

## Impact of Socio-Economic factors of Residents on Solid Waste Management in two zones of BBMP

**Dr. Gajendra N.**

Guest Faculty of Economics

Maharani Cluster University

Email Id: [gajendraraj@gmail.com](mailto:gajendraraj@gmail.com)

Mob: 9986887926

### Abstract

*This research paper examines the impact of socio-economic factors of residents on solid waste management in two zones namely Bommanahalli zone and south zone of BBMP in the Bengaluru city. Today the most important subject that affects and worries mankind is the issues concerned with solid waste management in the BBMP. Community participation has a direct bearing on efficient solid waste management. The municipal authorities have tried to mobilize the community and educate residents on the rudiments of handling waste and proper practices of storing it in their own bins at the household, shop and establishment level. Residents assume that waste thrown on the streets would be picked up by the municipality through sweeping. Solid waste management cannot be successful without the involvement of all residents who have a vital role to play in successful implementation of scheme. It is worthwhile to examine some of the important stakeholders in this regard; residents play a significant role in bringing any changes and framing the policies, strategies and regulations to solve the solid waste problem in the zones. Residents of that particular region would understand the situation and analyses the problems faced by them over a period of time. So those in both zones of research area 320 residents are randomly selected to know their socio-economic status with respect to their age, status of resident, marital status and educational qualification. It also helps us to assess the attitudes of the residents, behaviour, and sensitivity towards solid waste management and to examine the socio-economic factors responsible for worst situation of municipal waste, working system of BBMP in managing the solid waste. It is on this note that the study attempts an examination of the impact of socio-economic factors on solid waste management by speculating the situation of BBMP.*

**Keywords: Solid Waste Management, Community Participation, Residents**

### Introduction

Generally, solid waste arises out of the range of garbage ascending from animal and human activities that are discarded as unwanted and useless. Solid waste is generated from industrial, residential and commercial activities in a given area, and may be handled in a variety of ways. Currently, the Bruhat Bengaluru Mahanagara Palike (BBMP), the agency vested with responsibility of collection and disposal of solid waste, is engaged in a series of approaches such as involvement of citizen, investment in infrastructure and technology, as well as monitoring the various systems that are involved in managing the present mix of actions and techniques. . In the absence of a basic facility of collection of waste from source, residents are prone to dumping waste

on the streets, open spaces, drains, and water bodies in the vicinity creating insanitary conditions. Incredible increases in population, ungraceful growth of development and expansion of commercial activities have impact on socio-economic and environment set up of the city. The city has been plague with virtually unmanageable rate of refuse generation of waste and its weak disposal methods adopted by bbmp. It is very common to see the loads of refuse scattering the major streets in the bengaluru city. This is a reflection of the deprived waste management techniques in the city. An assessment of the socio-economic factors that affect solid waste generation and disposal methods in bbmp is of great importance in order to safeguard the city from various problems that could arise from improper solid waste management. The consequences of solid waste management problem are that urban streets, streams and drainage systems are usually blocked giving rise to flood disaster in most of the country's urban centers.

### **Objectives of the Study:**

The study is mainly based on the following objectives:

- 1) To assess the socio-economic profile of residents in solid waste management.
- 2) To study the economic behavior, attitudes of residents towards solid waste generation to make more favorable environment.
- 3) To analyze the consumption pattern and expenditure of resident's solid waste management.

### **Hypothesis**

The stated objectives are studied by testing the following hypothesis

**H<sub>1</sub>:** There is no significant effect of socio-economic factors towards solid wastes.

**H<sub>2</sub>:** Attitudes, behaviour and life style of Residents have affected the environment.

**H<sub>3</sub>:** There is a significant relationship between consumption pattern and expenditure of residents towards solid waste.

### **Research Design and Sample Size**

The methodology is an important section of research work. In order to justify the objectives of the study, an appropriate methodology for conducting the study is inevitable. A primary data sources have undertaken as relevant to the stated objectives of the study. There is a significant relationship between consumption pattern and expenditure of residents towards solid waste. The researcher had selected two zones i.e., Bommanahalli Zone and South Zone equally shared with 320 residents (160+160) respondents consists of highest number of populations with all class group of residents who are the major stakeholders for the biggest challenge of solving municipal solid waste.

