CHAPTER-6

Noise Sensitivity & Diners' Experience

This chapter presents the results and outcomes of the second objective of the study. It includes the effect of noise in the restaurant on diners' experience and also incorporates the role of music in noise.

This chapter deals with the effect of noise in the restaurant on visitor's experience. The responses of the guests in order to analyze the impact of noise in overall satisfaction of diners is presented in this chapter. This chapter also captures the analysis on the role of music in noise avoidance. This chapter is presented in six sub sections.

6.1. Highlights the preliminary introduction to noise

6.2. Emphasizes on noise sensitivity

6.3. Perception of sonic quality and noise sensitivity

6.4. Restaurant experience and noise sensitivity

6.5. Music typology and noise sensitivity

6.6. Segment-wise noise sensitivity

6.7. Role of music as a noise avoider

6.1. Introduction

Diners are exposed to different types of sound as reported in the previous chapter (refer to Section 5.2.2, 5.2.3; Chapter 5). Some sounds are pleasing to our ears and some are not. These unpleasant sounds are harmful for us psychologically and physiologically. In restaurants, noise emissions were reported as the primary source of complaints just after poor customer service during the meal (Spence, 2014; Spence et al., 2019). Additionally, noise levels are rising due to several sources, including traffic noise near restaurants and public areas (Münzel et al., 2018b; Spence, 2014; Pawlaczyk-Łuszczyńska et al., 2018). Noise exposure can cause a variety of symptoms not only to the diners but also to the employees and whosoever are exposed to that environment for a prolonged period. These consist of tension, irritation, and disruption of sleep (Basner et al., 2014) which may develop over time and lead to cardiovascular disease, diabetes, obesity, and hypertension (Münzel et al., 2018a; Poulsen et al., 2018). According to Spence et al., background noise can also have an impact on how much the food is enjoyed by the diners. Let us go through and understand the impact of noise in diners' experience in the following sections.

The survey data of 824 responses from diners of restaurants situated in Guwahati, Jorhat, Tezpur, Tinsukia, Dibrugarh, Nagaon and Silchar are used to analyze the second objective- *To measure the impact of noise in overall satisfaction of diners and also to find out if music can play some role in noise avoidance.* For details on demographic profile of the respondents Section 5.1 of Chapter 5 can be referred to.

6.2. Noise Sensitivity

According to research, noise sensitivity is one of the most important factors influencing noise irritation (Williams & Short, 2022; Stansfeld et al., 2009). Noise sensitivity is mostly independent of noise exposure and is a predictor of noise discomfort (Griffiths & Delauzun, 1977; Stansfeld, 1992; Job, 1999). Rather than the physical characteristics of the noise itself, it is a subjective level of noise perception that modifies different levels of responses. Generally, it takes into account underlying attitudes towards noise and individual tolerance of particular noises (Nivison, 1992). Although sensitivity to noise is generally thought of as a fixed inherited feature, it can change over time.

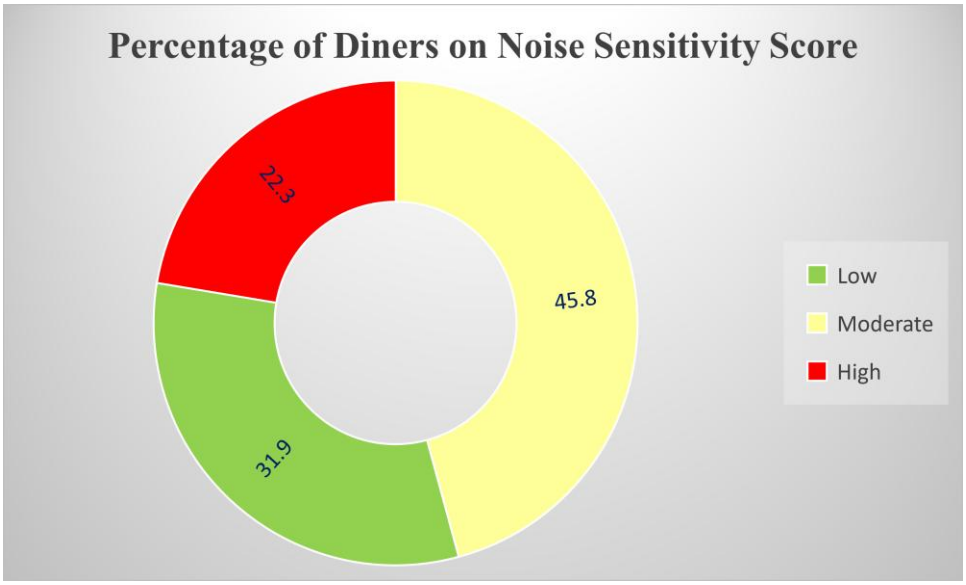

Figure 6.1: Noise Sensitivity Score

The above figure (6.1) depicts the percentage of diners on their noise sensitivity score derived from the survey data. The scores are based on the 20 statements of the Weinstein's Noise Sensitivity Scale modified for restaurant settings by the author. The respondents are categorized as per their rating for these statements. Those who rated strongly agree and agree to the statements are categorized as highly sensitive to noise.

Those who rated neutral are categorized as moderately sensitive and those who rated disagree and strongly disagree to the statements are treated as low sensitive to noise. Based on the scores three categories are created as – high noise sensitive, moderately noise sensitive and low noise sensitive. 22.3% diners are calculated to be high on noise sensitivity, 45.8% are moderately noise sensitive and 31.9% are low sensitive to noise in restaurants [Refer to Section 4.4.1(iii)]

6.2.1. Sonic Impression & Noise Sensitivity

Sonic impression refers to the perception of diners towards the auditory environment. Three categories are used to describe the sonic impression as – 'good, neutral and bad'. Diners have different perception of sonic impression of the restaurant. Based on the sonic impression noise sensitivity is measured. In order to measure this variable with noise sensitivity a chi square test is performed with the following hypothesis that:

H_{0N1}: There is no significant association between perception of sonic impression on noise sensitivity.

