

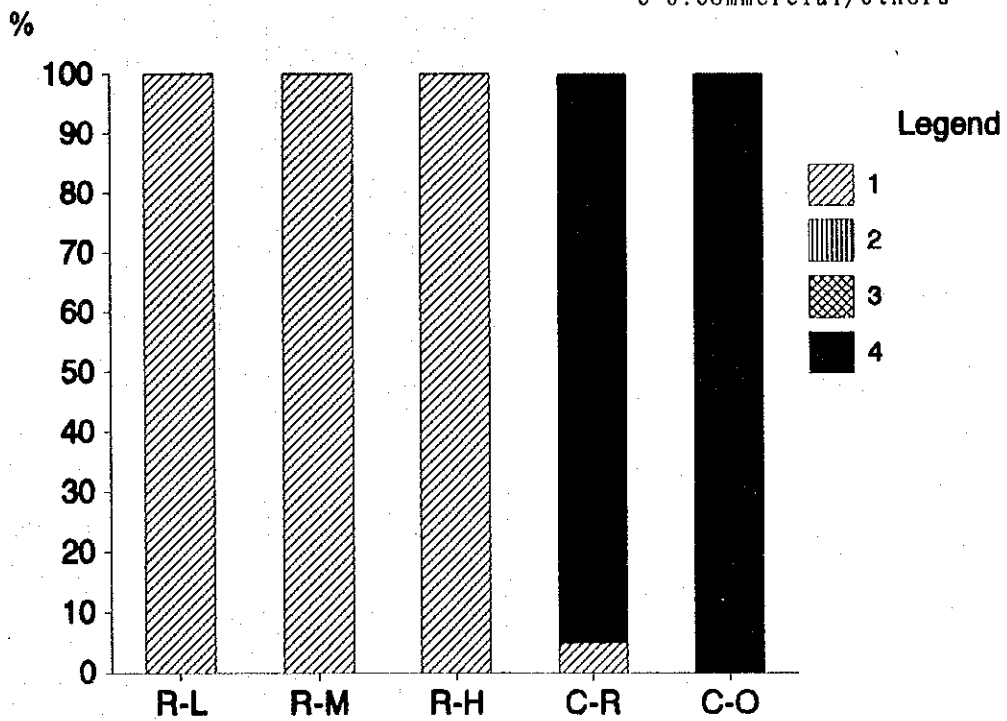
C.2 Results of the Survey

Q1-4 Housing Category

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Detached houses	100.0%	100.0%	100.0%	100.0%	5.0%	0.0%	1.7%
2	Colonial houses	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	Apartment buildings	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	Commercial buildings	0.0%	0.0%	0.0%	0.0%	95.0%	100.0%	98.3%

Note:

R-L:Residential/Low Income
 R-M:Residential/Middle Income
 R-H:Residential/High Income
 C-R:Commercial/Restaurant
 C-O:Commercial/Others

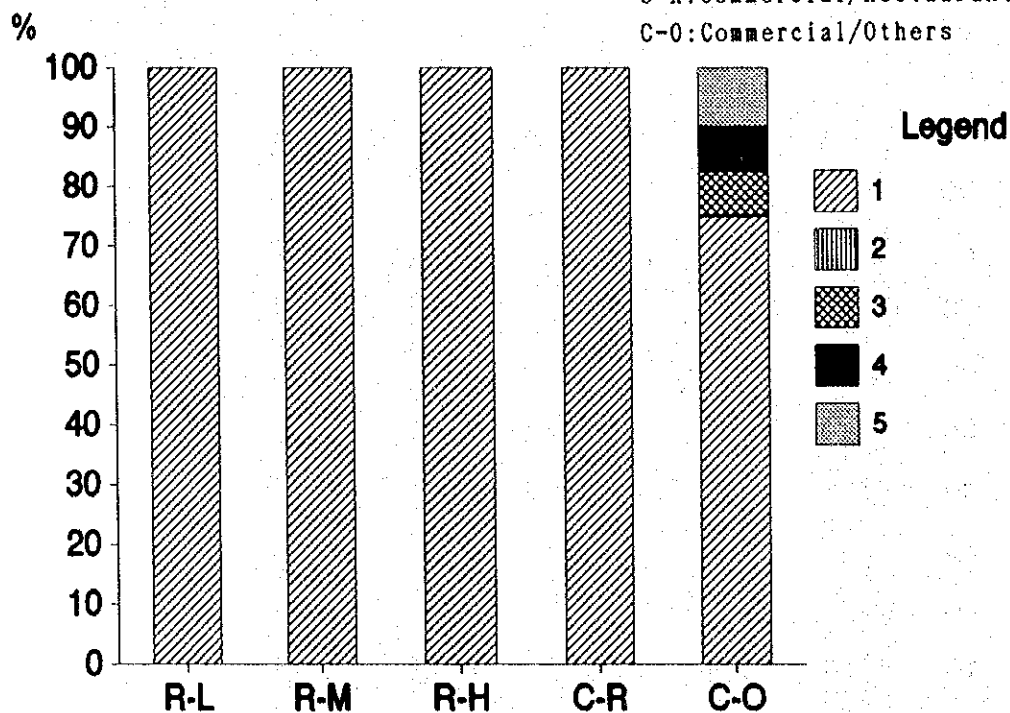


Q1-5 Distance from the house to a road of more than 5m width:

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	In front of the premises	100.0%	100.0%	100.0%	100.0%	100.0%	75.0%	83.3%
2	Less than 10m	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	10-29m	0.0%	0.0%	0.0%	0.0%	0.0%	7.5%	5.0%
4	30-49m	0.0%	0.0%	0.0%	0.0%	0.0%	7.5%	5.0%
5	50m or more	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	6.7%

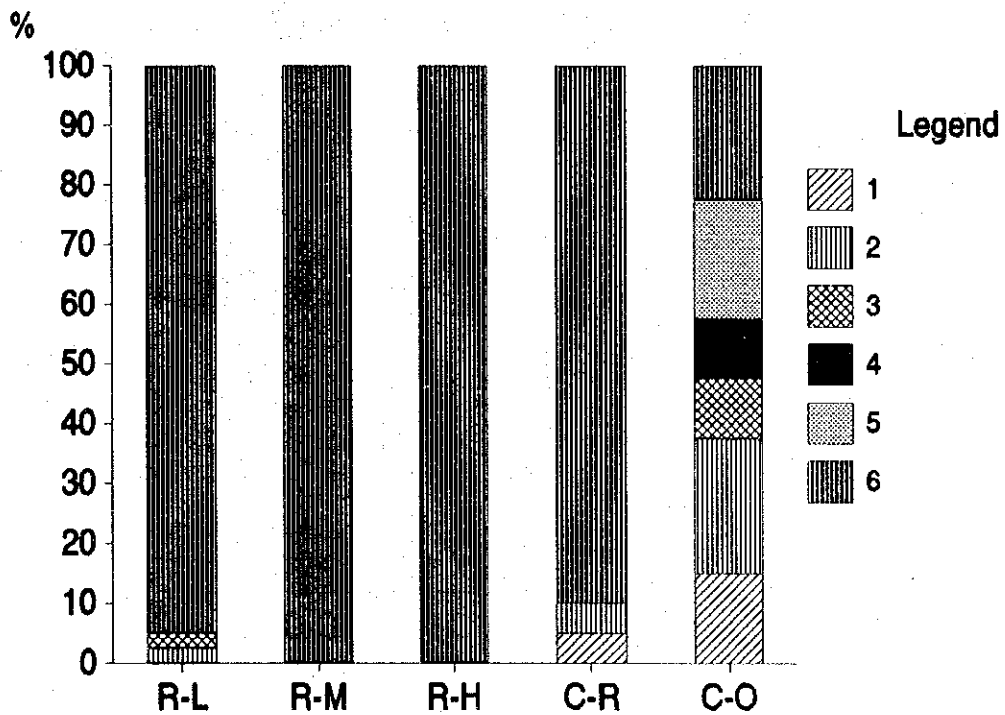
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Q1-6 Distance from the house to communal container or public discharge point:

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	In front of the premises	0.0%	0.0%	0.0%	0.0%	5.0%	15.0%	11.7%
2	Less than 10m	2.5%	0.0%	0.0%	0.8%	5.0%	22.5%	16.7%
3	10-20m	2.5%	0.0%	0.0%	0.8%	0.0%	10.0%	6.7%
4	30-49m	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	6.7%
5	50m or more	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	13.3%
6	There is no communal container or discharge point in this area.	95.0%	100.0%	100.0%	98.3%	90.0%	22.5%	45.0%

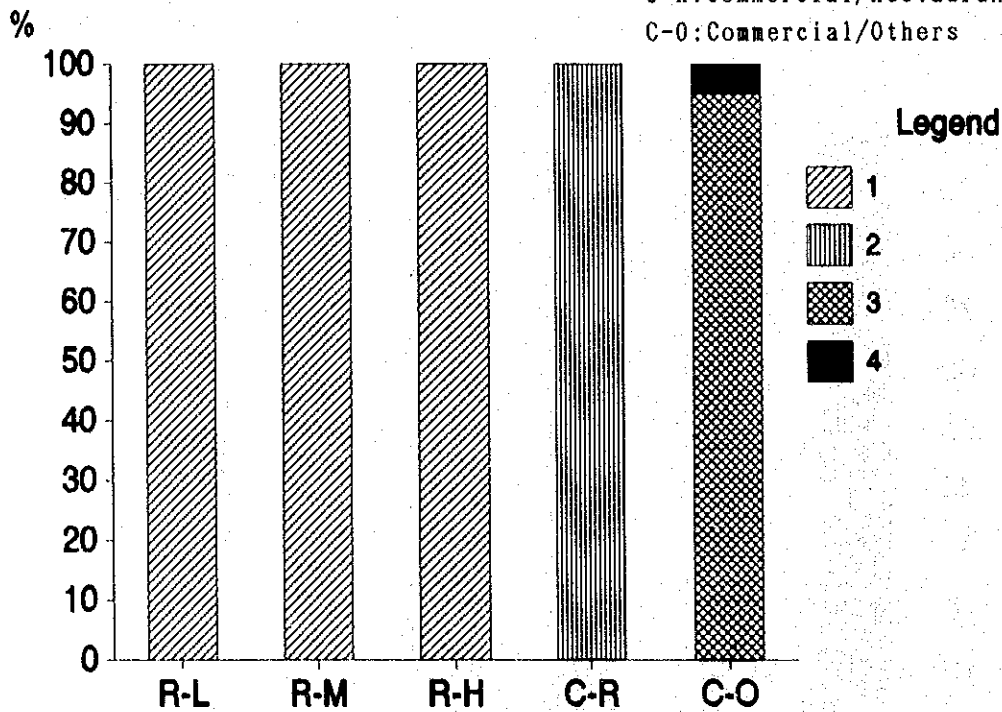


Q2-1 Housing Category

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Residence	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%
2	Restaurant	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	33.3%
3	Shops except for restaurants	0.0%	0.0%	0.0%	0.0%	0.0%	95.0%	63.3%
4	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	3.3%

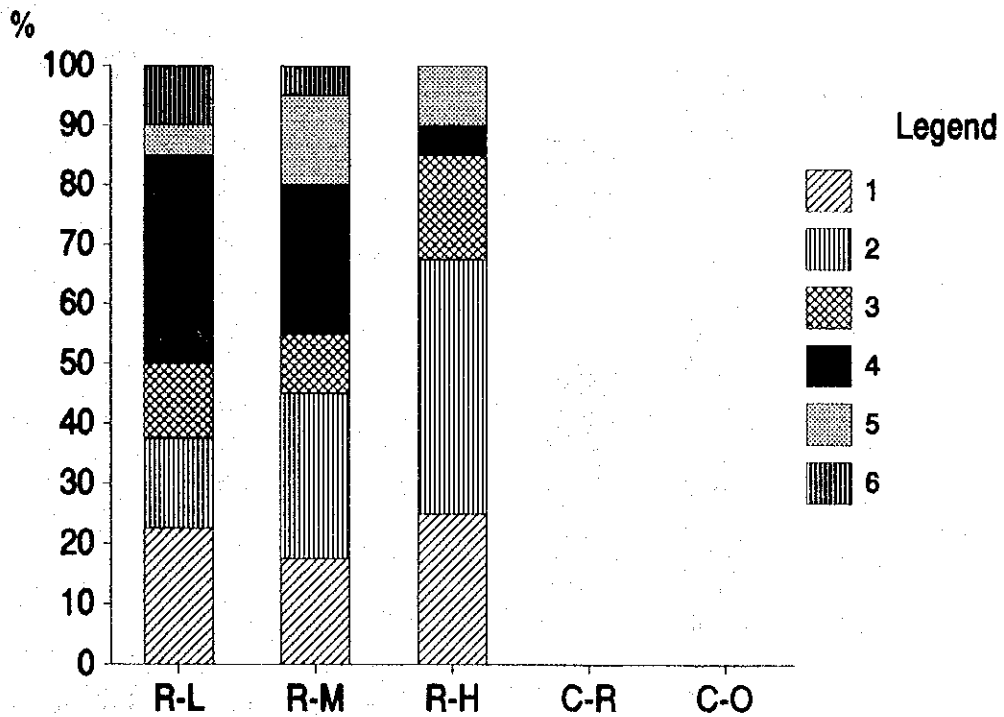
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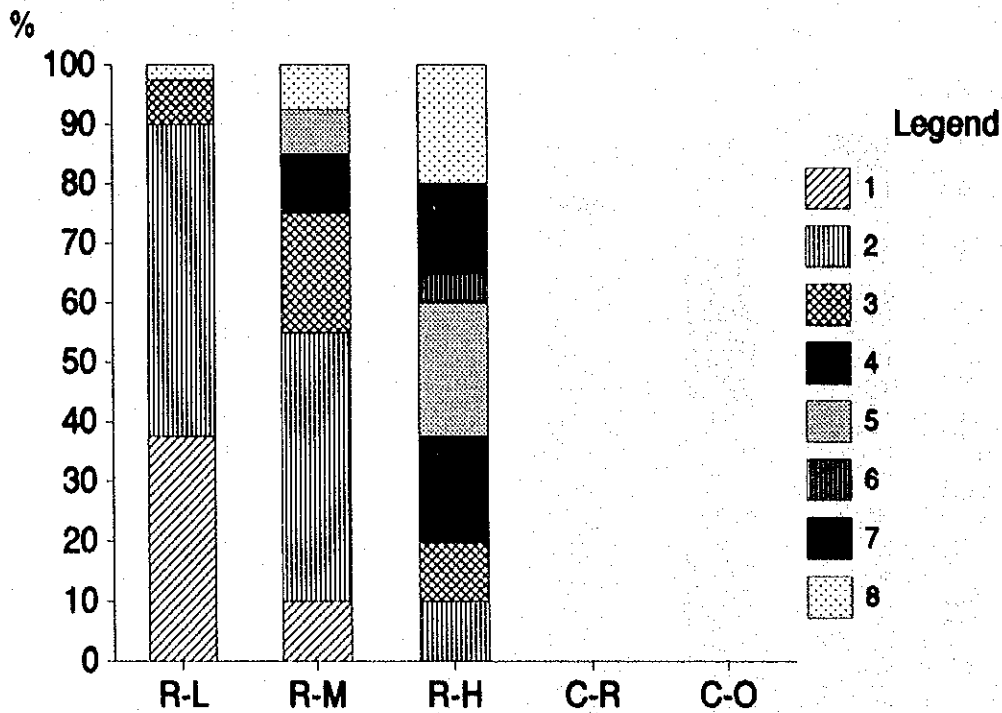
Q2-2 Employment of the title holder

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Public Servant	22.5%	17.5%	25.0%	21.7%	0.0%	0.0%	0.0%
2	Employee of Private Company	15.0%	27.5%	42.5%	28.3%	0.0%	0.0%	0.0%
3	Owner of company, shop, etc.	12.5%	10.0%	17.5%	13.3%	0.0%	0.0%	0.0%
4	Unemployed	35.0%	25.0%	5.0%	21.7%	0.0%	0.0%	0.0%
5	Unknown	5.0%	15.0%	10.0%	10.0%	0.0%	0.0%	0.0%
6	Others	10.0%	5.0%	0.0%	5.0%	0.0%	0.0%	0.0%



Q2-3 Monthly Family Expenses:

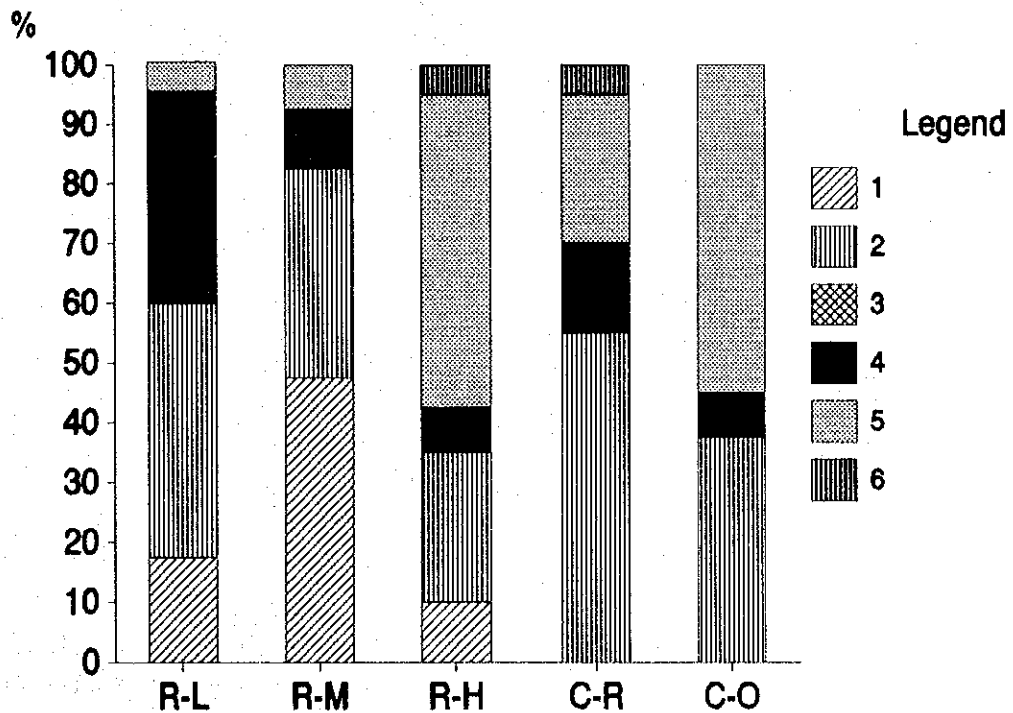
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Less than 500 cordobas/month	37.5%	10.0%	0.0%	15.8%	0.0%	0.0%	0.0%
2	500-1,500 cordobas/month	52.5%	45.0%	10.0%	35.8%	0.0%	0.0%	0.0%
3	1,500-3,000 cordobas/month	7.5%	20.0%	10.0%	12.5%	0.0%	0.0%	0.0%
4	3,000-5,000 cordobas/month	0.0%	10.0%	17.5%	9.2%	0.0%	0.0%	0.0%
5	5,000-7,000 cordobas/month	0.0%	7.5%	22.5%	10.0%	0.0%	0.0%	0.0%
6	7,500-10,000 cordobas/month	0.0%	0.0%	5.0%	1.7%	0.0%	0.0%	0.0%
7	More than 10,000 cordobas/month	0.0%	0.0%	15.0%	5.0%	0.0%	0.0%	0.0%
8	Unknown	2.5%	7.5%	20.0%	10.0%	0.0%	0.0%	0.0%



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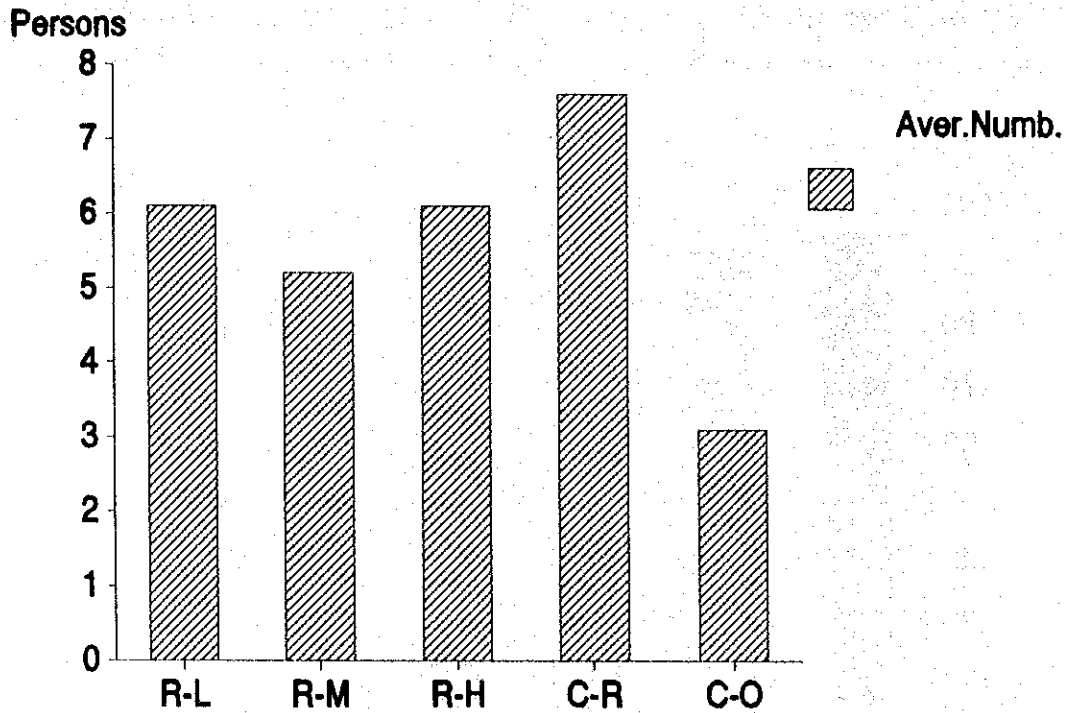
Q2-4 Interviewees:

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Housewife	17.5%	47.5%	10.0%	25.0%	0.0%	0.0%	0.0%
2	Owner of house/shop	42.5%	35.0%	25.0%	34.2%	55.0%	37.5%	43.3%
3	Children	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	Other family members	35.0%	10.0%	7.5%	17.5%	15.0%	7.5%	10.0%
5	Housekeeper or employee	5.0%	7.5%	52.5%	21.7%	25.0%	55.0%	45.0%
6	Others (Please specify)	0.0%	0.0%	5.0%	1.7%	5.0%	0.0%	1.7%



Q2-5 Number of persons staying in the shop or in case of house living in it:

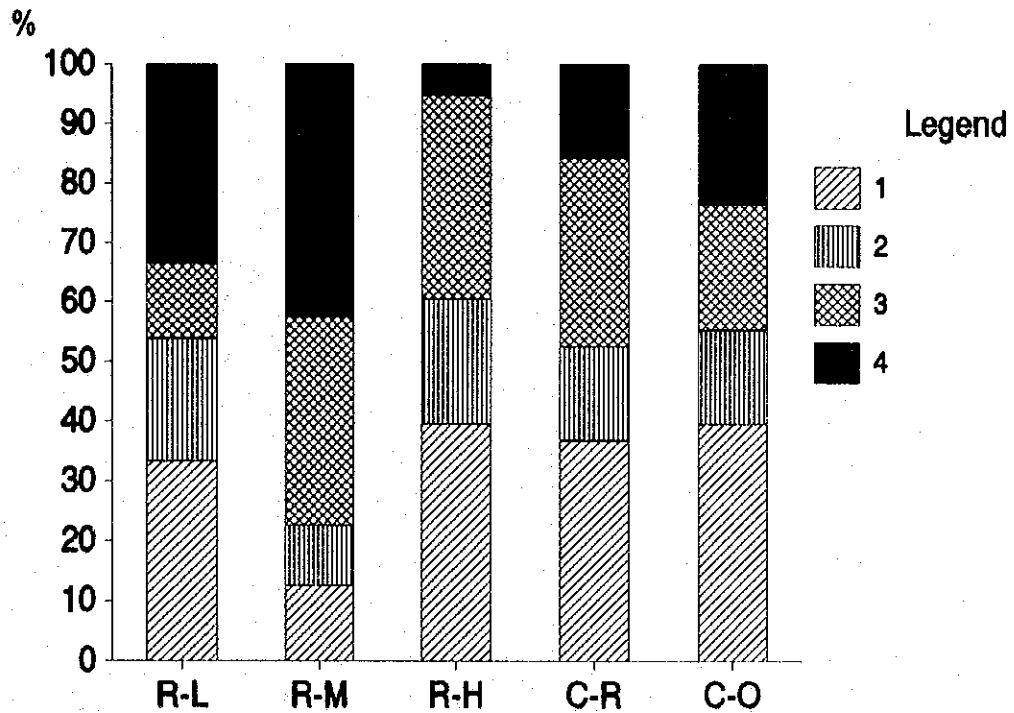
	Residential				Commercial		
	Low Income	Middle Income	High Income	Average	Food	Others	Average
Average Number (Persons)	6.1	5.2	6.1	5.8	7.6	3.1	4.6



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Q2-6 Period of Residency or number of years since the shop opened:

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Less than 5 years	33.3%	12.5%	39.5%	28.2%	36.8%	39.5%	38.6%
2	5-9 years	20.5%	10.0%	21.1%	17.1%	15.8%	15.8%	15.8%
3	10-19 years	12.8%	35.0%	34.2%	27.4%	31.6%	21.1%	24.6%
4	2- years or more	33.3%	42.5%	5.3%	27.4%	15.8%	23.7%	21.1%

