RESEARCH REPORT

Assessment of a Variable Shelter Cost-to-Income Measure of Affordability

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ASSESSMENT OF A VARIABLE SHELTER COST-TO-INCOME MEASURE OF AFFORDABILITY

By
Boriss Mazikins

for
Research Division
Canada Mortgage and Housing Corporation

Ottawa
March 1992

NOTE: **DISPONIBLE AUSSI EN FRANÇAIS SOUS LE TITRE:**

RAPPORT DES FRAIS DE LOGEMENT AU REVENU MESURE DE L'ABORDABILITÉ

This study was conducted by Mr. Boriss Mazikins for Canada Mortgage and Housing Corporation under Part IX of the National Housing Act. The analysis, interpretation and recommendations are those of the consultant and do not necessarily reflect the views of Canada Mortgage and Housing Corporation or those divisions of the Corporation that assisted in the study and its publication.

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INTRODUCTION

1.1 Preamble

In civilized societies, one of the functions of governing authorities is to set up and maintain programs of assistance to individuals and families considered to be **in need.** How to define and identify cases of such need has been a subject of long debates, scholarly pursuits and conferences, national as well as international. Generally, it has been accepted that if a household, family, or other recognized social, economical unit cannot afford to maintain a certain "minimum standard of living", it is in need of assistance, which may be immediate or potential. In Canada, and other western countries, this "minimum standard" does not mean existence at a subsistence level, but rather a way of life which, while possibly falling short of the average, still reflects the norms of contemporary society. Thus, the concept of "the minimum standard" represents a relative and not an absolute notion.

When minimum budgets are constructed, the acceptance of this principle may be visible from the way "the basket of goods" is specified. The applicable norm income is established then simply by pricing this "basket".

Alternatively, norm incomes may be set on the basis of some statistical relationship. For example, units may be considered as living below the minimum standard if the proportion of their income spent on basic necessities: food, shelter and clothing, exceeds the corresponding average ratio by more than a certain specified margin. Or, the norm income may be simply set by equating it to one half of the median income, or on the basis of some other percentage.

In many of these approaches (there are many other variants), "equivalence scales" are also often employed to set different levels of norm income for family groups dissimilar in terms of their characteristics. However, there are no generally accepted methods for determining equivalence scales, nor for establishing norm (low) incomes, nor for defining minimum standards of living. Practice varies from municipality to municipality, from province to province, and from country to country.[1] It may also vary when program objectives differ in their orientation. While some programs may be concerned with general poverty, others may be concerned with providing equal educational opportunities, or health care, or suitable and adequate housing.

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[1] A recent discussion paper "Statistics Canada's Low Income Cut-Offs, Methodological Concerns and Possibilities", by M.C. Wolfson and J.M. Evans, Research Paper Series, Statistics Canada, offers a comprehensive, up-to-date review of these topics.

1.2 Housing Needs and Core Housing Need Model

CMHC's Core Housing Need Model serves the needs of one of such special-focus program[2], the objective of which is to identify and address the housing needs of the population. Here too, the measurement tool of housing need - the Model, is expected to reflect contemporary society's housing standards; any set minimum norm should not clash with the housing standards of the day. This condition is reflected in each of the three norms applied by the Core Housing Need Model: in the definition of shelter suitability, adequacy as well as affordability.

Currently, for purposes of social housing programs, a shelter cost-to-income ratio equal to or greater than 30 per cent is taken as an indicator of a potential shelter affordability "problem"; households with ratios of 30 per cent or higher are considered to be spending more than the norm for housing. The "30 per cent" affordability threshold, however, is applied uniformly to all types of households. The fact is ignored that households with different characteristics may not have identical spending patterns, i.e. to meet their basic requirements some types of households may spend a larger proportion of income on food and clothing but less on shelter. This means that for some types of households, a universal, fixed shelter cost-to-income ratio may tend to exaggerate the level of shelter affordability problem while underestimating it for others.

The objective of this study is to address this particular concern and, if feasible, to develop a variable shelter cost-to-income ratio scale, in other words, an "equivalence scale", that would more effectively identify cases of shelter affordability problems for purposes of the Core Housing Need Model.

1.3 Report Lay-Out

The results of this study are presented in the next two chapters. Chapter two focuses first on conceptual considerations, and addresses methodological issues. It then proceeds to derive variable shelter affordability thresholds using the 1986 FAMEX microdata file as its statistical source.

Chapter three examines the incidence of core housing need as estimated on the basis of variable cut-off criteria from the 1988 Core Housing Need Database. For comparison, a parallel set of figures, based on the traditional fixed ratio method of estimation, is also presented; differences are appropriately highlighted.

Chapter four presents the conclusions and offers recommendations.

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[2]See "Core Housing Need in Canada", 1991, NHA Publication 6567, Canada Mortgage and Housing Corporation (CMHC).

Two appendices and References complete the report. Appendix "A" describes adjustments made to the 1986 FAMEX microdata file to eliminate records which were believed to present distorted data on regular mortgage principal payments (negative or very large values). Appendix "B" contains technical comments on how variable cut-offs could be incorporated into the Core Housing Need Computer Module.

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CHAPTER 2
DERIVATION OF VARIABLE SHELTER AFFORDABILITY CUT-OFFs

2.1 Conceptual Considerations

The approach used in this study for development of variable shelter cost-to-income ratio cut-offs represents an extension of the traditional approach which uses a single ratio (currently thirty per cent) to distinguish households experiencing potential shelter affordability "problems" from those who are not. It, thus, tacitly accepts as valid the logic underlying the traditional measure which has a long history of successful applications in shelter affordability analysis. In essence, then, changes in the measurement technique proposed in the current study, represent no more than refinements to the traditional method. They should be viewed only as such.

What this traditional method is saying is that a household whose shelter costs consume 30 per cent or more of total household income may potentially be <u>burdened</u> by shelter costs. Costs may be too high relative to income; in other words, they may impose a heavy strain on the household budget. The question, of course, arises, do households, particularly if they possess markedly different characteristics, start experiencing a "shelter affordability burden" all at the same shelter cost-to-income ratio level, i.e. when it reaches the 30 per cent mark?

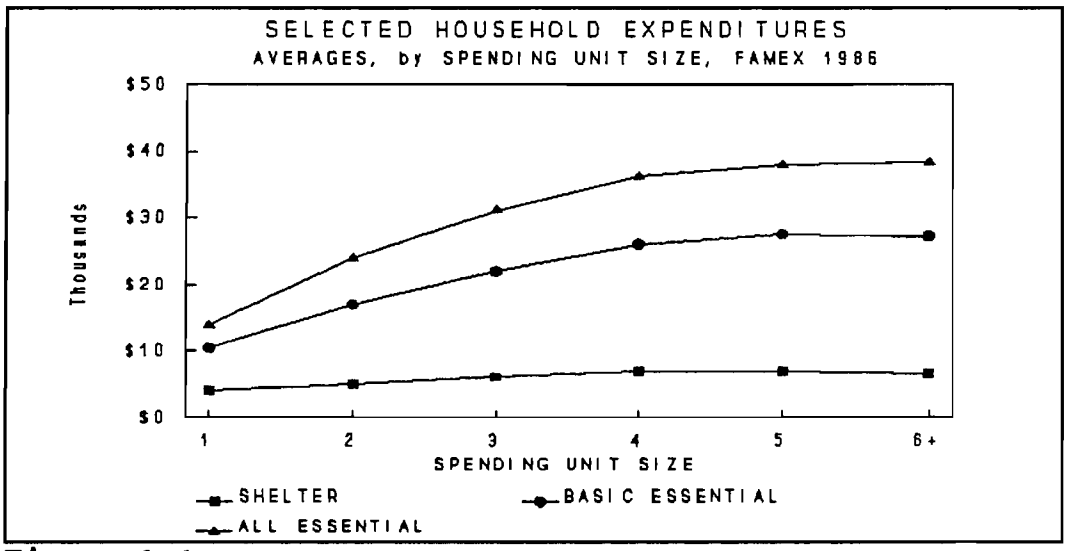

Figure 2.1

It is common knowledge that living costs are higher for larger households than for smaller ones. Bigger units need larger dwellings, they consume more food, they need more clothing, toothpaste, et cetera. This relationship is illustrated in Figure 2.1. It depicts averages of selected consumer cost aggregates for 1986, as estimated from the Family

Expenditure Survey (FAMEX). The top curve shows how much, on average, households spent in 1986 on **necessities**. The middle curve focuses on only a portion of these expenditures, those related to food, clothing, and shelter (the **basic necessities**). It also includes personal taxes. The bottom curve isolates the **shelter** component element, which was adjusted to represent the costs of the principal residence only, plus, when applicable, mortgage principal payments. Thus, in this figure, the distances between the pairs of curves illustrate the relative importance of each of the three expenditure blocks which together comprise the total of expenditures on necessities, or "**essential expenditures**" for short. A new term: "**basic essential expenditures**" will similarly be used in the remainder of this chapter to describe the total of (1) costs of basic necessities (food, shelter and clothing) and (2) personal taxes.

While the two lower chart layers have already been defined, i.e. (1) shelter costs and (2) food, clothing and personal taxes, household expenditures represented in the top, third layer still need to be identified. It should be mentioned that the choice of these "border" expenditure items involves arbitrary decisions as there are no universally accepted criteria available to help in their selection. The guiding principle applied in this case was the retention of FAMEX "Summary Expenditure Categories" as basic classification units and then grading each of them as either "mostly essential" or "mostly discretionary", a process which obviously is not entirely objective and rather crude. But so is the measure we are trying to develop. At the end of the process, it was concluded that the following summary expenditure categories: household operations, personal and health care, and transportation were of the "mostly essential" expenditure type and consequently they all became part of "essential expenditures".

Large differences in the level of expenditures, particularly those other than shelter (the latter presents a relatively flat curve), are quite obvious from Figure 2.1. The rate of change (the slope) for the two upper aggregate curves is greatest at the start of the scale, gradually declining as the curve flattens with increasing household sizes. It is also notable that the curve rising most steeply, i.e. being most sensitive to changes in the unit's size, is the one at the top, representing the broadest definition of household expenditures chosen for this example.

The current **fixed** affordability ratio cut-off concept, which applies equally to all types and sizes of households, is based on the assumption that all are equally prone to incur "shelter affordability problems" at the same shelter cost-to-income ratio level of 30 per cent. It may, however, be the case that households of different sizes start to experience shelter affordability problems at different points. To examine this question, it is useful to construct a hypothetical example of six households ranging in size from 1 to 6 persons (Fig. 2.2).

This figure plots three curves by size of spending unit: Income (before taxes), Shelter Costs (=30% of income), and the total of all Essential Expenditures (which include shelter costs,

as defined)[3]. At the shelter cost-to-income ratio level of 30 per cent, all units do not experience the same potential for incurring shelter affordability "problems". The cost and income curves show that while spending units of size one and two (particularly the former) have at their disposal some unused income, units of size three just barely make ends meet, and units of four people and more live with large deficits. This means that the larger households would either have to borrow or dispose of some of their assets, or, more likely, cut down on the consumption of housing or other necessities, i.e. in the constructed example, accept a standard of living that is below average. The case study constructed above points to a need to modify the fixed shelter affordability measure to give due recognition to differences in expenditure patterns, particularly if the objective is to equalize the level of burden at the shelter affordability threshold.

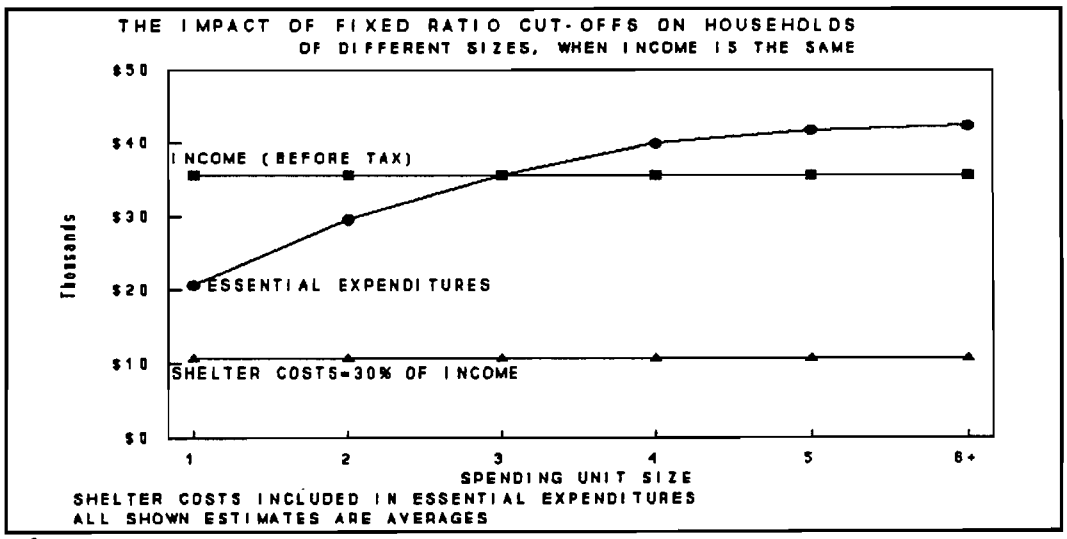

Figure 2.2

In the search for an appropriate answer, let's turn our attention to the second element in the shelter cost-to-income ratio, the household income (before tax), and particularly to its remaining portion - the **"Residual Income"**, that is income left over for other purposes after all "essential expenditure" needs of a household have been met (see Fig. 2.3). This residual income is, of course, used in part to cover still other household needs - expenditures of somewhat more discretionary nature, such as furnishings and equipment, education, recreation, reading materials, tobacco and alcohol, maintenance of summer cottages, interest charges, dues, donations, pensions and life insurance contributions, but it also serves as a kind of cushion that is available to absorb any changes in the cost of shelter. It will be noted that the Residual Income Curve is rather flat compared to the Total Income Curve, but the direction of change in both cases is the same. Both rise as the unit's size increases from 1 to 5 persons, but then, at the end of the scale - for units of six persons and more, both show a small decline.