Table 6.1.: Chi-Square Tests for Sonic Impression & Noise Sensitivity

Variable	Value	Sig. P value	Cramer's V
Sonic Impression	*11.021*	*0.026*	*0.082*

The result of the Chi-Square test is presented in the table. The table shows that the *p*-value i.e., .026 is less than the significance level of .05. Hence, the null hypothesis can be rejected and it can be concluded that the noise sensitivity of diners is associated with the perception of

Table 6.2.: Sonic Impression & Noise Sensitivity

Level of noise sensitivity	Sonic impression	Good	Neutral	Bad	Total
Low	*Count*	*76*	*162*	*23*	***261***
	Row %	*29.10%*	*62.10%*	*8.80%*	*100.00%*
	Column %	*25.20%*	*35.40%*	*38.30%*	*31.90%*
Moderate	*Count*	*156*	*193*	*26*	***375***
	Row %	*41.60%*	*51.50%*	*6.90%*	*100.00%*
	Column %	*51.70%*	*42.20%*	*43.30%*	*45.80%*
High	*Count*	*70*	*102*	*11*	***183***
	Row %	*38.30%*	*55.70%*	*6.00%*	*100.00%*
	Column %	*23.20%*	*22.30%*	*18.30%*	*22.30%*
Total	*Count*	*302*	*457*	*60*	***819***
	Row %	*36.90%*	*55.80%*	*7.30%*	*100.00%*
	Column %	*100.00%*	*100.00%*	*100.00%*	*100.00%*
	% of Total	***36.90%***	***55.80%***	***7.30%***	*100.00%*
	Column %	*100.00%*	*100.00%*	*100.00%*	*100.00%*
	% of Total	***36.90%***	***55.80%***	***7.30%***	*100.00%*

sonic impression. The Phi/Cramer's V value should then be examined to ascertain how strongly the two variables are related. Since the Phi value is utilised to ascertain correlation when there are just dichotomous variables, the Cramer's V value should be examined for interpretation in this situation. According to Akoglu's (2018) Phi and Cramer's V range, diners' degrees of noise sensitivity are positively but weakly correlated with sonic impression (.082). The cross tabulation on sonic impression and noise sensitivity reveals that those diners who are low in noise sensitivity 29.10% perceives the sonic impression to be good, 62.10% perceives that the sonic impression is neither good and not bad being in neutral and 8.80% considers the sonic impression to be bad. In case of diners with moderate noise sensitivity 41.60% considers sonic impression to be good, 51.50% considers neutral and only 6.90% considers bad. While looking into high noise sensitive diners considers 38.30% as good, 55.7% as neutral and 6% considers sonic impression to be bad. It can be inferred that while most diners tend to have a "Neutral" sonic impression regardless of sensitivity level, those with low and moderate noise sensitivity are more inclined to rate the environment as “Good” compared to those with high sensitivity. However, diners with high sensitivity perceived the sonic impression to be *less* “Bad” than moderate and low noise sensitive diners. Efforts to improve restaurant soundscapes should focus on accommodating diners with higher sensitivity to noise.

6.2.2. Background Sound Level & Noise Sensitivity

The background sound level refers to the perception of diners on levels of different sound sources encountered in the restaurant. To measure the levels, three categories are used- ‘high, appropriate and low’. In order to ascertain the association between background sound level and noise sensitivity again a chi square test is used with the following hypothesis:

> *H_{0N2}: There is no significant association between background sound level in the restaurant on noise sensitivity.*

The result of the Chi-Square test is presented in the table shows the p-value for both the variable i.e., .004 for background sound level is less than the significance level of .05. Hence, the null hypothesis can be rejected and it can be said that the noise sensitivity of diners is associated with the perception of background sound level in the restaurant. The

diners' degrees of noise sensitivity are positively but weakly correlated with sonic impression (=.096). The cross tabulation between background sound level and noise sensitivity reveals that 19.2% diners who are low in noise sensitivity but perceives the background sound to be high. Those diners who are low noise sensitive 69.70% perceive that the background sound to be appropriate and 11.1% consider it to be low. In case of diners with moderate noise sensitivity 12.5% considers background sound level to be high, 79.2% considers appropriate and only 8.3% considers low. While looking into high noise sensitive only 7.7% diners consider background sound level as high, 81.4% as appropriate and 10.9% diners consider it to be low. It can be inferred from here that diners with high sensitive comparatively less diners perceive the background sound to be 'high' than moderate sensitive and low sensitive diners. Highly sensitive diners contributed 12.6% of those perceiving the sound as "High", 42.3% are from moderate sensitivity and 45% are low sensitive Regardless of sensitivity, the majority of diners (76.7%) find "Appropriate" sound levels. While highly sensitive eaters tend to perceive calmer situations, individuals with low sensitivity are more tolerant of "High" sound levels. This suggests that flexible soundscapes are required in restaurants to accommodate varying sensitivity levels.

Table 6.3.: Background Sound Level & Noise Sensitivity

Level of noise Sensitivity	Background Sound Level	High	Appropriate	Low	Total
Low	Count	50	182	29	261
	Row %	19.2%	69.7%	11.1%	100.0%
	Column %	45.0%	29.0%	36.3%	**31.9%**
Moderate	Count	47	297	31	375
	Row %	12.5%	79.2%	8.3%	100.0%
	Column %	42.3%	47.3%	38.8%	**45.8%**
High	Count	14	149	20	183
	Row %	7.7%	81.4%	10.9%	100.0%
	Column %	12.6%	23.7%	25.0%	**22.3%**
Total	Count	111	628	80	819
	Row %	13.6%	76.7%	9.8%	100.0%
	Column %	100.0%	100.0%	100.0%	100.0%
	% of Total	**13.6%**	**76.7%**	**9.8%**	100.0%

6.2.3. Music Volume & Noise Sensitivity

As it has been found out that background sound level differs across different levels of noise sensitivity, the next variable on perception of the volume of music thought to be explored. The opinion of diners on the volume of music played in the restaurants has been assessed with noise sensitivity. Again, a Chi square is performed by considering the following hypothesis:

H_{0N3}: Music volume is not significantly associated across different levels of noise sensitivity.

Table 6.4: Chi-Square Tests for Music Volume Level & Noise Sensitivity

Variable	Value	Sig. P value	Cramer's V
Music Volume Level	*121.644*	*0.000*	*0.273*

The results of the Chi-Square test is presented in the table shows the p-value= .000 for level of music volume is less than the significance level of .05. Hence, the null hypothesis can be rejected and it can be said that the noise sensitivity of diners is associated with the perception of level of music volume in the restaurant. The diners' degrees of noise sensitivity are positively and strongly correlated with the volume of music in the restaurant (.273). The differences in the various levels of volume of music with respect to noise sensitivity levels can be ascertained from the cross tabulation presented below:

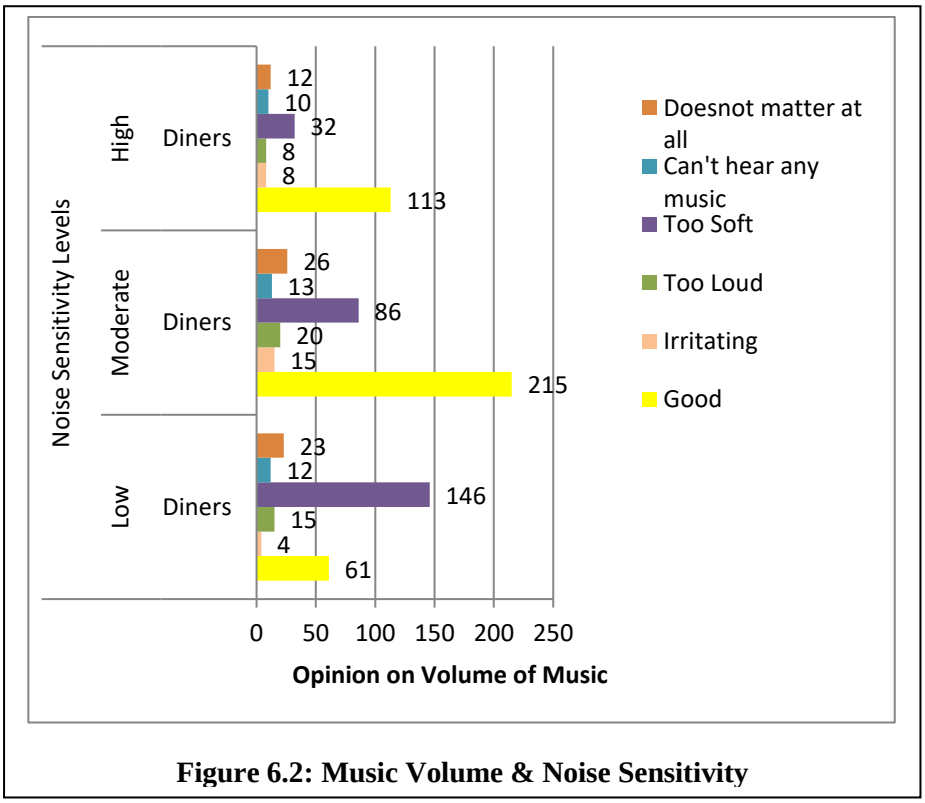

Figure 6.2: Music Volume & Noise Sensitivity

This table examines the relationship between diners' noise sensitivity levels (Low, Moderate and High) and their opinions on the volume of music in restaurants (Good, Irritating, Too Loud, Too Soft, Can't Hear any Music, and Does not Matter at All). It can be interpreted as majority of diners (47.5%) finds the music volume was "Good" followed by 32.2% diners opined the music as "Too Soft". Less frequently given responses include "Irritating" (3.3%), "Too Loud" (5.3%), "Can't Hear Any Music"

(4.3%), and "Does Not Matter at All" (7.4%). The largest group of diners (45.8%) were moderately sensitive, followed by diners (31.9%) low in noise sensitive and highly sensitive (22.3%) diners. The majority of diners in the low sensitivity group (55.9%) believed the music volume was "Too Soft", 23.4% of respondents said the volume was "Good", a very few percentages said it was "Too Loud" (5.7%), "Can't Hear Any Music" (4.6%) and "Irritating" (1.5%). Low sensitivity diners were more likely to say the music was "Too Soft," indicating that they preferred music that is a little louder in volume. According to moderately noise sensitive diners, 57.3% accounts for a "Good" volume, followed by 22.9% "Too Soft". The diners who are moderately sensitive are the most satisfied ones, with the majority rating the volume as "Good". Highly sensitive diners were most likely to find the volume "Good" (61.7%) but were less likely than other groups to report "Too Soft"(17.5%) indicating their preference for softer music.

6.2.4. Usual Personal Level of Listening Music & Noise Sensitivity

It is believed that each one of has different level of volume for listening music. Music is an inevitable thing which is present from birth to death and during our lifetime. That is why in order to determine whether and how the level of noise sensitivity varies across the usual personal level of the diner's listening music one way ANOVA test is performed.

> *H_{0N4}: There is no significant difference in the usual personal level of music listening across individuals with varying levels of noise sensitivity.*

The result of ANOVA test shows that p=.000. Therefore, the null hypothesis is rejected. In case of rejection of the null hypothesis indicates that at least there is difference in one pair. To get more insight for the differences in the variables, the homogeneity of variance is looked for.

Table 6.5: Usual Personal Level of Listening music and Noise Sensitivity

Usual Personal Level of Listening music		N	$\bar{X}$ (Mean) (1-7)	F	p	Significant Difference
Levels of Noise Sensitivity	Low	261	*3.43*	*44.469*	***.000***	*Significantly Different*
	Moderate	375	*4.13*			
	High	183	*4.90*			

The analysis showed that there is violation of homogeneity of variance for the noise sensitivity levels (p=0.00) and Games-Howell Post-hoc are considered for multiple comparisons as extracted value is less than significance value (i.e., P<.05). It is found in the Post-hoc analysis that there is difference in the usual personal level of listening music among low noise sensitive diners and moderate sensitive diners(p=.00); low noise sensitive diners and high noise sensitive diners (p=.00) and also between moderate noise sensitive diners and high noise sensitive diners. It can be inferred from here that perception of noise and the sensitivity levels of the diners are influenced by their respective personal level of listening music. There are statistically significant differences in the usual personal levels of music listening among the "low," "moderate," and "high" frequency groups, with a clear trend of increasing levels as the frequency category rises.

This may mean that they may prefer to listen to loud music otherwise but sensitive to restaurant noise. Even if the diners are high sensitive, they may prefer listening to music in general at a louder volume but may not prefer any kind of noise in restaurants and not even loud music.

Summary of section 6.2:

In this above section, diners noise sensitivity score was calculated and categorized as – 'high noise sensitive', 'moderate noise sensitive' and 'low noise sensitive'. Diners tend to have a "Neutral" sonic impression regardless of sensitivity level. Regardless of sensitivity, the majority of diners favour "Appropriate" sound levels. Those who are in low sensitivity perceived the music level to be “Too soft”. The diners who are moderately sensitive are the most satisfied ones, with the majority rating the volume as "Good". Highly sensitive diners were most likely to find the volume "Good" (61.7%) but were less likely than other groups to report "Too Soft” (17.5%) indicating their preference for softer music. Again, diners prefer to listen to loud music otherwise but sensitive to restaurant noise.

6.3. Perception of Sonic Quality & Noise Sensitivity

It is pivotal to examine the qualitative aspects of soundscape with its established sonic quality. The perception of the sonic environment being pleasant, chaotic, exciting, uneventful, calm, annoying and monotonous restaurant ambience to noise sensitivity are

explored separately with the help of one-way ANOVA. The following hypotheses are formulated:

H_{0N5}: There is no significant difference in the average perception of a pleasant soundscape across diners with varying levels of noise sensitivity.

H_{0N6}: There is no significant difference in the average perception of a chaotic soundscape across diners with varying levels of noise sensitivity.

H_{0N7}: There is no significant difference in the average perception of a exciting soundscape across diners with varying levels of noise sensitivity.

H_{0N8}: There is no significant difference in the average perception of a uneventful soundscape across diners with varying levels of noise sensitivity.