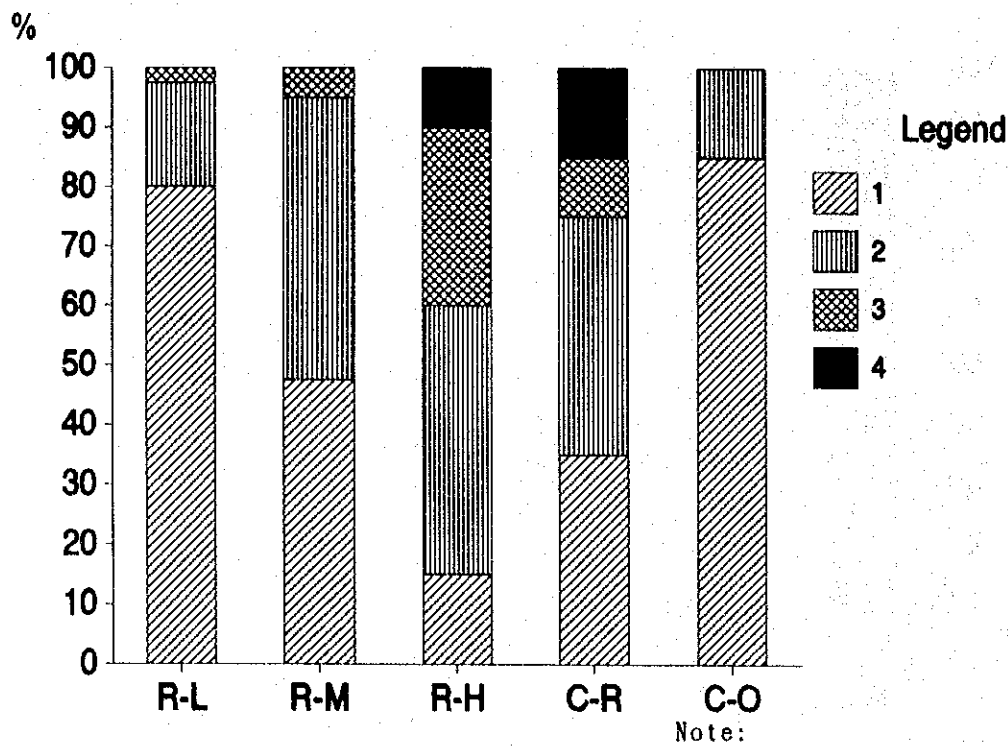


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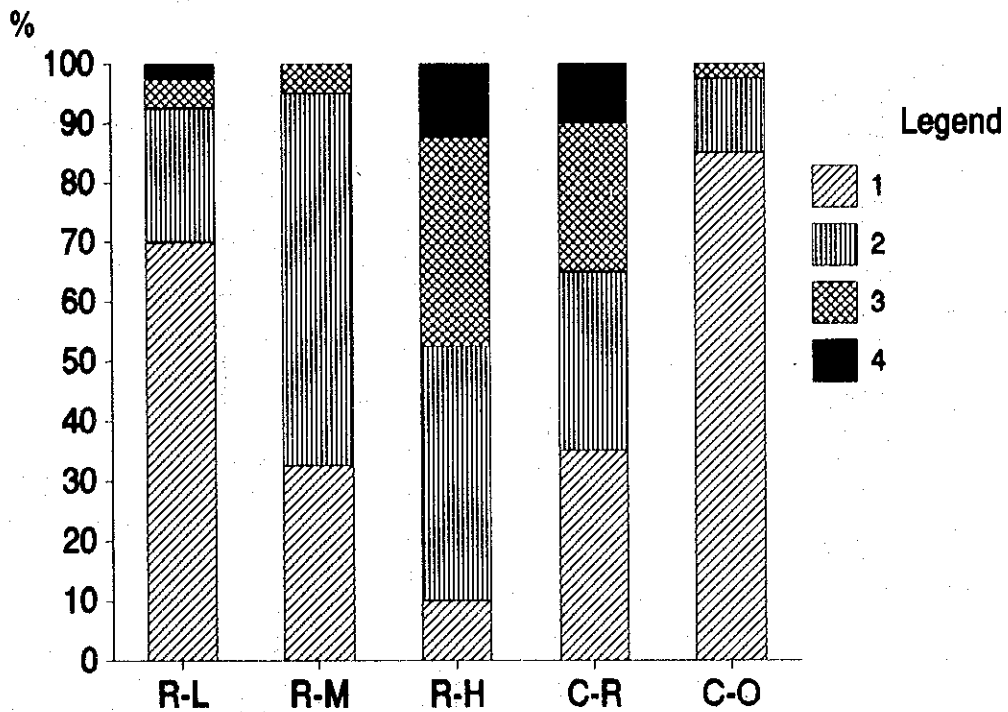
Q2-7 Floor area of the house/shop:

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Less than 100m ²	80.0%	47.5%	15.0%	47.5%	35.0%	85.0%	68.3%
2	101-200m ²	17.5%	47.5%	45.0%	36.7%	40.0%	15.0%	23.3%
3	201-300m ²	2.5%	5.0%	30.0%	12.5%	10.0%	0.0%	3.3%
4	More than 300m ²	0.0%	0.0%	10.0%	3.3%	15.0%	0.0%	5.0%



Q2-8 Land area of the house/shop:

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Less than 100m ²	70.0%	32.5%	10.0%	37.5%	35.0%	85.0%	68.3%
2	101-300m ²	22.5%	62.5%	42.5%	42.5%	30.0%	12.5%	18.3%
3	301-500m ²	5.0%	5.0%	35.0%	15.0%	25.0%	2.5%	10.0%
4	More than 500m ²	2.5%	0.0%	12.5%	5.0%	10.0%	0.0%	3.3%

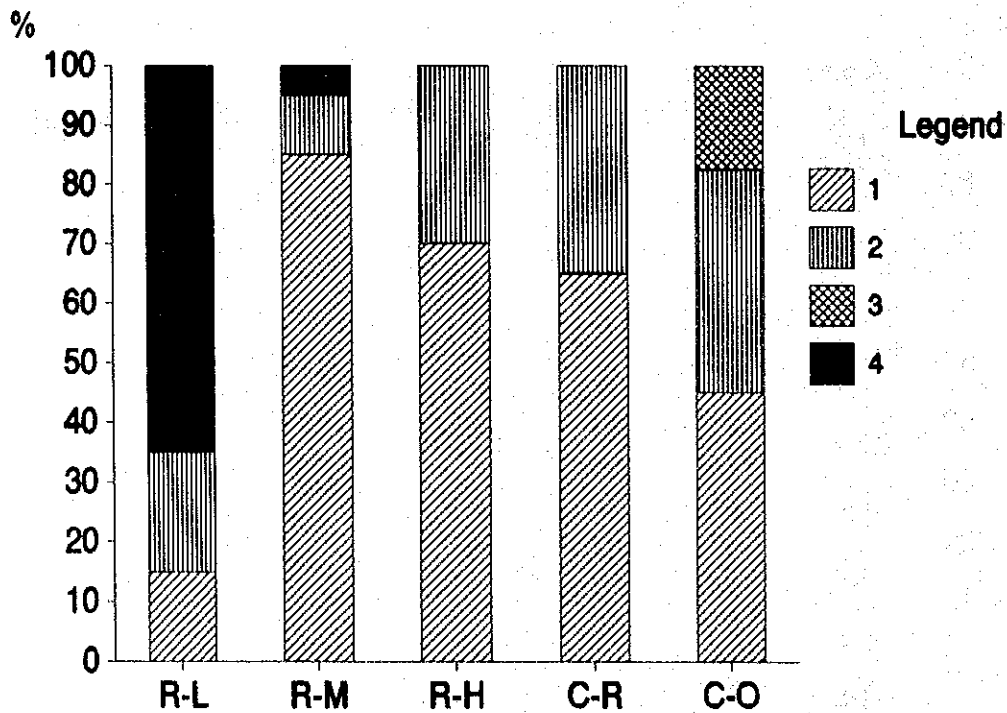


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- C-O: Commercial/Others

Q2-9 Type of pavement of the access road to your house/shop:

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Asphalt	15.0%	85.0%	70.0%	56.7%	65.0%	45.0%	51.7%
2	Stone	20.0%	10.0%	30.0%	20.0%	35.0%	37.5%	36.7%
3	Others	0.0%	0.0%	0.0%	0.0%	0.0%	17.5%	11.7%
4	Unpaved	65.0%	5.0%	0.0%	23.3%	0.0%	0.0%	0.0%

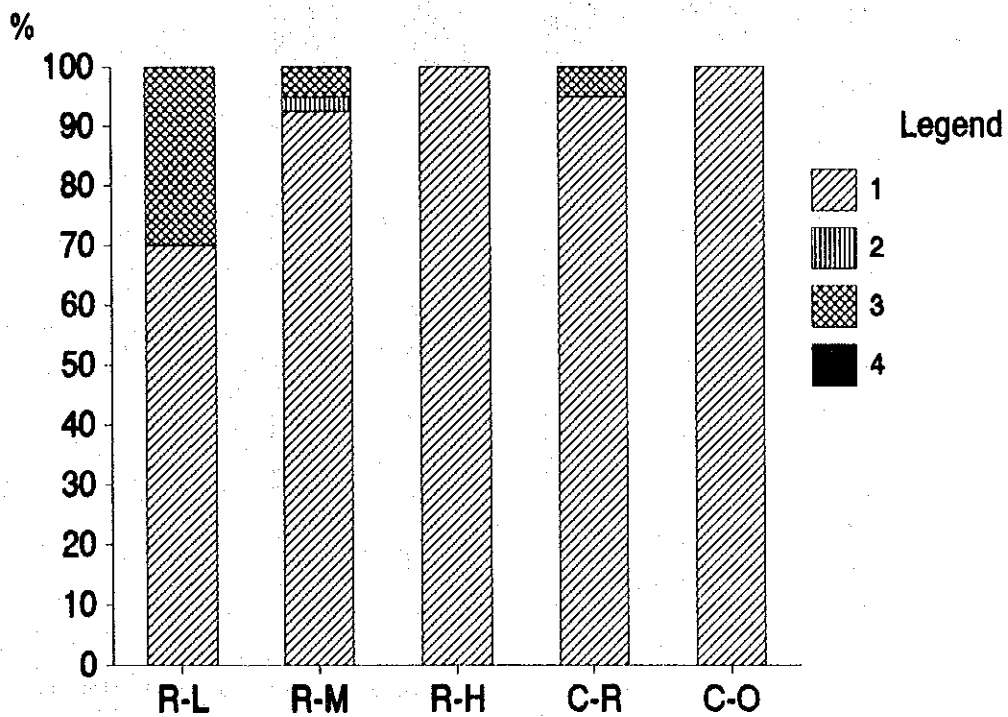


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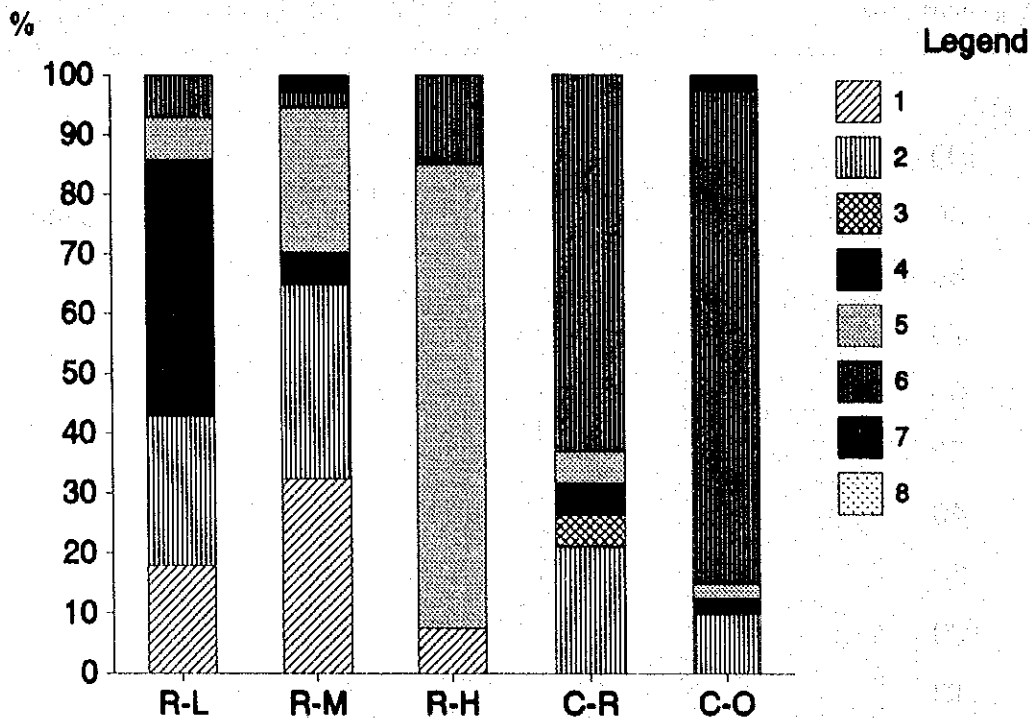
Q3-1 Manner of waste disposal

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Discharge it at specific place for the regular collection service.	70.0%	92.5%	100.0%	87.5%	95.0%	100.0%	98.3%
2	Discharge it outside of my premises where there is no regular collection service or channels.	0.0%	2.5%	0.0%	0.8%	0.0%	0.0%	0.0%
3	Dispose it by myself through combustion, dispose it in my backyard, etc..	30.0%	5.0%	0.0%	11.7%	5.0%	0.0%	1.7%
4	I don't know.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Q3-2 Who discharges the waste from your house/shop?

No.	Answer	Residential				Commercial		
		Low	Middle	High	Average	Food	Other	Average
1	Housewife	17.9%	32.4%	7.5%	19.0%	0.0%	0.0%	0.0%
2	Owner	25.0%	32.4%	0.0%	18.1%	21.1%	10.0%	13.6%
3	Children	0.0%	0.0%	0.0%	0.0%	5.3%	0.0%	1.7%
4	Other family member	42.9%	5.4%	0.0%	13.3%	5.3%	2.5%	3.4%
5	Housekeeper (servant)	7.1%	24.3%	77.5%	40.0%	5.3%	2.5%	3.4%
6	Employee	7.1%	2.7%	15.0%	8.6%	63.2%	82.5%	76.3%
7	Others (Please specify)	0.0%	2.7%	0.0%	1.0%	0.0%	2.5%	1.7%
8	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

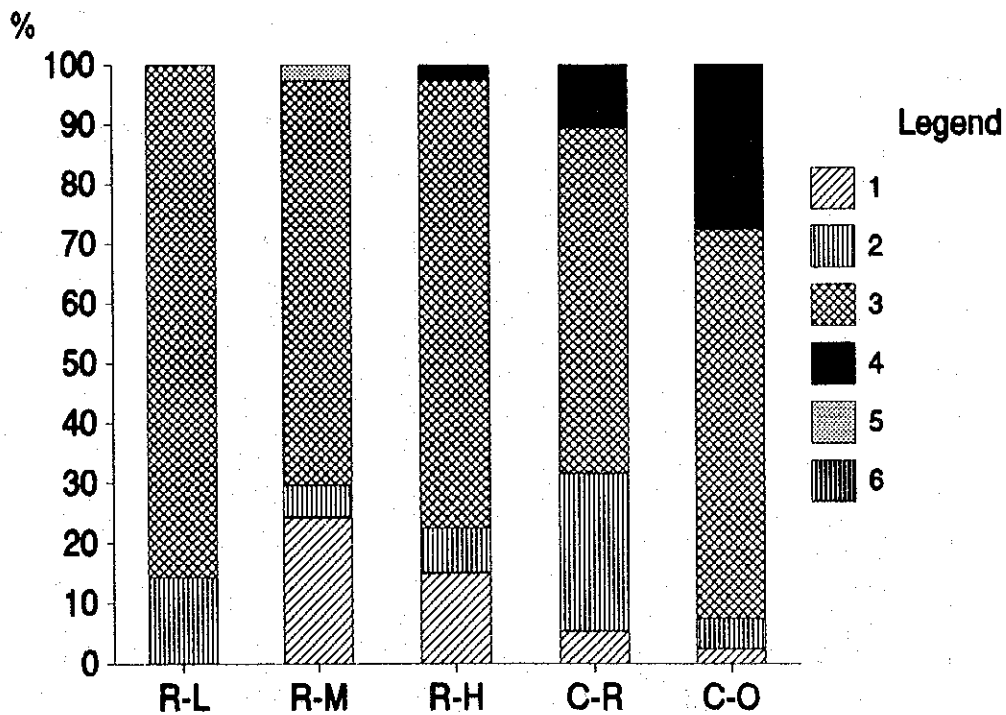


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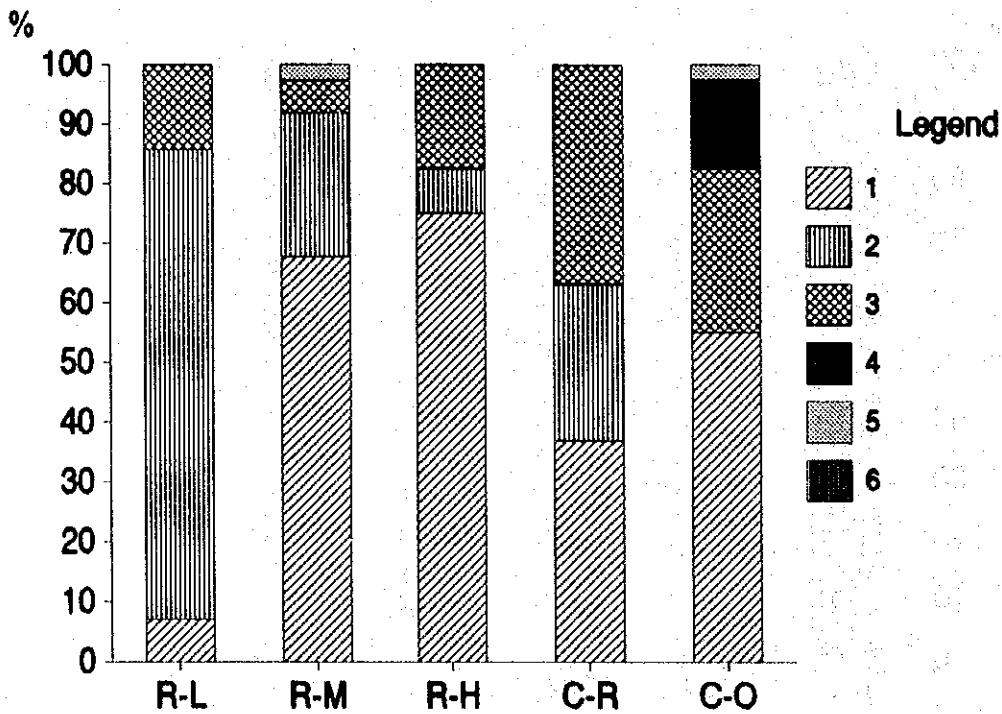
Q3-3 Where do you discharge your waste for the regular collection service?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Garbage stand	0.0%	24.3%	15.0%	14.3%	5.3%	2.5%	3.4%
2	Inside my premises	14.3%	5.4%	7.5%	8.6%	26.3%	5.0%	11.9%
3	Outside my premises	85.7%	67.6%	75.0%	75.2%	57.9%	65.0%	62.7%
4	Communal container	0.0%	0.0%	2.5%	1.0%	10.5%	27.5%	22.0%
5	Others (please specify)	0.0%	2.7%	0.0%	1.0%	0.0%	0.0%	0.0%
6	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



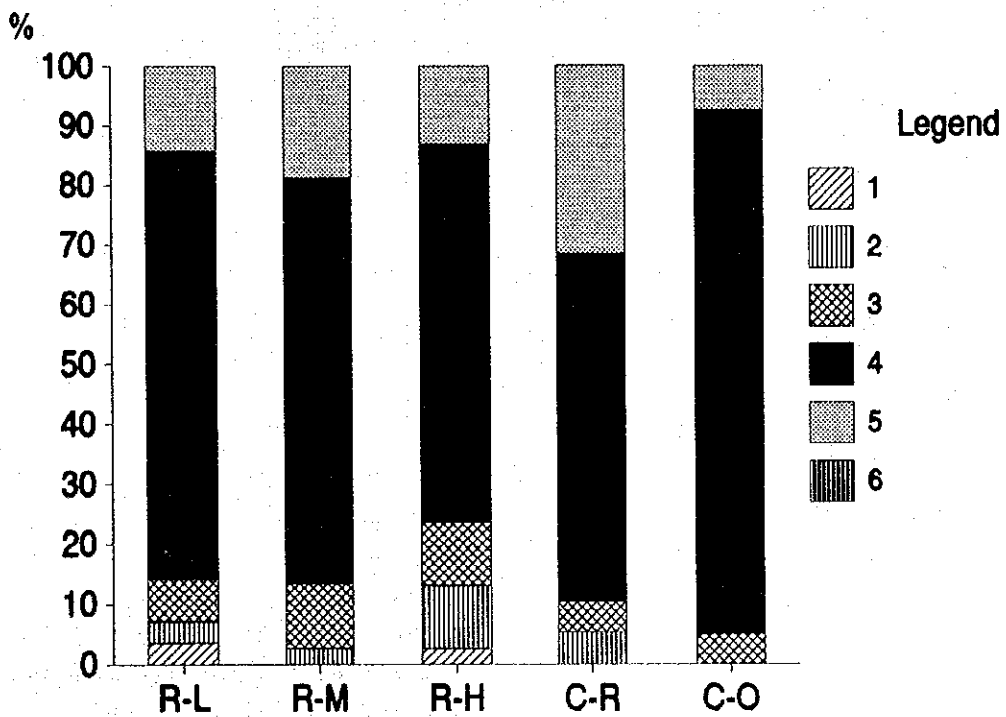
Q3-4 What type of container do you use for carrying waste to the collection point in question 3-3?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Plastic bag	7.1%	67.6%	75.0%	54.3%	36.8%	55.0%	49.2%
2	Paper/textile bag	78.6%	24.3%	7.5%	32.4%	26.3%	0.0%	8.5%
3	Metal/plastic/wood bucket	14.3%	5.4%	17.5%	12.4%	36.8%	27.5%	30.5%
4	Cardboard Box	0.0%	0.0%	0.0%	0.0%	0.0%	15.0%	10.2%
5	Others (Please specify)	0.0%	2.7%	0.0%	1.0%	0.0%	2.5%	1.7%
6	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



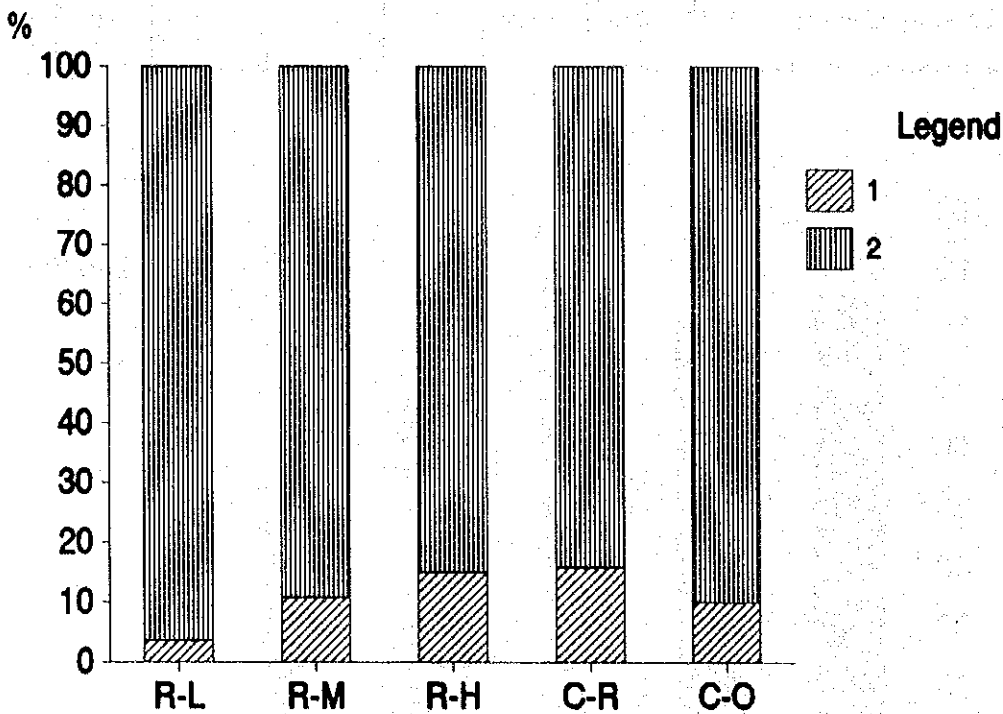
Q3-5 Why do you use it?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Municipal ordinance	3.6%	0.0%	2.6%	1.9%	0.0%	0.0%	0.0%
2	It is clean after collection work	3.6%	2.7%	10.5%	5.8%	5.3%	0.0%	1.7%
3	It prevents foul odor	7.1%	10.8%	10.5%	9.7%	5.3%	5.0%	5.1%
4	It is easy to handle	71.4%	67.6%	63.2%	67.0%	57.9%	87.5%	78.0%
5	Keeps away pest such as flies	14.3%	18.9%	13.2%	15.5%	31.6%	7.5%	15.3%
6	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Q3-6 Do you have any problems with your container for waste collection?

