SOLID WASTE PRICING AND AFFORDABILITY

[1] INTRODUCTION

Currently, the City of Saskatoon pays for solid waste services—meaning garbage collection, recycling, landfill, and yard and food waste, and other ancillary services—through a mix of property taxes and user fees (or charges). On the one hand, for example, residential curbside recycling is paid for by a flat user charge, meaning each household pays the same amount per month regardless of income levels, or property values. From a public finance perspective, this is an optimal approach given that individual users of the service can be identified, they can also be excluded from receiving the service, and one person's consumption of the service, means that another person cannot consume the service at the same time.

On the other hand, residential garbage collection is paid for by residential and non-residential property taxes, meaning that the cost of residential garbage collection is based on the assessed value of the property. From a public finance perspective, there are several inherent problems with this approach, with the three most prominent being:

- it inefficiently allocates resources as the (marginal) cost for generating garbage is essentially $0/kilogram of waste;
- it violates fairness or benefits equity, as non-residential property taxpayers are paying for a service they do not receive; and
- It violates accountability and transparency issues as there is no connection to the cost of the service and the amount of household waste generation.

As the City of Saskatoon considers the establishment of a solid waste utility, and thereby charging a price for residential garbage collection, some concerns have been raised about how this policy change may affect low income homeowners. In other words, will the change to solid waste pricing increase affordability concerns for certain households? If so, how should this issue be addressed?

The purpose of this document is to provide an overview with respect to solid waste pricing and affordability, or what some refer to as "ability-to-pay". It argues that affordability issues can be addressed in three key ways: (1) the implementation of variable pricing; (2) removing the cost of solid waste services from the municipal property tax; and (3) the expansion of the City's property tax deferral program. However, the document argues strongly against special or discounted fees to address affordability concerns.

The document will address various issues and concepts as it relates to solid waste pricing and affordability. Section two addresses the main objectives for solid waste pricing. Section three addresses the issue of fairness (or equity) for solid waste pricing. Section four provides some considerations to address affordability. Section five provides a brief analysis of the relationship between incomes, age, household size and the amount of solid waste generation (or garbage) for single family households in Saskatoon.

[2] THE OBJECTIVE(S) OF SOLID WASTE PRICING

Solid waste services generally exhibit "private good characteristics" meaning that they are "rival" in consumption and users can be "excluded" from using the service.[1] As such, the public finance literature strongly supports user charges as the most appropriate way to pay for the delivery of solid waste services.

The main economic reason for imposing appropriately designed charges or fees on those who benefit from public services is to provide the public sector with incentives for using resources in the most efficient manner possible. The fee essentially rations goods and services to consumers who place the greatest value on the good or service, thus maximizing efficiency.

Because charges are based on the quantity consumed by a user, they give local government an indication of the level of service demanded thus resulting in a better match between local supply and demand. This is in contrast to a service financed through taxes where users have no incentive to limit their use and may create artificially inflated user demand that governments feel obligated to satisfy.

According to the research, "user fees promote efficiency, equity, compliance costs, visibility, and accountability, which is why the approach of local finance should generally be "whenever possible, charge"."[2] Thus, one objective for charging a fee for a service is to recover the costs of delivering that service. User fees (or charges) accomplish this as the price per person or household is generally based on their use of the service.

However, another important objective for user fees (or charges) for solid waste services is that they can be used as an effective tool to change consumer behaviour, by efficiently allocating or conserving resources. Economic theory indicates that households will consume every item (including garbage disposal services) up to the point at which the marginal benefit is reduced to an extent that it hits the going market price line. If users/households are not charged for a service on a per-use basis, then the going market price for an additional unit of it is zero. In other words, charging for garbage disposal through property taxes suggests that the marginal cost for disposing of a kilogram of solid waste is zero, which is clearly not the case.

[1] For more on these concepts consult the Discussion Paper, "Using the right instruments to pay for the right services: principles, concepts and ideas on how the City of Saskatoon should deliver and pay for the collection and disposal of solid waste," attached to the June 26, 2017 City Council meeting report on a establishing a Waste Utility.