[3]As estimated from the 1986 FAMEX micro-data file for an adjusted universe, as detailed later.

Figure 2.3, presenting the relationship between average residual income and household size derived from the latest available FAMEX survey (1986)[4], serves as the basis for the delineation of variable shelter cost-to-income ratio cut-off points. These average values, differing by size of household, can be viewed as "representative" of or "typical" of household-income-expenditure profiles regarded as acceptable in today's society. Their residual incomes delineate a set of "**equivalent comfort**" levels of income which households of different sizes retain for their additional non-basic needs, noted above. The degree to which a shelter affordability measure provides for horizontal equity in its determination of a shelter affordability burden across all households may be judged by the degree to which it measures a reduction in residual household income, with a very equitable measure reducing the latter equally for all households.

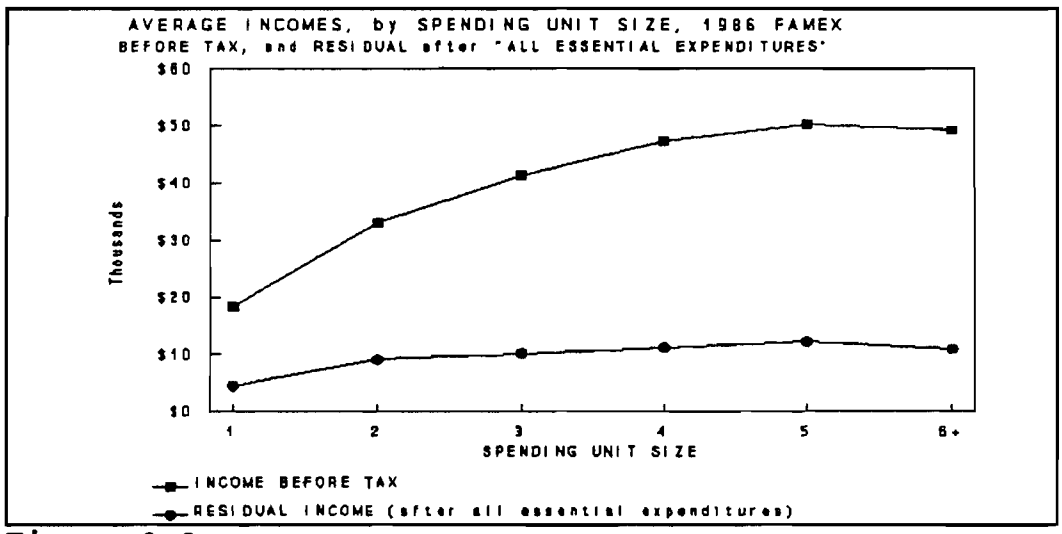

Figure 2.3

Shelter cost-to-income ratio cut-off points, which define when households potentially start to experience "affordability problems" should affect households proportionally on a relative basis. Otherwise, the impact of higher shelter costs at the affordability threshold will not be "equal" among groups - the inherent weakness of the fixed ratio method.

These principles will now be applied to the actual process of deriving variable cut-off points from an analysis of the expenditure pattern data of the 1986 Survey of Family Expenditures (1986 FAMEX).

2.2 Derivation of Variable Shelter Affordability Cut-Offs

To derive the variable shelter cost-to-income ratio cut-offs, it is possible to continue the analysis of our six households examining further their average expenditure and income

[4]This survey program is the only statistical source available in Canada capable of providing details necessary for this type of analysis.

situations. The average expenditure and income data are presented for households of from 1 to 6+ persons in Table 2.1 below.

TABLE 2.1 Selected Estimates by Spending Unit Size
1986 Family Expenditure Survey

ITEM	TOTAL	SPENDING UNIT SIZE					
		1	2	3	4	5	6+
SPENDING UNITS, #	7,917,440	1,883,810	2,301,820	1,331,39	1,456,530	646,880	297,010
				Averages ($$)			
INCOME BEFORE TAX	35,611	18,391	33,085	41,279	47,418	50,231	49,267
"ESSENTIAL" EXPENDITURES:							
SHELTER[5]	5,549	4,017	5,080	6,129	6,913	6,932	6,609
FOOD	5,000	2,558	4,374	5,549	6,717	7,613	8,751
CLOTHING	2,210	1,002	1,789	2,602	3,119	3,509	4,095
PERS.TAX	6,454	2,873	5,801	7,738	9,326	9,493	7,773
OTHER ESSENTIAL[6]	7,493	3,471	6,938	9,080	10,078	10,453	11,064
NON-SHELTER, SUB-TOTAL	21,157	9,905	18,903	24,969	29,241	31,069	31,683
T O T A L - "ESSENTIAL" EXPENDITURES	26,707	13,921	23,984	31,098	36,154	38,001	38,292
RESIDUAL INCOME	8,904	4,469	9,101	10,182	11,264	12,230	10,975

Next, it is necessary to take today's typical-sized[7] households and assume that their shelter costs rise to exactly 30 per cent of income (the traditional level for the shelter affordability cut-off). In this analysis, income is held constant, as are the household's "essential non-shelter expenditures", which remain at the actual average for the particular household size group. Let's examine the impact on the household's residual income, see Table 2.2.

The analysis shows that the increase in the two person household's shelter costs of $4,845 (from $5,080 to $9,925) produces a corresponding reduction of 53.2 per cent in the residual income (reduced from $9,101 to $4,256), down to 46.8 per cent of its original value. It can then be stated that for this typical household, the 30 per cent shelter cost-to-income affordability threshold translates into a 53.2 per cent loss in household "residual income",

[5]Includes mortgage principal payments.

[6]Total of expenditures on household operations, transportation, health and personal care.

[7]Of size 2, the modal category among households and spending units.

indeed a stringent measure of burden. Since the shelter cost burden is a function of the size of the residual income cushion, we can also conclude that the hardship resulting from shelter costs has correspondingly increased.

TABLE 2.2 DERIVATION OF VARIABLE SHELTER AFFORDABILITY CUT-OFFs		
ITEM	2-PERSON S.U.s	
	CASE 1	CASE 2
	($$$)	
INCOME before TAX	33,085	33,085
SHELTER COSTS-ORIGINAL	5,080	
SHELTER COSTS AT 30% MARGIN		9,925
OTHER "ESSENTIAL" NON-SHELTER EXPENDITURES	18,903	18,903
RESIDUAL INCOME	9,101	4,256
REDUCTION IN RESIDUAL	4,845	
or	53.2%	
DATA SOURCE: 1986 FAMILY EXPENDITURE SURVEY, Micro-data Tape		

On the basis of the argument presented earlier, it can be stated that complete horizontal equity of the affordability measure occurs when the shelter cost-to-income ratio thresholds set reduce the residual incomes of the other five households by exactly the same factor, i.e. 53.2 per cent (see Table 2.3).

TABLE 2.3 DERIVATION OF VARIABLE SHELTER AFFORDABILITY CUT-OFFs						
ITEM	SPENDING UNIT SIZE					
	1	2	3	4	5	6+
INCOME before TAX $	18,391[B]	33,085	41,279	47,418	50,231	49,267
RESIDUAL INCOME $	4,469	9,101	10,182	11,264	12,230	10,975
REDUCTION FACTOR	53.2%	53.2%	53.2%	53.2%	53.2%	53.2%
REDUCTION IN RESIDUAL INCOME $	2,379	4,845	5,420	5,996	6,511	5,842
	+	+	+	+	+	+
SHELTER COSTS-ORIGINAL $	4,017	5,080	6,129	6,913	6,932	6,609
SHELTER COSTS-ADJUSTED $	6,396[A]	9,925	11,549	12,910	13,443	12,452
SHELTER COST-INCOME RATIO AT THE AFFORDABILITY MARGIN:						
BEFORE ROUNDING	34.8%[C]	30.0%	28.0%	27.2%	26.8%	25.3%
AFTER ROUNDING	35%	30%	28%	27%	27%	25%
DATA SOURCE: 1986 FAMILY EXPENDITURE SURVEY, Micro-data Tape						

The amount of the reduction in residual income, when added to the original actual household average shelter cost expenditure, produces an adjusted shelter cost figure (A), which divided by income (B) determines the shelter affordability cut-off point (C) applicable to each household size. These newly-derived ratios are thus founded on the principle of equalized shelter burden at the cut-off margin for households of different sizes.

2.3 The Results

These new shelter cost-to-income ratios, variable by household size, have been rounded to eliminate decimal places. The impact of rounding the ratios can be seen from Table 2.3; the final series of variable cut-off points are also presented below.

TABLE 2.4 VARIABLE SHELTER AFFORDABILITY CUT-OFF POINTS

Household Size	Cut-off Point
1	35%
2	30%
3	28%
4 - 5	27%
6 or more	25%

A graphic illustration of the impact of the variable shelter cost-to-income ratio cut-off methodology on classification of households in terms of their shelter affordability status is presented in Figure 2.4. The 30%-line, shown for two-person households is, of course, also the traditional "fixed ratio" cut-off line. For the categories of households whose lines shifted clockwise (down) from the traditional 30% position, i.e. households of size three and larger, the level of shelter expenditures set to identify potential affordability problems is shifted lower. This suggests that the number of cases with such "problems" under the variable ratio scenario would now increase, and also that the size of that increase would be increasingly larger as household size increases from three to six and more persons. The traditional 30%-line remains applicable to households of size two, so there is no change in the

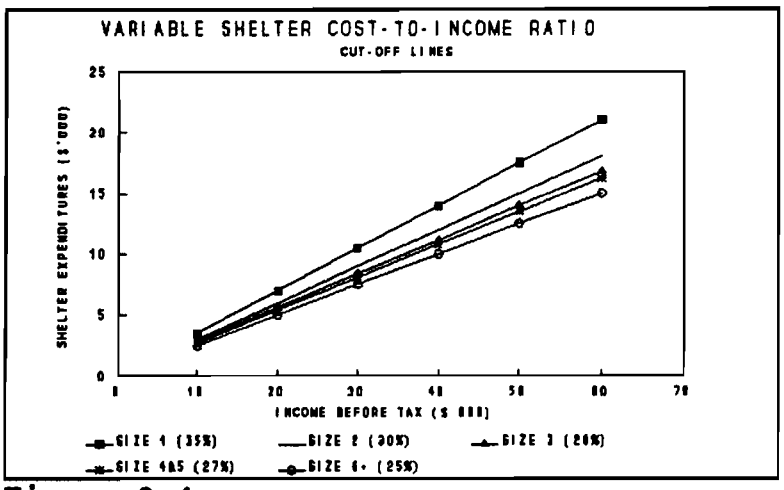

Figure 2.4

affordability status for this category of households. For one-person households, however, the "variable" cut-off line makes a larger counter-clockwise (upward) shift from the "fixed ratio" position, thus setting for each income level a **new higher** critical shelter cost level at and above which potential affordability problems are recognized to exist. Such a shift in the critical shelter cost level should produce a lower number of"affordability problem" cases in this group.

2.4 Why not a Matrix of Cut-off Points?

An expansion of a single-column array of cut-off points into a multi-dimensional matrix of such points would not be as feasible because:

(1) the addition of supplementary variables could defeat the objective of keeping the affordability measure relatively simple.

(2) evidence from previous work indicates that there is little variation in the shelter cost-to-income ratio when values are compared among regions and areas of residence. All of them tend to stay close to the national average ratio. Thus, a geographic dimension would add very little of value to the matrix of cut-offs.

(3) the use of many other classification variables may simply be impossible for purely conceptual reasons. The variable used must be reasonably "neutral" in terms of its reflection of differences in economic standing. Any classification that creates categories on the basis of economic performance, or characteristics that are very closely linked to such performance, would lead to the establishment of "norms" that may prove to be very inequitable. The global expenditure profile of a category representing disadvantaged in no way can be viewed as a "normal standard" for members of that group, it merely reflects its disadvantaged position.

(4) finally, it must be recalled that the CMHC Core Housing Need Model, through its determination of "Norm Rent Income", already makes provisions for differences in household composition and area of residence.

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CHAPTER 3

Variable Ratio Method Evaluated - Revised Core Housing Need Estimates

The impact of variable shelter cost-to-income ratio cut-offs on the estimates of core housing need was assessed with the help of the CMHC Core Housing Need Model, appropriately adjusted. The 1988 Core Housing Need Database served as the statistical source. The process of evaluation begins with a short analysis of shelter affordability. The remainder of the chapter is concerned with differences in estimates of households in core housing need.

3.1 Impact on Shelter Affordability

Changes in estimates presented in this section can be attributed to the following two factors:

(1) shifts in the shelter cost-to-income ratio cut-offs (which determine shelter affordability), from the "fixed" to the "variable" levels;

(2) frequency of cases found within the shelter cost-to income ratio ranges affected by the above change in methodology. Obviously, even if the cut-off line drops from the "fixed" 30% position to the 25% level (for households of size 6+) under the "variable" ratio procedure, but in the data set there are no households of this size showing the shelter cost-to-income ratio in the 25% to 30% range, the estimate of incidence of " affordability problem" cases will not be affected.

The change in methodology, from the fixed to the variable ratio, yields at the global level similar estimates of households spending more than the norm (meaning spending more than set percentages of household income) on shelter: 1.522 million (fixed-ratio method) and 1.495 million (variable-ratio method), or 17 per cent of all households under either scenario. In other words, the variable ratio method is set to identify potential affordability "problems" at roughly the same overall level as the fixed ratio. But by household size, the results differ considerably as shown in Table 3.1.

The variable ratio method identifies significantly fewer one-person households spending more than the norm for their shelter, but compensatingly greater numbers of households of size three and larger. It should be noted that with the variable ratio, the incidence figures rise consistently as the household size increases from two to four. After that point, the incidence begins to drop. With the fixed ratio, the incidence drops consistently as the size of the unit increases from one to five, and it changes direction only at the very end of the scale, for households of size six and larger. The key finding is that, with the variable

ratio, the incidence of households of size 2 to 6+ spending more than the norm for their shelter varies less than it did under the fixed ratio.