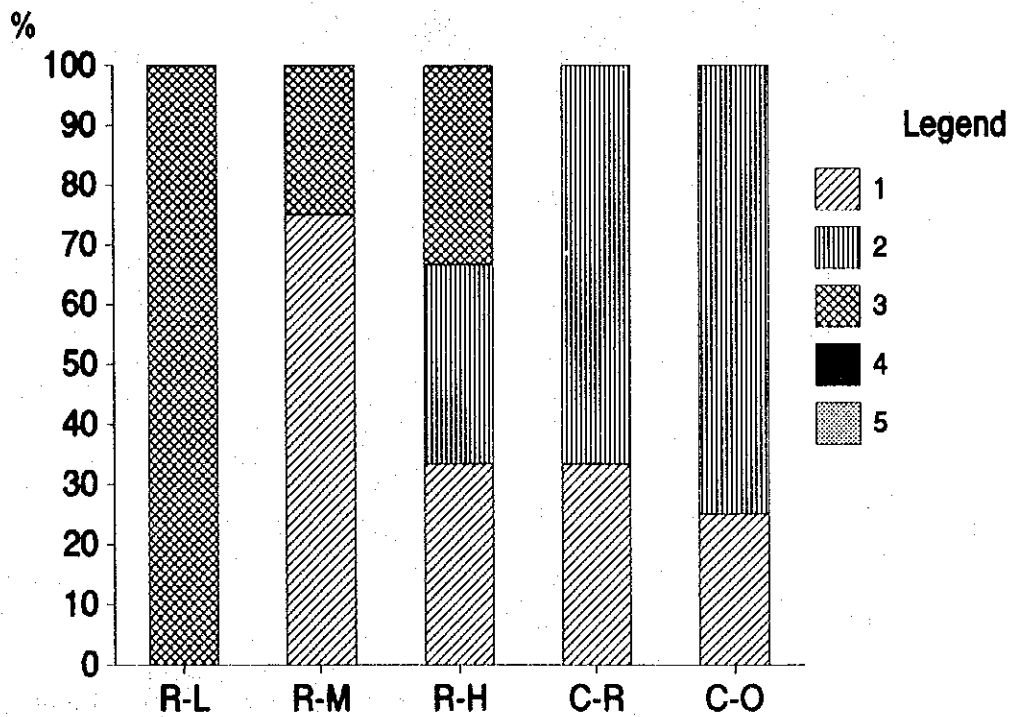
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	3.6%	10.8%	15.0%	10.5%	15.8%	10.0%	11.9%
2	No	96.4%	89.2%	85.0%	89.5%	84.2%	90.0%	88.1%



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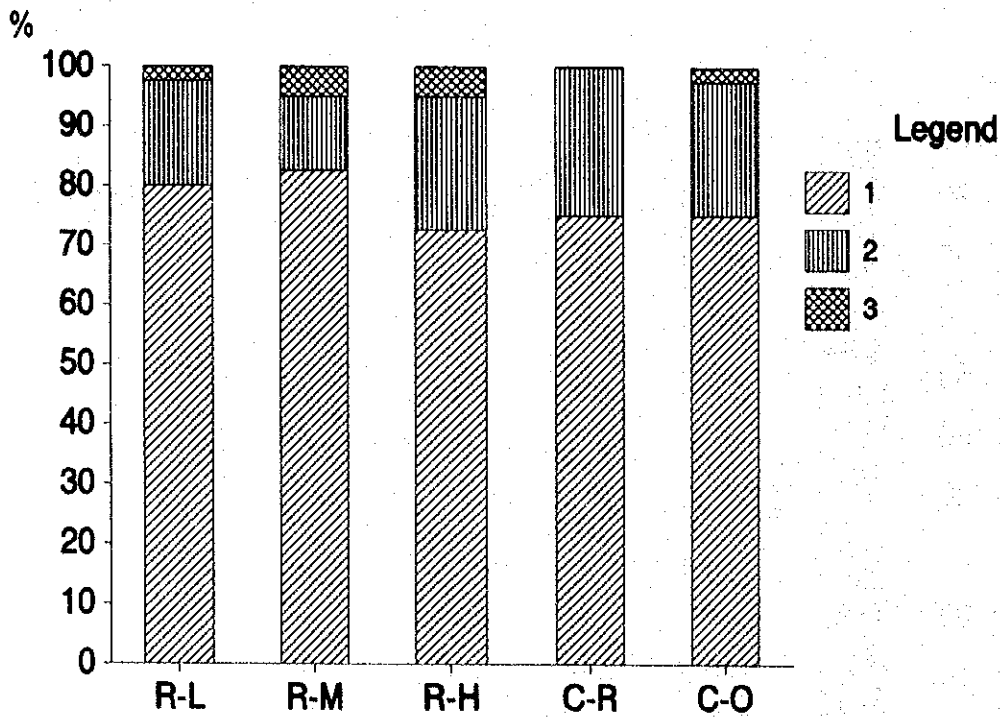
Q3-7 What is the problem with your container?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Looks ugly	0.0%	75.0%	33.3%	45.5%	33.3%	25.0%	28.6%
2	Insufficient capacity	0.0%	0.0%	33.3%	18.2%	66.7%	75.0%	71.4%
3	Insanitary conditions created by animal scavenging and waste scattering	100.0%	25.0%	33.3%	36.4%	0.0%	0.0%	0.0%
4	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Q3-8 Would you be able to cooperate by carrying your waste to communal containers installed in your area if you were requested to do so?

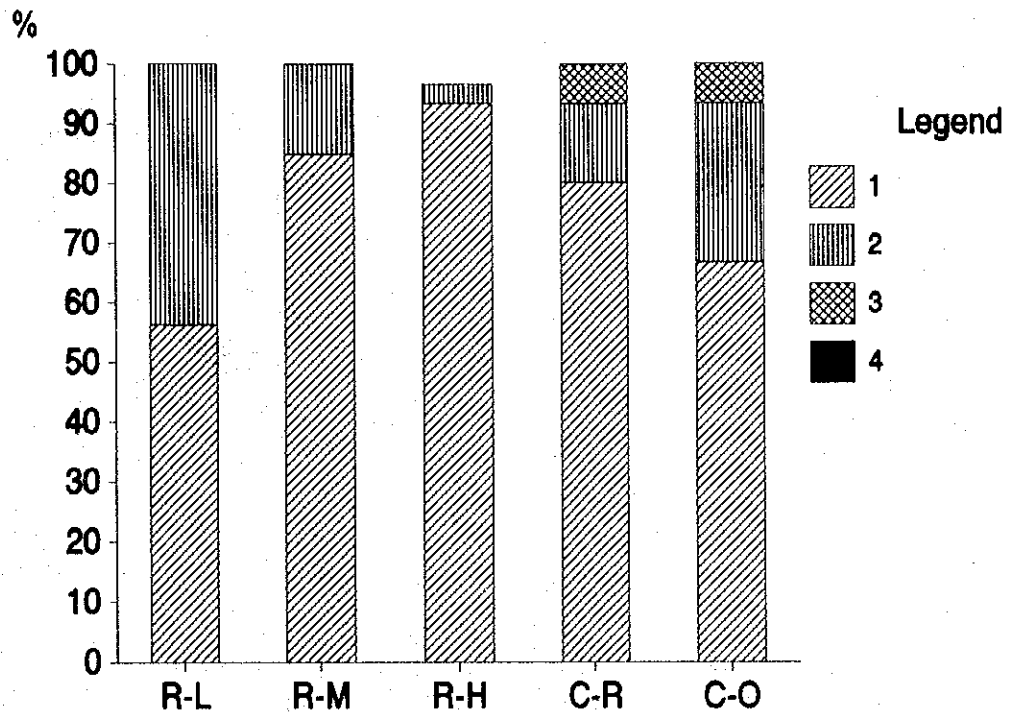
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	80.0%	82.5%	72.5%	78.3%	75.0%	75.0%	75.0%
2	No	17.5%	12.5%	22.5%	17.5%	25.0%	22.5%	23.3%
3	I don't know	2.5%	5.0%	5.0%	4.2%	0.0%	2.5%	1.7%



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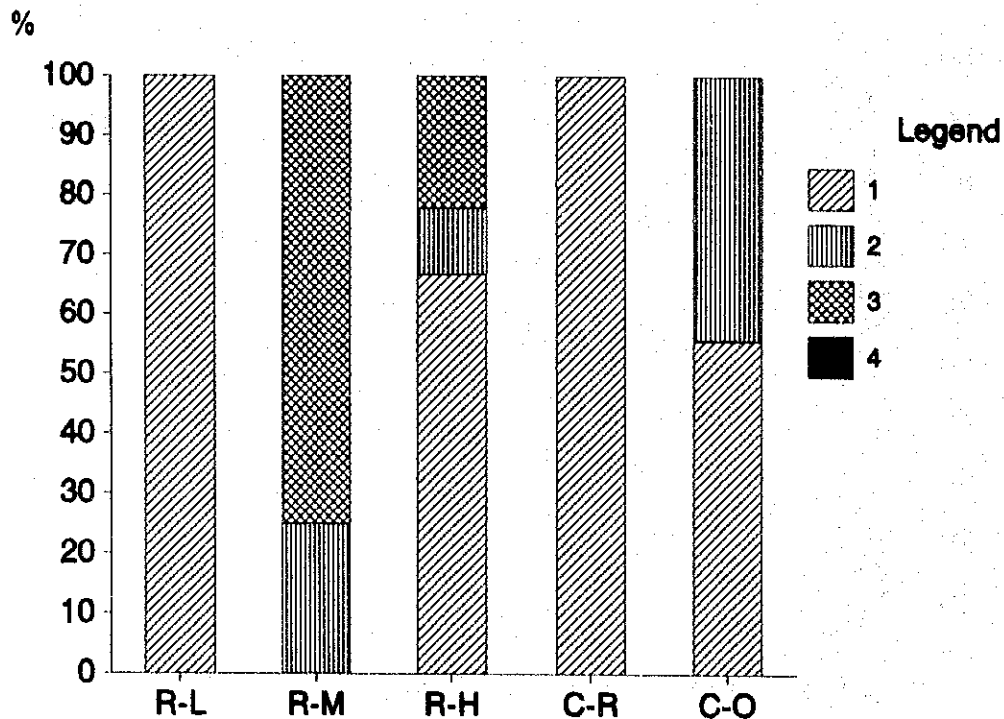
Q3-9 What do you use to discharge waste in the container?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Plastic/paper bag	56.3%	84.8%	93.3%	78.7%	80.0%	66.7%	71.1%
2	Individual container than plastic/paper bag	43.8%	15.2%	3.3%	21.3%	13.3%	26.7%	22.2%
3	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	6.7%	6.7%	6.7%
4	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



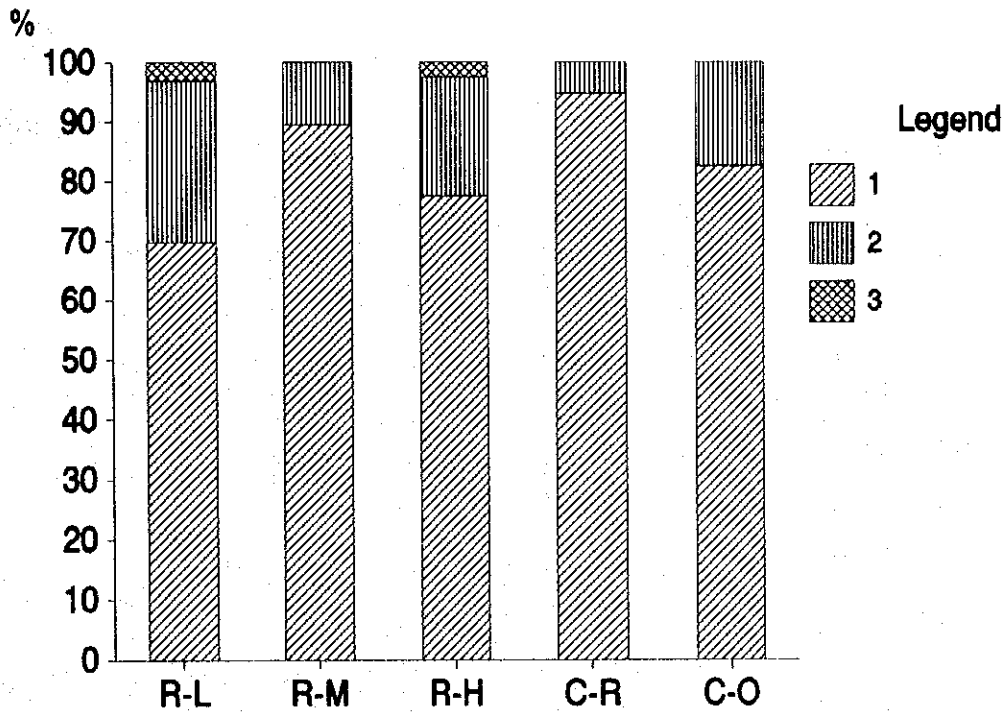
Q3-10 If the answer to question 3-8 is "No", what are the reasons?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Present system is better	100.0%	0.0%	66.7%	65.0%	100.0%	55.6%	71.4%
2	We have nobody who will carry the waste to communal containers	0.0%	25.0%	11.1%	10.0%	0.0%	44.4%	28.6%
3	Communal containers are not hygienic	0.0%	75.0%	22.2%	25.0%	0.0%	0.0%	0.0%
4	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Q3-11 Do you discharge waste at a fixed time?

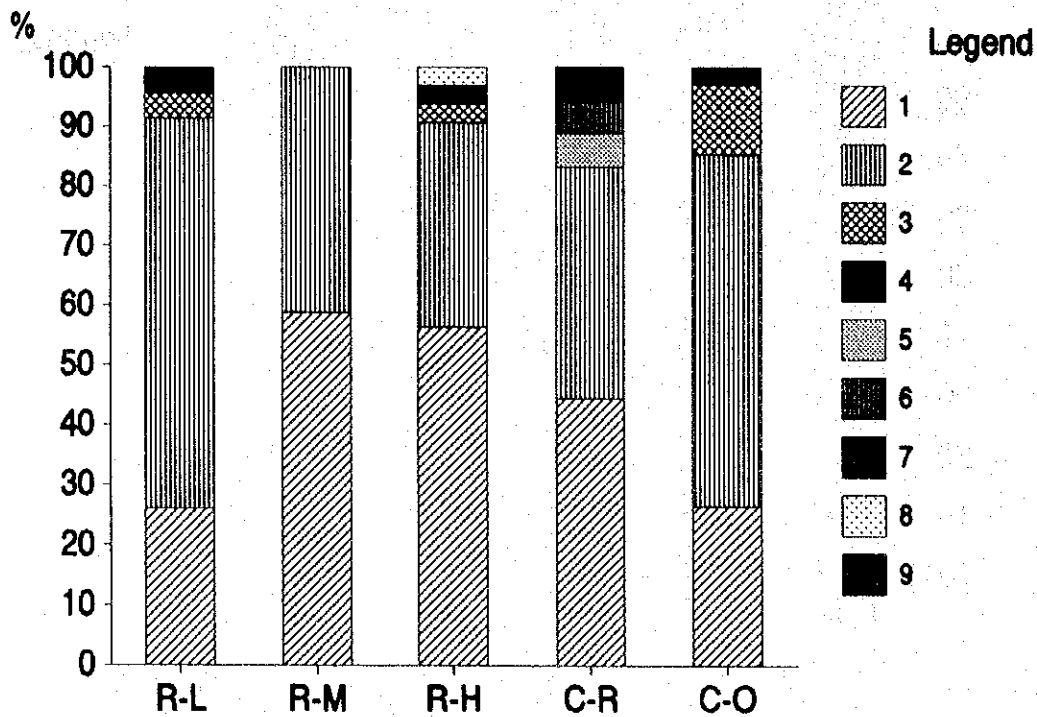
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	69.7%	89.5%	77.5%	79.3%	94.7%	82.5%	86.4%
2	No	27.3%	10.5%	20.0%	18.9%	5.3%	17.5%	13.6%
3	I don't know	3.0%	0.0%	2.5%	1.8%	0.0%	0.0%	0.0%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

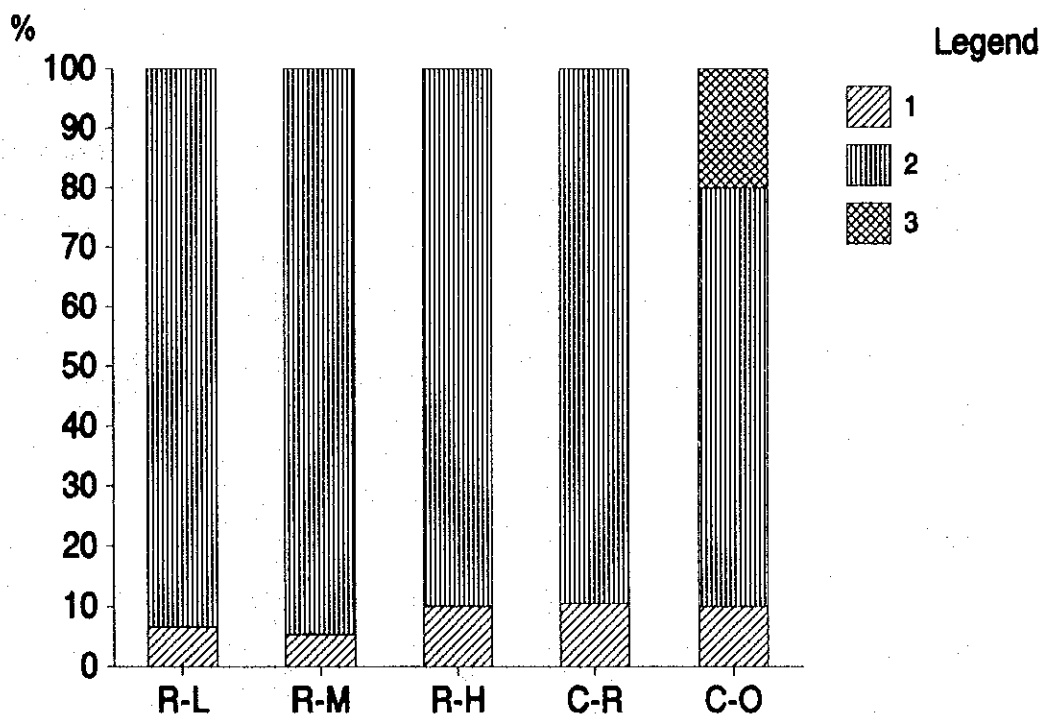
Q3-12 If "Yes", what time do you usually discharge your waste?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	6:00-8:59	26.1%	58.8%	56.3%	49.4%	44.4%	26.5%	32.7%
2	9:00-11:59	65.2%	41.2%	34.4%	44.9%	38.9%	58.8%	51.9%
3	12:00-14:59	4.3%	0.0%	3.1%	2.2%	0.0%	11.8%	7.7%
4	15:00-17:59	4.3%	0.0%	3.1%	2.2%	0.0%	2.9%	1.9%
5	18:00-20:59	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	1.9%
6	21:00-23:59	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	1.9%
7	24:00-2:59	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	1.9%
8	3:00-5:59	0.0%	0.0%	3.1%	1.1%	0.0%	0.0%	0.0%
9	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Q3-13 Have you ever discharge waste soon after it was collected?

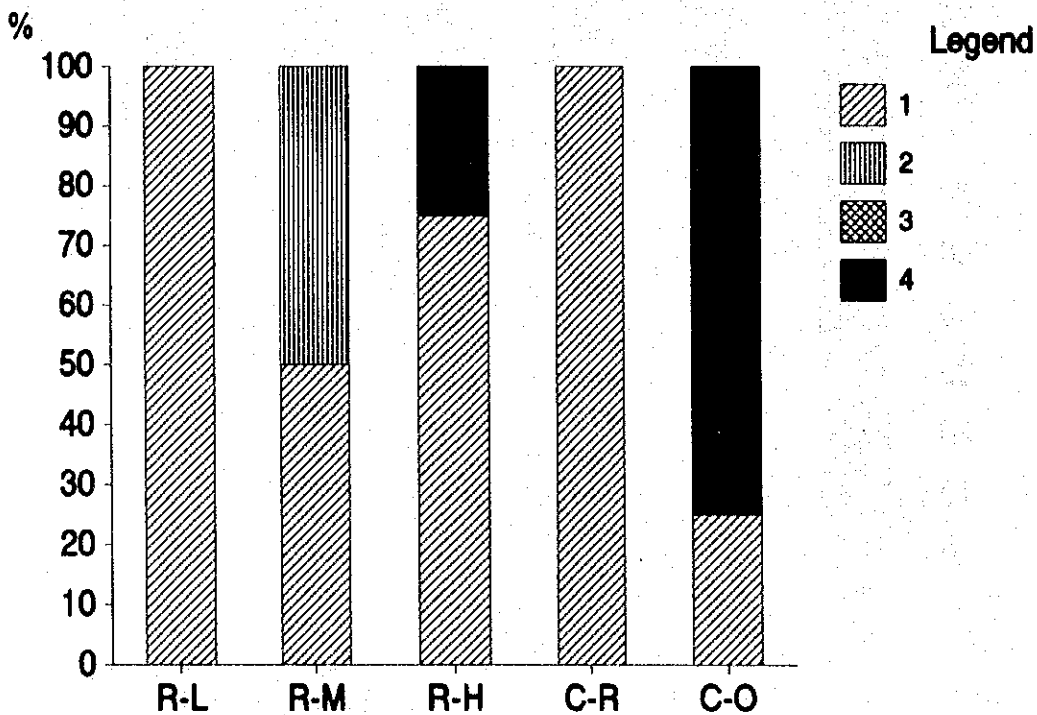
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	6.5%	5.3%	10.0%	7.3%	10.5%	10.0%	10.2%
2	No	93.5%	94.7%	90.0%	92.7%	89.5%	70.0%	76.3%
3	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	13.6%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

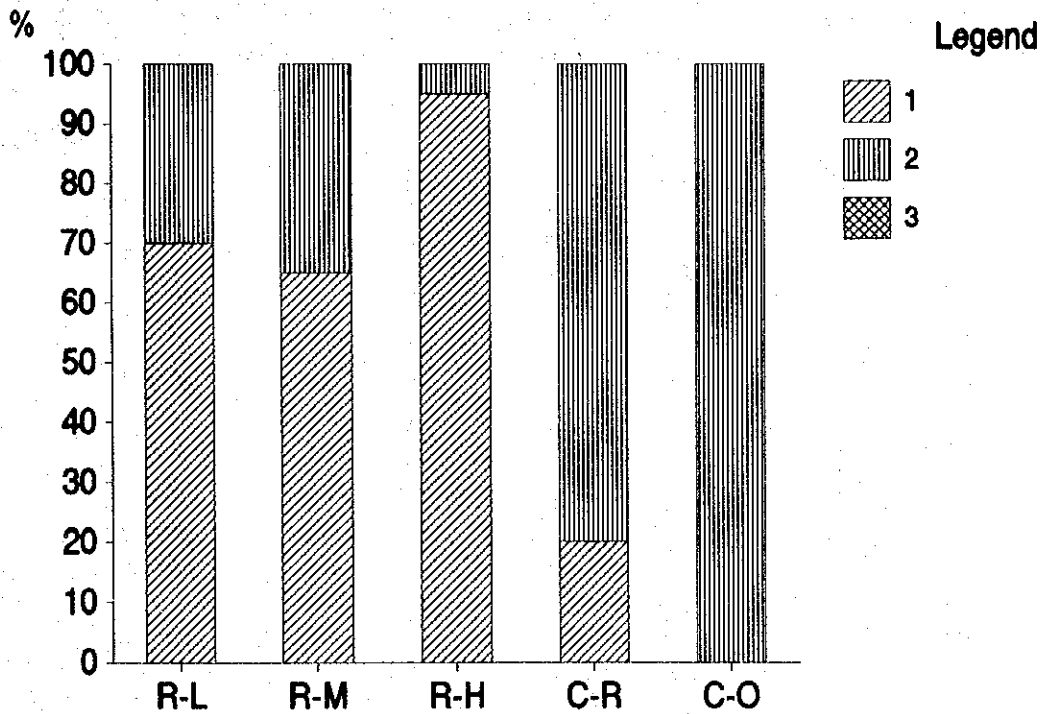
Q3-14 If yes, please state the reasons:

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	The arrival of vehicle is not noticed	100.0%	50.0%	75.0%	75.0%	100.0%	25.0%	50.0%
2	Collection time is not fixed	0.0%	50.0%	0.0%	12.5%	0.0%	0.0%	0.0%
3	Collection date is not fixed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	Others	0.0%	0.0%	25.0%	12.5%	0.0%	75.0%	50.0%



Q3-15 Do you have garden wastes (fallen leaves and branches or grass and weeds)?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	70.0%	65.0%	95.0%	76.7%	20.0%	0.0%	6.7%
2	No	30.0%	35.0%	5.0%	23.3%	80.0%	100.0%	93.3%
3	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

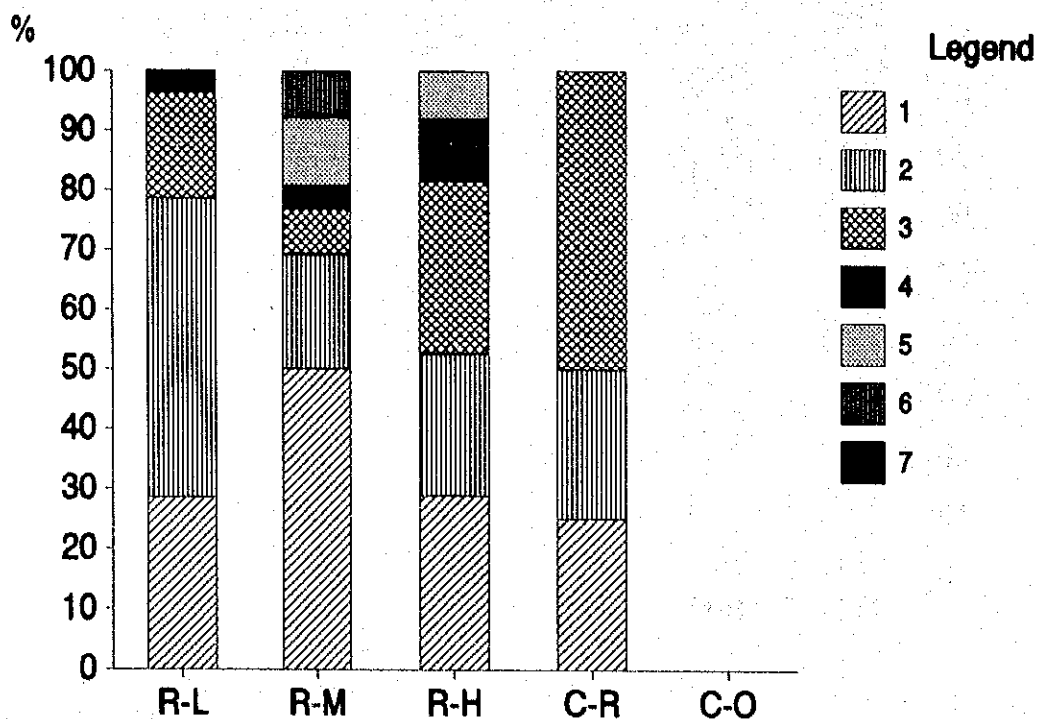


Note:

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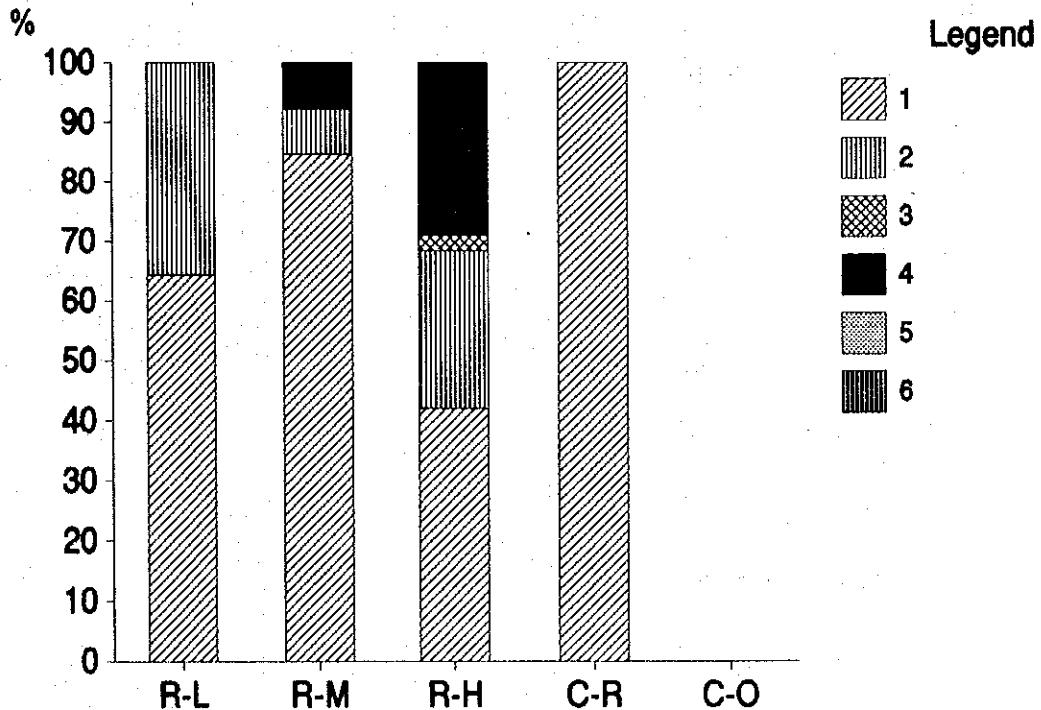
Q3-16 What volume of garden waste do you think you have per week?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Less than half of a regular garbage bag (80 liters)	28.6%	50.0%	28.9%	34.8%	25.0%	0.0%	25.0%
2	Half to one full garbage bag	50.0%	19.2%	23.7%	30.4%	25.0%	0.0%	25.0%
3	One to two full garbage bags	17.9%	7.7%	28.9%	19.6%	50.0%	0.0%	50.0%
4	Two to three full garbage bags	3.6%	3.8%	10.5%	6.5%	0.0%	0.0%	0.0%
5	Three to five full garbage bags	0.0%	11.5%	7.9%	6.5%	0.0%	0.0%	0.0%
6	Five to seven full garbage bags	0.0%	7.7%	0.0%	2.2%	0.0%	0.0%	0.0%
7	More than seven bags	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



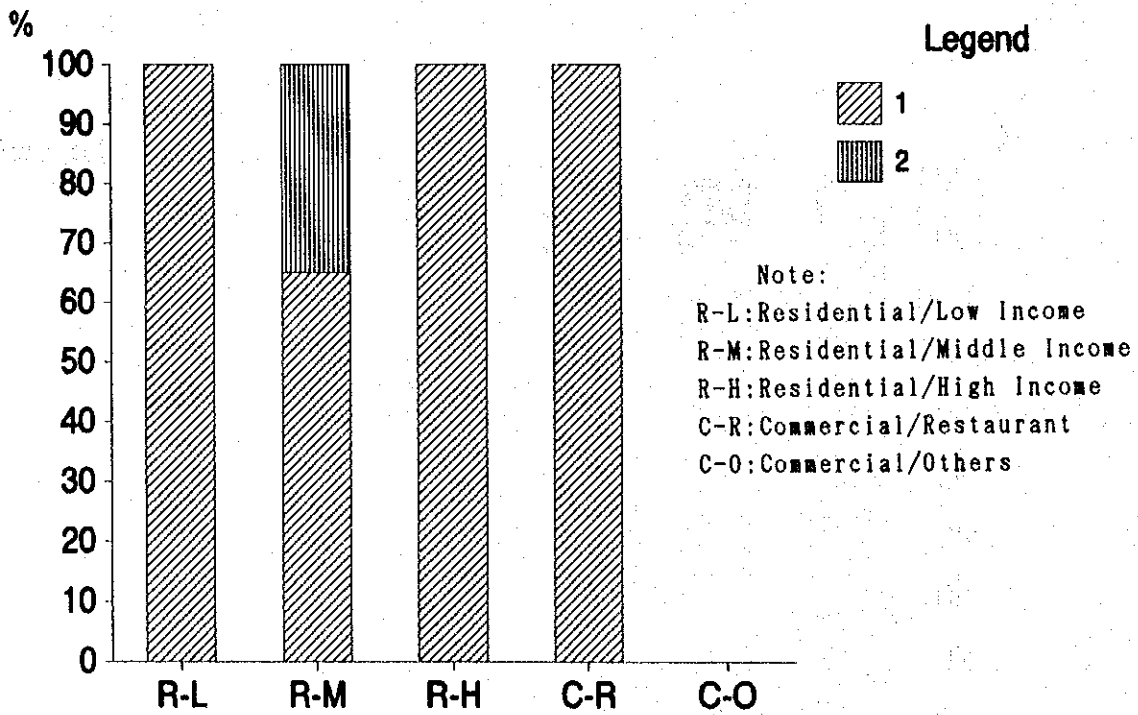
Q3-17 How do you discharge your garden wastes?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Discharge at the collection point with other waste	64.3%	84.6%	42.1%	60.9%	100.0%	0.0%	100.0%
2	Open combustion/burning	35.7%	7.7%	26.3%	23.9%	0.0%	0.0%	0.0%
3	Composting (producing fertilizer from wastes)	0.0%	0.0%	2.6%	1.1%	0.0%	0.0%	0.0%
4	Ask some other person who collects it	0.0%	7.7%	28.9%	14.1%	0.0%	0.0%	0.0%
5	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



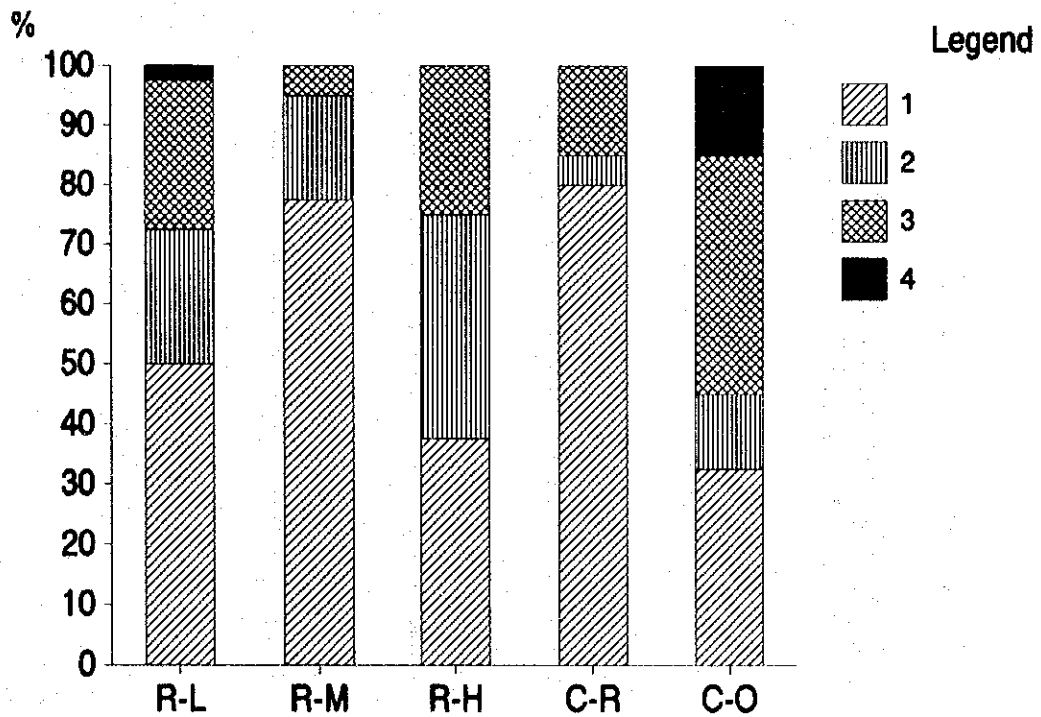
Q3-18 If the waste discharge from your house is collected regularly, will you discharge the garden waste with the other waste?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	100.0%	65.0%	100.0%	87.2%	100.0%	0.0%	100.0%
2	No	0.0%	35.0%	0.0%	12.8%	0.0%	0.0%	0.0%



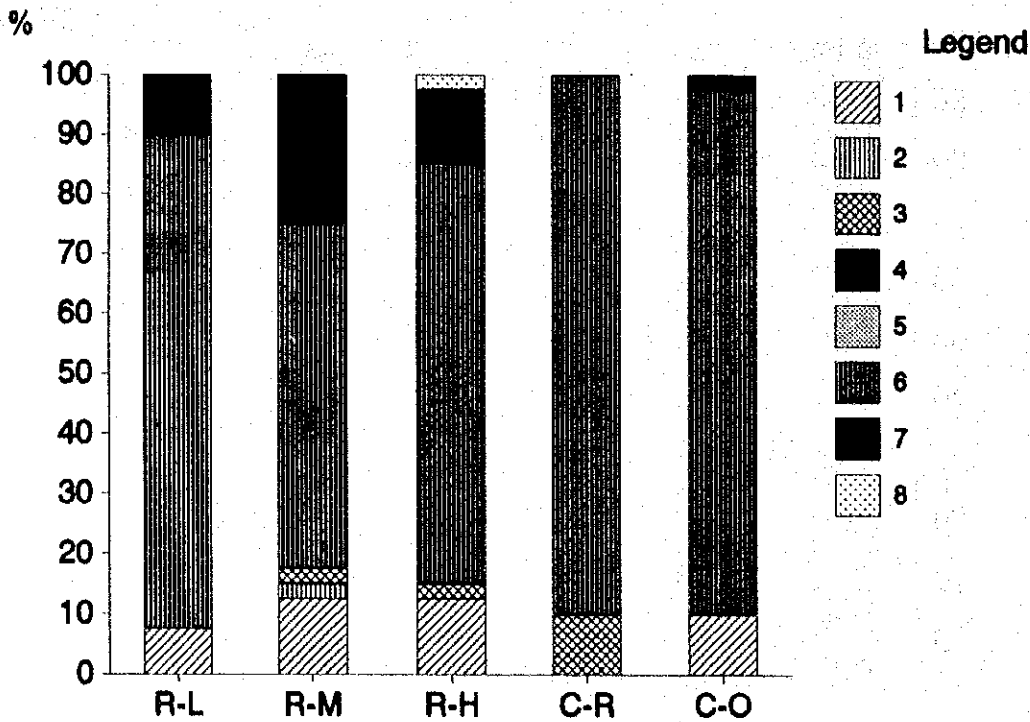
Q3-19 Does anyone in the family sweep the sidewalks or public area adjacent to your house?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes, everyday	50.0%	77.5%	37.5%	55.0%	80.0%	32.5%	48.3%
2	Yes, sometimes	22.5%	17.5%	37.5%	25.8%	5.0%	12.5%	10.0%
3	No	25.0%	5.0%	25.0%	18.3%	15.0%	40.0%	31.7%
4	I don't know	2.5%	0.0%	0.0%	0.8%	0.0%	15.0%	10.0%



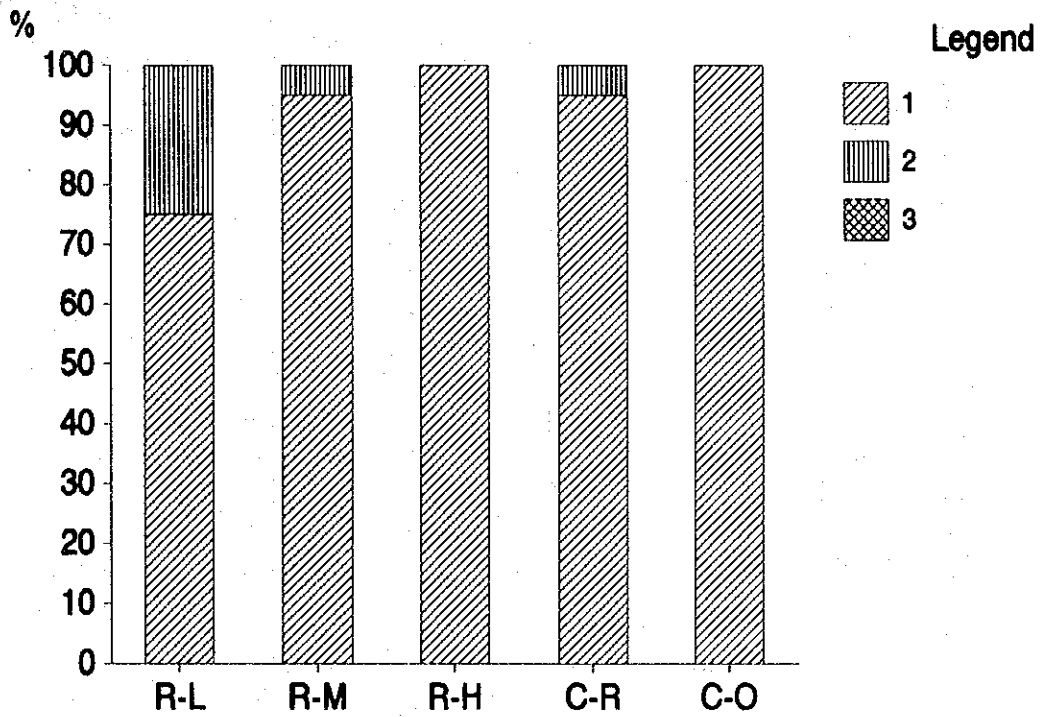
Q3-20 How are your bulky wastes disposed? (such as large broken furniture or electric appliances)

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Collected by the regular collection services	7.5%	12.5%	12.5%	10.8%	0.0%	10.0%	6.7%
2	Sold and/or collected by special collectors	0.0%	2.5%	0.0%	0.8%	0.0%	0.0%	0.0%
3	Self-disposal to landfill site	0.0%	2.5%	2.5%	1.7%	10.0%	0.0%	3.3%
4	Sold to Junkyard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	Collected during some campaign or special day	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	We don't generate bulky wastes at our house	82.5%	57.5%	70.0%	70.0%	90.0%	87.5%	88.3%
7	Others (Please specify)	10.0%	25.0%	12.5%	15.8%	0.0%	2.5%	1.7%
8	I don't know	0.0%	0.0%	2.5%	0.8%	0.0%	0.0%	0.0%



Q4-1 Do you have a waste collection service?

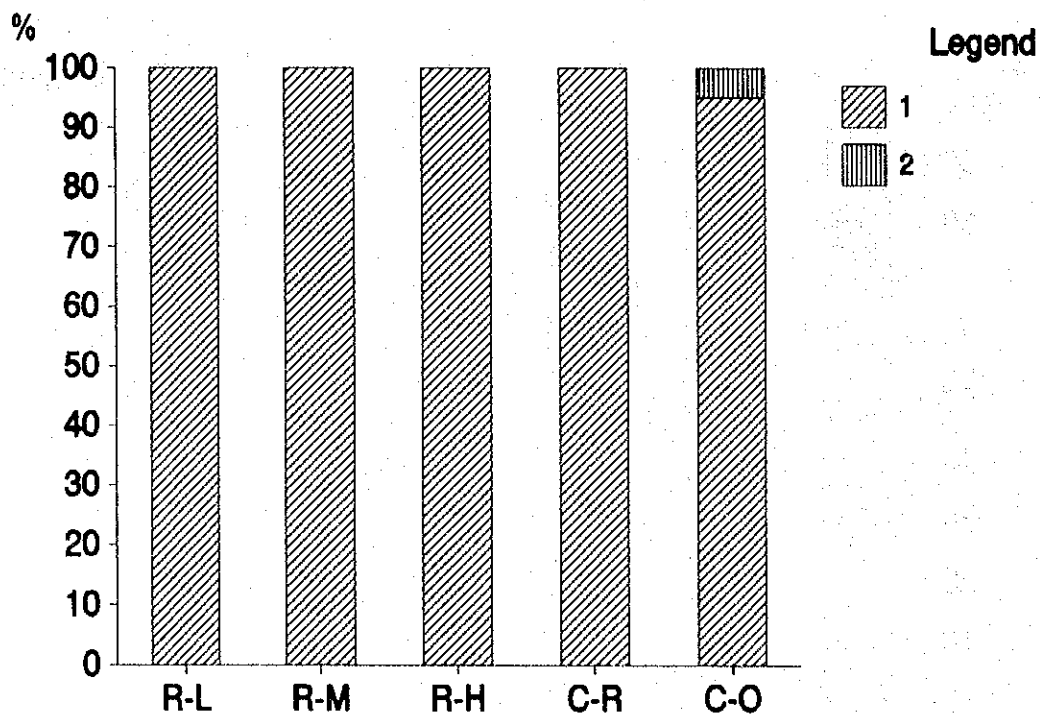
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	75.0%	95.0%	100.0%	90.0%	95.0%	100.0%	98.3%
2	No	25.0%	5.0%	0.0%	10.0%	5.0%	0.0%	1.7%
3	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Note:
R-L: Residential/Low Income
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C-R: Commercial/Restaurant
C-O: Commercial/Others

Q4-2 Who collects your wastes?

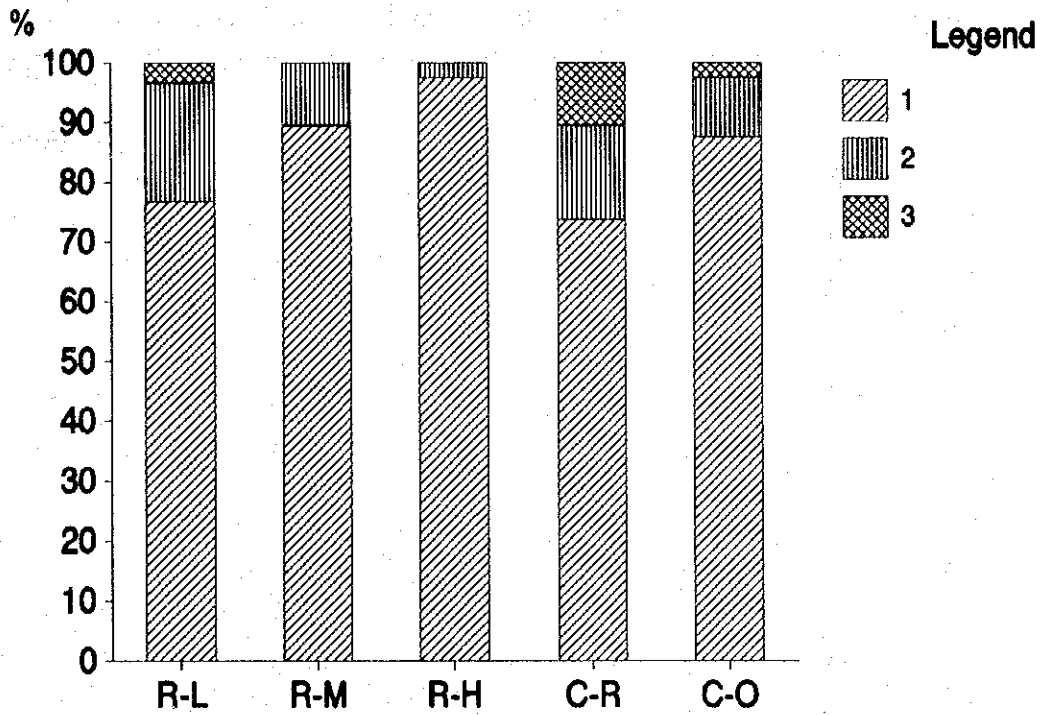
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Municipality	100.0%	100.0%	100.0%	100.0%	100.0%	95.0%	96.6%
2	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	3.4%



Note:
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 R-H: Residential/High Income
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 C-O: Commercial/Others

Q4-3 Are you satisfied with the collection service?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	76.7%	89.5%	97.5%	88.9%	73.7%	87.5%	83.1%
2	No	20.0%	10.5%	2.5%	10.2%	15.8%	10.0%	11.9%
3	I don't know	3.3%	0.0%	0.0%	0.9%	10.5%	2.5%	5.1%

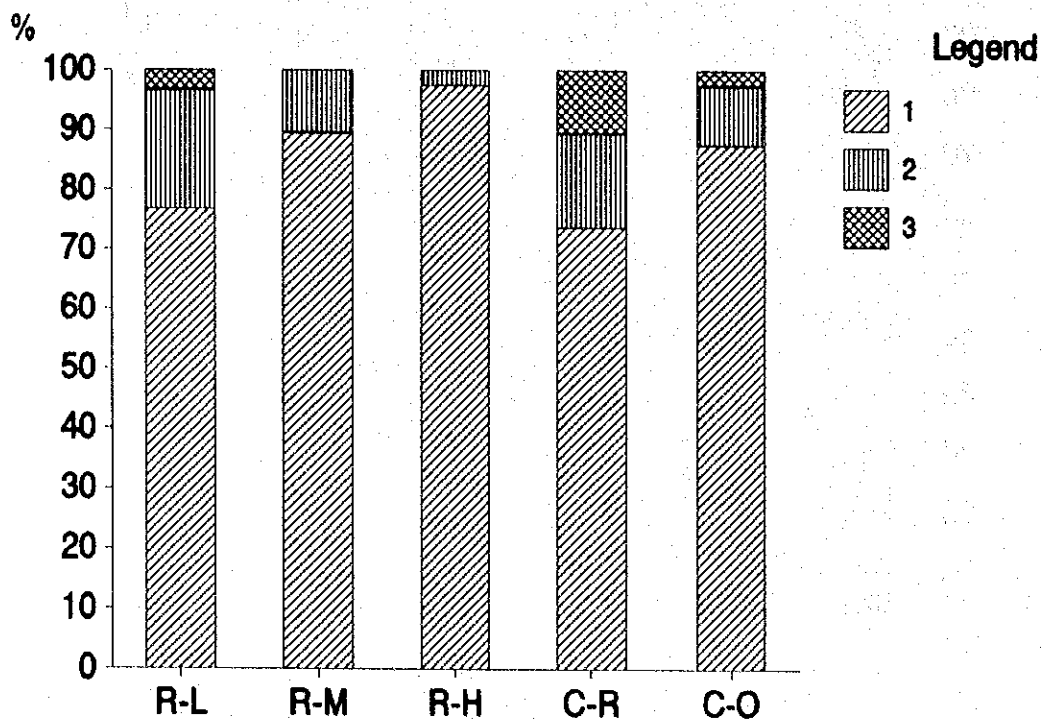


Note:

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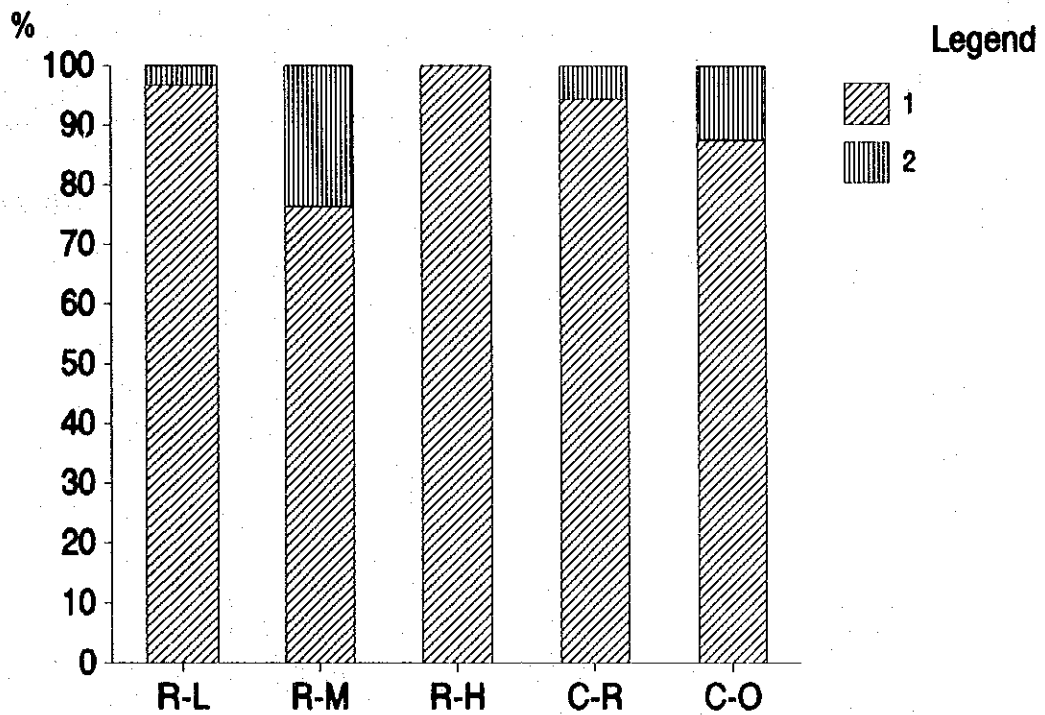
Q4-4 If "No", what are the reasons?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Frequency of collection service is low	83.3%	25.0%	0.0%	54.5%	20.0%	75.0%	44.4%
2	Collection time is irregular	0.0%	75.0%	0.0%	27.3%	0.0%	25.0%	11.1%
3	Collection time is very early or late	0.0%	0.0%	0.0%	0.0%	60.0%	0.0%	33.3%
4	Behavior of workers is bad	16.7%	0.0%	0.0%	9.1%	0.0%	0.0%	0.0%
5	Collection fee is expensive	0.0%	0.0%	100.0%	9.1%	0.0%	0.0%	0.0%
6	Collection fee system is not fair	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	Other (Please specify)	0.0%	0.0%	0.0%	0.0%	20.0%	0.0%	11.1%



Q4-5a Do you know how your waste is collected?