[2] This has been exhaustively covered in the literature. See, for example, Catherine Althaus and Lindsay M. Tedds, "User Fees in Canada: A Municipal Implementation Guide", Paper presented at the University of Waterloo Tax Symposium, June 19, 2014, David G. Duff, "Benefit Taxes and User Fees in Theory and Practice," in University of Toronto Law Journal, 54:4, (2004) 391-447 and Richard M. Bird and Thomas Tsiopoulous, "User Charges for Public Services: Potentials and Problems in Canadian Tax Journal, 45:1 (1997) 25-86.

[3] FAIRNESS AND SOLID WASTE PRICING.

There is often a misconception about the concept of fairness or equity when it comes to paying for municipal services. Where users of a service can be identified, where the service is rival in its consumption—meaning that if I consume the service at a particular point in time, nobody else can without increasing the marginal cost of the service—and if the user can be excluded from using the service, say for non-compliance, then user charges make sense. If these conditions are not satisfied, then it makes economic sense to pay for those services through the tax system.

User fees are based on the concept of who benefits, rather than ability to pay. In other words, user fees satisfy the principle of fairness in the sense that those who benefit from a service pay for it. This is often referred to as the "benefits principle", and is a foundation for local public finance, given the nature of the services that it delivers.[3]

The benefits principle stands in contrast to another measure of fairness, called the "ability to pay" principle. The ability to pay principle maintains that taxes (not fees) should be distributed according to some measure of a taxpayer's ability to pay. Its main goal is to satisfy horizontal and vertical equity concerns.

Horizontal equity refers to treating persons in similar situations similarly. Vertical equity refers to treating persons in different situations differently. This model is more appropriate in a federal and provincial context and when dealing with progressive taxation.

Given this distinction, user fees are often criticized as being unfair because they do not satisfy concept of vertical equity. But vertical equity is related to income distribution and not the cost of paying for service for which individuals benefit.

That said, with user fees, all consumers pay for the cost of the good or service regardless of their income, a key measure for ability to pay. Ability to pay is the most frequent argument against user fees, specifically that they are regressive. The literature, however, is not conclusive regarding the regressive nature of user fees.[4]

According to the literature, the evidence suggests three main arguments against regressivity of user fees:[5]

- upper-income households benefit disproportionately from free public services;
- user fees allow low-income consumers to adjust their consumption to lower levels, thereby paying less than they would under a property tax system; and
- any regressive or disproportionate effects can be minimized or even reversed with careful design, revenue uses, and compensation mechanisms.

[3] See for example, Harry Kitchen, "Financing City Services, Part 1: Operating Expenditures," (Calgary: Manning Foundation for Democratic Education) October 10, 2013; obtained from http://manningfoundation.org/Docs/Operating-Expenses.pdf
[4] See Tedds and Althouse at note 2.
[5] See Ibid.

[4] ADDRESSING AFFORDABILITY WITH SOLID WASTE PRICING

Given the analysis in the previous sections, it appears that there are two public policy problems with solid waste pricing. On the one hand, the City is trying to appropriately manage scarce resources, a problem that comes from removing the price incentive mechanism when services are offered free on a per-use basis (an efficiency issue).

On the other hand, the City is trying to ensure that the burden for delivering the service that the community considers necessary is distributed fairly. On this point there should be a tax structure and an income support system that can effectively redistribute income in the desired way. This generally comes from federal and provincial governments since they have access to progressive taxes.[6]

Therefore, the City should not offer fee discounts as it jeopardizes the main objectives of the charging a fee for solid waste services. The practice of discounting user fees is inefficient because the group paying the lower price will not be covering the same share of operating and capital costs as the group paying the higher price.

For those paying a lower percentage of costs, an incentive exists for overuse and overconsumption. This, in turn, often leads to a demand for more services and higher service levels than is economically efficient and, ultimately, more infrastructure investment than would be the case if every user paid the same price for the same service.[7]

The incentive provided by user fees makes a major contribution toward solving the problems of resource waste, while using a variety of related policy instruments will address the equity issue. By using these policies together, there is strong possibility of achieving a "win-win" outcome concerning both efficiency and equity objectives**.**

By addressing affordability, consideration of the incidence of any other tax or taxes that might be reduced at the same time and the incidence of the publicly provided goods and services to which any revenue is devoted. Below are some policy considerations that the City has control over to help address affordability concerns.

