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Richard M. Adams

Household recycling is an important means by which social costs of solid waste disposal may be reduced. These costs include energy and resource costs of collection and disposal as well as environmental costs from emissions from landfills, incinerators, and collection vehicles. In this thesis, a household production model is used to represent the decision faced by the household in determining the level of effort to commit to recycling activities. The decision regarding the level of effort the household commits to recycling is hypothesized to be a function of economic variables such as the cost of solid waste disposal and expenditure on goods for both direct consumption and as inputs into production in the home, as well as of the demographic characteristics of the household. Two empirical models are developed, using data collected by the Portland Metro Association. The first of these models specifies a linear relationship between recycling behavior and the economic and demographic variables in the model. The second model is somewhat more complex, making use of the indirect utility function of the household.

The results of the empirical analysis show that the greater the price change associated with increasing solid waste disposal volume, the greater the probability that the household will devote more effort to recycling. As well, the age and education of the female head of the household and the presence of a child in the home also affect the households decision to recycle.

Household recycling may be encouraged by municipal planners by using an escalating price structure for solid waste disposal. Additionally, recycling programs should emphasize convenience over other considerations such as variety of materials collected.

A Household Production Approach to Modeling Household Recycling Effort

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Approved:

Redacted for Privacy

Major Professor, representing Agricultural and Resource Economics

Redacted for Privacy

Chair of Department of Agricultural and Resource Economics

Redacted for Privacy

Dean of Graduate School

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Roger Martini, Author

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I. Introduction

Resource and environmental issues occupy an increasingly important place in public policy debates in the US. One resource issue which receives continuing interest from municipal policy makers, particularly those in densely-populated areas, is the impending solid waste "crisis" facing the United States. This concern is motivated by reports of actual and pending closures of landfills in many areas. For example, 80% of existing landfills are expected to close in the next 20 years (EPA 1988). Three reasons for this decline in landfills have been identified: 1) older landfills are reaching their capacity limits, 2) environmental regulations have been strengthened resulting in non-qualifying landfills being taken off-line and making new ones more expensive, and 3) public health concerns and the Not-in-my-backyard (NIMBY) syndrome (OTA 1989).

The response by state legislatures to the perceived solid waste crisis has been to pass laws mandating the reduction of the solid waste stream by source reduction, recycling and composting. Thirty-five states have passed bills with specific solid waste reduction goals, and incentive policies such as Advance Disposal Fees are under consideration in many different states (Glenn, 1992). These laws have addressed not only the volume of solid wastes produced, but also its toxicity, singling out tires, motor oil, white goods, and batteries for special consideration. Laws such as these which force municipalities to implement recycling programs indicate the growing concern that present solid waste practices are unsustainable in the long run.

Despite the potential closure of many U.S. landfills, concerns that the absolute capacity to store solid waste in landfills is limited are misguided. This is because the volume of a cube increases by the cube of the length of the sides, meaning that if one doubles the dimensions of a given landfill, the capacity is increased 8-fold. A small number of large landfills could potentially replace most of the smaller ones presently in operation. In the extreme, a single 20-mile square landfill 100 feet deep could contain the solid waste production of the United States for the next 500 years (Wiseman, 1991). This is not to say that regional scarcity does not exist or will not be a problem in the future. What it does mean is that the solid waste problem is primarily one of transportation, infrastructure, and environmental costs, not the ultimate capacity to store waste in landfills.

The social costs of solid waste disposal are of two types: Energy and other resource costs of collection, transportation and monitoring of waste, and environmental costs associated with the collection and landfilling process. A typical garbage truck costs $60,000 with a $12,000 annual maintenance budget, and will consume 1500 gallons of diesel fuel per year. Collection costs made up 80% of New York city's collection and disposal budget in 1984, dwarfing the costs of disposal in a state with some of the highest disposal costs in the United States. (Neal and Schubel, 1987 ch. 3). Environmental costs include emissions from garbage collection vehicles, toxic leachate from landfills entering water supplies, heavy-metal emissions from incinerators, and the inefficient use and disposal of valuable resources due to hidden disposal costs. The sum of these disguised and environmental costs are substantial, and vary by location. Components of the total cost of solid waste disposal also tend to be countervailing. For example, disposal at rural sites reduces some potential human health and environmental problems but increases transportation and other costs.

In many communities, these varied costs are hidden or offset through indirect subsidies. For example, garbage disposal costs are frequently paid out of general municipal revenues; no additional fee or tax is charged for pick-up regardless of quantity set out at the curb. The zero marginal cost of disposal of garbage provides no incentives for households to reduce the amount of waste that they generate, either by source-reduction activities or by recycling. This is changing. Municipal and state governments, in order to curb tax increases and diversify tax bases, as well as to be able to reach their waste diversion goals, are increasingly moving toward variable-rate or "pay-per-can" plans. Under such plans, households pay an incremental sum for additional quantities of solid waste (Skumatz and Zach, 1993). Portland, Oregon employs a plan of this type, operating under a variable-rate plan through which households contract for different levels of trash services on a volume basis. Rate plans of this type are regarded as encouraging more "socially responsible" behavior. Most of these plans have been successful in reducing quantities of municipal solid waste in the communities in which they are in place.

Variable rate pricing is a relatively recent innovation in solid waste management. The success of Seattle's recycling system in reducing municipal solid waste has led many communities in the U.S. to adopt similar systems. At present, variable rate plans for municipal solid waste collection are in use in more than 1000 communities. This is an increase from what was only a "few handfuls" in the late 1980's (Skumatz, 1993). Still, those currently using variable rate pricing are a small fraction of the number of municipalities in the U.S..

It is generally believed that the household's decision to recycle is dependent on the capacities and constraints put upon household members by circumstances such as employment and other costs or responsibilities (Derksen and Gatrell, 1993). These circumstances, which influence the opportunity costs of recycling, are important determinants of the level of recycling effort expended by the household. In addition, increases in the direct costs of solid waste disposal, such as fee increases, increase the economic gain from recycling and thus influence participation in recycling.

The overall objective of this thesis is to estimate the relationship between economic factors, such as increasing marginal costs of disposal service, and the recycling behavior of households. The study also explores other factors, such as demographic characteristics and the costs of producing goods in the home, which influence recycling behavior. Specifically, the research determines those characteristics that influence recycling, including the role of alternative life situations in determining the household's capacity to recycle. By noting explicitly the importance of such life situations or constraints, the analysis provides a clearer idea as to how the demographic make-up of a household may be used to predict recycling behavior.

The empirical focus is on household behavior in the Portland, Oregon metropolitan area. A unique data set from 837 households are used to estimate household technological and demographic effects on recycling behavior. Using this data set, ordered probit analysis is used to assess the importance of these variables and their effects. From this analysis, the data indicate that the demographics of a household are helpful in predicting the level of participation in recycling. Further, the opportunity cost of recycling is seen to be very important, indicating that future development of recycling programs should focus on convenience to the household in order to be most effective.

These research findings have implications for municipal policy makers in Portland and elsewhere. Specifically, information of the type developed here regarding the characteristics of household recycling behavior are useful in designing and implementing solid waste management policies. These findings can also suggest the magnitude of solid waste reductions to be achieved by different solid waste management programs. The results of this thesis, by combining the detailed data set on household behavior with econometric procedures borrowed from other economic problem settings, also contributes to the economic literature on household recycling behavior and solid waste management.

II Relevant Literature

The concept of pricing solid waste disposal or other environmentally sensitive activities at their marginal cost is a standard economic prescription for efficient regulation of environmental problems. However, empirical literature studying the mechanisms by which households respond to marginal cost pricing of solid waste disposal is fairly sparse. Theoretical discourse and mathematical models predominate, notably but not limited to Miedema (1983), Wertz (1976), and Dinan (1993). The common approach in these studies is to work through a simple utility maximization given a charge, *t*, for a solid waste "input" into a production function. The resulting signs and elasticity ranges for income and substitution effects from these comparative-static exercises are as expected, and the results mirror the much-larger body of literature on pollution taxation (See Pearce and Turner; 1992, for eg.).

The few empirical studies on recycling and solid waste production generally rely solely on survey data to gain information on household recycling behavior. The use of surveys to elicit recycling behavior introduces the possibility of response bias as households tend to respond to questioning in a way that makes them look like good citizens (the "warm glow" effect noted in the contingent valuation literature) . The most recent of this type of study is Reschovsky and Stone (1994). A notable exception to this in the recent literature is Hong et al. (1993) where a combination of direct observation and survey data from a large number of households was used. Reliance on direct observation of recycling behavior eliminates the response biases that plague simple surveys. Hong et al. employ their data set to derive the consequences of a variable-rate program for Portland, Oregon.

In other economic literature dealing with solid waste and recycling activity, Wertz (1976) uses a model of individual utility maximization of

$$U=U(x_1,\ldots,x_n,A) \qquad \textbf{(i)}$$

subject to

$$\sum p_i x_i + tw - y = 0 \qquad \textbf{(ii)}$$

where x_i represents good i, y is income, A is accumulated solid waste, and t is a disposal charge for waste, w. Using comparative statics, Wertz determines that w is reduced by increases in t, reductions in y (a small effect on w only), lower frequency of collection (higher A), and some other results. Wertz's work, by noting that the quantity of solid waste produced by a household is not constant but is rather affected by a variety of factors to which the household is subject, motivated much of the later work on the subject.

Lusky (1976) emphasizes the role of solid waste markets in producing socially efficient outcomes. Lusky examines household incentives to recycle by specifying a utility function containing two goods, virgin consumption goods and recycled consumption goods, and one "bad", solid waste (considered to be a nuisance or pollution). Lusky's analysis leads him to conclude that efficient refuse markets are needed to equate the marginal cost of recycling with its marginal benefits of garbage reduction and provision of additional consumption goods.

Miedema (1983) notes that virgin resources may enjoy an implicit subsidy that recycled materials do not enjoy. Miedema cites federal policies regarding resource extraction on public lands as the source of implicit subsidies on virgin resources. An example is federal policy that allows company to lease land for mining at below the market value, which lowers the price of ore. It is suggested that the market distortions created by these subsidies be corrected with some form of user fee or residuals tax. This would result in a higher social welfare level compared to the status-quo of no such charges. Miedema's work is one of the first to deal with externalities in the markets related to solid waste. Later solid waste research is greatly influenced by Miedema's treatment of externality

Dinan (1993) concludes that the socially efficient level of waste reduction is achieved by combining a disposal fee with a re-use subsidy. Dobbs (1991) reaches the same conclusion using a similar mathematical model. Dobb's rationale for a subsidy, similar to a deposit-refund system for beverage containers, is to prevent the common result of illegal dumping in response to a fee for solid waste disposal. The research findings from these two studies support the need to provide incentives to both 1) reduce the production of waste and 2) to encourage the proper disposal of such wastes as are generated through consumption activities. This approach recognizes that externalities exist both in the production of solid waste and its disposal, refining Miedema's approach to the subject. The illegal dumping problem noted by Dobbs is considered by Skumatz to be primarily a rural problem, where the ability to dump illegally is much greater. Skumatz also contends that this problem is one that fades with time, as people become resigned to the new system of solid waste fees.

Econometric-based empirical studies such as those by Hong et. al (1993) and by Fullerton and Kinnaman (forthcoming) determine that waste production is indeed reduced by variable rate or pay per can plans. However, estimates of the influence of demographic factors on waste production or of the response to variable rate plans have been plagued by insignificant t-statistics and contradictory signs in many empirical studies. For example, Fullerton and Kinnaman find insignificant t-statistics on all of the demographic variables tested. Lansana (1992), using discriminant analysis, found only three demographic variables to successfully discriminate between recyclers and non-recyclers.

There are a number of articles addressing issues similar or related to variable-rate plans for solid waste disposal. One of the earliest and most important works in the general field of solid waste studies is by Massell and Parish (1968). They model the profit maximizing behavior of firms that make use of a deposit-refund system for beverage containers. Their research identifies many effects of such programs that are neglected by later authors. Other works focus on the taxation aspect of variable-rate plans. Braulke and Endres (1985) consider the effects of effluent charges in controlling long-run pollution. As solid waste is a form of pollution, many of the conclusions reached in the more general literature on pollution are valuable in this context. O'Hagan (1984) examines the efficacy of Pigouvian taxes, regulations, and subsidies in controlling pollution. Writing in response to Braulke and Endres, De Meza (1988) confirms the general reliability of effluent charges (Pigouvian taxes) under a wide variety of circumstances. Stevens (1988) examines different fiscal effects of input charges (analogous to advance disposal fees) versus effluent charges (variable-rate disposal charges). Other economic studies on topics related to this issue not mentioned in this paper are reviewed in Hong (1992).

The role of demographic and other variables in determining recycling behavior has also been explored in other social sciences. Howenstine, a political geographer, (1993) concludes based on a review of past literature and his own observations that conservers or recyclers are generally young, educated, wealthy, urban, liberal, and from large households compared with non-recyclers. Only the conclusion that education is positively related to conservation is widely supported. In particular, income and age have been shown to be poor determinants of recycling or conservation behavior. (See Fullerton and Kinnaman 1994, Lansana 1992, Reschovsky and Stone 1994). Other characteristics, such as tenure (ownership of the home) and employment status, presence of children, and the relative convenience of disposal versus recycling are found to be stronger determinants of recycling behavior, though they remain problematic and subject to dispute. Further, those who chose to recycle do so primarily out of concern for the environment, whereas those who do not recycle frequently cite the lack of convenience or economic reward for their activity (Vining and Ebreo, 1990, Howenstine, 1993). Riggle (1989) reviews the effectiveness of recently implemented pay-per-bag programs in several areas. De Young (1986) examines the psychological benefits derived from recycling, such as satisfaction from frugality, participation in the community, or being more self-sufficient. De Young points to these satisfactions as an explanation of why individuals participate in recycling activity.

The reason behind the mixed statistical results of many demographic variables is speculated on by sociologists Derksen and Gartrell (1993). They note that the circumstances of each individual's situation determine the ultimate ability of people to pursue conservation behavior. Recyclers and non-recyclers often have similar levels of environmental awareness. However, while a retired or unemployed person in a large house with attached garage may find it quite easy to recycle, an apartment dweller with two small children and a full time job may find it more difficult to act on their convictions to recycle. Standard demographic characteristics then operate only within the context of each individual's life situation, thus an analysis that fails to account for thoe differences in life situations is unlikely to capture the true effect of those demographic characteristics on behavior.

The statistical problems of lack of robustness of estimates of the effect of demographic variables can best be addressed by the use of qualitative response models. This class of models, which includes the ordered probit estimation used in this thesis, have in recent years seen an explosion in use by applied econometric studies. Models of this type are extremely useful in answering questions involving choice. Qualitative response models allow choices made by individuals, or conditions under which choices are made, to be represented discretely. These conditions can be environmental variables, demographic characteristics, or any other variable that is non-continuous in nature. Amemiya (1981) provides an excellent survey of such models and their use in economic analysis. David and Legg (1975) use an ordered probit model similar to the one utilized in this thesis to explain the purchase price of a home. They use the age, income, and education of the head of the household as explanatory variables and divide the dependent variable, price of the home, into 3 categories. This technique is useful when the dependent variable is best modelled as discrete rather than continuous, or when the dependant variable is used to represent some unobserved variable that is directly related to the discrete dependent variable actually used in the model.

III Theoretical considerations

The economic model of consumer behavior posits that individuals operate with the primary objective of maximizing utility. Utility is defined as a measure of satisfaction that the individual derives from consumption of goods and services contained in the consumer's choice set. Utility is also derived from activities beyond the consumption of material goods or services. For example, one may derive utility from leisure and recreation time, contemplation of art or nature, or any of a number of environmental services available to the individual. The selected mix of these consumed goods and activities, subject to the individual's budget (income) and time constraints, will determine the maximum level of utility.

This general concept of the individual's choice problem is expressed more precisely in the mathematical notation of a utility function. This function, when reflecting the axioms that define consumer preference (rationality), allows economists to predict the behavior of individuals (and in the aggregate, markets) based on this idea of the search for maximum utility. Specifically, utility, U, is expressed as a function of consumption.:

$$U = F(x_1, x_2, \ldots x_n) \qquad \textbf{(1)}$$

The x_i's represent those things, such as material goods and services, that contribute to one's utility. The symbolic F() literally means "is a function of"; in this general expression, no actual functional form of the relation between utility, U, and those things that affect utility, x_i, is implied. This is known as the general form of the objective function.