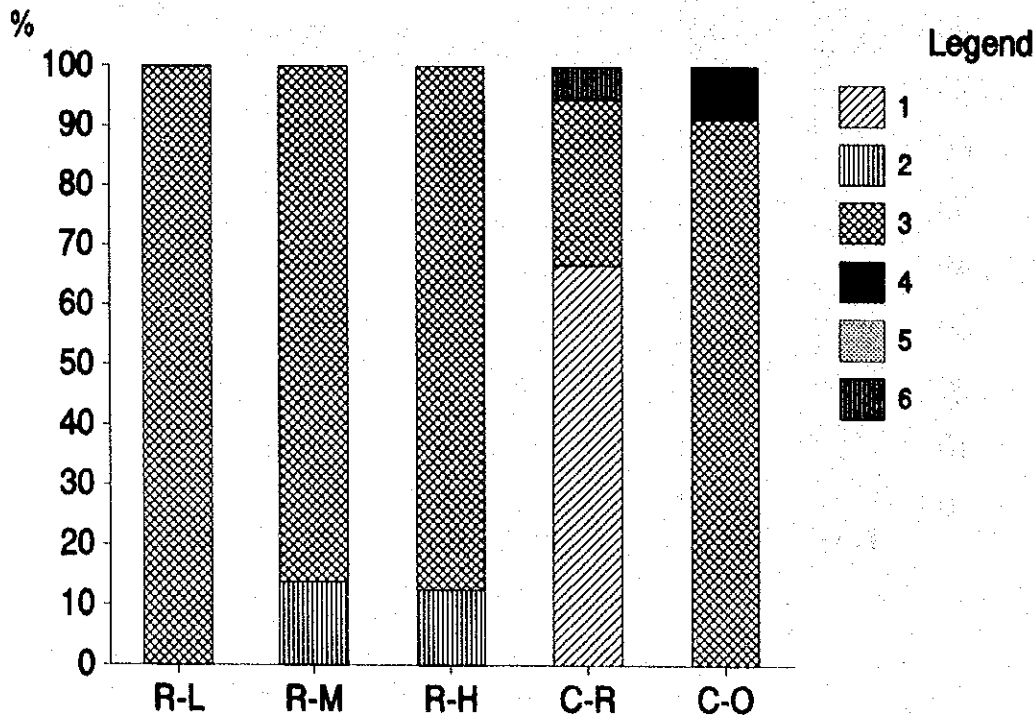
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	96.7%	76.3%	100.0%	90.7%	94.4%	87.5%	89.7%
2	No	3.3%	23.7%	0.0%	9.3%	5.6%	12.5%	10.3%



Note:
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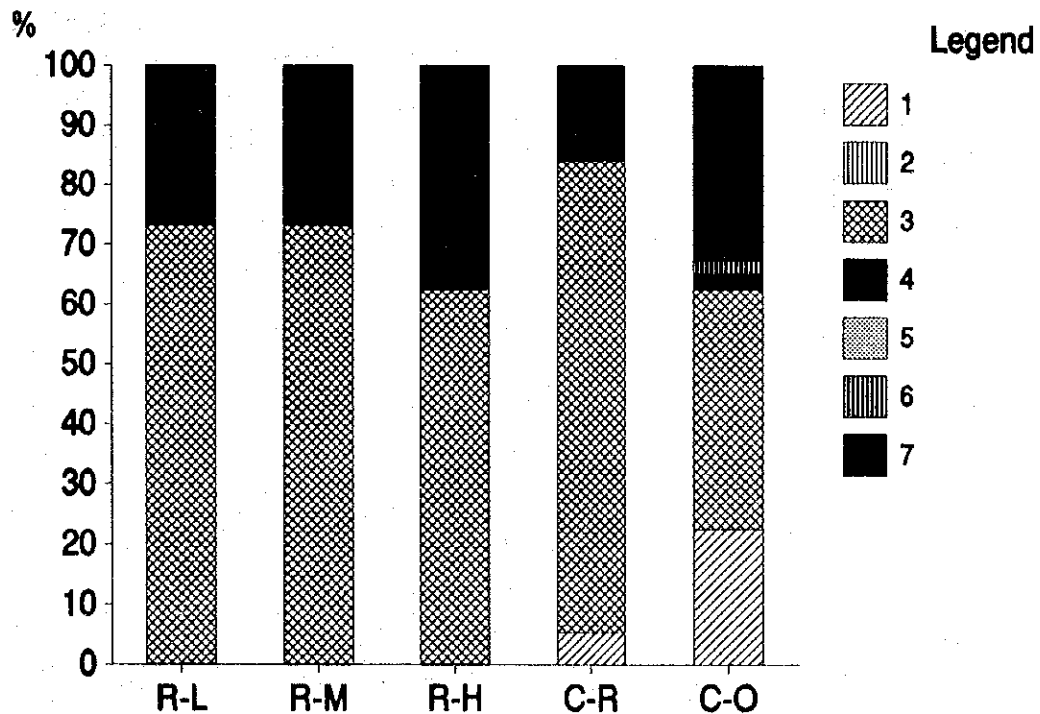
Q4-5b If the answer is "Yes", how is your waste collected?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Door to door collection system by collection worker	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%	23.1%
2	Curb collection by garbage stand	0.0%	13.8%	12.5%	9.2%	0.0%	0.0%	0.0%
3	Curb collection without garbage stand	100.0%	86.2%	87.5%	90.8%	27.8%	91.2%	69.2%
4	Residents themselves carry the waste to a communal container or to a certain collection point	0.0%	0.0%	0.0%	0.0%	0.0%	8.8%	5.8%
5	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	I don't know	0.0%	0.0%	0.0%	0.0%	5.5%	0.0%	1.9%



Q4-6 How often is your waste collected?

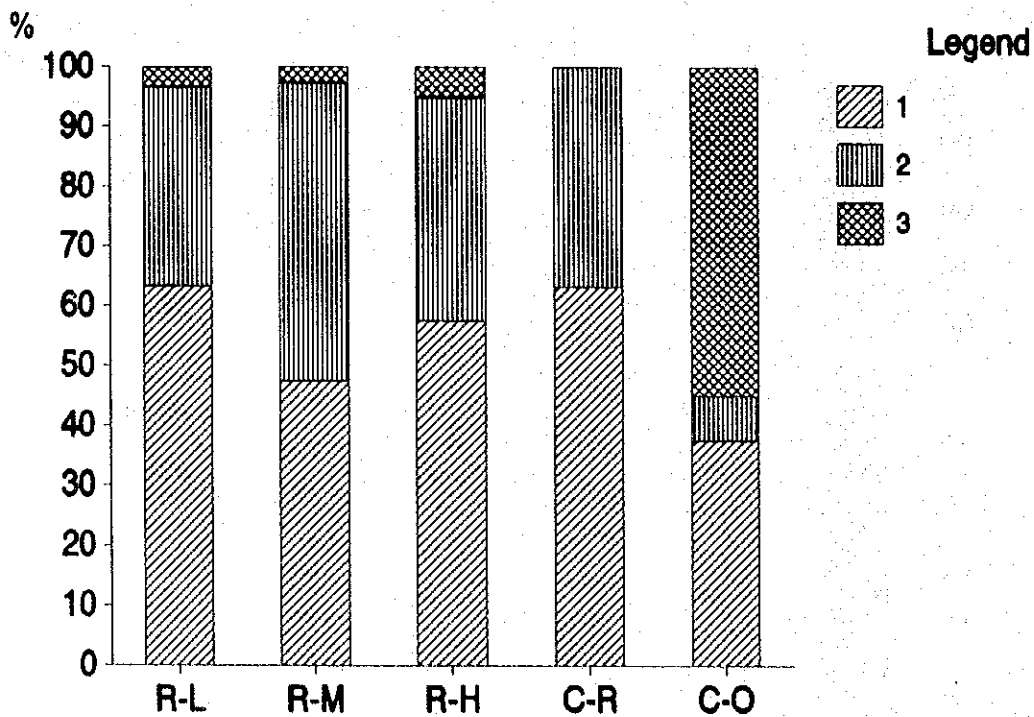
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Everyday	0.0%	0.0%	0.0%	0.0%	5.3%	22.5%	16.9%
2	Six times a week	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	Three times a week (every other day)	73.3%	73.3%	62.5%	69.4%	78.9%	40.0%	52.5%
4	Twice a week	20.0%	26.7%	37.5%	28.7%	15.8%	2.5%	6.8%
5	Once a week	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	1.7%
7	I don't know	6.7%	0.0%	0.0%	1.9%	0.0%	32.5%	22.0%



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 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q4-7 Is collection service done at a fixed time in the day?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	63.3%	47.4%	57.5%	55.6%	63.2%	37.5%	45.8%
2	No	33.3%	50.0%	37.5%	40.7%	36.8%	7.5%	16.9%
3	I don't know	3.3%	2.6%	5.0%	3.7%	0.0%	55.0%	37.3%

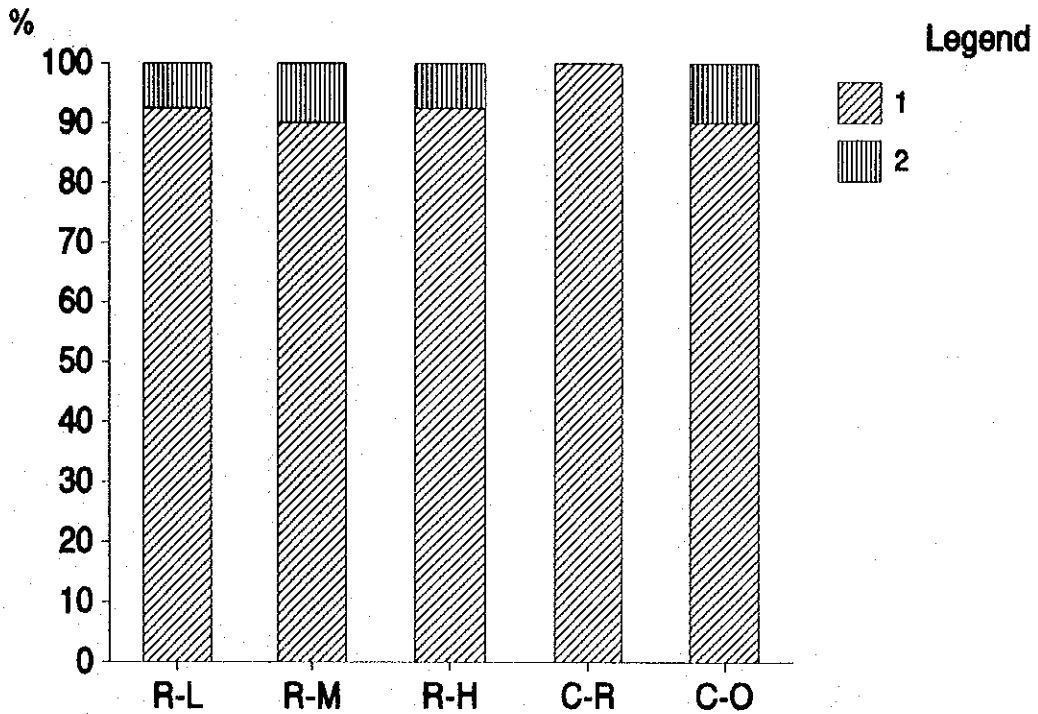


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Q5-1 If the municipality introduces a separate waste collection system to utilize waste (i.e. for instance you are requested to segregate your wastes into i. compostable waste (food waste, paper and garden waste) ii. recyclable waste (metals and bottles) and iii. other wastes), would you cooperate with the system?

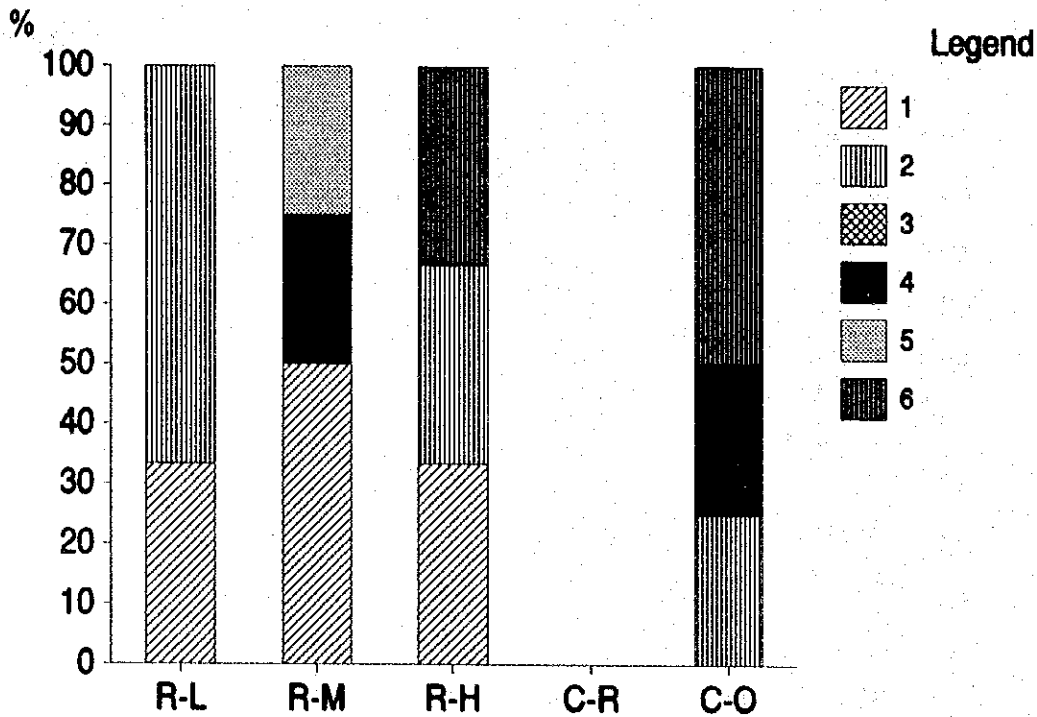
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	92.5%	90.0%	92.5%	91.7%	100.0%	90.0%	93.3%
2	No	7.5%	10.0%	7.5%	8.3%	0.0%	10.0%	6.7%



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Q5-2 If "No", what are the reasons?

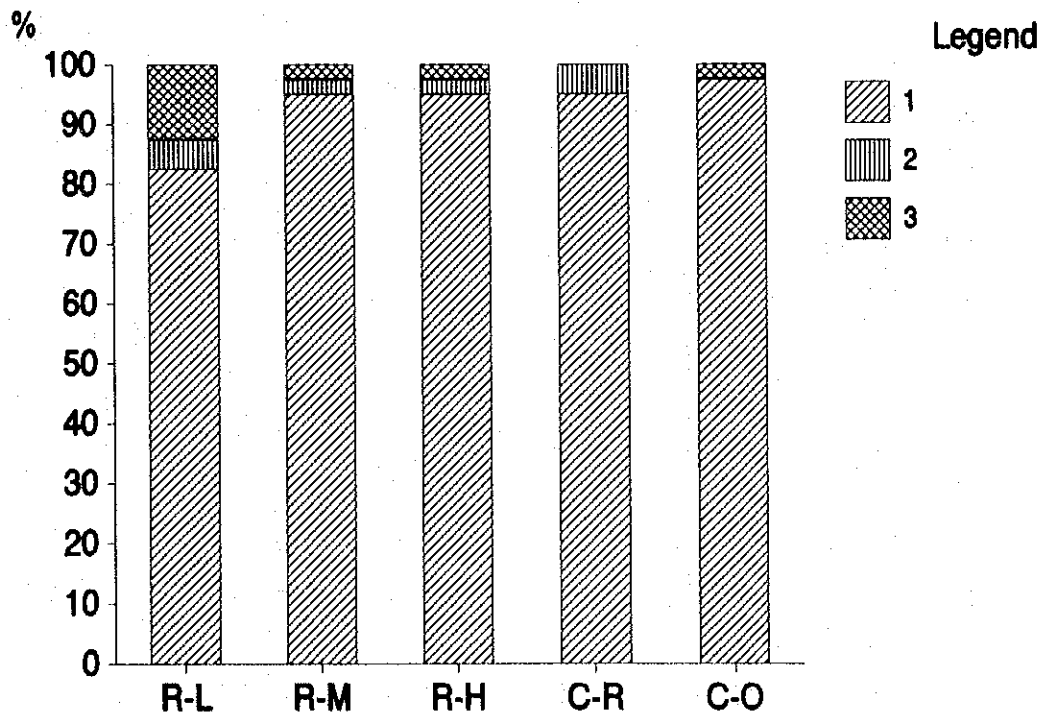
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	It requires several containers or plastic bags	33.3%	50.0%	33.3%	40.0%	0.0%	0.0%	0.0%
2	It requires certain effort	66.7%	0.0%	33.3%	30.0%	0.0%	25.0%	25.0%
3	It requires several public containers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	It is inconvenient	0.0%	25.0%	0.0%	10.0%	0.0%	25.0%	25.0%
5	It may increase collection cost	0.0%	25.0%	0.0%	10.0%	0.0%	0.0%	0.0%
6	Others (Please specify)	0.0%	0.0%	33.3%	10.0%	0.0%	50.0%	50.0%



Note:
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 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q5-3 Do you think resource recovery from wastes and recycling is necessary?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	82.5%	95.0%	95.0%	90.8%	95.0%	97.5%	96.7%
2	No	5.0%	2.5%	2.5%	3.3%	5.0%	0.0%	1.7%
3	I don't know	12.5%	2.5%	2.5%	5.8%	0.0%	2.5%	1.7%

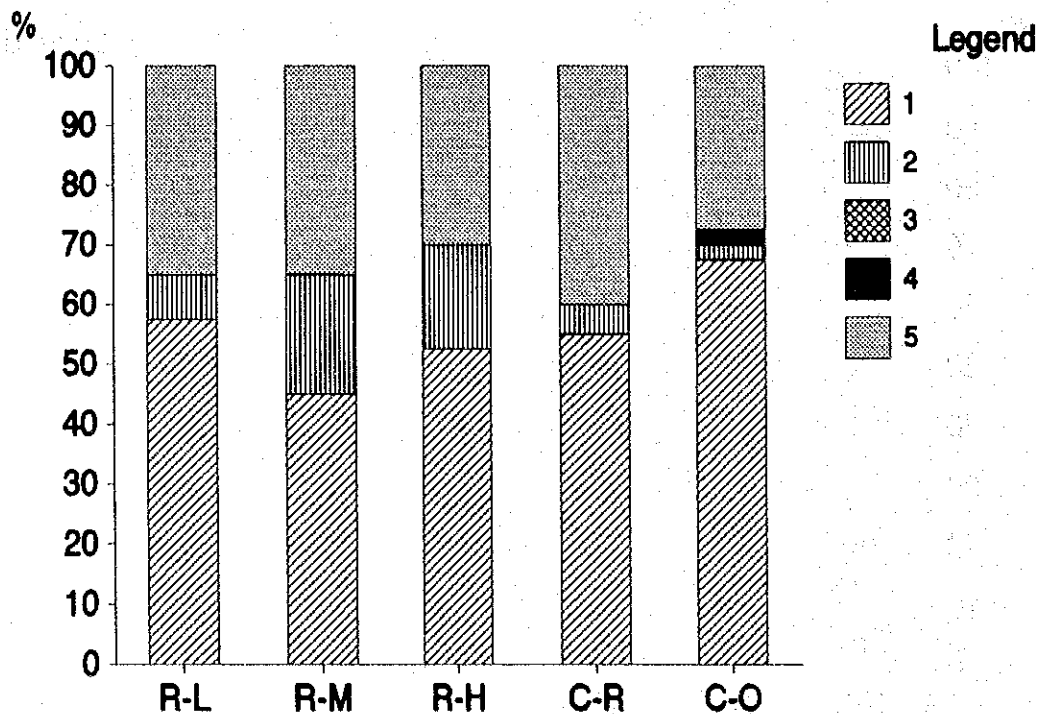


Note:

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- C-O: Commercial/Others

Q5-4 What kinds of resource recovery from wastes and recycling do you know?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Recycling or reusable materials such-as papers, bottles, etc.	57.5%	45.0%	52.5%	51.7%	55.0%	67.5%	63.3%
2	Composting (Fertilizer from wastes)	7.5%	20.0%	17.5%	15.0%	5.0%	2.5%	3.3%
3	Heat recovery by incineration	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	1.7%
5	I don't know	35.0%	35.0%	30.0%	33.3%	40.0%	27.5%	31.7%

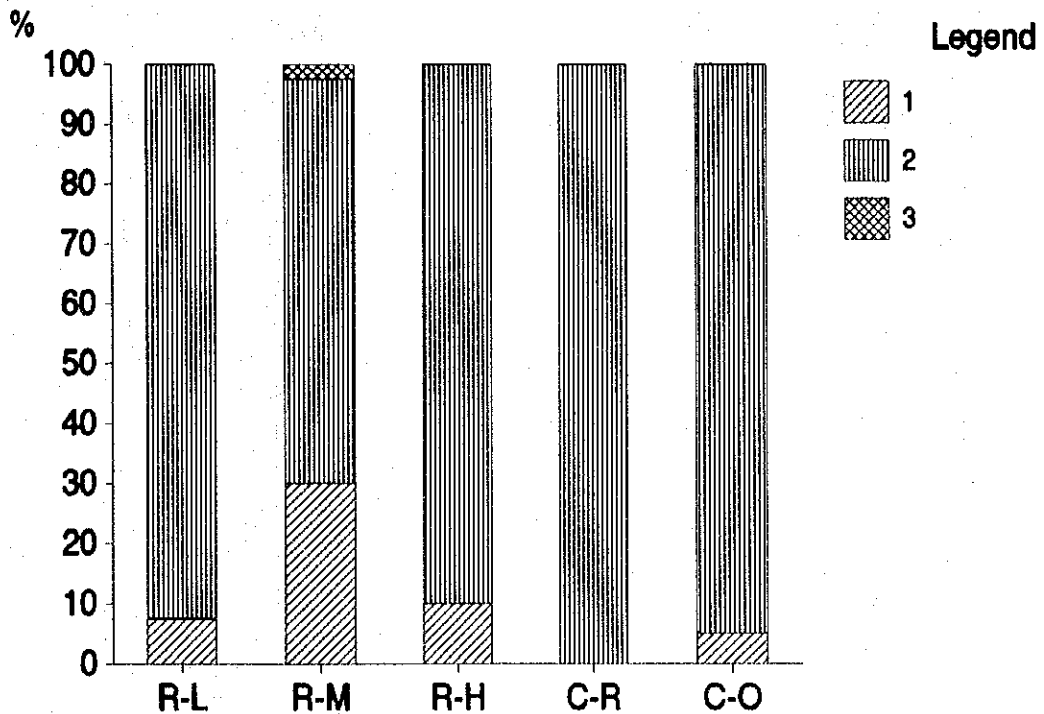


Note:

- R-L: Residential/Low Income
- R-M: Residential/Middle Income
- R-H: Residential/High Income
- C-R: Commercial/Restaurant
- C-O: Commercial/Others

Q5-5 Is there someone who comes around to collect or buy your reusable or recyclable materials?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	7.5%	30.0%	10.0%	15.8%	0.0%	5.0%	3.3%
2	No	92.5%	67.5%	90.0%	83.3%	100.0%	95.0%	96.7%
3	I don't know	0.0%	2.5%	0.0%	0.8%	0.0%	0.0%	0.0%

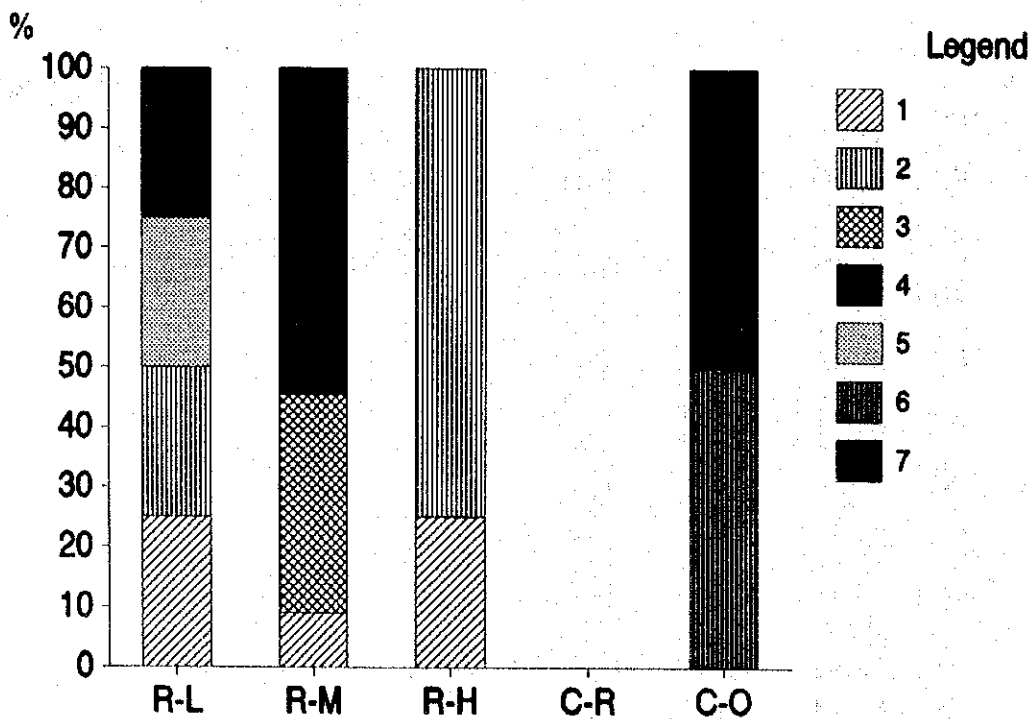


Note:

R-L: Residential/Low Income
R-M: Residential/Middle Income
R-H: Residential/High Income
C-R: Commercial/Restaurant
C-O: Commercial/Others

Q5-6 How often does the collector come around your place?