H_{0N9}: There is no significant difference in the average perception of a calm soundscape across diners with varying levels of noise sensitivity.

H_{0N10}: There is no significant difference in the average perception of a annoying soundscape across diners with varying levels of noise sensitivity.

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H_{0N11}: There is no significant difference in the average perception of a monotonous soundscape across diners with varying levels of noise sensitivity.

Table 6.6: Perception of Sonic Quality and Noise Sensitivity

Variables	*Levels of Noise Sensitivity*	N	$\bar{X}$ (Mean) (1-7)	F	p	Significant Difference
Pleasantness	Low	261	3.36	*113.84*	***.000***	*Significantly Different*
	Moderate	375	4.57			
	High	183	5.60			
Chaotic	Low	261	3.98	*22.97*	***.000***	*Significantly Different*
	Moderate	375	3.42			
	High	183	3.02			
Exciting	Low	261	3.82	6.08	***.000***	*Significantly Different*
	Moderate	375	4.20			
	High	183	4.05			

Variables	*Levels of Noise Sensitivity*	N	$\bar{X}$ (Mean) (1-7)	F	p	Significant Difference
Uneventful	Low	261	4.33	*15.90*	***.000***	*Significantly Different*
	Moderate	375	4.50			
	High	183	5.09			
Calm	Low	261	3.24	100.24	***.000***	*Significantly Different*
	Moderate	375	4.18			
	High	183	5.32			
Annoying	Low	261	3.83	*15.66*	***.000***	*Significantly Different*
	Moderate	375	3.39			
	High	183	3.04			
Monotonous	Low	261	3.69	*7.91*	***.000***	*Significantly Different*
	Moderate	375	3.92			
	High	183	4.18			

ANOVA tests are performed to investigate whether diners' perception of sonic quality (pleasant, chaotic, exciting, uneventful, calm, annoying and monotonous) varies based on levels of noise sensitivity. The test results, as shown in table, indicate that the *p* value for all the variables tested are less than .05. Consequently, the null hypotheses are rejected. Multiple comparisons can now be conducted to gain a better understanding of the variations within the groups. According to the Test of Homogeneity of Variances, the differences should be extracted using the Games-Howell Post-hoc method of multiple comparisons since the Levene's test of homogeneity for each variable has failed.

In the case of *Pleasantness*, Games-Howell test offers a clear view of the differences among all the noise sensitivity groups (low, moderate, and high) in how pleasant they perceive the sound environment is. Diners with "low" noise sensitivity find their sound environment significantly less pleasant than those with "moderate" sensitivity. Diners with "high" noise sensitivity perceive their sound environment as significantly more pleasant than those with "low" and "moderate" sensitivity. It can be inferred that high noise sensitivity diners find the ambience pleasant may be because of the music played therein and ignored the noise but low noise sensitivity diners may require more volume to enhance their pleasantness. This interpretation is consistent with *Calmness*, as here also the trend is similar with different noise sensitivity level the mean shows an increasing trend from low, moderate to high and p value=.000 for all the sensitivity groups.

In the case of *Exciting*, the only significant difference is between the "low" and "moderate" sensitivity groups, where the moderately noise sensitive diners perceive the sound environment as significantly more exciting than the low group. However, no significant differences are observed between other pair wise comparisons (e.g., moderate vs. high, very low vs. high). These results suggest that moderate noise sensitivity might be associated with a heightened perception of excitement in the sound environment, but this trend does not extend to the high sensitivity group as it showed in case of pleasantness and calmness.

For the variable *Uneventful*, diners with high sensitivity perceive their sound environment as more uneventful compared to those with low sensitivity and moderate sensitivity (p=.00 for both the pairs). This indicates that people with high level of sensitivity are more sensitive to or conscious of monotony (not happening/ not in movement) in their auditory surroundings. On the other hand, people with low sensitivity might want to experience greater stimulation in the same sound environment as they are finding the ambience to be somewhat eventful and need more volume and music to find it uneventful. Conversely, no significant difference has been found between moderate and low noise sensitive diners.

In the case of *Monotonous*, diners with high sensitivity perceive the sound environment as significantly more monotonous compared to those with low sensitivity (p=.00). However, there is no significant difference in perceived monotony among the moderate and high sensitivity groups (p=.61) and moderate and low sensitive diners (p=.63). This indicates that high noise sensitive diners are finding the restaurant ambience quite unpleasant and uneventful than their counterparts.

For the variable *Chaotic*, diners with low noise sensitivity perceive the sound environment as significantly less chaotic than those with moderate sensitivity (p=.00) and those with high sensitivity (p=.00). Again, people with moderate sensitivity perceive the sound environment as slightly less chaotic than those with high sensitivity (p=.049). This means that low sensitive diners are finding the restaurant unpleasant but they are moving towards eventful. Whereas, high sensitive diners considers the same environment uneventful and unpleasant.

Lastly, for *Annoying*, patrons with low sensitivity scores perceive the sound environment as significantly less annoying compared to those with moderate sensitivity scores and high sensitivity group (for both p=.00). However, there is no significant difference in perceived annoyance of the sound environment between the moderate and high sensitivity groups**.** It can be said that this result compliments the entire finding of this sub section. High sensitive diners are finding the restaurants pleasant and that is why less annoying and low sensitive diners want more excitement in their aural environment.

Summary of section 6.3:

The perception of the sonic environment being pleasant, chaotic, exciting, uneventful, calm, annoying and monotonous restaurant ambience to noise sensitivity were explored with the help of one-way ANOVA for each. Diners with *high noise sensitivity* perceive their sound environment as significantly *more pleasant* and *more calm* compared to those with low and moderate noise sensitivity. In the case of *Exciting*, the only significant difference is between the "low" and "moderate" sensitivity groups, where the moderately noise sensitive diners perceive the sound environment as significantly more exciting than the low group. This indicates that people with high level of sensitivity are more sensitive to or conscious of *monotony* (not happening/ not in movement) in their auditory surroundings. On the other hand, people with low sensitivity might want to experience greater stimulation in the same sound environment high noise sensitive diners are finding the restaurant ambience quite unpleasant and uneventful than their counterparts. In the case of *Chaotic,* diners with low noise sensitivity perceive the sound environment as less chaotic than those with moderate sensitivity and those with high sensitivity.

For *Annoying,* patrons with low sensitivity scores perceive the sound environment as significantly less annoying compared to those with moderate sensitivity scores and high sensitivity groups.

Therefore, incorporating higher loudness or more dynamic soundscapes could help restaurants to attract low-sensitivity guests to improve their experience without disturbing high-sensitivity diners. The increase in noise sensitivity levels emphasizes how crucial it is to customize soundscapes to accommodate a variety of tastes, striking a balance between pleasant and an enjoyable auditory experience.