The amount of each good or service consumed by an individual is constrained by the ability to obtain these commodities, i.e., the individual's income must be allocated to produce the highest possible level of utility. The consumer's constrained optimization problem, is thus one of maximizing utility subject to the constraints of income. One way to express this problem mathematically is through the use of a Lagrangian function which contains both the utility function and the income constraint placed upon it. Denoting the price for any x_i as p_i it is clear that the maximum amount of x's that the individual can obtain is limited by the relation $Y \geq p_1 x_i + p_2 x_2 + ... + p_n x_n$. The Lagrangian function is:

$$\mathcal{L} = F(x_1, x_2, ..x_n) + \lambda(Y - \sum p_i x_i) \quad (2)$$

Total utility is maximized when the marginal gain in utility from consuming some good x_i is equal to the cost of doing so, or:

$$\frac{\partial F(x_1, x_2, ..x_n)}{\partial x_i} = p_i \quad (3)$$

for all i=1...n. This set of n equations in n unknowns may be solved for the optimal x_i's, one of which is the demand for solid waste disposal services.

Utility Maximization and Solid Waste Studies:

This concept of maximization of utility conditional on some constraint is a fundamental approach to a wide range of economic problems, including solid waste management studies. With respect to solid waste, one or more of the x_i's are identified as being garbage disposal, availability of recycling, or time taken to recycle. While the utility maximization framework here is much simplified from that employed in most published research on the topic, the underlying concepts generally hold. Thus an exhaustive treatment of the mathematical structure present in past literature, such as presented in Hong (1991), is not repeated here.

The Household Production Approach and extensions:

The household production approach (Becker; 1965) embeds the idea of utility maximization. However, the approach differs from traditional constrained utility maximization in that the assumption of a single source of income used to obtain some items, x_i, is expanded. The household production model assumes not only that people work to earn income, Y, which is spent on goods x_i, but also that one may choose to forego working for income in favor of producing some x_i's directly in the home. Consequently, the decision facing the household is more complex than presented in the standard utility maximization framework.

Within the household production framework, one must select how much time to work for income and how much to devote to producing goods at home. One must also determine which goods should be produced at home and in what quantities. Related to this decision is the decision as to what goods will be purchased outside the home for direct consumption and what goods need be purchased as inputs in the production of the household goods. All of these decisions are made as part of the utility maximization process. The difference between the household production model and the standard utility maximization approach is thus in the way in which goods may be obtained. The next section of the thesis describes the particulars of the specific application of the household production model used in this thesis in more detail.

IV Modeling Considerations

We make use of a variation of the household production model used by Dubin and McFadden (1984) in their study of residential demand for household appliances. This model was further developed and generalized by Dubin (1985). Dubin describes the approach of his model of household durable and energy demand as follows:

> The demand for electricity by the household is a derived demand arising from the production of household services. The technology that provides household services is embodied in the household appliance durable. Thus to understand the residential demand for energy, we must understand the residential demand for durable equipment. (1985, p 4)

The model used in this thesis is similar in approach. Household demand for solid waste disposal services is a derived demand from the production of a household good. Households make a recycling technology decision based on the price of solid waste disposal services and other factors which will be considered later. To understand the household's demand for solid waste services, we must understand how the decision of the level of recycling technology or effort is made.

Households in this model are assumed to purchase both consumer items and inputs for a household production function by which the household produces goods for consumption. In this application of the model, one of the "inputs" to that production is solid waste disposal services, required to dispose of the waste which is a joint output of the production of the household good. Solid waste is defined as unrecyclables plus those recyclable materials that the household chooses not to recycle.

In the household production model, the household's demand for items such as solid waste disposal services and recycling effort are derived demands. These inputs are then combined to produce commodities that enter directly into the household utility function. Wastes from this household production process may be disposed of via payment of a fee for solid waste disposal or through recycling effort which costs household time but reduces the total solid waste disposal fee. The variables "solid waste disposal services" and "recycling effort" can therefore be modelled as functions of household production activities, fees for solid waste pick-up or the opportunity cost of time, and other household characteristics affecting utility.

In this model, selection of the derived demand for these inputs are made as part of the household's utility maximization decision. Households must select a certain level of commitment to recycling activity, which we will call their recycling "technology". This decision embodies a trade-off between paying a fee for solid waste disposal services, or reducing the fee by committing time to engage in differing levels of recycling activity. Once they have selected this level of recycling activity, which is a function of the constraints placed upon them by their life situation, they then maximize utility subject to that technology in what is a two stage maximization process, i.e.; first selecting the recycling technology and then maximizing utility given that technology. The specific characteristics of this "life situation" are primary determinants of the relative time spent earning income and time spent producing items at home. Time spent at home in household production may not be used to earn money income, and so one's capacity to earn income (wage rate) is hypothesized to be a factor in making this decision. For example, a retired person may be less reluctant to prepare home-cooked meals (involving little packaging waste) than would an individual earning $20 per hour whose time is consequently much more valuable. The wage-earning person is constrained to work a certain number of hours per day, after which they may be tired and decide to purchase packaged take-out food. The former person may find it no burden to spend a few minutes sorting recyclables and setting them out on the curb, while the latter may find it very difficult to find the time to do so.

The system of variable-rate charges for solid waste pick-up services used by the Portland Metropolitan Service District and most other municipalities in Oregon is based on a standardized 32-gallon can. Actual rates for each can are determined by each city government within the Metro area, and so rates differ between cities in the Metro area. Households must purchase at least one 32 gallon can/week of solid waste service (an exception in some municipalities is the use of 20 gallon "mini" cans) but may purchase up to three 32 gallon cans (or roll-cart equivalent) for an additional fee per can. Recycling set out at the curb side is collected free of charge, thus providing an incentive for households to reduce the number of cans required per week by recycling a greater volume of materials. The household must make the decision of how much recycling to do in order to save on solid waste disposal services, i.e., the technology decision regarding the level of recycling activity. A convenient measure of this household technology selection is the quantity of solid waste actually set out by the household. Within the capacity defined by their lifestyle, households must determine the optimal recycling effort to make. This in turn determines how much solid waste will be set out by the household in a given time period. Most households in the Portland Metro area use only one 32 gallon can of solid waste service per week, considerably less than the national average service used by households in areas without variable rate plans, reflecting the decision to commit some time to recycling.

Linear Model Specification

Two forms will be considered for the estimation of the theoretical concepts described above. First a linear relationship between household recycling technology and household demographic and economic variables is considered. This relationship is defined as:

$$Z^* = \beta' X + \varepsilon \qquad \textbf{(4)}$$

where Z^* represents the unobserved choice of household recycling technology. X is the vector of explanatory variables and ε is the error term. Possible recycling technology categories are:

$Z=0 \quad \text{if } Z^* \leq 0$

$Z=1 \quad \text{if } 0 \leq Z^* \leq \lambda_1$

$Z=2 \quad \text{if } \lambda_1 \leq Z^* \leq \lambda_2$

$Z=3 \quad \text{if } \lambda_2 \leq Z^*$

where Z represents the categories of quantities of recyclable materials set out by the household.

$Z=0$ Less than three pounds recycled weekly

$Z=1$ Between three and nine pounds recycled weekly

$Z=2$ Between nine and twelve pounds recycled weekly

$Z=3$ More than twelve pounds recycled weekly.

the λ_i's represent threshold parameters between categories and are estimated in the model. Assuming that ε is normally distributed, the probability of a household falling into a particular recycling category is given as:

$$\begin{aligned} P(Z=0) &= \Phi(-\beta' X) \\ P(Z=1) &= \Phi(\lambda_1 - \beta' X) - \Phi(-\beta' X) \\ P(Z=2) &= \Phi(\lambda_2 - \beta' X) - \Phi(\lambda_1 - \beta' X) \\ P(Z=3) &= 1 - \Phi(\lambda_2 - \beta' X) \end{aligned} \tag{5}$$

The household recycling model assumes that the demographic character of the household will be important in determining the recycling behavior of the household. This structure of the household's recycling decisions also includes several economic variables, including the price of trash disposal, the expenditures by the household on other goods and services outside the home, and the level of household production taking place within the home. The contents of the vector of explanatory variables, X, reflects this, containing both information on the demographic makeup of the household and economic variables affecting recycling behavior.

The results of the estimation of this model is reported in the 'Data and Estimation' section of this thesis.

Indirect Utility Function Model Specification

A second method of modeling household recycling effort, based again on concepts drawn from the household production approach, may be constructed through specification of functional forms for the household utility and production functions. These relationships are combined through the formation of the indirect utility function for the household. As with the simple linear model above, an estimable form of the indirect utility function is obtained and estimated.

The indirect utility function approach is more complex than the linear model, proceeding in a series of steps. First, the general form of the utility function and associated budget constraint is specified. Next, the inputs into the household production good are defined and integrated into the budget constraint. Third, a unit cost function for producing the household good is defined and used to represent the "price" of that good. Once the price of the household good is obtained, the specific form of the indirect utility function and cost function are chosen. Finally, a vector of demographic characteristics are specified and this vector and the unit cost function substituted into the indirect utility function. It is this final form which is econometrically estimated, using the data from the

Metro study. The estimation and data are described in the section entitled "Data and Estimation".

Household goods produced by the household for consumption are measured as a single composite good, denoted X_1. All other purchased goods are denoted by the composite variable, X_2. The household production composite, X_1, is assumed to be produced by two inputs. The first input, denoted z_1, is solid waste disposal. The other input is a composite for "all other inputs into household production" and is denoted z_2. Note that only good X_1 is produced by the two inputs z_1 and z_2; X_2 represents goods purchased outside the home with money income. There are no inputs as such in the production of X_2. Notation will follow the convention of denoting elements of vectors in lowercase with a subscript. Vectors are identified using uppercase text. Scaler variables not associated with a vector are denoted in uppercase with a subscript.

Formally, the assumptions behind the model are as described above. Specifically, the household selects a level of technology in household production that determines the level of recycling that the household pursues. This level of technology is selected in a two stage process. In the first stage, optimal input decisions are made based on recycling technology, and in the second stage the technology (time dedicated to recycling) is selected that produces the highest level of household utility. We also assume that the household production function is homogenous of degree one, so that the cost function can be written as a unit cost function. Household utility is specified to be a function of the home-produced composite commodity and of purchased goods:

$$U(X) = U[F(y, Z, A), X_2] \tag{6}$$

where X_1=F() is a household production function producing the composite home-produced good X_1. Z, [z_1, z_2], is a vector of input quantities used to produce good X_1, X_2 is a purchased composite good, and A is a vector of production parameters.

Household utility is a function of the consumption of the two composite goods X_1 and X_2. Factors (inputs) used in producing the home-produced good X_1 have input prices w_i and the purchased good X_2 has price P_2. We may now write the household's budget constraint as:

$$z_1 w_1 + z_2 w_2 + X_2 P_2 \leq I \tag{7}$$

where I is household income. The budget constraint requires that expenditures on goods purchased outside the home and on inputs into household production not exceed household income. The price of solid waste disposal, w_1, becomes fixed once the household selects the level of recycling effort, which in turn determines the number of 32 gallon trash cans which the household requires. The recycling technology is assumed constant once selected for the reason that contract periods for solid waste disposal are typically longer than the rate of pick-up of solid-waste set out. Unless the household is willing to alter their contract with the disposal company on a weekly basis, they are constrained to produce no more than the contracted volume of solid waste, and so must pursue a minimum level of recycling activity to meet that constraint. Once that technology is selected, households then allocate inputs to maximize utility, (6), subject to their budget constraint, (7). Or:

$$\max_{X_1, X_2} \; U[X_1, X_2] \qquad s.t.\; C(X_1, W;A) + X_2 P_2 \leq I \tag{8}$$

where $C(X_1, W{:}A)$ is the cost of producing the household good, X_1. The expenditures on inputs, $z_1 w_1 + z_2 w_2$, is replaced by this cost function in order to introduce X_1 into the constraint. This re-expresses the budget constraint as a function of goods consumed by the household. This serves another purpose. By the assumption of homogeneity of degree one for the cost function, we may rewrite equation 8 as:

$$\max_{X_1, X_2} \; U[X_1, X_2, ;\beta] \qquad s.t.\; X_1 \theta(W;A) + X_2 P_2 \leq I \tag{8'}$$

The unit cost function $\theta(W{:}A)$ now serves the same function in the budget constraint as does P_2, and so acts as a proxy for P_1, the "price" of the household good X_1. This is a very convenient property, as we may now substitute $\theta(W;A)$ into the indirect utility function in place of P_1

As X_1 is a composite variable, P_1 does not represent a true price as such, but rather represents the expense incurred in household production. Neither is P_1, which we represent with θ, simply the vector of input prices W. The form of θ is specified later.

From (8') we may derive our indirect utility as:

$$V[\theta(W;A), P_2, I; \beta] \qquad \textbf{(9)}$$

V is the dual of U in (1). This dual has a price partition corresponding to the commodity partition shown in (6). θ(W;A) is the unit cost of producing the household good X_1. One then needs to pick an appropriate functional form for V[] and for θ(). For V[] we select the form:

$$V[P_1, P_2, I] = \ln(I) \;\; \alpha\ln(P_1) \;\; \beta\ln(P_2) \qquad \textbf{(10)}$$

which is the indirect utility function from the Cobb-Douglas production function. With no *a priori* information as to the true form of the utility function, this form is selected for its simplicity and ease of estimation. We determine α by substituting as follows:

$$\alpha = \alpha' D = (\alpha_0 + \alpha_1 d_1 + \alpha_2 d_2 + \alpha_3 d_3 \ldots) \qquad \textbf{(11)}$$

where D is a vector of household demographic characteristics such as age or education. This vector is similar to the X vector estimated in the linear model, but with the expenditure variables excluded. By specifying this parameter of the Cobb-Douglas utility function as a vector, demographic characteristics can easily be included in the model. This allows us not only to estimate α and ß but also to test the effects of the demographic characteristics on recycling activity, which is a primary objective of this thesis. Thus, $\alpha_1, \alpha_2, \alpha_3$, etc, are new utility parameters. In the model, five demographic characteristics compose α. These are: the age and education of the female head of the household, the number of residents in the household, the presence of children in the household, and whether the household owns or rents their home (tenure status). As before, education and number of residents are represented as binary category variables. The category for college education and single resident are omitted. The model is linear in parameters.

For the functional form of C(W;A), the cost function, we use a linear cost function. Recall that by definition a cost function is a function of input prices and output. Earlier we separated out from this the output level, X_1, such that the unit cost function θ is solely a function of input prices and cost parameters a_1 and a_2:

$$\theta(W;A) = a_1 w_1 + a_2 w_2 \qquad \textbf{(12)}$$

Using this structure to separate out our input of interest, we let w_1 be the price of solid waste pick-up and w_2 be a price index for all other non-durable inputs usually in the household production function. This simple form states that P_1 (represented by θ), is a weighted sum of input prices. As for V[], this form is chosen for simplicity and transparency in absence of information on the true form of C{W;A). We obtain an estimable equation by substituting (11), and (12) into (10):

$$V[P_1,P_2,I] = \ln(I) - (\alpha'D)\cdot\ln(a_1 w_1 - a_2 w_2) - \beta\cdot\ln(P_2) \qquad \textbf{(13)}$$

Household technology responses are inherently ordered, as each higher level of technology implies and is implied by a lesser weight of disposed solid waste. Households will select the recycling effort and input use levels that correspond to their highest obtainable utility. The utility of each alternative technology, i^*, is $U^{i^*} = V^{i^*} + \xi^{i^*}$ where V^{i^*} is the indirect utility of the alternative selected and ξ^{i^*} are unobserved components of utility which may heuristically be thought of as an error term. While we cannot observe this utility U^{i^*} directly, we do observe the selection of technology and thus:

$$\begin{aligned} Z &= 0 \ \text{ if } U^{i*} \le O, \\ &= 1 \ \text{ if } 0 \ge U^{i*} \le \lambda_1, \\ &= 2 \ \text{ if } \lambda_1 \ge U^{i*} \le \lambda_2, \\ &= 3 \ \text{ if } \lambda_2 \ge U^{i*} \le 1 \end{aligned} \tag{14}$$

where Z and λ_i are defined in the same manner as in the linear model. If we assume that ξ^{i^*} is distributed normally with mean 0 and variance 1, we may estimate the following as an ordered probit:

$$\begin{aligned} &Prob[Z=0] = \Phi(-V[P_i,I]), \\ &Prob[Z=1] = \Phi(\lambda_1 - V[P_i,I]) - \Phi(-V[P_i,I]), \\ &Prob[Z=2] = \Phi(\lambda_2 - V[P_i,I] - \Phi(\lambda_1 - V[P_i,I]), \\ &Prob[Z=3] = 1 - \Phi(\lambda_2 - V[P_i,I]). \end{aligned} \tag{15}$$

This form is very similar to the linear model described earlier, with the indirect utility function used in the place of β'X. In the linear model of household behavior, the recycling technology choice is the underlying unobserved variable, whereas in this case the unobserved variable is the utility of the household.

