces the harsh Sun's direct impact during the hot summer. So, Sun and shadow complement each other to delineate their importance as influencing non-physical factors. Similarly, the absence of Sun or daylight might reduce the appeal of public space in terms of sitting. Understandably, during the rainy season or gloomy atmosphere, most public spaces remain empty for sitting. So, all these environmental factors are interrelated with each other and complementing the surrounding physical factors. For example, Trees and shadows are closely related as a deciding factor behind the public sitting activity. People always tend to sit underneath the tree or at least in a place where there is a shadow protecting the direct Sun.

2.2.2 Physical Factors / Design Features

Addressing the physical factors, which are the designed elements provided or planned by the designer to complement the overall scenario. In some cases, they can be the existing elements as well without much-planning implications. In terms of design features that mainly influence the sitting behavior, sitting benches are the most prominent ones to be noted. Again, it indicates the provision of sittable places. The most popular plazas tend to have considerably more sitting space than the less well-used ones (Whyte,1980). That means most vibrant public places logically consisted of more sitting provisions. Among those sitting places, the most used design feature to sit on is the sitting benches. This feature has numerous categories among itself. Sitting benches can also be classified into many types and design variants that have different impacts on the users regarding sitting activity

Figure 5: Long sitting benches are effective for two people sitting in terms of interaction.

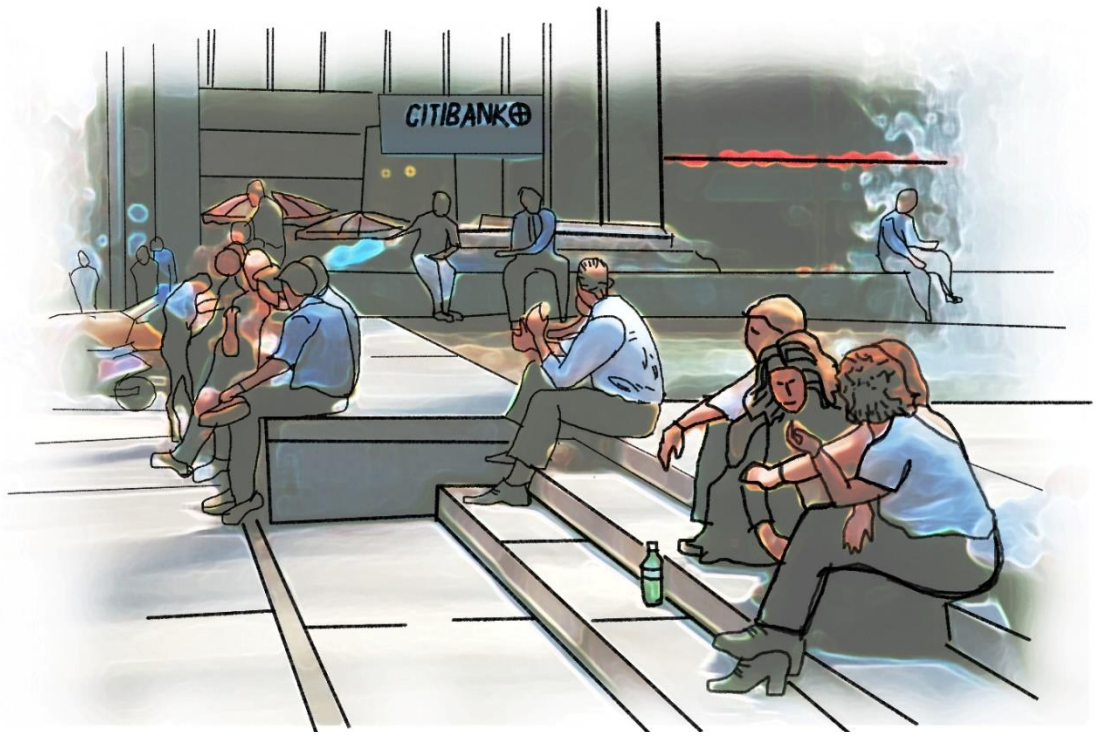

Figure 6: Ledges, steps etc. can also play an important role as a seating feature for multiple people interaction

and behavior. Ideally, siting should be physically comfortable-benches with backrests, well-contoured chairs. It is more important, however, that it be socially comfortable. That means choice: sitting up front, in back, to the side, in the sun, in the shade, in groups, off alone. (Whyte, 1980) According to Whyte, there should be a provision of different varieties of sitting benches that provide a different way of sitting, ensuring both social and physical comfort. Famous urbanist **Jan Gehl** expressed his thought regarding creating different sitting provisions for single and multiple user groups. In his book **Cities for People**, it is stated that users who want to maintain a distance to others long even benches are appropriate. **Cooper Marcus** and **Francis (1998)** also suggested two varieties of seating for those single users who want to sit near but not within eye contact with others. Straight seating options such as steps, ledges, or straight benches allow natural spacing between people. They do not imply unwanted eye contact, same as benches situated at a right angle or opposite each other. Circular benches around a planter (for trees or flowers) could be another possible variant that provides few detached users to sit closer and keep their privacy by looking in different directions (Cooper Marcus & Francis, 1998). City benches might be a good option for preserving private space and distance, but not as good at spreading communication. It is possible for a couple of users to turn their heads to initiate a conversation, but if a group of users is seated, a row of benches might not be inviting, says Jan Gehl (2010).

Figure 7: Sitting under trees always provides both psychological and physical comfort.

Among other physical features, Trees can be a deciding factor and their shadow casting ability which was discussed earlier as a non-physical or environmental factor. As Whyte (1980) expressed, trees should be related much more closely to sitting spaces than they usually are. As far as his research is concerned, the pleasure of being under a tree is much nicer while having a pleasant look at the surroundings. He also added that tree provides a satisfying enclosure; people feel cuddled, protected-very much as they do under the awning of a Street Cafe. As always, they will be cooler, too (Whyte, 1980).

In addition, bushes, hedges, and greeneries play an important role in creating fences, barriers, and buffers to the noise generated from the nearby roads. They also contribute to the sense of natural beauty and creating a pleasant microclimate. According to Gehl (2010), it is always possible to improve microclimate, particularly around the places that invite people to stay, where microclimate requirements are particularly stringent. Landscaping, hedges, and fences can provide shelter exactly where most needed (Gehl, 2010).

Figure 8: People love to sit where there is other people and activities occurring specially in an open green space.

Another critical factor that alleviates the sitting behavior is the openly accessible area, open green area, or open spaces where activities occurred, usually in a public place. Cooper Marcus and Francis (1998) noticed the significance of varieties in sitting orientation that provides variety while being seated in watching other people's activities, surroundings, and diversity in the sun and shade. People are attracted to other people (Abu-Ghazzeh, 1999, Spooner, 2014). Therefore, the city life view of people has a unique attraction, and people

will be attracted to a location where other people are passing by (Cooper Marcus & Francis, 1998; Gehl, 2010). Seating orientation is crucial in terms of having a diverse view of the surroundings. Lyle (1970) determined that people choose to be where there are other people. Places that are pretty distant from the central circulation and isolated ones were not much used compared to others. Most people have a preference to keep their faces towards the open areas where people engage in activities, or other features are present. Similarly, Mumcu (2002) sort out that seating with a comprehensive view and heading towards the places where the human activities were occupied for a more extended period than the others. So, the importance of the open activity area is quite influential in shaping public sitting preferences.

Figure 9: People tend to sit in the near vicinity of the circulation area.

expresses the dominance of pavements, pathways, or circulation spaces in public sitting behavior. People tend to sit in the near vicinity of the circulation area. Not necessarily, the sitting would hamper the circulation instead, and they complement each other.

Other features like fountains, statues, view of the water, etc., also decide factors initiating the sitting activities in a public space. The view is even better if many of these features are combined. According to Gehl, careful thinking about views and options for looking must be part of the effort made for good city quality (Gehl, 2010). People always love to have a glimpse of surroundings filled with visibly attractive and exciting features.

2.2.3 Psychological Factors

Sitting should be both physically and psychologically comfortable, as William H Whyte said. Several factors control the psychological comfort of public sitting. Many psychologists expressed different theories and concepts regarding people's mental comfort while sitting in a public place. Several factors control different aspects of people's sitting preferences. All these factors can be defined as comfort factors of public sitting. Mehta (2014) described that the feeling of comfort in an open public place is controlled by different factors such as safety perception level, the familiarity of the surroundings and people, weather, physical conditions, convenience, and so on. Spooner (2014) noted that sufficient seating, suitable noise levels, a pleasant microclimate, and visual access to greeneries are comfort factors. Psychological comfort is decided as a dimension of comfort by many authors. These are equally important in shaping the public sitting activities in an urban public space.

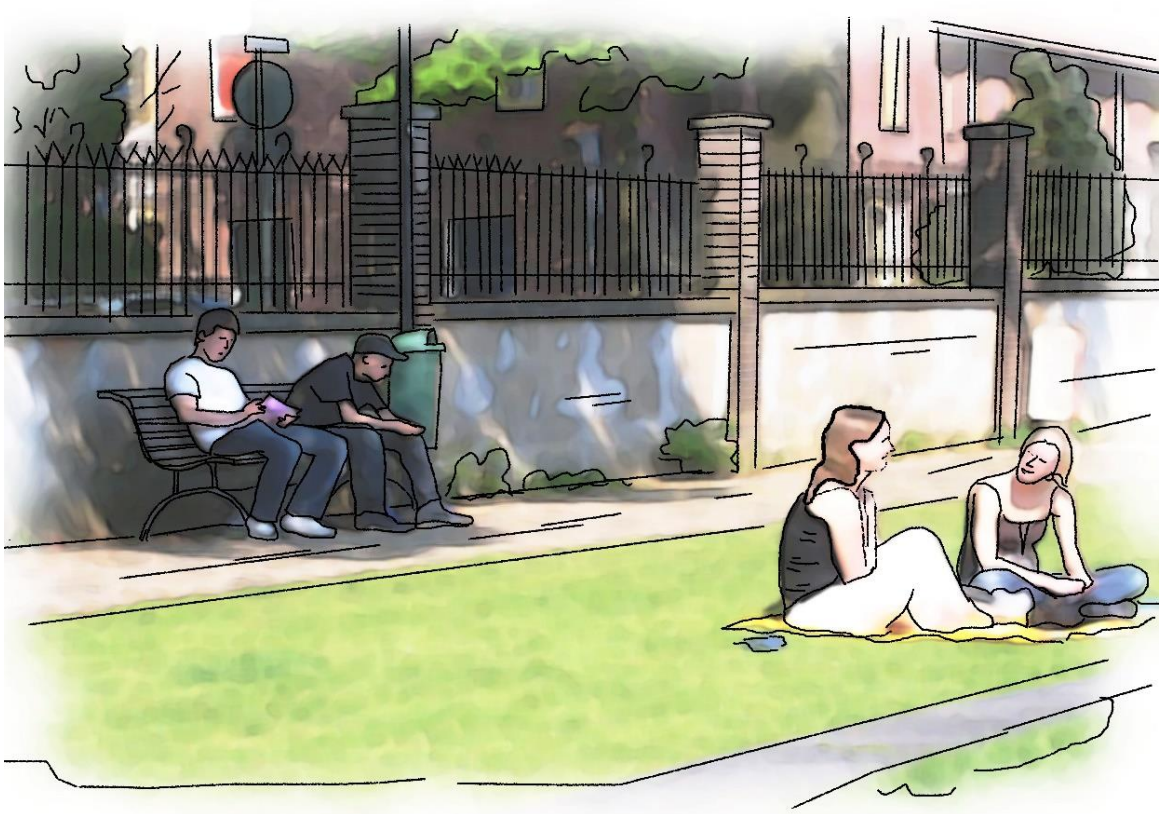

Figure 10: people tend to seek support from the details of the physical environment. Sitting places where one's back is protected are preferred to less precisely defined ones (Gehl, 1987).

Numerous urbanists provide several assumptions regarding psychological comfort and its effect. **Prospect Refuge Theory** is one of the most significant assumptions which can be explained as a crucial psychological factor of manipulating public sitting. Psychological

security is associated with establishing control over the environment, sustaining privacy, and avoiding being socially or physically lost (Jalaladdini & Oktay, 2012). The feeling of safety highly influences human spatial behavior. Prospect-refuge was defined as affordances for seating areas to get the feeling of safety (Mumcu, 2009; Mumcu et al., 2010). Appleton (1975, 1988) revealed that the evolutionary development of humankind had led humans to go for a setting in which, without being seen (refuge), they can see a broad vista (prospect). These landscape attributes seem to simplify survival, also persuade aesthetic delight. An unimpeded opportunity to see is called a prospect, whereas an opportunity to hide is called refuge; hence the name prospect refuge theory emerges when these two words combine (Appleton, 1975). In a study aimed to determine a relationship between this theory and sitting behavior, it was found out that prospect and refuge affect the choice of seating (Mumcu, 2009).

Similar affordances of the environment for seating are defined as **the Edge effect** by Gehl (1987, 2010). Places for sitting along facades and spatial boundaries are preferred to sitting areas in the middle of space; people tend to seek support from the details of the physical environment. Sitting places in niches or at other well-defined spots and sitting places where one's back is protected preferred to less precisely defined ones (Gehl, 1987). Users' backs are protected, and the frontal sensory apparatus of users can comfortably master the situation. A complete view of everything in the space is provided, and users are in no danger of unpleasant surprises from behind. Furthermore, the local climate is best there (Gehl, 2010). Existing researches are supporting these explanations. Chang (2002) found out that the most often used sitting places are the ones on the edge. Lyle (1970) dictated that people in open spaces revealed a tendency for clustering at the borders of the space. All these assumptions and theories determined by numerous renowned planners and psychologists through their researches reveal that the public has a notable impact by the psychological facts. A designer should always keep in mind these psychological factors of ensuring comfort while designing a public place. These physical and psychological factors are equally significant to turn a public place into a good one where people tend to stay longer and sit according to wide-open preferences.

2.3 Most Influential Factors

This research topic mainly focuses on the evaluation of sitting behavior in public spaces. It aims to investigate the most influential factors that shape this behavior. After a brief overview of the existing research and findings relevant to the topic, it is essential to sort out some significant factors associated with public sitting. As the research methodology is based on quantitative analysis, it is also crucial to have a decent literature-based guideline before proceeding towards the analysis. Based on the literature analysis, it is interesting to see how the existing theories can be compared to the day-to-day life scenario of several urban public spaces. In reference to the research methodology, some of the most significant factors associated with public sitting behavior are shortlisted and considered for the data collection and analysis phase to check their accountability.

Sun: Many researchers indicated the sun's influence as a defining factor of stationary activities in a public space. The presence of the sun always enhances the quality of the experience as sunlight is a significant attraction defining the use of public spaces. Existing

researches indicated that sunlight being an essential factor in the spring; people also tend to seek shade during the warmer months of summer. It is also highly associated with the shadow. Sun and shadow, in this case, always complement each other. Therefore, sun control is an essential factor that influences the comfort vote and is decisive for the viability of the outdoor space (Whyte, 1980; Mehta 2007, Tsitoura *et al*., 2014). For this research, it is vital to investigate the amount of available sunlight and shadow into the selected public spaces to see how it impacts the spatial quality of the space in terms of sitting.

Trees and shadow: Trees are always a fundamental element in any public place. They bear immense significance in numerous aspects. They enhance the natural quality of any place. At the same time, it is proven that people always tend to seek support from the direct sun, especially on hot summer days. So, it is a significant part of public preference to sit or linger underneath a tree to avoid the harsh sun. Besides, trees also provide psychological comfort to people in terms of having an enclosure like an umbrella. Moreover, trees are also associated with casting shadows underneath and to a specific periphery based on the time of the day. So, trees and shadows are also defining factors to look for in the analysis phase to evaluate their impact on public sitting.

Nearby features and activities: Many researchers emphasized the influence of surrounding features in a public place. These refer to the accumulation of the entire public space setting, especially within the vicinity of where people tend to sit. It has an immense impact on motivating the spatial behavior of any public place. People always feel more comfortable in visually pleasant surroundings. It also defines the impact of nearby features or elements and their associated activities that alleviate a place's public sitting preferences. These features can include nearby fountains, statues, water, public art, or whatever draws the public attraction. Different playing equipment, child play zone, etc., have a notable impact on shaping spatial behavior. People are always attracted by other people, as many researchers indicated. So nearby activities are always critical in defining the public sitting phenomenon of a place. According to Gehl, careful thinking about views and options for looking must be part of the effort made for good public place quality, which means nearby surroundings and their associated activities are always decisive to look after in this research.

Visibility: It indicates the provision of unobstructed vision within the surroundings. Being able to witness the surroundings and activities without having much trouble would lift the experience of a place. It is preferable to sit in a place where it is not difficult to see what is happening nearby. Having a clear vision within a certain vicinity is always impactful as people would love to what is happening in their surroundings. As William H Whyte described in his research, people are always more interested to see what is going on at the eye level rather than the meticulous details of the surrounding buildings or structures. People might not prefer to recognize these details instead to witness other spatial activities in the first place. In this case, clear visibility within the sitting area plays a decisive role in choosing the best possible location for sitting. Typically, people can recognize other's facial expressions within a distance of 35m. In this research, it is crucial to evaluate the amount of clearly visible areas where people tend to sit to justify the impact of visibility as a defining factor shaping public sitting behavior.

Edge Effect: According to Jan Gehl, people tend to seek support from the details of the physical environment, which drives the preferences of sitting along the facades or spatial boundaries in a public space. People tend to sit near the periphery of a place or the circulation pathway to feel some psychological support from the surrounding elements. This phenomenon is defined as the Edge effect. In this research case, it is influential to check the distances from the nearby pathway, trees, fences, or any other spatial boundaries to define the impact of edges in public sitting. Sitting places in niches or at other well-defined spots and sitting places where one's back is protected are preferred to less precisely defined ones (Gehl, 1987).

Noise: According to the existing knowledge, it is noticed that people tend to sit a bit farther from the sources of noise. This clearly impacts sitting preference in a public place as people typically choose to be in a location where the noise is within the comfort of tolerance. Especially in terms of group sitting, being able to listen what others are saying is always pleasant. This also paves the way to an essential aspect of public space that is social interaction. Even in the case of sitting alone, one would love to be in a quieter place to enjoy the glimpse of the surrounding greeneries, read something, or whatever based on one's personal preference. So, this research will focus on the distances from the nearby road as a primary source of noise to quantify public sitting preferences.

Based on these significant factors, this research proceeded towards the data collection and survey structure to evaluate the impacts of the findings and analyze the results compared to several public places.

03.Research Methodology

3.1 Type of Research

Empirical research was conducted to investigate the main factors related to sitting in several public spaces. This topic examines the cause and effects of several prominent design features that manipulate public spaces' sitting behavior. Based on the existing literature regarding public sitting, several influential factors were chosen for the survey and data collection phase. Three different public spaces were selected based on their similarity in shape, configuration, features, design elements, and so on. The quantitative research method was applied depending on observation and mapping. According to existing data collection standards, several mapping structures were formulated to gather the required data by on-site observations. Acquired data were processed and simplified following the data processing structure. All the final processed data were fed into a decision tree model to predict the sitting behavior of the three selected public spaces based on the interrelations of significant design features. Different mappings were generated from parametric analysis tools to evaluate the impacts of several public space features.

Empirical research can be interpreted as research where the study's outcome is fully extracted from concrete empirical evidence, therefore "verifiable" evidence. This empirical evidence can be gathered using both quantitative and qualitative research methods. The term empirical refers to the assembly of data using evidence collected via observation or experience or by applying calibrated scientific instruments. One common thing in all empirical research is the dependence on observation and experiments to collect data and investigate them to come up with conclusions. In this research case, evaluating the sitting behavior in public spaces requires strong evidence based on daily life observations. It helps generate meaningful conclusions regarding the cause and effects of several factors shaping the public sitting phenomenon.

As the quantitative research method quantifies opinions, behaviors, or other defined variables, it was more logical to use that typology in this topic. Quantitative research methods support analyzing the empirical evidence gathered. It is easy to figure out if the hypothesis is supported or not by using this research typology. Several variables were defined as independent and dependent based on their impacts on the public sitting behavior. In order to test their consequences, experimental research was conducted. Several observations were set up, and the existing literature inputs were tested by keeping an eye on the situations in which all the variables were examined. This is also used to check cause and effect. It is examined to see what happens to the independent variable if the other one is excluded or altered. The operation for such a method is usually preparing a hypothesis, testing on it, analyzing the outcomes, and reporting the findings to recognize if it supports the theory or not.

3.2 Research Question and variables

In this research, the main focus was to determine the impacts of surrounding design features that manipulate the sitting pattern of people in a public space. It was aimed to detect how people use a public space for sitting and how they give preferences to sitting locations. Depending on several interrelated queries, the main research questions were set to detect

the research outcome in a nutshell. What stimulates these sitting activities? Is there any discernible pattern that can be studied to analyze the impact of the surrounding? So, the main research questions are;

- **What** are the major design features that influence sitting activities in a public place?
- **How** do these influencing design features interact with each other to enhance the sitting preference of any specific location of a public place?

A well-structured research method was defined to proceed towards the outcome to answer these questions. Several significant factors were sorted out from the existing literature studies, where it was investigated regarding their impacts on the public sitting phenomenon by famous urbanists and psychologists. They were classified into two categories of dependent variables and independent variables. Dependent variables were defined as the activities, and spatial behaviors, whereas the significant features or design elements were noted down as independent variables which stimulate the public activities. Considering the prominent factors extracted from the literature, independent variables can be noted down as sitting benches, pavements, open green areas or open activity areas, playing equipment, child play zone, public art, installations like a statue, fountains etc., which are the designed elements or features directly stimulating the spatial behavior of the public place. On the other hand, sitting activity was classified as the dependent variable, influenced by the available design features or independent variables. It was tried to sort out the relations between those variables by a decision tree prediction to see how they interact with the overall scenario of public sitting. Finally, these variables were put together into diagrams to show the possible relationships between them and the expected direction of their relationships.

3.3 Selection of Study Sample

At the beginning of the methodology phase, three similar public places were selected within the city of Berlin. The main focus while selecting these places was the similarity in design features, shape and configurations, user patterns, and sitting activities to prepare a comparative analysis. In terms of area, they are different as it was tried to categorize them within the small, medium, and large public spaces. The three selected public places were Wartburgplatz, Teutoburgerplatz and Stein Platz.

3.3.1 Wartburgplatz

Wartburgplatz is an urban park in Berlin in the district of Tempelhof-Schöneberg. The Park is bordered by the Wartburg, Martin Luther, Apostel-Paulus, and Gothaer Straße and is situated more or less 300 meters north of the Schöneberg town hall. Opposite the Apostel-Paulus-Straße, to the north, the Schöneberg District Court's extensive building complex is located.

City planning officer Paul Egeling provided the design of the square. The grand opening took place in 1902. The names Wartburgplatz and Wartburgstraße were established around

1899. The square is located in the middle of a densely built-up residential area with bourgeois apartment buildings, most dated back from before the First World War. In the immediate vicinity, there is a Bavarian Quarter which represents the Wilhelminian style of development. Wartburgplatz was the endmost stop on tram line 66 until 1963, which ran between Schöneberg and Stieglitz. On May 2, 1963, it was stopped and switched to bus service. The overall area of the park is 12,200 sqm (Approx.) and is classified as a large public space for the sake of this research.

In terms of features, it has a wide-open green space in the middle surrounding by pathways connected to the nearby roads. A sufficient number of greeneries are present as the park is covered by large and medium trees, bushes, hedges which working as a buffer from the outside area, and fences to define the Park. There is one specified child play zone with various playing equipment. Sitting benches are placed at regular intervals into the periphery of the pathways. People from nearby neighborhoods frequently use this public space for different leisure activities and gathering. It is found more crowded, especially during the weekend or holiday period.

Figure 11: Satellite image of Wartburgplatz, Berlin, Germany. Source: Google Earth.

Figure 12: Aerial View of Wartburgplatz illustrated from 3D model.

3.3.2 Teutoburgerplatz

Teutoburgerplatz is a park located in Berlin in the district of Pankow. The approximate area is 8500 sqm which categorized the public park into a medium-sized public place for this research. The place is bordered by Zionskirchstraße, Christinenstraße, Fehrbelliner Straße and Templiner Straße. It was constructed in the early 1860s in connection with residential developments. The area near Teutoburger Platz was planned and built between 1860 and 1875. On that occasion, it was one of the most densely populated residential areas in Berlin. The square was initially a market without a designation and was named in 1875 after the Teutoburg forest. The Park is also known as "Teute" for short. Around 1880 the square was planted with several trees such as Robinia, birch, and mountain ash are mainly to be found there until the 21st century.

The northern area development around the square mostly took place around 1900. In 1910, a playground and a lavatory accumulated the green area, which was especially important for the schools built inside the block. In the late 1920s, the square was reshaped following the plans of the architect Erwin Barth. For Teutoburger Platz, Barth generated the garden plan and the plan for the shelter, which is now named the Platzhaus. It had a strongly structured facade that opened up to the square through three arched entrances. Behind it was a lounge with seating. As a unique design feature, the house's hipped roof had a lantern which helps to bring daylight into the interior of the building. Following 1945 the square building was accumulated with a flat roof and converted into a transformer house. During 1997 the pitched roof of the house was simplified. The Platzhaus became a meeting place for residents and was used for games, small art exhibitions, flea markets, and rental

Figure 13: Satellite image of Teutoburgerplatz, Berlin, Germany. Source: Google earth.

Figure 14: Aerial view of Teutoburgerplatz illustrated from 3D model.

purposes to organize private events by the sponsoring association Menschen am Teute. During the 2010s, the public place received its final renovation by the district administration where some sports facilities were added, and the green areas were redesigned by the landscape architect J. Greiner.

In terms of features and design elements, the square has more or less similar functions just like the previous one. Though the open green areas are not rectangular like Wartburgplatz, they are more irregular in shapes divided by several pathways. Large and medium trees in huge numbers provided the park enough shadows and greeneries that worked both as a buffer from the surrounding streets and defined the park's area. Several child play zones are accumulated inside the park to support playing activities for the children. At the same time, it has few playing types of equipment installed for other sports activities like table tennis, basketball, etc. In terms of sitting provision, a variety of sitting benches were noticed. Moreover, some sitting stones and ledges were also installed to add variety to the sitting choices. The Park has several fountains and statues to enhance the overall experience of the surroundings.

3.3.3 Steinplatz

Steinplatz is a square located in the district of Charlottenburg-Wilmersdorf in Berlin. It is situated almost in the middle of Hardenbergstraße, opposite the University of the Arts (UdK). It was named after the statesman and former Baron **Heinrich Friedrich Karl vom und zum Stein**, a contemporary of Hardenberg. Three streets lead to the rectangular plaza. These are Goethestraße on the west corner and Uhlandstraße on the south corner. The Carmerstraße adjoins on the southwest side and links the Steinplatz with the nearby Savignyplatz. Hardenbergstraße runs along the northeast edge.

The stone square was constructed in 1885. In 1905, the central city commemorated its 200th anniversary, at which the Kaiser Wilhelm monument was launched. Concurrently, the desire arose to erect a memorial for the namesake on Steinplatz. In 2016, Schirmer-Partner, a landscape planning office, was assigned with the specification of the design. In the middle of November 2017 and May 2018, the area was restructured by the district office of Charlottenburg-Wilmersdorf. The basis for the redesign was generated by Leon Giseke, Lasse Malzahn, and Lucas Rauch, entitled “Unlock,” which envisaged a great, straightforward design of the complex, an opening of the square towards the nearby residents, and a new staging of the memorials. The main field of the square is now covered with gravel on all four sides; strewn roads opened up, the natural stone edging of the plants facing Hardenbergstraße was taken out and restored on the other three edges by a surrounding concrete step so that the lawn is around 30 cm lower. The planting on Hardenbergstraße has been renewed but no longer offers any protection from street noise. High-quality furniture such as seating groups, benches, and ping-pong tables was installed along the paths. The square area is roughly 4200 sqm and is classified as a small urban public space in this research.

Figure 15: Satellite image of Steinplatz, Berlin, Germany. Source: Google Earth.

Figure 16: Aerial view of Steinplatz illustrated from 3D model.

3.4 Data Collection Structure

After selecting the public places sample to run the experimental study, a survey structure was formulated based on widely-accepted data collection methods, especially for the observational analysis. In this case, the book **Toolkit for the Ethnographic Study of Space** by **Setha Low** was followed. Based on that book, two different mapping structures were formulated to gather the possible amount of required data for this research. As mentioned earlier in the research typology, quantitative data were required to answer the desired research problems. A standard unit of area or cell was considered to collect information and compare different locations within the same public space. Each of these standard unit of area can be defined as an experiment cell that focuses on the sitting activities and design features inside the cell. This research also focuses on the sitting preferences of people to investigate the reasons behind it. At the same time, it was also helpful to formulate the cell unit to investigate the sitting activities and design features from the neighboring units more efficiently and effectively.

3.4.1 Formulation of Experiment Cell

To collect information regarding the variables from near and far, it was essential to generate a method of data collection that helps to acquire precise data that was looked after. Several dependent and independent variables were sorted out at the beginning inherited from the literature study. It was essential to figure out an easy and effective way to collect information regarding their impacts in the selected public spaces. Generating a standard area unit for data collection was effective as it helps to provide the exact quantity of desired information.

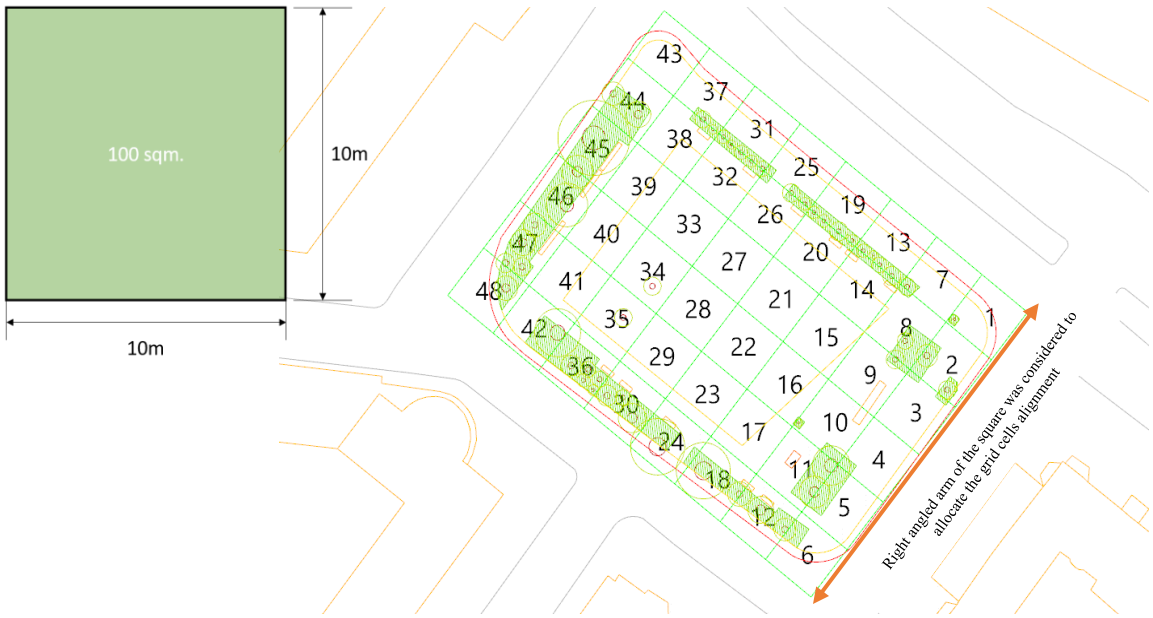

Figure 17: Assigning the standard cell into one of the selected public places before survey.