6.4. Restaurant Experience & Noise Sensitivity

In restaurants diners are exposed to different types of sounds which affect their overall dining experience. Here, in this section, attempt has been made to find out the differences on different noise sensitivity levels with that of *attention to music during a meal, overall satisfying restaurant experience, conviviality of restaurant ambience, perception on sound of cooking food as affecting mood positively,* and *perception on sound of food ordered by co-diners as enhancing appetite and temptation to order the same*. The following hypotheses are formulated:

> *H_{0N12}: The mean of extent to which individuals pay attention to music during a meal on the three levels of noise sensitivity are equal.*
>
> *H_{0N13}: The mean of diners' perception on overall satisfying restaurant experience on three levels of noise sensitivity are equal.*
>
> *H_{0N14}: The average perception to which individuals feel the restaurant ambience convivial on the three levels of noise sensitivity are equal.*
>
> *H_{0N15}: The average extent to which individuals perceive sound of cooking food as affecting mood positively on the three levels of noise sensitivity are equal.*
>
> *H_{0N16}: The average extent to which individuals perceive the sound of food ordered by co-diners as enhancing appetite and temptation to order the same on the three levels of noise sensitivity are equal.*

ANOVA tests are performed to investigate whether diners' perception on different restaurant experience (paying attention to music during meal; overall, satisfied with the restaurant experience; conviviality; sound of cooking food affects mood positively; and sound of food ordered by co-diners enhances appetite and temptation to order the same) varies based on levels of noise sensitivity. At 95% confidence levels, the test result, as shown in table, indicates that the p value for all the variables on test is less than .05 except the last one i.e., sound of food ordered by co-diners enhances appetite and temptation to order the same and noise sensitivity level.

Table 6.7: Restaurant Experience and Noise Sensitivity

Variables	*Levels of Noise Sensitivity*	N	$\bar{X}$ (Mean) (1-5)	F	p	Significant Difference at α=0.05
Paid attention to music during meal	Low	261	2.56	24.94	***.000***	*Significantly Different*
	Moderate	375	2.98			
	High	183	**3.33**			
Overall, satisfied with the restaurant experience	Low	261	3.22	24.17	***.000***	*Significantly Different*
	Moderate	375	3.46			
	High	183	**3.86**			
Conviviality of Restaurant Ambience	Low	261	2.98	74.67	***.000***	*Significantly Different*
	Moderate	375	3.54			
	High	183	**4.22**			
Sound of cooking affects mood positively	Low	261	2.15	*18.56*	***.000***	*Significantly Different*
	Moderate	375	2.65			
	High	183	**2.72**			
Sound of food ordered by co-diners enhances my appetite and temptation to order the same	Low	261	2.79	2.93	*.054*	*Significantly Not Different*
	Moderate	375	2.63			
	High	183	2.83			

The Multiple comparisons are made to gain a better understanding of the variations in the variables. The differences are extracted using the Games-Howell Post-hoc method of multiple comparisons since the Levene's test of homogeneity for each variable has failed. Additionally, null hypothesis for sound of food ordered by co-diners enhances appetite and temptation to order the same across the noise sensitivity levels failed to get rejected.

(a) **Paid attention to music during meal and Noise Sensitivity levels**

Games-Howell test captures a clear picture of the differences among all the noise sensitivity groups (low, moderate, and high) on diners paying attention to music during meal. Diners with "low" noise sensitivity pay significantly less attention to music during meal than those with "moderate" sensitivity (p=.000). Diners with "high" noise sensitivity paid significantly more attention to music during meal than those with "low" (p=.000) and “moderate” sensitivity (p=.008). It can be inferred that high noise sensitivity diners pay more attention to music in the

restaurant may be due to the music played therein and ignored the noise. The more sensitive a person is to noise, the more likely they are to pay attention to or notice music while eating. This implies that those who are more sensitive to noise are more sensitive to auditory inputs, which means that music plays a prominent role in their eating experience. This finding complements the finding of section 6.3 (for pleasantness and calmness). Since the diners who are low sensitive do not pay sufficient amount of attention to music during meal therefore, they found the restaurant ambiance comparatively less pleasant than moderate and high sensitive.

(b) Overall, satisfied with the restaurant experience

Next pair wise comparison is made on satisfying restaurant experience across noise sensitivity levels. People who are highly sensitive are the most satisfied with their dining experiences, followed by people who are moderately sensitive and, finally, people who are low noise sensitive. The *p* value less than .05 indicates the difference among the groups viz; high on noise sensitivity with low noise sensitivity diners (p=.00); high and moderately sensitive diners (p=.00) and low and moderate sensitive diners (p=.03). This pattern implies that, in this situation, noise sensitivity and overall fulfillment (Overall, satisfied with the restaurant experience) are positively correlated. It is plausible that those who are more sensitive would value nuances in the setting or components that improve their experience, including music, other pleasant sound and so on and so forth. On the other hand, people who are low sensitive did not find the restaurant setting to be as interesting, which resulted in lower levels of satisfying restaurant experience.

***(c)* Conviviality of Restaurant Ambience**

Patrons with high sensitivity find the restaurant atmosphere to be welcoming and friendly, followed by people with moderate sensitivity and people with low sensitivity (*p*=.00 for all the three pairs). This implies that people's positive perception of a restaurant's atmosphere is significantly influenced by their sensitivity to noise. People with high sensitivity are probably better able to enjoy the subtle aspects of ambience, which raises their conviviality scores. On the other hand, low sensitive diners might not find the setting as convivial and may require more volume and excitement.

(d) **Sound of cooking affects mood positively**

The result of the post hoc test reveals that individuals with high sensitivity are more positively affected by the sound of cooking compared to those with low sensitivity (p=.000). Individuals with moderate sensitivity are more positively affected by the sound of cooking compared to those with low sensitivity (p=.00). But there is no significant difference between diners with moderate sensitivity and those with high sensitivity regarding the positive effect of cooking sounds on mood (p=.858). It can be inferred that the sound of cooking has an equally favourable effect on people with high and moderate sensitivity. Low sensitivity diners, however, experience significantly less positive effects from the sound of cooking compared to both moderate and high sensitivity groups.

A threshold effect is shown by the lack of substantial differences between the moderate and high sensitivity groups: people with at least moderate sensitivity find cooking sounds uplifting and affecting their mood positively, whereas people with extremely low sensitivity do not.

(e) **Sound of food ordered by co-diners enhances my appetite and temptation to order the same**

As stated above that the p>.05 led to failure in rejection of null hypothesis at 5% significance level. Therefore, post hoc analysis has not been conducted. The means are marginal and there are no statistically significant differences among the different noise levels. It can be said that 'sound of food ordered by co-diners enhances appetite and temptation to order the same' has an equally marginal favourable effect on diners' noise sensitivity levels.