Equation 15 is estimated directly using census tract data tied to each observation to identify household costs w_2 and P_2. This is accomplished by identifying the typical household costs associated with certain demographic characteristics present in each observation. Equation 15 is also estimable as an ordered logit if a logistic distribution of the error term is assumed.

V Data and Estimation

The data used in estimating the model were obtained from a study done by the Portland Metropolitan Service District (Metro). Metro is a taxing and service district encompassing the municipalities in the Portland area. It was created to better co-ordinate certain urban functions in the area, including management of solid waste (Metro also manages the Portland Zoo, the public transportation system, and selected regional parks). The data used here were collected for Metro via a survey of the recycling behavior of a large number of households. The Metro survey consisted of two parts: the first component involved direct observation of all materials set out by selected households for disposal or recycling, measured by weight, net of container. The second component was the administration of face-to-face surveys of households included in the survey of materials. The sample was designed to collect data from all households on one garbage route in each municipal district in the Metro service area. Household participation in the first component was not elective; all houses on the selected route are sampled and measured. A total of 2375 houses were sampled. Each was observed 8 times, in four 2 week periods. Each of these four periods occurred in a different season of the year, and were alternated on two-week schedules, one period sampling the first two weeks of the month, the next the last two weeks, etc. The sample was stratified to include broad variations in neighborhood income and housing density.

Total container weights were recovered by the solid waste haulers both for garbage and recyclable materials. Yard debris was weighed separately. All containers were weighed separately; the total weight was reduced by the tare (container) weight. The type of material set out for recycling was noted in each observation, and in two of the eight observations each type was individually weighed. The scale used to weigh the containers was an A&D Engineering 1200 digital scale with a capacity of 130 pounds and accurate within .05 pound between calibrations. Overweight containers were weighted on a Pelouze P-250 scale.

Of the 2375 households whose solid waste disposal was measured, fewer than 1500 agreed to participate in face-to-face survey component of the study. Of this number, only 816 were complete and useable. Usable surveys were those in which answers were provided for all variables used in the model. Observations with missing values of variables used in the study were dropped. The resulting 816 households form the data set used to estimate the model in this thesis. Each household's 8 observations were pooled into an average value to obtain one composite observation per household.

Data regarding solid waste disposal pricing were collected in a separate phone survey of local solid waste service providers. The municipalities in the study area operate on a block-pricing system for solid waste disposal, where service rates for each volume size of container are set by the municipality. The marginal price variable used in both the linear and indirect utility household production models is the amount of increase in the service rate the household would face were it to increase service volume to the next possible level. This price data is reported in Table 1.

Certain assumptions and data manipulations were required in order to use the Metro data to estimate the two models considered in this thesis. Non-binary variables were divided by their mean values in order to ensure compatible scaling and to allow the invertability of the information matrix. In order to prevent infeasible solutions in the indirect utility function model, ß has been restricted to positive values. The category of seven residents had to be eliminated as there were only three such observations, resulting in a high level of multicollinearity between the "number of residents" categories (all categories would add to one in all except three cases). No other variables have restrictions imposed on them. Estimation of equation 5 (the linear model) and equation 15 (the indirect utility model) was done using the software package TSP, version 4.2 installed on the OSU mainframe computer, a VAX VMS. Variables used in the estimation of each model are defined in Table 2.

Table 1: Solid Waste Disposal Rates in the Study Area

Municipality		Cans (32 gallon)			Roll Cart (gallon size)			
		1	2	3	20	40	60	90
West Portland	W	19.30	28.75	35.25	16.30	21.00	25.75	28.80
	M	10.90	---	---	Call Basis: 6.40		No Service: 4.25	
East Portland	W	17.60	27.05	33.55	14.6	19.30	24.05	27.10
	M	9.90	---	---	Call Basis: 6.00		No Service: 3.65	
Gresham	W	17.55	---	---	15.50	18.55	22.15	---
	M	10.00	---	---	Call Basis: 5.00		No Service: 3.65	
West Linn	W	15.80	31.60	47.40	13.25	---	---	---
	M	7.50	15.00	22.15	Call Basis: 6.25			
Lake Oswego	W	16.15	30.55	46.30	---	---	---	---
	M	---	---	---				
Oregon City	W	17.95	35.90	53.85	14.25	17.95	27.60	29.20
	M	---	---	---	Call Basis: 4.75		No Service: 0.00	
Gladstone	W	13.55	27.10	40.65	10.85	13.55	27.60	29.20
	M	---	---	---	Call Basis: 6.25		No Service: 0.00	

W=Weekly Service M=Monthly Service ---=Service not offered

Table 2: Variables used in Ordered Probit Estimation.

Variable	Mean & Std. Dev.	Description
Z	N/A	Dependent variable of ordered probit. Valued 0,1,2,3 depending on the weight of recycled material set out by the household.
I	μ=48,002 σ=34,826	Household Income. ($)
W_1	μ=1.0071 σ=0.2288	Marginal price of solid waste disposal services. Is equal to the increase in the monthly rate charged the household for solid waste disposal if the household were to move to the next higher volume of disposal services.
W_2	μ=1.0033 σ=0.1530	Price of "All other" inputs into household production. Generated from census data as a price index.
P_2	μ=1.0000 σ=0.0069	Price of goods purchased outside the home (Index).
AGE	μ=47.39 σ=14.77	Age of eldest female (over 21) in the household
CHILD	μ=0.11 σ=0.31	Presence of a child under the age of three, binary variable.
TENURE	μ=0.10 σ=0.31	Tenure status of the household. Binary variable equals 0 if house is owned, 1 if rented.
Education	The education of the female head of household is used. This variable is divided in to categories, one through 5, with college education level omitted to prevent multicollinearity.	
Number of Residents	This variable is also divided into discrete categories, each number of residents having a binary representation. The lowest (one resident) is the omitted category.	

VI Results and Implications

In linear regression analysis, parameter estimates are used to determine the relationship between the magnitude of a vector of independent variables and the magnitude of a certain variable said to be dependent on those independent variables. In the case of the class of models that includes ordered probit analysis, the relationship between dependant and independent variables is couched in terms of probabilities. The intent of probit analysis is to relate the magnitude of a vector of independent variables and the probability that the dependant variable will fall in a specific category within a discrete set of possible categories. Specifically, the two models used in this thesis focus on the relationship between the characteristics of the household and the probability of the household falling into a specific category of recycling effort. The questions addressed with such models thus do not deal with marginal changes in a continuous dependent variable, i.e. "How many pounds of solid waste are recycled for every year of age of the head of the household" but rather "How does the presence of a child in the home affect the probability that the household will devote greater or lesser effort toward recycling." This effect is denoted the marginal change in probability, and is considered in more detail below.

Results of the ordered probit estimation for the linear form of the model are reported in Table 3. Standard-errors are calculated using the Eicker-White method. Table 4 gives the estimation results for the model utilizing the indirect utility function of the household, The values given in Table 4 are the values of each α_i in the model, as well as for β and a_1 and a_2 in equation 15 (see equation 13 for the full form of V[]), which form the starting point of the analysis of the estimation results.

The values given in these two tables are not themselves directly meaningful in terms of explaining recycling behavior. However, the parameter value may be used to determine the shift in the relative probabilities that a household will fall into a particular recycling category. The marginal effects of changes in the regressors on the probability categories are defined by Greene (1993):

$$
\begin{aligned}
\frac{\delta Prob(Z=0)}{\delta x_i} &= -\phi(\beta' x)\beta_i \\
\frac{\delta Prob(Z=1)}{\delta x_i} &= (\phi(-\beta' x)-\phi(\lambda_1-\beta' x))\beta_i \\
\frac{\delta Prob(Z=2)}{\delta x_i} &= (\phi(\lambda_1-\beta' x)-\phi(\lambda_2-\beta' x))\beta_i \\
\frac{\delta Prob(Z=3)}{\delta x_i} &= \phi(\lambda_2-\beta' x)\beta_i
\end{aligned}
\qquad \textbf{(16)}
$$

This set of equations is the result of taking the derivative of equation 5. The value of β'X (or V[.] in the case of the second model) is evaluated at the mean values of the dependant variables. Note that this part of the equation becomes a constant, which is multiplied by the parameter on the variable of interest. Thus, the marginal probabilities are in direct proportion to the β_i's for each variable. The trailing β_i in each equation is replaced by the derivative of V[] with respect to each variable for the case of the indirect utility function model. Recall that the estimated equation for this model is of the form:

$$V[P_1,P_2,I] = \ln(I)-(\alpha' D)\cdot\ln(a_1 w_1 + a_2 w_2) - \beta\cdot\ln(P_2) \qquad \textbf{(13)}$$

The marginal effect of each variable (analogous to the parameter estimate in a linear model) may be determined by taking the derivative of this function with respect to that variable. For any demographic variable, that derivative is:

$$\frac{\delta V□}{\delta\, var_i} = -\alpha_i \ln(a_1 w_1 + a_2 w_2) \tag{17}$$

which has the same sign as α_i. For the price of solid waste disposal, w_1, the equation

$$\frac{\partial V□}{\partial w_1} = \frac{-a_1\, \alpha' D}{a_1 w_1 + a_2 w_2} \tag{18}$$

(estimated to be 0.0627) represents the relevant marginal effect. The effect on the probability distribution resulting from a change in a regressor may be seen in the figure entitled "Effect of a change in regressor" below. Increasing the value of a (positively related) regressor has the effect of shifting the distribution slightly to the right. As a result, (and which may be seen by examining equation 16), the change in Prob(Z=3) has the same sign as equation 15 for each variable, and the change in Prob(Z=0) has the opposite sign of equation 15. The effects on the interior probabilities are not readily apparent from the sign of the parameter and must be checked. For binary variables, this is not an appropriate method. The change in probabilities due to a binary variable must be calculated by evaluating the difference between the predicted probabilities in each technology category when the binary variable holds the value of 1 or 0. The marginal effects of selected variables on each probability category for both models are summarized in Tables 5 and 6.

Table 3: Ordered Probit Parameter Estimates for Linear Model

β Vector	Estimate (t-stat)	β Vector	Estimate (t-stat)
MP of trash disposal	0.08006 (2.01207)	Education=5	0.142571 (1.04806)
Expenditure on household inputs	0.487922 (0.778629)	# Residents=2	.617986 (3.85929)
Expenditure on other goods	-10.1681 (-1.07463)	# Residents=3	0.338948 (2.03870)
Intercept	9.2898 (1.01756)	# Residents=4	0.584922 (3.39751)
Age	0.0901 (0.384337)	# Residents=5	0.401134 (1.74773)
Child	0.181983 (1.35028)	# Residents=6	0 .267661 (0.8625150
Tenure	-0.163241 (-1.18929)	# Residents=8	0.587547 (0.733700)
Education=1	-0.070186 (-.284984)	# Residents=9	0.919117 (0.731402)
Education=2	-0.062206 (-0.546095)	λ_1	1.45550 (24.0946)
Education=3	-0.00834 (-.0774810)	λ_2	1.92865 (25.2808)

Table 4: Ordered Probit Parameter Estimates using Indirect Utility Function

Parameter	Estimate (t-stat)	Parameter	Estimate (t-stat)
MP of trash disposal	-0.00283 (-1.67551)	# Residents=2	0.00498220 (0.167342)
Expenditure on household inputs	0.011459 (5.06482)	# Residents=3	-0.072529 (-2.38067)
Age	0.155056 (5.96321)	# Residents=4	0.00281852 (0.096748)
Child	0.093714 (3.01478)	# Residents=5	-0.049226 (-1.08032)
Tenure	0.058481 (1.65264)	# Residents=6	-0.077723 (-0.977538)
Education=1	0.142052 (1.98915)	# Residents=8	0.051288 (0.325065)
Education=2	0.072209 (2.76069)	Beta	0.525401 (see note)
Education=3	0.052829 (2.13242)	λ_1	1.50171 (22.5526)
Education=5	0.015968 (.506157)	λ_2	1.97893 (24.1631)

Effects of a change in a Regressor

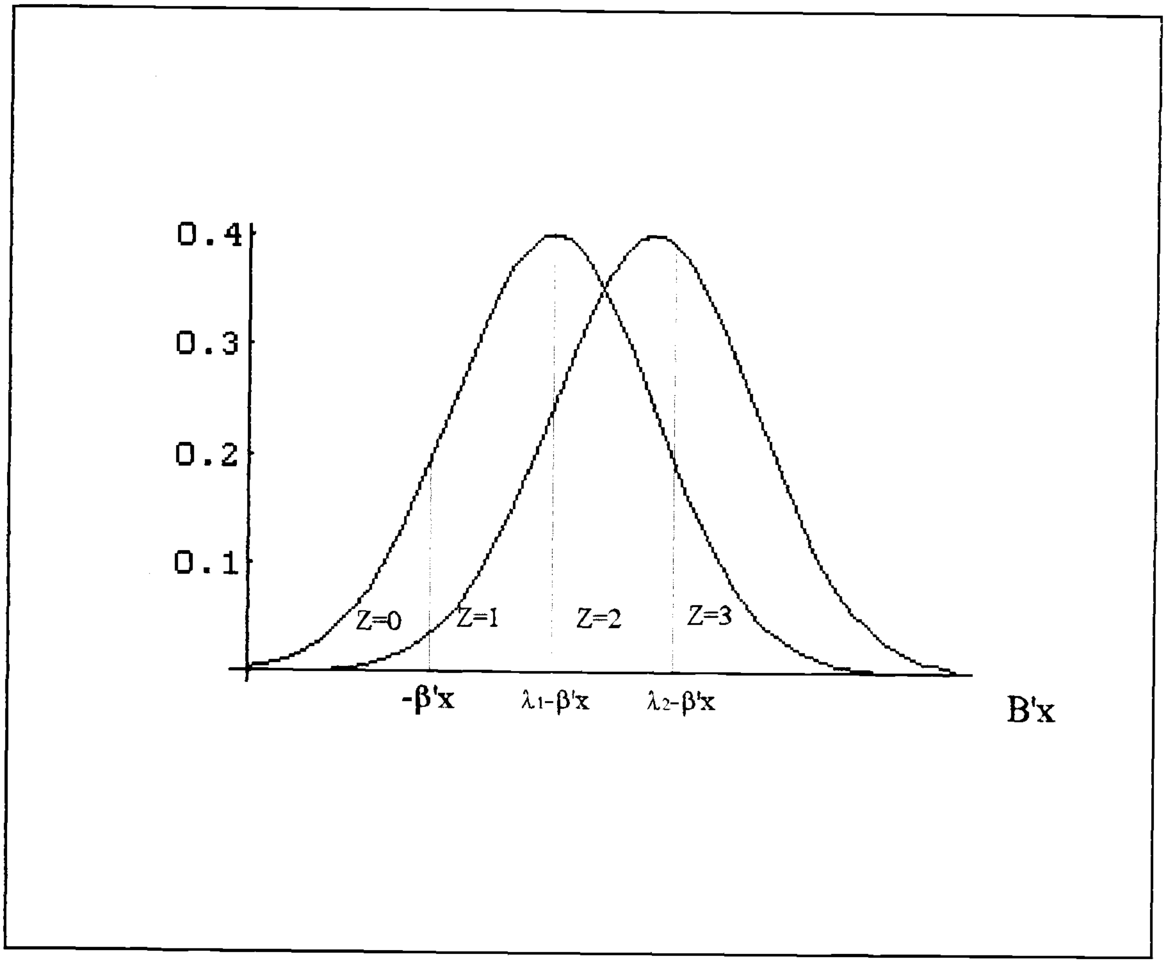

Table 5. Effects of changes in regressors on probabilities: Linear Model

Variable	∂ Prob(Z=0) (low recycler)	∂ Prob(Z=1) (med -low)	∂ Prob(Z=2) (med-high)	∂ Prob(Z=3) (high recycler)
MP of disposal	-0.031	0.019	0.007	0.006
Expenditure on HH goods	-0.1934	0.114	0.041	0.037
Age of Female Head.	-0.0357	0.0212	0.0076	0.0068
Child in home	-0.0713	0.3904	0.1643	0.0158
Household owns home	0.0649	-0.0407	-0.0131	-0.0111
Incr. Education no high school-high school	-0.00313	0.001723	0.00072	0.000688
high school--some college	-0.02101	0.011126	0.004985	0.004907
some college--college grad	-0.003232	0.0016407	0.000790	0.00080
college grad--postbac	-0.05405	0.02432	0.014210	0.015528
Incr. Residents 1--2	-0.2418	0.1445	0.0508	0.0465
2--3	0.010752	-0.05351	-0.02657	-0.027443
3--4	-0.095227	0.048569	0.023159	0.023499
4--5	0.070676	-0.034506	-0.017712	-0.018458
5--6	0.052902	-0.031422	-0.011319	-0.010161

Table 6. Effects of changes in regressors on probabilities: Indirect Utility Model

Variable	∂ Prob(Z=0) (low recycler)	∂ Prob(Z=1) (med -low)	∂ Prob(Z=2) (med-high)	∂ Prob(Z=3) (high recycler)
MC of disposal	-0.012	-0.012	0.005	0.0185
Age of Female Head.	-0.137	-0.135	0.061	0.212
Child in home	-0.0673	-0.102	0.0266	0.143
Household owns home	-0.045	-0.059	0.019	0.086
Incr. Education no high school- high school	0.04190	0.0859	-0.0137	-0.11414
high school--some college	0.01542	0.019447	-0.00667	-0.02819
some college--college grad	0.051446	0.03895	-0.02281	-0.06759
college grad--postbac	-0.01704	-0.00938	0.007476	0.018951
Incr. Residents 1--2	-0.00424	-0.0046	0.00188	0.00697
2--3	0.0602	0.04919	-0.034998	-0.0944
3--4	-0.07841	-0.04717	0.03418	0.09139
4--5	0.05106	0.037775	-0.02262	-0.06621
5--6	0.033819	0.01080	-0.014211	-0.03041

Two tests of the overall significance of each model were conducted. For nonlinear regressions of this type, the standard R^2 measure is not appropriate. One possible measure of goodness-of-fit can be performed using the ratio of two likelihood functions. The numerator is the value of the likelihood function of the unrestricted form of the regression, and the denominator is the value of the likelihood function of the regression resulting when all parameter estimates except for the intercept are constrained to be zero. This measure is therefore of the form:

$$GOF = 1 - \frac{L_U}{L_R}$$

This measure is bounded between 0 and 1, with 0 representing no effect of the variables in the model and 1 signifying that the variables completely explain the dependent variable.