Considering the whole square or park at once while measuring the number of variables and their impacts appeared complex. Instead, dividing the public places into smaller grid cells helps collect the desired information within each cell. As the analysis result depends on the grid cell size, it was essential to choose a standard unit of area for the experiment cells to catch the maximum number of sitting activities and surrounding design features. It has appeared that a standard cell unit should consist of 10m X 10m dimension or 100 sqm area considering the shape and configuration of the selected public space samples.

The smaller the grid cell gets, the smaller the number of sitting and design features captured during the surveys. At the same time, the larger the grid gets, the less accurate the results would be, as analyzing a larger area reduces the model's accuracy. Moreover, running computational analysis tools to calculate distances and generate mappings will be much smoother if a minimum area is considered. So, choosing a dimension of 10m X 10m or 100 sqm area for each cell provided a decent number to deal with, which was neither very large nor small and appeared perfect to some extent to catch sufficient sitting activities and surrounding design features. In terms of any further necessity, the experiment cells area can easily be doubled or tripled while applying them to larger public spaces. So, in terms of the generability of this quantitative research, this is also important.

Before proceeding towards the survey, each of the three selected public places was divided into 100 sqm units to focus on cell by cell while collecting all the variables and their impacts. In terms of aligning the grid cells with the public places, most of the time, one specific right-angled arm was considered to align with the configuration of those square grid cells. However, unfortunately, all the three surveyed public spaces do not have more than one right-angled arm to each other. So, sometimes the cells were aligned with any of the specific arms of each public space based on the significance of locations such as alignment starting from a significant node, etc. In the end, the main focus was to cover the whole public place with the grid cells to acquire the necessary data.

3.4.2 Observation and Mapping Structure

In order to start the survey, two different mapping methods were formulated to proceed towards the data collection based on observation. As mentioned earlier, the book TESS was followed to generate these mapping structures. Due to the demand of the research problem, information related to the sitting activities and interrelated surrounding design features were required. For evaluating and establishing desired relations between the selected variables, it was beneficial to set a proper data collection structure that supports all the necessary information through a proper observational study. Mapping is one the most effective way of gathering data considering this research perspective. For that sake, two individual mapping structures were considered: the behavioral map and the existing features map for the final data collection within the selected sample public spaces.

Within a particular space, mapping can be a method to trace people and objects and their relationships to one another. It is easier to understand what is happening to whom, where,

and when by mapping the behavior and activities of people along with their movements and daily rhythms: Mapping is effective to record everything within a space together with its design and natural elements. Maps are often place-centered and used to observe relatively small spaces over a specific period. There are, however, several specialized mapping techniques and technologies that allow tracking many more people and other moving objects, such as global positioning system (GPS) tracking or geographic information system (GIS) mapping. (Setha Low et al. 2018)

3.4.3 Behavioral Map

This typology is used to locate the people and activities that are seen. During a short period, there is provision to record as much as according to the demand. It is pretty flexible because if the space is crowded, the activities can be recorded for a short time—such as for five minutes—and can cover a small portion of the space. If it is not crowded, the record can be longer—15 to 20 minutes—and it can cover a larger area. It is possible to create behavior maps for different times of day and days of the week to notice the difference according to the time. Most public places have a social order and pattern of behaviors and activities, which it will uncover. It always unveils who the regulars are and who just stops to look and moves on. It also helps to learn whether users make the space inviting to newcomers. It can be recorded people by age (children/adults), gender (m/f/t), behaviors (e.g., sitting, standing, sleeping, reading), or specific activities (e.g., playing soccer, reading, sleeping, playing cards, shining shoes, selling lottery tickets).

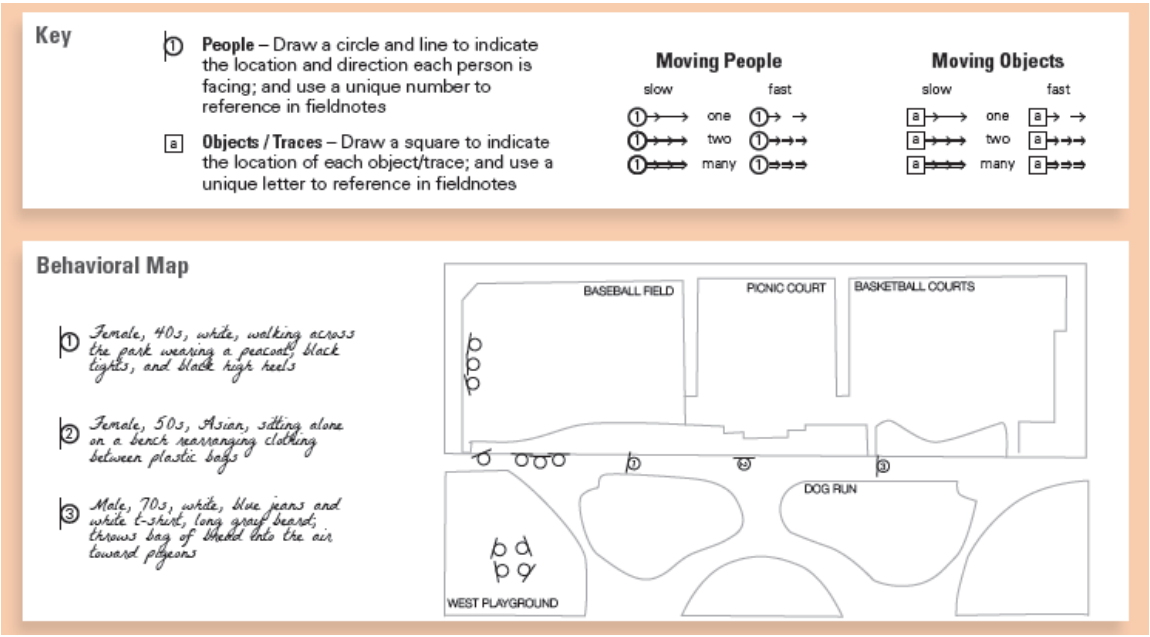

Figure 18: Behavioral mapping sample, Source: TESS 2018 by Setha Low et al.

3.4.4 Existing Features Map

The Physical traces mapping described in the book TESS was modified to form a revised format of mapping named Existing features map for the sake of this research. Physical traces mapping usually focuses and records the trash, eroded paths, holes in fences, and other traces of activities that are occurring when the observer is not there. These maps are a way to learn about what happens over time or late at night—for example, if liquor bottles or drug-related materials remain in the public space when the observer returns to observe in the morning. This type of mapping is essential to trace the overall activity patterns of public space. Nevertheless, for this research case, as it is aimed to determine the relations between the features of public space and activities to see how they impact the public sitting behavior in a particular location, it was decided to trace only the existing prominent features and their characteristics instead of collecting the data of overnight activities. To make the survey process easier and feasible, information regarding all the impactful existing features was gathered, especially where sitting or other spatial behaviors occurred. So, the mapping is revised and named as an Existing features map.

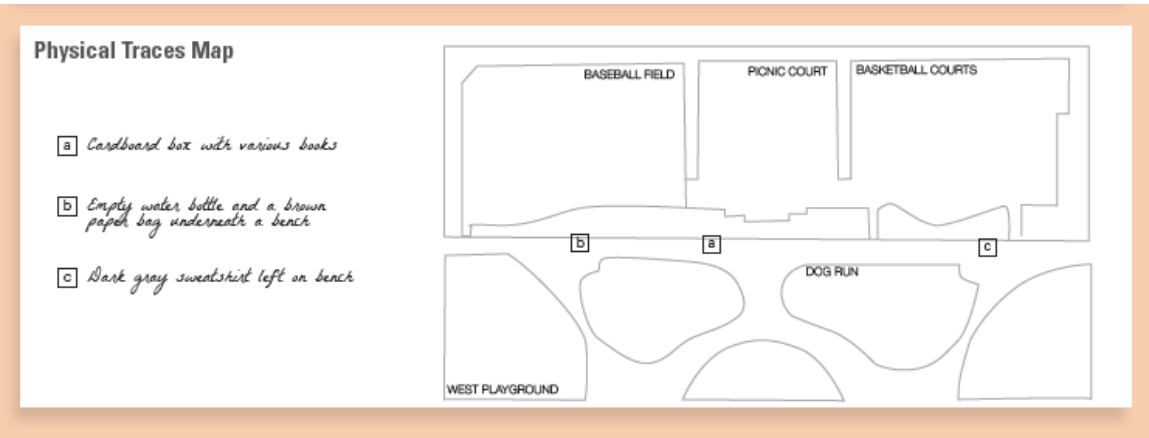

Figure 19: Physical Traces Map example. Source: TESS 2018 by Setha Low et al.

3.5 Survey and Data Collection

After setting the standard formats of mapping, the data collection phase was proceeded into the selected public places to run the survey. At first, for each of the three public spaces, it was set to conduct three surveys for three different times. Each survey lasted for 1 hour. With the help of Behavioral Mapping, within that 1 hour, the number of people was counted in terms of sitting activities that lasted for at least 5 mins or longer. Especially within each cell, the position of the sitting activities was tracked and noted down. With the assistance of Existing features mapping, all the significant features and their characteristics, such as texture, color, shape, numbers, etc., were noted down. For each of the surveys of all three selected public spaces, similar procedures were replicated each time to collect desired data for further analysis.

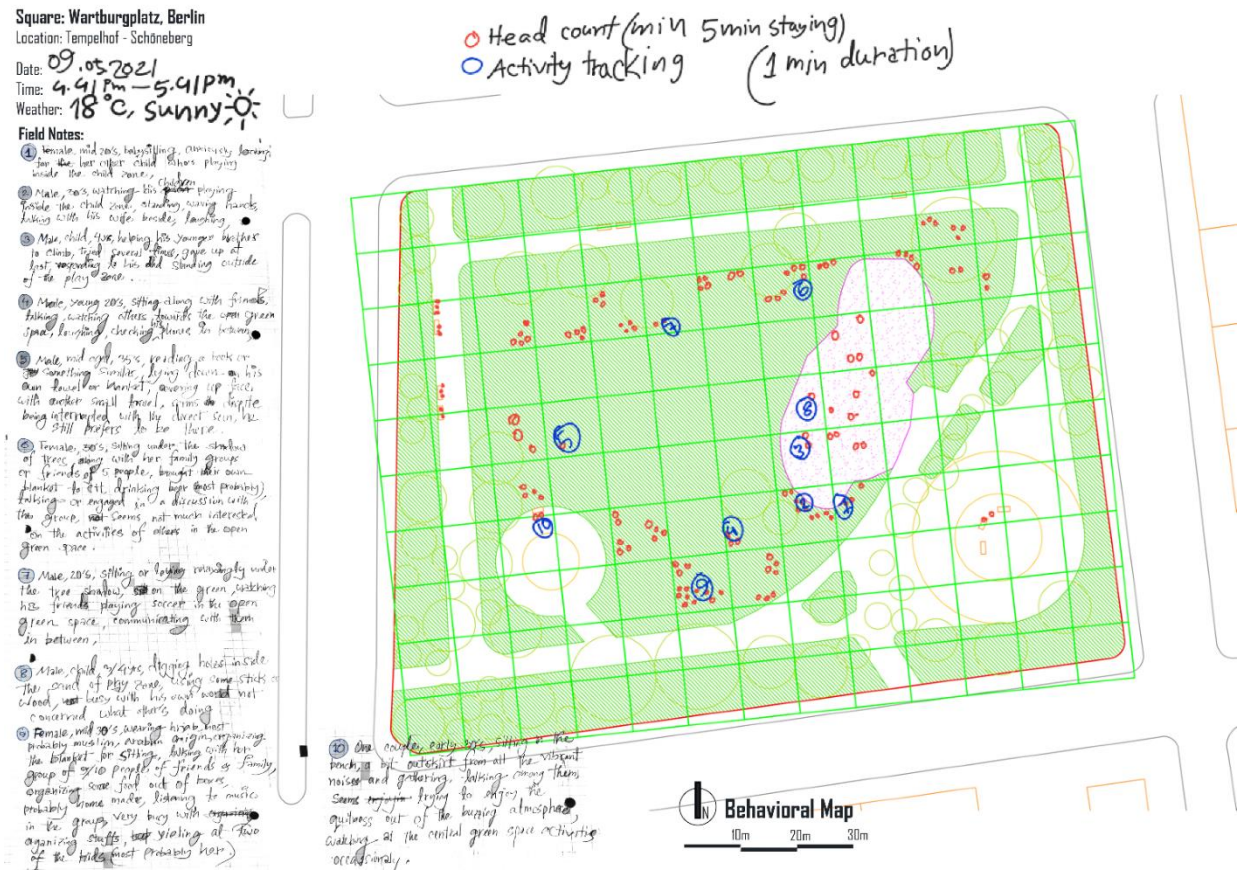

Figure 20: Behavioral Mapping of Wartburgplatz, Survey sample 1, 09.05.2021 from 4.41-5.41 pm.

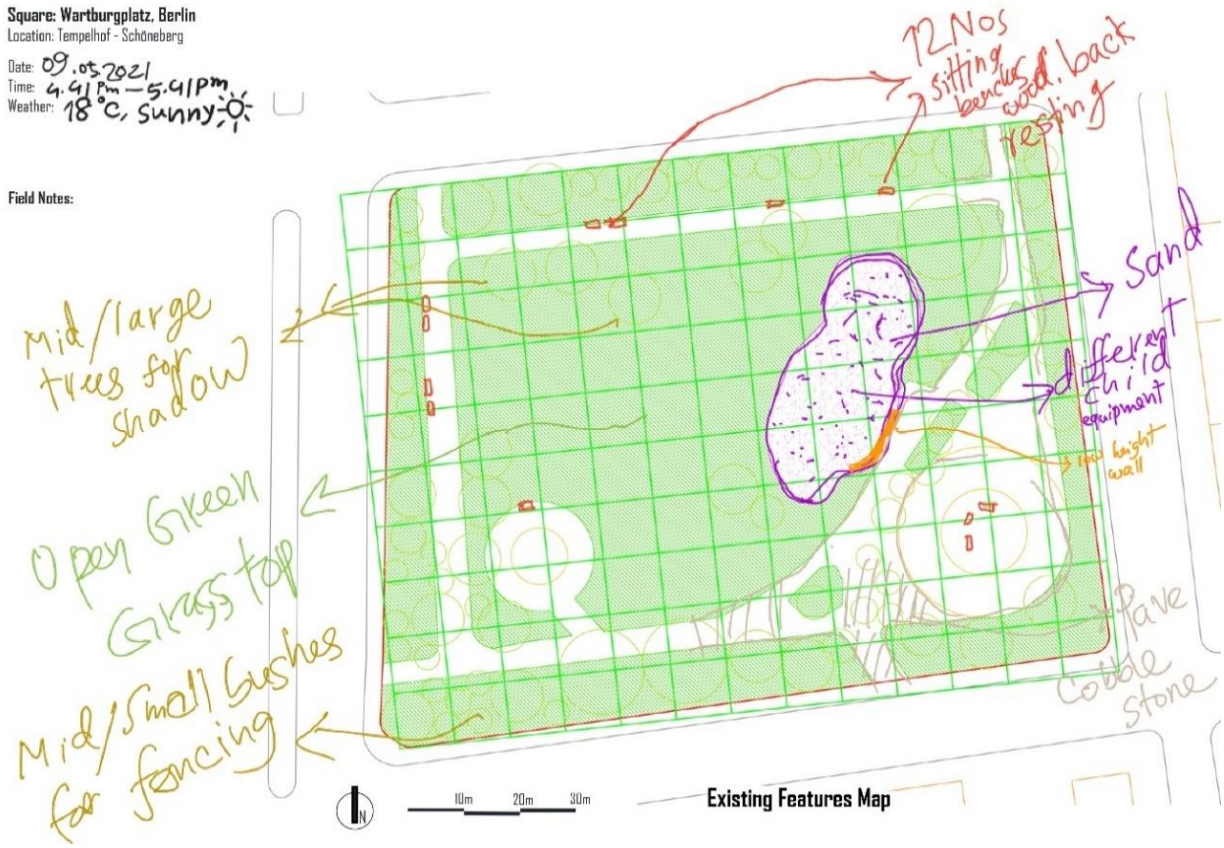

Figure 21: Existing Features Mapping of Wartburgplatz, Survey sample 1, 09.05.2021 from 4.41-5.41 pm.

That means for three different public places in total; there were nine surveys. Each Park or square was surveyed three times in three different periods of 1 hour. Most of the surveys were conducted during the holidays or weekend days as the research aimed to investigate public sitting behavior. So, it was necessary in the first place to ensure the most possible amount of public gathering to evaluate the sitting pattern. All the three selected public places more or less recorded the most significant number of public gatherings during the holidays or off days during the weekend.

3.6 Data Processing

After conducting the initial survey within each of the selected public places, the collected data were digitized with the help of a computer-aided design application tool. Each of the public places was digitally reproduced using CAD applications and 3D modeling tools along with help from google earth and map to take accurate references and positions. Collected data and information for each survey period were accumulated within the computer-generated outlines of each public place.

3.6.1 Classification of Data

Collected data were classified into two major categories of Binary and Continuous numbers. Binary data is mainly represented in the format of Yes/No or 0/1 to represent the existence of any variables both within each experiment cell and in the nearby cells. For example, within each cell of 100 sqm or 10m X 10m peripheries, the existence of independent variables such as sitting benches, pavements, trees and shadow, open accessible green area, playing equipment, etc. were noted down and expressed into the binary data format of yes or no. The exact process followed for the evidence of dependent variables: spatial behaviors and activities such as sitting, talking, reading, movement or playing activities, listening to music, performing activities, and so on. On the other hand, continuous numbers were used in terms of measuring distances. These distances were calculated from the center of each experiment cell to the nearest point of various existing significant features such as distance from the nearest pavement, nearest roads, nearest open accessible green or activity area to investigate their impacts on the sitting behavior. Also, to evaluate the visibility within each cell, several isovist properties were calculated considering the visual barriers or obstructions, mainly the tree trunks. Prepared binary data set can also be classified into two divisions of analysis parameters. One is within each cell, and the other represents evidence of the same variables within the 15m radius of each experiment cell. That allows the opportunity to evaluate the impact of the variables from a near and far vicinity.

3.6.2 Data Chart Structure

Based on the classification of acquired data, a standard and simplified chart was formulated to represent data for each of the surveys. The structure was kept as simple as possible to use later in the decision tree for data analysis.

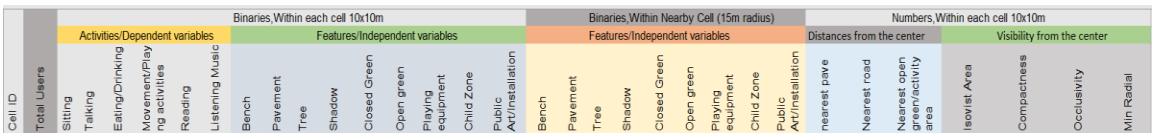

Figure 22: Simplified and compact data representation chart structure for each of the survey.

With the aid of a spreadsheet tool, the structure was formulated to represent each time survey data was mainly divided under three major headings. Two of them represent Binary data collection, and the rest is representing continuous numbers. Under each heading, it was divided into sub-headings defined as Dependent variables or Activities and Independent variables or features both for within cell analysis and nearby cell analysis of 15m radius. The continuous numbers mainly show the distances and calculation of several isovist properties from the center of each experiment cell.

3.6.3 Data Processing Tools

Several tools were used during the data processing period in this research. For preparing the digital outlines of the selected public places to survey, two different computer-aided design and drafting tools were used. To take accurate references and fix these public places' positions, Google earth and map are used as a base. To generate the 3-dimensional work model, different 3D modeling computer programs were utilized. In terms of running several data processing analyses to define the characteristics of the selected variables, parametric modeling and analysis tools were used to generate the illustrations and prepare the desired calculations. Some illustrations explaining the data analysis and results were generated using raster graphics editing tools and applications.

3.6.4 Data Processing Methods

In this section, all the applied processes and tools are discussed to extract the desired data. Most of the analyses were conducted to obtain data for the continuous number categories such as distances, visibility properties, etc. Most of the binary data were directly assembled into the standard data chart from the on-field observation. The analysis was run in terms of shadow casting, which accumulates the presence or absence of shadows inside the experiment cells as binary data.

3.6.5 Shadow Analysis

Sunlight and shadow are two of the most important factors that influence sitting behavior. Many existing research referred that the presence of the sun enhances the experience of any public place. The shadow is a defining factor in protecting people from the direct sun, especially during the hot summer days. Sun and shadow influence the public sitting phenomenon to a great extent. In the selected public spaces, the main shadow casting elements are the existing trees. As shadow was considered one of the defining factors of sitting activities, it was classified as an independent variable. Shadow casting analyses were conducted with the help of parametric visual programming tools in the CAD application to check the pattern of casted shadows during the exact period of each survey time. As mentioned earlier, 3-dimensional models of all the selected public spaces were generated and associated with all the existing features. An approximate number of trees were allocated into their current position, maintaining a nearly approximate height and perimeter matching the existing scenario. With the aid of environmental analysis plugins inside the parametric visual programming tools, the exact time, date, hours, and geographic location were assorted to create virtual shadows within the 3-Dimensional model to see how the shadow-casting appeared. From those visualizations, the presence or absence of

shadow within each experiment cell was counted and noted based on the exact period when each of the surveys was conducted. Though this shadow casting analysis has its shortcoming in that the trees' shape, perimeter, and height was not possible to build 100% accurately in the virtual model, it was tried to replicate the existing scenario as exact as possible. So, the casted shadow pattern might not be 100% accurate. However, in the sense of probability, they project the most probable shadow pattern considering the period of data collection, which provides an opportunity to acquire an idea regarding the presence or absence of shadow within each experiment cell.

Figure 23: Shadow casting for the survey sample in Wartburgplatz at 9.05.2021, 4.41 pm-5.41 pm.

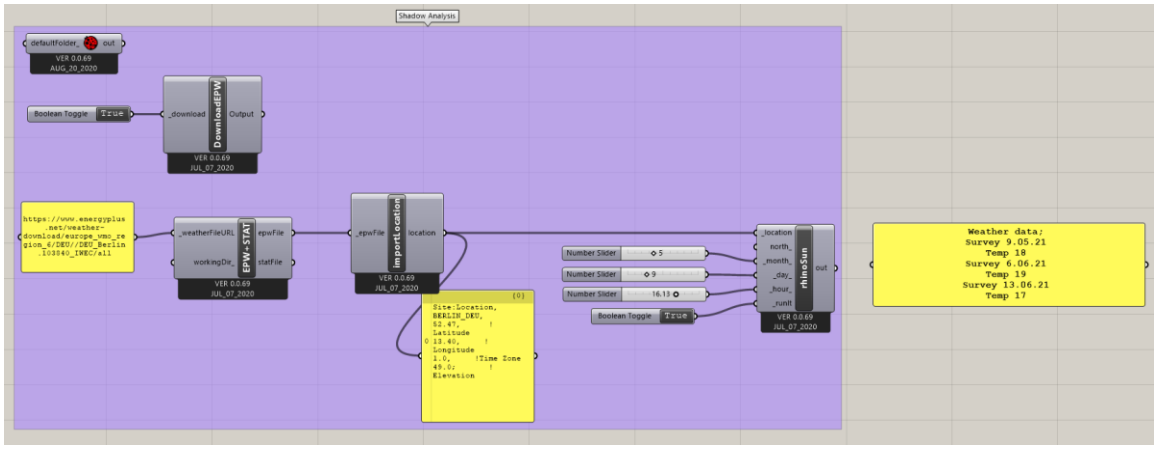

Figure 24: Algorithm used for creating the shadow casting within the exact period of surveys.

3.6.6 Distance Analysis

While calculating the distances as part of the data class continuous numbers, each experiment cell's geometric center was considered the base point to measure the distances. From the center point towards the nearest point of each variable or feature, the distances were calculated to evaluate the impacts on public sitting. Three major distances were taken into consideration. Distances from the nearest pavement to check the validity of the hypothesis stated that people tend to sit near the circulation. Pathways, pavements are quite significant elements considering the sitting preferences in a public place. Additionally, distances from the nearest road are also crucial in checking the impacts on sitting places where it is highly related to noise. As roads are the significant sources of noise in those selected public places in this research, distances from the nearest road helped define their impacts on public sitting. Lastly, distances from the nearest open green area or the activity area represent the impacts of the open activity area on public sitting. Many researchers concluded the impact of open activity areas on public sitting preferences. People tend to get attracted where there are other people. So, these distances are decisive in evaluating the impact of open green areas on the phenomenon of public sitting. All the experiment cells within one public place were assigned into chronological numbers to calculate distances from each of them towards the nearest variables and were expressed by color swatch representation expressing the nearest and farthest cells in terms of distances.

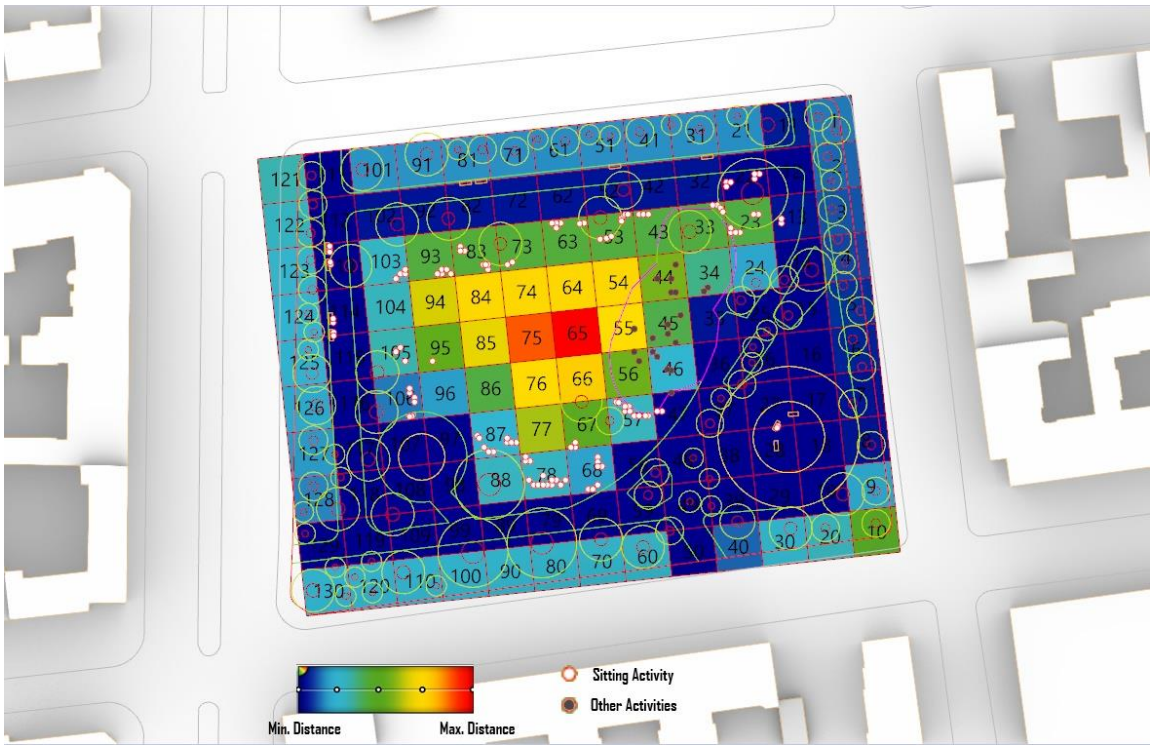

Figure 25: Distances from the nearest pavement for each cell, Survey sample 1 at Wartburgplatz 09.05.2021.

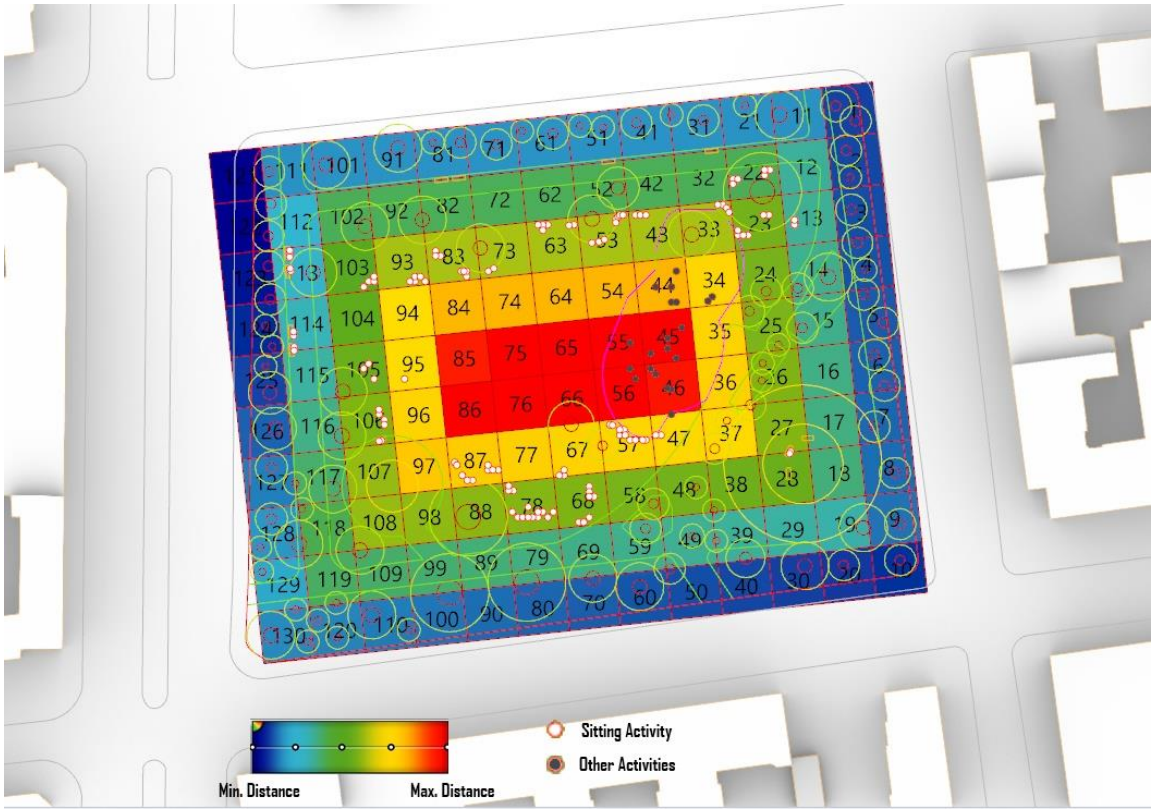

Figure 26: Distances from the nearest road for each cell, Survey sample 1 at Wartburgplatz 09.05.2021.