TABLE 3.1 Households Spending Over the Norm on their Shelter by Household Size Canada, 1988

HOUSEHOLD SIZE	TOTAL HOUSEHOLDS		WITH AFFORDABILITY "PROBLEM"					
			VARIABLE		FIXED		INCIDENCE	
	#	%	#	%	#	%	VARIABLE	FIXED
TOTAL	8,979,753	100.0%	1,495,334	100.0%	1,522,003	100.0%	16.7%	16.9%
1	1,978,146	22.0%	485,478	32.5%	631,674	41.5%	24.5%	31.9%
2	2,741,244	30.5%	386,039	25.8%	386,039	25.4%	14.1%	14.1%
3	1,564,665	17.4%	228,593	15.3%	192,747	12.7%	14.6%	12.3%
4	1,679,616	18.7%	250,813	16.8%	196,925	12.9%	14.9%	11.7%
5	726,767	8.1%	106,220	7.1%	79,904	5.2%	14.6%	11.0%
>=6	289,315	3.2%	38,191	2.6%	34,714	2.3%	13.2%	12.0%

3.2 Impact on Core Housing Need Level - General Overview

Changes brought about by the variable shelter cost-to-income ratio cut-offs are somewhat mitigated by other factors imbedded in the housing core need model. Thus, the final impact of the alternative methodology on core housing need estimates is not as predictable as in the case involving the incidence of "shelter affordability" based on simply spending more than the norm.

In more specific terms, the core need status of a household may not necessarily change when its simple shelter affordability status is re-classified under the "variable" cut-off scale. For instance, some households may have already been placed in core need because they occupy "inadequate" or "unsuitable" dwellings. Their core need status would not change. Other households, however, which were previously excluded from core need due to their income exceeding the "norm rent income", may now qualify as the "norm income" level shifts down under the "variable ratio" scheme. This holds true for households of size three and larger. Conversely, some one-person households in core need under the "fixed ratio" norms lose that status as the "Norm Rent Income" applicable to them is raised. Finally, there are also households with incomes still somewhat above the applicable adjusted "Norm Rent Income" even though under the "variable ratio" cut-off scale they are considered to be spending more than the norm for their shelter. This last group will be of no consequence to core need estimates.

There were 1,209,205 households identified as in core housing need in 1988 by the variable ratio estimation methodology, compared to 1,259,776 under the fixed ratio - the difference amounting to a reduction of only 50,571 units. In terms of incidence, the drop was from 14.0 per cent under the existing, fixed ratio method, to 13.5 per cent under the variable ratio approach. The proposed change in methodology thus could be judged as being nearly neutral on the overall incidence of core housing need.

The following sections trace changes in incidence which did vary according to different characteristics of households. Differences in incidence are illustrated in graphs; corresponding numerical data are presented in tabulations. In some cases, where the results warrant it, a supplementary graph or table is also included to illustrate changes in the distribution of households in core housing need, or to feature some other aspects of change in terms of shifts in tenure or age compositions, or in income and shelter cost relationships.

3.3 Core Housing Need, By Household Size (Number of persons)

When examined by household size, the results clearly reveal the effects of changes in the estimation model. In general, the variable ratio method produces a series of incidence rates which show less dispersion than under the traditional method.

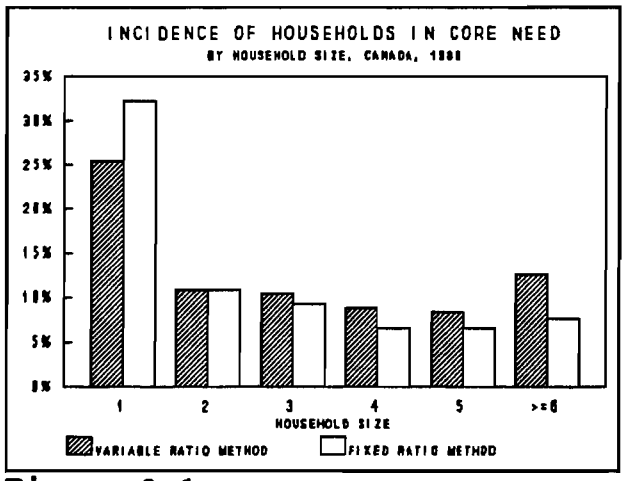

Figure 3.1

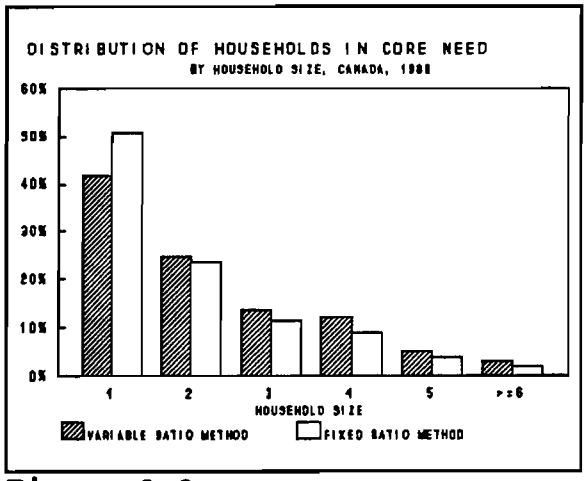

Figure 3.2

For one-person households, the incidence of core housing need cases drops sharply from 32.3 per cent to 25.5 per cent. For two-person households, the largest single household group, of course, it does not change at all (through design), but for categories comprised mostly of larger households - of three or more members - the incidence of core need cases rises. For households of size four and five - groups with the lowest incidence - it increases by about two percentage points. Worthy of note is the large incidence increment for households with six or more members. This group, however, accounts for a small proportion of households and thus has little affect on the overall level of core need. The

latter point becomes evident once the percentage **distributions** of core need units are examined by household size. These distributions are given in Table 3.2 and they are also illustrated graphically in Figure 3.2.It is only one- and four-person households which depart significantly from the general pattern of change, with the former sharply reducing their proportion among cases of core need while the latter contributing a little more than others. This has correspondingly affected the average size of households in core need which increased from 1.97 persons per household to 2.24.

TABLE 3.2 All Households and Those in Core Housing Need by Household Size Canada, 1988

HOUSEHOLD SIZE	TOTAL HOUSEHOLDS		IN CORE NEED					
			VARIABLE		FIXED		INCIDENCE	
	#	%	#	%	#	%	VARIABLE	FIXED
TOTAL	8,979,753	100.0%	1,209,205	100.0%	1,259,776	100.0%	13.5%	14.0%
1	1,978,146	22.0%	504,919	41.8%	638,156	50.7%	25.5%	32.3%
2	2,741,244	30.5%	297,765	24.6%	297,765	23.6%	10.9%	10.9%
3	1,564,665	17.4%	162,894	13.5%	143,852	11.4%	10.4%	9.2%
4	1,679,616	18.7%	146,575	12.1%	110,760	8.8%	8.7%	6.6%
5	726,767	8.1%	60,854	5.0%	47,327	3.8%	8.4%	6.5%
>=6	289,315	3.2%	36,198	3.0%	21,916	1.7%	12.5%	7.6%
AVE.SIZE	2.72		2.24		1.97			

A clearer picture about the nature of changes taking place in the pool of households in core need emerges once we examine closer the frequencies provided in Table 3.2 under respective classifications of core need. The earlier-observed difference between two estimates of households in core need, of some 50,000 units, is only a net result of changes brought about by the substitution of variable ratios for fixed ratios in one of the elements of the Core Housing Need Model; the number of households whose core need status changes in the process is actually much greater.

More stringent criteria established by the "Variable" ratio model, for the determination of core need among one-person households, result in the elimination of 133,237 such households from core need. In contrast, more liberal criteria set for households of size three and larger put more of them, 82,666 in all, into core need. The sum of these two figures:

$$133{,}237 + 82{,}666 = 215{,}903$$

illustrates the extent to which changes in the core need classification alter the composition

of households in core need. Thus, although the alternative estimation methodologies produce similar numbers in housing need, the composition of the groups affected is quite different!

A graphical illustration of changes in the composition of the "problem group" (households in core need) by household size is provided in Figure 3.3. The negative column, below the "0-line", represents one-person households which are dropped from the core need category when the variable ratio cut-offs replace the fixed cut-off point. Columns above the "0-line" refer to households which are added. They are of size three and larger. As can be seen, the largest group of new core need cases is comprised of households of size four. The next largest group is that of 3-person households. The remainder is divided almost equally between the two top size groups. Details on tenure, which are also shown in this illustration, will be reviewed in another section later.

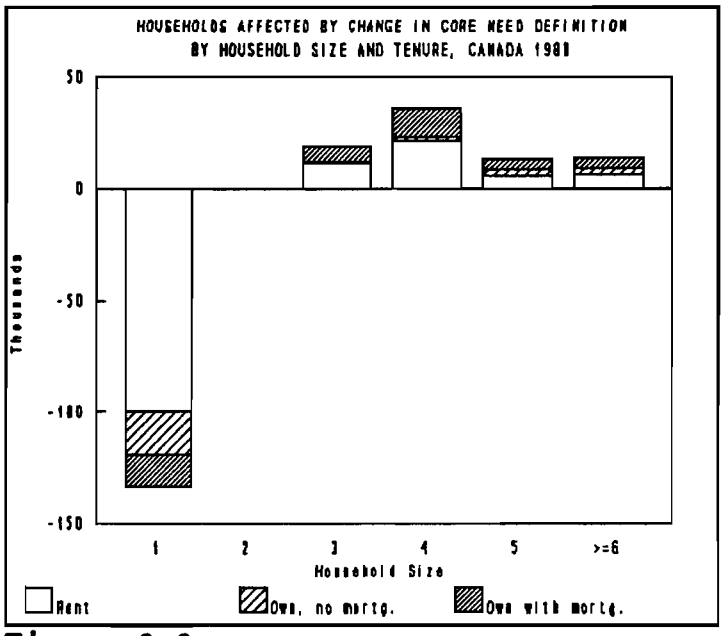

Figure 3.3

TABLE 3.3 Shelter Costs, Income , and Shelter Cost-to-Income Ratios
Group Averages, by Household Size
Canada, 1988

HOUSEHOLD SIZE	AVERAGE SHELTER COSTS			AVERAGE INCOME			AFFORDABILITY RATIO		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
TOTAL	5,615	4,872	4,718	38,904	11,881	11,292	14.4%	41.0%	41.8%
1	4,164	3,969	4,028	20,339	8,645	9,452	20.5%	45.9%	42.6%
2	5,106	4,843	4,843	36,418	11,693	11,693	14.0%	41.4%	41.4%
3	5,975	5,438	5,316	44,899	13,851	13,131	13.3%	39.3%	40.5%
4	6,958	6,531	6,651	49,773	17,322	15,579	14.0%	37.7%	42.7%
5	6,928	6,183	6,219	53,191	16,893	15,318	13.0%	36.6%	40.6%
>=6	7,325	6,243	6,197	57,982	19,230	16,953	12.6%	32.5%	36.6%

At the total core need group level, the **average** shelter cost-to-income ratio showed only a small change, a drop from 41.8% "fixed" to the 41.0% "variable" ratio average (see Table 3.3). Under the "variable" core need affordability classification, both average income as

well as average shelter costs increased compared to their respective "fixed" values, but income increased proportionately more than did shelter expenditures. This produced the above decline in the overall average core need affordability ratio.

For individual groups, the changes in the average shelter cost-to-income ratios were consistent with their position toward the "neutral" 2-person-household category. For people living alone in core need, the average shelter cost-to-income ratio increased from 42.6% to 45.9%, even though there was virtually no change in their average shelter cost. The increase was solely due to the decline of this group's average income, from $9,452 to $8,645. A change in the opposite direction took place for households of three or more members, but any sizable decreases in average shelter cost-to-income ratios occurred only for groups of household size four or more. But in these cases too, the changes in the ratio reflected mostly shifts in average income, as, in general, average costs varied little as definitions changed. The observed pattern of shifts in the average income of core need units, when re-defined on the basis of a variable ratio criterion, is also reflected in the results examined in the light of income quintiles. These are discussed next.

3.4 Core Housing Need, By Income Quintile

Changes in estimates related to households in core need are all triggered by the outflow of some 133,000 one-person households and their replacement by nearly 83,000 larger households, those of three or more persons. As larger households have higher incomes than unattached individuals living alone, these changes in the composition of the core need group by household size induce parallel changes in the income quintile characteristics of the group. This is evident from Table 3.4.

TABLE 3.4 Households with Changing Core Need Status by Household Size and Income Quintile Canada, 1988

Household Size	Total	Income Quintile				
		Lowest	Second	Middle	Fourth	Highest
Total	-50,571	-100,622	33,143	16,908	0	0
1	-133,237	-113,852	-19,385	0	0	0
2	0	0	0	0	0	0
3	19,042	5,124	12,654	---	0	0
4	35,815	5,099	20,144	10,572	0	0
5	13,527	---	9,410	---	0	0
6+	14,282	---	10,320	---	0	0
Sub-Total: 3+	82,666	13,230	52,528	16,908	0	0

"---" Not applicable or sample too small to provide a reliable estimate

The overall result is that the lowest quintile contains 100,000 less households in core need when the variable ratio cut-offs replace the fixed cut-off point, while the following two quintiles include more: the second - 33,000 households and the middle quintile - 17,000. This, of course, changes the quintile profile for **all** households in core need, which includes the large number of households (1,126,539) placed in core need by either concept.

