
Study on perception of places during lockdown in Covid-19: Relationship between place attachment and usage pattern

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Abstract: *The spread of SAR-CoV-2 virus has infected millions worldwide. Policies like social distancing, self-isolation and quarantine has become the new order. There was a global lockdown for months with every public place remaining shut, when this research was conducted. This article aims to establish the relationship between place attachment and its usage pattern in the context of pandemic. The research is based on qualitative and quantitative analysis of individual's place usage time before and after lockdown, simultaneously compared with perceived place attachment. On one hand, the article gathers these relevant data during global lockdown for Covid-19 during March to May 2020, and acts as a handy repository for future research with fast changing scenario due to the pandemic; and on the other, the data analysis captures time and situation specific relationships related to places, which could be further compared and utilized for designing safer, efficient, viable and resilient places.*

1. Introduction

Public places have always been seen thriving with activities showcasing a vibrant character. People living in 2020 however are witnessing a different scenario altogether. The recent happenings have left a deep void on the social structure of the urban fabric where public places unlike before are undergoing a sea change. Adapting to the 'new' normal is unusual and demanding at the same time. 'Social distancing' is the biggest preventive measure which restricts the transmission of this virus from one person to another (Fong, et al., 2020); (Wasdani & Prasad, 2020). In order to successfully implement social distancing norms, (Paital, Das, & Parida, 2020) states governments all over the world have incorporated lockdown with curtailed mobility and restricted services. Let us consider an example, say a public square where people used to gather around to sit, have something to eat or simply to pass their leisure time previously, now bears a deserted look. When the virus will subside and restrictions lifted, these places will again witness crowd but the manner in which they will embrace it will never be the same.

Place identity is seen to have a negative impact owing to natural disasters, leading to emotions of loss and grief (Ruiz & Hernandez, 2014) resulting in "loss or removal of a community from its ground" (Oliver-Smith, 1996). Pandemics are not new to this world as humanity has been witnessing them since the 14th century. However, the novel coronavirus disease (Covid-19) has unveiled our lack of preparedness in handling emergency situations. (Corbera, Anguelovski, Honey-Rosés, & Ruiz-Mallén, 2020) states that it is still too early to conclude if the impacts of Covid-19 will have a far-reaching influence on public spaces as they have on our lives. The inadequacies in the design and management of urban places have been starkly visible and requires the implementation of safer design techniques to optimise public safety in the post pandemic phase. The abrupt pause in the functioning of places has alluded to a psychological setback in the minds of people as many livelihoods have been severely affected. Imagine the street vendors whose sole source of income directly came from their daily sales. Governments around the world have

announced special relief packages to cater for the unparalleled financial loss but that alone does not solve the problem especially in developing countries like India with a population of over one billion.

2. Review of literature: People, Places and Place Attachment

The most basic constituent in a physical space that injects life into them are people. In the era of cutting-edge technologies and smart cities, it is the people who make them smart. The choices and preferences of individuals within the limits of the space of awareness reflects their aspirations based on the cultural influence they have (Urban, et al., 1978). Based on their environmental setting, people usually get affected physiologically, psychologically, and behaviourally as well (Evans & McCoy, 1998). Hence, people are quintessential in the formation of a place and a major contributor to the vibrancy that the place exhibits.

Each place has its own unique character that is an important issue in social science (Gustafson, 2001). Several studies have revealed the significance of places in shaping mental health and human behaviour. Places do involve people which is evident from the values and meaning it consists of. According to (Rapoport, 1990) who argued that places in addition to physical features include messages and meanings that people perceive and decode based on their roles, experiences, expectations and motivations.

Places are often based on the kind of activity pattern it is associated with. According to (Lathrop, 1970) activity choice itself can be explained only in terms of the motivation, needs, wants and capabilities of the individual. Broadly speaking, we often segregate places like residence, markets, parks, squares, offices and many more based on their usage. In the context of this research segregation has been based on activities that an individual partakes in each of these places to analyze the kind of impact each of these places have on their everyday lives. Conative dimensions have often been known to affect the relationship between people and places. Local participation and civic action which are issues of social action are connected to the affective link towards the environment. (Lewicka, 2005) highlights the fact that a strong attachment implies a higher motivation for the action, especially when the action is aimed at developing behaviour that favours the environment (Van Vugt, 2001).