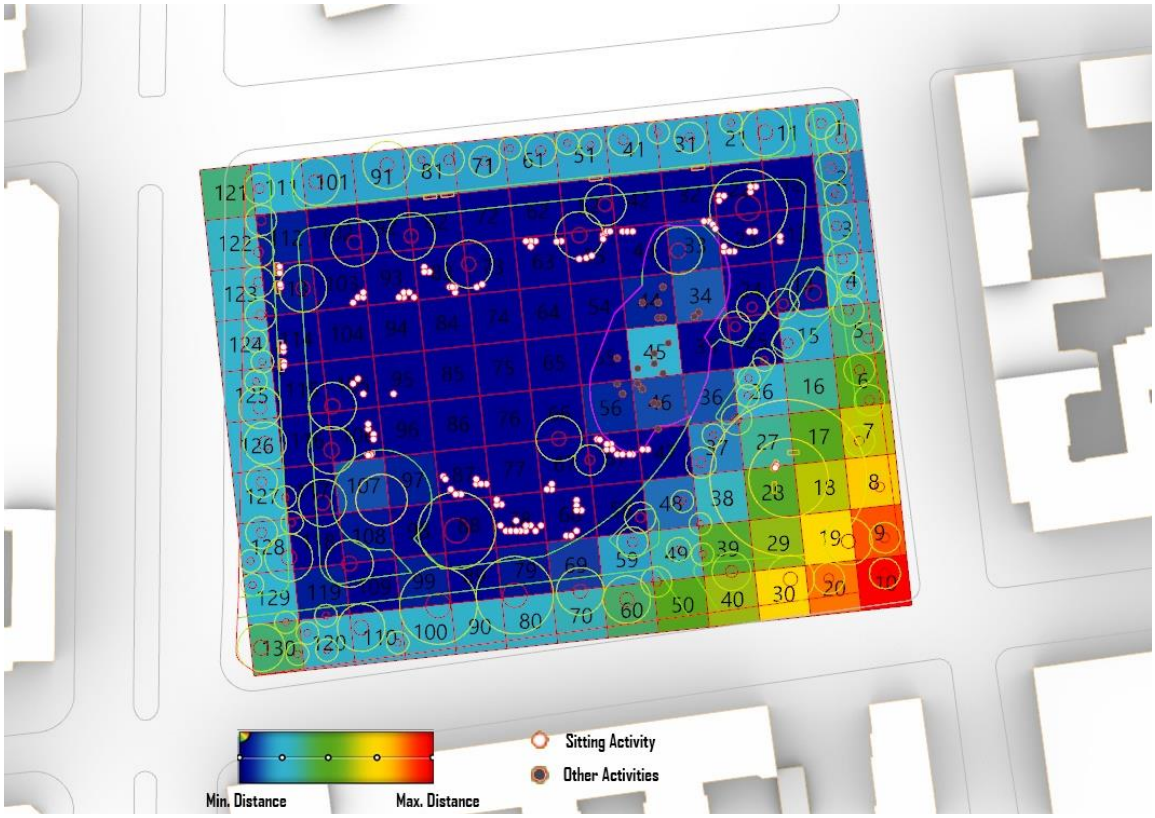

Figure 27: Distances from the nearest open green activity area for each cell, Survey sample 1 at Wartburgplatz 09.05.2021.

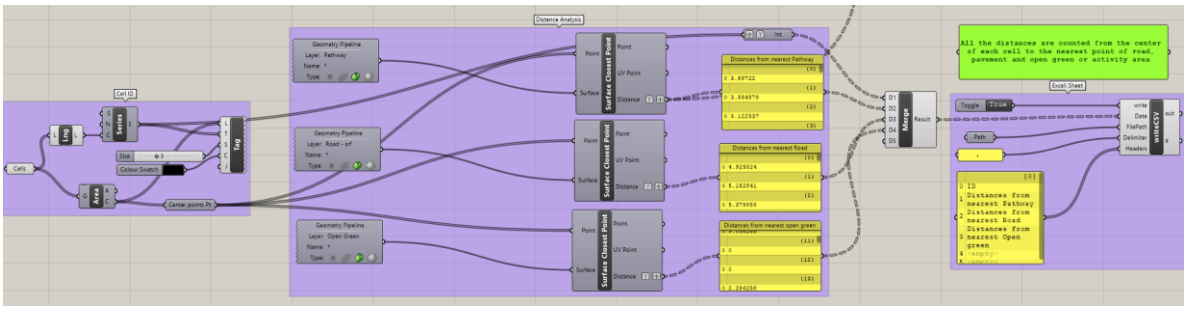

Figure 28: Algorithm used for calculating the distances from the center of each cell towards the nearest points of each variable.

3.6.7 Visibility Analysis

The provision of unobstructed vision within the surroundings can be indicated by visibility. Being able to witness the surroundings and activities without having much trouble would lift the experience of any public place. It is preferable to sit in a place where it is not difficult to see what is going on nearby. Having a clear vision within a certain vicinity is always impactful as people would love to sit and witness what is happening in their surroundings. Visibility analysis refers to the isovist properties that help define whether a place is good or bad in terms of visibility. Some of the isovist properties help indicate how much provision a place has in terms of clear vision within the surroundings. As existing researches said, people can recognize other's facial expressions until a distance of 35m. So, while calculating the isovist properties, the radius distances were kept limited to 35m. Before getting involved in the visibility analysis, it is necessary to have a brief idea regarding the isovist and some of its properties.

Isovist is a method of measuring visual properties associated with a particular arrangement of boundaries (spatial configuration). An isovist relates to the part of an environment that can be seen from a single observation point (Benedikt, 1979). Various parameters are derivable from an isovist, such as the area, the perimeter, compactness, and occlusivity. The area of an isovist describes how much one can see from a particular vantage point. The value compactness indicates the relationship between area and perimeter in relation to a perfect circle. It gives an idea of how complex or compact the field of view is. Occlusivity explains the number of open edges. An open edge denotes an edge line of the visual field which is not touched by physical boundaries (e.g., walls). (Schneider and König, 2012) Along with these isovist properties, one more entity was named Min radial, which denotes the minimum distance of the visual obstruction. In this research case, min radial calculation proved crucial as the visual obstruction elements are mainly the tree trunks. So, min radial also expressed the nearby presence of a tree. These four isovist properties were considered crucial to define the impact of visibility on sitting behavior. In all the three selected samples of public places, above mentioned isovist properties were calculated with the help of parametric analysis tools and illustrated using a color swatch to represent all the cells according to the values of visibility performance according to each time survey data. Each of the isovist properties helps to relate their impact depending on the sitting positions of people in each of the individual data collection phases for all three public places.

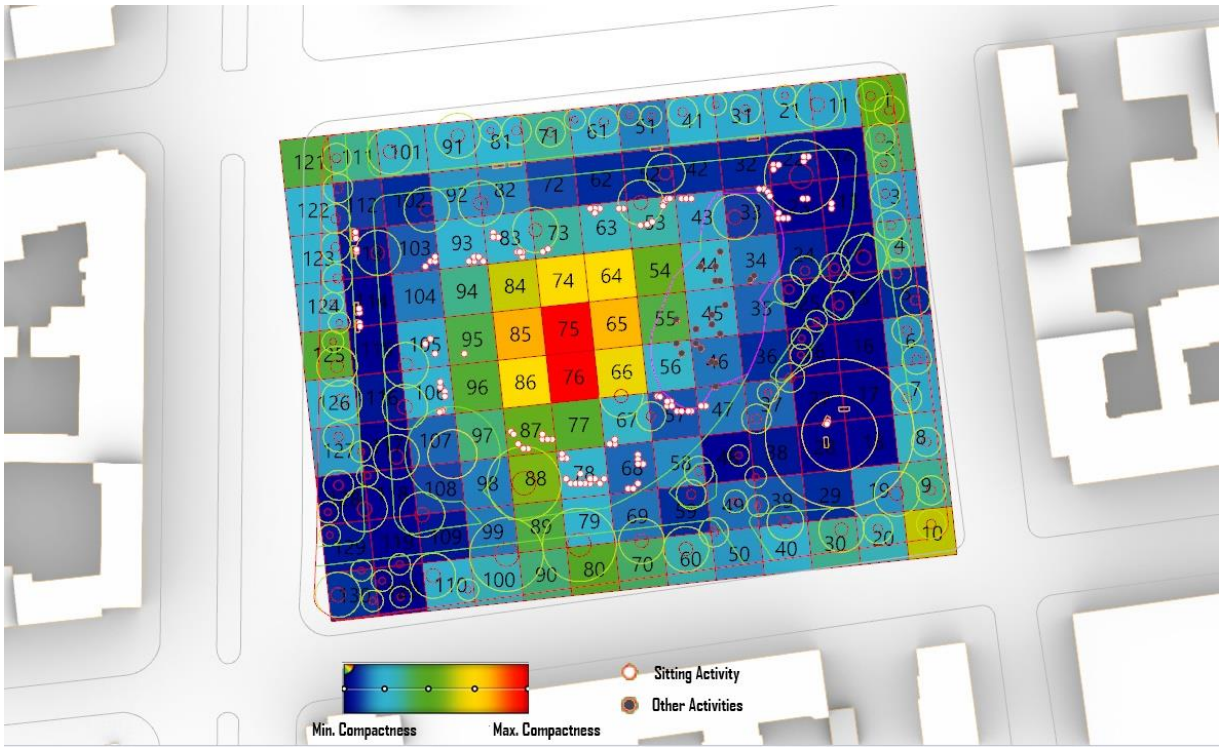

Figure 29: Isovist area for each of the experiment cell considering the center of each cell as a vantage point. Survey sample 1 at Wartburgplatz 09.05.2021.

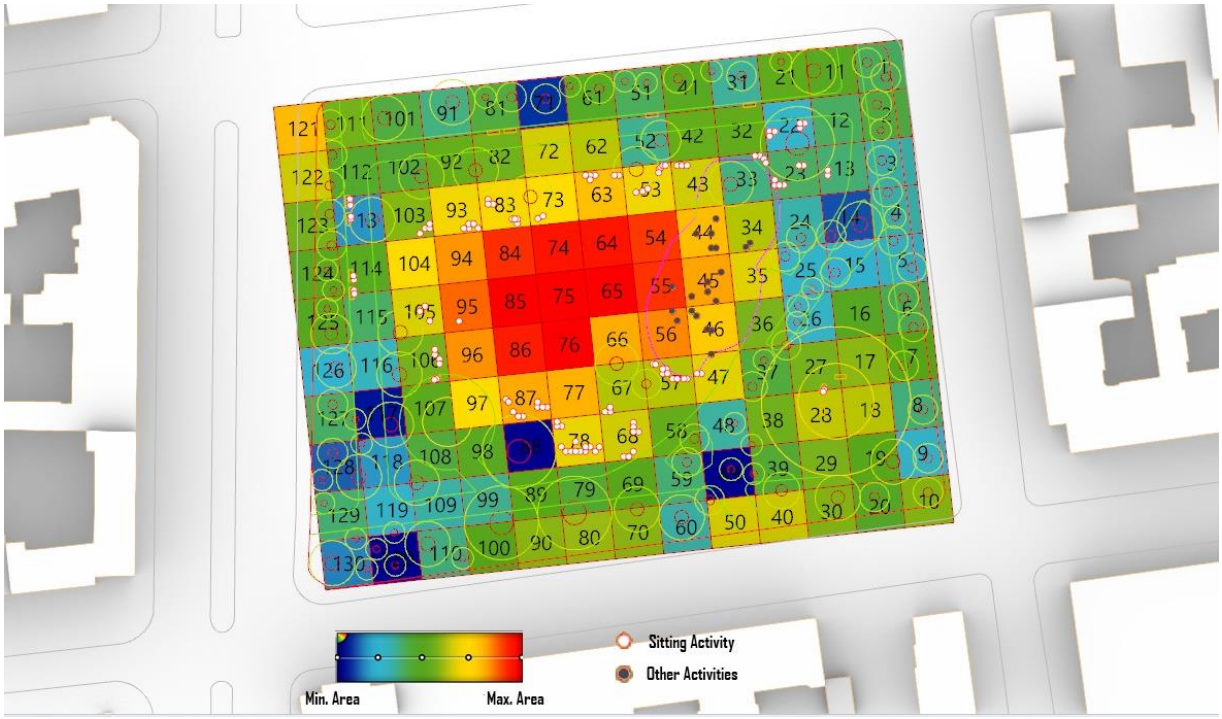

Figure 30: Isovist compactness for each of the experiment cell considering the center of each cell as a vantage point. Survey sample 1 at Wartburgplatz 09.05.2021.

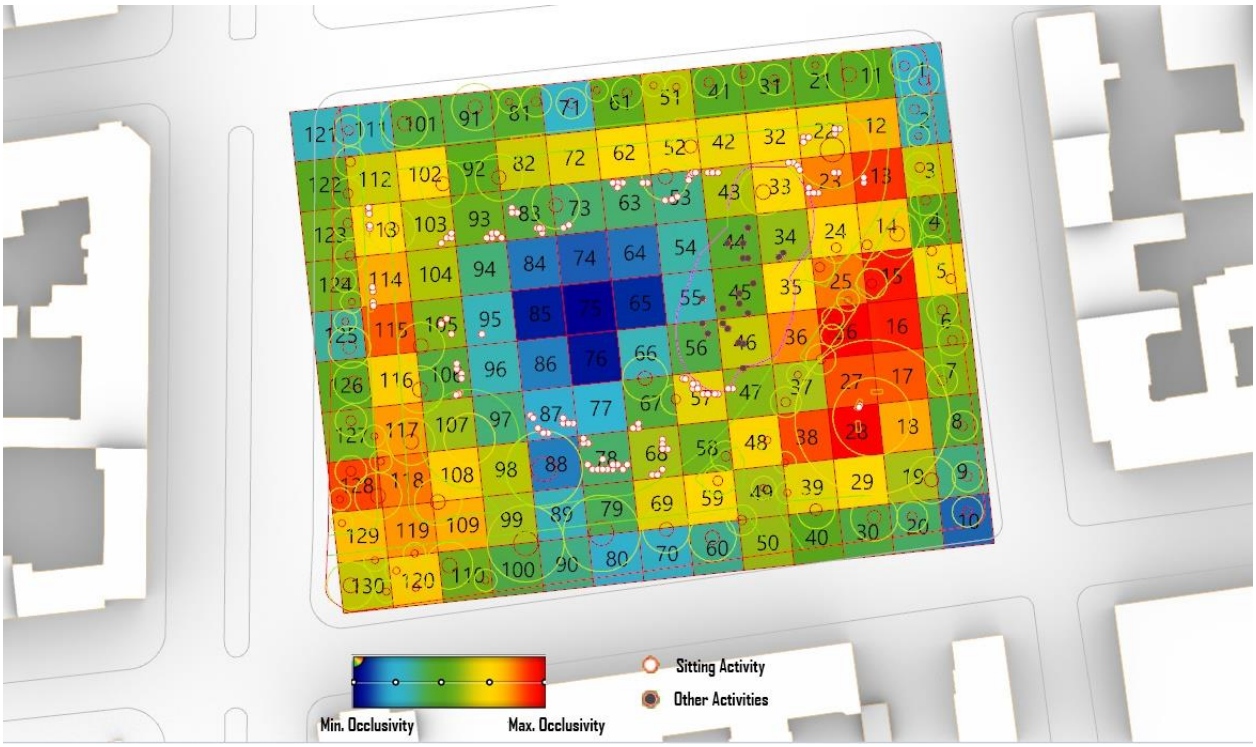

Figure 31: Isovist occlusivity for each of the experiment cell considering the center of each cell as a vantage point. Survey sample 1 at Wartburgplatz 09.05.2021.

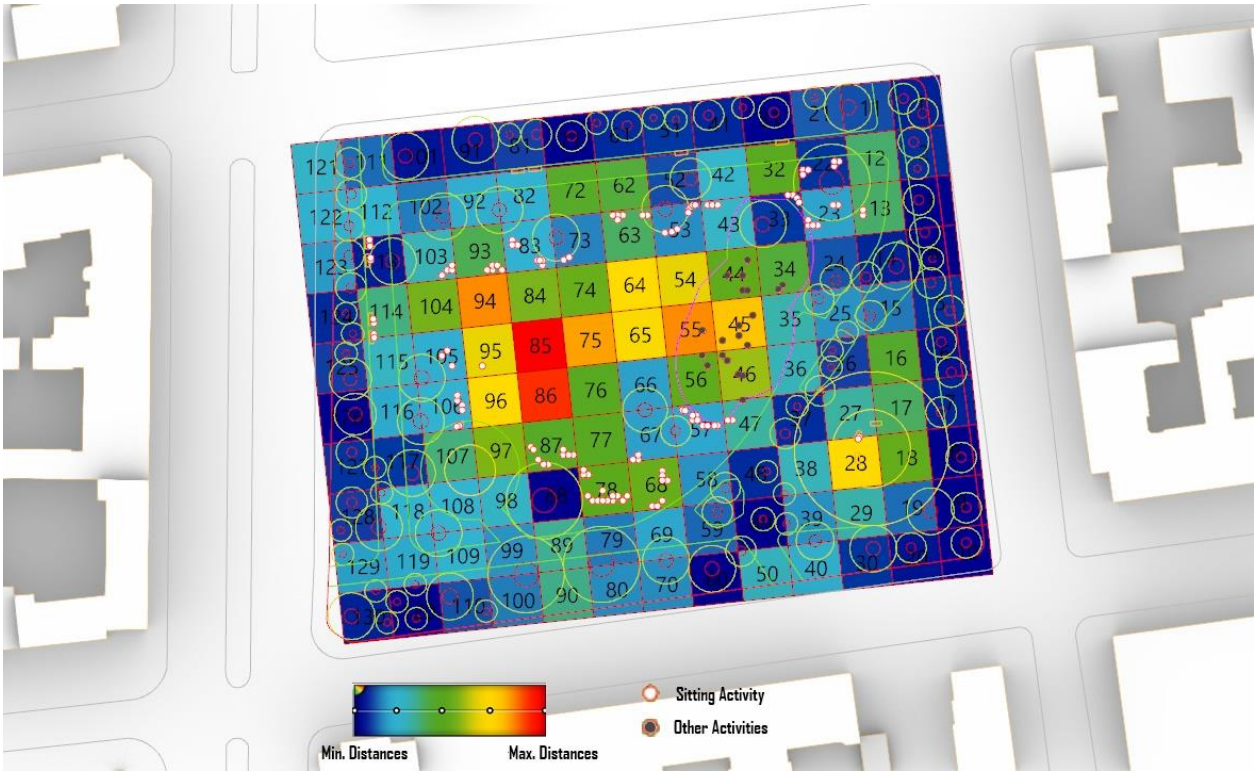

Figure 32: Min. radial distances for each of the experiment cell considering the center of each cell as a vantage point. Survey sample 1 at Wartburgplatz 09.05.2021.

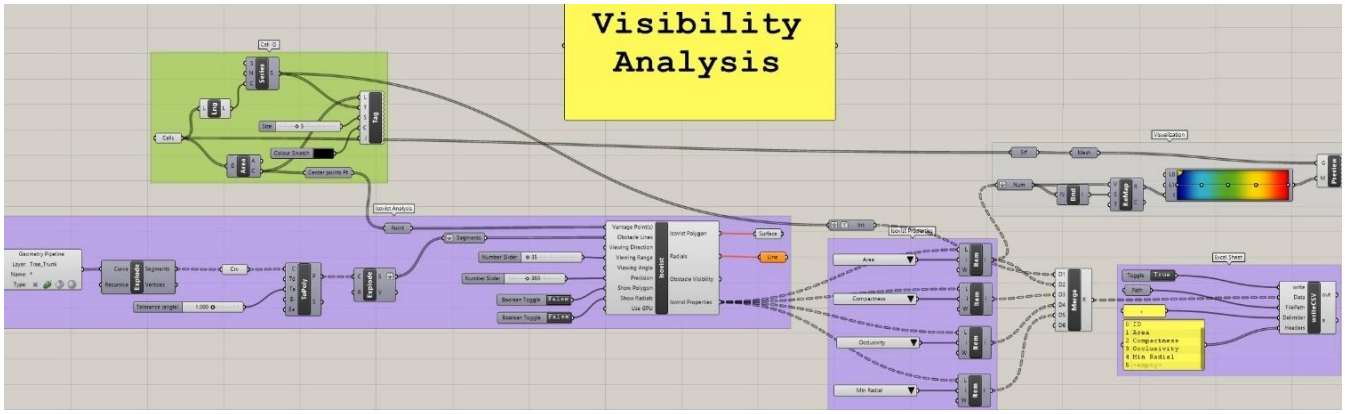

Figure 33: Algorithm used for calculating the isovist properties for each of the individual experiment cell assigned to a selected public place.

3.7 Final Data Output

After conducting previously described analysis and procedures, all the necessary information regarding different variables were collected together. All the data were assorted inside one standard spreadsheet for one survey within each of the three selected public places. Later each individual survey data was aggregated considering the presence of sitting activities to have one final data input chart for one individual public place.

		Binaries,Within each cell 10x10m														Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m					
		Activities/Dependent variables						Features/Independent variables								Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.37	1.13	16.90	3559.19	0.18	167.80	5.40
2	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.62	14.06	3302.95	0.15	175.59	3.76
3	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.86	15.65	3432.68	0.14	204.91	6.27
4	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	5.10	17.36	3440.78	0.17	172.38	7.08
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	no	0.00	5.34	19.06	3205.87	0.14	187.08	4.65
6	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.44	1.06	21.09	3477.66	0.39	71.64	5.01
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.95	10.24	3411.59	0.11	228.47	5.62
8	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.95	4.09	3028.11	0.08	262.52	1.89
9	5	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.86	5.80	3290.48	0.07	303.15	4.66
10	2	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	15.10	7.50	3225.89	0.10	271.97	5.76
11	2	no	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	12.08	9.21	2914.23	0.10	231.75	4.02
12	3	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	2.09	12.18	2386.16	0.23	110.71	0.33
13	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.84	9.44	3174.27	0.06	332.03	4.23
14	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.56	11.84	0.00	3122.43	0.06	317.47	4.94
15	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.06	21.84	0.00	3358.85	0.05	364.96	12.44
16	1	yes	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	2.35	22.58	0.00	3349.51	0.08	303.26	6.47
17	1	yes	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.65	12.59	0.00	3161.33	0.09	257.03	8.03
18	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	2.61	7.18	2845.60	0.22	121.41	1.13
19	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.72	9.50	3185.15	0.07	337.13	4.55
20	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.50	11.72	0.00	3131.87	0.06	323.91	4.94
21	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	10.50	21.72	0.00	3417.38	0.06	371.97	14.78
22	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	no	no	no	yes	no	no	no	12.21	23.10	0.00	3367.86	0.07	329.83	15.75
23	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.92	13.11	0.00	3221.18	0.08	266.37	10.65
24	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	3.12	7.08	2562.25	0.14	185.75	0.99
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.64	9.57	3204.95	0.06	378.62	4.60
26	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.43	11.64	0.00	3163.34	0.06	336.33	4.75
27	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	10.43	21.64	0.00	3363.30	0.05	370.75	14.03
28	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	13.02	23.57	0.00	3327.99	0.06	357.56	8.09
29	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.02	13.58	0.00	3068.93	0.06	326.86	8.61
30	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	3.59	6.98	2530.46	0.21	126.54	0.66
31	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.64	9.63	3209.69	0.08	285.26	4.69
32	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.37	11.64	0.00	3063.73	0.06	335.37	4.62
33	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	9.33	21.64	0.00	3256.22	0.05	381.88	11.51
34	2	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	9.18	23.98	0.00	3054.31	0.06	367.32	2.04
35	2	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.12	13.99	0.00	2592.79	0.05	327.11	0.94
36	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	4.00	6.88	2338.57	0.08	268.97	0.87
37	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.73	9.71	3302.90	0.09	246.17	4.65
38	2	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.73	0.51	3126.19	0.08	283.82	4.89
39	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.66	0.67	3039.30	0.05	370.55	9.54
40	4	yes	yes	yes	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.17	0.82	2958.77	0.04	403.51	7.12
41	3	yes	yes	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	13.56	0.98	2911.74	0.06	308.59	7.69
42	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	4.30	6.87	2975.32	0.12	216.98	2.95
43	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	0.00	2.86	14.29	3517.78	0.26	109.56	10.72
44	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	5.16	10.51	2914.93	0.18	180.76	1.79
45	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.67	10.66	10.67	0.94	0.00	0.02
46	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.18	10.82	2591.25	0.15	175.50	0.87
47	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	3.80	10.98	1.30	0.94	0.00	0.35
48	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	1.62	0.00	12.95	3106.44	0.17	180.98	2.41

Figure 34: One final data chart based on one individual survey at Steinplatz, 16.06.2021.

04.Analysis & Results

4.1 Data Analysis

Based on the final processed data output, accumulated information regarding all the independent and dependent variables was analyzed. The three selected public places had three times surveys from three different periods, and each survey was converted into one standard data chart. Altogether, there were nine surveys initially. However, all the individual survey data for each public place was aggregated in a way if a cell was used for sitting activities, it was marked as 'Yes,' and as a final output of processed data, there was only one accumulated chart for one public place at the end. The data analysis part followed a decision tree by inserting all the combined data into the model. Before proceeding towards the data analysis process and its explanation, it is necessary to give a brief overview regarding the decision tree model structure.

4.2 Decision Tree

A decision tree is a decision assist tool that uses a tree-like model of decisions and possible conclusions. A decision tree is a flowchart-like formation in which each internal node serves as a "test" on a feature (e.g., if a coin flip shows up heads or tails), every branch stands for the consequence of the test, and every leaf node expresses a class label (decision taken after computing all features). The paths from the root to the leaf represent classification rules. (Kamiński, B., Jakubczyk, M. & Szufel, P. A framework for sensitivity analysis of decision trees. Cent Eur J Oper Res 26, 135–159, 2018). Decision tree learning is a procedure conventionally used in data mining. The aim is to create a model that predicts the value of a target variable based on several input variables. (Rokach, Lior; Maimon, O. 2008). Decision trees used in data mining can be categorized into two main types: Classification and regression. Classification tree analysis is when the assumed result is the class (discrete) to which the data belongs. Regression tree analysis is when the speculated outcome can be considered an actual number (e.g., the price of a house or a patient's duration of stay in a hospital).

4.3 Analysis Process

In this research, a decision tree was used to evaluate the impacts of different variables on public sitting. The variables are mainly the significant features of a public place. While using this data analysis tool, the model was trained to evaluate the patterns of a target variable based on the input variables, which are the design features. Decision tree clustering was used as most of the collected data were of two major classes, YES and NO. The decision tree model was fed all the final processed data for each of the public spaces one by one. The whole analysis part was conducted in several phases. At first, for each sample public place, one aggregated survey data chart was inserted into the model to run the analysis and see how it predicts the relation for one individual public place. The exact process continued with the rest two public places. After One round of individual data analysis, all the three public places data were combined and fed into the model. Later the model predicted the target variable 'sitting activity' based on the input variables for all three public places combinedly.

4.4 Analysis: Evaluating Sitting Behavior

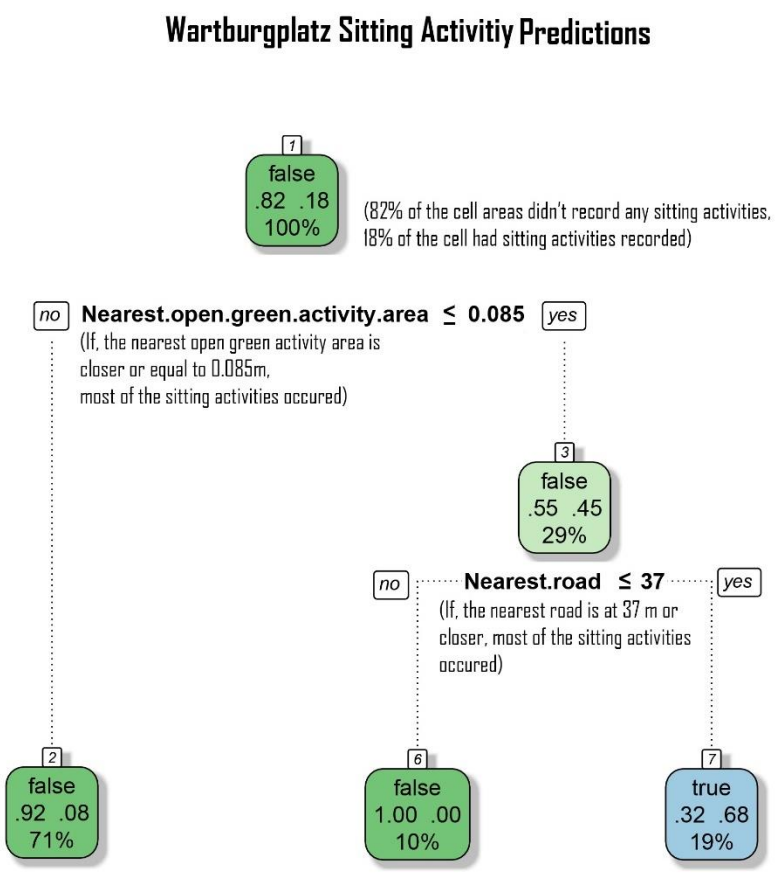

Figure 35: Decision tree predictions for Wartburgplatz sitting activities.

For the case of Wartburgplatz, 'nearest open green area' and 'nearest road distance' were predicted as the most influential variables for sitting activities based on the input variables from the survey. According to the model, if the cell is directly located on the open green area or within a proximity of 0.085m or less, it expects sitting activities. Furthermore, if the open green areas are closer to the nearest road by 37m or less, the model predicts sitting activities. It is crucial to consider the combination of the branches as the predictions indicate their interrelation while evaluating the sitting activities for any particular public place.

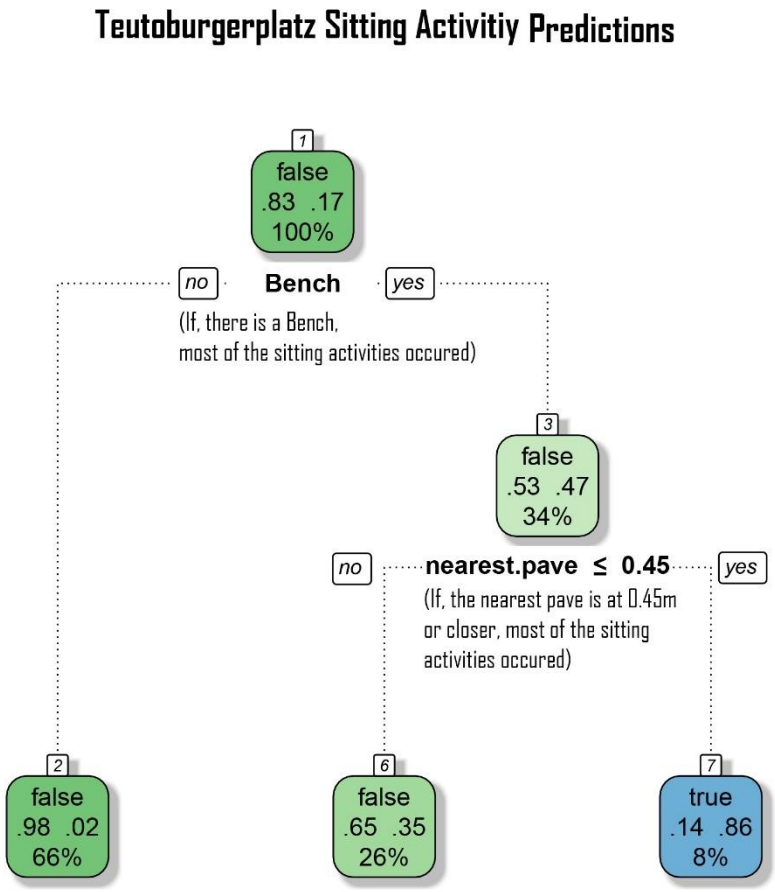

Figure 36: Decision tree predictions for Teutoburgerplatz sitting activities.