4.1 Variable Pricing:

One of the most important advantages of a variable-rate program may be its inherent fairness. When the cost of managing waste is hidden in taxes (or charged at a flat rate,) households who recycle and divert waste subsidize their neighbours' wastefulness. Under variable pricing, residents pay for what they throw away. Thus, those households that generate less waste will be able to reduce their costs.

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[6] For example, see Robin W. Boadway and Harry M. Kitchen, Canadian Tax Policy, 3rd edition, Tax Paper No 103 (Toronto: Canadian Tax Foundation, 1999).

[7] Much of the proceeding discussion is based on Harry Kitchen, "No Seniors' Special: Financing Municipal Services in Aging Communities," IRPP Study, (Montreal: Institute for Research on Public Policy, No 51, February 2015) 24

4.2 Removing Costs of Solid Waste from the Municipal Property Tax:

By removing the cost of solid waste services from the property tax base, this will reduce the taxes for residents and businesses. Currently, non-residential property tax payers are paying for solid waste services but do not receive the service. But because the solid waste user fees are not charged on top of the existing property tax funded system, this will help to reduce the overall burden.

4.3 Expand the City's Property Tax Deferral System:

The City currently operates a low income seniors' property tax deferral program. However, this violates horizontal equity concerns because it is offered to a select group of low income homeowners. The City could expand the program to all low income homeowners, which may help them address any potential tax increases to pay for other City services.

Finally, consideration should be given to the federal provincial low income tax credits and transfer systems. For example, recent changes to Saskatchewan's low income tax credits will help to address affordability concerns for low income households. Although the City has no control over this component, they are something to pay attention to.

[5] WASTE GENERATION, HOUSEHOLD INCOME, AGE AND HOUSEHOLD SIZE; IS THERE A STATISICAL RELATIONSHIP?

There has been curiosity about the relationship between incomes, age, household size and the amount of solid waste generation for single family households. In other words, do lower income households generate more waste than middle or high income households or vice versa? Do households with different age characteristics generate more or less waste? Do larger households generate more waste?

To address these issues, the Administration investigated the relationship between these variables and waste generation. In terms of waste generation, the data was obtained from the City of Saskatoon's 2016 Waste Audit. The City of Saskatoon (City) retained 2cg Inc. (2cg) (as a sub-contractor to Dillon Consulting) to conduct waste audits to estimate the composition of wastes destined for landfill and various recyclable streams.

In early 2016, the City selected ten sampling areas, or neighbourhoods, of 10 single family homes in the City for use throughout this project. These neighbourhoods reflect the range of different demographic and socioeconomic households and were selected to facilitate the collection of representative samples. The amount of waste generation was calculated as kg/household/week (or kg/hh/week).

5.1 Waste Generation and Income

Based on the waste generation (i.e., garbage) sample data for single family households by neighbourhood, the Administration then matched household incomes to each of the sample neighbourhoods, using the most recent income data. Income was obtained from the 2011 National Household Survey (NHS). We use median household incomes (meaning the point at which half of the incomes are higher and half of the incomes are lower) for each neighbourhood.

The Administration then conducted an analysis to determine if there is any correlation between the two variables. To be statistically significant, the correlation coefficient needed to be above 0.49 for total income and 0.44 for after tax income. For total income, the results yielded a correlation coefficient of 0.25. For after tax income, the results yielded a correlation coefficient of 0.28. These weak relationships are illustrated in charts 5.1 and 5.2 in Appendix 1. The non-linear relationship between the variables indicates no correlation.

Given this analysis, we can therefore say that there is no statistically significant correlation between median household incomes and the amount of waste generated by households in the sample neighbourhoods.