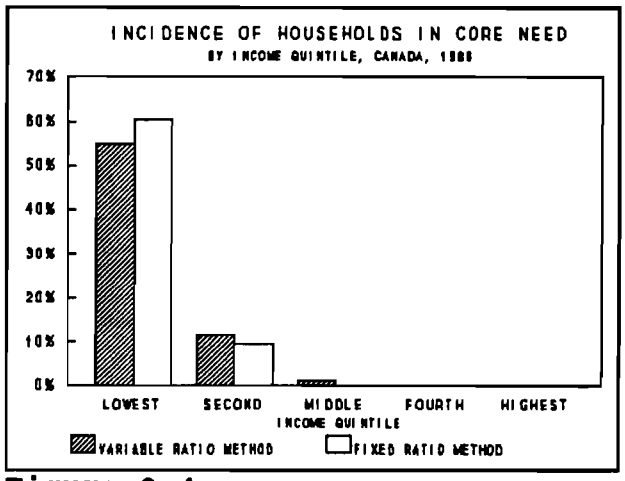

Figure 3.4

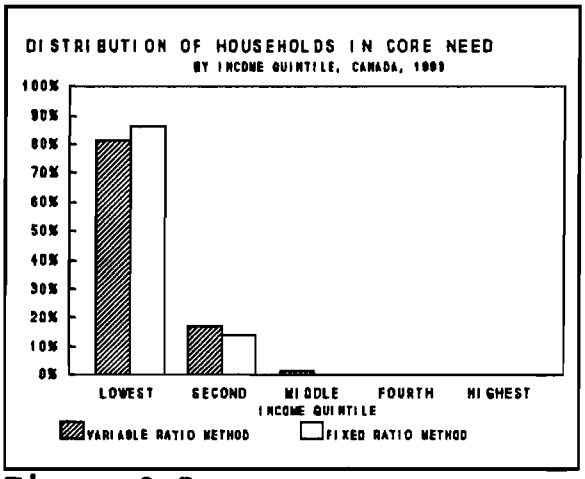

Figure 3.5

Core housing need cases remain concentrated at the bottom of the quintile scale, although the variable ratio method does have an impact on the incidence quintile profile (Table 3.5 and Fig. 3.4).

TABLE 3.5 All Households and Those in Core Housing Need by Income Quintile Canada, 1988

QUINTILE GROUP	TOTAL HOUSEHOLDS		IN CORE NEED					
			VARIABLE		FIXED		INCIDENCE	
	#	%	#	%	#	%	VARIABLE	FIXED
TOTAL	8,979,753	100.0%	1,209,205	100.0%	1,259,776	100.0%	13.5%	14.0%
LOWEST	1,795,811	20.0%	985,033	81.5%	1,085,655	86.2%	54.9%	60.5%
SECOND	1,795,910	20.0%	206,579	17.1%	173,436	13.8%	11.5%	9.7%
MIDDLE	1,795,837	20.0%	17,593	1.5%	---	0.1%	1.0%	---
FOURTH	1,796,134	20.0%	0	0.0%	0	0.0%	0.0%	0.0%
HIGHEST	1,796,061	20.0%	0	0.0%	0	0.0%	0.0%	0.0%

"---" Not applicable or sample too small to provide a reliable estimate

The incidence figure for the lowest quintile shows a significant drop, from 60.5 % to 54.9% per cent, reflecting a ten per cent reduction in the number of core need cases in that

quintile, while it increases for the second quintile (from 9.7% to 11.5%). It is worth noting, that under the variable ratio scenario, some core housing need cases appeared even among households in the median income quintile, but barely sufficient to produce one per cent incidence. Under the fixed ratio, the problem is confined to the bottom two quintile categories. It is evident that in the determination of core housing need, improved recognition of household size in the variable ratio model better acknowledges that a household's capacity to spend on shelter varies directly with its size.

Consistent with changes in the incidence, the distribution of households facing core need (Fig. 3.5) also shifts slightly toward higher quintile groups. Despite this direction of change, even under the "variable" ratio scenario the lowest quintile still contains more than 80 per cent of all core need cases and, as was just pointed out, half of them are households of singles.

It was observed earlier that the average size of households in core need becomes larger when the variable-ratio-based method is applied. As can be observed from Table 3.6, that increase applies even to core need households in the lowest quintile where this average changed from 1.76 to 1.88 persons per household. This mostly reflects a reduction in representation of one-person households in core need in that quintile, from 57 to 51 cases per hundred. In the second quintile, it is mostly the new core need cases, households of size three and larger, which contributed to the increase in the corresponding average, which changed from 3.25 to 3.76.

TABLE 3.6 Ave. Size of Households and One-Person Households as % of Total All Households and Those in Core Need, by Income Quintile Canada, 1988

INCOME QUINTILE	AVERAGE SIZE OF HOUSEHOLD			1-PERSON H'HOLDS AS % OF TOTAL		
	TOTAL	IN CORE NEED		TOTAL	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED
TOTAL	2.72	2.24	1.97	22.0%	41.8%	50.7%
LOWEST	1.70	1.88	1.76	56.8%	51.3%	57.0%
SECOND	2.34	3.76	3.25	26.9%	0.0%	11.2%
MIDDLE	2.80	4.53	---	16.5%	0.0%	0.0%
FOURTH	3.20	---	---	7.1%	0.0%	0.0%
HIGHEST	3.53	---	---	2.8%	0.0%	0.0%

"---" Not applicable or sample too small to provide a reliable estimate

While the average shelter costs of core need households under the variable ratio method are somewhat higher than under the fixed ratio method, within individual income quintiles (where such comparisons are possible), for all practical purposes, as shown in Table 3.7,

there are no such differences. Not surprisingly, these costs tend to increase with each quintile step, and it is the appearance of some core need households in the middle quintile (when the variable ratio method was applied) that produces a higher overall cost average for core need cases under this definition.

On the income side, the pattern is similar although there are some variations. Differences between the two core need categories within quintile categories are, at least in relative terms, rather small, and the somewhat higher average income for core need cases, defined with variable ratio cut-offs, can again be mainly attributed to "new" core need cases coming from the middle quintile.

TABLE 3.7 Shelter Costs, Income, and Shelter Cost-to-Income Ratio Group Averages, by Income Quintile Canada, 1988

INCOME QUINTILE	AVERAGE SHELTER COSTS			AVERAGE INCOME			AFFORDABILITY RATIO		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
TOTAL	5,615	4,872	4,718	38,904	11,881	11,292	14.4%	41.0%	41.8%
LOWEST	3,629	4,448	4,393	10,848	9,881	10,025	33.5%	45.0%	43.8%
SECOND	4,571	6,686	6,728	21,825	19,916	19,158	20.9%	33.6%	35.1%
MIDDLE	5,581	7,351	---	33,874	29,487	---	16.5%	24.9%	---
FOURTH	6,585	0	0	47,592	0	0	13.8%	0.0%	0.0%
HIGHEST	7,710	0	0	80,376	0	0	9.6 %	0.0%	0.0%

"---" Not applicable or sample too small to provide a reliable estimate

While under the variable ratio method, core need households in the second quintile also had a higher average income, households in the lowest income range had a lower average income. These last two facts have impacted on the group shelter cost-to-income ratio, reducing it by 1.5 percentage points in the first instance, and increasing it by a little more than a percentage point in the second instance.

3.5 Core Housing Need, by Tenure

There is no neutrality in the impact of variable ratio cut-offs on estimates in so far as tenure characteristics of households in core need are concerned. As was illustrated earlier in this chapter (Fig.3.3), in the exchange of one-person core need households for households of size three and larger, which results when the variable ratio cut-off process is applied to determine the core need status, the tenure composition of core need households is substantially transformed. Full details are shown in Table 3.8. The net drop in renters in core need (53,871) even exceeds the entire net reduction of all households in

core need (50,571) induced by the alternative, variable ratio methodology. There is also a net reduction among core need households living in owned, mortgage-free homes (-11,549). As 35 per cent of households (of size three and larger), which are added to the core need universe by this exercise, are owners with mortgages, but among the departing (one-person) units, this tenure applies to a much smaller percentage (11%), the core need group of households with this tenure gains 14,849 net new units.

TABLE 3.8 Households with Changing Core Need Status by Household Size and Tenure Canada, 1988

HOUSEHOLD SIZE	TOTAL	RENT	OWN	
			NO MORTGAGE	WITH MORTGAGE
TOTAL	(50,571)	(53,871)	(11,549)	14,849
1	(133,237)	(99,850)	(19,193)	(14,194)
2	0	0	0	0
3	19,042	11,733	---	6,804
4	35,815	21,437	---	12,543
5	13,527	6,007	---	4,851
>=6	14,282	6,802	---	4,845
Sub-Total: 3+	82,666	45,979	7,644	29,043

"---" Not applicable or sample too small to provide a reliable estimate

It is important to delve below the net impact of changes in core need to look at the tenure of those households added to need. It might be added that, in approximate terms, in each household size category, about a third of households added to the core need universe were owners with mortgages. Finally, of new mortgage-free owners in core need, larger units, in spite of their smaller numbers in need, contributed more than did households of size three or four. The above observed transformations had, of course, also changed the total universe of core need cases. Here is the global picture.

There are differences in the way the variable ratio core need estimation model impacts on households with different tenure characteristics. For one of the three basic tenure categories, the overall incidence of core need is raised, but for the other two it is lowered. Table 3.9 and Figure 3.6 reveal these results. Among **home owners with a mortgage** the 1988 incidence of core need cases, as determined by the variable ratio method, moves up to 6.6 per cent, from 6.1 per cent under the fixed ratio method. For **owners of mortgage-free homes**, the incidence edges downward, to 5.9 per cent from 6.3% under the fixed ratio method. There is a similar drop among **renters**, to 26.1 per cent from 27.7 per cent. The renters, nevertheless, continue to comprise by far the largest component among households in core housing need, accounting for 70.4 per cent of the total (72 per cent under the fixed ratio method).

TABLE 3.9 All Households and Those in Core Housing Need by Tenure Canada, 1988

TENURE	TOTAL HOUSEHOLDS		IN CORE NEED					
			VARIABLE		FIXED		INCIDENCE	
	#	%	#	%	#	%	V'ABLE	FIXED
TOTAL	8,979,753	100.0%	1,209,205	100.0%	1,259,776	100.0%	13.5%	14.0%
RENT	3,269,427	36.4%	852,600	70.5%	906,471	72.0%	26.1%	27.7%
OWN, NO MORTGAGE	2,843,308	31.7%	167,132	13.8%	178,681	14.2%	5.9%	6.3%
OWN WITH MORTGAGE	2,867,018	31.9%	189,473	15.7%	174,624	13.9%	6.6%	6.1%
AVE.SIZE	2.72		2.24		1.97			

The changes in the distribution pattern, illustrated in Figure 3.7 and tabled above, represent the changes in core need incidence. A comparison of the two profiles reveals, however, that the decline in the renter proportion of core need is somewhat less pronounced than the drop in renter core need incidence. Among households in core need, renters thus continue to account for seven out of ten units.

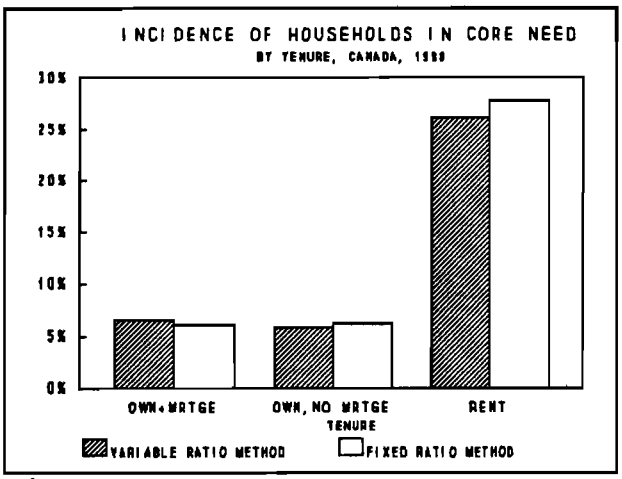

Figure 3.6

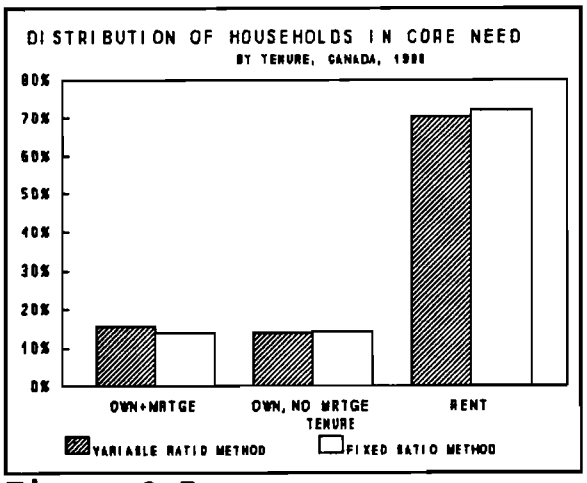

Figure 3.7

The tenure impact of changes in core need methodology stems from differences in the composition of tenure groups by household size. Frequencies in the added range of qualifying shelter cost-to-income ratio ranges along with levels of income have also played a role. The study focuses first on household size.

As can be seen from Table 3.10, the average size of households of home owners without mortgages matches the corresponding national figure of 2.7 persons per household. Households of home owners with mortgages have on average 0.7 more persons per

household, and renters 0.6 less. It will be recalled that the variable ratio process makes core need conditions more stringent for one-person households and more liberal for those of size three and larger and this creates a pool of core need households which includes less one-person households and more units of size three and larger. The average size of core need households becomes correspondingly larger: 2.2 persons per household as against 2.0 under the "fixed ratio" procedure.