For the case of Teutoburgerplatz, decision tree predictions provided ‘sitting benches’ and ‘nearest pavement distance’ as the most influential variables. According to the predictions, if there is a bench within the cell, the model expects sitting activities. Furthermore, if the bench is located in the proximity of 0.45m or closer to a nearby pavement, the model predicts sitting activities. The model evaluated the impacts of sitting benches and their distances to a nearby pavement on manipulating sitting behavior for this public place. It explains the importance of having a bench within proximity of a pavement that best attracts people for sitting activities. On another note, having a bench in the middle of green areas or having pavement without a nearby sitting bench either would not help in the cause of stimulating sitting behavior.

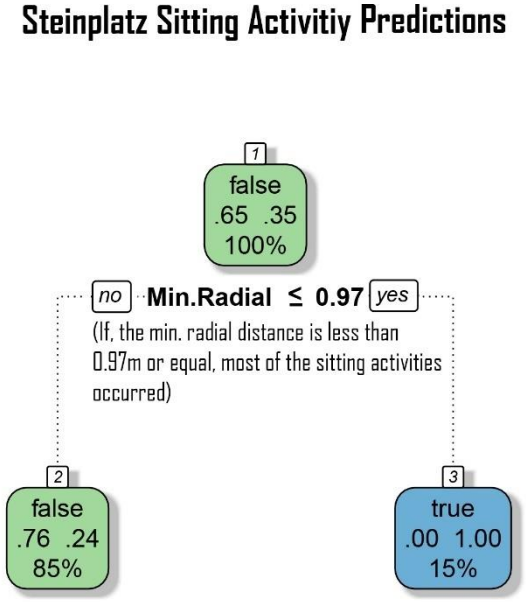

Figure 37: Decision tree predictions for Steinplatz sitting activities.

For the case of Steinplatz, the decision tree model predicted 'Min. radial distance' as the most influential factor for sitting activities. According to the prediction, if the Min. radial distance within the cell is 0.97m or less, the model predicts sitting activities. Min. radial is a property of Isovist calculation. It refers to the distance of the nearest visual obstruction. That means, within the cell, wherever there is a design element or features less than 1 m or closer distances, sitting activities were expected by the model. This interpretation indicated that people prefer to sit near any physical object located less than 1 m within this square. It is essential to note that the Min. radial distance of fewer than 1m does not necessarily indicate an obstacle nearby that would block all the visual access of the surroundings. Instead, it relates to the psychological aspects of public sitting behavior as people tend to seek support from their surroundings while sitting in a public place.

From the decision tree predictions for each public place individually, different variables were the most significant in manipulating public sitting behavior in different public places. In Wartburgplatz, the two most significant variables for sitting were predicted as the open green activity area and nearest road distance. For Teutoburgerplatz, the presence of a bench and nearest pavement distances were assumed to be the most prominent by the model, whereas, in Steinplatz, the presence of any nearby features in less than 1 m distance was considered crucial.

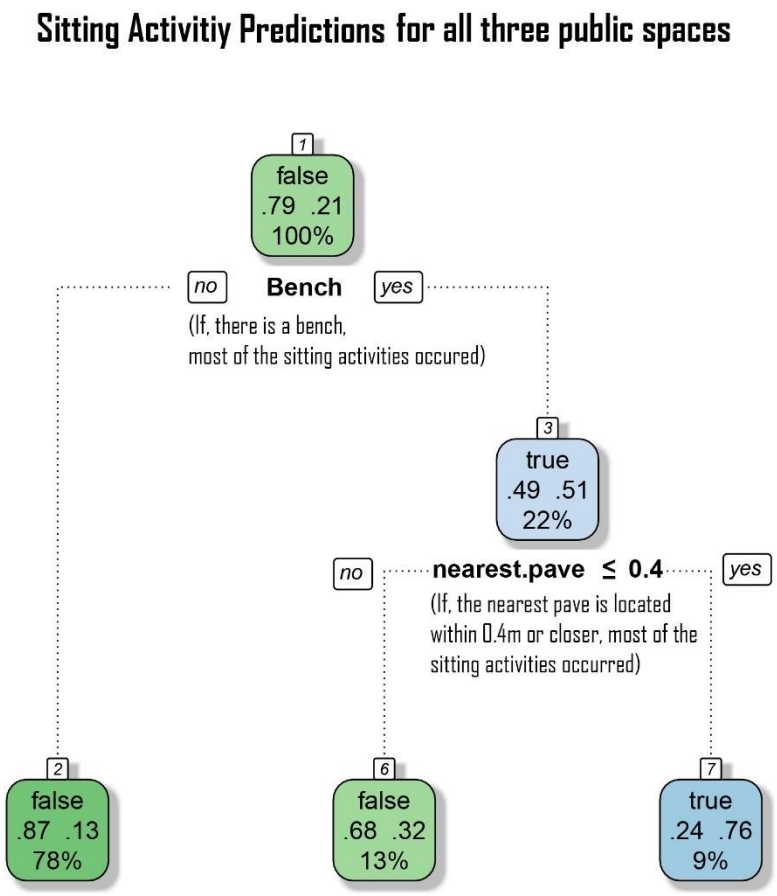

Figure 38: Sitting behavior predictions by decision tree for all the three public places combined.

After running decision tree-based analysis for each individual public place, the input data were merged for all three public places to run an overall analysis to observe the combined prediction. All the three public places survey data were combined and fed into the model. Later the model predicted the target variable 'sitting activity' based on the input variables for all three public places.

The predictions were more conventional and similar to the individual predictions for Teutoburgerplatz. The combined model predicted the 'Sitting benches' and 'nearest pavement distance' as the most influential variables. According to the combined model, if there is a bench within the cell, it predicts sitting activities. Moreover, if the bench is located in a proximity of 0.4m or nearer to a pavement, the model expects sitting to be occurred. This prediction was provided considering a total number of 266 experiment cells combining all three public places for the first sample of the survey data set.

4.5 Results

As this research aimed to investigate the influence of significant design features shaping sitting behavior in public places, at the end of the data analysis, the outcomes are presented here in the result section. The decision tree method of data analysis was used to analyze the final processed data for selected public places. The decision tree models predicted various significant variables that are most influential in terms of public sitting activities. The results of the data analysis would be presented as it was received, and later in the discussion chapter, they would be interpreted with possible explanations. For better understanding and coherence to the aim of the research, the results are framed in reference to the research questions.

4.5.1 Major Features Influencing Public Sitting

As the main research question was framed as, what are the major design features that influence sitting activities in a public place? In reference to that, the decision tree-based outcomes indicated the features that predicted as most influential on public sitting activities. Also, the research asked further, how do these influencing design features interact with each other to enhance the sitting preference of any specific location of a public place? The decision tree branches indicated their interrelations which explains the ideal combination of several variables to attract sitting activities in any given location.

Public space name	Influencing Factors	Interrelation
Wartburgplatz	Open green area, Nearest road distance.	Open green area within a distance from the nearby road of 37m or less.
Teutoburgerplatz	Sitting bench, Nearest pavement distance	Bench located within a proximity of 0.45m or nearer to a pavement.
Steinplatz	Min. radial distance	Presence of any design elements or features within a distance of less than 1m.
All three combined	Sitting bench, Nearest pavement distance	Bench located within a proximity of 0.4m or nearer to a pavement.

From the data analysis, factors listed above were predicted as the most influential for shaping the public sitting phenomenon. They are noted down here in this chapter without any alteration. These predictions regarding the most influential input variables on public sitting were obtained from all the decision tree models. Those input variables are mainly the design features and attributes of a public place. Later in the discussion chapter, they were interpreted with possible explanations.

4.6 Analysis Limitations

Every analysis has limitations or restrictions, which might be considered a severe issue if the error rate is too high. The data analysis method used in this research is also associated with several errors or shortcomings. It is necessary to have a general idea regarding the flaws to evaluate the accuracy of an analysis. To specify the accuracy of this decision tree method or binary classification test, two statistical measures of the performance are defined as Sensitivity and Specificity.

Sensitivity can also be defined as True Positive rate, which measures the proportion of correctly identified positives within the performance model (i.e., the proportion of those who have some condition (affected) who are correctly identified as having the condition). **Specificity** can be denoted as the True Negative rate, which measures the proportion of correctly identified negatives with the same performance model (i.e., the proportion of those who do not have the condition (unaffected) who are correctly identified as not having the condition). There are several terms such as "true positive," "false positive," "true negative," and "false negative," which refer to the test outcome and the accuracy of the classification. For example, if the condition is a disease, "true positive" referring the amount of "correctly diagnosed as diseased" whereas "false positive" expresses "incorrectly diagnosed as diseased," "true negative" refers to "correctly diagnosed as not diseased," and "false negative" indicates "incorrectly diagnosed as not diseased." Therefore, if a test's sensitivity score is 97% and the specificity is recorded as 92%, the rate of false negatives is 3%, and the rate of false positives is 8% for the analysis.

4.7 Accuracy of the Decision Tree Model

The absolute accuracy of the decision tree models was calculated to evaluate the relevance of the analysis method used in this research. All the models for individual public spaces and combined public places were evaluated in accuracy, sensitivity, and specificity. More or less, all the models performed decently, as the statistics showed.

Model	Accuracy/Misclassification	Sensitivity	Specificity
Wartburgplatz	88%	70%	92%
Teutoburgerplatz	88%	40%	98%
Steinplatz	79%	41%	100%
All combined	83%	33%	97%

4.7.1 Wartburgplatz Model

The decision tree model for Wartburgplatz sitting activity prediction has an accuracy rate of 88%, indicating a better overall performance compared to the others. In terms of Sensitivity, the model predicted the sitting activities 70% of the time in the correct positions. That means the false positive rate of the model is 30%, where it predicted sitting activities in locations where there was no sitting recorded during the survey. In terms of Specificity, the score was 92%, indicating the higher accuracy in predicting the locations not suitable for sitting. So, for the rest 8% time, the model predicted wrongly where sitting activities were recorded during the survey.

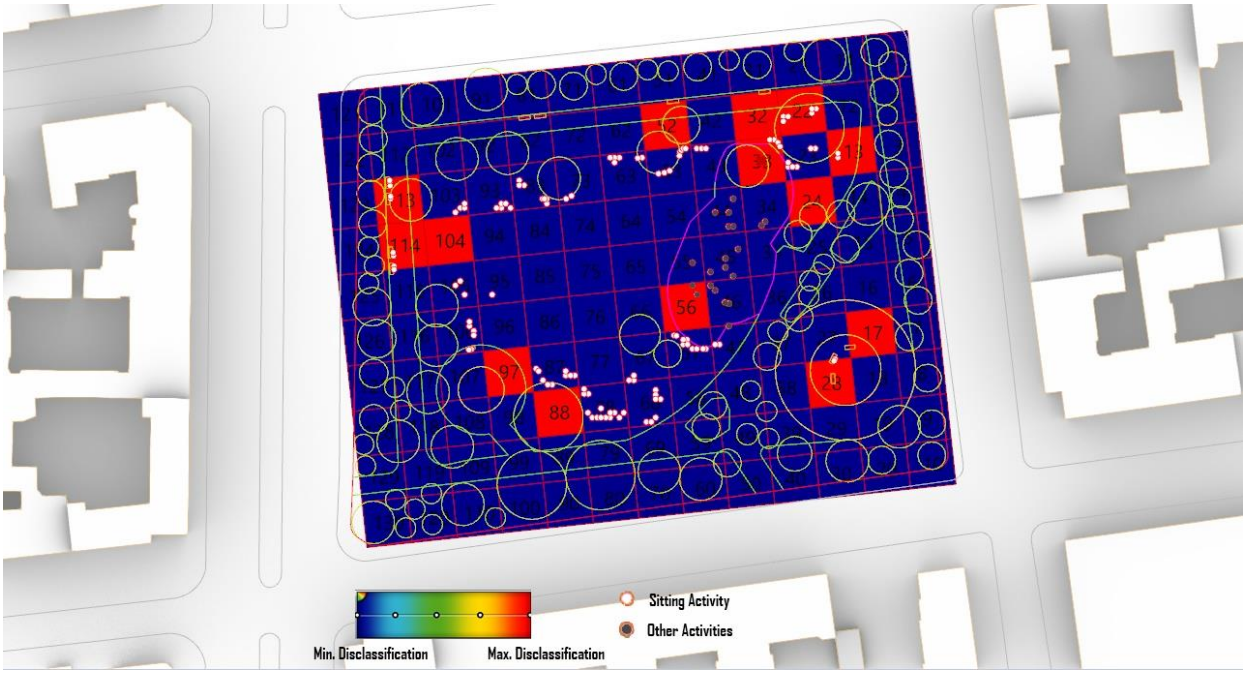

Figure 39: Misclassification (Locations where the model delivered incorrect prediction) for the model of Wartburgplatz.

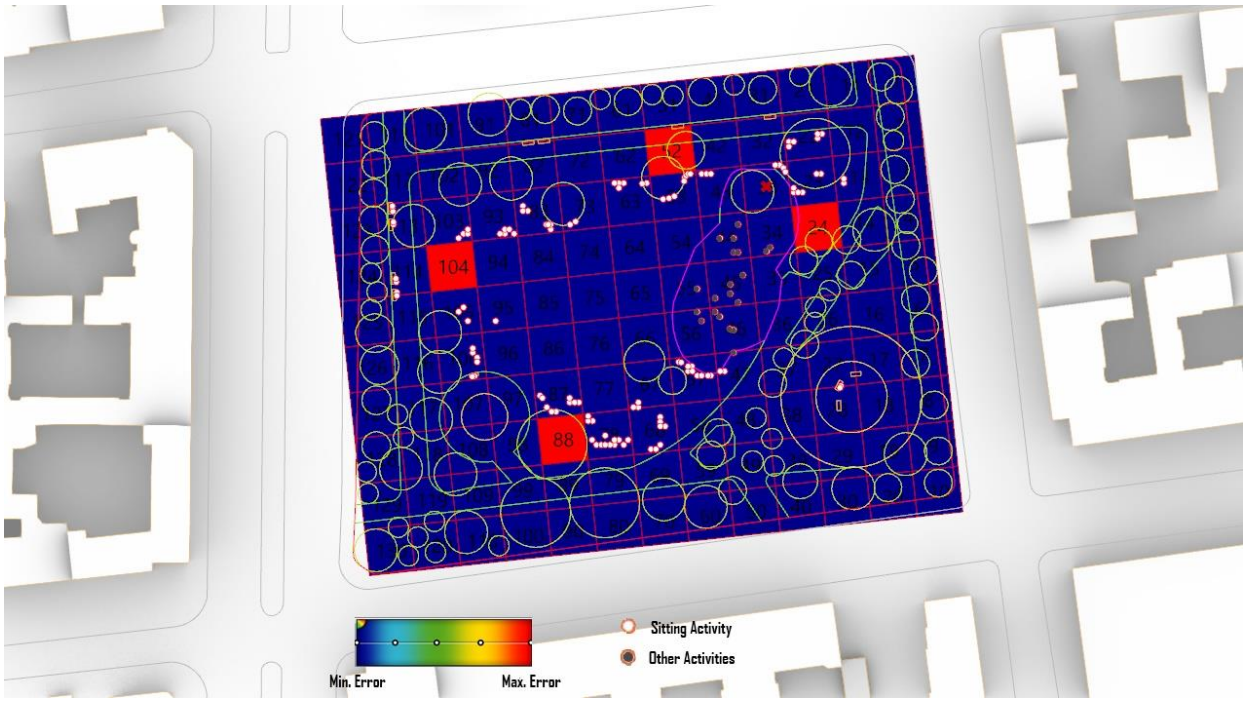

Figure 40: False positive (The model expected sitting activity at locations where the survey didn't measure any sitting activity) for the model of Wartburgplatz.

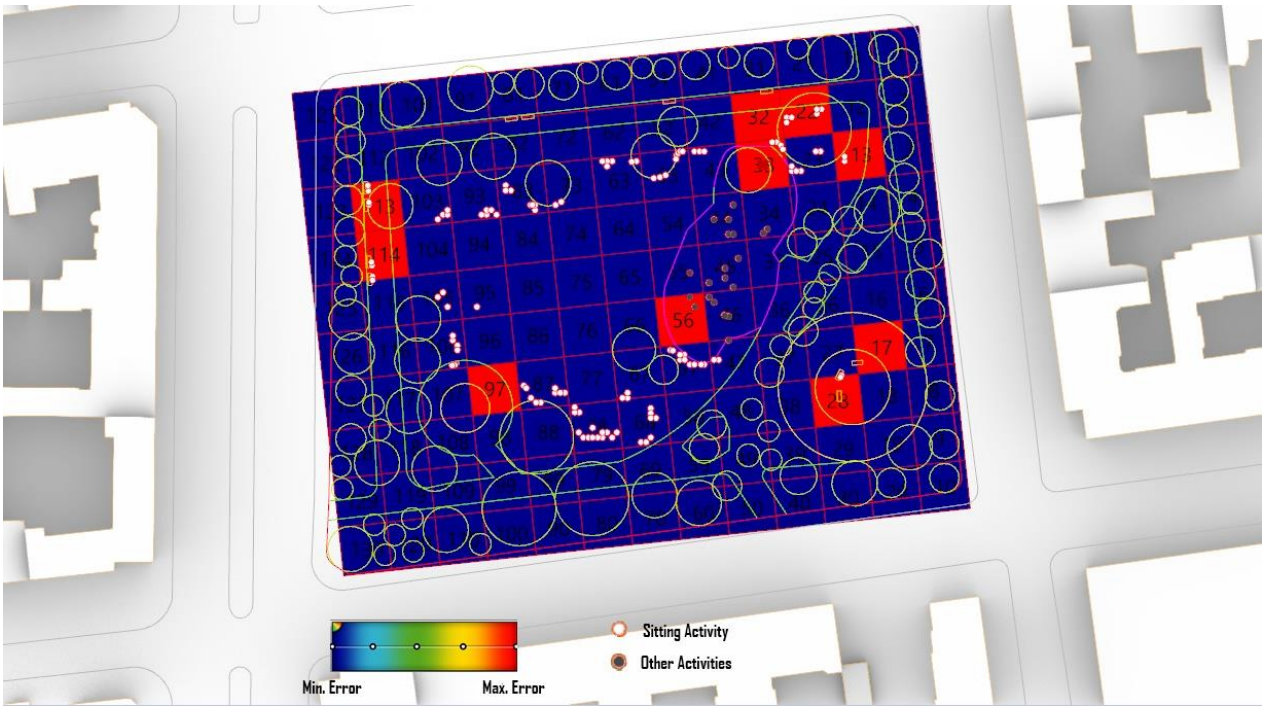

Figure 41: False negative (The model did not predict any sitting activity at locations where actually sitting activities were recorded) for the model of Wartburgplatz.

4.7.2 Teutoburgerplatz Model

The decision tree model for Teutoburgerplatz sitting activity prediction has an accuracy rate of 88%, indicating a better overall performance compared to the others. In terms of Sensitivity, the model's score is relatively low. It predicted the sitting activities 40% of the time in the correct positions. That means the false positive rate of the model is 60%, where it predicted sitting activities in the wrong locations most of the time in comparison to the locations where there was no sitting recorded during the survey. In terms of Specificity, the score was 98%, indicating very high accuracy in predicting the locations not suitable for sitting. So, for the rest 2% time, the model predicted wrongly where sitting activities were recorded during the survey as a false negative.

4.7.3 Steinplatz Model

Steinplatz sitting activity prediction model has an accuracy rate of 79%, which indicates a reasonable overall performance. This model also has a low Sensitivity performance rate where it failed to predict the sitting activities more than 41% of the time in the correct positions. That means the false positive rate of this model is 59%, where it predicted sitting activities in the wrong locations compared to where there was no sitting recorded during the survey. Nevertheless, the score of 100% Specificity ensures the predictions of locations where it is not suitable for sitting activities in this specific public square.

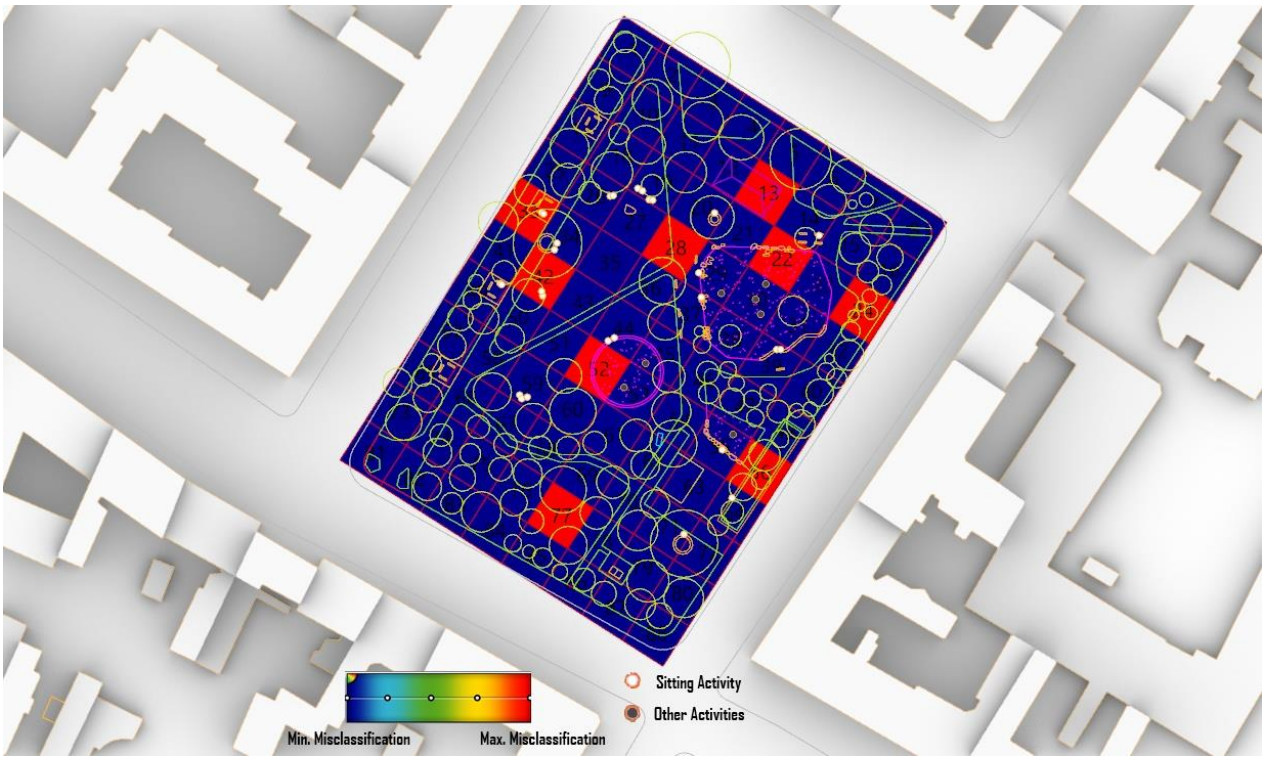

Figure 42: Misclassification (Locations where the model delivered incorrect prediction) for the model of Teutoburgerplatz.

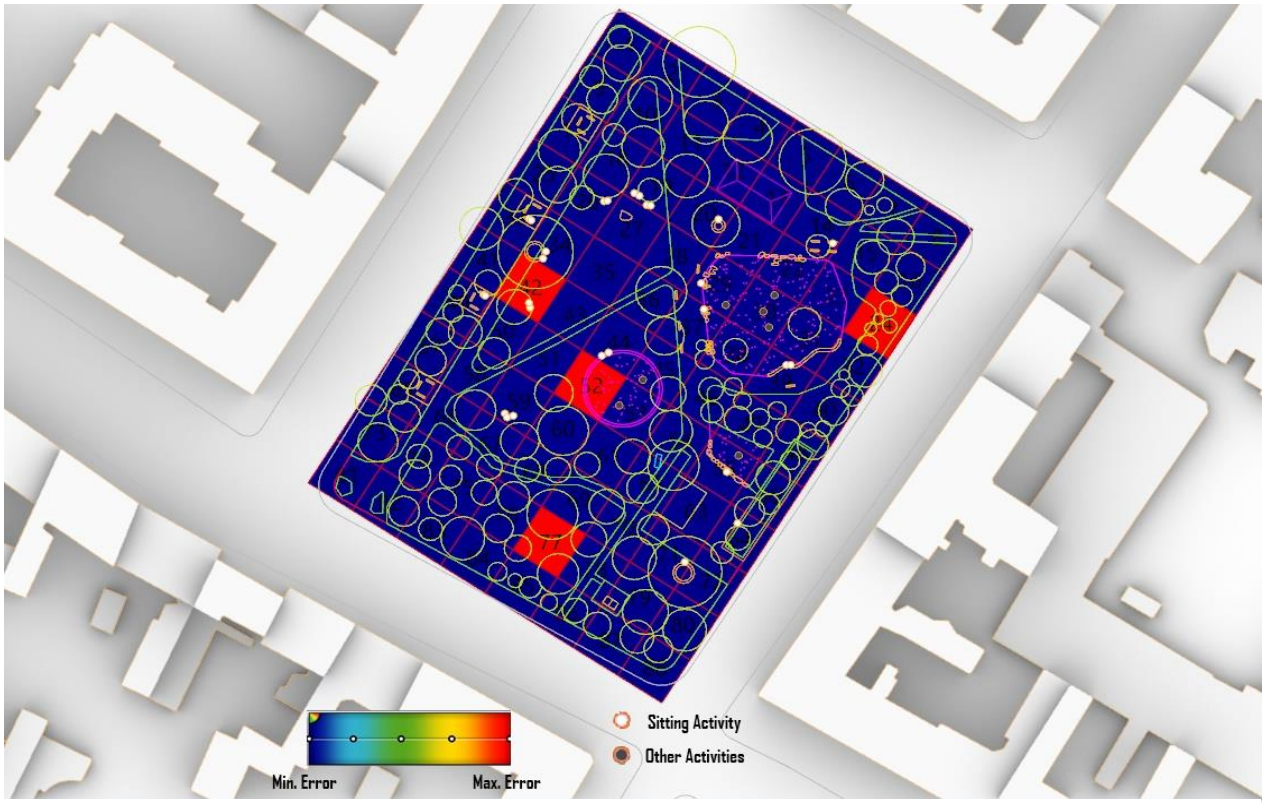

Figure 43: False positive (The model expected sitting activity at locations where the survey didn't measure any sitting activity) for the model of Teutoburgerplatz.

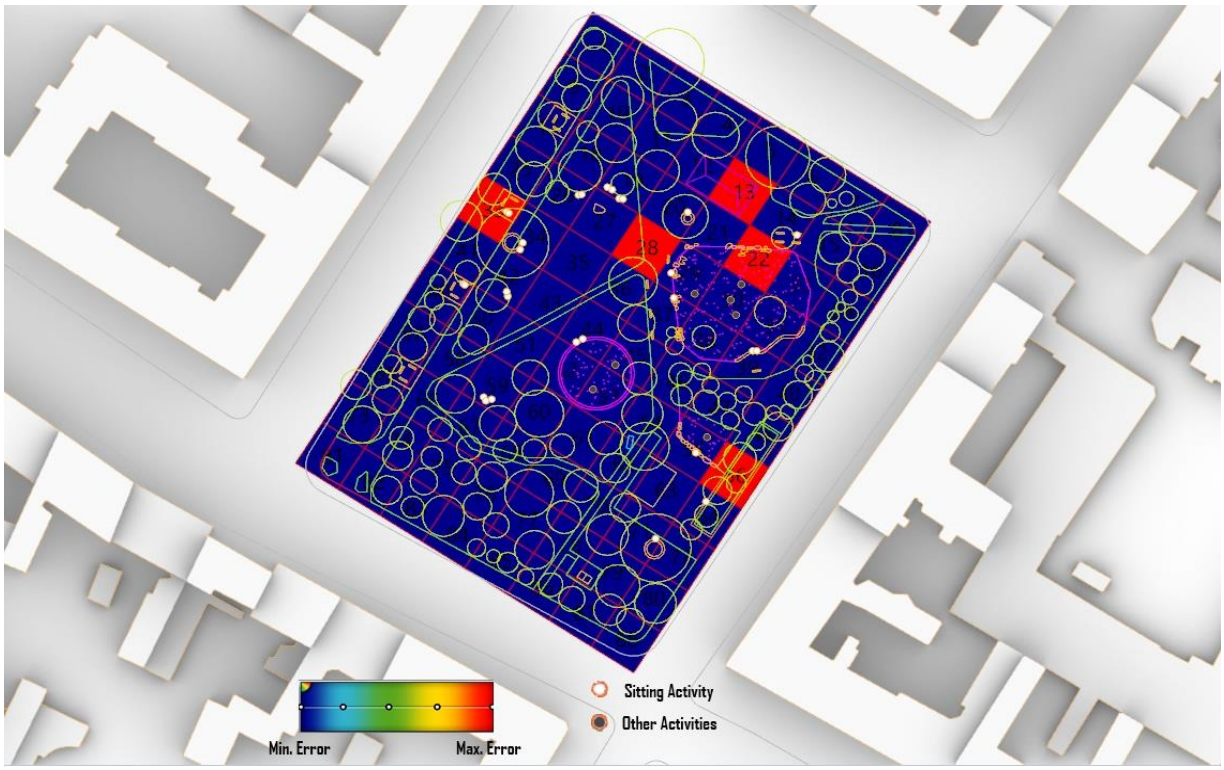

Figure 44: False negative (The model did not predict any sitting activity at locations where actually sitting activities were recorded) for the model of Teutoburgerplatz.