5.2 Waste Generation and Age Cohorts

The Administration conducted a similar analysis with respect to various age cohorts. Again we matched the age cohorts to each sample neighbourhood, using the Saskatchewan Health's Population Estimates for 2016. This data source was chosen simply because the population is grouped by age cohorts and neighbourhood.

To conduct the analysis, we determine the age of the population of the sample neighbourhood by using cohorts. The cohorts are grouped as follows: (1) 0-5 years; (2) 6-17 years; (3) 18-64 years; and (4) 65 years and over. We then determine the percentage of each cohort relative to the age of the population. Naturally, the largest cohort is the 18-64 years.

That said, we are interested in determining the age distribution of each neighbourhood to see if there is some statistically significant relationship between various age cohorts and waste generation in the neighbourhood. In other words, do neighbourhoods that have a higher percentage of the population aged 6-17 years tend to generate more waste (or garbage)?

The analysis reveals that there is no statistically significant correlation between the amount of waste generated and various age groups in the sample neighbourhood. These results are illustrated in charts 5.3 through 5.6 in Appendix 1.

5.3 Waste Generation and Household Size

Finally, the Administration conducted a similar analysis on the relationship between waste generation and average household size by single family household in the sample neighbourhoods. To conduct this analysis, the Administration matched the average single family household size for each of the sample neighbourhoods, using data obtained from the NHS. The purpose is to determine whether or not neighbourhoods that have larger households generate more waste.

The analysis reveals that there is no statistically significant correlation between the amount of waste generated in a neighbourhood and the average size of the household. In fact, the relationship is flat, as illustrated in chart 5.7 in Appendix 1.

APPENDIX 1

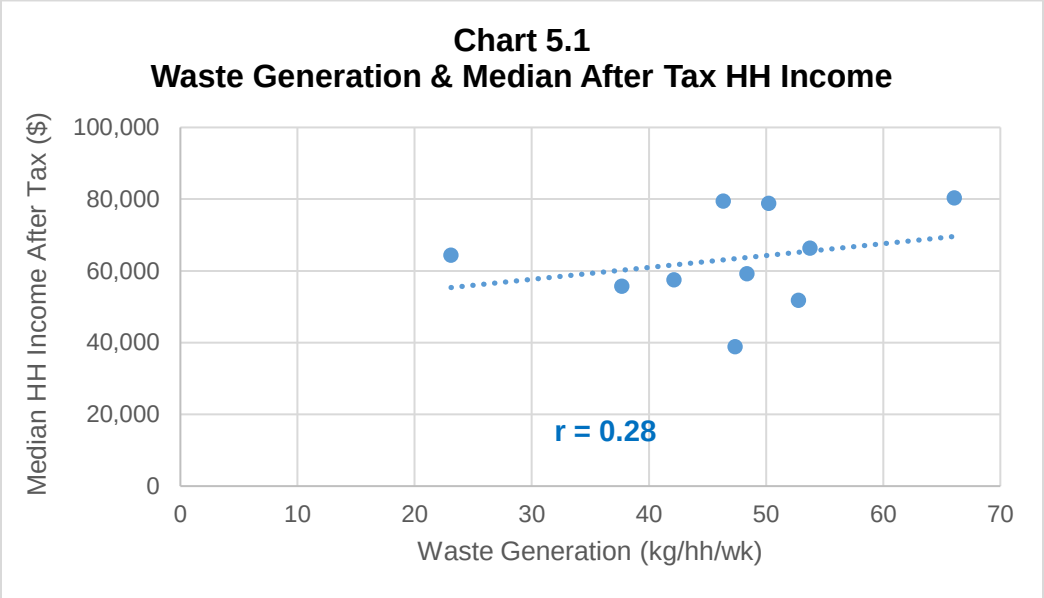
Chart 5.1
Waste Generation & Median After Tax HH Income
Median HH Income After Tax ($)
100,000
80,000
60,000
40,000
20,000
0
0
10
20
30
40
50
60
70
Waste Generation (kg/hh/wk)
r = 0.28