“Public” spaces are defined as those that are habitable by people who are “personally unknown or only categorically known to one another” (Low & Lyn, 1989). Based on the work of William H. Whyte, an American organization by the name of Project for Public Spaces (PPS) has described high quality successful spaces as those that lay their focus on issues like accessibility, activity and use, comfort and image and sociability. The places must allow easy access and be well connected to its vicinity having numerous activities for all user groups where they feel safe and comfortable. They should be clean, attractive with adequate seating; and most importantly, act as venues for people to interact socially (Project for Public Spaces, 2008). Urban public places are often described as means of reinforcing the urban identity. It is important to the life of the city and impact the self-identity (Cybriwsky, 1999). (Francis, Giles-Corti, Wood, & Knuiman, 2012) in their study points out the need for having high quality public places in local neighbourhoods irrespective of how frequently they are used. These places serve as an indispensable element for enhancing a

sense of community amongst residents. Successful public places should be freely accessible, comfortable, user friendly and most importantly portray a unique urban character. These are indispensable in the socio-economical structure of an urban fabric which has to be considered in urban sociology. (Zhang & Lawson, 2009) also found the size and number of public spaces outside residential buildings were not significantly associated with social interaction, concluding that the key to social interaction in public spaces was the quality of the space provided. As new developments often lack a range of commercial options, and sense of community has been associated with smaller population size (Wilson & Baldassare, 1996). The kind of involvement in neighbourhood organisations as stated by (Chavis & Wandersman, 1990); (Kingston, Mitchell, Florin, & Stevenson, 1999) might also contribute towards a greater sense of community.

The meaning of place attachment is directly linked with emotion however, the complexity arises while defining it. (Giuliani & Feldman, 1993) has identified eleven different definitions of place attachment in one single collection. Place attachment can be defined as the affective link that people establish with specific environments, where they have a propensity to remain and where they feel comfortable and safe (Hidalgo & Hernández, 2001). This complex phenomenon has multiple facets as it examines the bonding between people and place. According to (Altman & Low, 1992); (Chow & Healey, 2008) it involves the interplay of affect and emotions, knowledge and beliefs, behaviour and actions in reference to a place. The dimension of place attachment this paper dwells in is the inter-relation between time and emotion which people invest at a certain place. From a general psychological perspective, the amount of time spent at a particular place often determine the attachment level. For example, when we spent over eight hours per day at office we gradually become attached to that place. However, this is not binding and often influenced by other factors like lack of alternate options, pressure of providing for the family and many others. Social cohesion plays a key role in attachment. A classic example of this would be during festivals like Christmas when people irrespective of where they are situated are reluctant to return home to celebrate with the family. The attachment of people to public places are not always based on their needs but incorporates a lot of other factors like local relationships, social bonding, feeling of relaxation, safety and familiarity with the urban setting. (Hernández, Hidalgo, Salazar-Laplace, & Hess, 2007) in his study elucidates four varying perspectives having a congenial relationship between place attachment and place identity: (1) they are conceptually similar (Brown & Werner, Social cohesiveness, territoriality, and holiday decorations: the influence of cul-de-sacs, 1985); (2) place attachment as a component of place identity (Lalli, 1992); (3) place identity as a component of place attachment (Kyle, Graefe, & Manning, 2005); (4) both the concepts are merely dimensions of a supra-ordered notion (Jorgensen & Stedman, 2001). Along with place attachment, social attachment also encompasses many facets which in some instances have overlapping meanings. One such facet is place belongingness where people feel a 'membership' to an environment (Mesch & Manor, 1998); (Milligan, 1998). The other facet is place rootedness referring to a strong bond to home (Hay, 1998); (Tuan, 1980). Familiarity to a place defined as pleasant memories, achievement memories and environmental images forms another facet (Roberts, 1996). According to (Brown, Perkins, & Brown, Place attachment in a revitalizing neighborhood: Individual and block levels of analysis, 2003) neighbourhood attachment indicates one's emotional connection to their immediate surroundings. (Christopher, Gregory, & Delene, 2010) states there exist strong correlations between place identity and place belongingness.