Summary of section 6.4:

This section showed that the more sensitive a person is to noise, the more likely he/she to pay attention to or notice music while eating. People who are highly sensitive are the most satisfied with their dining experiences, followed by people who are moderately sensitive and, finally, people who are low noise sensitive. Patrons with high sensitivity find the restaurant atmosphere to be welcoming and friendly, followed by people with moderate sensitivity and people with low sensitivity. It was also found that the sound of cooking has an equally favourable effect on people with high and moderate sensitivity. Low sensitivity diners, however, experience significantly less positive effects from the sound of cooking

compared to both moderate and high sensitivity groups. However, 'sound of food ordered by co-diners enhances appetite and temptation to order the same' has an equally marginal favourable effect on diners' noise sensitivity irrespective of its levels.

6.5. Music Typology & Noise Sensitivity

In order to examine the extent of preference for different categories of music such as no music, pre-recorded music and live music on the basis of noise sensitivity levels following hypotheses are tested

H_{0N17}: The average preference for no music in a restaurant based on the three levels of noise sensitivity are equal.

H_{0N18}: The average preference for pre -recorded music in a restaurant on the three levels of noise sensitivity are equal.

H_{0N19}: The preference for live music in a restaurant based on the three levels of noise sensitivity.

Table 6.8: Music Typology and Noise Sensitivity

Variables	Levels of Noise Sensitivity	N	$\bar{X}$ (Mean) (0-5)	F	p	Significant Difference at α=0.05
No Music	Low	261	**2.77**	17.88	***.000***	*Significantly Different*
	Moderate	375	2.08			
	High	183	1.93			
Pre-Recorded Music	Low	261	2.45	33.47	***.000***	*Significantly Different*
	Moderate	375	2.85			
	High	183	**3.51**			
Live Music	Low	261	**2.68**	4.81	***.008***	*Significantly Different*
	Moderate	375	2.38			
	High	183	2.22			

The null hypotheses related to different musical conditions across noise sensitivity levels are tested with ANOVA. The test results as produced in the Table show that *p* value is less than .05 at 95% confidence levels. Therefore, the null hypotheses are rejected. Now, to get deeper insight into the differences in the variables, the multiple pair-wise comparisons can be drawn. The Test of Homogeneity of Variances suggests that the

Games-Howell Post-hoc method of multiple comparisons should be followed to extract the differences.

In case of *No music*, Games-Howell test offers a clear view of the differences among the noise sensitivity groups (low, moderate, and high) to their preference for no music condition. However, there is no significant difference between high and moderate noise sensitive diners (p=.625). Diners with "high" noise sensitivity prefer no music during restaurant visit as significantly less than those with "low" sensitivity. However, diners with "low" noise sensitivity prefer no music more than those with "moderate" sensitivity. It can be concluded that high noise sensitive diners find the ambience unpleasant due to the absence of music therein. They also want the music to suppress the negative impact of noise in their dining experience. Here, music acts as the noise avoider. On the other hand, low sensitive diners are somewhat accustomed with noise and does not need a cover to a particular extent.

In case of *Pre-recorded music*, the post hoc analysis shows a clear difference among different levels of noise sensitivity (p=.000 for all the three pairs). The preference for pre-recorded music while dining significantly varies across individuals with different levels of noise sensitivity. It is observed that diners with high noise sensitivity show a stronger preference for pre-recorded music compared to those with low sensitivity and moderate sensitivity. It can be concluded that high sensitivity diners like restaurants with a set volume, which may be caused by the pre-recorded music.

For *Live music*, diners with low noise sensitivity prefer live music slightly more than those with moderate noise sensitivity (p=.033). Conversely, individuals with high noise sensitivity show significantly less preference for live music compared to those with low noise sensitivity (Mean Difference = -0.460, p = 0.010). Additionally, there is no significant difference in live music preference between individuals with moderate and high noise sensitivity. This suggests that diners who are moderately and highly sensitive towards noise avoid a live music condition in restaurant. It may be due to the fact that they may perceive live music to be noisy.

Summary of section 6.5:

This section reveals distinct preferences for music types among diners with varying levels of noise sensitivity. Diners with "high" noise sensitivity prefer ‘no music’ during

restaurant visit which significantly less than those with "low" sensitivity. However, diners with "low" noise sensitivity prefer ‘no music’ comparatively more than those with "moderate" sensitivity. The preference for pre-recorded music while dining significantly varies across individuals with different levels of noise sensitivity. It is observed that diners with high noise sensitivity show a stronger preference for pre-recorded music compared to those with low sensitivity and moderate sensitivity. For *Live music*, diners with low noise sensitivity prefer live music slightly more than those with moderate noise sensitivity and high sensitive to noise least prefers live music. It can be concluded that restaurants should consider customizing their sonic environment to satisfy and accommodate different noise sensitivity levels. Although, both moderate and high noise sensitive diners indicated a very low preference for ‘no music’ but reported high preferences for pre-recorded music, it is meaningful to add some music to make the sonic environment appealing. Restaurants should balance the appeal of pre-recorded music with the option of live music or quieter settings for diners with varying preferences. Also, it was mentioned in the previous chapter (section 5.8.1) that preference for live music is more during special occasions. Therefore, managers should formulate strategies in a manner to play pre-recorded music during normal days and live music during special days, on occasions and possibly during weekends to cater to the diverse customer needs and preferences.

6.6. Demographic Profile & Noise Sensitivity

In order to check if diners age, gender, occupation, marital status, visit types (instant or pre-booked)) and treat type (self-paid or sponsored) with their noise sensitivity certain hypotheses are formed to be tested using Chi square test. These are:

> *H_{0N20}: There is no significant difference in noise sensitivity levels across different age groups.*
>
> *H_{0N21}: There is no significant difference in noise sensitivity levels across gender.*
>
> *H_{0N22}: There is no significant difference in noise sensitivity levels between occupations.*
>
> *H_{0N23}: There is no significant difference in noise sensitivity levels between marital statuses.*

H_{0N24}: There is no significant difference in noise sensitivity levels across income groups.

H_{0N25}: There is no significant difference in noise sensitivity levels across spending in restaurants.

H_{0N26}: There is no significant difference in noise sensitivity levels between visit types.

H_{0N27}: There is no significant difference in noise sensitivity levels between treat types.