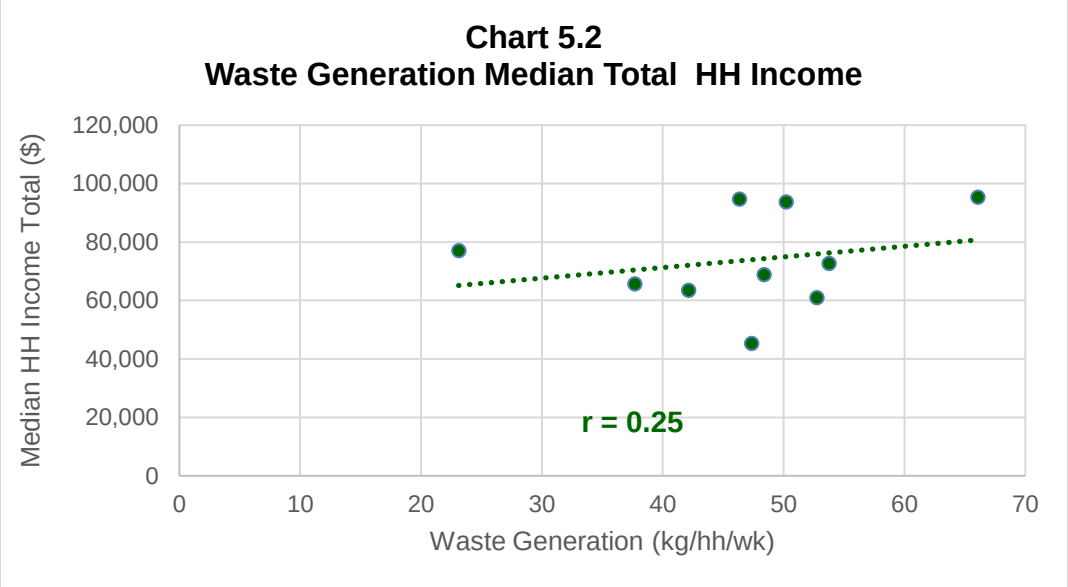
Chart 5.2
Waste Generation Median Total HH Income
Median HH Income Total ($)
120,000
100,000
80,000
60,000
40,000
20,000
0
0
10
20
30
40
50
60
70
Waste Generation (kg/hh/wk)
r = 0.25

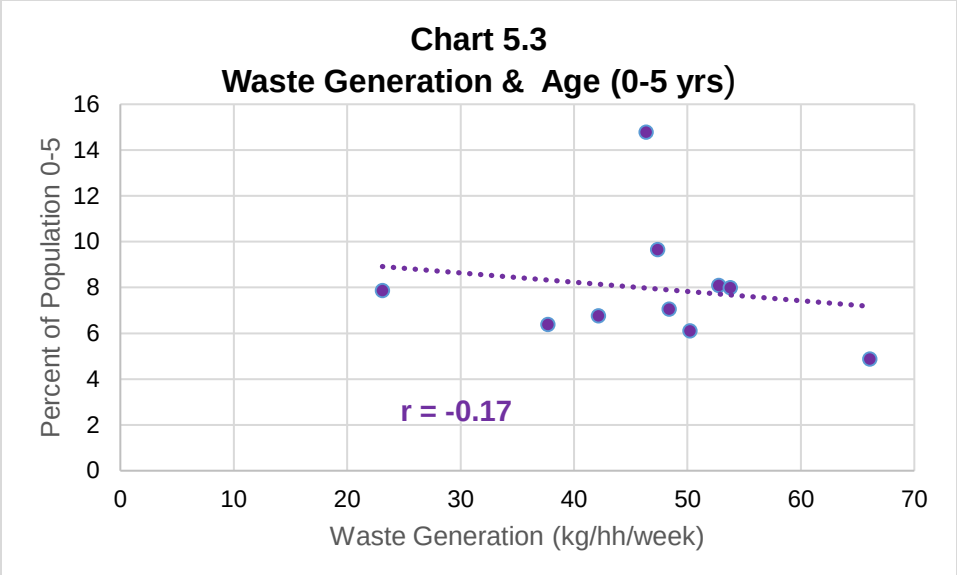
Chart 5.3
Waste Generation & Age (0-5 yrs)
Percent of Population 0-5
16
14
12
10
8
6
4
2
0
0
10
20
30
40
50
60
70
Waste Generation (kg/hh/week)
r = -0.17