A second and more general test of goodness-of-fit, proposed by Berndt and Khaled (1979) was also conducted. This measure is termed the generalized-R^2 and is of the form:

$$\tilde{R}^2 = 1 - e^{2(L_R - L_U)/N)}$$

where N is number of observations. One benefit of this measure is that it may be used to conduct a test of overall significance of the model using the test statistic:

$$T = -N \cdot \ln(1 - \tilde{R}^2)$$

This statistic is distributed χ^2 with degrees of freedom equal to the number of parameters estimated in the model. Results of both these tests for each model are summarized in Table 7. The results of the goodness-of-fit tests indicate that there is considerable variation in the dependent variable not captured by the linear model. Low R^2 values are common in cross-sectional data, such as are used to estimate this model (see Green, p 150-151), whereas the large number of observations in the data set allow for highly significant results both overall and for each variable. While the predictive power of these models may be poor, the significance of the overall test statistic and the t-statistics for many of the individual variables support the use of the parameter estimates for general hypothesis tests concerning relationships between explanatory variables and recycling as well as to assess the specific quantitative effects of individual variables for policy analysis.

By similar reasoning, the high goodness of fit results observed for the indirect utility model must be viewed with caution. It is difficult to determine conclusively the fit of a model of this type. Again, the more important statistic with which to be concerned is the t-statistic obtained for each parameter.

Table 7: Goodness of Fit Test Results for Each Model

	L_U	L_R	$1- L_U/L_R$	Ř	χ^2 result
Linear Model	-877.996	-899.218	0.02251	0.04835	40.439
Indirect Utility Model	-959.939	-1633.94	0.41250	0.80832	1348.0

The statistical results (coefficients) from both models are expected to have similar signs and magnitudes for some variables. As is evident from Tables 5 and 6, the linear form and the indirect utility form of the household recycling model display consistent results concerning the effects of demographic variables on recycling. There are, however, some cases where the signs on a particular variable are different.

In both forms, results indicate that a household will tend to recycle more if the female head of the household is older, if there is a child in the home, if there is a greater amount of household production, and if the household faces a higher marginal disposal cost for household solid waste. The relationship between the marginal cost of increasing solid wast disposal (the resulting increase in the disposal fee paid by the household from increasing service volume) is significant at the 5% level in both models, and is an important result. This indicates that the households in the sample are responsive to the amount charged for disposal services, and will use recycling to prevent increases in their solid waste disposal bill. As noted by Hong et al., the economic incentive for recycling increases as households approach the capacity of their existing level of service (volume of the can or disposal unit). This finding is also consistent with general literature on block pricing, as in electricity consumption (See Hong 1992).

There are some important differences across the models. For example, in the case of the linear model, the results indicate that a household will have a higher level of recycling if the female head of the household is more educated, the family income is higher, if there are more residents in the home, and the greater the proportion of total consumption due to goods produced in the home. In the linear model, only the parameters on household income, marginal price of disposal services, and the number of residents, are significant at 5%. In the indirect utility model, all variables, except number of residents, are significant at 5%. As a result, greater weight should be assigned to the common findings across the models.

The indirect utility model indicates that the household will tend to have a higher level of recycling activity if the female head of the household is older, if there is a child in the home,, the female head of the home is less educated, the household does not own their home, and if there is a higher level of expenditure on household production inputs. In this model there is no measure for expenditure on goods outside the home. The price of those goods, P_2, is considered to be constant across all households, and so β in this model acts as an intercept term. Also, while income appears as an argument in the model, there is no parameter associated with it, and so the direct effect of income changes is uncertain.

As has been mentioned earlier, an important theoretical determinant of the level of recycling technology selected by a household is the household's opportunity cost of time. It is hypothesized that individuals with low opportunity costs on their time allocate more time for recycling activities, *ceteris paribus*, as it is less expensive for them to do so. When one considers the implications of some of the demographic variables, the results in Tables 5 and 6 support the role of the value of time. For example, as one's age increases, so the probability that they are retired also increases, and so the opportunity cost of their time is likely to be lower (see Hong 1992). The presence of a child in the home might affect recycling behavior in several ways; there may be increased use of recyclable materials associated with raising a small child, or it may indicate that there is an adult in the home to care for the child, in which case the opportunity cost of recycling for that adult may be lower than if they were working outside the home. The finding that households where the female head has a lower education tend to recycle more also fits with this explanation of opportunity cost of time. A more highly educated individual is more likely to work outside the home, and as a result would have a higher opportunity cost associated with recycling.

The results concerning the relationship between a households expenditures on goods produced in the home and recycling suggests that either increased consumption of household goods implies that there is a person working in the home, or that household production produces larger quantities of recyclable material than does goods purchased outside the home (this would appear to be true for the case of a home-cooked meal vs. eating at a restaurant, for example).

These results have several important implications for those involved in the development of municipal recycling programs. Clearly, demographic variables are important and should be considered along with other characteristics of the community. For example, a recycling program implemented in a retirement community is more likely to be successful than one in an area typically occupied by working families.

The importance of the opportunity cost of time should be considered by solid waste managers. The results of this study support the hypothesis that time is an important factor in the household's decision of how much effort to devote to recycling. From this, it follows that recycling programs that focus on convenience to the household will be relatively more successful than those focusing on other program characteristics, such as the number of different materials collected. Programs that do not require source separation of materials to be done by the household and programs that allow curbside or back-yard pick up should be considered, and may turn out to be more cost-effective than programs involving depots or requiring separation of materials by the household. At present, all Oregon municipalities have programs that offer curbside pick-up of recycling with minimal source-separation (materials are separated at the curb by the solid waste worker). This is not the case in many other areas of the U.S.

Solid waste management officials may also look to pricing structures for solid waste disposal as a means to encourage increased participation in recycling. The results of the study indicate that the higher the price increase faced by the household, the greater is the incentive to recycle. The household's decisions regarding solid waste disposal and recycling are not separate, thus disposal rates may be employed as a tool to affect recycling participation.

VII Conclusion

The overall objective of the research presented in this thesis is to gain an understanding of the effects of demographic and economic variables, such as the cost of solid waste disposal services, on household recycling behavior. A secondary objective included detailed investigation of the importance of specific aspects of such variables including the household's "life situations" and the household decision to recycle.

This thesis started with the specification of the household production model as a useful method of investigating household recycling behavior and the associated demand for solid waste disposal services. Two statistical models reflecting this household production approach were specified and estimated. The first model took a traditional linear approach to relating recycling effort and the explanatory variables in the model. The second was more detailed, making use of the indirect utility function of the household. Functional forms for the household utility function and the cost function for household production were selected to provide reasonable and transparent estimates of the parameters of interest included in the model. Simple manipulation of these functions, making use of fundamental economic techniques, motivated the use of a single-equation, discrete choice model of household recycling behavior. Both model equations were estimated using ordered probit techniques.

A recent comprehensive data set of household behavior and demographic characteristics, supplied by the Portland Metropolitan Service District, was used to estimate the models. This data set, which combined direct observations of household solid waste production with a face-to-face survey collecting demographic information on each household, is unique in that it eliminates many problems with survey data, such as problems of response-bias which arise in many social-good contexts. This data set was stratified to eliminate possible bias in collection. At 816 useable observations, it was sufficiently large to allow reliable estimation of the two models considered in the thesis.

The results of the model indicate that selected demographic characteristics of a household are significant determinants of recycling behavior. The price of solid waste disposal also has a significant effect on the effort committed by the household to recycling. Larger increments in solid waste disposal fees would result in increased recycling activity by households. Thus, a more aggressive approach to pricing solid waste disposal could significantly improve participation in recycling. It is common in block pricing systems to price each additional can at the same or lower price. An escalating price structure, with higher volumes of disposal facing higher incremental prices, is likely to enhance household participation in local recycling programs.

The opportunity cost of time is an important concept in explaining the effects of the demographic and economic variables considered in the model. Recognition of the importance of the opportunity cost of time is important in design of public policy regarding solid waste. From a solid-waste management perspective, policy makers should focus on making recycling more convenient rather then, say, increasing the number of materials collected for recycling. By this reasoning, recycling programs that offered backyard pickup of only a few materials, as compared to a centralized depot or even a curbside plan that would have many eligible materials, would enhance convenience and increase recycling levels. The results of this research support and emphasize the widely-recognized importance of convenience in the design of solid waste management policy, in fact placing convenience as the top priority in the design of recycling programs.

The household production model used here is a fruitful method of framing the problem of determining household recycling activity. Future research using such models would benefit from specific inclusion of the opportunity cost of time as a parameter in the model. Other important considerations for future research is to identify the person in the household with primary responsibility for recycling, and to discriminate between source-reduction and recycling behaviors as methods to reduce solid waste production in the home.

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Appendix

Data used in estimation of Household production model of household recycling effort.

Variable Definition

(1) Observation Number
(2) Average solid waste production by household
(3) Average weight of recyclables set out by household
(4) Price for solid waste disposal services paid by household
(5) Composte price index for other houshold production inputs
(6) Price index of goods purchased for consumption outside of household
(7) Income of household
(8) Age of female head of household
(9) Education of female head of household
    1=Less than high school
    2=High school graduate
    3=Some college/tech school
    4=College grad
    5=Post Baccalaureate
(10) Presence of a child under 3 in household: 1=true
(11) Number of residents in household
(12) Tenure status: 0=Own, 1=Rent

Data, by variable

1	2	3	4	5	6	7	8	9	10	11	12
1	24.33	15.60	19.30	69.42	132.06	80000	60	4	0	2	0
2	27.61	3.78	17.60	61.42	132.10	62500	42	5	0	3	1
3	22.19	1.21	19.30	61.42	131.28	62500	37	4	0	1	0
4	25.34	4.25	17.95	88.45	134.22	25000	65	2	0	2	0
5	33.66	8.46	17.60	61.42	131.92	77000	39	5	1	4	0
6	34.04	6.60	17.60	75.99	133.08	10000	31	4	0	3	0
7	29.11	7.80	19.30	69.37	132.06	45000	72	4	0	2	0
8	27.50	5.21	19.30	64.31	132.53	35000	43	3	0	3	0
9	28.51	7.21	14.60	61.42	131.28	45000	41	4	0	1	0
10	34.10	14.98	24.05	61.42	131.94	60000	37	2	0	5	0
11	34.89	5.64	17.60	66.99	132.10	185000	46	4	0	3	0
12	17.45	4.91	14.60	83.63	132.99	25000	50	3	0	3	0
13	46.98	6.70	17.60	64.31	132.32	30000	38	4	0	4	1
14	28.15	5.30	14.60	82.28	132.47	35000	81	2	0	5	1
15	43.33	5.16	19.30	61.42	131.92	100000	42	2	0	4	0
16	23.11	1.70	17.60	69.42	132.10	150000	55	5	0	3	0
17	22.06	4.63	14.60	61.42	132.06	62500	42	4	0	2	0
18	30.84	6.64	19.30	61.42	132.10	54000	41	4	1	3	0

19	9.40	4.38	17.60	66.99	132.10	45000	48	5	0	3	0
20	33.84	8.30	17.60	83.63	132.50	25000	45	3	0	4	0
21	16.76	4.06	17.60	69.42	132.06	50000	58	4	0	2	0
22	36.55	0.25	17.60	66.99	131.94	40000	45	4	0	6	0
23	23.36	4.23	14.60	66.99	131.92	60000	45	4	0	4	0
24	39.59	2.73	17.60	61.42	131.94	62500	42	1	0	6	0
25	38.70	13.74	17.60	62.65	132.50	25000	35	2	0	4	0
26	15.31	1.23	14.60	69.37	132.06	50000	65	4	0	2	0
27	29.70	2.63	17.60	80.94	132.22	25000	64	4	0	1	0
28	46.61	6.58	17.60	61.42	131.92	50000	41	3	0	4	0
29	15.56	2.10	17.60	61.42	132.10	40000	25	4	0	3	0
30	59.09	5.09	27.10	80.71	132.53	30000	62	2	0	3	0
31	34.44	2.66	17.95	61.42	131.94	75000	42	2	0	6	0
32	12.41	1.06	17.60	61.42	132.10	50000	39	2	0	3	0
33	30.80	3.51	17.95	75.99	132.30	10000	39	2	0	4	0
34	23.91	3.39	17.60	69.37	132.06	45000	73	2	0	2	0
35	32.29	9.73	17.60	61.42	132.10	80000	42	3	0	3	0
36	23.74	12.64	17.60	61.42	131.92	58000	38	2	0	4	0
37	32.66	13.48	17.95	75.71	133.04	30000	47	3	0	2	1
38	24.19	1.80	14.60	80.71	131.48	35000	60	4	0	1	0
39	43.86	4.11	19.30	82.28	133.04	30000	69	3	0	2	0
40	31.94	6.60	24.05	61.42	132.10	80000	43	3	0	3	0
41	17.34	3.74	14.60	88.45	134.22	25000	71	2	0	2	0
42	19.06	0.56	17.60	87.16	135.55	17500	57	2	0	2	0
43	23.48	2.95	17.60	69.37	132.10	50000	69	2	0	3	0
44	18.71	6.36	14.60	62.65	132.50	25000	31	2	0	4	0
45	30.51	5.14	24.05	64.31	132.47	30000	33	2	1	5	0
46	14.75	0.96	14.60	98.75	135.30	7200	81	2	0	1	0
47	20.93	4.61	17.60	61.42	131.92	60000	35	3	0	4	0
48	26.36	11.94	17.60	61.42	131.94	62500	31	4	0	5	0
49	21.04	5.38	17.60	83.63	132.50	20000	50	4	0	4	1
50	30.00	-1.05	14.60	82.28	132.47	35000	70	2	0	6	0
51	33.55	1.53	17.60	64.31	132.32	30000	36	3	0	4	0
52	21.68	1.65	17.60	89.22	135.55	17000	71	2	0	2	0
53	21.00	4.65	17.60	64.31	132.53	35000	29	3	1	3	0
54	40.53	0.00	17.60	62.65	132.10	25000	42	3	0	6	0
55	19.68	1.43	17.60	75.71	132.53	35000	48	2	0	3	1
56	26.39	-1.58	24.05	66.99	132.10	75000	45	5	0	3	0
57	11.01	5.45	17.60	82.28	133.04	30000	72	3	0	2	0
58	26.74	6.19	17.60	61.42	131.92	100000	38	4	0	4	0
59	20.48	1.43	17.95	62.65	132.99	25000	36	3	0	3	1
60	30.43	4.44	17.95	62.65	132.50	29000	28	3	1	4	0
61	18.85	3.53	17.95	61.42	132.06	70000	41	3	0	2	0
62	39.88	0.69	17.95	62.66	132.31	17500	26	2	0	4	1
63	17.46	2.10	17.60	66.99	132.10	65000	45	3	0	3	0
64	27.83	1.31	19.30	61.42	132.10	45000	42	3	0	3	0
65	14.21	5.55	13.55	61.42	132.10	40000	44	3	0	3	1
66	23.09	0.53	17.60	69.42	131.92	62500	60	5	0	4	0
67	45.16	0.60	17.60	91.92	135.45	11000	76	2	0	2	1
68	24.71	1.54	13.55	64.31	132.32	35000	37	4	0	4	0
69	16.24	4.66	19.30	69.42	132.06	100000	60	2	0	2	0
70	15.31	1.23	17.60	61.42	132.10	50000	43	5	0	3	0
71	23.11	2.48	13.55	61.42	131.92	62500	31	2	0	4	0
72	12.45	7.68	13.55	82.28	133.04	35000	72	3	0	2	0
73	31.58	1.59	17.55	75.71	132.47	35000	47	2	0	5	1
74	37.24	9.93	17.95	83.63	134.22	25000	50	3	0	2	0
75	9.54	3.53	4.75	69.42	131.28	45000	58	4	0	1	0
76	29.93	11.50	13.55	61.42	132.10	100000	35	4	1	3	0
77	117.59	12.38	17.95	69.37	131.94	100000	88	1	0	9	0
78	17.93	4.20	13.55	66.99	131.92	62500	47	3	0	4	0