3. Research Design

The primary aim of this paper is to determine and understand the relationship between attachment of an individual to a particular place category based on the number of hours before and after the current pandemic situation. It also takes into account the usage pattern of individuals before and after the pandemic. This research adheres to a specific time period between March 2020 – May 2020, when there was a lockdown in most of the countries around the world including a nationwide lockdown in India. In order to carry out the research, a predefined set of objectives had been formulated based on the scenario back then. Firstly, different places had been classified into various categories. For example, restaurants and theatre were included under recreational, yoga and fitness centre were included under indoor activities and so on. Secondly, an online questionnaire for survey was framed in order to get valuable feedback from users during the lockdown period. Thirdly, the entire research had been subdivided into three studies, each one dealing with a specific purpose having a defined aim. Lastly, the results and inferences from each study has been analyzed to arrive at a conclusive outcome which moving forward, shall give a clear direction and scope for further research.

The first study dealt with attachment levels for each place category. It ranked the places according to the attachment levels of the user, with the most significant place being ranked first and the least significant ranked last. The second study identified if there was any significant deviation between hours spent before and after the pandemic period. The last study indicated the relationship between attachment levels and the number of hours spent before and number of hours people were willing to spent after the pandemic. The inferences from each study were linked in the general discussion.

In order to conduct the individual studies related to place attachment during the lockdown period of the pandemic, an online questionnaire was formulated using ‘Google forms’ and circulated on various online platforms. The responses were recorded and compiled in Microsoft Excel. Based on the total number of responses (N = 323) few which showed ambiguity were discarded and the final figure came to (N = 297). Based on the data obtained from the survey, it was noted that the male - female percentage distribution of respondents was 55.6% and 44.4% respectively. The age of respondents had been categorized into various groups for a better understanding of the subjects under study. Age group 14-19 years comprised 6.7%, 20-24 years comprised 16.6%, 25-34 years comprised 33.2%, 35-44 years comprised 18.5%, 45-64 years comprised 21.1% and 65-79 years comprised 3.5% of the total respondents. Out of the total respondents 31.1% belonged to the student category, while 28.1% and 27.5% belonged to the service and professional sector respectively.

4. Study – 1

4.1 Objective

The primary objective of this study was to determine the ranking of places according to the attachment levels using RIDIT Analysis.

4.2 Method

From the initial sample size of (N=323), 297 respondents of the survey were asked to indicate their attachment to a particular place on a Likert scale of 1 to 7, where 1= Very detached, 2= Detached, 3= Somewhat detached, 4= Neither detached nor attached, 5= Somewhat attached, 6= Attached and 7= Very attached. Places belonged to all categories from residence to recreational areas to shopping malls. On careful observation it was recommended to use Relative to an Identified Distribution (RIDIT) calculation and analysis on the ordinal data. RIDIT analysis is generally used on data which does not have an interval scale (Bhattacharya & Kumar, 2017). From the sample size of similar categories one can determine the score (RIDIT) for each category which serves as a percentile rank of an item for the sample and equates to the number of items in all lower categories plus one-half of the number of items in each category, divided by the total sample size. Once the RIDIT's for each category have been determined, they are taken as values of a dependent variable for the comparison groups and the normal distribution is applied (Flora Jr, 1974). Based on literary sources the RIDIT analysis for various attachment levels was performed on the following category of places:

- Residence (home, hostel, rented apartment etc)
- Office / institution / workplace
- Road / transport for travel / commutation
- Indoor sports center / fitness center for yoga, gym
- Outdoor sports / park / ground / open space etc
- Recreational place (restaurant, theatre etc)
- Religious / spiritual places (temple, mosque etc)
- Market / mall / street shops / commercial place

The empirical dataset of 297 respondents have been considered. For performing RIDIT analysis we had opted for Microsoft Excel 2016 as the software tool. The ranks are in accordance with the mean RIDIT (ρ_i) values for each place which was calculated at 95% confidence. At the end of the process, the W-calculation or the Kruskal-Wallis statistics W test was performed for hypothesis testing. To test the null hypothesis where all the ρ_i values are equal to 0.5 against the hypothesis that at least one of the ρ_i value is different. The Kruskal-Wallis statistics (W) follows the χ^2 distribution with (m - 1) degrees of freedom. In this case the value of χ^2 for (8-1) degrees of freedom was 14.0671 and calculated Kruskal-Wallis Statistics (W) was 2379.8313, which was considerably higher. Thus, we can reject the null hypothesis.