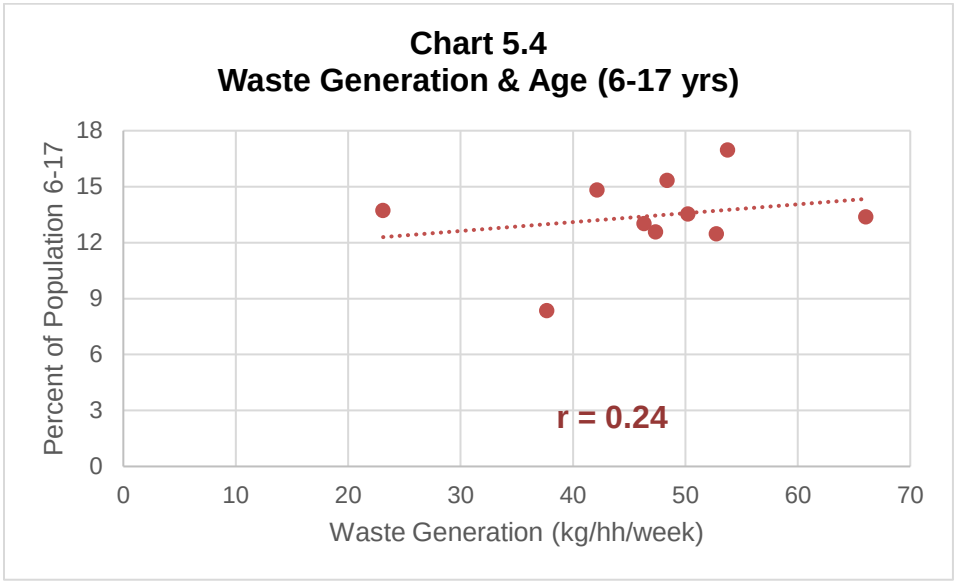
Chart 5.4
Waste Generation & Age (6-17 yrs)
Percent of Population 6-17
18
15
12
9
6
3
0
0
10
20
30
40
50
60
70
Waste Generation (kg/hh/week)
r = 0.24

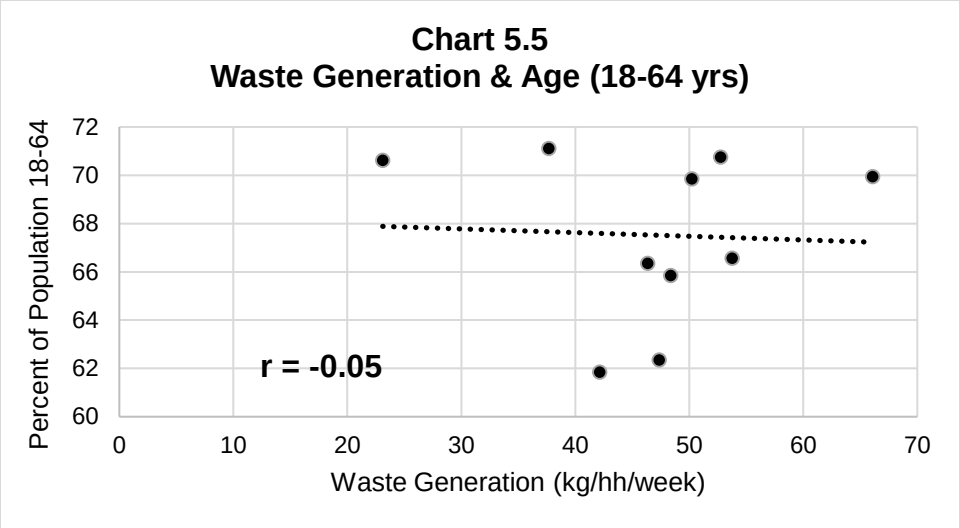
Chart 5.5
Waste Generation & Age (18-64 yrs)
Percent of Population 18-64
72
70
68
66
64
62
60
r = -0.05
0
10
20
30
40
50
60
70
Waste Generation (kg/hh/week)