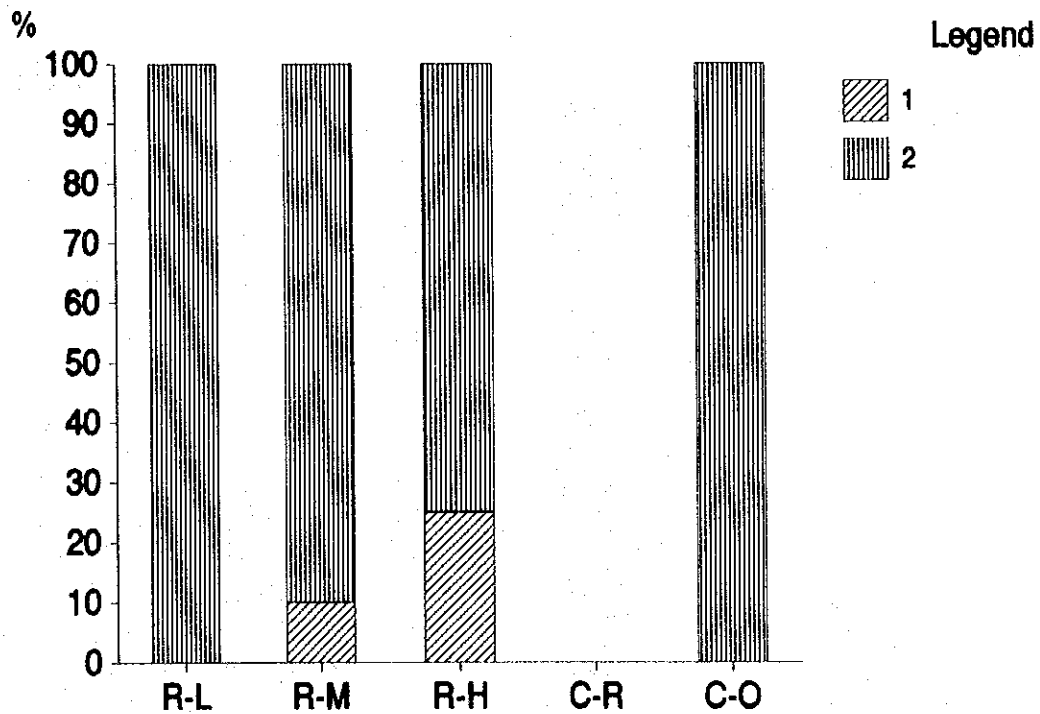
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Once a week	25.0%	9.1%	25.0%	15.8%	0.0%	0.0%	0.0%
2	Once a month	25.0%	0.0%	75.0%	21.1%	0.0%	0.0%	0.0%
3	Once every two months	0.0%	36.4%	0.0%	21.1%	0.0%	0.0%	0.0%
4	Once half a year	0.0%	18.2%	0.0%	10.5%	0.0%	0.0%	0.0%
5	Once a year	25.0%	0.0%	0.0%	5.3%	0.0%	0.0%	0.0%
6	Others (Please specify)	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%
7	I don't know	25.0%	36.4%	0.0%	26.3%	0.0%	50.0%	50.0%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q5-7 Instead of selling recyclable materials to the collector, do you sell the recyclable materials to the shops?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	0.0%	10.0%	25.0%	11.1%	0.0%	0.0%	0.0%
2	No	100.0%	90.0%	75.0%	88.9%	0.0%	100.0%	100.0%

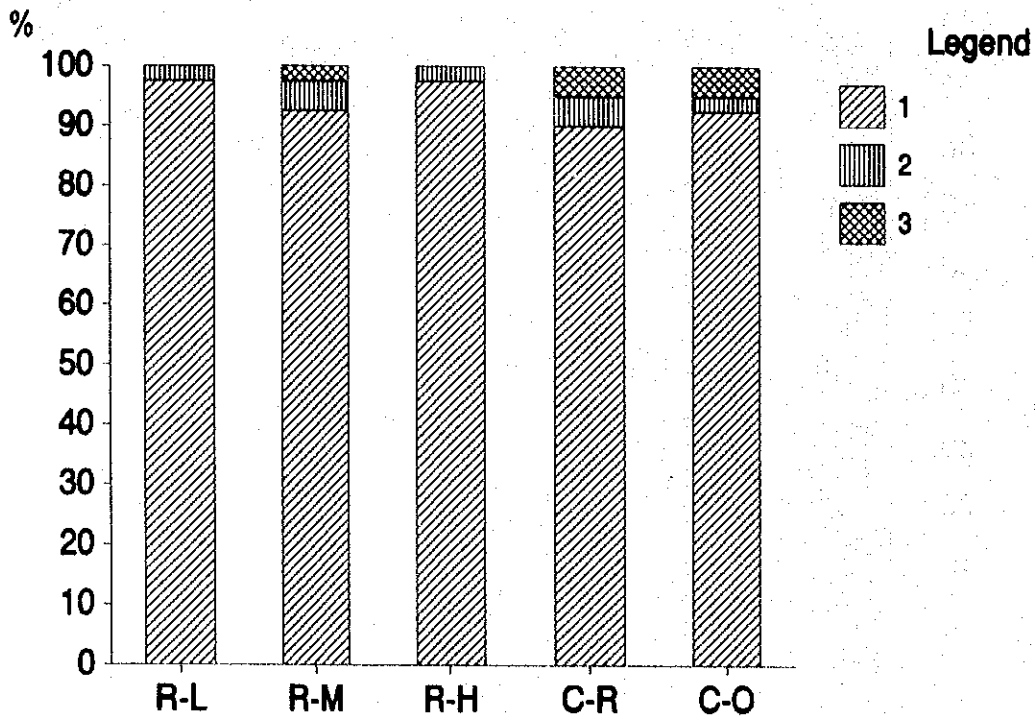


Note:

- R-L: Residential/Low Income
- R-M: Residential/Middle Income
- R-H: Residential/High Income
- C-R: Commercial/Restaurant
- C-O: Commercial/Others

Q5-8 If the association or cooperative in your area were to raise some funds (in order to engage beneficial activities for residents), through sale of reusable or recyclable materials, would you be able to contribute or participate?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	97.5%	92.5%	97.5%	95.8%	90.0%	92.5%	91.7%
2	No	2.5%	5.0%	2.5%	3.3%	5.0%	2.5%	3.3%
3	I don't know	0.0%	2.5%	0.0%	0.8%	5.0%	5.0%	5.0%

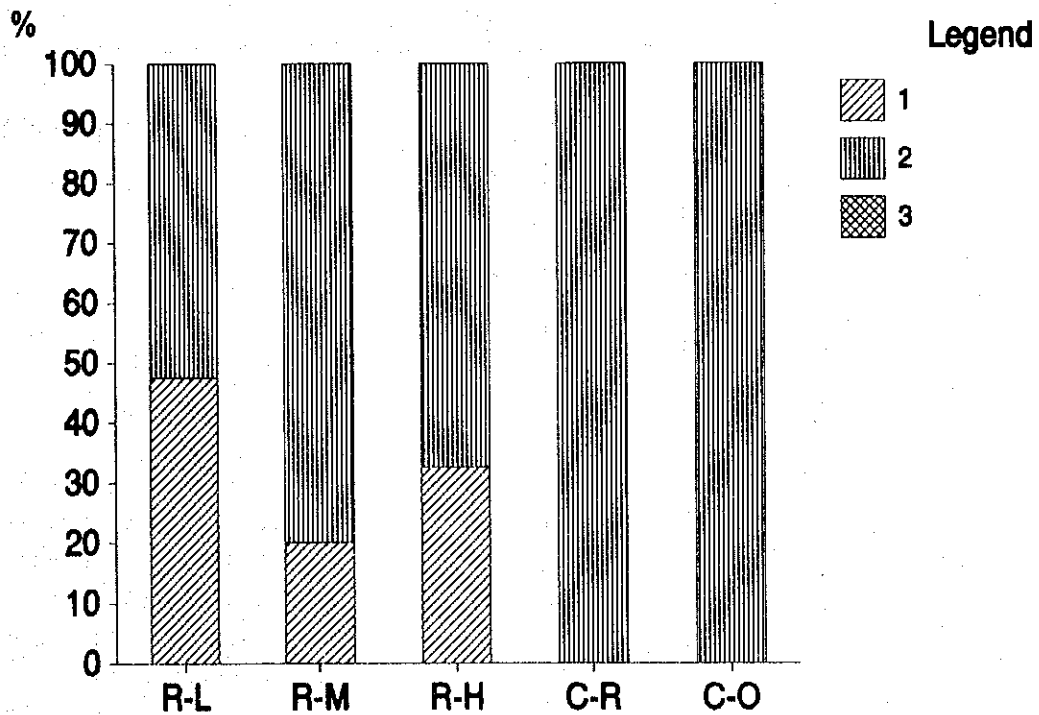


Note:

R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q5-9 Do you feed food wastes to your animals?

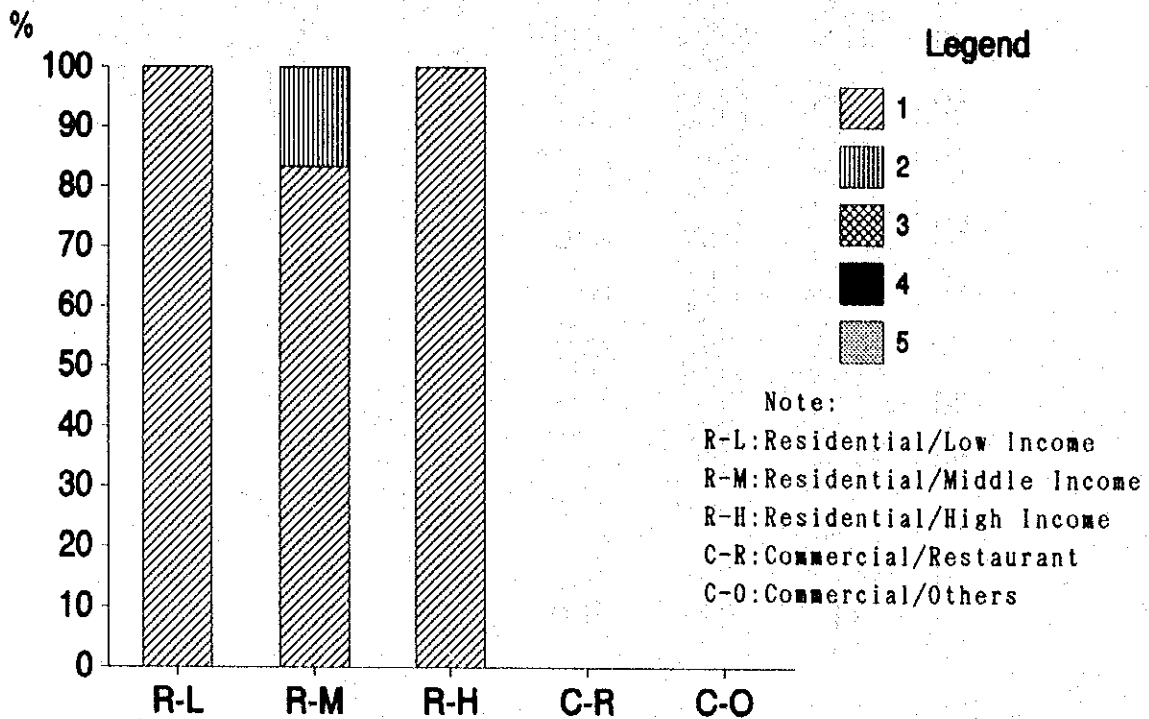
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	47.5%	20.0%	32.5%	33.3%	0.0%	0.0%	0.0%
2	No	52.5%	80.0%	67.5%	66.7%	100.0%	100.0%	100.0%
3	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

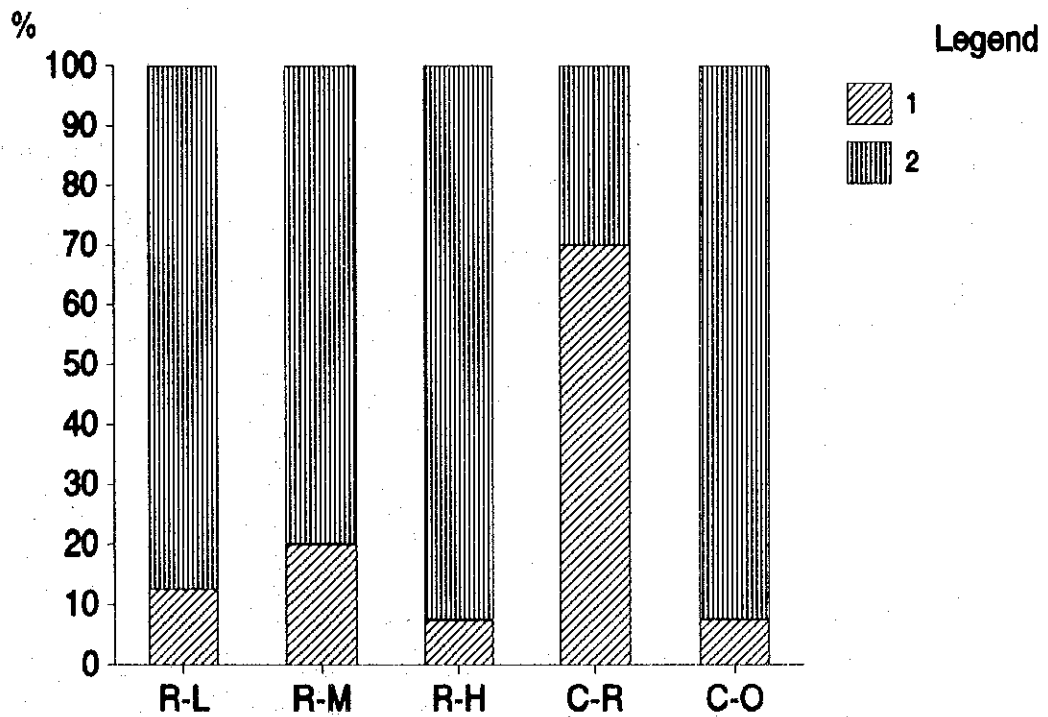
Q5-10 How much food do you give to your animals per day?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Less than one fourth of a regular garbage bag per day (0-20 liters)	100.0%	83.3%	100.0%	97.3%	0.0%	0.0%	0.0%
2	One fourth to half of garbage bag per day (20-40 liters)	0.0%	16.7%	0.0%	2.7%	0.0%	0.0%	0.0%
3	Half to three fourths of a regular garbage bag per day (40-60 liters)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	Three fourths to one full regular garbage bag per day (60-80 liters)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	More than one full regular garbage bag per day (more than 80 liters)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Q5-11 Does anyone come to collect your food waste?

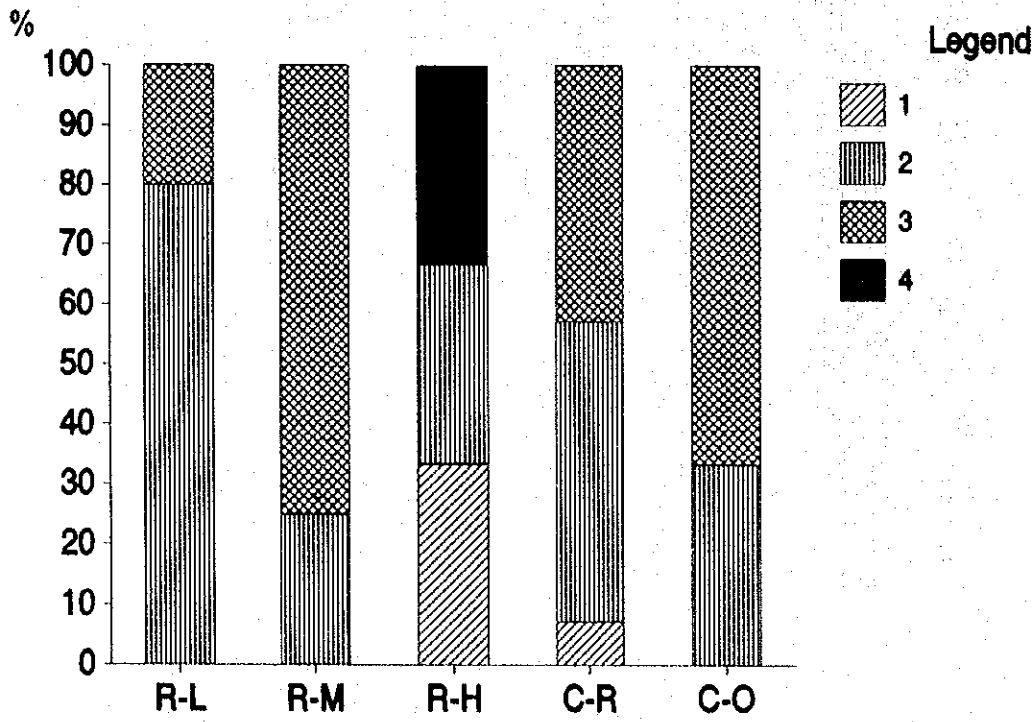
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	12.5	20.0%	7.5%	13.3%	70.0%	7.5%	28.3%
2	No	87.5%	80.0%	92.5%	86.7%	30.0%	92.5%	71.7%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q5-12 How many times per week is your food waste collected?

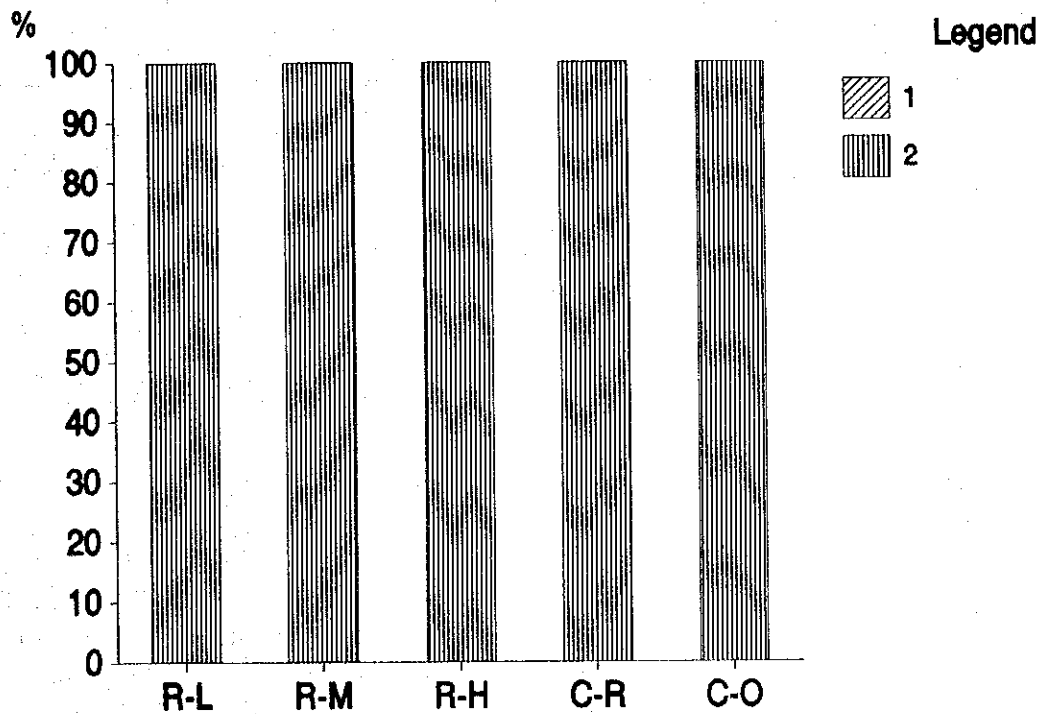
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Once-twice a week	0.0%	0.0%	33.3%	6.3%	7.1%	0.0%	5.9%
2	Three-four times a week	80.0%	25.0%	33.3%	43.8%	50.0%	33.3%	47.1%
3	Everyday	20.0%	75.0%	0.0%	43.8%	42.9%	66.7%	47.1%
4	Others (Please specify)	0.0%	0.0%	33.3%	6.3%	0.0%	0.0%	0.0%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q5-13 Do you receive money from a collector in exchange for your food waste?

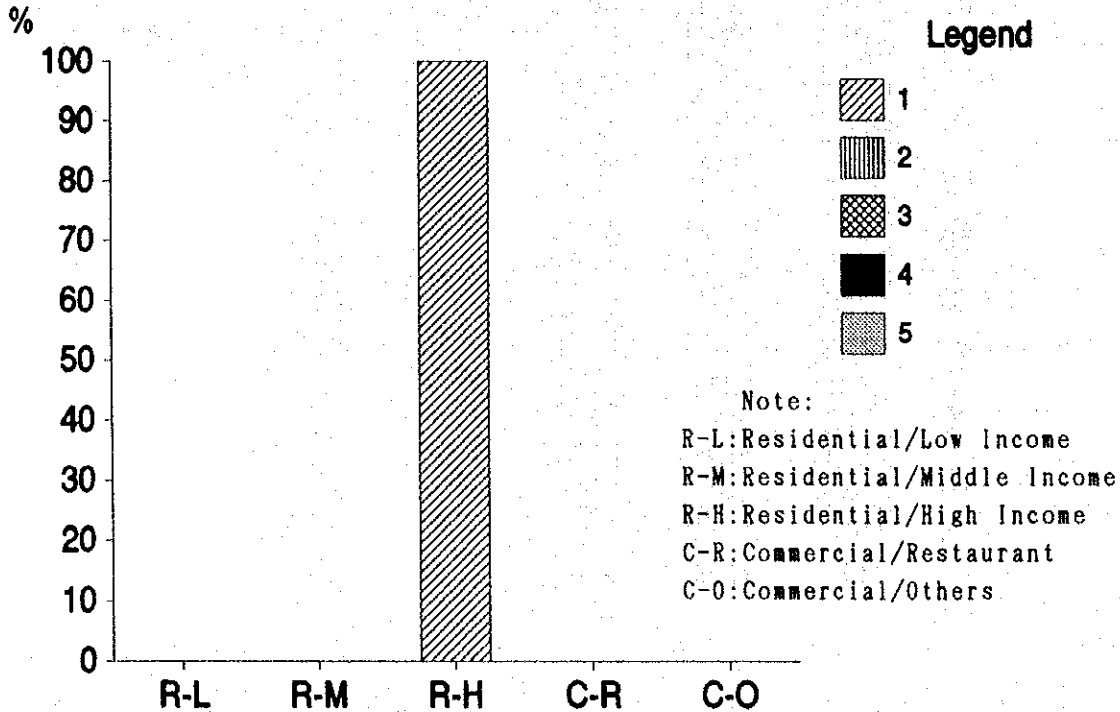
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	No	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

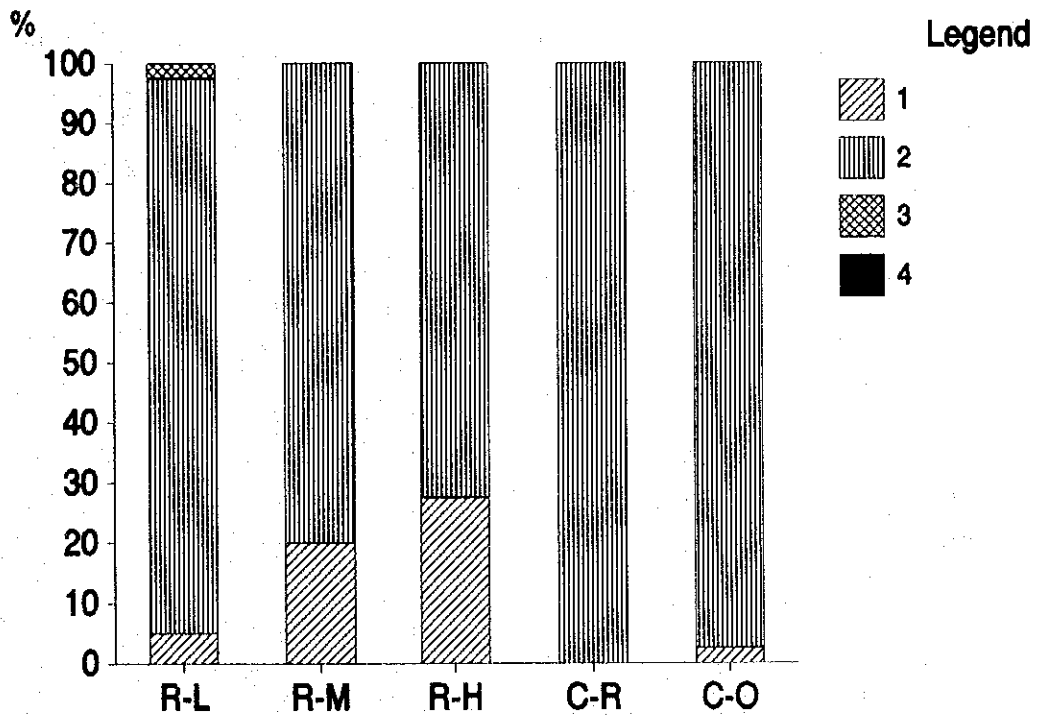
Q5-14 What quantity of food waste do you sell at one time?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average Income	Food	Others	Average
1	Less than one fourth of a regular garbage bag per day (0-20 liters)	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%
2	One fourth to half of a garbage bag per day (20-40 liters)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	Half to three fourths of a regular garbage bag per day (40-60 liters)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	Three fourths to one full regular garbage bag per day (60-80 liters)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	More than one full regular garbage bag per day (more than 80 liters)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Q5-15 Do you use food and garden waste as fertilizers?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	5.0%	20.0%	27.5%	17.5%	0.0%	2.5%	1.7%
2	No	92.5%	80.0%	72.5%	81.7%	100.0%	97.5%	98.3%
3	Only garden waste	2.5%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
4	Only food waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

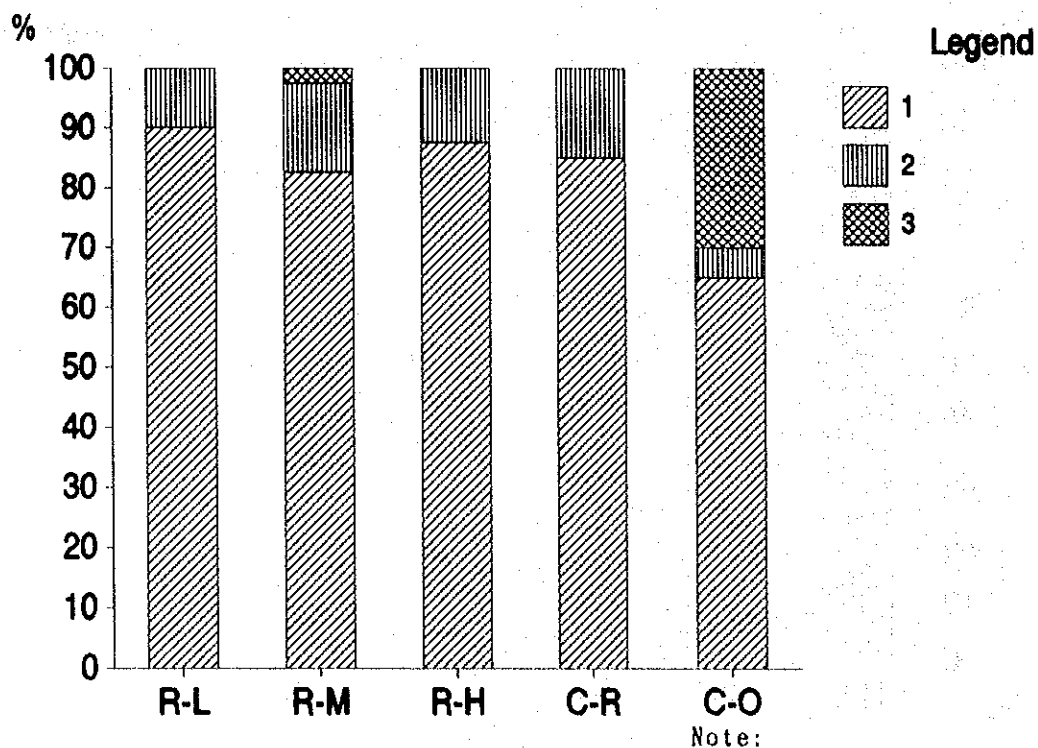


Note:

R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q5-16 Would you like to have guidance on methods of producing fertilizer from food and garden waste?