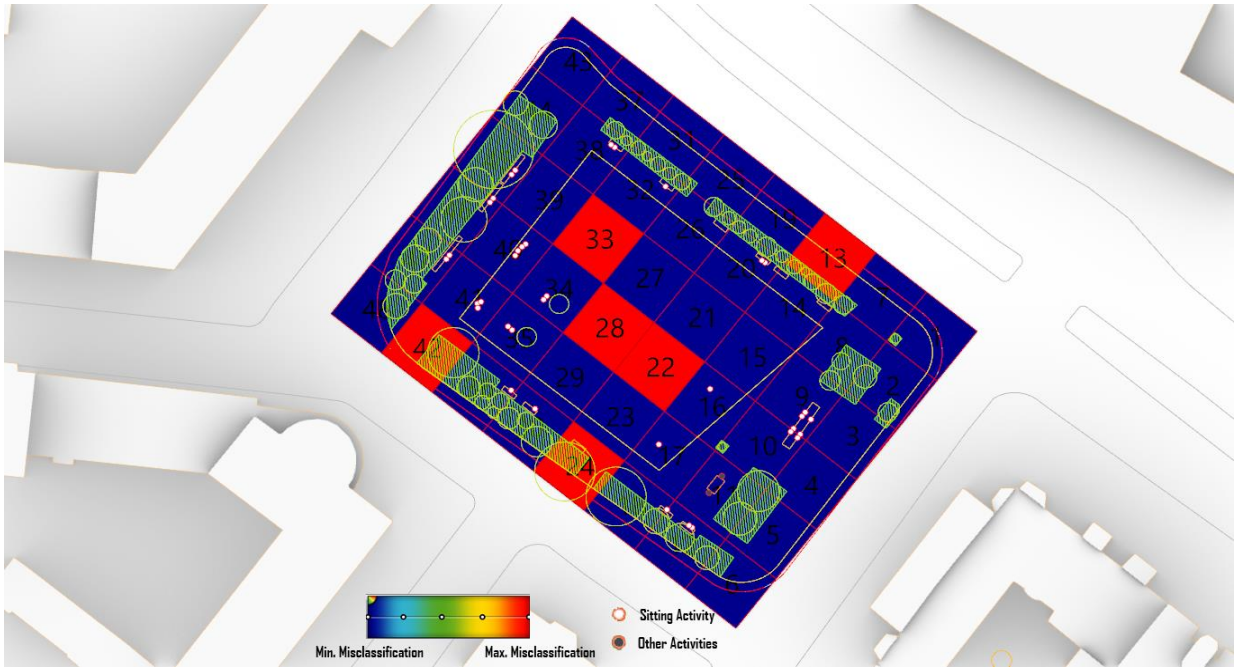

Figure 45: Misclassification (Locations where the model delivered incorrect prediction) for the model of Steinplatz.

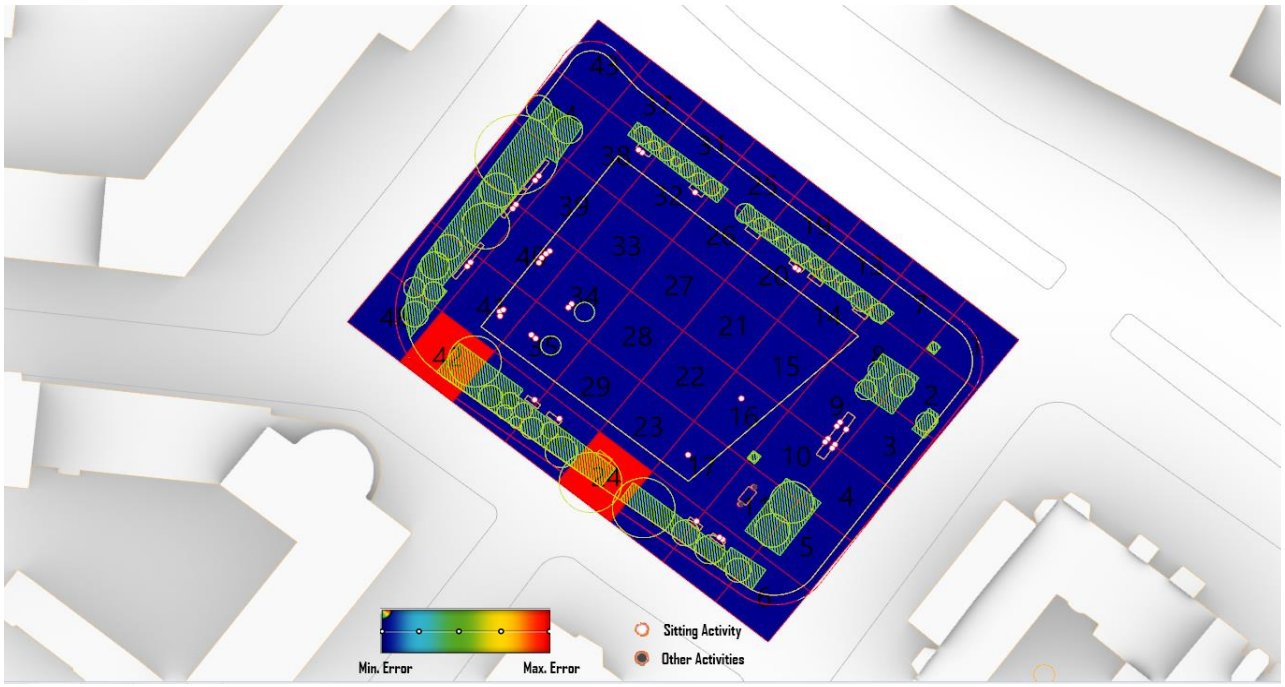

Figure 46: False positive (The model expected sitting activity at locations where the survey didn't measure any sitting activity) for the model of Steinplatz.

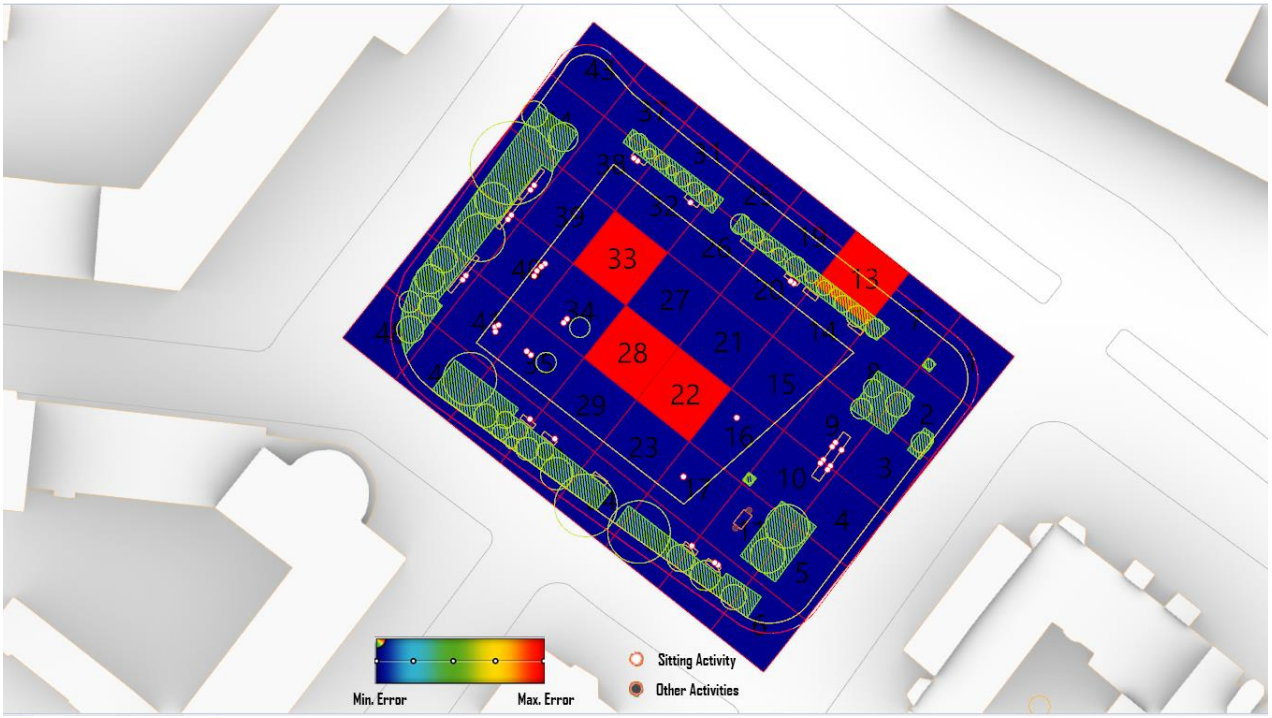

Figure 47: False negative (The model did not predict any sitting activity at locations where actually sitting activities were recorded) for the model of Steinplatz.

4.7.4 All Combined Model

All combined model of sitting activity prediction has an accuracy rate of 83% which indicates a good overall performance for the aggregated data of all three public spaces. However, in terms of Sensitivity, its performance is not up to mark as only 33% of the time the model predicted sitting activities in the correct locations, which indicates a high 77% rate of False-positive prediction. However, a 97% Specificity rate ensures a satisfactory performance in predicting locations unsuitable for sitting activities.

So, considering the overall accuracy rate, all the prediction models for the public places performed reasonably well. Nevertheless, the low rate of Sensitivity of all the models simultaneously opens up the discussion to increase the sample size for the model to generate better performances in predicting the sitting activity locations. On the other hand, the high accuracy rate in Specificity of all the models ensures good performance in evaluating the locations not suitable for sitting.

05.Discussions

5.1 Interpretation of Results

The results indicated several design features and attributes of public places as the influencing factor for people's sitting behavior in public place. As the research aimed to investigate the features that most contribute to the sitting phenomenon in public places, the results are presenting some significant factors according to the analysis. In reference to the analysis results, the most dominating factor is the presence of a sitting bench which dictates most of the sitting behavior or preferences of sitting among the selected survey samples. In addition to that, open green area, distances from the nearest pavement are few other dictating factors that play an important role in influencing public sitting activities. Moreover, nearest road distances and Min. radial distance were also predicted as essential factors in this research. These results can be interpreted to understand what they are referring to. This chapter tried to interpret the resulting features and their relevance in reference to the existing literature and the research expectation.

Sitting benches: As specified by the analysis outcome, sitting benches were predicted to have the most impact upon public sitting activities based on the survey data. From the combined decision tree model of data analysis, it was predicted that a sitting bench was mostly involved with the sitting activities within the selected public places. That indicated the high impact of this specific feature on sitting activities. People usually tend to sit where there is a bench. Having a sufficient amount of sitting furniture always increases the possibilities of sitting. Within the selected public places, the sitting activity rate of people was high, especially in the locations or cells associated with a bench. Among three public spaces, two of them had most of the cells assorted with sitting benches recorded the maximum number of sitting activities that happened.

Considering this characteristic, the combined model predicted that the presence of a bench most of the time ensures the maximum number of sitting activities occurred. Though it was also evident from the analysis that presence of a nearby pavement always complemented the scenario within the places of sitting activities. It is also beneficial to note that, for preparing a compact and simplified input data chart, all the sitting furniture such as sitting stones, ledges, or sitting furniture designed around the tree trunks were also categorized into the criteria of sitting benches.

If we analyze all the three selected public places from the survey, combinedly within the 266 cells, 56 of them were recorded having sitting activities. Among the sitting activity cells, 27 of them having direct involvement of a sitting bench which denoted that 48% of the cells where sitting activities occurred were associated with sitting benches. Again, in terms of individual cases, Steinplatz and Teutoburgerplatz had a higher percentage of sitting activity cells associated with sitting benches. In, Steinplatz 64% of the sitting activities were directly influenced by sitting benches. Whereas, Teutoburgerplatz stats revealed that 80% of the sitting activities were associated with sitting benches. An exception was found in the case of Wartburgplatz, where 17% of the sitting activities had a direct impact by the sitting bench features.

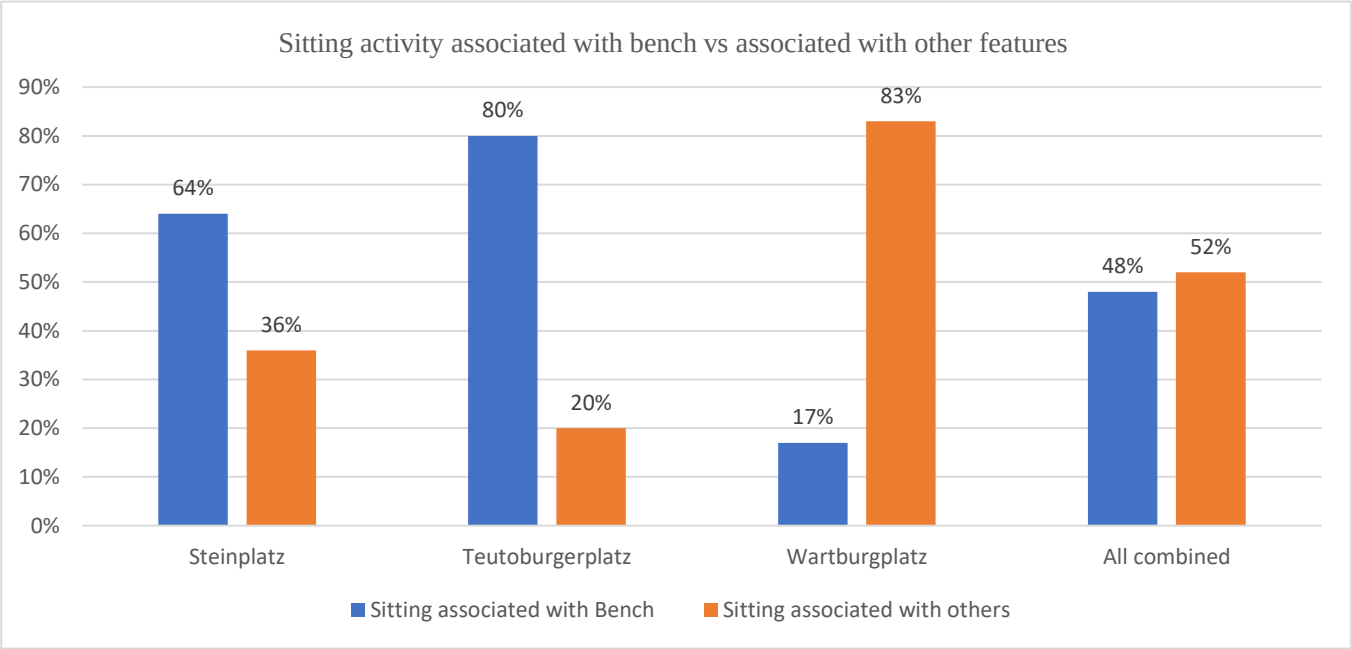

Figure 48: Bar chart showing the percentage of sitting activities occurred within the cell areas of public spaces directly involved with the bench in comparison with the involvement of other features.

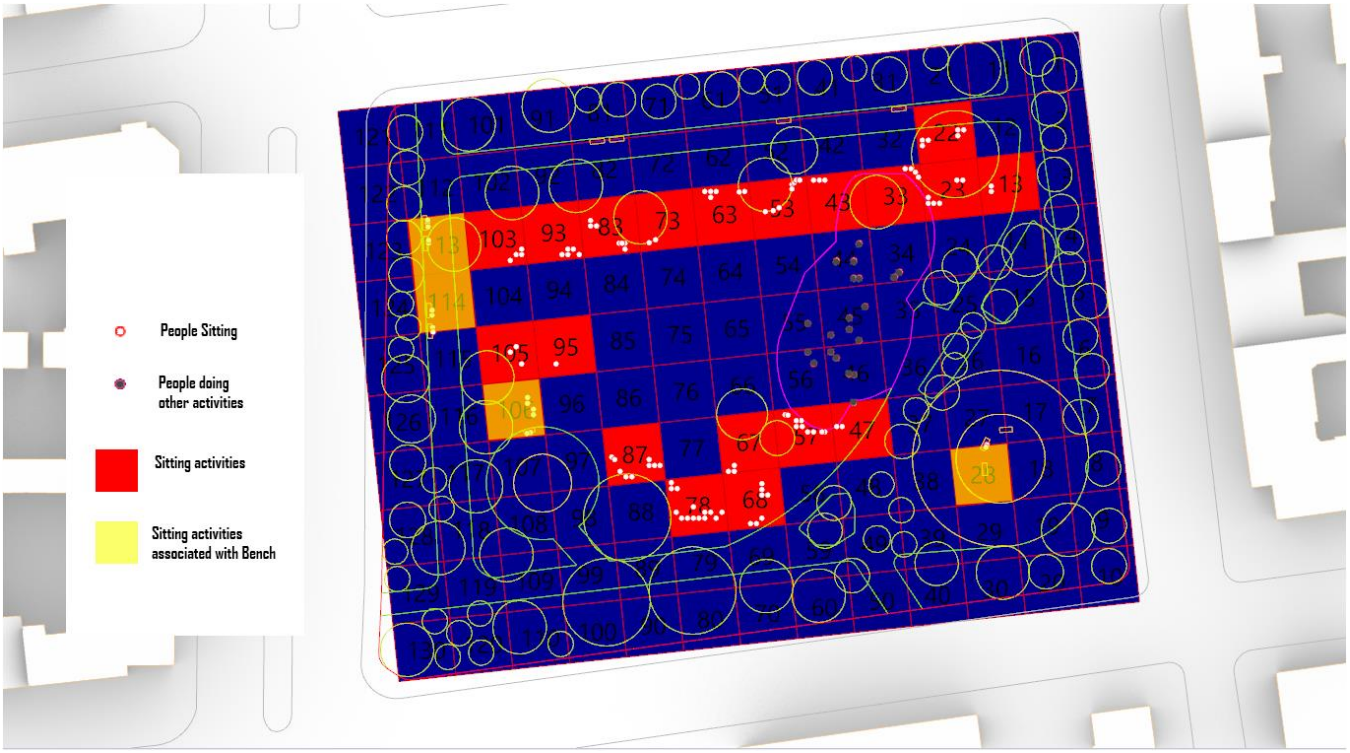

Figure 49: Wartburgplatz all sitting activity cells vs sitting activity cells having involvement with sitting benches.

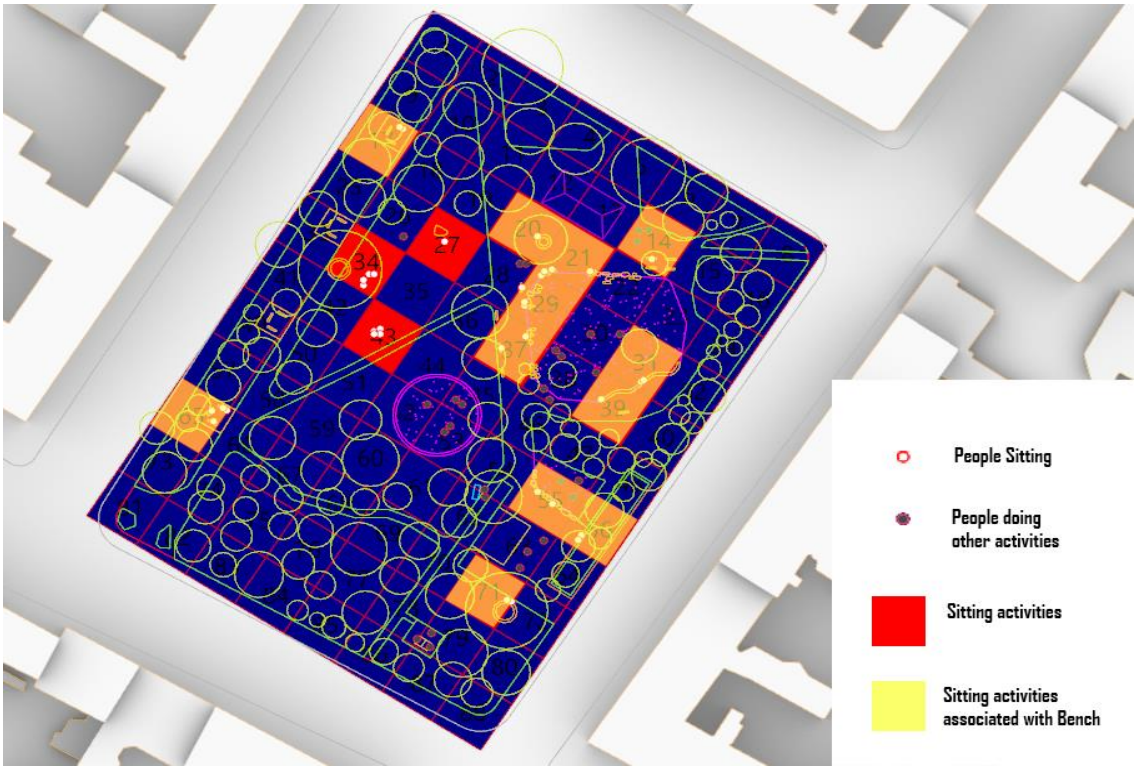

Figure 50: Teutoburgerplatz all sitting activity cells vs sitting activity cells having involvement with sitting benches.

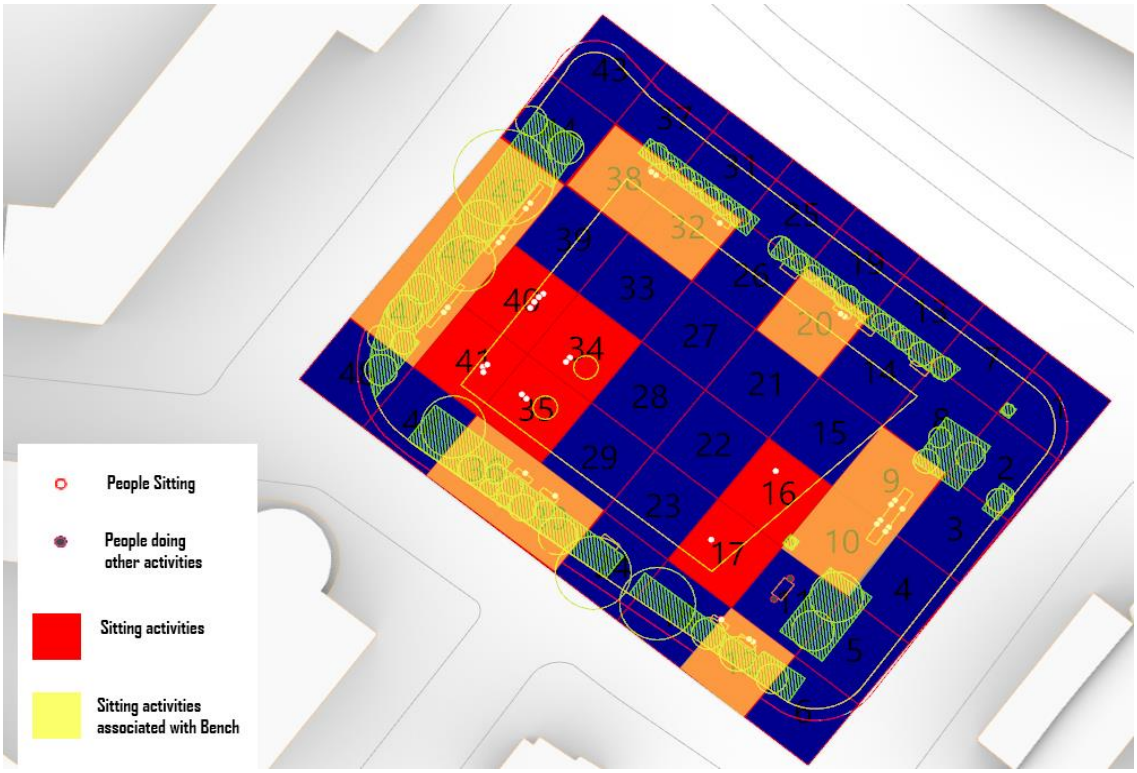

Figure 51: Steinplatz all sitting activity cells vs sitting activity cells having involvement with sitting benches.

Nearest pavement: Among two of the major decision rules predicted by the all-combined decision tree model, distance to the nearest pavement was also noted to be a deciding factor in terms of sitting. The model predicted that most of the sitting activities occurred where there was a nearby pavement within a distance of 0.4m or less. That means there are high possibilities of sitting near the peripheral areas of pavement or circulation paths. The models noticed the characteristics of preferring the sitting locations within close proximity of the pavement or circulation areas from the surveyed public space samples. Especially for the cases of Teutoburgerplatz and Steinplatz, most of the cells where sitting activities were recorded had an average distance of 2m from the nearest pavement or circulation. It indicated the impacts of the nearest pavement on preferring sitting locations within these public places. Exception found in the case of Wartburgplatz where the average distances of nearby pavement from the sitting activity cells were farther away than the other two places. Still, the impact of the presence of a nearby pavement or circulation area can easily be demonstrated because it influenced the other spatial activities and the contribution to the overall scenario within these public places.

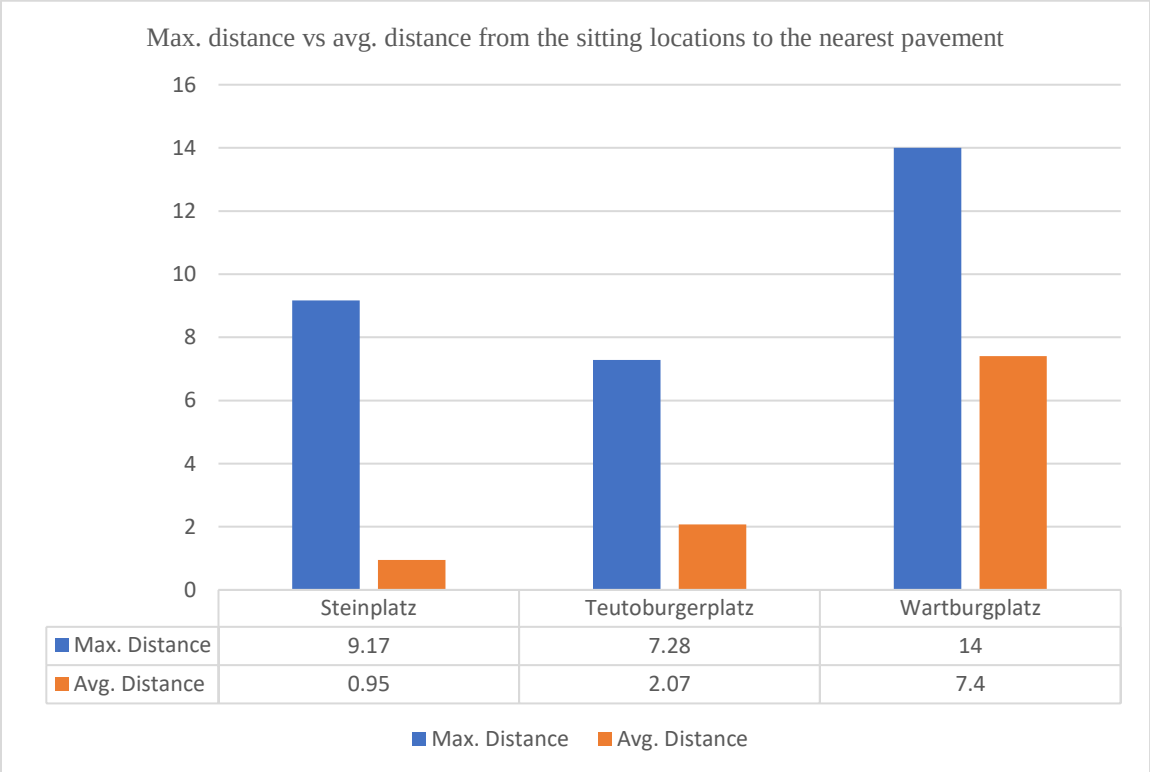

Figure 52: Bar chart showing the max. and avg. distances from the cells to the nearest pavement where sitting activities recorded within the three surveyed public places.

Open green area: According to the decision tree prediction models, open green area or open grass area was predicted as one of the most significant features influencing public sitting activities. Usually, this feature is directly associated with sitting and other activities and also manipulates the sitting behavior or preference of sitting locations within a public place most often according to the data analysis based on the surveys. Especially in the case of Wartburgplatz, the maximum amount of sitting activities were associated with this open green area feature and contributed to the overall sitting activities within the three selected public places. It was recorded many times from the surveys that people choose open green areas to sit directly on the grass. However, there was the evident influence of some other design and environmental features also affecting sitting location preferences. On the contrary, sitting in the other two public places was influenced mainly by sitting benches. Nevertheless, open green areas also had a significant impact as an integral part of the surroundings within those two public places. People tend to see what others are doing and sit nearby. So, this open green area is also essential to patronize other spatial behaviors such as sports and moving activities, children playing, and so on, which indirectly has a massive impact on public sitting and the preference of sitting locations. According to the Wartburgplatz model predictions, most of the sitting activities occurred in a scenario where the nearest open green area is within a distance of 0.085m or less, which interprets that either people are sitting directly on the grass or in locations where it was pretty near to the open green area. That expressed the influence of this feature shaping the public sitting phenomenon and the preference for the sitting locations among the surveyed public places.

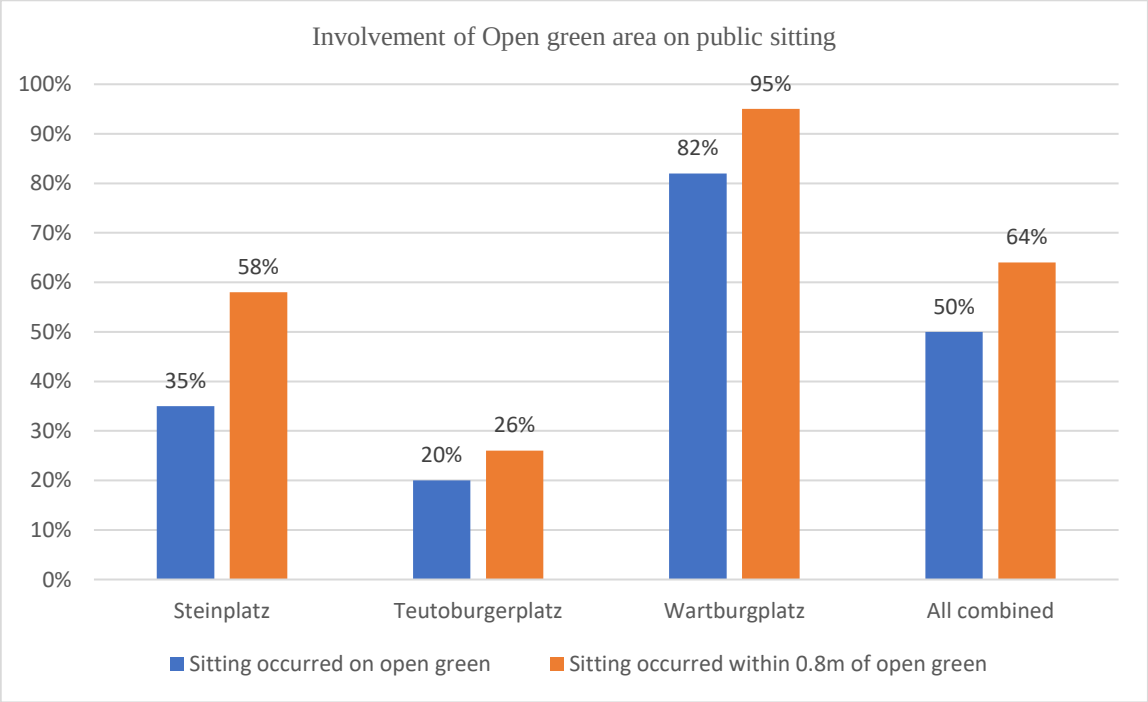

Figure 53: Bar chart showing the direct and indirect involvement of open green area on public sitting behavior.