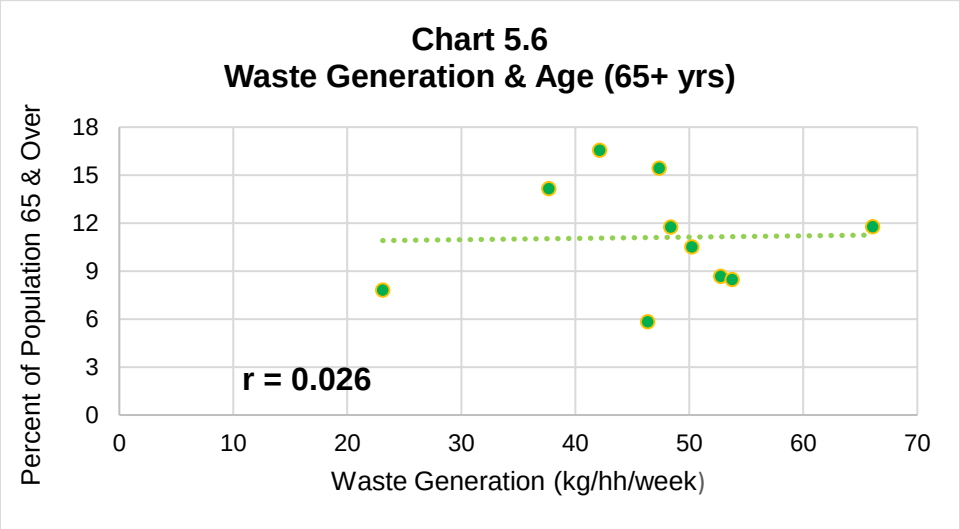
Chart 5.6
Waste Generation & Age (65+ yrs)
Percent of Population 65 & Over
18
15
12
9
6
3
0
r = 0.026
0
10
20
30
40
50
60
70
Waste Generation (kg/hh/week)

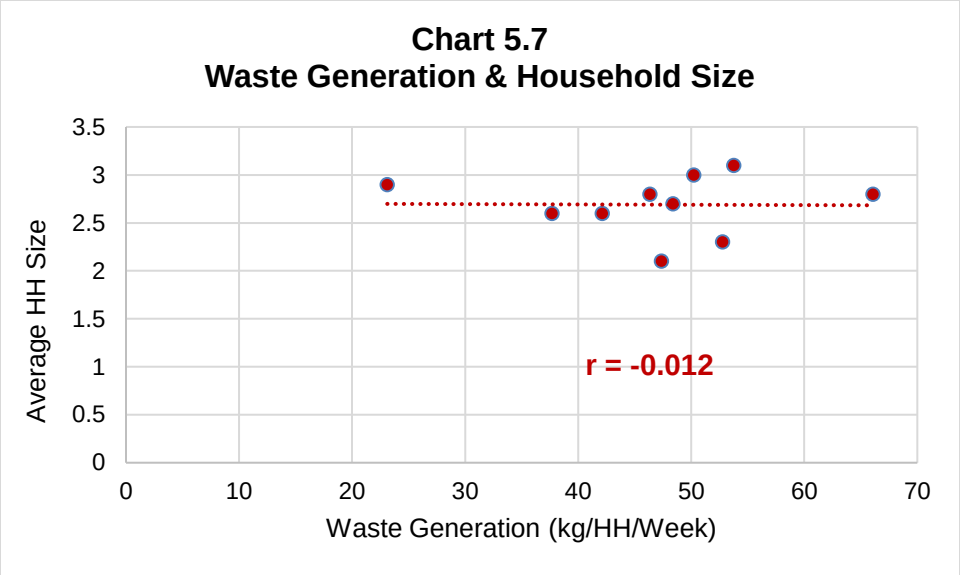
Chart 5.7
Waste Generation & Household Size
Average HH Size
3.5
3
2.5
2
1.5
1
0.5
0
0
10
20
30
40
50
60
70
Waste Generation (kg/HH/Week)
r = -0.012