79	34.60	1.61	17.60	69.42	132.10	70000	57	4	0	3	0
80	26.26	6.50	17.60	64.31	132.53	34000	43	4	0	3	0
81	52.55	-1.58	17.60	69.37	132.10	52000	87	4	0	3	0
82	15.95	5.29	17.60	61.42	132.10	64000	38	5	0	3	0
83	13.93	6.90	17.60	61.42	131.92	50000	42	2	0	4	0
84	14.81	2.73	17.60	64.31	133.04	35000	30	3	0	2	0
85	10.46	12.43	13.55	61.42	132.10	75000	30	5	1	3	0
86	73.60	5.59	19.30	61.42	132.10	100000	26	4	0	3	0
87	31.74	1.76	19.30	61.42	132.10	45000	43	1	0	3	1
88	30.09	2.31	19.30	75.71	133.04	35000	45	3	0	2	0
89	21.16	6.68	19.30	64.31	133.04	35000	43	3	0	2	0
90	25.33	1.65	19.30	61.42	131.94	50000	40	5	1	5	0
91	26.21	0.00	28.75	66.99	132.06	45000	46	2	0	2	0
92	31.61	0.00	19.30	61.42	131.28	42000	39	4	0	1	0
93	17.44	3.69	19.30	69.37	132.06	40000	78	2	0	2	0
94	30.96	1.11	28.75	80.71	132.53	35000	64	2	0	3	1
95	0.00	2.55	19.30	61.42	132.06	62500	42	5	0	2	0
96	41.59	2.99	19.30	64.31	132.47	35000	34	3	0	5	0
97	32.26	2.63	19.30	66.99	132.06	55000	50	4	0	2	0
98	30.90	1.11	19.30	64.31	132.53	30000	30	3	1	3	1
99	23.66	2.06	19.30	61.42	131.92	48000	32	3	0	4	0
100	46.01	2.39	19.30	83.63	134.22	25000	49	3	0	2	1
101	25.53	3.91	17.60	61.42	131.94	65000	40	5	0	5	0
102	27.09	5.69	17.60	66.99	131.94	45000	45	1	0	5	0
103	29.18	3.88	13.55	61.42	131.92	45000	27	2	1	4	0
104	23.51	3.76	17.60	88.45	132.99	25000	67	3	0	3	0
105	28.55	4.25	19.30	64.31	132.32	35000	35	4	0	4	1
106	12.86	2.68	19.30	75.71	131.48	30000	46	3	0	1	0
107	5.96	4.86	19.30	61.42	131.92	60000	32	5	0	4	0
108	29.35	1.51	19.30	61.42	132.06	62500	33	4	0	2	0
109	16.71	4.81	17.60	80.94	132.22	25000	62	3	0	1	0
110	22.89	1.76	13.55	64.31	132.53	35000	41	2	0	3	1
111	16.14	3.88	13.55	98.75	134.51	9000	75	5	0	2	0
112	26.33	1.54	19.30	89.93	133.76	12000	60	4	0	1	0
113	43.83	3.26	19.30	69.42	132.06	60000	64	4	0	2	0
114	50.01	7.13	19.30	64.31	133.04	35000	33	2	1	2	0
115	40.18	15.20	19.30	61.42	132.10	62500	26	2	1	3	1
116	25.16	1.34	19.30	61.42	131.94	45000	38	4	1	5	0
117	14.70	4.89	14.60	61.42	132.10	50000	39	5	0	3	0
118	37.41	5.23	19.30	61.42	132.10	45000	28	4	1	3	0
119	87.86	5.73	19.30	61.42	131.92	62500	36	4	1	4	0
120	42.81	13.45	19.30	61.42	131.92	50000	35	4	0	4	0
121	15.79	0.19	19.30	61.42	131.28	45000	43	4	0	1	0
122	28.11	12.39	19.30	61.42	132.06	45000	31	3	0	2	1
123	12.03	11.29	19.30	69.37	132.06	45000	78	2	0	2	0
124	16.91	0.78	17.60	61.42	132.06	60000	30	3	0	2	0
125	47.89	5.45	27.10	88.45	132.99	28000	68	2	0	3	0
126	33.96	3.99	19.30	61.42	131.94	62500	33	4	1	5	0
127	15.16	19.28	19.30	61.42	132.06	70000	38	3	0	2	0
128	43.98	0.88	17.60	66.99	132.06	45000	52	3	0	2	0
129	8.25	1.44	19.30	91.92	133.76	12500	85	1	0	1	0
130	22.84	2.60	19.30	61.42	131.28	45000	42	4	0	1	0
131	23.94	3.33	19.30	80.71	133.04	33000	60	2	0	2	0
132	28.05	10.18	19.30	62.65	132.99	20000	38	4	1	3	0
133	28.94	4.36	27.10	62.65	132.50	24000	44	1	0	4	0
134	32.99	1.01	19.30	61.42	132.06	62500	28	4	0	2	0
135	26.58	1.50	19.30	62.65	132.50	22000	40	3	0	4	0
136	27.65	6.56	19.30	61.42	131.92	50000	35	2	0	4	0
137	36.98	7.29	19.30	61.42	132.10	50000	32	4	1	3	0
138	28.85	4.75	19.30	61.42	131.92	60000	30	5	1	4	0

139	25.88	6.89	13.55	88.45	132.22	25000	67	2	0	1	0
140	39.95	4.24	13.55	64.31	132.53	35000	42	3	0	3	0
141	21.30	3.53	14.60	61.42	132.06	40000	44	3	0	2	1
142	8.48	12.51	19.30	75.71	131.48	35000	47	3	0	1	0
143	25.68	3.13	19.30	62.65	132.50	25000	37	2	0	4	0
144	44.86	6.90	19.30	69.42	132.10	62500	62	3	0	3	0
145	25.85	7.14	17.60	61.42	132.10	60000	40	4	0	3	0
146	26.18	1.73	17.60	61.42	131.92	58000	35	4	1	4	0
147	22.81	7.39	19.30	61.42	132.06	62500	25	4	0	2	0
148	29.71	5.39	19.30	61.42	132.06	60000	27	4	0	2	0
149	40.79	3.34	19.30	64.31	132.53	35000	26	2	1	3	0
150	15.95	7.24	13.55	91.92	133.08	12500	77	3	0	3	0
151	15.43	2.68	13.55	61.42	132.10	62500	33	5	0	3	0
152	37.13	3.21	25.75	61.42	131.94	62500	36	5	0	6	1
153	39.65	4.00	19.30	66.99	132.06	48000	50	3	0	2	0
154	34.86	3.65	19.30	66.99	131.92	100000	48	4	0	4	0
155	5.85	1.14	14.60	61.42	131.92	75000	37	4	0	4	0
156	16.86	2.89	13.55	61.42	131.94	65000	39	3	0	5	0
157	31.36	12.55	25.75	66.99	132.10	100000	46	5	0	3	0
158	19.21	0.38	19.30	66.99	132.10	100000	45	5	0	3	0
159	35.15	5.41	13.55	61.42	131.94	62500	37	3	0	6	0
160	22.89	0.00	17.60	64.31	133.04	35000	37	3	0	2	0
161	41.55	0.00	22.15	66.99	131.92	45000	50	2	0	4	0
162	38.53	3.41	24.05	64.74	131.78	5000	43	4	1	4	1
163	30.31	2.75	24.05	89.93	135.45	12000	62	2	0	2	0
164	42.96	0.26	27.10	93.05	135.45	12500	52	2	0	2	0
165	35.99	2.26	17.60	83.63	132.22	25000	48	3	0	1	0
166	31.66	4.23	19.30	61.42	132.06	65000	40	3	0	2	0
167	22.49	4.85	19.30	80.71	133.04	35000	58	2	0	2	0
168	25.83	4.25	24.05	61.42	131.92	50000	39	2	0	4	0
169	27.11	2.76	24.05	64.31	132.53	30000	40	3	0	3	1
170	9.89	12.18	17.55	64.31	133.04	35000	40	2	0	2	0
171	10.01	2.38	17.60	61.42	132.06	50000	30	2	0	2	1
172	24.71	3.88	17.60	64.31	132.32	35000	37	2	0	4	0
173	12.13	5.16	14.60	64.31	133.04	30000	39	3	0	2	0
174	35.79	2.54	17.60	62.65	132.22	27000	44	3	0	1	0
175	32.18	2.24	17.60	66.99	132.06	45000	53	2	0	2	0
176	56.15	8.53	17.60	64.31	132.32	30000	28	4	1	4	0
177	26.18	5.24	17.60	61.42	132.06	62500	43	4	0	2	0
178	8.03	2.35	9.90	89.22	135.55	17500	76	3	0	2	0
179	37.84	2.79	17.60	82.28	132.53	35000	67	4	0	3	0
180	8.11	4.34	14.60	98.75	135.30	5000	79	1	0	1	0
181	35.71	3.38	17.60	66.99	131.92	43000	47	3	0	4	0
182	16.91	3.75	17.60	66.99	131.92	40000	46	3	0	4	0
183	48.29	4.94	17.60	61.42	131.92	69000	36	4	1	4	0
184	22.31	5.23	13.55	66.99	131.92	61000	52	3	0	4	0
185	6.56	1.91	14.60	51.01	133.97	2500	42	5	0	1	0
186	36.66	4.44	13.55	61.42	131.92	45000	33	4	0	4	0
187	15.78	0.51	17.60	64.74	132.37	7500	22	3	0	3	1
188	28.48	2.25	13.55	61.42	132.10	62000	44	3	0	3	0
189	20.70	5.85	17.60	61.42	132.06	62500	40	3	0	2	1
190	29.91	0.11	19.30	62.65	132.50	25000	35	3	0	4	0
191	15.81	6.18	17.60	98.75	134.51	7500	77	2	0	2	0
192	46.54	7.71	17.60	61.42	132.06	50000	30	3	0	2	1
193	9.95	0.43	17.55	88.45	132.99	20000	65	2	0	3	0
194	14.76	4.63	13.55	82.28	133.04	35000	77	1	0	2	0
195	24.23	10.41	13.55	66.99	131.94	62500	47	3	0	6	0
196	18.19	5.64	17.95	61.42	132.10	75000	43	1	0	3	0
197	30.20	7.83	17.95	62.65	132.99	25000	30	4	1	3	0
198	17.34	2.58	17.95	75.99	135.45	12000	34	3	0	2	0

199	17.19	3.49	14.60	61.42	132.06	90000	27	4	0	2	0
200	25.33	6.69	13.55	61.42	132.10	40000	44	3	0	3	0
201	16.74	0.35	17.95	91.92	133.76	12500	75	4	0	1	1
202	8.73	2.56	17.95	69.42	131.28	45000	56	3	0	1	1
203	12.61	6.56	4.75	64.31	132.53	36000	43	5	0	3	0
204	17.56	4.71	13.55	61.42	132.06	60000	39	4	0	2	0
205	16.54	1.09	15.80	61.42	132.10	100000	43	3	0	3	0
206	27.13	5.04	13.55	61.42	131.28	45000	37	5	0	1	0
207	43.75	1.39	17.55	66.99	132.06	45000	52	2	0	2	0
208	23.90	6.70	13.55	64.31	133.04	33000	44	3	0	2	0
209	40.74	2.08	15.80	61.42	131.92	62500	33	5	0	4	0
210	19.48	10.56	13.25	69.37	132.06	40000	66	5	0	2	0
211	18.00	13.95	4.75	61.42	131.94	40000	31	2	0	5	0
212	4.33	4.41	4.75	91.92	133.76	12500	76	2	0	1	0
213	5.91	1.30	17.95	64.31	132.53	30000	32	3	1	3	0
214	15.10	3.36	17.95	61.42	132.06	40000	37	2	0	2	0
215	5.48	4.23	4.75	64.31	132.53	33000	31	4	1	3	0
216	31.83	0.68	17.95	69.42	131.94	60000	62	2	0	7	0
217	8.39	1.46	17.95	88.45	134.22	25000	71	3	0	2	0
218	12.81	12.89	4.75	62.65	132.50	25000	33	1	0	4	0
219	22.09	3.09	19.30	66.99	132.06	62500	52	3	0	2	0
220	41.13	3.33	13.55	61.42	131.94	45000	35	5	1	5	0
221	29.86	6.76	13.55	82.28	133.04	35000	77	4	0	2	0
222	15.55	0.53	13.55	88.45	134.22	25000	72	2	0	2	0
223	74.56	0.94	35.90	69.37	131.92	45000	76	2	0	4	0
224	22.18	5.25	17.95	89.93	133.08	10000	61	1	0	3	0
225	18.93	-0.53	19.30	66.99	132.06	62500	47	2	0	2	0
226	23.31	1.98	13.55	89.22	132.35	17500	70	2	0	3	0
227	34.58	10.63	13.55	62.65	132.50	25000	31	2	0	4	0
228	28.78	3.45	13.55	61.42	131.92	41000	28	3	1	4	0
229	25.11	4.09	13.55	62.65	132.99	25000	38	2	0	3	0
230	34.28	6.08	13.55	89.93	135.45	12500	62	1	0	2	0
231	23.40	3.40	17.95	98.49	131.78	7500	60	2	0	4	0
232	26.98	2.01	17.60	75.71	133.04	35000	51	2	0	2	0
233	22.28	2.09	13.55	61.42	132.06	62500	37	2	0	2	0
234	41.93	11.01	13.55	75.71	132.47	30000	45	5	0	6	0
235	44.04	5.13	13.55	61.42	132.10	60000	30	4	1	3	0
236	32.05	0.26	19.30	83.63	134.22	25000	50	2	0	2	0
237	10.93	4.23	13.55	98.75	134.51	7500	84	2	0	2	0
238	16.98	2.61	24.05	66.99	131.92	62500	47	3	0	4	0
239	14.15	19.90	15.80	82.28	133.04	30000	65	3	0	2	0
240	29.20	10.94	15.80	66.99	131.92	62500	48	4	0	4	0
241	27.45	5.56	17.60	61.42	131.92	62500	37	2	1	4	0
242	34.15	2.89	17.95	61.42	131.94	45000	29	3	0	8	0
243	30.20	8.46	15.80	61.42	131.92	75000	41	5	1	4	0
244	46.50	2.46	19.30	80.94	132.10	25000	62	2	1	6	1
245	18.55	15.76	15.80	80.71	132.53	35000	56	2	0	3	0
246	28.16	6.51	15.80	66.99	132.06	70000	46	3	0	2	0
247	57.64	3.60	27.10	64.31	132.32	35000	34	2	0	4	0
248	11.96	10.93	15.80	61.42	131.94	62500	35	4	0	5	0
249	32.31	12.73	15.80	75.71	132.32	35000	45	5	0	4	0
250	34.29	0.00	24.05	62.65	132.10	25000	32	4	1	5	0
251	32.75	1.76	15.80	66.99	131.94	85000	48	4	0	5	0
252	21.08	5.95	15.80	66.99	132.06	100000	48	3	0	2	0
253	45.60	23.78	15.80	61.42	131.92	70000	44	5	0	4	0
254	70.58	5.34	17.60	64.31	132.47	30000	38	4	0	5	1
255	41.25	5.64	15.80	61.42	132.10	200000	31	5	0	3	0
256	14.09	7.49	19.30	69.37	132.10	45000	77	2	0	3	0
257	72.35	1.49	27.10	64.31	132.53	30000	42	2	0	3	0
258	40.36	2.24	15.80	61.42	131.94	90000	40	3	0	5	0