## 1. Socio - Economic profile of Residents

It is very important and necessary to study the socio-economic profile of residents because they are people who lives permanently or a long-term basis in the same region. It is worth noting that information on the socio-economic status is of great importance to solid waste planning process. We know that social parameters like sex, age and marital status of residents also influences on the process of solid waste management.

Gender plays an important role in managing and generating the solid waste in the study area. Analysis of gender helps to find the extent of male and female participation in solid waste management. As per the details of gender-wise representation; majority 79.4 percent of respondents are females and 20.6 percent of respondents are male in the two zones. The p value 0.097 is greater than 0.05 obtained by chi square test clearly indicates that, there is insignificant difference in the opinion of respondents belong to two different zones. Usually, men go for work and women are mere home makers spend more time in the house. This may be because females have a closer engagement with waste management at the household level. It indicates that females are more involved in kitchen activities rather than men and also responsible for the generation of wastes in the houses. In order to examine these the socio-economic profile of residents is exhibited in the Table: 1.1

**Table: 1.1**  
**Socio - Economic profile of Residents**

s l n o	Indicators	Particulars	Bommanahalli Zone		South Zone		Total		Chi-Square Test			
			Nos	%	Nos	%	Nos	%	X <sup>2</sup>	df	P Value	Result
			1	Sex	Male	39	24.4	27				
		Female	121	75.6	133	83.1	254	79.4				
2	Status of Resident	Kannadiga	139	86.9	144	90.0	283	88.4	0.764	1	0.382	NS
		Non-Kannadiga	21	13.1	16	10.0	37	11.6				
3	Age	15-25 Years	14	8.8	12	7.5	26	8.1	0.361	3	0.948	NS
		26-35 Years	41	25.6	45	28.1	86	26.9				
		36-45 Years	94	58.8	92	57.5	186	58.1				
		46 & above	11	6.9	11	6.9	22	6.9				

4	Educational Qualification	Below SSLC	56	35.0	70	43.8	126	39.4	3.514	3	0.319	NS
		PUC	22	13.8	22	13.8	44	13.8				
		Degree	50	31.2	37	23.1	87	27.2				
		Post-Graduation	32	20.0	31	19.4	63	19.7				
5	Marital Status	Unmarried	7	4.4	10	6.2	17	5.3	3.583	5	0.611	NS
		Married	151	94.4	147	91.9	298	93.1				
		Divorced	1	0.6	0	0.0	1	0.3				
		Widow	1	0.6	1	0.6	2	0.6				
		Separated	0	0.0	1	0.6	1	0.6				
<b>Total number of Respondents</b>			<b>160</b>	<b>100</b>	<b>160</b>	<b>100</b>	<b>320</b>	<b>100</b>				

Source: Field Survey

Bengaluru is a metropolitan city and place for more of job opportunities, with this 88.4 percent of respondents are kannadigas lived for more than 15 years and little number of 11.6 percent are non-kannadigas in the two zones. The p value 0.382 is greater than 0.05 obtained by chi square test clearly indicates that, there is no significant difference in the opinion of respondents belongs to two different zones. In these two zones dominated majority of population are basically originated in the city. The result tells us that people who are permanently residing at these places are dominating and contributing more in the generation of waste in the two zones.

Age is a factor which tells us the behaviour and nature of people towards solid waste. 58.1 percent of respondents are found in the group of 36-45 years and 26.9 percent of respondents are from 26-35 years of age group. The p value 0.948 is greater than 0.05 obtained by chi square test indicates that, there is insignificant difference in the opinion of respondents belong to two different zones. It shows that between 25 years to 45 years of age group respondents are more in this particular zones. This may be because this age group has a greater desire to conserve the resources for future generations. Government should focus on this particular age group while framing the policies and practices of solid waste management.