4.3 Results

The level of attachment to a place is indicative of the respondent's perception of the place. The cumulative mean RIDIT values for each place along with their assigned ranks (see

Table 1 Ranking places according to attachment levels) represents a clearer picture of how attached respondents were to each of the places mentioned in the table. The RIDIT ranks had been arranged as follows:

Residence (home, hostel, rented apartment) > Office / institution / workplace > Road / transport for travel / commutation > Market / mall / street shops / commercial place > Recreational place (restaurant, theatre) > Outdoor sports / park / ground / open space etc > Religious / spiritual places (temple, mosque) > Indoor sports center / fitness center for yoga, gym

For instance, it was observed for Residence the mean RIDIT value ($\rho_i = 0.2552$) was the highest, precisely the reason it had been assigned rank one. The attachment level of the respondents for Residence was higher than any other in the list of places. This analysis enabled us to identify the places people preferred and considered significant in their everyday lives. Office ($\rho_i = 0.2461$) was ranked two indicating most people were attached to their respective workplaces immediately after their home. Although the difference was not significant but still sufficient to conclude the behaviour and perception of respondents towards their place of work. Road ($\rho_i = 0.2170$) and Market ($\rho_i = 0.2150$) with their respective mean RIDIT values were ranked three and four but showed a close range. The respondents had considered these places to have equal levels of attachment. On the other hand, places like temples ($\rho_i = 0.1439$), meditation centres ($\rho_i = 0.1429$), parks and playgrounds ($\rho_i = 0.1678$) had been given lower rankings by the respondents. The higher the value of ρ_i higher is the ranking, whereas a lower value ρ_i value indicates lower rank. The higher ranked category of places was considered to be statistically significant in comparison to the lower ranked categories.

Table 1 Ranking places according to attachment levels

Place	Attachment Level							ρ_i	Rank	LB	UB	W calculation
	1	2	3	4	5	6	7					
<i>Residence (home, hostel, rented apartment etc)</i>	0.0024	0.0022	0.0041	0.0109	0.0302	0.0873	0.1180	0.2552	1	0.2217	0.2887	17.7988
<i>Office / institution / workplace</i>	0.0040	0.0038	0.0074	0.0169	0.0421	0.1084	0.0634	0.2461	2	0.2126	0.2796	19.1483
<i>Road / transport for travel / commutation</i>	0.0036	0.0104	0.0138	0.0508	0.0577	0.0622	0.0185	0.2170	3	0.1835	0.2505	23.7802
<i>Indoor sports center / fitness center for yoga, gym</i>	0.0109	0.0291	0.0193	0.0387	0.0403	0.0301	0.0079	0.1764	8	0.1429	0.2099	31.1088

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<i>Outdoor sports / park / ground / open space etc</i>	0.0081	0.0225	0.0147	0.0278	0.0650	0.0402	0.0229	0.2013	6	0.1678	0.2348	26.5052
<i>Recreational place (restaurant, theatre etc)</i>	0.0065	0.0148	0.0147	0.0338	0.0788	0.0492	0.0123	0.2103	5	0.1768	0.2438	24.9342
<i>Religious / spiritual places (temple, mosque etc)</i>	0.0153	0.0203	0.0115	0.0332	0.0431	0.0382	0.0159	0.1774	7	0.1439	0.2109	30.9115
<i>Market / mall / street shops / commercial place</i>	0.0048	0.0143	0.0166	0.0351	0.0779	0.0532	0.0132	0.2150	4	0.1814	0.2485	24.1322

Kruskal Wallis - W 2379.8313

Chi-Square (8-1 = 7 df) 14.0671

The RIDIT algorithm helped in making a significant contribution to this research by ranking these places according to attachment levels of the respondents. This enabled us to make further inroads to understand the perception of respondents during lockdown period owing to the Covid-19 pandemic.

5. Study – 2

5.1 Objective

To determine if there was any statistical evidence that the difference (in mean) between hours spend at a place before the pandemic and hours spend at a particular place after the pandemic (paired observations) on a particular outcome was significantly different from zero. The paired *t*-test had been used as a tool for testing the hypothesis.