259	12.39	1.05	13.25	66.99	132.06	60000	53	2	0	2	0
260	19.36	2.50	17.60	61.42	132.10	40000	33	3	0	3	0
261	22.64	0.60	15.80	61.42	131.92	62500	37	4	0	4	0
262	25.83	4.21	15.80	61.42	131.94	50000	44	3	0	5	0
263	16.71	7.05	15.80	66.99	131.92	50000	45	3	0	4	0
264	30.43	10.41	15.80	61.42	131.92	100000	42	2	0	4	0
265	16.09	4.74	15.80	69.42	132.06	50000	58	2	0	2	0
266	50.50	7.15	17.60	66.99	132.10	65000	49	2	0	3	0
267	4.88	9.85	17.55	61.42	132.10	60000	44	3	0	3	0
268	42.19	5.40	19.30	88.45	134.22	25000	76	3	0	2	0
269	12.56	3.15	17.60	88.45	134.22	25000	67	3	0	2	0
270	32.11	2.95	17.55	66.99	131.28	45000	45	4	0	1	0
271	34.15	5.13	22.15	61.42	132.06	45000	25	3	0	2	0
272	27.23	5.43	22.15	61.42	131.92	65000	43	3	0	4	0
273	23.29	0.21	17.60	88.45	134.22	25000	80	2	0	2	0
274	13.63	3.24	19.30	102.62	135.30	7500	47	3	0	1	0
275	17.13	8.39	19.30	62.65	132.50	26000	30	4	1	4	0
276	13.10	-0.53	17.55	61.42	131.92	45000	32	3	0	4	1
277	11.86	1.08	17.55	61.42	131.94	45000	37	3	0	5	0
278	22.69	6.13	14.60	91.92	135.45	11000	69	2	0	2	0
279	29.41	8.32	19.30	87.16	132.35	17500	61	3	0	3	0
280	28.21	0.60	17.60	62.66	132.31	16000	30	4	0	4	0
281	32.03	4.44	17.55	80.71	133.04	35000	58	2	0	2	0
282	21.28	2.34	15.80	66.99	132.10	150000	46	3	0	3	0
283	8.25	1.65	17.55	66.99	132.06	60000	49	2	0	2	0
284	20.19	24.79	17.55	89.22	135.55	18000	65	2	0	2	0
285	11.91	5.94	17.55	75.71	133.04	30000	50	3	0	2	0
286	11.66	10.70	17.55	64.31	132.32	35000	43	3	0	4	0
287	22.31	3.00	15.50	75.71	133.04	30000	46	2	0	2	0
288	30.66	4.11	24.05	62.65	132.50	25000	37	2	0	4	0
289	35.17	0.38	27.10	61.42	132.10	45000	32	4	1	3	0
290	32.45	2.34	24.05	91.92	135.45	12500	77	2	0	2	0
291	35.95	2.45	24.05	64.31	132.53	32000	41	3	0	3	0
292	29.96	7.84	14.60	80.94	134.22	25000	62	2	0	2	0
293	44.54	1.15	27.10	61.42	132.10	62500	27	3	0	3	0
294	15.64	3.71	22.15	61.42	131.94	45000	37	3	0	5	0
295	51.64	3.20	27.10	61.42	132.06	45000	38	2	0	2	0
296	40.38	3.10	24.05	83.63	132.99	27000	49	3	0	3	0
297	8.70	1.18	14.60	69.37	132.10	45000	87	4	0	3	0
298	27.91	8.50	14.60	75.71	133.04	30000	51	4	0	2	0
299	25.85	1.59	17.60	69.42	132.06	40000	55	2	0	2	0
300	42.68	1.91	17.60	64.31	132.32	35000	34	2	0	4	0
301	46.00	2.10	24.05	62.65	132.50	25000	33	3	0	4	0
302	0.00	2.20	3.65	62.65	134.22	25000	31	3	0	2	1
303	0.00	2.20	3.65	62.66	132.35	17500	37	4	0	3	1
304	48.70	0.21	24.05	61.42	131.92	45000	32	2	0	4	0
305	39.48	1.41	19.30	64.31	132.47	35000	43	2	0	5	0
306	14.65	11.71	17.55	75.71	133.04	35000	53	2	0	2	0
307	16.95	7.43	17.55	88.45	134.22	20000	65	3	0	2	0
308	11.84	0.19	17.55	64.31	132.53	30000	35	3	0	3	0
309	12.81	2.24	17.55	64.31	132.32	35000	37	3	0	4	1
310	39.48	9.15	17.60	66.99	132.06	75000	46	3	0	2	0
311	23.01	9.20	17.55	66.99	132.10	60000	52	3	0	3	0
312	30.44	6.91	22.15	61.42	131.94	44000	36	2	0	6	1
313	21.08	4.49	19.30	64.31	132.53	39000	36	2	0	3	0
314	12.23	7.65	19.30	61.42	132.06	40000	38	5	0	2	0
315	26.69	2.96	19.30	61.42	132.06	40000	35	2	0	2	0
316	34.69	2.54	17.55	66.99	131.94	45000	47	5	0	5	0
317	11.29	3.75	6.40	61.42	132.10	70000	39	5	0	3	0
318	27.33	5.61	19.30	66.99	131.92	75000	46	2	0	4	0

319	13.35	-0.43	17.55	61.42	131.92	68000	35	3	0	4	0
320	18.14	8.64	17.55	61.42	132.10	40000	40	4	0	3	0
321	2.21	6.70	16.30	69.42	132.06	200000	57	4	0	2	0
322	24.35	4.39	19.30	61.42	132.10	95000	27	4	0	3	0
323	24.55	7.61	19.30	61.42	131.92	75000	39	4	0	4	0
324	25.65	4.78	28.80	61.42	131.92	50000	40	4	0	4	1
325	22.54	7.15	25.75	69.42	132.06	100000	57	4	0	2	0
326	0.00	0.89	6.40	80.71	131.48	30000	62	5	0	1	0
327	24.18	0.17	15.80	61.42	132.10	100000	37	3	0	3	0
328	28.54	3.25	19.30	61.42	132.10	70000	33	2	1	3	0
329	12.84	7.14	16.30	80.94	132.99	25000	63	3	0	3	0
330	34.18	5.86	19.30	66.99	131.92	40000	49	4	1	4	0
331	43.81	6.66	25.75	66.99	132.06	70000	50	3	0	2	0
332	32.85	3.59	21.00	61.42	131.92	100000	39	5	0	4	0
333	15.45	2.43	19.30	80.71	133.04	35000	64	3	0	2	0
334	22.83	7.04	19.30	61.42	131.28	100000	40	5	0	1	0
335	29.18	12.86	19.30	61.42	132.10	100000	25	4	0	3	0
336	32.41	7.28	28.80	66.99	131.94	100000	45	4	0	5	0
337	33.36	11.68	25.75	61.42	132.10	150000	44	5	0	3	0
338	33.61	10.54	19.30	61.42	131.92	62500	44	5	0	4	0
339	20.66	2.49	16.30	61.42	132.10	80000	39	5	1	3	0
340	41.69	15.59	19.30	61.42	132.10	105000	41	4	0	3	0
341	26.70	7.80	25.75	61.42	132.10	45000	37	5	0	3	0
342	46.43	1.33	19.30	69.37	132.10	60000	69	4	0	3	0
343	30.65	7.83	25.75	80.94	134.22	25000	60	4	0	2	0
344	13.36	8.60	16.30	69.37	131.28	50000	65	3	0	1	0
345	57.06	18.75	28.80	61.42	131.94	200000	41	4	0	5	0
346	51.73	6.11	19.30	88.45	134.22	22000	73	2	0	2	0
347	58.93	8.54	28.80	66.99	132.10	117000	45	4	0	3	0
348	41.01	7.13	28.80	61.42	132.10	100000	44	4	0	3	0
349	17.19	2.76	19.30	75.71	133.04	35000	50	3	0	2	0
350	22.94	0.89	19.30	61.42	131.94	45000	30	3	0	5	0
351	14.95	8.83	19.30	66.99	132.06	60000	46	3	0	2	0
352	52.30	4.41	19.30	66.99	132.10	100000	46	5	0	3	0
353	12.43	12.93	19.30	66.99	132.06	100000	46	5	0	2	0
354	38.94	2.04	19.30	61.42	132.10	62500	42	5	0	3	0
355	19.35	7.86	19.30	66.99	131.92	45000	50	5	0	4	0
356	11.21	14.54	19.30	61.42	132.06	150000	43	3	0	2	0
357	16.86	5.81	19.30	75.71	132.47	35000	47	4	0	5	0
358	19.21	8.03	19.30	66.99	132.10	45000	48	4	0	3	0
359	13.93	3.04	21.00	61.42	132.10	70000	42	5	0	3	0
360	19.40	2.35	19.30	61.42	132.06	62500	30	4	0	2	0
361	43.01	7.18	22.15	61.42	131.94	60000	38	3	0	5	0
362	8.66	2.71	4.25	61.42	131.94	45000	35	2	0	5	0
363	32.28	5.94	19.30	66.99	131.92	82000	48	4	0	4	0
364	17.23	13.24	19.30	66.99	132.06	100000	46	3	0	2	0
365	32.34	7.15	25.75	61.42	132.06	100000	42	4	0	2	0
366	30.10	5.58	19.30	66.99	131.92	75000	50	3	0	4	0
367	31.69	4.91	19.30	66.99	131.92	62500	52	4	0	4	0
368	54.26	14.96	28.80	66.99	131.92	90000	49	4	0	4	0
369	23.95	1.20	19.30	69.42	132.06	75000	62	3	0	2	0
370	14.10	11.41	15.80	66.99	131.92	80000	45	4	0	4	0
371	61.53	10.00	28.80	66.99	131.92	45000	46	5	0	4	0
372	28.09	11.00	17.60	80.71	131.48	33000	56	2	0	1	0
373	28.76	9.28	16.30	61.42	131.92	100000	43	4	1	4	0
374	14.24	7.38	16.30	66.99	131.92	100000	50	3	0	4	0
375	14.40	10.96	25.75	69.42	132.06	45000	62	5	0	2	0
376	45.56	4.08	19.30	66.99	131.94	60000	47	3	0	6	1
377	61.70	20.43	28.80	61.42	131.92	40000	44	4	0	4	0
378	20.58	4.93	19.30	61.42	132.10	60000	41	3	0	3	0

379	36.74	10.59	28.80	66.99	132.10	100000	52	4	0	3	0
380	43.05	0.21	17.60	64.31	132.32	35000	32	3	0	4	0
381	4.38	2.28	14.60	89.22	132.74	17500	75	2	0	1	0
382	32.05	2.59	21.00	69.37	132.10	100000	100	1	0	3	0
383	19.70	-0.53	16.30	66.99	132.06	90000	49	5	0	2	0
384	21.95	6.60	19.30	66.99	132.06	100000	52	3	0	2	0
385	22.14	1.29	19.30	61.42	131.92	60000	40	5	0	4	0
386	18.86	3.91	14.60	89.22	132.74	19000	75	2	0	1	0
387	22.90	0.71	19.30	64.31	132.32	35000	32	3	0	4	0
388	8.69	3.80	14.60	89.22	135.55	17500	70	3	0	2	0
389	70.19	8.61	19.30	61.42	131.94	57000	39	4	0	5	0
390	15.78	3.71	19.30	69.42	132.06	60000	57	5	0	2	0
391	25.44	10.54	19.30	61.42	131.92	70000	40	5	0	4	0
392	26.73	4.26	17.60	69.42	132.06	72000	62	3	0	2	0
393	17.58	10.05	14.60	66.99	132.06	45000	53	5	0	2	0
394	24.80	2.25	17.55	80.71	133.04	35000	62	2	0	2	0
395	43.64	1.58	17.60	66.99	132.10	45000	47	5	0	3	0
396	50.79	19.20	24.05	61.42	131.94	41000	32	2	1	8	0
397	45.35	2.13	17.60	75.71	133.04	30000	48	3	0	2	0
398	40.70	9.26	17.60	91.92	133.08	12500	70	3	0	3	0
399	37.73	8.81	17.60	66.99	132.10	100000	45	4	0	3	0
400	35.65	5.60	17.60	75.71	132.53	30000	50	2	0	3	0
401	30.41	2.63	22.15	64.31	132.47	30000	40	3	0	6	0
402	32.84	4.73	17.60	66.99	132.10	45000	45	4	0	3	0
403	19.58	4.38	17.60	88.45	134.22	25000	67	3	0	2	0
404	32.35	2.20	17.60	61.42	132.06	100000	42	5	0	2	0
405	45.70	14.33	17.60	64.31	132.32	31000	35	2	1	4	0
406	47.91	7.39	27.05	61.42	131.92	80000	38	2	0	4	0
407	13.04	3.33	9.90	87.16	132.74	15000	62	2	0	1	0
408	22.68	2.10	17.60	91.92	133.76	10000	67	4	0	1	0
409	28.10	4.10	14.60	64.31	133.04	35000	37	4	0	2	0
410	6.74	9.78	9.90	87.16	132.74	17500	61	2	0	1	0
411	10.47	1.69	17.60	69.37	131.28	50000	73	2	0	1	0
412	23.79	3.06	17.60	61.42	132.06	52000	37	5	0	2	0
413	12.49	4.73	14.60	75.71	133.04	35000	52	2	0	2	0
414	29.59	4.10	17.60	69.42	132.10	75000	60	4	0	3	0
415	22.25	12.54	17.60	61.42	131.92	55000	40	4	0	4	0
416	37.39	1.70	14.60	101.84	133.21	2500	75	1	0	2	0
417	25.34	9.81	17.60	66.99	131.92	100000	52	4	0	4	0
418	36.43	1.98	17.60	61.42	132.06	45000	42	2	0	2	0
419	31.65	7.20	14.60	91.92	133.76	12000	65	2	0	1	0
420	61.63	1.63	24.05	75.99	133.08	13000	25	3	0	3	0
421	29.20	6.15	17.60	75.71	132.53	30000	45	2	0	3	1
422	32.93	6.91	14.60	62.65	132.10	25000	29	3	1	5	0
423	59.48	7.76	17.60	66.99	132.06	100000	49	2	0	2	0
424	84.40	4.81	27.10	62.65	132.50	25000	27	4	1	4	1
425	31.06	1.74	17.60	66.99	132.10	53000	47	4	0	3	0
426	33.13	3.66	19.30	82.28	132.53	35000	100	2	0	3	0
427	37.39	4.85	17.60	64.74	131.78	7000	40	3	0	4	0
428	13.31	20.81	9.90	82.28	133.04	30000	65	2	0	2	0
429	7.64	1.40	14.60	51.01	132.54	2500	36	3	0	3	1
430	71.39	0.59	27.10	66.99	132.10	62500	45	4	0	3	0
431	26.91	2.84	17.60	98.75	134.51	7500	82	2	0	2	0
432	9.20	5.16	17.60	64.74	134.51	7000	40	3	0	2	0
433	18.83	6.09	14.60	61.42	131.92	48000	39	4	1	4	0
434	32.83	8.20	17.60	62.65	134.22	25000	28	3	0	2	1
435	22.80	2.21	14.60	64.31	132.53	35000	27	2	0	3	0
436	57.33	3.84	24.05	61.42	131.28	62500	42	5	0	1	0
437	18.95	0.48	17.60	62.65	134.22	25000	37	5	0	2	1
438	33.59	3.58	17.60	66.99	132.06	45000	47	3	0	2	0