Education shapes the personality and sharpens the mind of an individual. For the purpose of this study, educational qualification of the respondents has been classified into four strata viz., below SSLC, PUC, Degree, Post-graduation level. With regard to level of education, it is seen that majority 39.4 percent of residents are studied up to SSLC. Only 13.8 percent of respondents are

PUC. It tells us that people who are below matriculated are unaware of the issue. The p value 0.031 is greater than 0.05 obtained by chi square test clearly indicates that, there is no significant difference in the opinion of respondents belongs to two different zones.

Marriage is a socially or ritually recognized union between spouses that establishes rights and obligations. It is a legally mandatory for spouses to live together in the society. It is also evident from table: 1.1, majority 93.1 percent of respondents are married and living together in the families; only 5.3 percent of the respondents are unmarried or bachelors. The p value 0.611 is greater than 0.05 obtained by chi square test clearly indicates that, there is insignificant difference in the opinion of respondents belong to two different zones. It clearly indicates that families play a bigger role in the source of generation of solid waste in the two zones.

The overall analysis of this survey, females are more engaged in household activities than men in both the zones with minimum educational knowledge it tells us that females found difficult to understand the solid waste management system. It shows that only 11.6 percent are non-kannadigas which are very less in number so majority of permanent residents who are married plays a crucial role in solving the solid waste issue in the two zones.

## **2. Occupation, Size of the family and Income of the residents**

Occupation is a status symbol for an individual. For the purpose of the present study, occupation status of the respondents has been classified into four categories namely self-employed, private employee, government employee and others. As per the details of occupation; 38.1 percent of respondents are private employees and 35.6 percent of respondents are belonged to other job category. It is also found that people are self-employed and employed in private sector are not bothered about the solid wastes. The p value 0.020 is lesser than 0.05 obtained by chi square test clearly indicates that, there is highly significant difference in the opinion of respondents belong to two different zones. The result tells us that people who are working in private sectors are more and busy with their job responsibilities assigned to them and least bothered towards the issue in the two zones.

Size of the family plays an important role in determining the personality of an individual. A family has more care and responsibilities whereas smaller families create stable environment and has less stress. It is the replica of responsibility, care, identity and happiness. Sometimes nature and type of house also reflects the economic status of human being. Size of the family determines the quantity generation of solid waste from particular individuals in the society. Considering these

factors, information about the size of family is collected from respondents. Majority 88.8 percent of respondents belong to 3-5 members of family and 3.8 percent are just couples but rarely 1.2 percent is from joint family system. It is observed from the table 2.1 on average size of the family are 3 to 5 members which are nuclear families. The p value 0.067 is greater than 0.05 obtained by chi square test indicates that, there is insignificant difference in the opinion of respondents belong to two different zones.

Income is the decisive factor and purchasing power of the individuals. It is lime lighted from the table: 4.2 that 43.6 percent of the respondents are earning average monthly income of below Rs.10000 and 38.6 percent of respondents are earning between Rs.10000 to Rs.30000. A meagre percent of 3.1 respondent's earnings is below Rs.90000 and 3.8 percent of respondents are above Rs.90000 economically sophisticated in the city. It is evident that people don't want to disclose their proper income because they are stabbed in the society with different tags. But from the table: 2.1, we can notice that 43.6 percent of respondents are living in bengaluru with below average level of income to run their families. The p value 0.014 is lesser than 0.05 obtained by chi square test indicates that, there is highly significant difference in the opinion of respondents belong to two different zones. The status of occupation, size of the family and income of residents are exhibited in the Table: 2.1

**Table: 2.1**  
**Occupation, Size of the Family, Income of Residents**

S l o	Indicators	Particulars	Bommanahalli Zone		South Zone		Total		Chi-Square Test			
			Nos	%	Nos	%	Nos	%	X <sup>2</sup>	df	P Value	Result
1	Occupation	Self Employed	43	26.9	25	15.6	68	21.2	9.802	3	0.020	HS
		Private Employee	49	30.6	73	45.6	122	38.1				
		Govt. Employee	8	5.0	8	5.0	16	5.0				
		Others	60	37.5	54	33.8	114	35.6				
2	Size of the Family	0-2 Members	2	1.2	10	6.2	12	3.8	7.147	3	0.067	NS
		3-5 Members	143	89.4	141	88.1	284	88.8				
		6-8 Members	13	8.1	7	4.4	20	6.2				
		8 & above	2	1.2	2	1.2	4	1.2				