TABLE 3.10 Average Size of Households, and Selected Percentages by Household Tenure, All Households and Those in Core Need, Canada, 1988

HOUSEHOLD TENURE	HOUSEHOLD SIZE AVERAGE			1-PERSON HOUSEHOLDS AS PER CENT OF TOTAL			PER CENT IN THE LOWEST QUINTILE		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
TOTAL	2.7	2.2	2.0	22.0%	41.8%	50.7%	20.0%	81.5%	86.2%
RENT	2.1	2.1	1.8	40.0%	47.9%	56.0%	33.6%	85.1%	88.5%
OWN, NO MORTGAGE	2.7	2.1	1.9	16.1%	42.0%	50.0%	19.2%	85.5%	90.3%
OWN WITH MORTGAGE	3.4	3.1	2.7	7.4%	14.0%	23.4%	5.2%	61.7%	69.8%

Among tenure categories there is some variation in the size of these increases: the smallest increment (+0.2) applies to owners without mortgages, somewhat greater (+0.3) to renters, and the largest, in absolute terms, to owners with mortgages (+0.4 persons per household). This makes the average size of core need households living in owned homes with mortgages (3.1 persons per household), larger by exactly one person than the average size of households in the other two tenure groups, both of average size 2.1.

This part of Table 3.10 also reveals that actual changes in the composition of tenure groups by size of household are much larger than the change in incidence would indicate. The latter reflect only the **net result** of definitional changes of core need. In other words, in a category with a large component of one-person households, such as renters, there is a major, largely hidden substitution of core need one-person households by those with three or more members. This is clearly revealed by shown increases in the average size of core need households as well as other data presented below.

The last segment of this table provides a hint as to income characteristics of households involved in this substitution. It will be noted that, as the "variable ratio" definition is applied, the proportion of core need households belonging to the lowest income quintile declines in each tenure category. This means that in the core need universe households with income in the bottom quintile range (primarily one-person households) are replaced, at least in part, by households belonging to the second and even third income quintiles. This is particularly evident among home owners with mortgages. The "variable" core need definition brought in a number of units that were not only larger in size, as was observed

earlier, but also of bigger income, generally above the income threshold separating the lowest and the second quintiles. As a consequence, the proportion of households in core need in this tenure category who had incomes under this threshold dropped to 62 per cent, compared to 70 per cent under the "fixed ratio". For home owners without mortgages and renters in core need, this figure changed somewhat less, to 85 per cent, still overwhelming majority.

Table 3.11 examines by tenure the pattern of change in income, shelter costs, and the shelter cost-to-income ratio when the "variable ratio" method replaces the "fixed" affordability ratio for the determination of core need.

TABLE 3.11 Average Shelter Costs, Income, and Shelter Cost-to-Income Ratio by Household Tenure
All Households and Those in Core Need, Canada, 1988

HOUSEHOLD TENURE	AVERAGE SHELTER COSTS			AVERAGE INCOME			AFFORDABILITY RATIO		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
TOTAL	5,615	4,872	4,718	38,904	11,881	11,292	14.4%	41.0%	41.8%
RENT	5,137	4,797	4,690	27,593	11,466	11,081	18.6%	41.8%	42.3%
OWN, NO MORTGAGE	2,682	2,521	2,548	41,160	10,378	9,762	6.5%	24.3%	26.1%
OWN WITH MORTGAGE	9,069	7,285	7,087	49,566	15,071	13,952	18.3%	48.3%	50.8%

There is very little change in the level of average shelter costs when the "variable ratio" scale replaces the "fixed" cut-off. Among households in core need, the highest average cost of shelter is that borne by owners with mortgages. In fact it is three times as high as that of owners without mortgage. Average shelter costs of renter households in core need fall midway between. Another comparison that may be of some interest is that of average shelter costs between all households and those in core need. The difference between these two sets of estimates is again quite small, measurable for renters and particularly for owners without mortgages in terms of only a few hundred dollars at most. Only in the case of owners with mortgages does the difference become a factor, approaching $2,000 when the "fixed ratio"-based estimate is used, and around $1,800, when the comparison involves the "variable ratio" estimate.

Profiles of average incomes show some similarity to those observed for shelter costs when comparisons were made between the two definitions of households in core need. However, when income averages of core need households are compared with those of all households, one discovers totally different relationships. First, let us focus on differences between the

two sets of income averages corresponding to two definitions of core need. For all three tenure groups the income average is higher under the "variable ratio" than the "fixed ratio" method. This, of course, was anticipated earlier. The largest absolute difference, of about $1,000, is shown by owners with mortgages, the tenure category with the highest average income. In the case of those in core need, it is almost 50 per cent higher than that estimated for owners without mortgages, the core need group with the lowest average income. The "variable ratio" process increases the average income figure for this category by about $600. The smallest change, of about $400, applies to the largest tenure group among households in core need - renters.

In comparison to all households, income received by households in core need represents but a fraction. The largest difference between the two income averages applies to owners without mortgages where the global average is four times the figure applicable to households in core need. For owners with mortgages this factor is lower - three, and for renters - 2.5.

With shelter costs barely changing and incomes rising, the all-tenure group shelter cost-to-income ratio drops, from 41.8 to 41.0 per cent. This relatively small change was determined by the nature of the changes for the largest core need tenure category - renters. In their case, only 0.5 percentage points separated the "variable ratio" estimate from the "fixed ratio" value. For owners with mortgages, the tenure category contributing only a small component of core need households, the drop was five times as large - 2.5 percentage points, and for another small "contributor", mortgage-free owners, it was 1.8 percentage points. However, even after these changes, ratio values among tenure categories remain quite dispersed, with owners with mortgages incurring the highest average shelter cost-to-income ratio of 48.3%, and renters only a little less, at 41.8%, compared to owners without mortgages trailing far behind with the lowest ratio of 24.3 per cent.

3.6 Core Housing Need, by Age of Head

It may again be helpful to precede the discussion of changes in age profile of households in core need, which occur when the fixed shelter affordability criterion is replaced by a variable ratio, with an evaluation of households which are directly affected. Table 3.12 supplies the required data.

The net effect of the change in the estimation model is to increase the number of households in need with heads between 25 and 44 years by some 26,000, but to decrease it in all other cases, although for households with heads in the age range 45 to 54 years the drop is limited to less than 1,000 households. However, this apparent "neutrality" to differences in estimation processes by households with heads in this latter age category masks the fact that some 10,000 one-person households, predominantly renters, were replaced by some 9,000 households of size three and larger, among whom the majority were home owners.

This process of substitution is in some cases very one sided, as in the case of units with elderly heads, 65 years of age and over. A net reduction of 55,410 units in this age category[8] of core need households is almost entirely due to single person households being no longer classified as in core need; "new", added core need cases number but a few thousand.

TABLE 3.12 Households with Changing Core Need Status by Age of Head and Household Tenure Canada, 1988

TENURE	AGE OF HEAD						
NET CHANGE	TOTAL	UNDER 25	25-34	35-44	45-54	55-64	65 & OVER
TOTAL	(50,571)	(12,095)	10,813	15,251	(942)	(8,188)	(55,410)
RENT	(53,871)	(12,151)	3,174	4,929	(2,970)	(6,358)	(40,495)
OWN, NO MTGE	(11,549)	---	---	---	---	(3,019)	(12,535)
OWN WITH MTGE	14,849	---	6,756	8,262	---	1,189	(2,380)
OUT: 1-PERSON HOUSEHOLDS							
TOTAL	(133,237)	(15,619)	(21,441)	(11,332)	(10,268)	(15,925)	(58,652)
RENT	(99,850)	(15,315)	(19,190)	(7,400)	(7,151)	(9,138)	(41,656)
OWN, NO MTGE	(19,193)	0	---	---	---	(3,875)	(13,397)
OWN WITH MTGE	(14,194)	---	---	(3,673)	---	---	(3,599)
IN: 3+-PERSON H'HOLDS							
TOTAL	82,666	3,524	32,254	26,583	9,326	7,737	3,242
RENT	45,979	3,164	22,364	12,329	4,181	---	---
OWN, NO MTGE	7,644	---	---	---	---	---	---
OWN WITH MTGE	29,043	---	8,886	11,935	---	4,101	---

"---" Not applicable or sample too small to provide a reliable estimate

The earlier-mentioned group covering the age span of 25 to 44 years, accounted for more than 70 per cent of all households of size three and larger that were added to the core need universe by the variable ratio method, but only for one-quarter of the one-person units that were removed by it. These are the dynamics behind the large increase in core need cases in this age group. Furthermore, among the added households, some 40 per cent were home owners, while among the removed units, this percentage was only half as large. As will be shown in the following paragraphs, most of the observed differences left a readily visible impact on incidence and other statistical measures applicable to the full core need universe.

[8]Note that this reduction is larger than the total reduction for all age groups combined.

TABLE 3.13 All Households and Those in Core Housing Need by Age of Head Canada, 1988

AGE GROUP	TOTAL HOUSEHOLDS		IN CORE NEED					
			VARIABLE		FIXED		INCIDENCE	
	#	%	#	%	#	%	VARIABLE	FIXED
TOTAL	8,979,753	100.0%	1,209,205	100.0%	1,259,776	100.0%	13.5%	14.0%
UNDER 25	482,040	5.4%	134,465	11.1%	146,560	11.6%	27.9%	30.4%
25 - 34	2,031,170	22.6%	271,171	22.4%	260,358	20.7%	13.4%	12.8%
35 - 44	2,026,475	22.6%	206,686	17.1%	191,435	15.2%	10.2%	9.4%
45 - 54	1,427,873	15.9%	130,427	10.8%	131,369	10.4%	9.1%	9.2%
55 - 64	1,332,007	14.8%	159,315	13.2%	167,503	13.3%	12.0%	12.6%
65 & OVER	1,680,188	18.7%	307,141	25.4%	362,551	28.8%	18.3%	21.6%

When the variable ratio method is applied to all households, the level of core housing need drops sharply at both ends of the age scale but for the two age groups in the 25 to 44 year range it increases noticeably. The 45-54 age group is practically indifferent to methods of measurement, but the 55-64 group shows a change that is consistent with the national pattern, a drop from 12.6 to 12.0 per cent.

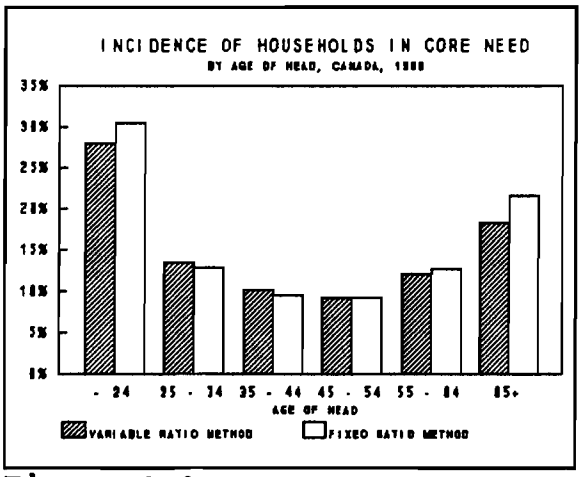

Figure 3.8

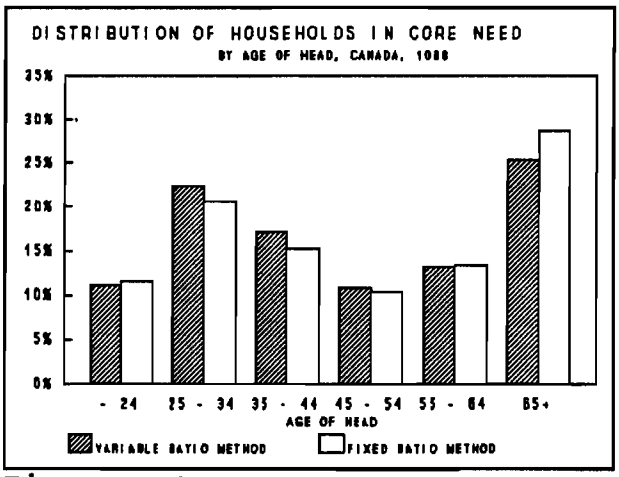

Figure 3.9

Again, the changes observed can all be traced to differences in the composition of age groups by household size. This point can be more thoroughly explored with the help of data supplied in the supplementary table included in this section.Table 3.14 shows that the average size of households in both the oldest and the youngest age groups (1.78 and 2.02 persons per household respectively) is considerably smaller than in other age categories, the overall average being 2.72 persons per household. This result reflects a high proportion of single households in both of these age groups, particularly among the elderly (42%). It

will also be noted that the average size of households in core need is consistently lower than the corresponding group average, and as expected, the variable ratio classification shows somewhat higher values than does the fixed-ratio-defined group.

TABLE 3.14 Selected Supplementary Data by Age of Head Canada, 1988

AGE OF HEAD	HOUSEHOLD SIZE AVERAGE			1-PERSON HOUSEHOLDS AS PER CENT OF TOTAL			PER CENT IN THE LOWEST QUINTILE		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
TOTAL	2.72	2.24	1.97	22.0%	41.8%	50.7%	20.0%	81.5%	86.2%
UNDER 25	2.02	1.97	1.82	30.3%	38.6%	46.0%	32.4%	86.0%	86.6%
25 - 34	2.79	2.76	2.42	20.5%	25.7%	35.0%	14.1%	75.8%	83.5%
35 - 44	3.45	3.15	2.84	12.9%	21.4%	29.0%	9.5%	69.6%	77.7%
45 - 54	3.17	2.45	2.17	13.3%	35.1%	42.6%	10.0%	74.9%	79.0%
55 - 64	2.46	1.92	1.75	19.6%	44.1%	51.5%	20.4%	87.8%	90.7%
65 & OVER	1.78	1.37	1.28	41.9%	72.6%	77.7%	44.3%	92.0%	92.9%

It was mentioned earlier that the lowering of shelter cost-to-income ratio cut-off levels for households of size three and larger in the variable ratio model produces an upward shift in the quintile distribution of core need households. As can again be seen from Table 3.14, this shift does not appear to affect the oldest and the youngest age groups; their bottom income quintile status remains intact under either core need definition.

These changes had a corresponding impact on the age distribution of households in core housing need. The proportion of households with elderly heads declined for reasons already discussed. Units headed by persons in the 25-44 year age range increased their representation. Among them, the reduction in the total of one-person core need households was more than offset through the addition of households of three or more members. These were the households with the shelter cost-to-income ratio values between the newly applicable variable ratio cut-off and the previously-used 30 per cent level, and with incomes below norm rent income. This last factor is of particular significance in interpreting the results for the next age group, households with heads in the 45 to 54 year range, the group consistently reporting the highest average incomes. For them, any increase in frequency of shelter affordability "problems" affected little if at all the group's core need level - their incomes were simply too high (i.e. above norm rent income) to qualify them for core need status.