439	26.19	9.53	14.60	61.42	132.06	80000	26	4	0	2	1
440	19.58	7.56	17.60	69.42	132.06	43000	57	3	0	2	0
441	29.46	10.61	14.60	91.92	135.45	11000	68	2	0	2	0
442	14.28	2.35	14.60	89.22	135.55	17500	79	2	0	2	0
443	16.75	11.25	14.60	61.42	131.92	45000	44	2	0	4	0
444	52.91	8.40	17.60	61.42	131.92	100000	30	4	0	4	1
445	32.96	13.66	17.60	61.42	132.06	45000	32	3	0	2	0
446	55.04	9.39	19.30	64.31	132.32	38000	32	4	1	4	0
447	5.76	12.56	9.90	80.71	133.04	35000	61	2	0	2	0
448	26.50	2.86	17.60	75.71	133.04	35000	52	2	0	2	0
449	30.58	3.29	14.60	61.42	131.92	50000	42	4	0	4	0
450	35.01	3.33	14.60	91.92	133.76	14000	69	2	0	1	0
451	27.29	8.41	17.55	61.42	131.92	62500	35	3	0	4	0
452	31.59	12.08	17.60	62.65	132.50	25000	42	2	0	4	0
453	41.46	2.39	17.60	62.65	132.10	25000	35	1	0	5	1
454	41.46	2.39	17.60	62.65	132.10	22000	35	1	0	5	1
455	24.58	3.99	17.60	61.42	132.06	50000	32	4	0	2	0
456	19.70	1.99	14.60	64.31	133.04	35000	26	4	0	2	0
457	48.99	0.94	19.30	66.99	132.06	100000	45	5	0	2	0
458	10.80	7.64	19.30	61.42	132.06	45000	37	2	0	2	0
459	21.10	18.04	19.30	69.42	132.10	48000	63	3	0	3	0
460	30.75	5.71	14.60	64.31	132.32	35000	34	4	1	4	0
461	12.60	2.65	19.30	66.99	132.10	150000	50	3	0	3	0
462	22.21	0.50	19.30	61.42	132.06	62500	35	5	0	2	0
463	19.30	4.53	15.80	64.31	132.32	35000	27	3	1	4	0
464	19.45	11.83	19.30	69.42	132.06	150000	56	4	0	2	0
465	16.25	5.95	19.30	66.99	132.06	75000	50	4	0	2	0
466	46.03	4.10	28.75	61.42	131.92	100000	43	4	0	4	0
467	25.29	1.81	28.75	80.94	134.22	25000	61	3	0	2	0
468	32.46	8.40	28.75	66.99	132.10	100000	53	4	0	3	0
469	37.73	3.68	17.55	83.63	132.99	25000	52	2	0	3	0
470	40.56	2.35	19.30	69.42	132.06	80000	57	3	0	2	0
471	23.11	7.15	14.60	69.42	132.06	62500	57	4	0	2	0
472	26.34	11.08	19.30	69.42	132.06	180000	62	4	0	2	0
473	22.46	5.53	19.30	61.42	131.92	100000	42	4	0	4	0
474	29.53	6.56	19.30	61.42	131.94	45000	41	3	0	6	0
475	34.85	4.04	19.30	80.71	133.04	35000	62	2	0	2	0
476	27.45	5.75	19.30	69.42	132.06	62500	57	2	0	2	0
477	21.41	4.76	15.80	64.74	131.78	7500	34	3	0	4	0
478	24.40	3.39	19.30	61.42	132.10	45000	42	3	0	3	0
479	7.98	2.91	14.60	62.65	134.22	20000	35	2	0	2	0
480	46.90	2.06	19.30	82.28	133.04	35000	69	2	0	2	0
481	22.84	1.80	19.30	61.42	131.94	110000	39	4	0	5	0
482	31.95	7.44	19.30	66.99	132.10	70000	45	3	0	3	0
483	56.85	6.71	19.30	61.42	132.06	45000	42	4	0	2	0
484	7.90	4.04	17.60	61.42	131.92	65000	37	3	0	4	0
485	19.11	1.05	17.60	75.99	133.76	12000	43	5	0	1	1
486	42.13	2.54	19.30	61.42	131.92	62500	37	4	1	4	0
487	17.86	6.98	19.30	61.42	131.92	110000	41	3	0	4	0
488	57.04	6.09	19.30	61.42	131.92	100000	32	3	0	4	0
489	25.30	0.94	19.30	61.42	131.92	350000	30	4	1	4	0
490	11.23	9.66	19.30	66.99	132.06	250000	53	5	0	2	0
491	19.36	5.94	17.60	69.42	132.06	40000	55	3	0	2	0
492	23.30	3.38	17.60	62.65	132.50	29000	31	2	0	4	0
493	20.43	6.75	19.30	80.94	132.99	29000	57	2	0	3	0
494	28.71	1.60	17.60	75.99	133.08	12500	35	2	0	3	1
495	32.25	0.33	19.30	75.71	132.47	30000	45	3	0	5	0
496	15.85	0.69	19.30	66.99	131.92	65000	49	4	0	4	0
497	24.29	12.33	19.30	69.37	132.06	100000	65	4	0	2	0
498	14.16	5.28	14.60	88.45	132.99	25000	65	2	0	3	0

499	22.38	3.79	14.60	61.42	131.92	40000	42	4	0	4	0
500	31.69	4.68	19.30	61.42	131.92	45000	36	4	0	4	0
501	45.53	6.24	28.75	82.28	133.04	35000	73	5	0	2	0
502	62.09	4.00	28.75	61.42	131.92	62500	37	5	0	4	0
503	32.29	4.71	28.75	66.99	132.06	100000	51	4	0	2	0
504	18.66	7.11	15.80	61.42	131.92	80000	43	4	0	4	0
505	29.68	8.00	17.60	66.99	132.06	62500	50	3	0	2	0
506	39.78	12.16	27.10	69.42	132.06	50000	62	2	0	2	0
507	41.06	6.90	28.75	61.42	131.94	100000	42	3	0	5	0
508	32.55	7.48	17.60	89.22	135.55	17500	76	2	0	2	0
509	17.80	7.49	19.30	61.42	132.06	40000	29	3	0	2	0
510	44.69	8.21	24.05	82.28	132.32	35000	65	4	0	4	0
511	17.56	4.58	17.60	61.42	132.10	64000	32	3	1	3	0
512	24.88	3.03	19.30	66.99	132.10	40000	51	2	0	3	0
513	12.80	5.36	17.60	61.42	132.06	62500	30	2	0	2	0
514	30.59	3.79	19.30	64.31	132.32	35000	42	2	0	4	0
515	12.68	7.35	19.30	61.42	132.06	45000	22	3	0	2	0
516	41.30	1.71	28.75	66.99	131.92	50000	45	3	0	4	0
517	25.30	1.86	19.30	61.42	132.10	41000	44	4	0	3	0
518	55.00	7.15	19.30	61.42	132.06	150000	36	5	0	2	0
519	4.91	6.64	10.90	64.31	131.48	31000	39	5	0	1	1
520	49.03	5.78	28.75	66.99	131.92	62500	47	5	0	4	0
521	24.63	9.18	14.60	64.31	132.32	35000	41	3	0	4	0
522	42.28	5.23	28.75	66.99	131.92	100000	45	3	0	4	0
523	29.94	0.53	17.60	83.63	132.50	23000	52	2	0	4	0
524	15.15	2.95	17.60	62.65	134.22	25000	34	3	0	2	0
525	20.43	8.75	19.30	69.37	132.06	50000	65	4	0	2	0
526	18.35	10.21	10.90	80.94	134.22	20000	64	3	0	2	0
527	26.41	2.26	17.60	80.71	132.32	35000	63	2	0	4	0
528	35.85	0.26	24.05	75.99	131.49	12500	37	3	0	7	0
529	13.80	11.43	19.30	62.65	132.50	29000	40	3	0	4	0
530	44.88	7.49	17.60	61.42	131.92	41000	33	2	0	4	0
531	38.85	5.71	17.60	91.92	133.08	12500	67	3	0	3	0
532	18.19	12.33	19.30	61.42	132.10	62500	44	3	0	3	0
533	59.65	7.50	19.30	61.42	131.92	50000	36	3	0	4	0
534	46.83	11.60	19.30	66.99	131.92	50000	50	3	0	4	0
535	26.98	0.00	19.30	62.65	132.99	20000	29	3	0	3	1
536	28.11	2.28	28.75	66.99	131.94	40000	45	3	0	5	0
537	45.24	4.34	19.30	61.42	132.10	45000	38	2	0	3	0
538	23.99	9.13	19.30	61.42	132.10	40000	28	4	1	3	0
539	19.65	2.85	19.30	82.28	133.04	35000	73	2	0	2	0
540	13.38	3.59	14.60	80.71	131.48	35000	57	2	0	1	0
541	12.68	0.93	14.60	61.42	132.10	50000	36	2	0	3	1
542	25.73	14.63	19.30	80.94	134.22	25000	57	2	0	2	0
543	54.44	3.78	19.30	61.42	131.92	48000	36	2	0	4	0
544	48.38	3.68	17.60	62.65	132.10	28000	36	2	0	5	0
545	9.03	1.21	14.60	61.42	131.92	45000	37	3	0	4	0
546	22.09	7.30	19.30	69.42	132.06	90000	61	4	0	2	0
547	25.67	6.40	17.60	61.42	131.92	45000	43	3	0	4	1
548	50.65	15.59	19.30	88.45	134.22	25000	66	4	0	2	0
549	21.31	1.53	19.30	80.94	132.22	20000	63	2	0	1	0
550	27.08	2.24	19.30	82.28	132.53	39000	76	3	0	3	0
551	22.49	4.95	17.60	75.99	135.45	12500	43	2	0	2	1
552	8.20	4.83	14.60	91.92	135.45	12000	81	2	0	2	0
553	8.20	4.83	14.60	89.22	135.55	17500	81	2	0	2	0
554	36.28	12.28	24.05	98.75	131.78	7500	65	3	0	4	0
555	54.76	3.35	24.05	87.16	132.27	17500	56	2	0	8	1
556	19.19	6.70	19.30	88.45	132.22	20000	76	3	0	1	0
557	8.80	3.41	19.30	93.05	133.76	12000	50	2	0	1	0
558	15.11	10.76	14.60	75.71	133.04	39000	53	3	0	2	0

559	16.81	3.14	14.60	61.42	131.94	55000	28	5	1	5	0
560	34.65	1.58	14.60	61.42	131.92	62500	26	3	0	4	0
561	11.39	2.83	14.60	88.41	132.74	19000	46	3	0	1	0
562	29.46	6.28	19.30	61.42	131.92	50000	32	2	0	4	0
563	12.74	9.65	5.00	82.28	133.04	35000	65	5	0	2	0
564	27.04	13.41	17.60	64.31	132.32	32000	37	3	0	4	0
565	38.04	0.74	17.60	75.71	133.04	30000	48	3	0	2	0
566	31.95	1.80	24.05	75.99	132.30	13000	39	2	0	4	0
567	31.26	2.01	17.60	61.42	131.92	45000	33	2	0	4	0
568	31.34	0.64	17.60	64.31	132.32	35000	34	2	0	4	0
569	23.20	2.94	27.10	64.31	132.47	30000	41	4	0	9	0
570	35.91	1.30	17.60	89.93	133.08	12500	60	1	0	3	0
571	40.06	1.73	27.10	75.99	131.49	12500	28	2	0	8	1
572	14.13	0.54	17.60	87.96	133.97	2500	55	2	0	1	1
573	8.90	1.19	17.60	80.94	132.99	25000	61	4	0	3	0
574	27.09	1.93	14.60	66.99	132.06	50000	53	2	0	2	0
575	27.39	7.21	17.60	62.65	132.99	26000	44	4	0	3	0
576	20.53	3.75	17.60	64.74	134.51	7500	30	3	0	2	1
577	29.21	2.41	9.90	87.16	132.31	17500	58	2	0	4	0
578	12.01	1.40	14.60	66.99	132.06	65000	53	3	0	2	0
579	29.24	5.40	24.05	101.84	133.21	2200	71	2	0	2	0
580	32.76	4.31	17.60	64.31	132.53	35000	27	3	0	3	1
581	25.79	1.63	17.60	80.94	134.22	25000	64	2	0	2	0
582	68.13	1.51	24.05	69.37	131.94	45000	81	4	0	7	0
583	27.08	3.40	13.55	62.65	132.99	25000	32	3	1	3	0
584	23.61	8.01	17.60	80.94	134.22	25000	57	3	0	2	0
585	19.48	16.96	17.60	62.65	132.10	25000	34	3	1	5	1
586	22.35	4.23	17.60	66.99	132.06	42000	54	4	0	2	0
587	21.95	2.38	17.60	64.31	132.53	31000	31	4	1	3	0
588	25.33	6.15	14.60	64.31	132.47	35000	42	3	0	5	0
589	25.41	0.49	13.55	88.45	132.22	25000	67	4	0	1	0
590	34.91	6.16	19.30	61.42	131.92	50000	32	2	0	4	0
591	22.90	9.19	19.30	61.42	131.94	40000	41	4	0	6	0
592	28.68	10.13	17.55	66.99	131.92	45000	52	3	0	4	0
593	11.33	1.64	17.60	80.94	132.22	21000	59	2	0	1	0
594	27.08	6.31	19.30	62.65	132.50	25000	44	5	0	4	1
595	19.54	16.48	17.60	98.75	134.51	9600	81	2	0	2	0
596	18.05	4.65	14.60	88.45	132.22	25000	78	5	0	1	0
597	67.46	0.45	27.10	62.65	132.99	25000	35	2	0	3	1
598	39.39	7.08	24.05	61.42	132.10	95000	37	5	0	3	0
599	41.19	0.29	24.05	61.42	131.94	100000	39	3	0	6	0
600	47.00	3.53	28.75	66.99	131.92	40000	52	2	0	4	0
601	8.13	-0.18	14.60	91.92	135.45	11000	68	3	0	2	0
602	9.86	1.71	14.60	64.31	133.04	30000	38	3	0	2	0
603	27.56	2.79	17.60	69.42	132.10	55000	57	5	0	3	0
604	26.53	4.09	17.60	89.22	135.55	17500	68	4	0	2	0
605	57.30	0.49	19.30	61.42	131.92	62500	34	3	0	4	1
606	11.85	3.91	17.60	98.75	135.30	7500	66	1	0	1	0
607	32.79	4.53	13.55	87.16	132.74	15000	59	3	0	1	0
608	21.60	3.16	14.60	61.42	132.10	45000	26	3	1	3	0
609	11.36	7.44	14.60	61.42	132.10	70000	42	5	0	3	0
610	16.06	4.88	17.60	61.42	131.92	50000	39	3	0	4	0
611	22.79	7.34	19.30	61.42	132.06	60000	41	3	0	2	0
612	17.43	0.45	17.60	61.42	131.92	40000	30	2	1	4	1
613	12.44	5.29	17.60	61.42	132.06	50000	29	4	0	2	1
614	42.09	18.61	17.60	64.31	133.04	35000	35	2	0	2	0
615	17.73	3.29	13.55	89.22	135.55	15000	65	3	0	2	0
616	17.66	3.03	17.60	61.42	132.10	45000	28	2	1	3	0
617	42.70	1.89	27.10	61.42	132.10	62500	42	2	0	3	0
618	27.74	5.10	24.05	61.42	131.92	62500	39	5	0	4	0