3	Monthly Income	Less than 10000	80	50.0	59	37.1	139	43.6	12.432	4	0.014	HS
		Rs.10000- Rs.30000	50	31.2	73	45.9	123	38.6				
		Rs.30001- Rs.60000	18	11.2	17	10.7	35	11.0				
		Rs.60001- Rs.90000	8	5.0	2	1.3	10	3.1				
		Above Rs.90000	4	2.5	8	5.0	12	3.8				
<b>Total number of Respondents</b>			<b>160</b>	<b>100</b>	<b>160</b>	<b>100</b>	<b>320</b>	<b>100</b>				

Source: Field Survey

The overall analysis of this survey revealed that majority of residents are working in private sector and rest of respondents are working in different sector with a family size of 3 to 5 members are more in these two zones. This helps us to frame the rules and regulations for the families to impart the knowledge of solid waste management. It also shows that their family income is also less than ten thousand which means government should focus on this category of people in implementing certain policies towards better solid waste management.

### 3. Consumption pattern and Expenditure of Residents

The expenditure incurred by residents on domestic consumption and behaviour of residents is very important to assess the source of generation of waste in the two zones. Higher the consumption of people leads to larger the generation of waste in the city. The Consumption pattern and Expenditure of residents are exhibited in the Table: 3.1.

With regard to eating habits, it is seen that majority 70.5 percent of respondents are having the habit of both vegetarian and nonvegetarian and 17.9 percent of respondents are only vegetarian. The p value obtained 0.406 is greater than 0.05 obtained by chi square test indicates that, there is no significant difference in the opinion of respondents belongs to two different zones. It is noted that respondents having the habit of both vegetarian and non-vegetarian are contributing for the waste generation in the two zones.

With this 70.3 percent of respondents are spending less than Rs.3000 for vegetables and 26.9 percent of respondents are spending more than Rs.4000 for their vegetables purchase. Henceforth

their p value 0.210 is greater than 0.05 obtained by chi square test tells that, there is insignificant difference in the opinion among two zones respondents. But another data shows that 81.1 percent of respondents are having eating habits of nonveg and spending below Rs.4000 per month. Their p value 0.706 is greater than 0.05 obtained by chi square test indicates that, there is no significant difference in the opinion of respondents belongs to two different zones. In regard, 45.7 percent of respondents are spending for their livelihood purchases are below Rs.5000 and 30.6 percent of respondents are spending below Rs.10000. Because in these two zones respondents are having less income or they fall into category of middle-class group. The p value 0.493 is greater than 0.05 obtained by chi square test indicates that, there is no significant difference in the opinion of respondents belongs to two different zones.

**Table: 3.1**  
**Consumption pattern and Expenditure of Residents**

s l n o	Indicators	Particulars	Bommanahalli Zone		South Zone		Total		Chi-Square Test			
			Nos	%	Nos	%	Nos	%	X <sup>2</sup>	df	P Value	Result
1	Are you Vegetarian	Vegetarian	24	15.0	33	20.8	57	17.9	1.805	2	0.406	NS
		Non- Vegetarian	19	11.9	18	11.3	37	11.6				
		Both	117	73.1	108	67.98	225	70.5				
2	Monthly Expenditure for Vegetables	Less than Rs.3000	119	74.4	106	66.2	225	70.3	4.530	3	0.210	NS
		Rs.3001- Rs.5000	36	22.5	50	31.2	86	26.9				
		Rs.5001- Rs.6000	5	3.1	3	1.9	8	2.5				
		Rs.6001- Rs.8000	0	0.0	1	0.6	1	0.3				
3	Monthly Expenditure for Non- Vegetarian	Less than Rs.4000	114	83.2	101	78.9	215	81.1	1.396	3	0.706	NS
		Rs.4001- Rs.5000	19	13.9	23	18.0	42	15.8				
		Rs.5001- Rs.6000	2	1.5	1	0.8	3	1.1				