3.7 Core Housing Need, by Household Composition

Like the classification of households by size, this variable treats one-person households as

a distinct category. Thus, there exists no ambiguity as to what impact the switch to the variable ratio methodology produces on component categories: only unattached individuals are affected by a reduction of core need cases among them, as already noted in an earlier section; for all others the frequency of core need occurrences either remains constant ("husband and wife only" category) or shows some increase. In other words, within household composition categories there are no "hidden" substitutions, the differences between variable ratio and fixed ratio estimates reveal the entire extent of changes. Figure 3.10 illustrates how the increase of 82,666 core need cases was apportioned among household composition categories. The impact of changes on the full core need universe is discussed next.

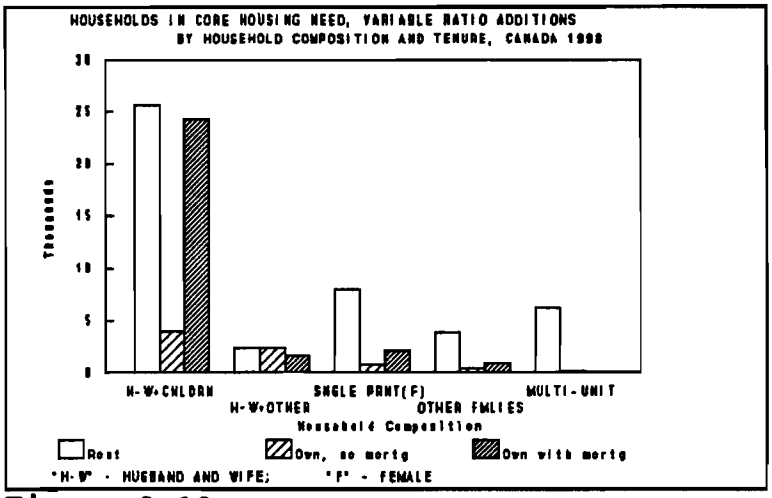

Figure 3.10

TABLE 3.15 All Households and Those in Core Housing Need by Household Composition Canada, 1988

HOUSEHOLD COMPOSITION	TOTAL HOUSEHOLDS		IN CORE NEED					
			VARIABLE		FIXED		INCIDENCE	
	#	%	#	%	#	%	VARIABLE	FIXED
TOTAL	8,979,753	100.0%	1,209,205	100.0%	1,259,776	100.0%	13.5%	14.0%
Unat. Ind.s	1,978,146	22.0%	504,919	41.8%	638,156	50.7%	25.5%	32.3%
Husband & Wife (H-W) only	2,035,173	22.7%	140,475	11.6%	140,475	11.2%	6.9%	6.9%
H-W with single chldrn	3,359,774	37.4%	227,046	18.8%	173,199	13.7%	6.8%	5.2%
H-W, all other	311,747	3.5%	16,899	1.4%	10,559	0.8%	5.4%	3.4%
Female single parent fam.	471,039	5.2%	191,205	15.8%	180,278	14.3%	40.6%	38.3%
Other family households[9]	381,845	4.3%	64,783	5.4%	59,580	4.7%	17.0%	15.6%
Multi-unit households	442,029	4.9%	63,878	5.3%	57,529	4.6%	14.5%	13.0%

[9]This residual category of one-economic-unit households includes male single-parent families with children.

Household composition relates to the unit's particular stage in the family life cycle and thus, at least for some categories, shows results similar to those already revealed by other classifications, such as household size and age of head. A large drop in the incidence of core need among unattached individuals was commented upon earlier, when the impact produced by changes in estimation methodology was reviewed for households classified by size. No change in the incidence level for households comprised of only a husband and a wife was to be expected given the fact that households of size two were chosen in the variable ratio model to retain the traditional 30 per cent shelter affordability cut-off level. For all other categories of households, among whom the largest in size are family households with single children, the variable-ratio-based incidence shows an increased level of core need. It is worth pointing out too that the variable ratio method finds an even higher level of core need problems among families headed by single female parents than was diagnosed under the fixed ratio method, 40.6 versus 38.3 per cent.

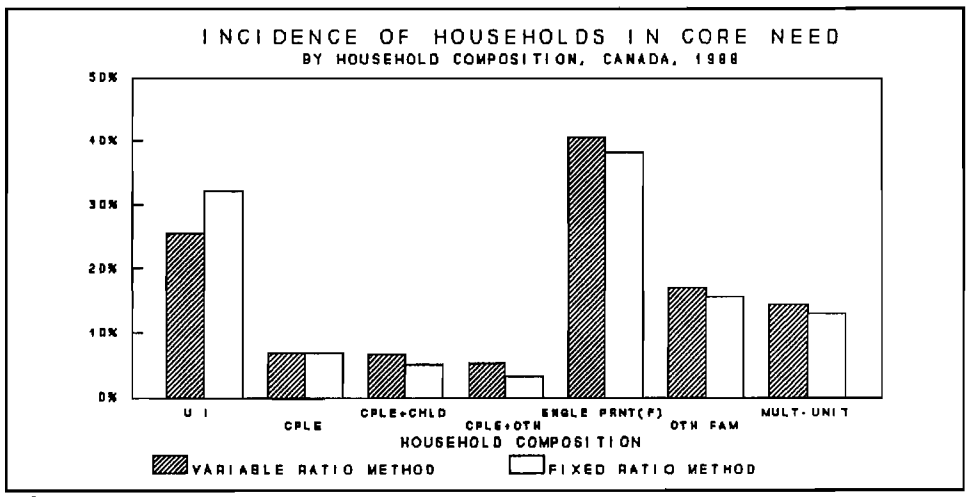

Figure 3.11

Given large differences in the category sizes, and in the impact of alternative methodologies on the calculation of core need incidence, it is obvious that the distribution of households in core need by Household Composition also underwent a significant and, when plotted, a readily visible change. This is illustrated in Fig. 3.12.

It will be noted that there are two types of households where the variable ratio method produces larger shifts in the distribution. When the fixed ratio is replaced by the variable ratio method, the proportion of all core need cases comprised of unattached individuals drops sharply, from 50.7 to 41.8 per cent, while the presence of husband-wife families with single children (and no other dependents) correspondingly increases from 13.7 to 18.8 per cent of the core need total. In comparison, there are only minor changes in the remaining segments of the distribution.

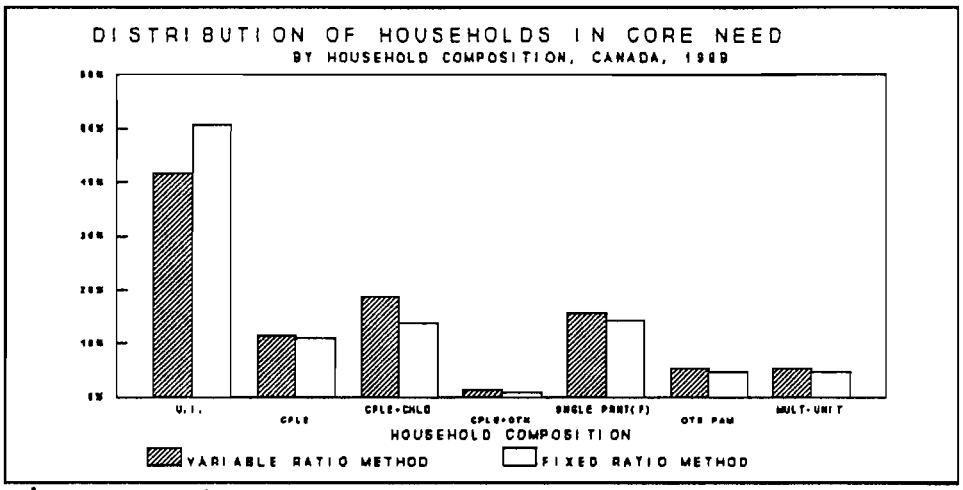

Figure 3.12

Unattached individuals, under either definition, incurred the second highest incidence of core need but, when the calculation shifts from a fixed to a variable ratio method, the incidence drops significantly from 32.3 to 25.5 per cent.

TABLE 3.16 Households in Core Housing Need
Unattached Individuals
Canada, 1988

		In core need		Coreneed Incidence	
Unattached individuals	Total households	Variable method	Fixed method	Variable method	Fixed method
Total	1,978,146	504,919	638,156	25.5%	32.3%
Elderly females	533,389	174,271	221,285	32.7%	41.5%
Other	1,444,757	330,648	416,871	22.9%	28.9%

From recent studies it is known that a large distinct group among unattached individuals - single elderly females (27 per cent of the total), have consistently experienced especially great difficulties with shelter affordability, more so than any other readily recognisable household category, including female single parent families. Indeed, with the fixed ratio method, the 1988 incidence of core housing need among them was 41.5 per cent (compared to the 38.3 per cent figure mentioned earlier with respect to female single parent families). With the variable ratio methodology, which allows for differences in spending on basics among households of different sizes, this percentage drops to 32.7 per cent, considerably below the corresponding figure applicable to female single parent families (40.6 per cent).

3.8 Core Housing Need, by Geographic Variables

Geographic implications of changes in the core need classification of households become more readily apparent if the initial stage of the analysis focuses only on records directly affected by the revised procedures. Net changes of the full universe of core need cases, if examined alone, may often hide the fact that the process alters the composition of some core need groups on a quite substantial scale even though the net result reveals little if any change. Statistics on all households affected by changes in core need status determination are give in Table 3.17. This three-dimensional tabulation cross-classifies the affected households by region, area of residence (met or non-met) and tenure. In cells where estimates are small and consequently low in statistical reliability, these have been deleted[10]. The cell is filled with the notation "---".

There was a shift toward a somewhat higher representation of non-metropolitan households in the core need group as 31,505 non-metropolitan households of size three and larger replaced 41,152 one-person units. The drop in the total number of core need cases in non-metropolitan areas was thus 9,647 units. On the other hand, in metropolitan areas there were only 51,161 households added to the revised core need group which lost 92,085 one-person units, a net loss of 40,924 households. Another notable difference between the two "area of residence" summary categories relates to tenure. While in both areas households added to the core need category had a higher proportion of home owners among them than did the respective departing one-person households, in non-metropolitan areas home owners represented nearly two-thirds of the total, while in metropolitan areas only a third. Thus, the variable ratio method not only increases the relative size of home owners in the core need group but in doing so it also expands the presence of non-metropolitan households of this type.

In three of the five regions of Canada (Ontario, Prairies, and British Columbia), regional proportions of households added to or removed from the core need category were roughly of the same order of magnitude. Consistent with the national pattern, the level of household deletions in these three regions exceeded the corresponding volume of additions. Quebec region, however, lost proportionately more than it gained under the re-classification of core need. In the Atlantic Region the reverse was true; core need additions outnumbered deletions and by a substantial margin (two to one). The overall impact on the regional composition of core need was to increase the presence of Atlantic and reduce the presence of Quebec households in need. In Ontario, while the proportion of renters among core need cases changed relatively little, there was a major shift within the owners category, from single households with no mortgages, to households of size three and larger with

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[10]There is no simple program available for use on personal computers to calculate standard errors of estimates for this sample-based data set. The criterion applied here is therefore arbitrary. It is, however, partially based on practices followed by Statistics Canada in their assessment of statistical reliability of Household Facilities and Equipment Survey estimates except that in this case the minimum size of usable estimate is set at 3,500 households instead of 4,000 households.

mortgages. In all other regions, there was a general reduction in the proportion of renters among households in core need. It was mostly owners with mortgages who showed corresponding gains.

TABLE 3.17 Households with Changing Core Need Status by Tenure, Region and Area of Residence Canada, 1988

TENURE	CANADA			ATLANTIC			QUEBEC		
NET CHANGE	TOTAL	MET.	N-MET	TOTAL	MET.	N-MET	TOTAL	MET.	N-MET
TOTAL	(50,571)	(40,924)	(9,647)	1,889	(195)	2,084	(20,260)	(18,182)	(2,078)
RENT	(53,871)	(42,426)	(11,445)	(2,662)	(618)	(2,044)	(21,353)	(19,505)	(1,848)
OWN-MRTGE	(11,549)	(3,469)	(8,080)	1,237	(130)	1,367	(2,304)	(104)	(2,200)
OWN+MRTGE	14,849	4,971	9,878	3,314	553	2,761	3,397	1,427	1,970
OUT: 1-PERSON HOUSEHOLDS									
TOTAL	(133,237)	(92,085)	(41,152)	(8,972)	(1,495)	(7,477)	(38,518)	(30,397)	(8,121)
RENT	(99,850)	(77,026)	(22,824)	(5,786)	(1,365)	(4,421)	(35,062)	(29,819)	(5,243)
OWN-MRTGE	(19,193)	(5,583)	(13,610)	(2,445)	(130)	(2,315)	(2,778)	(578)	(2,200)
OWN+MRTGE	(14,194)	(9,476)	(4,718)	(741)	0	(741)	(678)	0	(678)
IN: 3+ PERSON HOUSEHOLDS									
TOTAL	82,512	51,161	31,505	10,730	1,300	9,561	19,441	12,215	6,043
RENT	45,070	34,600	11,379	3,077	747	2,377	13,709	10,314	3,395
OWN-MRTGE	8,743	2,114	5,530	3,598	0	3,682	1,657	474	0
OWN+MRTGE	28,699	14,447	14,596	4,055	553	3,502	4,075	1,427	2,648