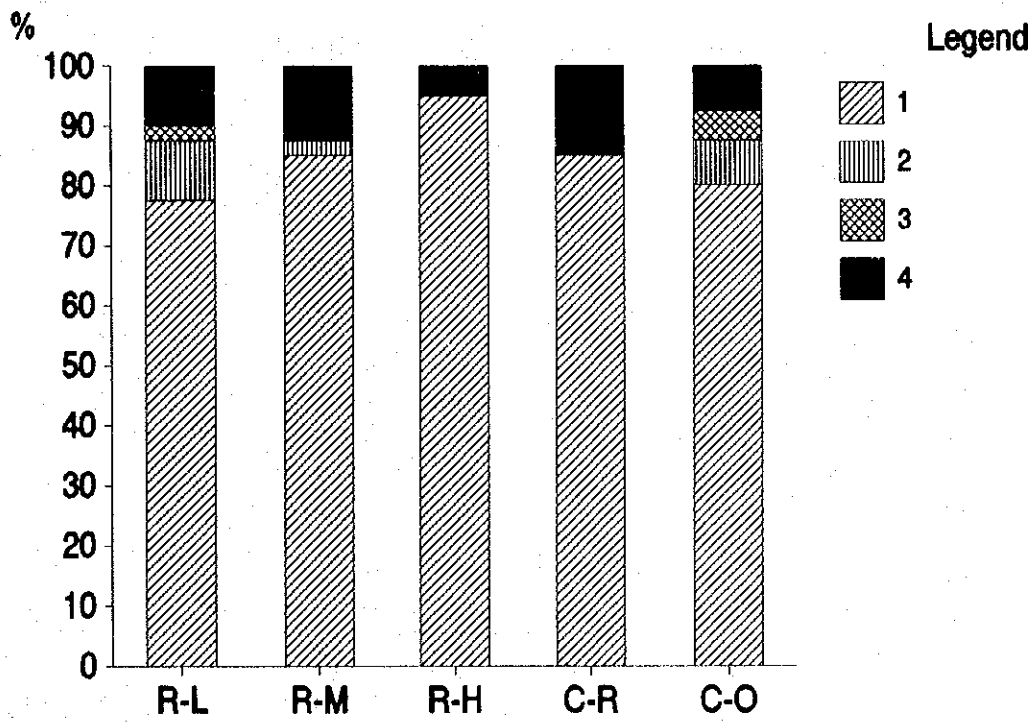
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	90.0%	82.5%	87.5%	86.7%	85.0%	65.0%	71.7%
2	No	10.0%	15.0%	12.5%	12.5%	15.0%	5.0%	8.3%
3	I don't know	0.0%	2.5%	0.0%	0.8%	0.0%	30.0%	20.0%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q6-1 Do you know which authority is responsible for Municipal Solid Waste Management?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Municipality	77.5%	85.0%	95.0%	85.8%	85.0%	80.0%	81.7%
2	Ourself	10.0%	2.5%	0.0%	4.2%	0.0%	7.5%	5.0%
3	Others	2.5%	0.0%	0.0%	0.8%	0.0%	5.0%	3.3%
4	I don't know	10.0%	12.5%	5.0%	9.2%	15.0%	7.5%	10.0%

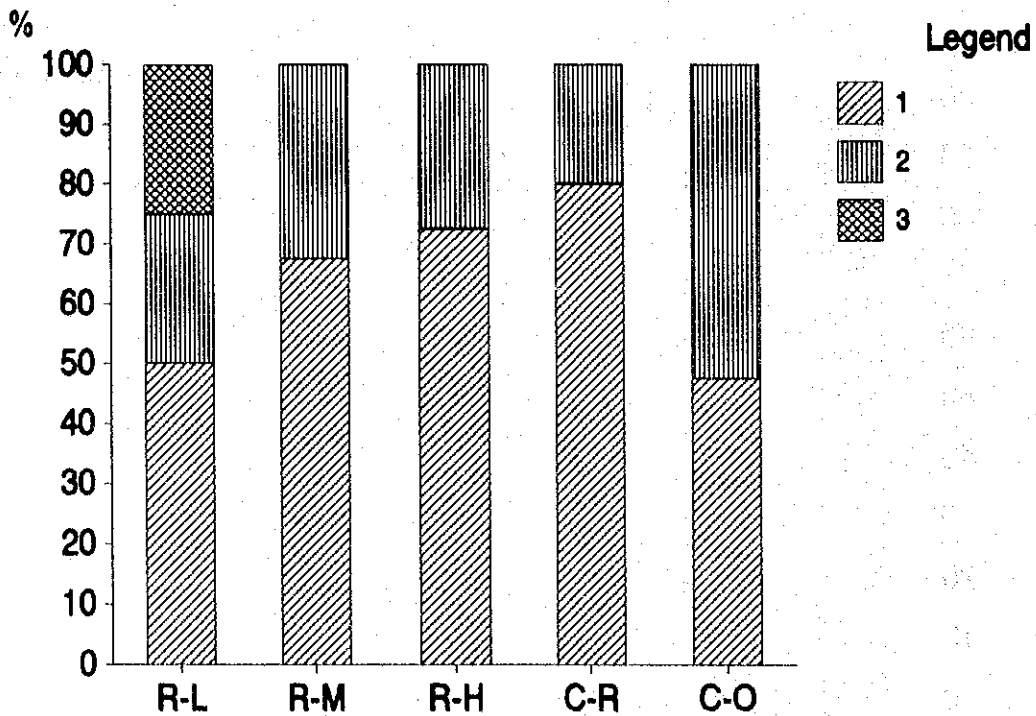


Note:

R-L: Residential/Low Income
R-M: Residential/Middle Income
R-H: Residential/High Income
C-R: Commercial/Restaurant
C-O: Commercial/Others

Q6-2 The present Municipal Solid Waste Management is being carried out by the municipality, Do you think the present MSWM is appropriate?

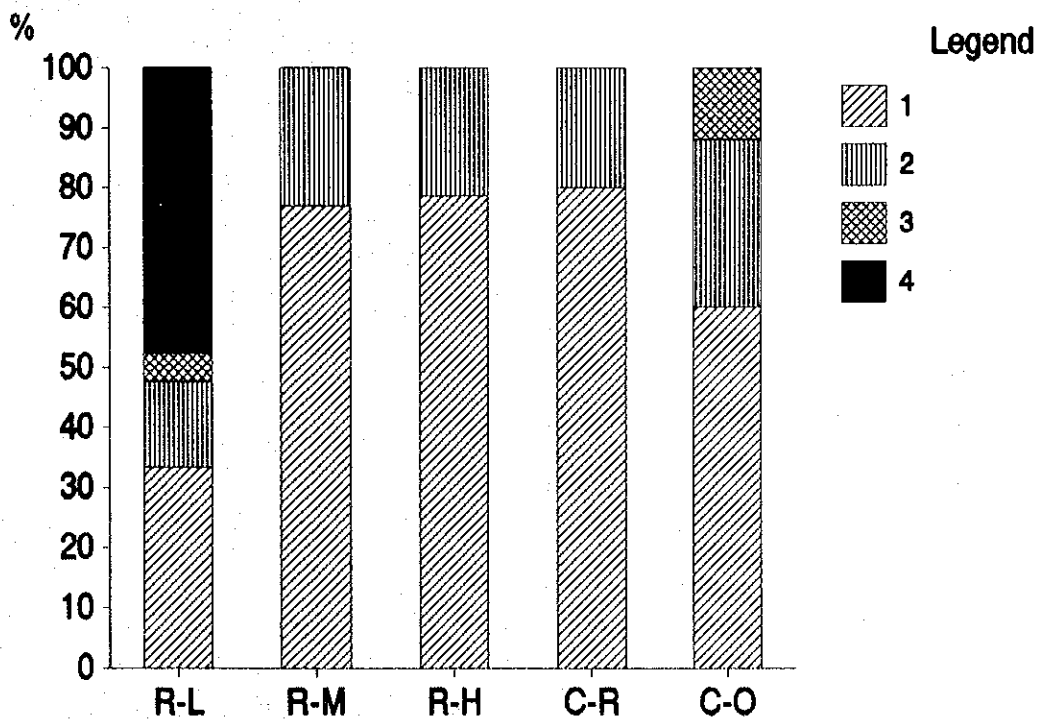
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	50.0%	67.5%	72.5%	63.3%	80.0%	47.5%	58.3%
2	No	25.0%	32.5%	27.5%	28.3%	20.0%	52.5%	41.7%
3	I don't know	25.0%	0.0%	0.0%	8.3%	0.0%	0.0%	0.0%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q6-3 If "No", what organization should take responsibility for MSWM?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Municipality	33.3%	76.9%	78.6%	58.3%	80.0%	60.0%	63.3%
2	Private company	14.3%	23.1%	21.4%	18.8%	20.0%	28.0%	26.7%
3	Others (Please specify)	4.8%	0.0%	0.0%	2.1%	0.0%	12.0%	10.0%
4	I don't know	47.6%	0.0%	0.0%	20.8%	0.0%	0.0%	0.0%

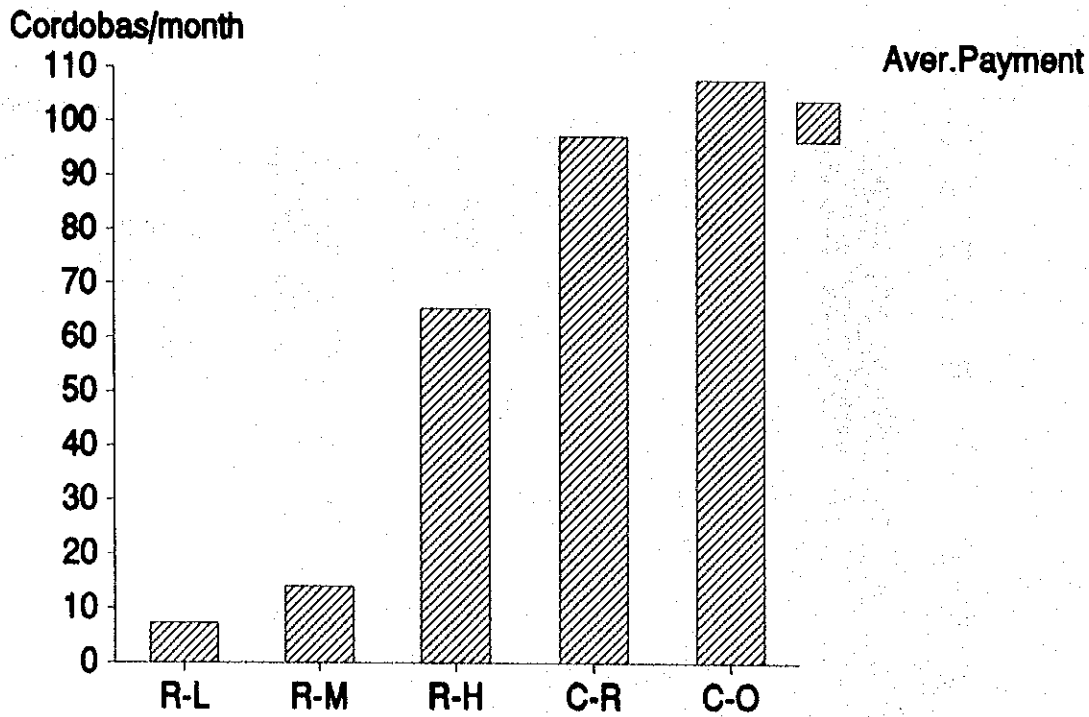


Note:

R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q6-4 How much do you pay for the collection service per a month?

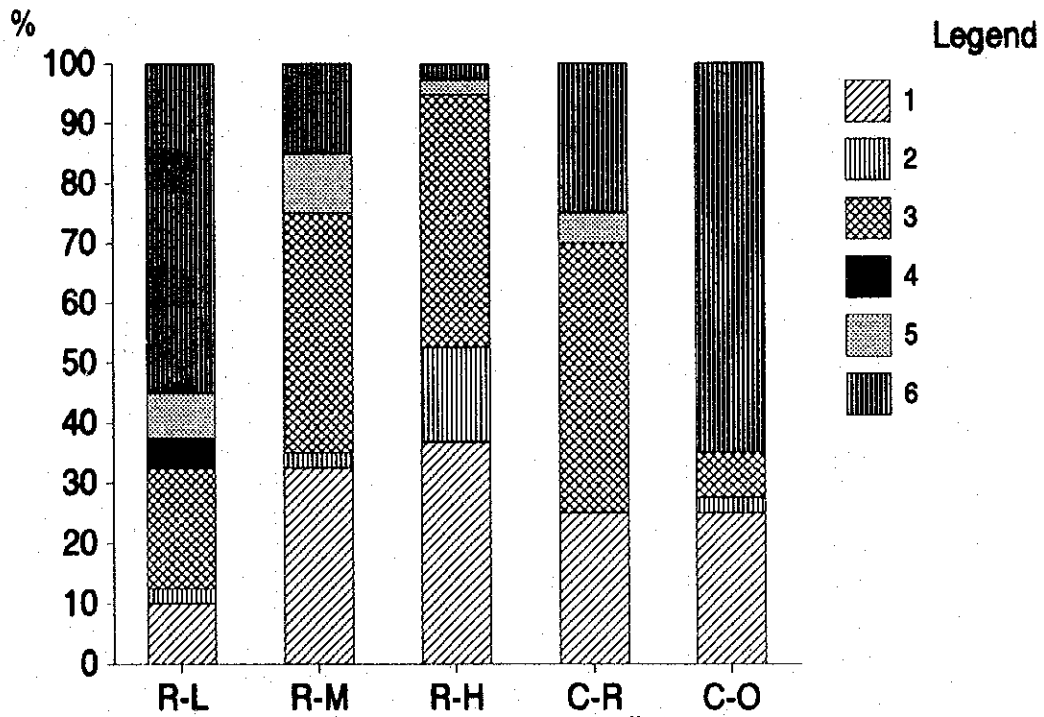
	Residential				Commercial		
	Low Income	Middle Income	High Income	Average	Food	Others	Average
Average Payment (Cordobas/month)	7.3	14.0	65.4	35.6	97.2	107.7	101.8



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q6-5 What do you think about the collection fee?

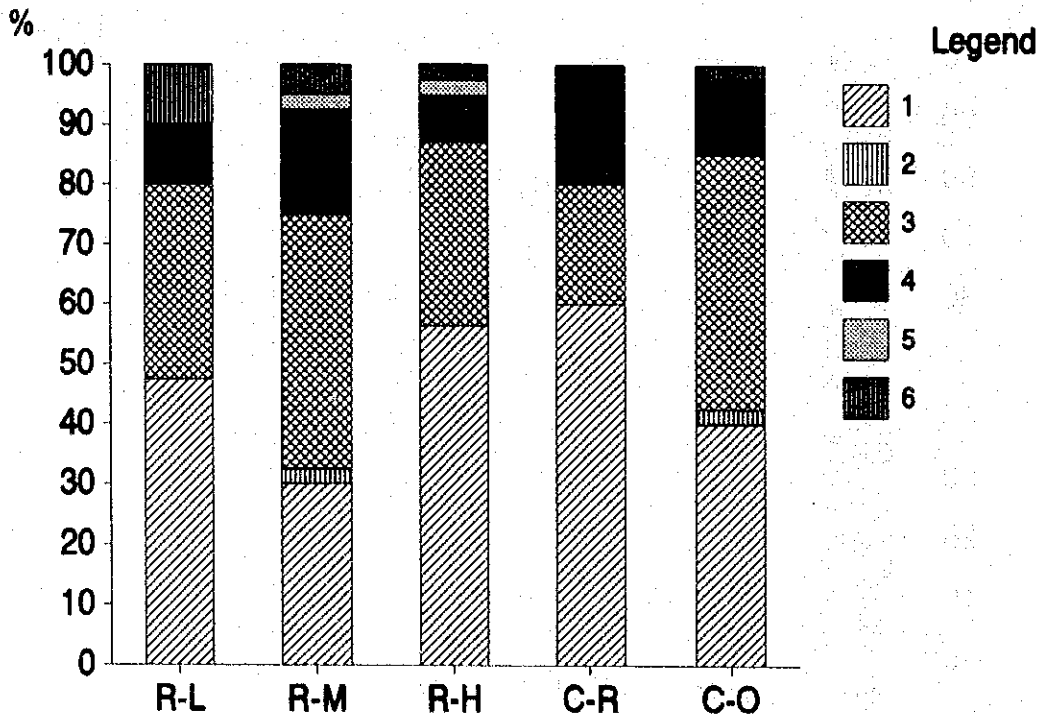
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Expensive	10.0%	32.5%	36.8%	26.3%	25.0%	25.0%	25.0%
2	Little bit expensive	2.5%	2.5%	15.8%	6.8%	0.0%	2.5%	1.7%
3	Appropriate	20.0%	40.0%	42.1%	33.9%	45.0%	7.5%	20.0%
4	Little cheap	5.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%
5	Collection fee system is not fair	7.5%	10.0%	2.6%	6.8%	5.0%	0.0%	1.7%
6	I don't know	55.0%	15.0%	2.6%	24.6%	25.0%	65.0%	51.7%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q6-6 The present waste management cost is not sufficient for maintaining the beautiful sight of the City and its environment. Who do you think should bear the extra cost?

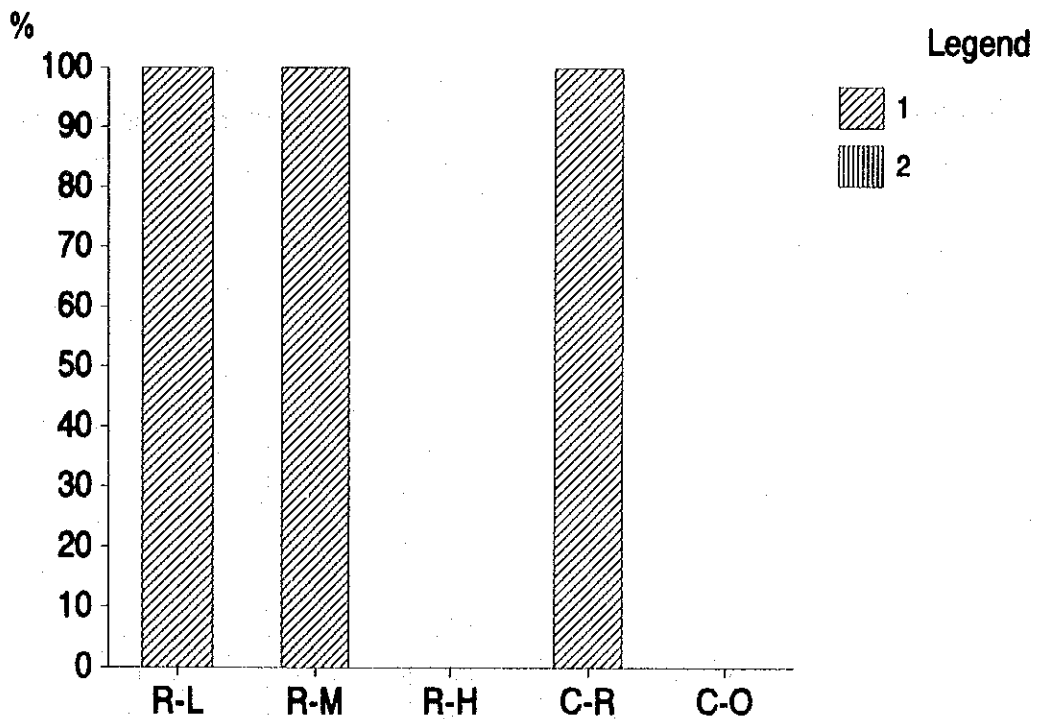
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Central government	47.5%	30.0%	56.4%	44.5%	60.0%	40.0%	46.7%
2	District government	0.0%	2.5%	0.0%	0.8%	0.0%	2.5%	1.7%
3	Municipality	32.5%	42.5%	30.8%	35.3%	20.0%	42.5%	35.0%
4	Citizens by means of collection fee increase	10.0%	17.5%	7.7%	11.8%	20.0%	12.5%	15.0%
5	Others (Please specify)	0.0%	2.5%	2.6%	1.7%	0.0%	0.0%	0.0%
6	I don't know	10.0%	5.0%	2.6%	5.9%	0.0%	2.5%	1.7%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q6-7 Do you want to receive a collection service?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%	100.0%
2	No	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Note:

R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

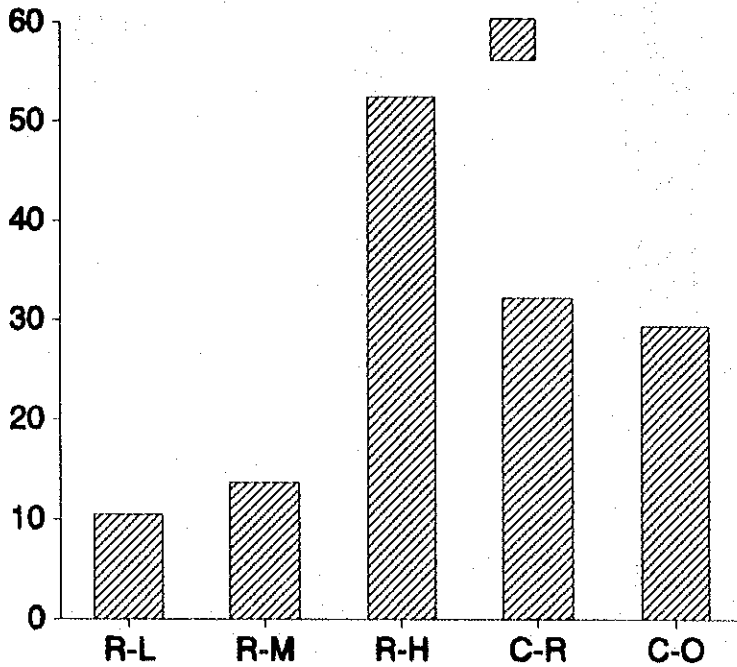
Q6-8(6)

**Willingness to pay
Average Amount Willing to Pay**

	Residential				Commercial		
	Low Income	Middle Income	High Income	Average	Food	Others	Average
Average Amount Willing to Pay (Cordobas/month)	10.5	13.7	52.5	25.3	32.2	29.4	30.6

Cordobas/month

Aver. Amount Willing to Pay

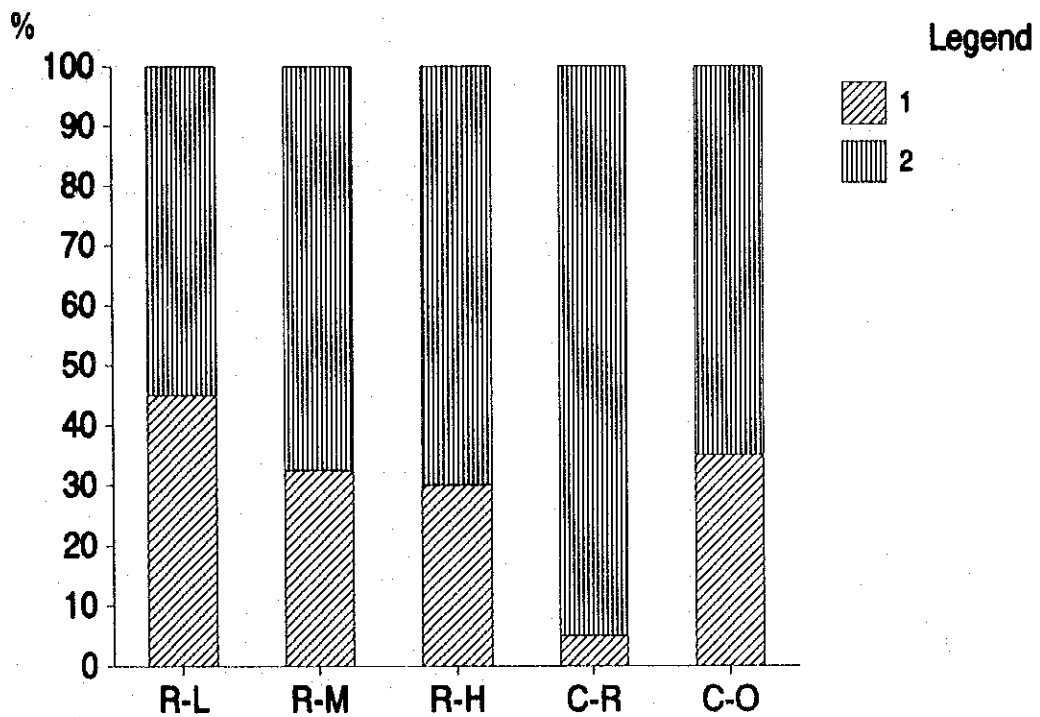


Note:

- R-L: Residential/Low Income
- R-M: Residential/Middle Income
- R-H: Residential/High Income
- C-R: Commercial/Restaurant
- C-O: Commercial/Others

Q7-1 Have you ever had any guidance on methods of proper discharge?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	45.0%	32.5%	30.0%	35.8%	5.0%	35.0%	25.0%
2	No	55.0%	67.5%	70.0%	64.2%	95.0%	65.0%	75.0%