Table 6.9: Chi-Square Tests for Demographic Variables & Noise Sensitivity

Variable	Value	Sig. P value	Cramer's V	Significant Difference at α=0.05
Age	*31.83*	***.000***	*.139*	*Significantly Different*
Gender	*1.21*	*.546*	*.039*	*Significantly Not Different*
Occupation	*8.89*	***.012***	*.104*	*Significantly Different*
Marital Status	*8.37*	***.015***	*.101*	*Significantly Different*
Income	*12.839*	***.046***	*.089*	*Significantly Different*
Average Spending in Restaurant	*41.33*	***.000***	*.159*	*Significantly Different*
Treat Type	*11.32*	***.003***	*.118*	*Significantly Different*
Visit Type	*0.82*	*.662*	*.032*	*Significantly Not Different*

The results of the Chi-Square tests are presented in the table shows the p-value for all the variables. The null hypotheses on age, occupation, marital status, income, average spending in restaurant and treat type are rejected since p value is less than the significance level of .05. And for gender and visit type, we failed to reject null hypotheses. Hence, it can be said that the levels of noise sensitivity of diners are significantly different in case of age, occupation, marital status, income, average spending in restaurant and treat type.

The Cramer's V result talks about the strength of the association and relation. For *age* it is .139 yielding a moderate and positive relation; occupation and marital status are .104

and .101 respectively showing a moderate association; income is .089 showing a positive but weak association; average spending in restaurant is .159 having a strong association; treat type is .118 showing a moderate relation. *Gender and visit type* have no association (> .0 but < .05).

(i) Age

The largest proportion of respondents fall within the 26–35 years age bracket across all noise sensitivity levels, accounting for 69.0% of diners with low noise sensitivity; 54.7% of diners with moderate noise sensitivity; 50.3% of those with high noise sensitivity. The 36–45 years age bracket shows a higher proportion of individuals with moderate noise sensitivity (54.0%) and high noise sensitivity (33.0%) compared to other sensitivity levels. It is observed that the diners under 26-35 years are largely affected by noise sensitivity. It has been noted that most diners between the age group of 26-35 years are sensitive to noise at every level. It is very crucial for the restaurants to understand the young crowd as per their sensitivity to noise. Taking into account soundscapes that provide ambiance without being overpowering for senior audiences with moderate sensitivity. Restaurants should take noise comfort into account, especially for the highly sensitive diners of 36–45 age group, who might be more impacted by loud noises.

(ii) Occupation

Among self-earning individuals, moderate noise sensitivity accounted for 46.4%, followed by low sensitivity (30.3%), and then high sensitivity (23.4%). Among those who are not earning, low sensitivity accounted for 44.6%, followed by moderate sensitivity (41.3%), and the smallest group has high sensitivity (14.1%). Moderate noise sensitivity is the most common (45.8% of total respondents), regardless of occupation status. Low noise sensitivity is the second most common (31.9%), followed by high noise sensitivity (22.3%). It is found that majority of diners who are earning are moderate noise sensitive and majority of those who are not earning are low noise sensitive. It can be concluded that restaurants should consider creating

sound levels that cater to moderate and high sensitivity, particularly for the self-earning group, as they form the majority of customers.

(iii) Marital Status

Currently single diners dominate across all noise sensitivity levels. Low sensitivity accounts for 70.9% of the currently single diners. Followed by moderate sensitivity for 62.1% and 58.5% are high sensitivity. Married individuals make up a smaller proportion across all sensitivity levels, but their highest representation is in the high sensitivity group (41.5%). Moderate noise sensitivity is the most common overall (45.8% of total respondents), followed by very low sensitivity (31.9%), and then high sensitivity (22.3%). It is found that among married diner, majority are high noise sensitive and in case of currently single diners majority are low on sensitivity. Since currently single diners make up the largest portion of their clientele, restaurants with moderate noise levels are likely to appeal to them. Married customers may benefit more from customized noise environments.

(iv) Income

Diners with moderate noise sensitivity are the largest group across all income brackets, accounting for 45.8% of the total respondents. Those with low noise sensitivity follow, representing 31.9% of the total, while high noise sensitivity accounts for 22.3% only. The largest proportion of low sensitivity is in the Upto ₹35,000/- income bracket (30.7%). In case of moderate sensitive diners, the largest proportion is in the ₹65,000/- –₹1,00,000/- income group (34.1%). For high sensitivity group largest proportion is split across ₹65,000/- –₹1,00,000/- (34.4%). It can be said that noise sensitivity tends to rise with income as it is observed that income group ₹65,000/- –₹1,00,000/- are high sensitive and diners with low income (Upto ₹35,000/-) noise sensitivity tends to be low. It can be concluded that income is a determining factor as far as noise sensitivity is concerned.

(v) Average Spending in Restaurant

The majority of diners with low sensitivity are in the Upto ₹2,500/- group (50.2%). Only 8.4% of individuals with low sensitivity spend more than ₹10,000/-. Again, maximum diners with moderate sensitivity are in the ₹2,500/- or less group (50.7%). Spending above ₹10,000/- accounts for only 8.8% of this moderate group. A significant proportion of individuals with high sensitivity are in the ₹2,500/- or less group (71%), while only 1.1% of this group spends above ₹10,000/-. Among diners spending "Above Rs. 10,000/-" the majority (57.9%) have moderate sensitivity and among diners spending 'Upto Rs. 2500/-' majority are high sensitive. This indicates that with rising sensitivity average spending comes down and vice –verse.

(vi) Treat Type

The majority of diners with low sensitivity are in the self-paid (94.3%) as the majority of the respondents comes from self-paid category. Only 5.7% of sponsored individuals fall under low sensitivity. Again, maximum diners with moderate sensitivity are also in self-paid category (85.9%). Similarly, a significant proportion of individuals with high sensitivity are in the self-paid group (88%), while only 12% of this group has sponsored treat. This indicates that depending upon treat type sensitivity of diners varies. The sensitivity goes down from low to moderate in case of self -paid treats.

Summary of the section 6.6:

With regard to age, majority of the diners under the age group 26-35 years are prominently observed to come under each level of noise sensitivity. In case of occupation majority of both the earning and not earning diners are moderately noise sensitive. In terms of marital status, among married diners' majority are high noise sensitive and in case of currently single diners' majority are low on sensitivity. Noise sensitivity tends to rise with income, income group ₹65,000/- –₹1,00,000/- are high sensitive and diners with low income (Upto ₹35,000/-) noise sensitivity tends to be low. The majority of diners with three noise sensitivity levels are in the Upto ₹2,500/- group

in terms of average spending while dining. The majority of diners with low sensitivity are in the self-paid group in case of treat type.