5.2 Method

It was imperative to prioritize the safety of public places after normalization is restored. Not only people but places too have to be adaptable to this ‘new’ normal. The survey had been conducted online taking views from people regarding the number of hours they used to spend at a certain place before the pandemic and how much time, are they likely to spend after normalcy is restored. Based on the responses, a descriptive statistical analysis had been performed in the form of mean, standard deviation and co-efficient of variation. The paired *t*-test had been used to test

the hypotheses where the mean was compared. The null hypothesis stated the difference between the paired mean of hours was equal to zero ($H_0: \mu_1 - \mu_2 = 0$), while the alternative hypothesis stated that the difference between the paired mean of hours was not equal to zero ($H_1: \mu_1 - \mu_2 \neq 0$), where μ_1 was the mean of hours spend at a particular place before the pandemic and μ_2 was the mean of hours spend at the same place after the pandemic. From the t distribution table at 95% confidence level, the critical t value ($t_{critical}$) having $df = N - 1$ was compared with the calculated t -value (t_{cal}) (Kent State University, 2020). The null hypothesis was rejected if the calculated t -value was found to be greater than the critical t value indicating significant difference in the means.

5.3 Results

It had to be noted that out of $N = 323$ responses from the sample dataset, only 297 recorded non-missing observations for both variables. At 95% confidence level having a degree of freedom $df = 7$, the critical value of t was equal to ± 2.365 for two – tailed hypothesis having significance level $\rho = 0.05$. **Table 2** indicated the values for each place category. For Residence it was seen that the $t_{cal} (1.40) < t_{critical} (2.36)$, hence the null hypothesis stood true and the result was statistically not significant. Similarly, for Office $t_{cal} (-5.33) < t_{critical} (-2.36)$ and for Road $t_{cal} (-2.59) < t_{critical} (-2.36)$ respectively it was observed that in both cases the null hypothesis ($H_0: \mu_1 - \mu_2 = 0$) held true. The mean difference of hours (after pandemic – before pandemic) for these two places also exhibited negative values at -1.17 and -0.25 respectively. However, in case of places for Indoor Sports $t_{cal} (4.63) > t_{critical} (2.36)$, Outdoor activities $t_{cal} (6.65) > t_{critical} (2.36)$, Recreation $t_{cal} (3.05) > t_{critical} (2.36)$, Religious $t_{cal} (3.14) > t_{critical} (2.36)$ and Market areas $t_{cal} (-1.13) > t_{critical} (-2.36)$, the critical t -value was found to be greater than the calculated t -value suggesting significant statistical difference. Thus, the null hypothesis was rejected and the alternative hypothesis ($H_1: \mu_1 - \mu_2 \neq 0$) held true.

Table 2 Paired t -test on each place before and after the pandemic

Place	Total hours spend before pandemic	Mean of Total hours spend before pandemic	Total hours spend after pandemic	Mean of Total hours spend after pandemic	Mean of Difference total hours (after before)	Standard deviation of difference -hours	Standard deviation of difference	Coefficient of variation	Paired t -test
Residence (home, hostel, rented apartment etc)	3196.5	10.73	3311	11.11	114.5	0.38	4.72	22.29	1.40
Office / institution / workplace	2050.5	6.88	1700.5	5.71	-350	-1.17	3.80	14.46	-5.33
Road / transport for travel /	541.5	1.82	466.5	1.57	-75	-0.25	1.67	2.80	-2.59

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commutation

<i>Indoor sports center for yoga, gym</i>	241.5	0.81	374	1.26	132.5	0.44	1.66	2.75	4.63
<i>Outdoor sports park ground open space etc</i>	301.5	1.01	520	1.74	218.5	0.73	1.90	3.62	6.65
<i>Recreational place (restaurant, theatre etc)</i>	720.5	2.42	912	3.06	191.5	0.64	3.63	13.21	3.05
<i>Religious / spiritual places (temple, mosque etc)</i>	371	1.24	499	1.67	128	0.43	2.36	5.58	3.14
<i>Market mall / street shops commercial place</i>	694	2.33	643.5	2.16	-50.5	-0.17	2.59	6.72	-1.13

Value for $t_{critical}$ was ± 2.365 at 95% confidence and significance level $p = 0.05$

6. Study – 3

6.1 Objective

To study the relationship between attachment levels of respondents and number of hours spend at a particular place before the pandemic and number of hours, are they likely to spend at that place after the pandemic. We used regression analysis as a tool to determine how the changes in each independent variable were related to changes on the dependent variable.