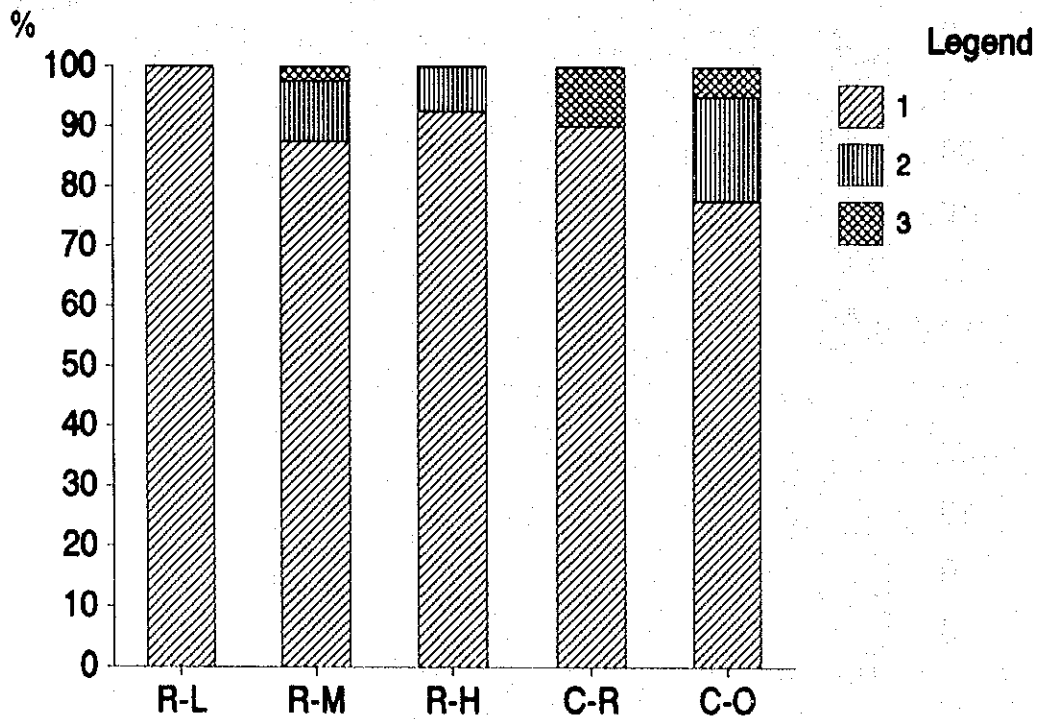


Note:

- R-L: Residential/Low Income
- R-M: Residential/Middle Income
- R-H: Residential/High Income
- C-R: Commercial/Restaurant
- C-O: Commercial/Others

Q7-2 Do you think "Clean Day" should be organized?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	100.0%	87.5%	92.5%	93.3%	90.0%	77.5%	81.7%
2	No	0.0%	10.0%	7.5%	5.8%	0.0%	17.5%	11.7%
3	I don't know	0.0%	2.5%	0.0%	0.8%	10.0%	5.0%	6.7%

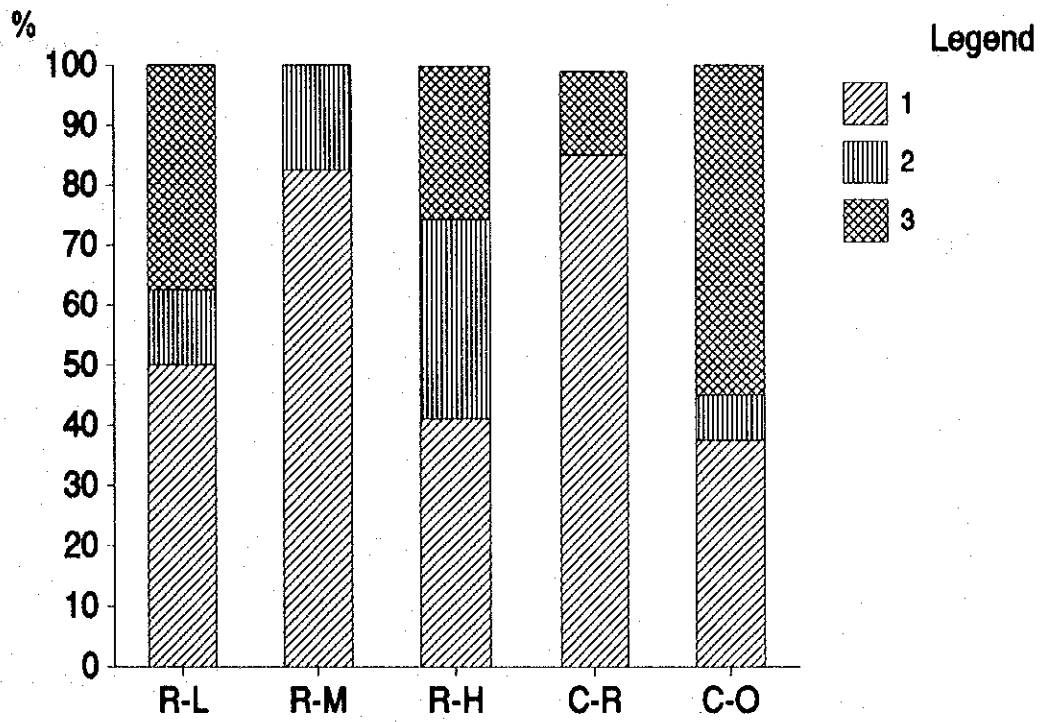


Note:

- R-L: Residential/Low Income
- R-M: Residential/Middle Income
- R-H: Residential/High Income
- C-R: Commercial/Restaurant
- C-O: Commercial/Others

Q7-3 Does anyone in your family/shop clean the road shoulder or adjacent public area in front of your house/shop?

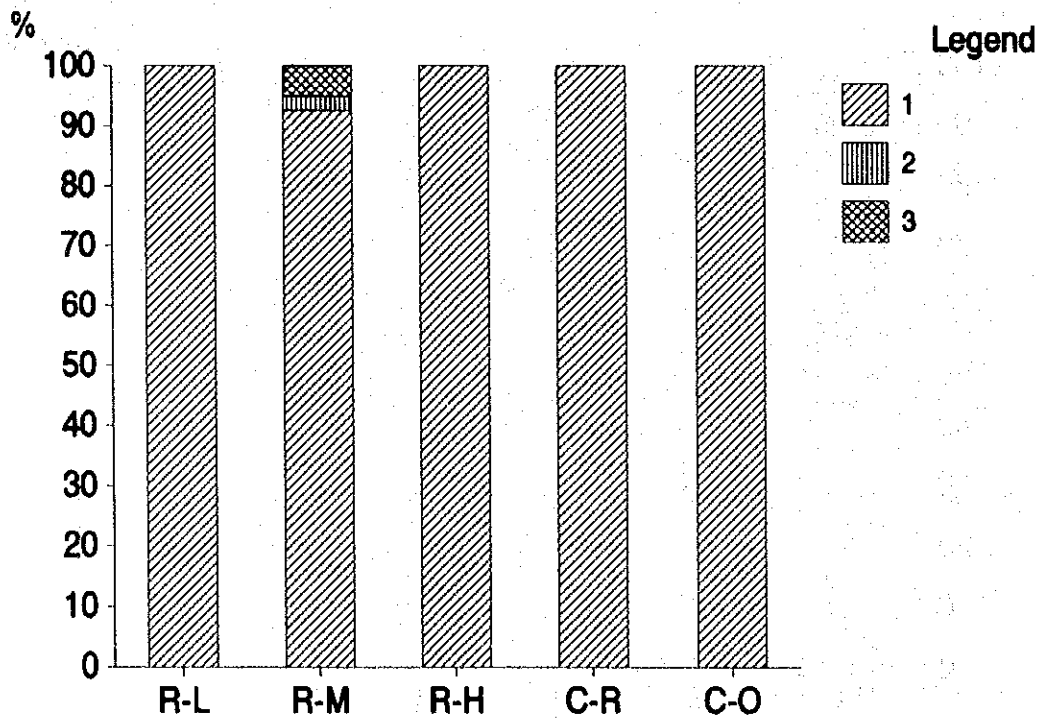
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes, everyday	50.0%	82.5%	41.0%	58.0%	85.0%	37.5%	53.3%
2	Yes, sometimes	12.5%	17.5%	33.3%	21.0%	0.0%	7.5%	5.0%
3	No	37.5%	0.0%	25.6%	21.0%	15.0%	55.0%	41.7%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q7-4 Do you think public cooperation is necessary in order to maintain the beautiful city and environment?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	100.0%	92.5%	100.0%	97.5%	100.0%	100.0%	100.0%
2	No	0.0%	2.5%	0.0%	0.8%	0.0%	0.0%	0.0%
3	I don't know	0.0%	5.0%	0.0%	1.7%	0.0%	0.0%	0.0%

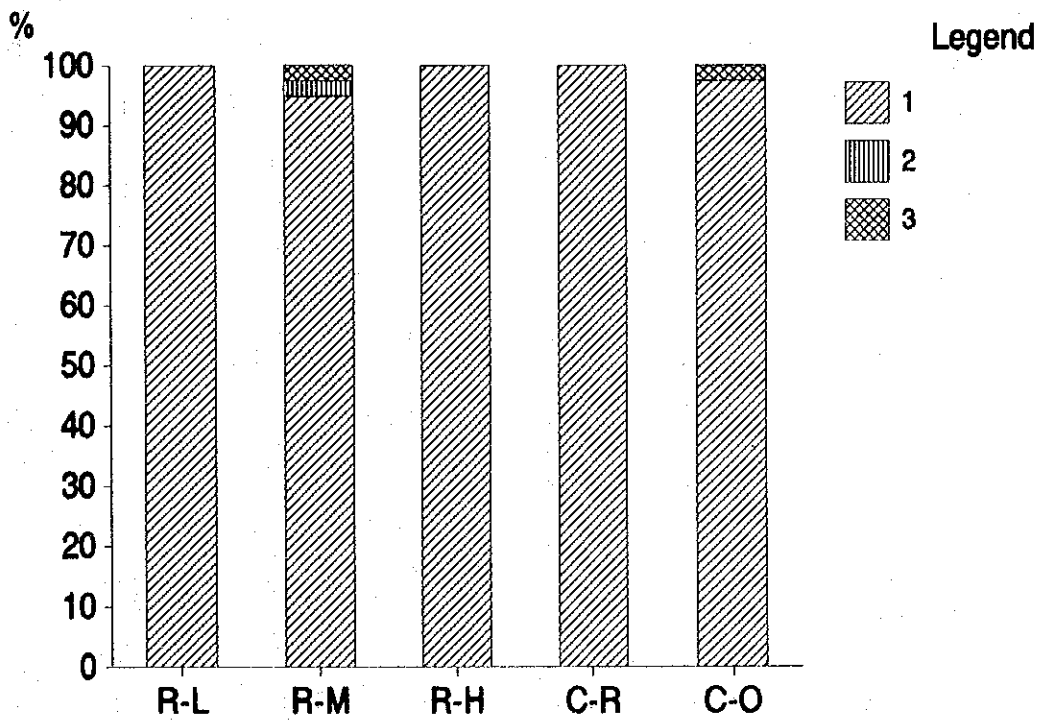


Note:

- R-L: Residential/Low Income
- R-M: Residential/Middle Income
- R-H: Residential/High Income
- C-R: Commercial/Restaurant
- C-O: Commercial/Others

Q7-5 If "Yes", would you cooperate in maintaining a beautiful city and environment?

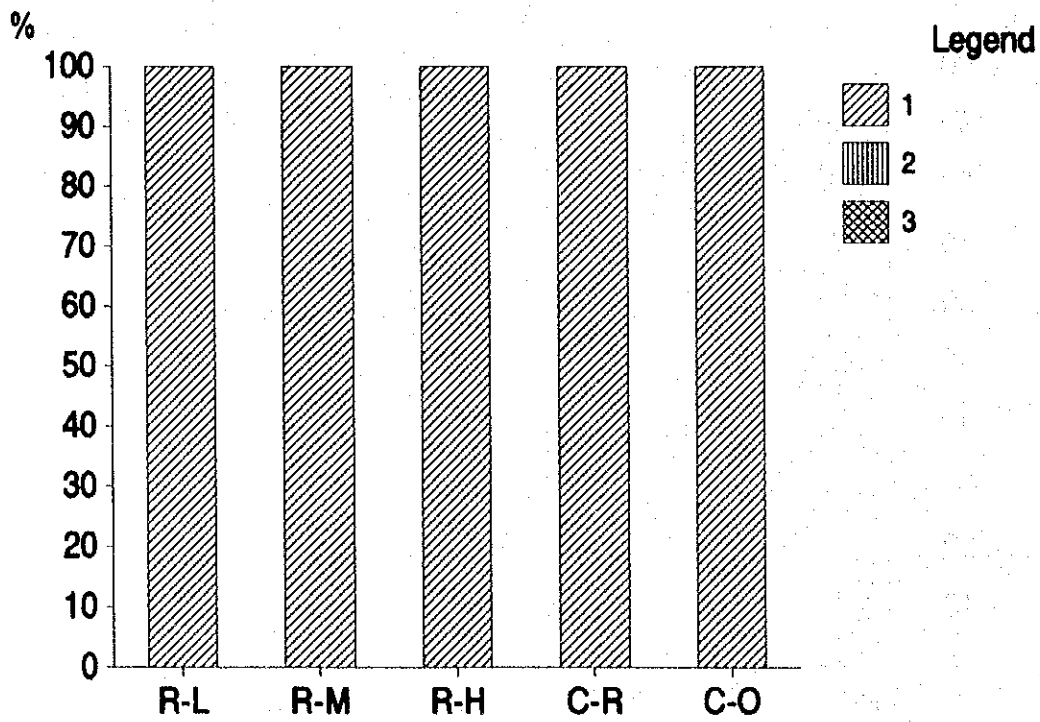
No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	100.0%	94.9%	100.0%	98.3%	100.0%	97.5%	98.3%
2	No	0.0%	2.6%	0.0%	0.8%	0.0%	0.0%	0.0%
3	I don't know	0.0%	2.6%	0.0%	0.8%	0.0%	2.5%	1.7%



Note:
 R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

Q7-6 Do you think public education or campaign for maintaining the beautiful city and environment is necessary?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Yes	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	No	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	I don't know	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

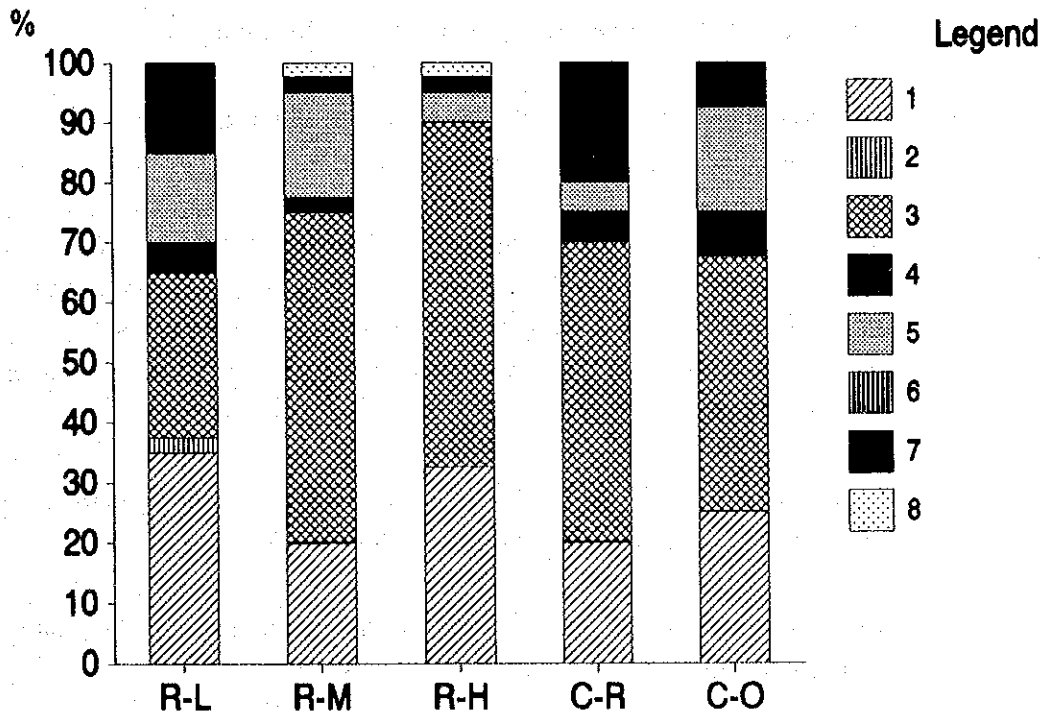


Note:

- R-L: Residential/Low Income
- R-M: Residential/Middle Income
- R-H: Residential/High Income
- C-R: Commercial/Restaurant
- C-O: Commercial/Others

Q7-7 If "Yes", who should take such action?

No.	Answer	Residential				Commercial		
		Low Income	Middle Income	High Income	Average	Food	Others	Average
1	Central government	35.0%	20.0%	32.5%	29.2%	20.0%	25.0%	23.3%
2	District government	2.5%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
3	Municipality	27.5%	55.0%	57.5%	46.7%	50.0%	42.5%	45.0%
4	School	5.0%	2.5%	0.0%	2.5%	5.0%	7.5%	6.7%
5	Family members	15.0%	17.5%	5.0%	12.5%	5.0%	17.5%	13.3%
6	Church	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	Others (Please specify)	15.0%	2.5%	2.5%	6.7%	20.0%	7.5%	11.7%
8	I don't know	0.0%	2.5%	2.5%	1.7%	0.0%	0.0%	0.0%



Note:

R-L: Residential/Low Income
 R-M: Residential/Middle Income
 R-H: Residential/High Income
 C-R: Commercial/Restaurant
 C-O: Commercial/Others

C3 Findings

a. Preliminary Questions

- 100 % of the interviewees lived in detached housing areas (refer to Q1-4).

b. General Questions

- The maximum family expenditure ranges from C\$ 500 to 1,500 in low-middle income groups, and C\$ 5,000 to 7,000 in high income group (refer to Q2-3).
- The average housing area is very large at approximately 300 m² (refer to Q2-8).
- Asphalt pavement prevails in residential areas (refer to Q2-9).

c. Questions on Waste Discharge from Your House/Shop.

- The percentage of using garbage stands is approximately 14% in the residential area. (refer to Q3-3)
- Approximately 80 % of the interviewees in low income group are using textile bag (nylon sack) and approximately 70 % in middle and high income group use plastic bags as waste containers, due to their manageability and because many of them find the materials satisfactory as waste containers (refer to Q3-4, 3-5, 3-6).
- Approximately 80 % of the interviewees intend to cooperate by carrying waste to the communal containers (refer to Q3-9).
- More than 60 % of the interviewees discharge garden wastes regularly for regular collection service (refer to Q3-15, 3-17).
- The majority of the people sweep the road in front of their houses (refer to Q3-19).

d. Questions on Waste Collection Services in Your Area

- Coverage rate of the waste collection service is 90 % in the Municipality (refer to Q4-1).
- Approximately 90 % of the people is satisfied with the present waste collection services (Q4-3).
- The method of waste collection is curb collection (Q4-5).
- Frequency of waste collection service is 3 times a week (Q4-6).

e. Questions on Resource Recovery and Recycling

- More than 90 % of the interviewees intend to cooperate in recycling activities (refer to Q5-1, 5-8).
- More than 90 % of the interviewees feel the need for resource recovery and recycling (refer to Q5-3).
- Composting and heat recovery are not known measures of recycling and resource recovery. Around 50% of the interviewees are only aware of paper recycling while 15% about composting. The people were found to have limited knowledge on these issues (Q5-4).
- There are door-to-door collectors but collection frequency is very low (refer to Q5-5, 5-6).
- A system where a shop buys reusable materials from common residents has not been provided yet (refer to Q5-7).

f. Collection Fee and Financial Matters

- More than 85 % of the interviewees understand that the municipalities are responsible for municipal solid waste management (Q6-1).
- Approximately 63 % of the interviewees are satisfied with the present municipal solid waste management (refer to Q6-2).
- The present average waste collection fee and the amount the residents are

willing to pay are summarized in Table C.3a (refer to Q6-4, 6-8).

Table C.3.1a Opinion on Waste Collection Fee

		Average amount of present collection fee per house (Cordobas/month)	Average amount willing to pay (Cordobas/month)	Differences
Residential Area	Low	7.3	10.5	44 % up
	Middle	14.0	13.7	2 % down
	High	65.4	52.5	20 % down
	Weighted Average	11.8	13.2	19 % down

Note: Weighted average of present collection fee and the average amount the residents are willing to pay was calculated in accordance with the following population ratio;
 High : 4%
 Middle: 33%
 Low : 63%

- More than 85 % of the interviewees think that the government should bear the extra cost to maintain the beauty of the city (Q6-6).

g. Public Cooperation

- Approximately 36 % of the interviewees have had guidance on method of proper waste discharge methods (Q7-1).
- Nearly 100 % of the interviewees understand the necessity of public cooperation and express willingness to participate (Q7-2, 7-4, 7-5, 7-6).
- Almost 50 % of the interviewees think the municipality should take initiatives concerning public cooperation (Q7-7).

ANNEX D

***INVESTIGATION OF
PRESENT DISPOSAL AND
NEWLY PROPOSED LANDFILL SITES***

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ANNEX D INVESTIGATION OF PRESENT DISPOSAL AND NEWLY PROPOSED LANDFILL SITES

D.1 Investigation of the Existing Landfill Sites

In order to obtain the basic data for the study of the existing disposal sites, topographical, land use, geological and environmental surveys were carried out. The results of each survey are described here in detail.

D.1.1 Topographic Survey

A topographical map of the whole area of the Acahualinca final disposal site, at a scale of 1 to 1000, was drawn by the Study team.

The Acahualinca disposal site is situated by the shores of Lake Managua, northwest of Managua City, and its present disposal area is approximately 40 ha.

Finally, the 100 ha survey area specified in the inception report has increased to 130 ha as the lake shore expanded due to the drop in the water level of lake Managua.

D.1.2 Geological Survey

a. General

This report contains the results of the geological survey carried out by the JICA Study Team for Solid Waste Management in the municipality of Managua.

b. Location of Boring

The location of the boring sites which was provided by the JICA Study Team is shown in Figure D.1.3a. The first, second and third boring sites are located on the line which is drawn between Asososca lake and Acahualinca lake. These sites were selected to investigate the water level and to carry out water quality analysis for the environmental survey. The first, fourth and fifth borings sites form a beeline

in the Acahualinca disposal site.

c. Work Method

The geological survey was carried out in accordance with the following specifications.

ca. Boring

- 1) Number of Boreholes : 5 boreholes
- 2) Depth of the boreholes: 2 points/50m
3 points/30m

Exact boring locations of the boreholes are shown in Figure D.1.2a.

cb. Penetration Test

The penetration test was carried out within 1 m from the boring location.

- Number of penetration tests: 5
- Depth of test: 190 meters
- Interval of penetration test: every 1 meter

Penetration tests were carried out on the same boreholes used for the boring tests.

cc. Sampling

Three samples from three different layers for laboratory testing were taken at each borehole.

cd. Laboratory Test

The following laboratory tests were conducted on samples taken from the boreholes.

- 1) Permeability test
- 2) Grain size analysis
- 3) Triaxial compression test
- 4) Consolidation test

Permeability tests were determined from the triaxial equipment and additional pressure.

Unconfined compression test was obtained in the Triaxial Apparatus. Detailed information is included in the respective sheet.

The Triaxial Undrained Shear Test (UU) was conducted using a WYKEHAN FARRANCE Compression Machine (WF 10052), Triaxial Cell (WF 10754). Monitoring and recording of measurements were done using an PC-XT Computer.

The Consolidation Test was conducted using a WYKEHAN FARRANCE EDOMETER (WF 24001) and the results are in separate sheets.

d. Results and Summary

da. Subsoil Characteristics

The five combined boreholes showed very clearly the subsoil characteristics in the site. In boreholes 1, 2 and 4, waste layers were found from depths between 3.90m and 7.0m to 12.0m respectively. Boreholes 3 and 5 in the shore of Managua Lake contained natural soil.

Generally, the soil found in the borehole sites is made up of fine sand, silt, fine silty gray and brown sands intercalated with soft, dark and highly compressed pumiceous; unaltered samples were taken in boreholes 1, 2 and 3. For further details refer to the drilling logs in the data book.

The standard penetration tests carried out in the 5 sites (boreholes) were taken up to a depth of 17m. High resistance was encountered beyond this point and this is explained in the data book.

The borehole logs also contain the standard penetration test results, ground water level, and geological distribution.

e. Laboratory Tests Results and Summary

ea. Permeability Test

In order to obtain the coefficient of permeability the following formula was used. It requires the parameters obtained by means of the single dimension consolidation test in which the results must be expressed in the C.G.S. unit system.

$$K \text{ (cm/sec)} = \frac{a_v \times H^2 \times P_w}{5 \times (1+e) \times t_{50}}$$

where

a_v = Compressibility Coefficient

H = Maximum distance traveled by water in the soil

P_w = Volumetrical weight of water

e = Initial void ratio

t_{50} = The time corresponding to a 50 % consolidation. This was obtained from the Time-Settlement curve using the test load that considered the vertical pressure from the sampling site in the borehole.

The results of the permeability test are as shown in Table D.1.2a.

Table D.1.2a Permeability Test Results

BOREHOLE No.	1		2		3	
Permeability Test No.	1	2	3	4	5	6
Depth (m)	4.20	5.90	16.30	0.90	2.85	2.85
Vertical Stress (kg/cm ²)	0.378	0.531	1.467	0.08	0.256	0.256
Compressibility Coefficient (cm ² /g)	0.00047	0.00242	0.00489	0.000437	0.00623	0.000378
Maximum Distance (cm)	1.19	1.19	1.10	1.25	1.19	1.24
Volumetric weight (gr/cm ³)	1.00	1.00	1.00	1.00	1.00	1.00
Initial void ratio	11.22	14.50	11.177	8.937	10.289	8.25
Time (s)	180	1050	360	8	240	60
Permeability Coefficient (cm/sec)	6.05×10^{-8}	4.2×10^{-8}	1.64×10^{-5}	1.72×10^{-6}	6.51×10^{-7}	2.09×10^{-7}

eb. Grain Size Analysis

Tests were carried out on the 6 Shelby samples. The corresponding grading curves as well as the respective calculation for determining the percentage of soil with any equivalent diameter are shown in the report "INFORME DE ESTUDIO GEOTECNICO" prepared by the Study Team.