6.7. Role of Music as a Noise Avoider

We might see something similar if we were to picture ourselves at a noisy restaurant. The conversation and laughter of the diners fill the air. Noise may be produced by the bustling kitchens of restaurants. Appliances are buzzing, chefs are shouting instructions, and plates are clanking together. These noises could divert the mind of the guests from dining and giving their ear a chance to react in a negative way. In addition to these, there is music in the background. It is assumed that the atmosphere of the restaurant is noisy. Now, an effort is made to see if the music that is played therein may help people avoid those noises by a Chi-Square test. The following is the hypothesis for this:

> *H_{0N28}: There is no significant association between diners' perception of pleasant music as a noise avoider and their levels of noise sensitivity.*
> *H_{1N29}: There is a significant association between diners' perception of pleasant music as a noise avoider and their levels of noise sensitivity*

The results of the Chi-Square test shows (Chi square value =217.830) p-value for the test variable as.000. The null hypothesis on no association is thus. Hence, it can be said that there is a relationship among sensitivity levels (low, moderate, and high) and the perception that pleasant music acts as a noise avoider. The Cramer's V result produced .365 about the strength of the association and relation indicating a very strong positive association between the variables. The cross-tabulation analysis reveals that among diners with low sensitivity, 24.8% agreed and 5.4% strongly agreed that pleasant music acts as a noise avoider, mostly either had 'no comment' (44.2%) or disagreed (21.1%). For persons with moderate noise sensitivity, 54.2% agreed, and 9.2% strongly agreed, a smaller proportion of "no comment" (20.3%) and "disagree" (13.7%) responses. It can be concluded that among those with high sensitivity, 67.2% "agree" and 24.0% "strongly agree", suggesting stronger endorsement for music as noise avoider, compared to other groups. The diners those who "disagree" accounted for 50.5% and are low noise sensitive. Overall, a total of 61.3% of diners with high sensitivity strongly agreed that pleasant music acts as a noise avoider. According to this table, there is a positive relationship between the perception of pleasant music as a noise avoider and high noise

sensitivity. While people with low sensitivity show more variation in their responses, including a significant percentage of "no comment" and disagreement, people with high sensitivity are more likely to agree or strongly agree with this statement. It can be said that the high noise sensitive diners prefer music as a thin linen to cover the unwanted negative sounds called as noise in the restaurants. They are pretty much sure that music can make their experience a pleasant one. This result can be complementary to the previous finding presented in the above sections [Section 6.3 and 6.4 (a)] on music and noise sensitivity. People who are more sensitive are more likely to notice or pay attention to music while dining in restaurants. This suggests that people with higher noise sensitivity are also more responsive to auditory stimuli, meaning that music is a significant part of their eating experience and can play the role of a noise avoider. Additionally, moderately noise sensitive also considers music as noise avoider. However, low noise sensitive diners are indifferent with music as a auditory stimuli to reduce noise.

Table 6.10: Pleasant music acts as a Noise Avoider & Noise Sensitivity

Pleasant music acts as a noise avoider		Noise Sensitivity Levels			Total
		Low sensitivity	Moderate sensitivity	High sensitivity	
Strongly Disagree	Count	11	8	1	20
	% within Pleasant music acts as a noise avoider	55.0%	40.0%	5.0%	100.0%
	% within sensitivity	4.5%	2.6%	.4%	2.4%
	% of Total	1.3%	1.0%	.1%	2.4%
Disagree	Count	51	42	8	101
	% within Pleasant music acts as a noise avoider	**50.5%**	41.6%	7.9%	100.0%
	% within sensitivity	**21.1%**	13.7%	3.0%	12.3%
	% of Total	6.2%	5.1%	1.0%	12.3%
No Comment	Count	107	62	15	184
	% within Pleasant music acts as a noise avoider	58.2%	33.7%	8.2%	100.0%
	% within sensitivity	**44.2%**	20.3%	**5.5%**	22.5%
	% of Total	13.1%	7.6%	1.8%	22.5%
Agree	Count	60	166	182	408
	% within Pleasant music acts as a noise avoider	14.7%	40.7%	**44.6%**	100.0%
	% within sensitivity	**24.8%**	**54.2%**	**67.2%**	49.8%
	% of Total	7.3%	20.3%	22.2%	49.8%
Strongly Agree	Count	13	28	65	106
	% within Pleasant music acts as a noise avoider	12.3%	26.4%	**61.3%**	100.0%
	% within sensitivity	**5.4%**	**9.2%**	24.0%	12.9%
	% of Total	1.6%	3.4%	7.9%	12.9%
Total	Count	242	306	271	819
	% within Pleasant music acts as a noise avoider	29.5%	37.4%	33.1%	100.0%
	% within sensitivity	100.0%	100.0%	100.0%	100.0%
	% of Total	29.5%	37.4%	33.1%	100.0%

Summary

In the context of restaurants, sensitivity to noise describes how patrons perceive and respond to the levels of background noise in their dining space. Their entire experience may be impacted by these sensitivities. The three types of noise sensitivity are derived from the survey data are described here.

Low Noise Sensitive Diners: Ambient noises, such as background conversation, music, or sound from kitchen sources, in restaurants don't annoy people who aren't sensitive to noise. They can adjust to noisy settings with ease, and they could even perceive a lively and bustling restaurant atmosphere as enjoyable or energizing. Noise is less likely to cause them to get distracted or uneasy, enabling them to concentrate on their food and company.

Impact: They are more tolerant to restaurants with louder sound levels because noise has less effect on their dining experience.

Moderate Noise Sensitive Diners: These diners can withstand moderate levels of background noise as long as it is not too loud, although they are fairly sensitive to it. Chatter and background music may be appropriate as long as they don't disrupt discussion and are kept at a reasonable volume. They favour well-balanced settings with some noise but not too much of it.

Impact: Although excessive noise may somewhat lessen their enjoyment, they can tolerate somewhat noisy environments as long as other elements of the eating experience, may be the overall ambiance and food quality are satisfactory.

High Noise Sensitive Diners:

Ambient noise in a restaurant has significant effects on highly sensitive people. Noises that can rapidly become overwhelming, such as loud music, discussions, or kitchen noise, might lead to discomfort, stress, or even anxiety. They frequently favour calmer dining settings with low noise levels that encourage rest.

Impact: Their dining preferences and experience are greatly influenced by noise, which frequently causes them to avoid restaurants which have reputation of being noisy.

However, in our case the diners on high noise sensitivity perceive the restaurant ambience to be pleasant. They are attentive to music and preferred pre-recorded music than live music. They also think that a music in the background enhances their dining

experience. However, with low sensitive diners, they want more excitement in the form of increased volume to add a topping to their restaurant ambience. Moderately sensitive diners are happy with their experience unless the noise gets into their head. It is observed that noise sensitivity tends to rise with income and with married diners, therefore, effort should be made to provide the auditory stimuli in such a way to provide them a better experience. A judicious assessment of the demographic profile helps in understanding the noise sensitivity and incorporates auditory stimuli in such a way to provide a pleasant sonic experience. Finally, it can be concluded that the analyses suggest that flexible soundscapes are required in restaurants to accommodate varying sensitivity levels to make the restaurant experience a favourable one for all.