6.2 Method

The same questionnaire had been used where from the overall sample size of $N = 323$ responses, a total of 297 had been found to bear values complying to all variables. Multiple Linear Regression uses several explanatory variables to predict the outcome of a response variable. Hence, the independent variables comprised of hours before (x_1) and hours after (x_2) while attachment level (y_i) was the predicted variable. It was assumed that the independent variables were not too highly correlated to each other and y_i observations were selected independently and randomly from the sample. The coefficient of determination (R-squared) is a statistical metric that measures the variation in outcome which can be explained by the variation in independent variables. R^2 can only be between 0 and 1, where 0 indicates that the outcome cannot be predicted by any of the independent variables and 1 indicates that the outcome can be predicted without error from the independent variables (Morningstar Investing Glossary, 2020). The residual value, E , which was the difference between the actual outcome and the predicted outcome, was included in the model to account for such slight variations.

6.3 Results

On performing the analysis, it was seen that for Residence there was a 28% decrease in number of hours spend after the pandemic for very detached and an 15% increase in the number of hours people were willing to spend at Residence after the pandemic period. An interesting scenario arises in case of Office where we saw, for respondents who were very attached, there was a 23% decrease in the number of hours they were willing to spent during post pandemic phase. Respondents who were very detached had shown a 55% decrease in the number of hours after the pandemic. The percentages had been calculated with respect to the number of hours the respondents were likely to spent at that particular place after normalcy is restored. Naturally, the negative values of percentages indicated there was a decrease while positive values reflected an increase in the number of hours likely to be spent post pandemic. Except for Residence, each of the places namely Office, Road, Indoor, Outdoor, Religious and Market had shown a decrease in the number of hours by -23%, -51%, -72%, -23%, -8% and -37% respectively for very attached respondents. Not only for respondents who were very attached, there was a decrease in -55%, -58%, -81%, -38%, -20% and -52% respectively for respondents who were very detached from the above places.

7. Discussion

The attachment of people towards places were based on various attributes. Each study performed illustrated separate findings but had a common central theme which dealt with the attachment of people with different category of places before and after the pandemic. Each study was objectified towards finding results that can yield clear directions while moving forward. The first study used RIDIT analysis to rank place categories according to the attachment levels. Results indicated people were highly attached to their place of residence closely followed by their place of work compared to other places. The pandemic had instilled a sense of anxiety amongst people. With the added restrictions on movement and constant alerts on avoiding crowded places, people were opting for residence as a safer alternative. This was significant considering the conditions back then (even is till now) where public places were vulnerable. Work forms an important aspect of one's living. Hence, people had ranked workplaces right after their place of refuge. Human behaviour and their perception towards their surrounding often influence their choices and actions. Since going to work and getting items for daily consumption are

indispensable, the use of road for transportation was ranked closely after. The rankings were indicative of the fact that the ones that were ranked higher were to be considered significant. Places like parks, fitness centres, gym, temples, mosques had been given lower preference by the people. Evidently, most of this was due to the pandemic scenario which was intensified with fresh cases being reported daily, where people retracted from going to places which were not of much relevance according to them. These places were in fact closed during the lockdown period. Although, these places are gradually opening up to the public post lockdown, people are still doubtful about going to these places as evident from the analysis. While planning for the future these data and results will help researchers in understanding which sectors to lay more focus on for a more resilient and sustainable design.