TENURE	ONTARIO			PRAIRIES			BRIT.COLUMBIA		
NET CHANGE	TOTAL	MET.	N-MET	TOTAL	MET.	N-MET	TOTAL	MET.	N-MET
TOTAL	(17,594)	(11,348)	(6,246)	(7,697)	(5,609)	(2,088)	(6,909)	(5,590)	(1,319)
RENT	(13,663)	(9,770)	(3,893)	(8,151)	(5,923)	(2,228)	(8,042)	(6,610)	(1,432)
OWN-MRTGE	(6,625)	(2,430)	(4,195)	(2,752)	(751)	(2,001)	(1,105)	(54)	(1,051)
OWN+MRTGE	2,694	852	1,842	3,206	1,065	2,141	2,238	1,074	1,164
OUT: 1-PERSON HOUSEHOLDS									
TOTAL	(47,270)	(35,040)	(12,230)	(22,064)	(13,065)	(8,999)	(16,413)	(12,088)	(4,325)
RENT	(32,274)	(26,136)	(6,138)	(15,271)	(10,553)	(4,718)	(11,457)	(9,153)	(2,304)
OWN-MRTGE	(8,523)	(3,579)	(4,944)	(3,596)	(927)	(2,669)	(1,851)	(369)	(1,482)
OWN+MRTGE	(6,473)	(5,325)	(1,148)	(3,197)	(1,585)	(1,612)	(3,105)	(2,566)	(539)
IN: 3+ PERSON HOUSEHOLDS									
TOTAL	29,337	23,692	5,984	13,500	7,456	6,911	9,504	6,498	3,006
RENT	18,272	16,366	2,245	6,597	4,630	2,490	3,415	2,543	872
OWN-MRTGE	1,898	1,149	749	844	176	668	746	315	431
OWN+MRTGE	9,167	6,177	2,990	6,059	2,650	3,753	5,343	3,640	1,703

Finally, combining regional and area of residence dimensions, we find that Ontario was the only region where under the variable ratio definition of the affordability threshold, core need households in non-metropolitan areas reduced their proportional representation in the total pool of "problem" cases. It was mentioned earlier that while in both met and non-met areas the number of core need cases declined, the drop was much smaller in non-met areas, 9,647 units compared to 40,924 in met areas. To put it another way, the "replacement rate" of core need households in non-met areas (newly-designated core need households x 100% / rejected former core need households) was 77% compared to 56% in met areas. In Ontario, however, this replacement rate in non-met areas drops to just below 50% while it is 128% in the Atlantic region. In the remaining regions the rate is quite close to the average for all non-met areas combined.

In metropolitan areas the picture is somewhat different. While in the Prairies and British Columbia the replacement ratio closely resembles the average figure for all met areas, in Ontario it increases to 68%, but then, in Quebec, it drops to 40%. In the Atlantic region the numbers are too small to require a comment. Thus, Ontario while reducing its contribution of core need cases from non-met areas, makes up by contributing more from metropolitan areas, with an overall result that its regional pattern of change, like that of the Prairies and British Columbia, closely approximates the national experience.

About a third of all those households that were recognized as being in core need only by the variable ratio methodology (and not by the fixed ratio method), were renters residing in metropolitan areas of Ontario and Quebec. In comparison, the proportion of one-person households which lost their core need status was some ten percentage points higher. The key conclusion is that, under the variable ratio methodology, metropolitan areas of central Canada contribute proportionately less renters who are in core need than is the case under the traditional, fixed ratio method.

3.9 Core Housing Need, by Area of Residence

TABLE 3.18 All Households and Those in Core Housing Need by Area of Residence Canada, 1988

AREA OF RESIDENCE	TOTAL HOUSEHOLDS		IN CORE NEED					
			VARIABLE		FIXED		INCIDENCE	
	#	%	#	%	#	%	VAR.	FIXED
ALL AREAS	8,979,753	100.0%	1,209,205	100.0%	1,259,776	100.0%	13.5%	14.0%
500,000 & OVER	4,340,620	48.3%	657,482	54.4%	690,701	54.8%	15.1%	15.9%
100,000-499,999	1,070,571	11.9%	149,870	12.4%	157,575	12.5%	14.0%	14.7%
30,000- 99,999	931,037	10.4%	108,859	9.0%	113,855	9.0%	11.7%	12.2%
SMALL URBAN	1,211,190	13.5%	146,421	12.1%	154,098	12.2%	12.1%	12.7%
RURAL	1,426,335	15.9%	146,573	12.1%	143,547	11.4%	10.3%	10.1%

The two methods of measuring core housing need produce generally similar incidence patterns when the classifying variable is the Area of Residence. In only one case does the variable ratio profile behave differently, and that is in rural areas, where it identifies a somewhat higher level of core housing need than the traditional, fixed ratio method. In all other areas, there are only marginal departures from the national difference, and none in terms of direction.

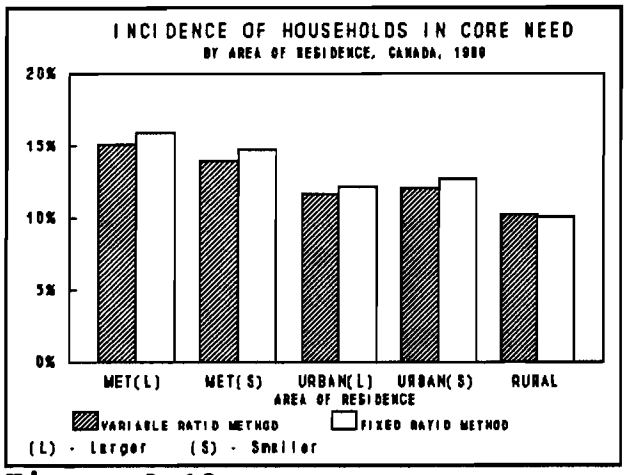

Figure 3.13

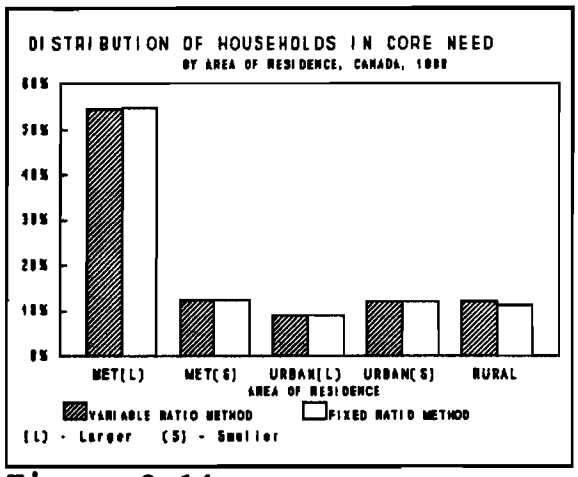

Figure 3.14

The distribution of core need households, shown in Figure 3.14, also illustrates a somewhat higher sensitivity of rural areas to the method used to select households in core need. Its causes are of some interest and will be explored later but, as is clearly evident from the provided illustration, the impact of this factor on the overall distribution pattern of core need households is barely discernible.

Table 3.19 Shelter Costs, Income, and Shelter Cost-to-Income Ratios
Group Averages, by Area of Residence
Canada, 1988

AREA OF RESIDENCE	AVERAGE SHELTER COSTS			AVERAGE INCOME			AFFORDABILITY RATIO		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
ALL AREAS	5,615	4,872	4,718	38,904	11,881	11,292	14.4%	41.0%	41.8%
500,000 & OVER	6,294	5,318	5,149	42,090	12,466	11,854	15.0%	42.7%	43.4%
100,000-499,999	5,846	5,064	4,970	39,050	12,378	11,948	15.0%	40.9%	41.6%
30,000-99,999	5,489	4,721	4,508	36,962	10,544	10,164	14.9%	44.8%	44.3%
SMALL URBAN	4,745	4,067	3,920	33,828	10,363	9,834	14.0%	39.2%	39.9%
RURAL	4,199	3,591	3,392	34,677	11,258	10,322	12.1%	31.9%	32.9%

Thanks to lower costs of rural shelter, households in rural areas spend on average a smaller percentage of their income on shelter than do urban households (Table 3.19). This also applies to households in core need under either definition. It will be noted that, when core need is re-defined to conform to the variable ratio norms, the average area shelter cost-to-income (affordability) ratios display a nearly consistent tendency to decline, with the largest drop, from 32.9 to 31.9 per cent, occurring in rural areas. Urban areas with the population in the 30,000-99,999 range, where this ratio increased, represent the only exception. As the minimum ratio value (rural areas) moved lower and the maximum value (urban 30,000-99,999 areas) higher, the ratio range expanded accordingly.

Table 3.20 examines tenure characteristics, by area of residence, of all households and those in core need, before and after the use of variable ratio cut-offs in the Core Housing Need Module.

TABLE 3.20 Distribution of All Households and Those in Core Need by Tenure within the Area of Residence Categories
Canada, 1988

AREA OF RESIDENCE	TOTAL	RENTERS			OWNERS, NO MORTGAGE			OWNERS WITH MORTGAGE		
		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
			V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
ALL AREAS	100%	36.4%	70.5%	72.0%	31.7%	13.8%	14.2%	31.9%	15.7%	13.9%
500,000 & OVER	100%	46.0%	79.4%	80.5%	24.5%	7.3%	7.5%	29.5%	13.2%	12.0%
100,000-499,999	100%	36.0%	74.7%	76.5%	28.1%	10.1%	9.6%	35.9%	15.2%	13.9%
30,000- 99,999	100%	35.5%	74.5%	74.7%	28.6%	10.4%	12.8%	35.9%	15.2%	12.5%
SMALL URBAN	100%	32.5%	66.1%	66.5%	37.0%	21.3%	22.6%	30.5%	12.6%	10.8%
RURAL	100%	11.4%	27.7%	29.4%	53.8%	41.7%	43.4%	34.8%	30.6%	27.1%

The proportion of all households living as renters consistently drops as the size of the Area of Residence declines, from 46.0% in areas with a population of at least 500,000, to only 11.4% in rural areas. This pattern equally applies to renter households in core need, defined either way. Within each urban area category, the percentage of renters among households in core need is, however, at least twice as high as for all households combined. Only in the largest metropolitan areas, where population exceeds 500,000, this difference is somewhat reduced. When the core need status is re-defined on the basis of variable cut-offs, these percentages change little. Two categories showing somewhat larger changes are smaller metropolitan areas (population 100,000 - 499,999) and rural areas. But unlike the former, where there are compensating increases in both owner categories, in rural areas, it is only owners with mortgages who increase their percentage not only at the expense of renters but also at the expense of owners without mortgages.

The percentage of people living alone (one-person households) is considerably lower in rural areas than in urban areas, 13 per cent compared to over 22 per cent (Table 3.21). This,

combined with the fact that two-thirds of households of this type live in rented accommodation, explains why the percentage of renters in rural areas, whatever their core need status, is so much lower than in urbanized areas.

TABLE 3.21 Average Household Size and Selected Percentages
All Households and Those in Core Need
Canada, 1988

AREA OF RESIDENCE	HOUSEHOLD SIZE AVERAGE			1-PERSON HOUSEHOLDS AS PER CENT OF TOTAL			PER CENT IN THE LOWEST QUINTILE		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
ALL AREAS	2.72	2.24	1.97	22.0%	41.8%	50.7%	20.0%	81.5%	86.2%
500,000 & OVER	2.63	2.18	1.93	24.6%	42.9%	51.5%	18.7%	78.4%	82.8%
100,000-499,999	2.68	2.20	1.93	22.8%	43.7%	53.0%	19.5%	78.4%	81.3%
30,000- 99,999	2.70	2.19	1.90	22.3%	40.9%	50.1%	20.5%	92.5%	96.3%
SMALL URBAN	2.66	2.10	1.85	22.4%	47.9%	56.2%	23.5%	89.1%	94.2%
RURAL	3.05	2.75	2.38	13.2%	29.4%	38.4%	21.0%	82.5%	90.9%

The same "asymmetry" in the rural composition of households (in terms of size) also provides an explanation for the earlier-observed difference in this area's reaction to the modifications of the shelter affordability concept. Since in rural areas one-person households account for only one-eighth (13%) of households, (nationally - 22%), this area is affected much less than other areas by more stringent "variable ratio" criteria applicable to one-person core need households or, in more specific terms, by the adjustment of the ratio cut-off level from 30 to 35 per cent. As a result, the rural areas, where 16 per cent of Canada's households reside, accounted for only 9 per cent of (one-person) households which lost their core need status under the variable ratio approach. In contrast, rural contribution of "new" core need cases (households of size three and larger) amounted to 18 per cent of the corresponding total, which exceeds their proportional representation. The net effect of these two uneven adjustment flows was an increment in rural core need incidence while in all other areas these adjustments produced a drop. Such opposing results reduced the dispersion of area incidence estimates, but rural areas nevertheless retained their position as the area with the lowest incidence of core need.

3.10 Core Housing Need, by Province/Region

Some interesting contrasts in estimates (based on the variable ratio model) are observed when one compares the provinces comprising the Atlantic Region with other provinces. In the latter case, the drop in the incidence level, caused by the use of the variable ratio, is consistent with the overall direction and size of adjustment, except that Manitoba and Quebec display a somewhat greater sensitivity toward change than do other provinces west of New Brunswick. However, in the Atlantic Region, little consistency can be found.