Nearest road: Wartburgplatz model of data analysis predicted that the distances from the nearest road also impacted sitting activities. The model assumed that the cells where most of the sitting activities were recorded had a minimum distance of 37m or less from the nearest road. That means most of the sitting activities were recorded within the cells far away from the roads. This reflects the impact that people tend to sit in a place far from the noise and chaos. The surrounding roads being considered the primary sources of the noise, the distances indicated the impacts of nearby roads in terms of sitting location preferences within the selected public places. In the case of Wartburgplatz, the average distance from the sitting locations to the nearest roads was 26m, reflecting the model's prediction. However, exceptions occurred for the other two places as they are comparatively smaller in areas. In addition to that, majority of the sitting activities were influenced by the sitting benches within those two public places. Most of the sitting benches were allocated in the peripheral areas of these two public places, resulting in fewer distances from the nearby roads. Though it contradicts the prediction of the decision tree for these two cases, it also can be explained considering some other facts. Especially for Teutoburgerplatz, the whole public place was surrounded by a heavy buffer of trees and greeneries, which cut off the noise from the nearby roads significantly according to the on-site observations and experiences. So, in this case, the fewer distances from the nearby roads did not impact the sitting location preferences much. On the other hand, Steinplatz is relatively smaller in terms of the area from the other two places where the maximum amount of sitting was also associated with sitting benches placed in the peripheral areas close to the surrounding roads. In this case, noise is a factor but despite this, people tend to sit mostly in the peripheral areas within the square.

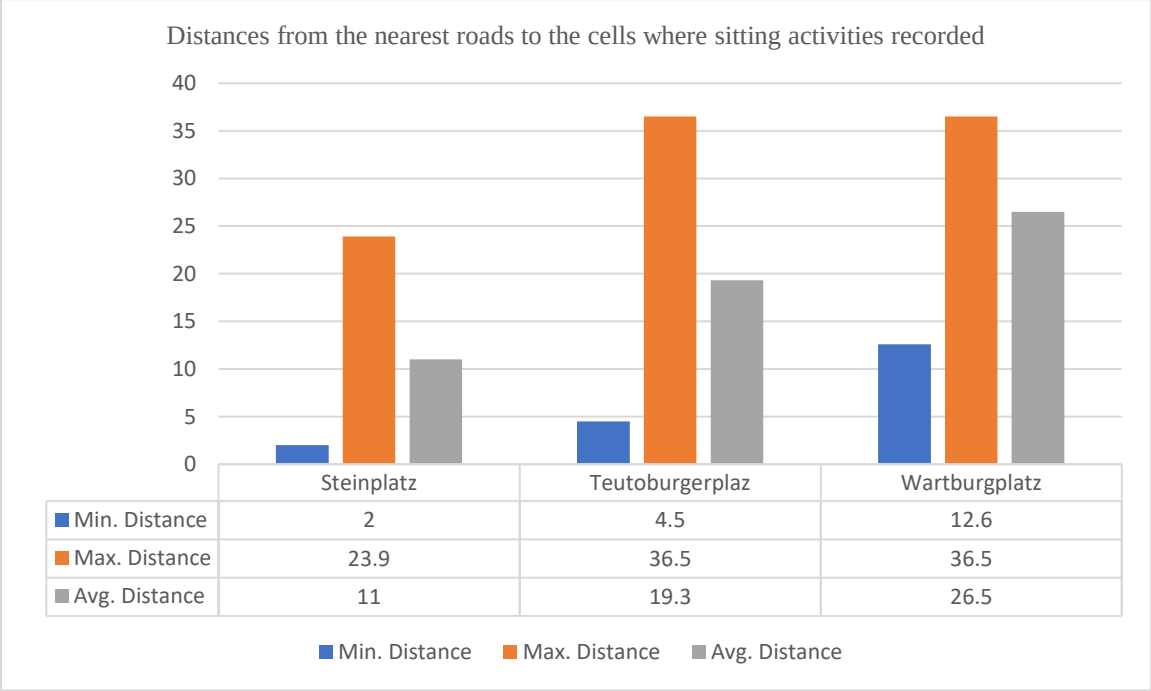

Figure 54: Bar chart showing the min, max. and avg. distances from the cells to the nearest roads where sitting activities recorded within the three surveyed public places.

Min. radial distance: Min radial denotes the minimum distance of the visual obstruction from the vantage point in terms of visibility. In this research case, min radial calculation proved critical as the visual obstruction elements are mainly the tree trunks. Min. radial distance also expressed the nearby presence of a tree or some other elements. In the case of Steinplatz, the decision tree model predicted the impact of Min. radial distances, where the prediction stated that most of the sitting activities occurred if the Min. radial distance is 0.97m or less. It can be explained that people in Steinplatz preferred to sit in a location where there is a nearby tree or some other elements. This fact can also be referenced to the psychological aspect of choosing a sitting location within public places. As existing literature claimed, people prefer to seek psychological support from the surroundings where they sit. The presence of a nearby tree or any other features can be considered as an element of psychological support in this regard.

Though the decision tree models predicted the factors as mentioned earlier as the most influential on public sitting activity, there are few other factors such as visibility within the cell, neighboring child zone, impacts of sun and shadow, etc. which also has high relevance in relation to the on-site observations and the research expectation. As the research was more oriented to evaluate the impacts of surrounding design features on public sitting, the decision tree models predicted the most relevant features based on the input variables from the survey samples. It is essential to note that the interrelations between the predicted design features are equally important as those individual features in a location predicted for sitting activity. For example, the combined decision tree model predicted the influence of sitting benches and the nearest pavement on sitting behavior. That means if the benches are placed near a pavement, the environment better suits sitting activities. Locations having sitting benches in the middle of grass areas or pavements without placing the sitting benches would not be sufficient to attract sitting activities most. Due to the lack of these ideal combinations between significant design features, locations within the same public places vary from sitting preferences.

5.2 Relation to the Literature Study

In this section, the outcome from the analysis part of this research is compared with the existing the literature-study driven factors. It is beneficial to draw some relevance within the existing literature and the findings from this research to evaluate if the results support the existing studies within the field or challenge some existing theories. To define the relevance between the results and the existing fact, the predicted influencing factors are compared with the hypotheses generated factors taken into consideration at the end of the literature analysis.

Notable similarities were found between the outcome of the research and the factors generated from the existing literature. The literature review found that the design features influence the sitting behavior to a significant extent; sitting benches are the most prominent ones among them. It indicates the provision of sittable places. As Whyte stated, the most popular plazas tend to have considerably more sitting space than the less well-used ones, which indicated that the most vibrant public places logically consisted of more sitting provisions. Among those sitting places, the most used design feature to sit on is the sitting

benches. This feature has numerous categories among itself. Sitting benches can also be classified into many types and design variants that have different impacts on the users regarding sitting activity and behavior. From the research outcome, sitting benches were predicted as the most influential features. Among the surveyed public places, most of the time, sitting activities were associated with sitting benches. This denotes the influence of sitting benches as a significant feature in shaping sitting behavior within the selected public places.

Relevance was found in terms of open green areas as the research outcome highly focused on the influence of an open activity area or open green field near the locations where most of the sitting activities occurred within the three surveyed public places. This open green area has significance on public sitting from many aspects. Cooper Marcus and Francis (1998) noticed the significance of varieties in sitting orientation that provides variety while being seated in watching other people's activities, surroundings, and diversity in the sun and shade. People are attracted to other people (Abu-Ghazzeh, 1999, Spooner, 2014). Therefore, the city life view of people has a unique attraction, and people will be attracted to a location where other people are passing by (Cooper Marcus & Francis, 1998; Gehl, 2010). Seating orientation is crucial in terms of having a diverse view of the surroundings. Lyle (1970) determined that people choose to be where there are other people. Apart from these, many other research and studies indicated the significance of open green areas in terms of public sitting. The research outcome matched the expectation of the literature to a great extent as a significant amount of the sitting activities were manipulated by this feature in all three public spaces.

Another essential factor that was noticed from the research result is the presence of nearby pavement or circulation. The research outcome displayed the influence of this feature on public sitting locations to a reasonable extent. Sitting activities near the pavement or circulation pathway were frequently noticed during the surveys within all three public places. The literature analysis also influenced the impact of nearby pavements. According to William H Whyte, Circulation and sitting, in sum, are not antithetical but complementary. It expresses the dominance of pavements, pathways, or circulation spaces in public sitting behavior. People tend to sit in the near vicinity of the circulation area. Not necessarily would the sitting hamper the circulation; instead, they complement each other. Sitting should be both physically and psychologically comfortable, as William H Whyte stated.

Several factors control the psychological comfort of public sitting. Many psychologists expressed different theories and concepts regarding people's mental comfort while sitting in a public place. All these factors can be defined as comfort factors of public sitting. Numerous urbanists provided several assumptions regarding psychological comfort and its effect. **Prospect Refuge Theory** is one of the most significant assumptions which can be explained as a crucial psychological factor of manipulating public sitting. An unimpeded opportunity to see is called a prospect, whereas an opportunity to hide is called refuge; hence the name prospect refuge theory emerges when these two words combine (Appleton, 1975). In a study aimed to determine a relationship between this theory and sitting

behavior, it was found out that prospect and refuge affect the choice of seating (Mumcu, 2009).

From the research outcomes, these psychological comfort factors can be explained. In many cells where sitting activities occurred, people tend to sit near the periphery of the place or the circulation, which can be interpreted as an impact of these psychological comfort factors. Because people always tend to seek psychological support from their surroundings. In this case, it can also be related to the prediction of Min. radial distance as it explains that sitting activities near a tree or any other features for the sense of psychological support within the surroundings. Similarly, **the Edge effect** by Jan Gehl explained the preferences for sitting along facades and spatial boundaries within public places. This is also supported by the research results, as it was noticed in the experiment. In many cases, the sitting activities were recorded near the spatial boundaries or periphery of the surveyed public places, reflecting the edge effect on public sitting behavior.

Being able to witness the surroundings and activities without having much trouble would lift the experience of a place. It is preferable to sit in a place where it is not difficult to see what is nearby. Having a clear vision within a certain vicinity is always impactful as people would love to what is happening in their surroundings. As William H Whyte described in his research, people are always more interested to see what is going on at the eye level rather than the meticulous details of the surrounding buildings or structures. Supporting the literature analysis in the case of visibility, the research showed that most of the locations where sitting activities were recorded had a higher amount of isovist area, which denotes the high amount of visual provision. So, from the research, the impact of visual provision within the sitting locations is also justified.

According to the existing research, Noise has a clear impact on sitting preferences in a public place as people typically choose to be in a location where the noise level is within the comfort of tolerance. Especially in terms of group sitting, it is always pleasant to hear clearly what others are saying in the group. This fact also paves the way to an essential aspect of public space that is social interaction. Even in the case of sitting alone, one would love to be in a quieter place to enjoy the glimpse of the surrounding greeneries, read something, or whatever based on one’s personal preference. Based on the research result, it was seen that most of the sitting locations had a minimum distance of 37m to the nearest road, which denotes the impact of noise factors on public sitting preferences in public places.

5.3 Research Limitations

Every research has its limitations and shortcomings. Sometimes, the result fails to meet the expectation. In some cases, the result discovers new confusions and knowledge gaps in the field simultaneously. Off and on, the results justify the existing literature and hypothesis generated based on the topic at the beginning of the research. In this section, this research's limitations and restraints are elaborated according to the results and the expectation set at the beginning depending on the existing studies.

This research followed the decision tree method of data analysis to generate the outcomes provided by the predictions of the models. As stated before, the decision tree models have their limitations in terms of predicting relations. All these predictions are highly dependent on the given data sample size and their interrelations with the target variable. If the input variables and their interconnections are not evident enough to explain the target variable then the result will not match with the expectations sometimes. In this research, the biggest limitation is the sample size of the data. Due to the limited research period, it was not possible to incorporate a large data sample size from numerous public places of different area, configuration, contexts of design features allocation and such, the predictions given by the decision tree are only confined to those three surveyed public places and influences traced from their design features and elements on public sitting.

In the results, some of the input variables did not come out as influential as expected at the beginning of the research. The variables which were left out in the result part, might be proved influential if the survey sample size increased. In addition, the fact of having no predictions on the environmental variables such as sun, tree, and shadows can be noted down as the research was more oriented to the influence of design features rather than considering all the factors. But in broader perspective, evaluating all other factors would help the research to enrich its directions. The existing research and hypothesis indicated the influence of these factors on people's sitting behavior in any public place. It was also noticed throughout the observational studies conducted in all the public places that people tend to sit in places where they can seek support from the direct sun, especially on hot sunny days. Nevertheless, due to small sample size and less complexity in the input variables, the model structure of the decision tree did not consider them influential enough to evaluate the sitting activities compared to the other features.

In addition, this research was conducted during the summer period, where the weather conditions were more or less similar in all the conducted surveys. Bright sunny weather was always conducive to the public gathering in any public place. So, the predictions made for all the performance models were based on the summer weather conditions in all three public spaces. In terms of rainy weather or winter, this research might vary to some extent, especially evaluating the impacts of environmental factors in shaping the public sitting phenomenon. Those predictions would also be interesting to know how people react in severe weather conditions to choose their sitting locations in public places.

In terms of the generalizability of this research, the resulting variables can be different to some extent in terms of significance. Due to the time limitations of the research, the survey samples of public places were kept limited to 3 public places having similar configuration, features, and typology. If the survey sample size increases, the output might be a bit different depending also on the complexity of gathered data and their correlations. Moreover, if different categories of public places with diversity in shape, configuration, features, and activities were considered, the output results would also differ depending on the scenarios. However, more or less, the method and structure that was followed throughout the research can easily be regenerated for any public place considering all the

varieties and exceptional conditions. As the study case was considered based on the city of Berlin, there might be exceptions founded while conducting the same experiment on a different city having a different cultural background and environmental consequences.

As studied from the existing literature, there are also impacts of many psychological factors on public sitting behavior. This research was conducted following the quantitative research and analysis methods. All the predictions and results were inherited based on the observational studies within the selected and surveyed public places. If there were provisions for conducting interviews with public space users to investigate their opinions regarding the comfort factors, it would be much more logical to conclude the impact of psychological factors on public sitting.

Nonetheless, the research has its limitations and drawbacks, the method and procedure followed from the beginning till the end were based on highly referenced scientific studies on this topic. They can be easily regenerated in any other public place to evaluate the impacts of different features on public sitting regardless of cultural, national, environmental, and design features.

06.Conclusions

6.1 Summary and reflections on the research

This research aimed to identify the significant design features influencing people's sitting behavior in public places and investigate the rationale of sitting place preferences over the different public space locations. Based on the quantitative analysis, it can be concluded that several key features mostly manipulate the public sitting phenomenon. Depending on these features, several other environmental and psychological factors contribute to the overall scenario. The research outcome helps establish the influence of design features such as sitting benches and open green areas having significant impacts on people's sitting preferences in public places. Results showing that having sufficient provision of sitting furniture in the right spot and a good amount of open green area within any public place should increase the possibility of people's sitting to a great extent. This stationary behavior would help enhance the vibrance of public places as it is known that people make the places.

Complementing these features, several other factors such as distances to the nearest pavements and roads play an essential role in defining this public sitting phenomenon. The research showed how people are influenced to prefer a sitting location nearby to circulation or pathway. In the same process, people tend to avoid sitting near a road in a general setting to avoid noise. Having a good visual provision within the sitting would also add value to the facts as the study investigated that most of the preferred sitting locations in a public place have greater visible access to the surroundings. This always refers to the existing thoughts on the phenomenon of public sitting as people are always interested in others. So, sitting activities are always influenced where there is provision to see what other people are doing. Adding on top, the research outcome also explored the consequences of having psychological comfort within the sitting locations controlling the sitting preferences. People tend to seek psychological support from the surrounding environment. This research discovered that a nearby tree, edge, or other features provide psychological comfort to the users while sitting.

Environmental factors also play a crucial role in shaping public sitting activities within a place. Though the decision tree models did not predict any environmental factors as the research output due to the lack of data sample, from the observational studies of the surveyed public places showed the preference of sitting locations within places with protection from direct sun during the hot summer days. Trees play an essential role in this context as nearby locations providing shadow and psychological comfort to the users are more preferred for sitting than the places directly open to the sun. The study also observed the impact of the child playing zone as parents preferred the sitting locations nearby to a place to witness their kids playing. This specific feature has a significant impact on creating social interactions between people as the on-site study recorded a high rate of talking activities among the people sitting near a child zone. The presence of several outdoor playing equipment had shown possibilities in enriching the place with some physical activities by enhancing the experience of other spatial activities.

The existence of features like fountains, statues, or public art and installations tend to increase the overall spatial activities of any public place, which has indirect involvement in sitting activities. As literature said, the overall experience of the place always adds value to the sitting preferences. Apart from the features and elements, some spatial activities and behavior were also noticed to influence people's sitting preferences throughout the survey study. Spatial activities like playing and movements, talking, and performing activities always act as a catalyst to stimulate the sitting preferences within public places. People usually choose the sitting locations based on the best combination of the factors, as mentioned earlier in public places. Absence of any of these crucial factors within the setting decrease the possibility of being a preferred place to sit. Despite having more or less the same features, some of the public place locations were preferred over others because of having a perfect combination of all within one.

6.2 Recommendations for future research

Based on these conclusions, the features influencing public sitting behavior might come in handy while designing a public space. Public spaces can often be used as an instrument to increase social bonding and cohesion, but they remain underutilized most of the time. Due to the design, location, proper management, and use process, a public space might not utilize its full potential to develop social interaction between different user groups. Further investigation can be initiated from this research by searching relations between sitting and social interaction in public places. The survey results of both the sitting and talking activities are closely related as talking activities were tracked in more than 90% of the cells where sitting occurred. So, 'talking/Social interactions' can be highly related to 'sitting' activities and their influencing factors. This further scope of research offers richer interpretation and implications since the results can be considered a measure of active social interaction and help explain further the consequences of sitting activities in public places in the field of urban and landscape planning.

Among the stationary activities of public space, sitting is one the most prominent for ensuring more extended occupancy of people within a place. That defines the vibrance of a public place and creates opportunities among people to interact with each other. If people stay longer in a place, there are more possibilities of social interaction through diverse activities. Future studies could be addressed to understand better the implications of these results to evaluate the importance of sitting activities within public places to generate social interaction and cohesion among people. How sitting influences social interaction within a public space could be an interesting topic of further investigation on the follow-up.

Further research is also needed to determine the causes and effects of different environmental factors manipulating the sitting behavior as this research was conducted during a certain period of the Summer. So, conducting further research on different seasons to understand better the relationship between environmental factors and public sitting to notice the influence more firmly.

6.3 Contribution of this research

This research explored the importance of sitting activities in developing a vibrant and attractive public place by discovering the relationship between prominent design features that mainly influence sitting behavior. The outcome established relations between the prominent features manipulating sitting activities and their implications based on the existing literature and researches. The study provided a scientific outlook regarding the public sitting phenomenon and its significance on other spatial behavior of a public place. It also investigated the cause and effects of the most influential design features on people's sitting behavior in public places to set up a bridge between the existing studies and their implications on practical life.

The trained decision tree model can be applied in the design process to predict if any given location will be used for sitting activities or not. Moreover, it can give the designer feedback before the design is built. Mistakes can be easily corrected in the design phase instead of improving dis-functional public spaces afterward.

As the design of a public space influences the public life quality of its inhabitants significantly, it is necessary to handle the design process and include the characteristics that help to evolve a public space into a good one. This research would help provide an overall idea to the designer regarding the features that directly influence sitting activities in public spaces. The outcome of this research should help the designers and planners implement the strategy of designing a vibrant public place, ensuring the best sittable locations and the ideal combinations of design features. So, the outcome of this research could be implemented further to increase a public space's attractiveness and participant's willingness to use it. That means this scientific research can be used as a tool for diagnosing sitting phenomena in public spaces by soliciting feedback about any given locations of a public space for sitting friendly public place design and promoting social contact between people from multicultural backgrounds and ethnicity to ensure a better urban and social environment.

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Appendix

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.37	1.13	16.90	3559.19	0.18	167.80	5.40
2	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.62	14.06	3302.95	0.15	175.59	3.76
3	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.86	15.65	3432.68	0.14	204.91	6.27
4	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	5.10	17.36	3440.78	0.17	172.38	7.08
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	no	0.00	5.34	19.06	3205.87	0.14	187.08	4.65
6	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.44	1.06	21.09	3477.66	0.39	71.64	5.01
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.95	10.24	3411.59	0.11	228.47	5.62
8	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.95	4.09	3028.11	0.08	262.52	1.89
9	5	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.86	5.80	3290.48	0.07	303.15	4.66
10	2	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	15.10	7.50	3225.89	0.10	271.97	5.76
11	2	no	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	12.08	9.21	2914.23	0.10	231.75	4.02
12	3	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	2.09	12.18	2386.16	0.23	110.71	0.33
13	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.84	9.44	3174.27	0.06	332.03	4.23
14	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.56	11.84	0.00	3122.43	0.06	317.47	4.94
15	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.06	21.84	0.00	3358.85	0.05	364.96	12.44
16	1	yes	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	2.35	22.58	0.00	3349.51	0.08	303.26	6.47
17	1	yes	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.65	12.59	0.00	3161.33	0.09	257.03	8.03
18	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	2.61	7.18	2845.60	0.22	121.41	1.13
19	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.72	9.50	3185.15	0.07	337.13	4.55
20	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.50	11.72	0.00	3131.87	0.06	323.91	4.94
21	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	10.50	21.72	0.00	3417.38	0.06	371.97	14.78
22	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	no	no	no	yes	no	no	no	12.21	23.10	0.00	3367.86	0.07	329.83	15.75
23	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.92	13.11	0.00	3221.18	0.08	266.37	10.65
24	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	3.12	7.08	2562.25	0.14	185.75	0.99
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.64	9.57	3204.95	0.06	378.62	4.60
26	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.43	11.64	0.00	3163.34	0.06	336.33	4.75
27	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	10.43	21.64	0.00	3363.30	0.05	370.75	14.03
28	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	13.02	23.57	0.00	3327.99	0.06	357.56	8.09
29	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.02	13.58	0.00	3068.93	0.06	326.86	8.61
30	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	3.59	6.98	2530.46	0.21	126.54	0.66
31	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.64	9.63	3209.69	0.08	285.26	4.69
32	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.37	11.64	0.00	3063.73	0.06	335.37	4.62
33	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	9.33	21.64	0.00	3256.22	0.05	381.88	11.51
34	2	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	9.18	23.98	0.00	3054.31	0.06	367.32	2.04
35	2	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.12	13.99	0.00	2592.79	0.05	327.11	0.94
36	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	4.00	6.88	2338.57	0.08	268.97	0.87
37	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.73	9.71	3302.90	0.09	246.17	4.65
38	2	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.73	0.51	3126.19	0.08	283.82	4.89
39	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.66	0.67	3039.30	0.05	370.55	9.54
40	4	yes	yes	yes	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.17	0.82	2958.77	0.04	403.51	7.12
41	3	yes	yes	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	13.56	0.98	2911.74	0.06	308.59	7.69
42	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	4.30	6.87	2975.32	0.12	216.98	2.95
43	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	0.00	2.86	14.29	3517.78	0.26	109.56	10.72
44	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	5.16	10.51	2914.93	0.18	180.76	1.79
45	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.67	10.66	10.67	0.94	0.00	0.02
46	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.18	10.82	2591.25	0.15	175.50	0.87
47	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	3.80	10.98	1.30	0.94	0.00	0.35
48	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	1.62	0.00	12.95	3106.44	0.17	180.98	2.41

Appendix 1: Steinplatz survey sample-1 data chart, Date: 16.06.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.37	1.13	16.90	3559.19	0.18	167.80	5.40
2	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.62	14.06	3302.95	0.15	175.59	3.76
3	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.86	15.65	3432.68	0.14	204.91	6.27
4	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	5.10	17.36	3440.78	0.17	172.38	7.08
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	no	0.00	5.34	19.06	3205.87	0.14	187.08	4.65
6	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.44	1.06	21.09	3477.66	0.39	71.64	5.01
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.95	10.24	3411.59	0.11	228.47	5.62
8	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.95	4.09	3028.11	0.08	262.52	1.89
9	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.86	5.80	3290.48	0.07	303.15	4.66
10	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	15.10	7.50	3225.89	0.10	271.97	5.76
11	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	12.08	9.21	2914.23	0.10	231.75	4.02
12	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	2.09	12.18	2386.16	0.23	110.71	0.33
13	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.84	9.44	3174.27	0.06	332.03	4.23
14	3	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.56	11.84	0.00	3122.43	0.06	317.47	4.94
15	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.06	21.84	0.00	3358.85	0.05	364.96	12.44
16	1	no	no	no	yes	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	2.35	22.58	0.00	3349.51	0.08	303.26	6.47
17	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.65	12.59	0.00	3161.33	0.09	257.03	8.03
18	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	2.61	7.18	2845.60	0.22	121.41	1.13
19	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.72	9.50	3185.15	0.07	337.13	4.55
20	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.50	11.72	0.00	3131.87	0.06	323.91	4.94
21	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	10.50	21.72	0.00	3417.38	0.06	371.97	14.78
22	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	no	no	no	yes	no	no	no	12.21	23.10	0.00	3367.86	0.07	329.83	15.75
23	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.92	13.11	0.00	3221.18	0.08	266.37	10.65
24	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	3.12	7.08	2562.25	0.14	185.75	0.99
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.64	9.57	3204.95	0.06	378.62	4.60
26	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.43	11.64	0.00	3163.34	0.06	336.33	4.75
27	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	10.43	21.64	0.00	3363.30	0.05	370.75	14.03
28	1	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	13.02	23.57	0.00	3327.99	0.06	357.56	8.09
29	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.02	13.58	0.00	3068.93	0.06	326.86	8.61
30	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	3.59	6.98	2530.46	0.21	126.54	0.66
31	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.64	9.63	3209.69	0.08	285.26	4.69
32	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.37	11.64	0.00	3063.73	0.06	335.37	4.62
33	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	9.33	21.64	0.00	3256.22	0.05	381.88	11.51
34	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	9.18	23.98	0.00	3054.31	0.06	367.32	2.04
35	0	no	no	no	no	no	no	no	no	no	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.12	13.99	0.00	2592.79	0.05	327.11	0.94
36	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	4.00	6.88	2338.57	0.08	268.97	0.87
37	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.73	9.71	3302.90	0.09	246.17	4.65
38	1	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.73	0.51	3126.19	0.08	283.82	4.89
39	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.66	0.67	3039.30	0.05	370.55	9.54
40	3	yes	yes	yes	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.17	0.82	2958.77	0.04	403.51	7.12
41	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	13.56	0.98	2911.74	0.06	308.59	7.69
42	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	4.30	6.87	2975.32	0.12	216.98	2.95
43	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	0.00	2.86	14.29	3517.78	0.26	109.56	10.72
44	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	5.16	10.51	2914.93	0.18	180.76	1.79
45	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.67	10.66	10.67	0.94	0.00	0.02
46	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.18	10.82	2591.25	0.15	175.50	0.87
47	2	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	3.80	10.98	1.30	0.94	0.00	0.35
48	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	1.62	0.00	12.95	3106.44	0.17	180.98	2.41

Appendix 2: Steinplatz survey sample-2 data chart, Date: 18.06.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.37	1.13	16.90	3559.19	0.18	167.80	5.40
2	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.62	14.06	3302.95	0.15	175.59	3.76
3	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.86	15.65	3432.68	0.14	204.91	6.27
4	0	no	no	no	no	no	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	5.10	17.36	3440.78	0.17	172.38	7.08
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	no	0.00	5.34	19.06	3205.87	0.14	187.08	4.65
6	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.44	1.06	21.09	3477.66	0.39	71.64	5.01
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.95	10.24	3411.59	0.11	228.47	5.62
8	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.95	4.09	3028.11	0.08	262.52	1.89
9	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.86	5.80	3290.48	0.07	303.15	4.66
10	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	15.10	7.50	3225.89	0.10	271.97	5.76
11	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	12.08	9.21	2914.23	0.10	231.75	4.02
12	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	2.09	12.18	2386.16	0.23	110.71	0.33
13	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.84	9.44	3174.27	0.06	332.03	4.23
14	3	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.56	11.84	0.00	3122.43	0.06	317.47	4.94
15	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.06	21.84	0.00	3358.85	0.05	364.96	12.44
16	1	no	no	no	yes	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	2.35	22.58	0.00	3349.51	0.08	303.26	6.47
17	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	0.65	12.59	0.00	3161.33	0.09	257.03	8.03
18	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	2.61	7.18	2845.60	0.22	121.41	1.13
19	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.72	9.50	3185.15	0.07	337.13	4.55
20	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.50	11.72	0.00	3131.87	0.06	323.91	4.94
21	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	10.50	21.72	0.00	3417.38	0.06	371.97	14.78
22	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	no	no	no	yes	no	no	no	12.21	23.10	0.00	3367.86	0.07	329.83	15.75
23	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.92	13.11	0.00	3221.18	0.08	266.37	10.65
24	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	3.12	7.08	2562.25	0.14	185.75	0.99
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	1.64	9.57	3204.95	0.06	378.62	4.60
26	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.43	11.64	0.00	3163.34	0.06	336.33	4.75
27	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	10.43	21.64	0.00	3363.30	0.05	370.75	14.03
28	1	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	13.02	23.57	0.00	3327.99	0.06	357.56	8.09
29	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.02	13.58	0.00	3068.93	0.06	326.86	8.61
30	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	3.59	6.98	2530.46	0.21	126.54	0.66
31	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.64	9.63	3209.69	0.08	285.26	4.69
32	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.37	11.64	0.00	3063.73	0.06	335.37	4.62
33	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	9.33	21.64	0.00	3256.22	0.05	381.88	11.51
34	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	9.18	23.98	0.00	3054.31	0.06	367.32	2.04
35	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.12	13.99	0.00	2592.79	0.05	327.11	0.94
36	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	4.00	6.88	2338.57	0.08	268.97	0.87
37	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	1.73	9.71	3302.90	0.09	246.17	4.65
38	1	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.73	0.51	3126.19	0.08	283.82	4.89
39	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.66	0.67	3039.30	0.05	370.55	9.54
40	3	yes	yes	yes	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.17	0.82	2958.77	0.04	403.51	7.12
41	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	13.56	0.98	2911.74	0.06	308.59	7.69
42	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	4.30	6.87	2975.32	0.12	216.98	2.95
43	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	0.00	2.86	14.29	3517.78	0.26	109.56	10.72
44	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	5.16	10.51	2914.93	0.18	180.76	1.79
45	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.67	10.66	10.67	0.94	0.00	0.02
46	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	4.18	10.82	2591.25	0.15	175.50	0.87
47	2	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	3.80	10.98	1.30	0.94	0.00	0.35
48	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	1.62	0.00	12.95	3106.44	0.17	180.98	2.41