		Rs.6001- Rs.8000	2	1.5	3	2.3	5	1.9				
4	Consumption Expenditure for a month	Less than Rs.5000	69	43.1	76	48.4	145	45.7	2.406	3	0.493	NS
		Rs.5001 – Rs.10000	55	34.4	42	26.8	97	30.6				
		Rs. 10001 – Rs.20000	31	19.4	35	22.3	66	20.8				
		Rs. 20001 – Rs.30000	5	3.1	4	2.5	9	2.8				
<b>Total number of Respondents</b>			<b>160</b>	<b>100</b>	<b>160</b>	<b>100</b>	<b>320</b>	<b>100</b>				

Source: Field Survey

The consumption pattern is also one of the reasons for generation of waste from these two zones. It is concluded from the above table: 3.1 that, both people having vegetarian and nonvegetarian has the tendency to generate more waste in the city. The analysis of this survey revealed that majority of residents are completely has the habit of consuming both veg and non-vegetarian and less income group who spends very less for their consumption expenditure for a month, it shows that particular category of respondents contributes more in generation of solid waste which is proved with their tendency of spending high for nonvegetarian and low for vegetarian by the residents in both the zones.

## Conclusion

Human ways of life have placed pressure on the environment and have caused imbalance in the eco systems by the producing, consuming and wasting of natural resources. Most countries evidently have major effects on the environment due to solid waste generation with economic development since the natural resources are used, and waste and pollution are produced. Therefore, the concern towards the management of solid waste as an integral part for sustainable development has increased. This study explored the impact of socio-economic factors of residents in managing the solid waste for sustainable development with the concern of new development process in two zones. It is clear that occupation, income of families has a significant impact on the solid waste management in the study area. Thus, the social awareness about SWM impact on sustainable development is seemingly low. Therefore, it is important of the policymakers to impart the knowledge of solid waste management from the primary level of residents.

## References

1. *Altaf, M. A. (1996). Household demand for improved solid waste management: A case study of Gujranwala, Pakistan. 857-868: World Development Vol -24, No.5.*
2. *Boyle, C.A (2000), Solid Waste Management in New Zealand, waste management, Waste Management 20 (2000) 517-526.*
3. *Bryman, A, (2008). Social Research Methods (3rd ed.), Oxford university Press Publication.*
4. *Chandrappa, R. and Das, D.B., (2012). Solid waste management principles and practice, Springer Publication.*
5. *J K Saha, N. P. (2010). An Assessment of Municipal Solid Waste Compost Quality Produced in Different Cities of India with the perspective of Developing Quality Control Indices. Bhopal: Waste Management.*
6. *Liu C, W. X. (2011). Factors Influencing Municipal Solid Waste Generation in China: A multiple Statistical Analysis study. International Solid Wastes and Public Cleansing Association.*
7. *Mathew, V. (2003). Solid waste management in Kottayam town. KRPLLD, CDS.*
8. *Naveen BP, Sitharam TG, Sivapullaiah PV (2014) Status of solid waste management in bengaluru and review of solid waste techniques adopted. International conference on waste management for sustainable development, Kerala, India.*
9. *Rajput (2009), Study on relationship between Municipal Solid waste generation and Economic development, Research Paper.*
10. *Sasikumar K, Krishna SG (2014) Solid Waste Management. PHI Learning Private Limited, New Delhi.*
11. *Van Houtven, G. (November 1999). Househol Behaviour under Alternative Pay- As-You-Throw Systems for Solid Waste Disposal. Land Economics, 515-537.*
12. *Wertz, K. L. (1976). Economic Factors influence Households Production Refuse. Journal of Environmental Economics and Management 2(3), 263-72.*