The second study used paired *t*-test to determine if there was evidence that the difference (in mean) of the number of hours spent at a particular place before the pandemic to the number of hours spent at the same place after the pandemic varied substantially from zero. For residence, the difference was not significant, the before and after hours were somewhat similar implying that the pandemic had not greatly affected the number of hours they spent at home. From our previous study we had also seen that residence had been the most preferred place where the level of attachment was fundamentally high. This makes perfect sense since home is a place where an individual finds comfort and feels secure. The paired *t*-test also revealed that workplace and roadways for travel also followed suit with residence. Their difference too with the critical value of *t*, although negative did not show significant difference. Since, these two categories of places are closely linked to an individual's daily life, people like before the pandemic will continue to use them for their needs. Places that showed significant statistical difference included: indoor areas (gym, fitness centre), outdoor spaces (parks, playgrounds), religious places (temples, mosques), recreational (restaurants, theatres), markets (malls, shops). Here, the before-after hours varied substantially indicating that the Covid-19 pandemic had a profound influence on the users. Linking this result with our previous study (where the aforesaid places had been assigned lower rankings) also reiterates the fact that these places were considered vulnerable by people. The primary objective must closely observe the nature, behaviour and functioning of these places under the current condition so that we may incorporate meaningful designs.

The third study employed regression analysis to examine the relationship between attachment levels and the number of hours spent at a particular place before the pandemic and the time they were willing to invest on that same place after the pandemic. The increase or decrease was expressed in percentage with negative values indicating a decrease in the amount of time. For people who were very detached from residence had revealed a decrease (expressed in percentage) in the number of hours they were willing spend after the pandemic. On the other hand, people who were highly attached to their residence had expressed a significant rise in the number of hours they were willing to spend after the current situation attained normalcy. Both the previous studies had shown that people prefer residence over other places and were attached, which notion was further justified in the third study. For rest of the place categories, the difference (in percentage) for both highly detached and highly attached people showed negative values implying a decrease in the number of hours during post pandemic phase. This gave us a strong indication that for each of

these places, people were inclined towards spending less time owing to the uncompromising impact of Covid-19.

8. Limitations and Future scope

This research including the survey had its own set of limitations. To start with, a larger sample size could have been considered for a more comprehensive analysis. Owing to the lockdown due to the current pandemic situation, the survey had to be restricted to online platform thereby curbing its outreach to a wider section of audience. The use of software was restricted to Microsoft Excel. The final limitation being that the output of each of this analysis might vary according with varying sample sizes.

The applicability of this research applies to the whole community as the pandemic has affected us all. The entire phenomena of a carefree life have been replaced by careful preventive measures under the tag of 'new normal'. The scope of this research cannot be merely restricted to the attachment of an individual to a particular and the time they are likely to spent after the pandemic but how it affects each category of place. Keeping in mind that this research was conducted during the lockdown period (March 2020 – May 2020), the data collected and results obtained are significant and shall serve as an important source of documentation. This data can be used for further research and comparative analysis during the post pandemic phase. Change is inevitable, but how are places changing due to this pandemic and how people are adapting to this change remains the main argument. This study shall pave the way for understanding what are the places which people will prefer so that more efforts can go into making them safer, cleaner and more resilient.

9. Conclusion

The Covid-19 pandemic has had a tremendous impact not only on places but also the people that are using them. Tracing back to the aim which was to determine and understand the relationship between attachment of an individual to a particular place category based on the number of hours before and after the current pandemic situation, it can be said that the studies undertaken have proven to be beneficial in giving directionality. The aim has been achieved through a series of analysis using various tools. This research provides relevant finding in the relationship between attachment levels and time spent at various places with respect to the pandemic. The attachment levels for some places can be predicted while for few others they become unpredictable. A common trend had been observed in the preferences of people. Places demanding daily usage had been ranked higher than places which were used on a weekly basis. This trend was largely due to the direct impact of the Covid-19 pandemic. Places where the attachment was high, the difference in hours of use before and after the pandemic was less. On the contrary, places with low levels of attachment had seen a significant difference in the number of hours before and after the pandemic. Generally, there had been a decrease in the amount of time people were willing to spend after the pandemic. This can be attributed to 'fear' since the disease is unknown to the world and solutions are mostly in the form of mere speculations and preventive

measures as directed by medical practitioners and researchers. 'Hope' often seen as a gift to mankind, is enabling people to think that like any other global pandemic this too shall pass giving us life lessons. Public places are the most vulnerable to the transmission of this virus. Hence there needs to be stringent guidelines and provisions for facilities like sanitization and social distancing. There was and always will be certain levels of uncertainty as to what the future holds but, at the least a generalized notion will help gain a definitive direction in combatting this pandemic from the societal perspective and planning for future oriented resilient urban spaces.

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