Appendix 3: Steinplatz survey sample-2 data chart, Date: 02.07.2021

Cell ID	Total Users	Binaries,Within each cell 10x10m														Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables								Features/Independent variables									Distances from the center			Visibility from the center			
		Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.46	5.87	8.03	2472.17	0.15	162.83	1.29
2	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	5.87	41.71	2381.80	0.07	254.98	3.69
3	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	6.32	5.87	79.84	2543.89	0.09	250.15	3.54
4	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	1.99	5.87	77.88	2651.59	0.18	195.54	1.75
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	0.12	5.87	76.90	1985.12	0.25	100.64	0.23
6	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	7.55	5.87	77.00	2278.70	0.10	230.33	2.03
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	1.09	5.87	77.88	2643.15	0.21	147.95	1.11
8	0	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.00	5.87	80.00	3078.92	0.20	139.35	6.53
9	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	3.80	6.77	72.07	2178.26	0.08	236.54	1.46
10	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	3.00	15.87	71.27	2044.79	0.06	324.18	2.34
11	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	0.00	15.87	70.16	2198.68	0.05	344.88	4.21
12	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	0.00	15.87	68.03	2568.15	0.09	277.72	5.46
13	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	yes	yes	0.00	15.87	66.91	2706.61	0.08	270.38	8.04
14	4	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	yes	0.00	15.87	67.00	2527.28	0.06	305.02	3.48
15	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.60	15.87	68.02	1958.34	0.07	284.48	0.54
16	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	7.59	6.90	70.42	2356.52	0.11	200.70	1.66
17	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.14	6.46	62.19	2407.75	0.12	224.00	1.80
18	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.97	16.46	61.27	2093.94	0.06	335.74	2.61
19	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	yes	1.18	25.87	60.59	2098.32	0.07	275.32	1.23
20	1	yes	no	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	yes	yes	0.00	25.87	58.21	2382.71	0.08	253.59	1.81
21	3	yes	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	yes	0.00	25.87	56.92	2805.32	0.08	333.29	5.47
22	0	no	no	no	no	no	no	no	yes	yes	no	no	no	no	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	2.09	25.87	57.01	2720.79	0.05	437.71	5.96
23	0	no	no	no	no	no	no	no	yes	yes	no	no	no	no	yes	yes	no	yes	yes	yes	yes	no	yes	yes	no	1.54	16.78	58.19	2446.46	0.03	431.76	7.08
24	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.38	6.78	60.98	1843.43	0.09	223.76	0.52
25	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.48	6.15	52.36	2574.14	0.10	224.35	2.64
26	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.67	16.14	51.27	2081.60	0.09	232.30	0.45
27	1	yes	no	no	no	yes	no	yes	no	no	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	7.28	26.14	51.18	2744.36	0.08	288.67	7.76
28	2	no	yes	no	no	no	no	no	yes	yes	yes	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	yes	no	0.00	35.87	48.39	2829.25	0.10	286.26	5.88
29	5	yes	yes	no	yes	no	no	no	yes	yes	no	no	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	2.83	35.87	46.93	2825.74	0.07	330.47	9.59
30	2	no	no	no	yes	no	no	no	no	no	no	no	no	yes	yes	no	no	yes	yes	yes	no	no	yes	yes	no	10.86	26.65	47.01	2686.29	0.04	425.79	7.28
31	2	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	3.14	16.65	48.44	2171.59	0.02	555.73	2.05
32	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	yes	no	1.37	6.66	51.73	2278.24	0.07	294.06	1.81
33	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.81	5.83	42.61	2439.20	0.07	299.41	3.28
34	4	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	no	no	no	2.37	15.83	41.27	2537.67	0.10	246.30	2.69
35	0	no	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	6.57	25.82	42.02	2879.45	0.07	307.83	10.30
36	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	0.90	35.82	38.61	2533.51	0.07	314.81	1.63
37	2	yes	no	no	no	yes	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	0.00	36.53	36.95	2652.84	0.09	295.00	3.78
38	5	no	yes	no	yes	no	no	no	yes	yes	yes	yes	no	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	3.20	26.53	37.02	1424.49	0.03	423.77	0.18
39	1	yes	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	no	no	0.00	16.53	38.80	2229.00	0.03	510.04	4.99
40	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	4.49	6.53	42.82	1748.09	0.05	321.13	1.03
41	0	no	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.15	5.52	33.01	2609.87	0.08	305.49	3.94
42	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	2.07	15.52	31.27	2616.35	0.09	256.20	3.67
43	4	yes	yes	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.85	25.51	32.08	2850.70	0.06	334.04	10.36
44	0	no	no	no	no	no	no	no	yes	yes	no	no	no	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	5.62	35.51	28.97	2741.34	0.06	354.28	7.95
45	2	no	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	3.22	36.41	26.99	2635.13	0.06	369.76	3.75
46	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	26.41	27.04	1678.67	0.03	444.46	1.13
47	1	no	no	no	yes	no	no	no	no	no	yes	yes	yes	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	5.96	16.41	29.40	1588.48	0.03	413.04	1.51
48	0	no	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	10.91	6.41	34.49	2080.06	0.08	253.88	1.15
49	0	no	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.49	5.21	23.71	2424.14	0.09	245.27	1.38
50	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.71	15.20	21.28	2531.50	0.07	317.69	3.76
51	0	no	no	no	no	no	no	no	no	yes	yes	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.47	25.20	22.14	2651.51	0.06	372.04	5.79
52	1	no	no	no	yes	no	no	no	yes	no	yes	no	no	yes	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	10.20	35.19	19.67	2588.98	0.05	388.73	5.82
53	2	no	yes	no	yes	no	no	no	yes	no	yes	no	no	yes	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	8.98	36.29	17.06	2320.62	0.04	396.35	6.47
54	1	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	no	0.00	26.29	17.08	1650.63	0.03	466.97	1.03
55	4	yes	yes	no	yes	no	no	no	yes	yes	yes	no	no	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	16.29	20.53	2125.32	0.03	477.56	7.89
56	2	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.86	6.29	27.23	2189.73	0.07	286.09	1.10
57	0	no	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.83	4.90	15.24	2493.21	0.08	278.02	2.02
58	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.89	11.29	2266.49	0.05	375.92	4.73
59	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	6.45	24.89	12.20	2176.57	0.04	484.60	5.83
60	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	yes	no	9.60	34.88	11.10	4.59	0.94	0.00	0.66
61	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	yes	no	5.72	34.86	7.22	2025.85	0.03	469.13	3.21
62	1	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	yes	no	yes	yes	yes	no	yes	yes	yes	yes	0.00	26.16	7.21	1582.55	0.03	407.62	0.79
63	3	no	no	no	yes	no	no	no	no	yes	yes	no	no	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	0.01	16.16	13.20	2153.90	0.03	485.50	7.90
64	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	yes	1.80	6.17	22.08	2.17	0.94	0.00	0.64
65	4	yes	yes	yes	no	no	no	no	yes	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	6.19	4.58	9.67	2135.29	0.10	237.99	0.56
66	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.58	1.38	1976.82	0.03	443.37	4.57
67	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	0.93	24.57	2.43	1794.58	0.03	516.88	3.61
68	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	0.13	25.48	1.63	1436.95	0.04	324.40	0.41
69	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	2.60	24.88	0.00	1738.28	0.02	505.98	4.33
70	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	yes	0.00	24.27	0.55	1921.20	0.04	437.55	3.99
71	2	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.41	16.04	10.55	1888.80	0.03	399.19	3.08
72	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.29	6.04	20.54	2610.71	0.14	210.21	3.35
73	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	5.83	4.27	9.64	2416.18	0.13	196.39	1.03
74	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.35	14.27	0.00	1582.35	0.07	211.46	0.19
75	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	6.97	16.11	0.00	1737.12	0.04	391.96	1.99
76	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	8.01	15.50	0.00	1529.78	0.02	439.66	2.14
77	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	9.18	14.90	0.00	1868.32	0.02	520.19	3.96
78	1	no	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	0.00	14.29	0.82	1966.14	0.03	400.86	5.16
79	2	no	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	7.15	13.69	10.82	2046.39	0.07	274.55	1.81
80	0	no	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	11.29	5.92	20.81	4.73	0.93	0.00	0.04
81	0	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	0.00	3.96	10.09	3246.94	0.17	191.02	7.87
82	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	0.00	6.73	0.10	2785.92	0.13	222.22	2.45
83	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	8.84	6.13	0.00	2.17	0.94	0.00	0.34
84	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	17.66	5.52	0.00	2497.87	0.07	332.20	3.37
85	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	8.91	4.91	0.00	2254.01	0.12	218.21	1.02
86	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	yes	no	no	0.00	4.31	1.09	2496.35	0.11	254.51	1.05
87	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	yes	no	no	9.59	3.70	11.09	2748.38	0.18	191.02	2.87
88	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	yes	no	no	19.07	3.10	21.08	2920.02	0.22	137.86	2.74
	64																														

Appendix 4: Teutoburgerplatz survey sample-1 data chart, Date: 15.05.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.46	5.87	8.03	2472.17	0.15	162.83	1.29
2	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	5.87	41.71	2381.80	0.07	254.98	3.69
3	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	6.32	5.87	79.84	2543.89	0.09	250.15	3.54
4	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	1.99	5.87	77.88	2651.59	0.18	195.54	1.75
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	0.12	5.87	76.90	1985.12	0.25	100.64	0.23
6	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	7.55	5.87	77.00	2278.70	0.10	230.33	2.03
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	1.09	5.87	77.88	2643.15	0.21	147.95	1.11
8	0	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.00	5.87	80.00	3078.92	0.20	139.35	6.53
9	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.80	6.77	72.07	2178.26	0.08	236.54	1.46
10	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	3.00	15.87	71.27	2044.79	0.06	324.18	2.34
11	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	yes	0.00	15.87	70.16	2198.68	0.05	344.88	4.21
12	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	yes	0.00	15.87	68.03	2568.15	0.09	277.72	5.46
13	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	yes	yes	0.00	15.87	66.91	2706.61	0.08	270.38	8.04
14	3	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	yes	0.00	15.87	67.00	2527.28	0.06	305.02	3.48
15	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.60	15.87	68.02	1958.34	0.07	284.48	0.54
16	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	7.59	6.90	70.42	2356.52	0.11	200.70	1.66
17	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.14	6.46	62.19	2407.75	0.12	224.00	1.80
18	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.97	16.46	61.27	2093.94	0.06	335.74	2.61
19	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	yes	1.18	25.87	60.59	2098.32	0.07	275.32	1.23
20	2	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	yes	yes	0.00	25.87	58.21	2382.71	0.08	253.59	1.81
21	0	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	yes	0.00	25.87	56.92	2805.32	0.08	333.29	5.47
22	1	yes	no	no	no	no	no	yes	yes	no	no	no	no	yes	yes	no	yes	yes	yes	yes	no	yes	no	yes	yes	2.09	25.87	57.01	2720.79	0.05	437.71	5.96
23	0	no	no	no	no	no	no	yes	yes	no	no	no	no	yes	yes	no	yes	yes	yes	yes	no	yes	no	yes	no	1.54	16.78	58.19	2446.46	0.03	431.76	7.08
24	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.38	6.78	60.98	1843.43	0.09	223.76	0.52
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	4.48	6.15	52.36	2574.14	0.10	224.35	2.64
26	4	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.67	16.14	51.27	2081.60	0.09	232.30	0.45
27	4	yes	yes	no	yes	no	no	yes	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	7.28	26.14	51.18	2744.36	0.08	288.67	7.76
28	0	no	no	no	no	no	no	yes	yes	yes	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	yes	no	0.00	35.87	48.39	2829.25	0.10	286.26	5.88
29	4	yes	yes	no	no	no	no	yes	yes	no	no	no	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	2.83	35.87	46.93	2825.74	0.07	330.47	9.59
30	3	no	no	no	yes	no	no	no	no	no	no	no	no	yes	yes	no	yes	yes	yes	yes	no	no	yes	yes	no	10.86	26.65	47.01	2686.29	0.04	425.79	7.28
31	0	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	3.14	16.65	48.44	2171.59	0.02	555.73	2.05
32	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.37	6.66	51.73	2278.24	0.07	294.06	1.81
33	6	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.81	5.83	42.61	2439.20	0.07	299.41	3.28
34	2	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.37	15.83	41.27	2537.67	0.10	246.30	2.69
35	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	6.57	25.82	42.02	2879.45	0.07	307.83	10.30
36	1	yes	no	no	no	yes	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	0.90	35.82	38.61	2533.51	0.07	314.81	1.63
37	1	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	0.00	36.53	36.95	2652.84	0.09	295.00	3.78
38	2	no	no	no	yes	no	no	yes	yes	yes	yes	no	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	3.20	26.53	37.02	1424.49	0.03	423.77	0.18
39	1	yes	no	no	no	yes	no	yes	yes	yes	no	no	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	0.00	16.53	38.80	2229.00	0.03	510.04	4.99
40	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	4.49	6.53	42.82	1748.09	0.05	321.13	1.03
41	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	5.15	5.52	33.01	2609.87	0.08	305.49	3.94
42	3	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	2.07	15.52	31.27	2616.35	0.09	256.20	3.67
43	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.85	25.51	32.08	2850.70	0.06	334.04	10.36
44	2	yes	yes	no	no	no	no	yes	yes	no	no	no	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	5.62	35.51	28.97	2741.34	0.06	354.28	7.95
45	1	no	no	no	yes	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	3.22	36.41	26.99	2635.13	0.06	369.76	3.75
46	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	26.41	27.04	1678.67	0.03	444.46	1.13
47	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	5.96	16.41	29.40	1588.48	0.03	413.04	1.51
48	0	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	10.91	6.41	34.49	2080.06	0.08	253.88	1.15
49	0	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	5.49	5.21	23.71	2424.14	0.09	245.27	1.38
50	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.71	15.20	21.28	2531.50	0.07	317.69	3.76
51	2	yes	yes	no	no	no	no	no	yes	yes	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.47	25.20	22.14	2651.51	0.06	372.04	5.79
52	4	yes	yes	no	yes	no	no	yes	no	yes	no	no	yes	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	10.20	35.19	19.67	2588.98	0.05	388.73	5.82
53	1	no	no	no	yes	no	no	yes	no	yes	no	no	yes	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	8.98	36.29	17.06	2320.62	0.04	396.35	6.47
54	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	26.29	17.08	1650.63	0.03	466.97	1.03
55	4	yes	yes	no	yes	no	no	yes	yes	yes	no	no	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	16.29	20.53	2125.32	0.03	477.56	7.89
56	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.86	6.29	27.23	2189.73	0.07	286.09	1.10
57	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.83	4.90	15.24	2493.21	0.08	278.02	2.02
58	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.89	11.29	2266.49	0.05	375.92	4.73
59	3	yes	yes	yes	no	no	yes	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	6.45	24.89	12.20	2176.57	0.04	484.60	5.83
60	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	yes	no	9.60	34.88	11.10	4.59	0.94	0.00	0.66
61	5	yes	yes	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	5.72	34.86	7.22	2025.85	0.03	469.13	3.21
62	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	yes	0.00	26.16	7.21	1582.55	0.03	407.62	0.79
63	2	no	yes	no	yes	no	no	no	yes	yes	no	no	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	0.01	16.16	13.20	2153.90	0.03	485.50	7.90
64	3	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	yes	1.80	6.17	22.08	2.17	0.94	0.00	0.64
65	0	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	6.19	4.58	9.67	2135.29	0.10	237.99	0.56
66	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.58	1.38	1976.82	0.03	443.37	4.57
67	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	0.93	24.57	2.43	1794.58	0.03	516.88	3.61
68	1	yes	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	0.13	25.48	1.63	1436.95	0.04	324.40	0.41
69	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	2.60	24.88	0.00	1738.28	0.02	505.98	4.33
70	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	yes	0.00	24.27	0.55	1921.20	0.04	437.55	3.99
71	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	1.41	16.04	10.55	1888.80	0.03	399.19	3.08
72	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	1.29	6.04	20.54	2610.71	0.14	210.21	3.35
73	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.83	4.27	9.64	2416.18	0.13	196.39	1.03
74	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.35	14.27	0.00	1582.35	0.07	211.46	0.19
75	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	6.97	16.11	0.00	1737.12	0.04	391.96	1.99
76	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	8.01	15.50	0.00	1529.78	0.02	439.66	2.14
77	2	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	9.18	14.90	0.00	1868.32	0.02	520.19	3.96
78	1	no	yes	no	yes	no	no	no	yes	yes	yes	no	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	0.00	14.29	0.82	1966.14	0.03	400.86	5.16
79	3	no	yes	no	yes	no	no	no	yes	yes	yes	no	yes	yes	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.15	13.69	10.82	2046.39	0.07	274.55	1.81
80	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	no	11.29	5.92	20.81	4.73	0.93	0.00	0.04
81	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	3.96	10.09	3246.94	0.17	191.02	7.87
82	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	6.73	0.10	2785.92	0.13	222.22	2.45
83	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	8.84	6.13	0.00	2.17	0.94	0.00	0.34
84	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	17.66	5.52	0.00	2497.87	0.07	332.20	3.37
85	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	8.91	4.91	0.00	2254.01	0.12	218.21	1.02
86	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	0.00	4.31	1.09	2496.35	0.11	254.51	1.05
87	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	9.59	3.70	11.09	2748.38	0.18	191.02	2.87
88	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	19.07	3.10	21.08	2920.02	0.22	137.86	2.74
	75																															

Appendix 5: Teutoburgerplatz survey sample-2 data chart, Date: 12.06.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.46	5.87	8.03	2472.17	0.15	162.83	1.29
2	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	5.87	41.71	2381.80	0.07	254.98	3.69
3	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	6.32	5.87	79.84	2543.89	0.09	250.15	3.54
4	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	1.99	5.87	77.88	2651.59	0.18	195.54	1.75
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	0.12	5.87	76.90	1985.12	0.25	100.64	0.23
6	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	7.55	5.87	77.00	2278.70	0.10	230.33	2.03
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	1.09	5.87	77.88	2643.15	0.21	147.95	1.11
8	0	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.00	5.87	80.00	3078.92	0.20	139.35	6.53
9	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	3.80	6.77	72.07	2178.26	0.08	236.54	1.46
10	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	3.00	15.87	71.27	2044.79	0.06	324.18	2.34
11	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	yes	0.00	15.87	70.16	2198.68	0.05	344.88	4.21
12	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	no	no	0.00	15.87	68.03	2568.15	0.09	277.72	5.46
13	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	yes	no	0.00	15.87	66.91	2706.61	0.08	270.38	8.04
14	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	yes	0.00	15.87	67.00	2527.28	0.06	305.02	3.48
15	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.60	15.87	68.02	1958.34	0.07	284.48	0.54
16	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	no	no	yes	yes	no	7.59	6.90	70.42	2356.52	0.11	200.70	1.66
17	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	4.14	6.46	62.19	2407.75	0.12	224.00	1.80
18	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	2.97	16.46	61.27	2093.94	0.06	335.74	2.61
19	4	yes	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	yes	no	1.18	25.87	60.59	2098.32	0.07	275.32	1.23
20	1	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	yes	yes	0.00	25.87	58.21	2382.71	0.08	253.59	1.81
21	0	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	yes	0.00	25.87	56.92	2805.32	0.08	333.29	5.47
22	0	no	no	no	no	no	no	yes	yes	no	no	no	no	yes	yes	no	yes	yes	yes	yes	yes	no	yes	yes	yes	2.09	25.87	57.01	2720.79	0.05	437.71	5.96
23	0	no	no	no	no	no	no	yes	yes	no	no	no	no	yes	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.54	16.78	58.19	2446.46	0.03	431.76	7.08
24	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.38	6.78	60.98	1843.43	0.09	223.76	0.52
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.48	6.15	52.36	2574.14	0.10	224.35	2.64
26	2	yes	yes	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	2.67	16.14	51.27	2081.60	0.09	232.30	0.45
27	0	no	no	no	no	no	no	yes	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	7.28	26.14	51.18	2744.36	0.08	288.67	7.76
28	0	no	no	no	no	no	no	yes	yes	yes	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	yes	no	0.00	35.87	48.39	2829.25	0.10	286.26	5.88
29	2	yes	no	no	yes	no	no	yes	yes	no	no	no	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	2.83	35.87	46.93	2825.74	0.07	330.47	9.59
30	3	no	no	no	yes	no	no	no	no	no	no	no	no	yes	yes	no	yes	yes	yes	yes	no	no	yes	yes	no	10.86	26.65	47.01	2686.29	0.04	425.79	7.28
31	0	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	3.14	16.65	48.44	2171.59	0.02	555.73	2.05
32	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.37	6.66	51.73	2278.24	0.07	294.06	1.81
33	2	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.81	5.83	42.61	2439.20	0.07	299.41	3.28
34	2	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	2.37	15.83	41.27	2537.67	0.10	246.30	2.69
35	0	no	no	no	yes	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	6.57	25.82	42.02	2879.45	0.07	307.83	10.30
36	0	no	no	no	yes	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	0.90	35.82	38.61	2533.51	0.07	314.81	1.63
37	1	yes	no	no	yes	no	no	yes	yes	yes	yes	no	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	0.00	36.53	36.95	2652.84	0.09	295.00	3.78
38	0	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	3.20	26.53	37.02	1424.49	0.03	423.77	0.18
39	2	yes	yes	no	no	no	no	yes	yes	yes	no	no	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	0.00	16.53	38.80	2229.00	0.03	510.04	4.99
40	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	no	4.49	6.53	42.82	1748.09	0.05	321.13	1.03
41	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.15	5.52	33.01	2609.87	0.08	305.49	3.94
42	2	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	2.07	15.52	31.27	2616.35	0.09	256.20	3.67
43	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.85	25.51	32.08	2850.70	0.06	334.04	10.36
44	2	yes	yes	yes	no	no	no	yes	yes	no	no	no	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	5.62	35.51	28.97	2741.34	0.06	354.28	7.95
45	1	no	no	no	yes	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	3.22	36.41	26.99	2635.13	0.06	369.76	3.75
46	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	26.41	27.04	1678.67	0.03	444.46	1.13
47	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	5.96	16.41	29.40	1588.48	0.03	413.04	1.51
48	0	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	10.91	6.41	34.49	2080.06	0.08	253.88	1.15
49	2	yes	yes	yes	no	no	no	yes	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.49	5.21	23.71	2424.14	0.09	245.27	1.38
50	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.71	15.20	21.28	2531.50	0.07	317.69	3.76
51	0	no	no	no	no	no	no	no	yes	yes	no	no	yes	no	no	no	yes	yes	yes	yes	no	yes	yes	yes	no	1.47	25.20	22.14	2651.51	0.06	372.04	5.79
52	0	no	no	no	no	no	no	yes	no	yes	no	no	yes	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	10.20	35.19	19.67	2588.98	0.05	388.73	5.82
53	1	no	no	no	no	no	no	yes	no	yes	no	no	yes	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	8.98	36.29	17.06	2320.62	0.04	396.35	6.47
54	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	26.29	17.08	1650.63	0.03	466.97	1.03
55	2	yes	no	no	yes	no	no	yes	yes	yes	no	no	no	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	16.29	20.53	2125.32	0.03	477.56	7.89
56	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	no	yes	yes	yes	yes	yes	no	yes	yes	no	1.86	6.29	27.23	2189.73	0.07	286.09	1.10
57	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	5.83	4.90	15.24	2493.21	0.08	278.02	2.02
58	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.89	11.29	2266.49	0.05	375.92	4.73
59	3	yes	yes	yes	no	no	yes	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	6.45	24.89	12.20	2176.57	0.04	484.60	5.83
60	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	yes	no	9.60	34.88	11.10	4.59	0.94	0.00	0.66
61	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	yes	no	5.72	34.86	7.22	2025.85	0.03	469.13	3.21
62	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	yes	no	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	0.00	26.16	7.21	1582.55	0.03	407.62	0.79
63	0	no	no	no	no	no	no	no	yes	yes	no	no	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	0.01	16.16	13.20	2153.90	0.03	485.50	7.90
64	1	yes	no	no	no	yes	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	yes	yes	1.80	6.17	22.08	2.17	0.94	0.00	0.64
65	0	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	6.19	4.58	9.67	2135.29	0.10	237.99	0.56
66	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.58	1.38	1976.82	0.03	443.37	4.57
67	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	0.93	24.57	2.43	1794.58	0.03	516.88	3.61
68	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	0.13	25.48	1.63	1436.95	0.04	324.40	0.41
69	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	2.60	24.88	0.00	1738.28	0.02	505.98	4.33
70	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	yes	0.00	24.27	0.55	1921.20	0.04	437.55	3.99
71	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	1.41	16.04	10.55	1888.80	0.03	399.19	3.08
72	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.29	6.04	20.54	2610.71	0.14	210.21	3.35
73	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.83	4.27	9.64	2416.18	0.13	196.39	1.03
74	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.35	14.27	0.00	1582.35	0.07	211.46	0.19
75	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	6.97	16.11	0.00	1737.12	0.04	391.96	1.99
76	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	8.01	15.50	0.00	1529.78	0.02	439.66	2.14
77	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	9.18	14.90	0.00	1868.32	0.02	520.19	3.96
78	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	0.00	14.29	0.82	1966.14	0.03	400.86	5.16
79	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	7.15	13.69	10.82	2046.39	0.07	274.55	1.81
80	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	no	11.29	5.92	20.81	4.73	0.93	0.00	0.04
81	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	3.96	10.09	3246.94	0.17	191.02	7.87
82	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	6.73	0.10	2785.92	0.13	222.22	2.45
83	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	8.84	6.13	0.00	2.17	0.94	0.00	0.34
84	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	17.66	5.52	0.00	2497.87	0.07	332.20	3.37
85	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	8.91	4.91	0.00	2254.01	0.12	218.21	1.02
86	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	0.00	4.31	1.09	2496.35	0.11	254.51	1.05
87	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	9.59	3.70	11.09	2748.38	0.18	191.02	2.87
88	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	yes	no	no	19.07	3.10	21.08	2920.02	0.22	137.86	2.74
	35																															

Appendix 6: Teutoburgerplatz survey sample-3 data chart, Date: 19.06.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m					
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center		
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.99	4.93	12.55	2611.95	0.27	117.37	1.50
2	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.55	5.15	7.03	2651.41	0.21	130.51	1.79
3	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.12	5.38	8.32	2500.33	0.13	229.36	1.00
4	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	2.69	5.61	10.92	2498.84	0.19	187.86	0.65
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	2.26	5.83	11.92	2447.96	0.08	252.47	1.84
6	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.83	6.06	23.08	2625.44	0.12	208.16	1.26
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.39	6.29	29.81	2795.94	0.14	208.93	1.59
8	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.26	6.51	37.07	2574.70	0.17	166.35	0.76
9	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	5.26	6.74	43.08	2442.02	0.19	146.03	0.76
10	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	12.46	4.18	49.09	2915.16	0.32	81.75	0.89
11	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.62	7.99	9.05	2739.83	0.13	182.55	2.32
12	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.89	15.15	0.89	2609.09	0.07	283.40	7.28
13	2	yes	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	1.54	15.38	1.53	2582.74	0.06	319.12	7.35
14	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	0.00	15.60	2.29	2189.47	0.07	274.29	1.57
15	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.81	15.83	8.94	2378.65	0.06	328.16	3.01
16	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.06	15.73	2734.52	0.05	324.77	8.62
17	0	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.29	23.11	2924.49	0.06	308.73	7.47
18	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.51	29.20	2995.20	0.07	286.57	10.37
19	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	14.48	35.04	2791.15	0.12	220.60	2.79
20	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.99	4.48	41.54	2725.02	0.18	152.68	1.18
21	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	4.46	7.98	8.81	2821.25	0.14	176.61	2.48
22	6	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	no	yes	no	1.18	17.98	1.18	2429.01	0.08	242.43	1.86
23	6	yes	yes	yes	yes	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	no	yes	no	yes	no	11.18	25.37	0.00	2606.02	0.07	297.49	3.82
24	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	5.19	25.60	0.00	2505.37	0.08	264.95	2.39
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.00	25.83	1.67	2438.14	0.07	300.77	3.45
26	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	26.06	9.69	2445.53	0.06	346.64	2.06
27	0	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	26.28	15.50	2887.91	0.06	310.79	6.38
28	2	yes	yes	no	no	no	no	yes	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	0.00	24.77	21.01	3008.27	0.07	345.84	14.18
29	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	14.78	27.41	2895.43	0.09	260.26	6.19
30	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.22	4.78	34.45	2911.27	0.19	163.34	1.92
31	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.48	7.97	8.74	2531.95	0.14	181.53	0.90
32	0	no	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	yes	no	1.26	17.97	1.27	2828.74	0.08	249.44	9.67
33	4	yes	yes	yes	yes	no	no	no	no	yes	yes	no	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	11.26	27.97	3.85	2566.19	0.09	266.05	1.93
34	2	no	no	no	yes	no	no	no	no	no	no	no	yes	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	9.48	35.60	5.37	2985.84	0.11	213.76	8.30
35	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	1.27	35.83	0.90	3057.17	0.11	261.77	6.19
36	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.00	36.05	5.13	2894.28	0.08	296.60	5.91
37	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	yes	no	yes	yes	yes	yes	yes	yes	yes	no	0.00	35.07	7.03	2670.78	0.11	219.61	1.79
38	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	0.00	25.07	13.28	2874.34	0.07	312.58	5.88
39	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.00	15.08	20.32	2682.53	0.10	238.68	3.43
40	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	3.48	5.08	27.95	3027.39	0.15	190.85	4.28
41	0	no	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.48	7.96	8.67	2733.14	0.15	182.50	1.58
42	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	yes	no	1.33	17.96	0.00	2839.23	0.09	241.51	5.27
43	3	yes	yes	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	yes	no	yes	yes	yes	no	yes	yes	yes	no	11.33	27.96	0.00	3031.82	0.13	221.88	5.52
44	5	no	yes	no	yes	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	yes	yes	no	yes	yes	yes	no	15.28	37.96	0.00	3299.75	0.17	172.76	10.05
45	5	no	yes	no	yes	no	no	no	no	no	no	no	no	yes	yes	no	no	yes	yes	no	no	yes	yes	yes	no	11.03	45.82	0.00	3342.75	0.14	190.84	15.76
46	4	no	yes	no	yes	no	no	no	no	no	no	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	6.85	45.37	0.00	3273.24	0.11	227.04	11.66
47	3	yes	yes	no	yes	no	no	no	yes	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.83	35.37	0.00	3059.63	0.11	209.98	6.39
48	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	25.37	6.20	2521.38	0.07	268.29	1.70
49	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.38	13.93	2057.37	0.11	220.22	0.37
50	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	no	no	no	no	0.00	5.38	22.18	3046.56	0.13	215.72	5.68
51	0	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	yes	no	yes	yes	yes	yes	yes	yes	no	no	no	4.47	7.95	8.59	2620.93	0.12	221.91	1.91
52	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	yes	no	yes	yes	yes	yes	yes	no	yes	no	1.40	17.95	0.00	2550.76	0.08	246.86	2.28
53	8	yes	yes	yes	no	no	yes	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	no	yes	no	yes	no	11.40	27.95	0.00	3092.81	0.19	144.35	3.36
54	0	no	no	no	no	no	no	yes	no	no	no	no	yes	no	yes	no	no	no	yes	yes	no	yes	yes	yes	no	21.40	37.95	0.00	3499.35	0.28	136.29	13.12
55	1	no	no	no	yes	no	no	no	no	no	no	no	yes	no	yes	no	no	no	yes	no	no	yes	yes	yes	no	20.52	47.95	1.16	3509.44	0.23	130.21	16.97
56	2	yes	yes	no	yes	no	no	yes	no	no	no	no	yes	no	yes	no	no	no	yes	yes	no	yes	yes	yes	no	14.93	45.67	3.30	3387.71	0.17	162.33	10.08
57	10	yes	yes	yes	yes	no	no	no	no	yes	no	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	7.92	35.67	0.00	2988.13	0.10	238.18	3.91
58	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	0.02	25.68	0.17	2840.26	0.12	203.09	3.41
59	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.68	8.45	2584.37	0.09	252.52	2.69
60	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	7.47	5.68	17.30	2509.40	0.18	140.82	0.88
61	0	no	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.46	7.94	8.52	2719.02	0.14	192.34	1.72
62	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.48	17.94	1.48	2994.23	0.08	248.90	8.21
63	6	yes	yes	yes	no	no	yes	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.48	27.94	0.00	3294.73	0.18	150.62	7.48
64	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	21.48	37.94	0.00	3568.09	0.37	84.15	14.87
65	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	28.99	47.94	0.00	3626.63	0.41	66.85	13.71
66	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	yes	no	22.02	45.97	0.00	3331.27	0.35	130.47	3.72
67	3	yes	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	13.85	35.97	0.00	2983.79	0.17	165.69	3.71
68	7	yes	yes	yes	yes	no	yes	no	yes	no	no	no	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	5.05	25.98	0.00	3029.00	0.11	218.94	10.48
69	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.98	4.12	2763.30	0.11	236.92	3.94
70	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.38	5.99	13.51	2928.54	0.21	121.64	3.38
71	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.47	7.93	8.50	2149.22	0.19	122.32	0.26
72	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.49	17.93	1.49	3032.76	0.10	237.43	8.74
73	2	yes	yes	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.49	27.93	0.00	3184.06	0.19	151.53	3.14
74	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	21.49	37.93	0.00	3560.45	0.36	79.05	10.48
75	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	no	yes	no	no	no	25.35	47.93	0.00	3660.37	0.50	45.39	16.56
76	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	19.70	46.27	0.00	3590.36	0.49	58.17	9.41
77	0	no	no	no	no	no	no	no	no	no	yes	no	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	16.74	36.27	0.00	3321.76	0.24	113.13	9.38
78	14	yes	yes	yes	yes	no	yes	no	no	no	yes	no	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	7.77	26.28	0.00	3078.84	0.16	151.91	10.02
79	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.28	2.24	2686.80	0.16	155.86	3.03
80	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.28	6.29	12.23	2953.70	0.24	109.03	3.42
81	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.50	7.92	8.53	2664.42	0.15	170.55	2.07
82	0	no	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.46	17.92	1.48	2874.89	0.12	228.61	4.29
83	7	yes	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	11.46	27.92	0.00	3110.48	0.17	163.48	4.29
84	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	21.46	37.92	0.00	3516.67	0.32	85.43	10.95
85	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	18.63	44.70	0.00	3618.88	0.41	62.73	20.39
86	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.25	45.81	0.00	3550.56	0.37	87.57	18.62
87	9	yes	yes	yes	yes	no	yes	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	6.87	36.57	0.00	3333.17	0.28	104.26	8.84
88	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.86	26.58	0.00	2021.13	0.29	87.17	0.31
89	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.58	2.06	2775.99	0.23	128.69	6.58
90	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.18	6.59	12.06	2927.15	0.21	144.00	6.78
91	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.53	7.92	8.56	2564.61	0.17	162.60	1.43
92	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.44	17.92	1.43	2844.07	0.12	189.70	4.08
93	5	yes	yes	yes	yes	no	yes	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.44	27.92	0.00	3097.06	0.14	198.45	7.77
94	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	18.02	33.65	0.00	3366.01	0.20	148.53	16.98
95	1	yes	no	no	no	yes	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	14.31	34.76	0.00	3434.02	0.22	129.65	13.21
96	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	4.90	35.87	0.00	3373.13	0.24	131.08	13.87