619	17.09	3.63	17.60	64.31	132.32	38000	33	2	0	4	0
620	28.18	2.08	17.60	62.65	132.50	25000	27	5	0	4	0
621	7.75	1.41	17.60	64.31	133.04	35000	38	4	0	2	0
622	50.76	3.53	27.10	61.42	132.10	70000	41	4	0	3	0
623	35.70	1.70	17.60	62.65	132.10	25000	39	4	0	6	1
624	32.10	5.00	24.05	66.99	131.92	50000	46	4	0	4	0
625	16.31	8.26	14.60	75.99	132.30	10000	44	3	0	4	0
626	11.00	6.10	17.60	64.31	132.32	35000	40	4	0	4	0
627	37.64	7.28	13.55	64.31	132.47	30000	31	3	1	6	0
628	23.06	2.44	13.55	61.42	132.10	62500	30	2	1	3	0
629	85.09	9.31	13.55	61.42	132.10	45000	[illegible]	2	0	3	0
630	42.98	9.46	19.30	61.42	131.94	42000	[illegible]	4	0	5	0
631	6.28	2.00	17.60	91.92	133.76	12500	74	2	0	1	0
632	15.69	4.01	17.60	51.01	132.54	2500	32	1	1	3	1
633	38.48	7.08	13.55	83.63	134.22	25000	45	2	0	2	1
634	13.30	2.80	13.55	61.42	132.10	45000	36	3	0	3	0
635	23.05	2.76	17.55	61.42	131.94	100000	36	4	0	5	0
636	34.51	6.38	13.55	83.63	134.22	25000	50	2	0	2	0
637	24.35	5.26	17.60	61.42	132.10	90000	38	4	0	3	0
638	16.14	3.36	14.60	61.42	132.06	65000	31	2	0	2	0
639	25.94	0.46	19.30	93.05	133.08	12500	47	3	0	3	0
640	29.49	2.79	14.60	66.99	132.06	60000	50	5	0	2	0
641	15.54	1.93	24.05	61.42	132.06	65000	37	4	0	2	0
642	22.34	10.99	17.60	66.99	131.92	62500	45	3	0	4	0
643	41.29	10.44	19.30	61.42	132.10	70000	41	3	0	3	0
644	26.99	14.76	17.60	66.99	131.92	100000	47	3	0	4	0
645	10.86	1.33	13.55	62.65	132.50	23000	34	2	0	4	0
646	31.28	0.31	24.05	89.22	132.35	18000	93	3	0	3	0
647	26.05	9.89	17.60	66.99	131.92	62500	46	5	0	4	0
648	10.96	5.19	13.55	91.92	133.76	10000	81	2	0	1	0
649	16.01	6.15	13.55	75.71	133.04	35000	47	2	0	2	0
650	12.21	5.31	14.60	61.42	132.10	40000	38	5	1	3	0
651	25.04	5.89	17.60	91.92	133.08	14000	65	2	0	3	0
652	13.06	4.58	13.55	87.16	135.55	18000	60	3	0	2	0
653	30.53	4.10	13.55	61.42	132.10	45000	27	4	1	3	0
654	19.40	2.20	17.60	66.99	132.06	50000	46	4	0	2	0
655	7.20	5.69	17.60	98.75	135.30	7500	85	2	0	1	0
656	3.43	6.21	6.25	83.63	132.99	25000	50	3	0	3	0
657	2.59	1.79	6.25	89.22	135.55	17500	81	2	0	2	0
658	4.14	-0.53	5.00	91.92	133.76	12000	72	3	0	1	0
659	15.68	6.61	17.60	62.65	134.22	26000	28	3	0	2	1
660	11.10	2.41	14.60	61.42	132.10	53000	38	3	0	3	0
661	8.26	4.20	9.90	61.42	132.10	44000	33	2	1	3	0
662	33.78	10.51	17.60	61.42	132.06	45000	42	3	0	2	0
663	9.08	3.71	14.60	91.92	135.45	12500	86	2	0	2	0
664	25.44	2.99	13.55	61.42	131.94	50000	35	4	0	5	0
665	21.25	5.01	13.55	82.28	133.04	35000	69	4	0	2	0
666	29.39	2.49	22.15	61.42	131.94	47000	37	3	0	5	0
667	51.41	9.33	17.60	61.42	132.10	60000	33	3	1	3	0
668	20.23	4.26	17.60	64.31	132.32	35000	37	4	0	4	1
669	7.71	3.84	14.60	64.31	132.53	35000	32	4	1	3	0
670	21.08	6.64	14.60	88.45	132.22	25000	67	5	0	1	0
671	6.33	2.76	19.30	88.45	134.22	25000	71	2	0	2	0
672	25.08	4.90	17.60	61.42	132.10	45000	29	4	1	3	1
673	12.23	4.75	14.60	98.75	135.30	7500	77	3	0	1	0
674	40.91	1.48	17.60	64.31	132.32	35000	37	2	0	4	0
675	12.73	1.58	17.60	98.49	134.51	7500	62	2	0	2	0
676	9.13	1.18	9.90	80.94	134.22	25000	63	3	0	2	0
677	8.90	2.73	14.60	69.37	131.28	100000	82	3	0	1	1
678	39.04	4.04	17.60	64.31	133.04	35000	40	2	0	2	0

679	16.09	3.19	17.60	91.92	133.76	12500	78	3	0	1	0
680	22.34	12.49	19.30	75.71	132.47	30000	47	3	0	5	0
681	31.14	5.41	17.60	69.42	132.06	62500	64	2	0	2	0
682	12.21	3.93	17.60	64.31	132.32	35000	37	2	0	4	0
683	12.94	9.35	14.60	80.71	133.04	35000	61	4	0	2	0
684	12.10	3.30	14.60	61.42	132.06	47000	37	4	0	2	0
685	25.15	4.79	17.60	61.42	131.92	62500	42	2	0	4	0
686	32.48	1.96	17.60	66.99	132.06	62500	46	3	0	2	0
687	28.94	13.13	19.30	66.99	132.06	45000	52	3	0	2	0
688	27.38	1.21	14.60	75.71	132.32	35000	49	3	0	4	0
689	12.40	6.74	17.60	75.71	132.32	32000	46	4	0	4	0
690	13.88	8.51	17.55	66.99	132.10	70000	45	2	0	3	0
691	29.28	3.80	17.55	69.42	131.94	60000	57	2	0	5	0
692	23.90	3.24	17.60	61.42	131.94	40000	37	5	1	5	0
693	20.46	7.43	19.30	88.41	135.55	17500	46	2	0	2	0
694	10.19	0.80	14.60	66.99	132.10	80000	47	5	0	3	0
695	9.48	3.86	24.05	62.65	132.10	27000	32	2	1	5	0
696	10.14	1.55	17.60	89.93	133.08	12500	63	2	0	3	1
697	10.23	1.29	17.55	69.42	131.28	57000	57	2	0	1	0
698	7.63	0.59	17.60	83.63	132.22	25000	47	3	0	1	1
699	29.04	0.96	22.15	61.42	132.10	53000	27	3	0	3	0
700	49.56	0.17	27.10	98.49	132.37	9600	56	1	0	3	1
701	19.59	18.64	17.95	64.31	133.04	35000	26	3	0	2	1
702	12.10	-0.53	17.55	61.42	131.94	50000	30	2	0	5	0
703	23.96	4.66	17.55	61.42	132.06	44000	28	2	0	2	0
704	60.16	2.60	28.80	66.99	131.92	100000	51	5	0	4	0
705	47.11	7.23	19.30	61.42	131.92	100000	32	5	1	4	0
706	13.01	2.35	19.30	62.65	132.99	25000	40	4	0	3	0
707	18.51	2.21	19.30	98.75	135.30	7500	85	2	0	1	0
708	16.08	3.51	19.30	91.92	133.76	12500	79	3	0	1	0
709	19.66	9.96	19.30	88.45	134.22	25000	67	3	0	2	0
710	19.43	2.26	19.30	64.74	132.37	7000	36	2	1	3	0
711	38.83	1.20	19.30	61.42	131.92	40000	34	4	1	4	0
712	25.96	0.99	19.30	61.42	132.06	70000	32	4	0	2	0
713	20.39	3.08	15.80	91.92	135.45	13000	66	3	0	2	0
714	9.06	3.61	19.30	66.99	132.06	62500	54	4	0	2	0
715	14.88	7.11	19.30	69.42	132.06	100000	62	4	0	2	0
716	51.60	6.86	25.75	61.42	131.94	52000	41	2	0	5	0
717	4.28	0.00	19.30	66.99	131.92	60000	46	3	0	4	0
718	24.79	10.69	19.30	62.65	134.22	25000	44	5	0	2	0
719	3.22	8.30	19.30	98.75	135.30	7500	79	3	0	1	0
720	40.99	1.79	22.15	62.65	132.99	25000	32	2	0	3	1
721	33.24	3.66	17.55	66.99	132.06	40000	49	4	0	2	0
722	8.68	0.66	15.50	88.45	134.22	25000	69	2	0	2	0
723	55.66	1.65	19.30	66.99	132.10	160000	50	4	0	3	0
724	19.49	3.56	19.30	69.42	132.06	62500	59	3	0	2	0
725	13.24	5.14	19.30	80.71	131.48	30000	64	4	0	1	0
726	42.89	0.00	19.30	88.45	134.22	28000	72	3	0	2	0
727	20.71	3.38	19.30	66.99	131.94	80000	48	3	0	5	0
728	15.49	9.13	17.55	61.42	132.10	62500	42	5	0	3	0
729	18.04	2.83	17.95	64.31	132.32	35000	42	3	0	4	0
730	26.08	1.36	16.30	82.28	131.48	35000	68	3	0	1	0
731	22.01	3.21	17.95	61.42	132.10	40000	30	1	0	3	0
732	26.94	3.70	19.30	82.28	133.04	35000	67	3	0	2	0
733	22.29	0.40	17.60	75.99	132.30	12000	35	3	0	4	1
734	21.33	7.58	4.75	88.45	134.22	25000	66	2	0	2	0
735	12.93	6.35	4.75	69.42	132.06	47000	56	2	0	2	0
736	31.24	2.59	17.95	62.65	132.10	25000	25	2	1	5	0
737	24.91	7.45	19.30	69.42	132.06	45000	57	2	0	2	0
738	13.66	5.66	17.60	89.93	135.45	10000	60	2	0	2	1

739	42.34	11.58	27.10	75.99	132.30	10000	28	3	1	4	1
740	28.70	9.40	19.30	61.42	132.10	140000	30	4	1	3	0
741	20.53	7.14	17.60	80.94	134.22	24000	60	2	0	2	1
742	27.68	6.78	14.60	98.49	134.51	7500	57	2	1	2	1
743	24.26	4.46	17.55	66.99	131.92	60000	46	3	0	4	0
744	42.64	1.05	19.30	61.42	131.92	45000	43	5	0	4	0
745	33.11	6.48	19.30	64.31	132.32	35000	39	3	0	4	0
746	33.80	6.49	19.30	61.42	132.10	62500	44	3	0	3	0
747	42.10	6.68	19.30	61.42	132.10	70000	30	4	1	3	0
748	24.11	2.51	19.30	69.37	132.06	40000	70	2	0	2	0
749	36.59	8.03	19.30	66.99	132.10	70000	48	3	0	3	1
750	28.06	-0.50	17.60	61.42	132.10	45000	27	3	1	3	0
751	36.34	9.34	19.30	64.31	132.47	35000	36	2	0	5	0
752	35.40	5.65	19.30	69.37	132.06	50000	71	2	0	2	0
753	40.08	3.21	17.55	69.42	132.06	40000	57	2	0	2	0
754	34.20	22.19	28.80	61.42	131.94	62500	42	5	0	5	0
755	99.11	2.53	19.30	61.42	131.92	60000	34	4	1	4	0
756	21.35	4.78	19.30	61.42	131.94	45000	31	4	0	5	0
757	22.61	5.49	17.60	88.45	132.50	21000	65	2	0	4	0
758	19.10	3.65	19.30	61.42	132.06	65000	30	3	0	2	1
759	33.01	1.95	19.30	64.31	132.32	35000	30	3	0	4	0
760	40.90	2.85	19.30	66.99	131.28	45000	45	4	0	1	0
761	25.54	5.51	17.60	91.92	135.45	12000	74	2	0	2	0
762	9.76	1.59	14.60	91.92	133.76	12500	70	3	0	1	0
763	10.91	2.43	19.30	88.45	132.22	20000	69	3	0	1	0
764	26.71	6.50	19.30	69.42	131.28	55000	55	5	0	1	0
765	10.34	5.61	19.30	69.42	132.06	100000	55	4	0	2	0
766	28.10	7.09	19.30	66.99	132.10	100000	51	4	0	3	0
767	17.01	8.70	19.30	69.37	132.06	40000	81	4	0	2	0
768	22.69	4.38	17.60	64.31	132.32	36000	42	5	0	4	0
769	32.96	6.94	19.30	66.99	132.06	60000	51	3	0	2	0
770	38.25	1.60	19.30	66.99	131.28	50000	45	4	0	1	0
771	55.31	1.93	25.75	61.42	131.92	70000	34	4	1	4	0
772	16.63	5.64	19.30	61.42	132.06	50000	32	3	0	2	0
773	64.95	7.23	25.75	66.99	132.06	62500	48	4	0	2	0
774	19.91	3.58	19.30	69.37	132.06	45000	71	3	0	2	0
775	23.74	7.49	19.30	61.42	132.06	62500	40	4	0	2	0
776	32.96	14.46	17.60	61.42	132.10	90000	40	2	0	3	0
777	19.75	14.45	17.60	93.05	132.30	10000	47	4	0	4	1
778	12.20	3.49	14.60	98.75	135.30	7500	75	2	0	1	0
779	27.88	5.01	19.30	61.42	131.92	75000	35	4	1	4	0
780	30.10	6.23	17.60	61.42	132.06	60000	29	2	0	2	0
781	48.28	0.64	27.10	89.93	133.08	10000	56	1	0	3	0
782	39.86	2.03	19.30	66.99	131.92	40000	46	4	1	4	0
783	40.90	6.23	19.30	61.42	131.92	45000	35	5	1	4	0
784	33.03	5.20	27.10	64.74	134.51	8000	41	2	0	2	1
785	11.69	3.35	17.55	61.42	132.06	52000	27	3	0	2	0
786	14.09	9.36	19.30	75.71	132.32	35000	53	4	0	4	0
787	48.39	1.86	19.30	61.42	131.92	100000	40	4	0	4	0
788	18.69	9.34	19.30	75.71	133.04	35000	53	3	0	2	0
789	29.03	-0.53	19.30	69.42	131.92	50000	57	4	0	4	0
790	17.14	5.51	17.55	82.28	133.04	35000	70	1	0	2	0
791	25.78	0.15	22.15	61.42	131.92	44000	40	4	0	4	0
792	15.83	2.63	14.60	61.42	131.92	40000	41	3	0	4	0
793	28.64	6.96	19.30	66.99	131.92	62500	49	4	0	4	0
794	18.81	0.93	17.60	61.42	131.94	110000	34	3	0	6	0
795	13.19	2.25	14.60	75.71	133.04	32000	45	2	0	2	0
796	17.18	2.09	17.60	61.42	131.92	50000	29	2	1	4	0
797	80.59	9.16	17.60	64.74	130.81	7500	28	3	0	5	1
798	11.13	5.80	14.60	82.28	132.53	36000	69	2	0	3	0

799	24.64	2.20	17.60	75.99	132.30	12000	28	3	1	4	0
800	34.96	1.98	17.60	61.42	131.94	45000	32	2	1	5	0
801	21.68	2.16	17.55	91.92	135.45	12500	72	2	0	2	0
802	6.65	3.40	16.30	61.42	132.06	450000	35	4	0	2	0
803	21.70	6.43	17.60	88.45	132.22	22000	76	3	0	1	0
804	25.40	0.59	17.60	61.42	132.06	50000	27	3	0	2	0
805	18.14	5.51	17.60	61.42	131.92	62500	31	3	0	4	0
806	38.36	7.60	17.60	80.71	133.04	35000	63	2	0	2	0
807	21.64	3.74	17.60	62.65	132.50	27000	27	2	1	4	0
808	10.33	4.63	17.60	69.42	132.06	50000	56	2	0	2	0
809	13.65	2.69	17.60	61.42	132.06	41000	40	3	0	2	0
810	23.35	2.93	17.60	64.31	133.04	33000	26	2	0	2	0
811	16.09	0.00	19.30	98.75	135.30	7200	79	3	0	1	0
812	19.90	0.00	17.55	61.42	131.92	50000	38	2	0	4	0
813	16.75	2.63	19.30	80.71	132.53	35000	63	2	0	3	0
814	30.94	8.78	28.75	61.42	131.92	95000	30	3	1	4	0
815	8.45	3.64	19.30	61.42	132.06	80000	35	4	0	2	0
816	21.89	5.93	19.30	66.99	132.06	70000	50	2	0	2	0
817	44.06	0.93	19.30	61.42	131.92	62500	37	4	1	4	0
818	68.09	2.55	28.75	61.42	131.94	65000	35	4	0	5	0
819	56.66	4.76	25.75	75.71	133.04	35000	54	3	0	2	0
820	0.44	1.04	19.30	61.42	131.94	62500	44	4	0	5	0
821	3.70	9.30	19.30	66.99	132.06	40000	53	2	0	2	0
822	15.85	7.44	17.55	61.42	131.92	60000	33	2	1	4	0
823	52.50	4.10	25.75	61.42	131.94	60000	44	3	0	6	0
824	18.69	3.69	19.30	69.42	132.06	45000	60	4	0	2	0
825	18.95	4.93	19.30	66.99	132.06	40000	50	4	0	2	0
826	16.01	5.95	14.60	89.93	133.76	12000	60	1	0	1	0
827	9.83	3.91	17.95	64.31	132.47	36000	38	2	0	5	0
828	8.33	9.40	4.75	62.65	132.10	20000	36	4	0	6	0
829	25.44	0.00	17.95	64.31	132.32	30000	35	3	0	4	1
830	20.99	1.66	17.60	69.37	132.06	40000	70	3	0	2	0
831	16.78	6.64	17.60	61.42	132.10	70000	43	3	0	3	0
832	32.49	0.66	17.60	62.65	132.10	25000	30	3	0	5	1
833	14.39	7.36	17.55	82.28	133.04	30000	65	3	0	2	0
834	22.68	10.35	14.60	61.42	132.06	140000	34	5	0	2	0
835	19.08	2.31	17.60	61.42	132.10	65000	38	4	0	3	0
836	30.60	7.28	14.60	61.42	132.10	65000	44	5	0	3	0
837	21.79	10.00	17.55	66.99	132.10	62500	47	3	0	3	0
838	17.18	4.88	10.00	61.42	131.92	50000	36	3	0	4	1