Appendix 7: Wartburgplatz survey sample-1 data chart, Data: 09.05.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	isovist Area	Compactness	Occlusivity	Min Radial
97	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	0.00	36.88	2.66	3174.55	0.21	148.75	11.07
98	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	26.88	0.61	2779.80	0.12	224.87	5.51
99	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.89	2.75	2544.26	0.11	220.43	3.47
100	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.08	6.89	12.02	2796.55	0.18	160.90	3.09
101	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.57	7.91	8.59	2665.91	0.17	164.68	1.17
102	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.41	17.91	1.42	2686.67	0.08	250.48	3.04
103	4	yes	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.65	22.60	0.00	2913.15	0.10	224.42	5.93
104	0	no	no	no	no	no	no	no	no	no	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	8.03	23.71	0.00	3141.67	0.11	221.69	10.81
105	3	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	8.40	24.82	0.00	3048.58	0.14	208.36	4.16
106	6	yes	yes	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	3.93	25.93	0.00	2881.93	0.14	164.70	4.33
107	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	0.00	27.05	4.94	2815.58	0.11	216.60	7.05
108	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	27.18	2.22	2666.66	0.09	272.78	4.97
109	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	17.19	1.72	2508.22	0.08	284.59	4.89
110	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	6.98	7.19	11.71	2564.17	0.15	202.30	2.40
111	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	7.90	9.90	2883.51	0.20	128.78	2.75
112	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.55	2.89	2703.51	0.09	229.71	4.68
113	5	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	12.66	2.35	2280.97	0.07	253.51	1.45
114	4	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	13.77	1.96	2736.77	0.07	285.66	6.97
115	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.88	1.59	2607.52	0.06	307.94	5.68
116	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	16.00	1.22	2472.87	0.07	273.52	4.01
117	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	17.11	0.84	2105.72	0.06	291.20	1.91
118	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	18.22	0.49	2288.26	0.07	299.85	4.88
119	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	17.49	2.74	2441.83	0.07	291.57	4.03
120	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	6.88	7.49	11.76	2071.20	0.06	273.65	0.82
121	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	8.34	0.49	16.49	3299.47	0.23	129.06	5.39
122	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.75	1.61	12.73	3027.88	0.15	186.92	4.34
123	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.16	2.72	12.33	2886.30	0.16	205.35	3.60
124	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	6.58	3.83	11.96	2737.92	0.15	202.46	1.71
125	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.99	4.95	11.58	2737.69	0.23	138.74	2.01
126	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	5.40	6.06	11.20	2390.73	0.15	188.84	0.82
127	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.82	7.17	10.83	2604.76	0.13	203.78	1.88
128	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.23	8.28	10.45	2208.60	0.06	313.84	2.00
129	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	9.42	11.16	2583.95	0.08	279.29	3.73
130	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	6.78	7.79	16.85	2259.42	0.09	228.32	1.53
tota	139																															

Appendix 7: Wartburgplatz survey sample-1 data chart, Data: 09.05.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.99	4.93	12.55	2611.95	0.27	117.37	1.50
2	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.55	5.15	7.03	2651.41	0.21	130.51	1.79
3	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.12	5.38	8.32	2500.33	0.13	229.36	1.00
4	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	2.69	5.61	10.92	2498.84	0.19	187.86	0.65
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	2.26	5.83	11.92	2447.96	0.08	252.47	1.84
6	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.83	6.06	23.08	2625.44	0.12	208.16	1.26
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.39	6.29	29.81	2795.94	0.14	208.93	1.59
8	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.26	6.51	37.07	2574.70	0.17	166.35	0.76
9	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	5.26	6.74	43.08	2442.02	0.19	146.03	0.76
10	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	12.46	4.18	49.09	2915.16	0.32	81.75	0.89
11	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.62	7.99	9.05	2739.83	0.13	182.55	2.32
12	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.89	15.15	0.89	2609.09	0.07	283.40	7.28
13	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	1.54	15.38	1.53	2582.74	0.06	319.12	7.35
14	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	0.00	15.60	2.29	2189.47	0.07	274.29	1.57
15	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.81	15.83	8.94	2378.65	0.06	328.16	3.01
16	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.06	15.73	2734.52	0.05	324.77	8.62
17	2	yes	yes	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.29	23.11	2924.49	0.06	308.73	7.47
18	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.51	29.20	2995.20	0.07	286.57	10.37
19	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	14.48	35.04	2791.15	0.12	220.60	2.79
20	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.99	4.48	41.54	2725.02	0.18	152.68	1.18
21	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	4.46	7.98	8.81	2821.25	0.14	176.61	2.48
22	4	yes	yes	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	yes	no	1.18	17.98	1.18	2429.01	0.08	242.43	1.86
23	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	no	yes	no	yes	no	11.18	25.37	0.00	2606.02	0.07	297.49	3.82
24	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	5.19	25.60	0.00	2505.37	0.08	264.95	2.39
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.00	25.83	1.67	2438.14	0.07	300.77	3.45
26	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	26.06	9.69	2445.53	0.06	346.64	2.06
27	0	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	26.28	15.50	2887.91	0.06	310.79	6.38
28	1	no	no	no	yes	no	no	yes	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	0.00	24.77	21.01	3008.27	0.07	345.84	14.18
29	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	0.00	14.78	27.41	2895.43	0.09	260.26	6.19
30	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.22	4.78	34.45	2911.27	0.19	163.34	1.92
31	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.48	7.97	8.74	2531.95	0.14	181.53	0.90
32	1	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	yes	no	1.26	17.97	1.27	2828.74	0.08	249.44	9.67
33	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	11.26	27.97	3.85	2566.19	0.09	266.05	1.93
34	1	yes	no	no	no	yes	no	no	no	no	no	no	yes	yes	yes	no	yes	yes	yes	yes	no	yes	yes	yes	no	9.48	35.60	5.37	2985.84	0.11	213.76	8.30
35	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	1.27	35.83	0.90	3057.17	0.11	261.77	6.19
36	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.00	36.05	5.13	2894.28	0.08	296.60	5.91
37	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	35.07	7.03	2670.78	0.11	219.61	1.79
38	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	0.00	25.07	13.28	2874.34	0.07	312.58	5.88
39	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	15.08	20.32	2682.53	0.10	238.68	3.43
40	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	3.48	5.08	27.95	3027.39	0.15	190.85	4.28
41	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.48	7.96	8.67	2733.14	0.15	182.50	1.58
42	4	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	no	yes	no	1.33	17.96	0.00	2839.23	0.09	241.51	5.27
43	2	no	no	no	yes	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	11.33	27.96	0.00	3031.82	0.13	221.88	5.52
44	2	no	no	no	yes	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	yes	yes	no	yes	yes	yes	no	15.28	37.96	0.00	3299.75	0.17	172.76	10.05
45	3	no	yes	no	yes	no	no	no	no	no	no	no	no	yes	yes	no	no	yes	yes	no	no	yes	yes	yes	no	11.03	45.82	0.00	3342.75	0.14	190.84	15.76
46	2	no	yes	no	yes	no	no	no	no	no	no	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	6.85	45.37	0.00	3273.24	0.11	227.04	11.66
47	2	yes	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.83	35.37	0.00	3059.63	0.11	209.98	6.39
48	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	yes	yes	yes	yes	yes	no	no	no	0.00	25.37	6.20	2521.38	0.07	268.29	1.70
49	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.38	13.93	2057.37	0.11	220.22	0.37
50	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	no	no	no	0.00	5.38	22.18	3046.56	0.13	215.72	5.68
51	0	no	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	yes	no	yes	yes	yes	yes	yes	no	no	no	4.47	7.95	8.59	2620.93	0.12	221.91	1.91
52	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	yes	no	yes	yes	yes	yes	yes	no	yes	no	1.40	17.95	0.00	2550.76	0.08	246.86	2.28
53	6	yes	yes	yes	no	no	yes	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	no	yes	no	yes	no	11.40	27.95	0.00	3092.81	0.19	144.35	3.36
54	0	no	no	no	no	no	no	yes	no	no	no	no	yes	no	yes	no	no	no	yes	yes	no	yes	yes	yes	no	21.40	37.95	0.00	3499.35	0.28	136.29	13.12
55	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	yes	no	no	no	yes	no	no	yes	yes	yes	no	20.52	47.95	1.16	3509.44	0.23	130.21	16.97
56	2	yes	no	no	no	no	no	yes	no	no	no	no	yes	no	yes	no	no	no	yes	yes	no	yes	yes	yes	no	14.93	45.67	3.30	3387.71	0.17	162.33	10.08
57	3	yes	yes	no	yes	no	no	no	no	yes	no	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	7.92	35.67	0.00	2988.13	0.10	238.18	3.91
58	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	0.02	25.68	0.17	2840.26	0.12	203.09	3.41
59	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.68	8.45	2584.37	0.09	252.52	2.69
60	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.47	5.68	17.30	2509.40	0.18	140.82	0.88
61	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.46	7.94	8.52	2719.02	0.14	192.34	1.72
62	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.48	17.94	1.48	2994.23	0.08	248.90	8.21
63	3	yes	yes	no	yes	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.48	27.94	0.00	3294.73	0.18	150.62	7.48
64	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	21.48	37.94	0.00	3568.09	0.37	84.15	14.87
65	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	yes	no	28.99	47.94	0.00	3626.63	0.41	66.85	13.71
66	4	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	yes	no	22.02	45.97	0.00	3331.27	0.35	130.47	3.72
67	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	13.85	35.97	0.00	2983.79	0.17	165.69	3.71
68	5	yes	yes	no	no	no	no	no	yes	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	5.05	25.98	0.00	3029.00	0.11	218.94	10.48
69	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.98	4.12	2763.30	0.11	236.92	3.94
70	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.38	5.99	13.51	2928.54	0.21	121.64	3.38
71	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.47	7.93	8.50	2149.22	0.19	122.32	0.26
72	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.49	17.93	1.49	3032.76	0.10	237.43	8.74
73	1	yes	no	no	yes	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.49	27.93	0.00	3184.06	0.19	151.53	3.14
74	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	21.49	37.93	0.00	3560.45	0.36	79.05	10.48
75	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	yes	no	yes	no	no	no	25.35	47.93	0.00	3660.37	0.50	45.39	16.56
76	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	19.70	46.27	0.00	3590.36	0.49	58.17	9.41
77	4	yes	yes	no	no	no	no	no	no	no	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	16.74	36.27	0.00	3321.76	0.24	113.13	9.38
78	4	yes	yes	yes	no	no	yes	no	no	no	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	7.77	26.28	0.00	3078.84	0.16	151.91	10.02
79	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.28	2.24	2686.80	0.16	155.86	3.03
80	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.28	6.29	12.23	2953.70	0.24	109.03	3.42
81	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.50	7.92	8.53	2664.42	0.15	170.55	2.07
82	1	yes	no	no	no	yes	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.46	17.92	1.48	2874.89	0.12	228.61	4.29
83	5	yes	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	11.46	27.92	0.00	3110.48	0.17	163.48	4.29
84	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	21.46	37.92	0.00	3516.67	0.32	85.43	10.95
85	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	yes	no	yes	no	no	no	18.63	44.70	0.00	3618.88	0.41	62.73	20.39
86	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.25	45.81	0.00	3550.56	0.37	87.57	18.62
87	6	yes	yes	yes	no	no	yes	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	6.87	36.57	0.00	3333.17	0.28	104.26	8.84
88	0	no	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.86	26.58	0.00	2021.13	0.29	87.17	0.31
89	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.58	2.06	2775.99	0.23	128.69	6.58
90	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.18	6.59	12.06	2927.15	0.21	144.00	6.78
91	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.53	7.92	8.56	2564.61	0.17	162.60	1.43
92	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.44	17.92	1.43	2844.07	0.12	189.70	4.08
93	5	yes	yes	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	11.44	27.92	0.00	3097.06	0.14	198.45	7.77
94	0	no	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	18.02	33.65	0.00	3366.01	0.20	148.53	16.98
95	0	no	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	14.31	34.76	0.00	3434.02	0.22	129.65	13.21
96	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	4.90	35.87	0.00	3373.13	0.24	131.08	13.87

Appendix 8: Wartburgplatz survey sample-2 data chart, Data: 06.06.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	isovist Area	Compactness	Occlusivity	Min Radial
97	5	yes	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	0.00	36.88	2.66	3174.55	0.21	148.75	11.07
98	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	26.88	0.61	2779.80	0.12	224.87	5.51
99	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.89	2.75	2544.26	0.11	220.43	3.47
100	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.08	6.89	12.02	2796.55	0.18	160.90	3.09
101	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.57	7.91	8.59	2665.91	0.17	164.68	1.17
102	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.41	17.91	1.42	2686.67	0.08	250.48	3.04
103	1	yes	no	no	no	yes	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.65	22.60	0.00	2913.15	0.10	224.42	5.93
104	0	no	no	no	no	no	no	no	no	no	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	8.03	23.71	0.00	3141.67	0.11	221.69	10.81
105	4	yes	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	8.40	24.82	0.00	3048.58	0.14	208.36	4.16
106	1	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	3.93	25.93	0.00	2881.93	0.14	164.70	4.33
107	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	0.00	27.05	4.94	2815.58	0.11	216.60	7.05
108	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	27.18	2.22	2666.66	0.09	272.78	4.97
109	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	17.19	1.72	2508.22	0.08	284.59	4.89
110	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	6.98	7.19	11.71	2564.17	0.15	202.30	2.40
111	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	7.90	9.90	2883.51	0.20	128.78	2.75
112	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.55	2.89	2703.51	0.09	229.71	4.68
113	3	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	12.66	2.35	2280.97	0.07	253.51	1.45
114	3	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	13.77	1.96	2736.77	0.07	285.66	6.97
115	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.88	1.59	2607.52	0.06	307.94	5.68
116	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	16.00	1.22	2472.87	0.07	273.52	4.01
117	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	17.11	0.84	2105.72	0.06	291.20	1.91
118	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	18.22	0.49	2288.26	0.07	299.85	4.88
119	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	17.49	2.74	2441.83	0.07	291.57	4.03
120	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	6.88	7.49	11.76	2071.20	0.06	273.65	0.82
121	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	8.34	0.49	16.49	3299.47	0.23	129.06	5.39
122	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.75	1.61	12.73	3027.88	0.15	186.92	4.34
123	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.16	2.72	12.33	2886.30	0.16	205.35	3.60
124	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	6.58	3.83	11.96	2737.92	0.15	202.46	1.71
125	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.99	4.95	11.58	2737.69	0.23	138.74	2.01
126	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	5.40	6.06	11.20	2390.73	0.15	188.84	0.82
127	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.82	7.17	10.83	2604.76	0.13	203.78	1.88
128	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.23	8.28	10.45	2208.60	0.06	313.84	2.00
129	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	9.42	11.16	2583.95	0.08	279.29	3.73
130	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	6.78	7.79	16.85	2259.42	0.09	228.32	1.53
tota	90																															

Appendix 8: Wartburgplatz survey sample-2 data chart, Data: 06.06.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	Isovist Area	Compactness	Occlusivity	Min Radial
1	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.99	4.93	12.55	2611.95	0.27	117.37	1.50
2	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.55	5.15	7.03	2651.41	0.21	130.51	1.79
3	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	3.12	5.38	8.32	2500.33	0.13	229.36	1.00
4	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	2.69	5.61	10.92	2498.84	0.19	187.86	0.65
5	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	2.26	5.83	11.92	2447.96	0.08	252.47	1.84
6	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.83	6.06	23.08	2625.44	0.12	208.16	1.26
7	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.39	6.29	29.81	2795.94	0.14	208.93	1.59
8	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.26	6.51	37.07	2574.70	0.17	166.35	0.76
9	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	5.26	6.74	43.08	2442.02	0.19	146.03	0.76
10	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	12.46	4.18	49.09	2915.16	0.32	81.75	0.89
11	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.62	7.99	9.05	2739.83	0.13	182.55	2.32
12	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.89	15.15	0.89	2609.09	0.07	283.40	7.28
13	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	1.54	15.38	1.53	2582.74	0.06	319.12	7.35
14	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	0.00	15.60	2.29	2189.47	0.07	274.29	1.57
15	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.81	15.83	8.94	2378.65	0.06	328.16	3.01
16	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.06	15.73	2734.52	0.05	324.77	8.62
17	1	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.29	23.11	2924.49	0.06	308.73	7.47
18	0	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	16.51	29.20	2995.20	0.07	286.57	10.37
19	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	14.48	35.04	2791.15	0.12	220.60	2.79
20	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.99	4.48	41.54	2725.02	0.18	152.68	1.18
21	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	4.46	7.98	8.81	2821.25	0.14	176.61	2.48
22	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	yes	no	1.18	17.98	1.18	2429.01	0.08	242.43	1.86
23	2	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	yes	no	no	no	yes	yes	yes	no	yes	no	yes	no	11.18	25.37	0.00	2606.02	0.07	297.49	3.82
24	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	5.19	25.60	0.00	2505.37	0.08	264.95	2.39
25	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.00	25.83	1.67	2438.14	0.07	300.77	3.45
26	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	0.00	26.06	9.69	2445.53	0.06	346.64	2.06
27	0	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	26.28	15.50	2887.91	0.06	310.79	6.38
28	1	yes	no	no	no	yes	no	yes	yes	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	0.00	24.77	21.01	3008.27	0.07	345.84	14.18
29	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	0.00	14.78	27.41	2895.43	0.09	260.26	6.19
30	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.22	4.78	34.45	2911.27	0.19	163.34	1.92
31	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.48	7.97	8.74	2531.95	0.14	181.53	0.90
32	3	yes	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	1.26	17.97	1.27	2828.74	0.08	249.44	9.67
33	0	no	no	no	yes	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	11.26	27.97	3.85	2566.19	0.09	266.05	1.93
34	4	no	no	no	yes	no	no	no	no	no	no	no	no	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	9.48	35.60	5.37	2985.84	0.11	213.76	8.30
35	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	1.27	35.83	0.90	3057.17	0.11	261.77	6.19
36	2	no	no	no	yes	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.00	36.05	5.13	2894.28	0.08	296.60	5.91
37	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.00	35.07	7.03	2670.78	0.11	219.61	1.79
38	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	0.00	25.07	13.28	2874.34	0.07	312.58	5.88
39	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	0.00	15.08	20.32	2682.53	0.10	238.68	3.43
40	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	3.48	5.08	27.95	3027.39	0.15	190.85	4.28
41	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.48	7.96	8.67	2733.14	0.15	182.50	1.58
42	2	yes	yes	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	yes	no	1.33	17.96	0.00	2839.23	0.09	241.51	5.27
43	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	11.33	27.96	0.00	3031.82	0.13	221.88	5.52
44	0	no	no	no	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	yes	yes	no	yes	yes	yes	no	15.28	37.96	0.00	3299.75	0.17	172.76	10.05
45	1	no	no	no	yes	no	no	no	no	no	no	no	no	yes	yes	no	no	yes	yes	no	no	yes	yes	yes	no	11.03	45.82	0.00	3342.75	0.14	190.84	15.76
46	0	no	no	no	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	6.85	45.37	0.00	3273.24	0.11	227.04	11.66
47	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	0.83	35.37	0.00	3059.63	0.11	209.98	6.39
48	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	25.37	6.20	2521.38	0.07	268.29	1.70
49	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.38	13.93	2057.37	0.11	220.22	0.37
50	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	no	no	no	no	0.00	5.38	22.18	3046.56	0.13	215.72	5.68
51	0	no	no	no	no	no	no	yes	no	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	no	no	no	4.47	7.95	8.59	2620.93	0.12	221.91	1.91
52	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	yes	yes	no	yes	no	1.40	17.95	0.00	2550.76	0.08	246.86	2.28
53	7	yes	yes	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	no	yes	no	yes	no	11.40	27.95	0.00	3092.81	0.19	144.35	3.36
54	1	no	no	no	yes	no	no	yes	no	no	no	no	yes	no	yes	no	no	no	yes	yes	no	yes	yes	yes	no	21.40	37.95	0.00	3499.35	0.28	136.29	13.12
55	1	no	no	no	yes	no	no	no	no	no	no	no	yes	no	yes	no	no	no	yes	no	no	yes	yes	yes	no	20.52	47.95	1.16	3509.44	0.23	130.21	16.97
56	2	yes	yes	no	yes	no	no	yes	no	no	no	no	yes	no	yes	no	no	no	yes	yes	no	yes	yes	yes	no	14.93	45.67	3.30	3387.71	0.17	162.33	10.08
57	3	yes	yes	no	no	no	no	no	no	yes	no	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	7.92	35.67	0.00	2988.13	0.10	238.18	3.91
58	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	yes	no	0.02	25.68	0.17	2840.26	0.12	203.09	3.41
59	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.68	8.45	2584.37	0.09	252.52	2.69
60	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	7.47	5.68	17.30	2509.40	0.18	140.82	0.88
61	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	4.46	7.94	8.52	2719.02	0.14	192.34	1.72
62	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.48	17.94	1.48	2994.23	0.08	248.90	8.21
63	4	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.48	27.94	0.00	3294.73	0.18	150.62	7.48
64	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	21.48	37.94	0.00	3568.09	0.37	84.15	14.87
65	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	yes	no	28.99	47.94	0.00	3626.63	0.41	66.85	13.71
66	2	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	yes	no	22.02	45.97	0.00	3331.27	0.35	130.47	3.72
67	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	yes	no	13.85	35.97	0.00	2983.79	0.17	165.69	3.71
68	2	yes	yes	no	no	no	no	no	yes	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	5.05	25.98	0.00	3029.00	0.11	218.94	10.48
69	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	15.98	4.12	2763.30	0.11	236.92	3.94
70	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.38	5.99	13.51	2928.54	0.21	121.64	3.38
71	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.47	7.93	8.50	2149.22	0.19	122.32	0.26
72	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.49	17.93	1.49	3032.76	0.10	237.43	8.74
73	2	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.49	27.93	0.00	3184.06	0.19	151.53	3.14
74	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	21.49	37.93	0.00	3560.45	0.36	79.05	10.48
75	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	25.35	47.93	0.00	3660.37	0.50	45.39	16.56
76	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	19.70	46.27	0.00	3590.36	0.49	58.17	9.41
77	3	yes	yes	yes	no	no	no	no	no	no	yes	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	16.74	36.27	0.00	3321.76	0.24	113.13	9.38
78	0	no	no	no	no	no	no	no	no	no	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	7.77	26.28	0.00	3078.84	0.16	151.91	10.02
79	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.28	2.24	2686.80	0.16	155.86	3.03
80	0	no	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.28	6.29	12.23	2953.70	0.24	109.03	3.42
81	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.50	7.92	8.53	2664.42	0.15	170.55	2.07
82	2	yes	no	no	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.46	17.92	1.48	2874.89	0.12	228.61	4.29
83	6	yes	yes	no	no	no	yes	no	no	yes	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.46	27.92	0.00	3110.48	0.17	163.48	4.29
84	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	21.46	37.92	0.00	3516.67	0.32	85.43	10.95
85	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	yes	no	no	no	18.63	44.70	0.00	3618.88	0.41	62.73	20.39
86	0	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.25	45.81	0.00	3550.56	0.37	87.57	18.62
87	3	yes	yes	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	6.87	36.57	0.00	3333.17	0.28	104.26	8.84
88	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.86	26.58	0.00	2021.13	0.29	87.17	0.31
89	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.58	2.06	2775.99	0.23	128.69	6.58
90	0	no	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.18	6.59	12.06	2927.15	0.21	144.00	6.78
91	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.53	7.92	8.56	2564.61	0.17	162.60	1.43
92	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	1.44	17.92	1.43	2844.07	0.12	189.70	4.08
93	5	yes	yes	no	no	no	yes	no	no	yes	yes	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	11.44	27.92	0.00	3097.06	0.14	198.45	7.77
94	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	yes	yes	no	yes	no	no	no	18.02	33.65	0.00	3366.01	0.20	148.53	16.98
95	0	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	14.31	34.76	0.00	3434.02	0.22	129.65	13.21
96	0	no	no	no	no	no	no	no	yes	no	no	no	yes	no	no	no	no	yes	yes	yes	no	yes	no	no	no	4.90	35.87	0.00	3373.13	0.24	131.08	13.87

Appendix 9: Wartburgplatz survey sample-3 data chart, Data: 13.06.2021

		Binaries,Within each cell 10x10m															Binaries,Within Nearby Cell (15m radius)									Numbers,Within each cell 10x10m						
		Activities/Dependent variables						Features/Independent variables									Features/Independent variables									Distances from the center			Visibility from the center			
Cell ID	Total Users	Sitting	Talking	Eating/Drinking	Movement/Playing activities	Reading	Listening Music	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	Bench	Pavement	Tree	Shadow	Closed Green	Open green	Playing equipment	Child Zone	Public Art/Installation	nearest pave	Nearest road	Nearest open green/activity area	isovist Area	Compactness	Occlusivity	Min Radial
97	3	yes	yes	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	0.00	36.88	2.66	3174.55	0.21	148.75	11.07
98	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	26.88	0.61	2779.80	0.12	224.87	5.51
99	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	16.89	2.75	2544.26	0.11	220.43	3.47
100	0	no	no	no	no	no	no	no	yes	yes	yes	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	7.08	6.89	12.02	2796.55	0.18	160.90	3.09
101	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.57	7.91	8.59	2665.91	0.17	164.68	1.17
102	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	1.41	17.91	1.42	2686.67	0.08	250.48	3.04
103	2	yes	yes	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.65	22.60	0.00	2913.15	0.10	224.42	5.93
104	0	no	no	no	no	no	no	no	no	no	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	8.03	23.71	0.00	3141.67	0.11	221.69	10.81
105	0	no	no	no	no	no	no	no	no	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	8.40	24.82	0.00	3048.58	0.14	208.36	4.16
106	9	yes	yes	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	3.93	25.93	0.00	2881.93	0.14	164.70	4.33
107	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	no	yes	no	no	no	0.00	27.05	4.94	2815.58	0.11	216.60	7.05
108	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	27.18	2.22	2666.66	0.09	272.78	4.97
109	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	17.19	1.72	2508.22	0.08	284.59	4.89
110	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	6.98	7.19	11.71	2564.17	0.15	202.30	2.40
111	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	7.90	9.90	2883.51	0.20	128.78	2.75
112	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	11.55	2.89	2703.51	0.09	229.71	4.68
113	1	yes	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	12.66	2.35	2280.97	0.07	253.51	1.45
114	2	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	13.77	1.96	2736.77	0.07	285.66	6.97
115	0	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	14.88	1.59	2607.52	0.06	307.94	5.68
116	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	16.00	1.22	2472.87	0.07	273.52	4.01
117	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	0.00	17.11	0.84	2105.72	0.06	291.20	1.91
118	0	no	no	no	no	no	no	no	yes	yes	yes	no	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	18.22	0.49	2288.26	0.07	299.85	4.88
119	0	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	17.49	2.74	2441.83	0.07	291.57	4.03
120	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	6.88	7.49	11.76	2071.20	0.06	273.65	0.82
121	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	8.34	0.49	16.49	3299.47	0.23	129.06	5.39
122	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.75	1.61	12.73	3027.88	0.15	186.92	4.34
123	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	7.16	2.72	12.33	2886.30	0.16	205.35	3.60
124	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	6.58	3.83	11.96	2737.92	0.15	202.46	1.71
125	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	no	no	no	5.99	4.95	11.58	2737.69	0.23	138.74	2.01
126	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	5.40	6.06	11.20	2390.73	0.15	188.84	0.82
127	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.82	7.17	10.83	2604.76	0.13	203.78	1.88
128	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	4.23	8.28	10.45	2208.60	0.06	313.84	2.00
129	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no	0.00	9.42	11.16	2583.95	0.08	279.29	3.73
130	0	no	no	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	no	yes	yes	yes	yes	no	no	no	no	6.78	7.79	16.85	2259.42	0.09	228.32	1.53
tota	76																															

Appendix 9: Wartburgplatz survey sample-3 data chart, Data: 13.06.2021

Thank You