TABLE 3.22 All Households and Those in Core Housing Need by Province Canada, 1988

Province	TOTAL HOUSEHOLDS		IN CORE NEED					
			VARIABLE		FIXED		INCIDENCE	
	#	%	#	%	#	%	V'ABLE	FIXED
CANADA	8,979,753	100.0%	1,209,205	100.0%	1,259,776	100.0%	13.5%	14.0%
BR. COLUMBIA	1,105,636	12.3%	174,696	14.4%	181,605	14.4%	15.8%	16.4%
PRAIRIES	1,524,187	17.0%	206,706	17.1%	214,403	17.0%	13.6%	14.1%
ALBERTA	817,214	9.1%	107,047	8.9%	110,388	8.8%	13.1%	13.5%
SASK.	338,116	3.8%	44,083	3.6%	45,164	3.6%	13.0%	13.4%
MANITOBA	368,857	4.1%	55,576	4.6%	58,851	4.7%	15.1%	16.0%
ONTARIO	3,255,227	36.3%	364,251	30.1%	381,845	30.3%	11.2%	11.7%
QUEBEC	2,354,952	26.2%	339,800	28.1%	360,060	28.6%	14.4%	15.3%
ATLANTIC	739,751	8.2%	123,752	10.2%	121,863	9.7%	16.7%	16.5%
N.B.	234,353	2.6%	41,448	3.4%	40,838	3.2%	17.7%	17.4%
N.S.	301,254	3.4%	46,171	3.8%	47,515	3.8%	15.3%	15.8%
P.E.I.	42,492	0.5%	6,508	0.5%	6,556	0.5%	15.3%	15.4%
NFLD	161,652	1.8%	29,625	2.4%	26,954	2.1%	18.3%	16.7%

Two of the Atlantic provinces show an increase in the incidence as the result of a switch from the fixed to the variable ratio estimation method of core need, with Newfoundland displaying a particularly large change, from 16.7 to 18.3 per cent, while in New Brunswick the change is much more moderate, from 17.4 to 17.7 per cent. In Nova Scotia the change in direction as well as magnitude is similar to the national result, but in Prince Edward Island differences in methodology have only a very marginal impact on estimates.

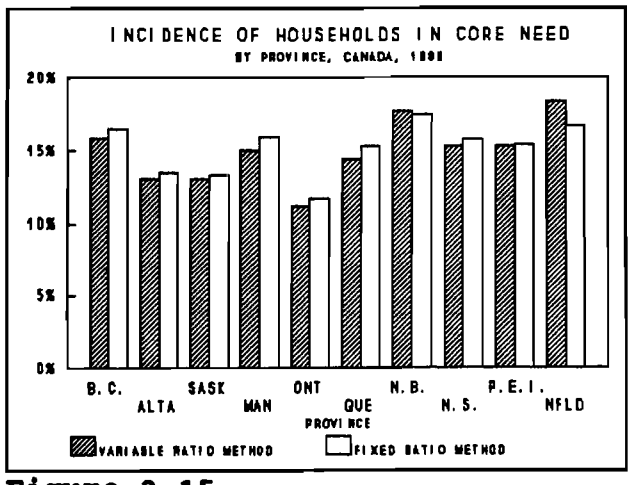

Figure 3.15

The observed changes in incidence produce no appreciable impact on the distribution of core need households by province (Fig. 3.16); the provincial shares of core need households change only fractionally. The province of Ontario, which along with Saskatchewan and Alberta to much lesser degrees, is somewhat under-represented among households in core need, still accounts, under the variable-ratio-based classification, for the largest single

provincial block of core need households - 30 per cent of the total, only a tiny fraction less than under the "fixed ratio" method.

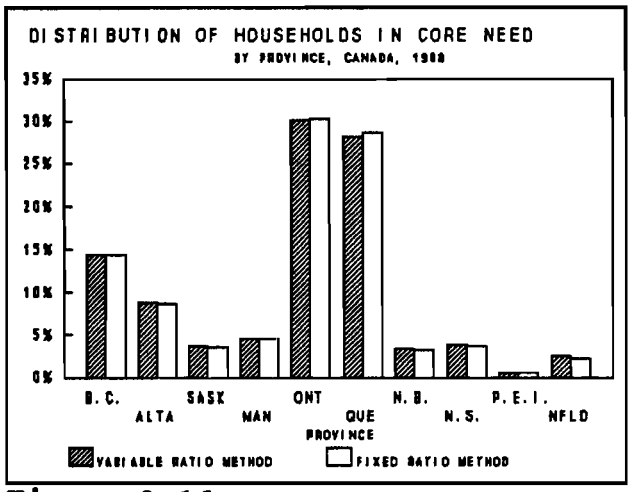

Figure 3.16

While in every province the variable ratio method produces a lower proportion of renters among households in core need, the decline is somewhat more pronounced in the Atlantic region where this tenure mode is much less common than in other parts of Canada (except Saskatchewan) (Table 3.23). Least affected is the province of Ontario where the drop is minimal. Irrespective of how core need is defined, in every province the percentage of renters among households in core need tends to be twice as high as the percentage of renters in the overall household population. There are, of course, variations. Quebec, Manitoba and Saskatchewan are the three provinces which depart somewhat more than others from this overall relationship.

TABLE 3.23 Distribution of All Households and Those in Core Need by Tenure within the Province
Canada, 1988

PROVINCE	RENT			OWN, NO MORTGAGE			OWN WITH MORTGAGE		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
CANADA	36.4%	70.5%	72.0%	31.7%	13.8%	14.2%	31.9%	15.7%	13.9%
BRIT.COLUMBIA	35.8%	69.9%	71.7%	32.4%	12.8%	12.9%	31.8%	17.3%	15.4%
PRAIRIES	32.1%	69.0%	70.4%	35.0%	14.5%	15.3%	32.9%	16.5%	14.4%
ALBERTA	34.4%	70.8%	71.8%	31.0%	11.3%	12.2%	34.6%	17.9%	16.0%
SASKATCHEWAN	26.0%	60.3%	61.5%	42.5%	23.5%	24.9%	31.5%	16.2%	13.6%
MANITOBA	32.5%	72.7%	74.4%	37.1%	13.6%	13.7%	30.5%	13.8%	11.9%
ONTARIO	36.0%	69.8%	70.1%	32.2%	13.7%	14.8%	31.8%	16.5%	15.0%
QUEBEC	43.8%	80.7%	82.1%	24.7%	7.8%	8.0%	31.5%	11.5%	9.9%
ATLANTIC	24.7%	48.0%	50.9%	43.4%	31.0%	30.4%	31.9%	21.0%	18.6%
NEW BRUNSWICK	22.9%	48.4%	51.6%	40.9%	24.7%	24.5%	36.1%	26.9%	23.8%
NOVA SCOTIA	27.7%	52.8%	55.0%	38.9%	27.7%	27.8%	33.3%	19.5%	17.2%
P.E.I.	24.0%	45.6%	51.2%	42.7%	26.2%	26.0%	33.3%	28.3%	22.8%
NEWFOUNDLAND	21.7%	40.4%	42.6%	55.5%	45.9%	45.2%	22.8%	13.7%	12.3%

As has already been observed, owners without mortgages appear to be less sensitive to the method of core need determination. This is also reflected in provincial figures. Shares of core need held by households in this tenure class change little when variable ratio cut-offs replace the fixed cut-off point. The provinces of Ontario and Alberta, where this proportion dropped by about a full percentage point, accounted for most of the small decline shown at the national level.

Owners with mortgages, the only tenure category which contributed more core need cases than it lost with transition from the fixed to the variable scale of cut-off values, shows for all provinces a corresponding increase in "variable" proportions. These increases do not vary too much from province to province[11]. The lowest proportion, as before, applies to the province of Quebec, and the highest, to the Atlantic region.

To overcome possible statistical reliability problems associated with small estimates, the next two tables will present data by regions.

TABLE 3.24 Average Size of Households, and Selected Percentages by Region, All Households and Those in Core Need, Canada, 1988

REGION	HOUSEHOLD SIZE AVERAGE			1-PERSON HOUSEHOLDS AS PER CENT OF TOTAL			PER CENT IN THE LOWEST QUINTILE		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
CANADA	2.72	2.24	1.97	22.0%	41.8%	50.7%	20.0%	81.5%	86.2%
BRIT. COLUMBIA	2.52	2.17	1.94	26.9%	43.6%	51.0%	21.5%	80.3%	82.2%
PRAIRIES	2.71	2.37	2.09	22.8%	40.3%	49.2%	21.2%	82.1%	89.1%
ONTARIO	2.76	2.21	1.90	21.4%	44.2%	54.5%	15.8%	72.6%	77.3%
QUEBEC	2.67	2.11	1.89	21.5%	42.2%	50.5%	22.8%	90.8%	94.5%
ATLANTIC	2.96	2.57	2.27	17.6%	33.2%	41.1%	24.8%	82.6%	90.0%

With the replacement of discarded one-person core need households by larger units, the core need group, defined in accordance with the "variable ratio" methodology, produces not surprisingly more persons per household than originally. Yet, when a comparison is made with the corresponding average applicable to **all** households, it becomes evident that households in core need are, on average, still considerably smaller than are **all** units. The Atlantic Region leads with the largest average size for both: all households and those in core need (under either definition), but there is no such symmetry for the other extreme. While British Columbia households are smallest in size, in the core need group, such

[11]Prince Edward Island represents a notable departure from this overall pattern. This finding, however, may not be statistically valid as it is based on a very small sample.

households are found in Quebec. Oddly, the percentage of one-person households in that group is higher in Ontario and British Columbia (under the "variable" core need definition: 44.2 and 43.6 per cent respectively) than it is in Quebec (42.2 per cent).

Perhaps it is not entirely accidental that it is also in the same region, Quebec, that the percentage of core need households in the lowest income quintile exceeds corresponding figures of other regions, and by a hefty margin. Table 3.25 may offer some answers.

In all regions, households placed into the core need category by the variable ratio method paid for shelter only a little more than did households selected by the fixed ratio procedure. In the former case, average costs ranged from a low of $3,939 in the Atlantic region, to a high of $5,495 in Ontario. This pattern also applies to the "fixed ratio" core need group, as well as to the all- household population where these costs ranged from $4,447 to $6,320.

TABLE 3.25 Shelter Costs, Income , and Shelter Cost-to-Income Ratios Group Averages, by Region Canada, 1988

REGION	AVERAGE SHELTER COSTS			AVERAGE INCOME			AFFORDABILITY RATIO		
	ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED		ALL H'HOLDS	IN CORE NEED	
		V'ABLE	FIXED		V'ABLE	FIXED		V'ABLE	FIXED
CANADA	5,615	4,872	4,718	38,904	11,881	11,292	14.4%	41.0%	41.8%
B. C.	5,671	5,153	5,007	37,712	12,323	11,849	15.0%	41.8%	42.3%
PRAIRIES	5,505	4,881	4,642	37,406	11,666	11,040	14.7%	41.8%	42.0%
ONTARIO	6,320	5,495	5,310	43,356	13,416	12,589	14.6%	41.0%	42.2%
QUEBEC	5,053	4,394	4,278	36,120	10,259	9,971	14.0%	42.8%	42.9%
ATLANTIC	4,447	3,939	3,870	33,044	11,551	10,741	13.5%	34.1%	36.0%

On the income side, the pattern is somewhat different. As the level of income is related to the size of unit, substitution of one-person households by larger households, as is the case in the current exercise, produces higher average incomes. While all regions share this result, in Quebec the increase is much smaller than elsewhere. Historically, households in the Atlantic region of Canada have always lagged behind other areas in terms of average income, but among households in core need, this distinction belongs to residents of Quebec. The variable ratio method has not affected this result in any way.

When the variable ratio methodology is applied, shelter cost-to-income ratios change only fractionally. The largest drop in the ratio occurs in the Atlantic region, where it falls from 36.0% to 34.1%. In all other regions these ratios drop less, with the fall from 42.2% to 41.0% in Ontario being the next largest. There is nearly no drop at all in Quebec, where it changes from 42.9% to 42.8 per cent, to remain the highest regional ratio.

3.11 Core Housing Need, by Region and by Area of Residence

The type of area affected most by the change in the shelter affordability cut-off definition, is the one comprised of large cities with a population of 100,000 and more - Metropolitan areas. Under the variable ratio estimation method, at the Canada level, the incidence of core need cases is 14.9 per cent, down from 15.7 per cent fixed ratio level. As Fig. 3.17 shows, the relationship between these two incidence levels is anything but uniform across Canada.

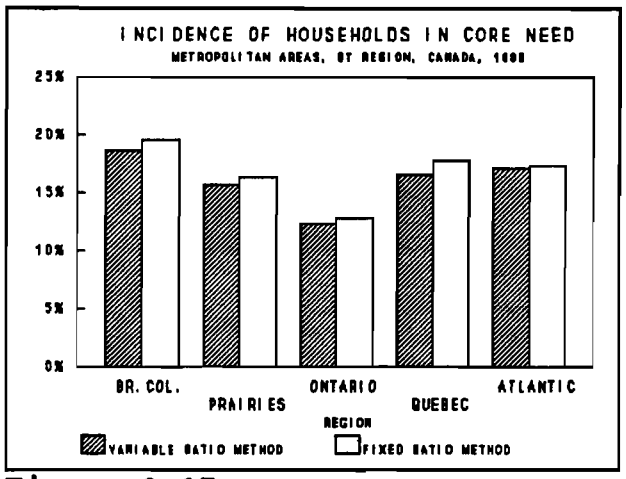

Figure 3.17

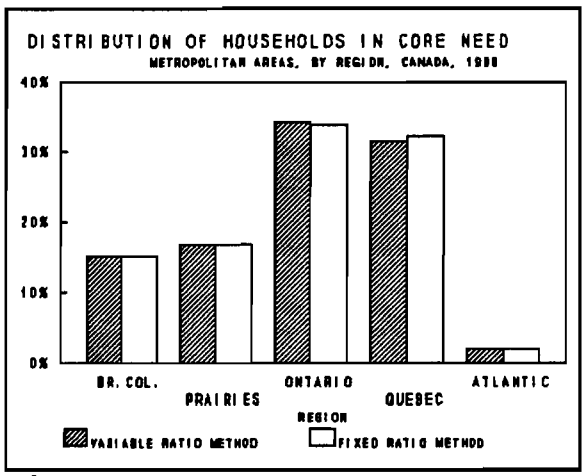

Figure 3.18

In metropolitan areas of the Atlantic Region, both methods yield nearly identical results. Yet, in Quebec, the variable ratio incidence estimate is more than a full percentage point lower than the one based on the fixed ratio. Even in this case, the absolute reduction is only 18,000 households and, as will be shown, this constitutes the entire impact of the change in methodology on Quebec. In the remaining three regions, the pattern is generally consistent with the overall pattern.

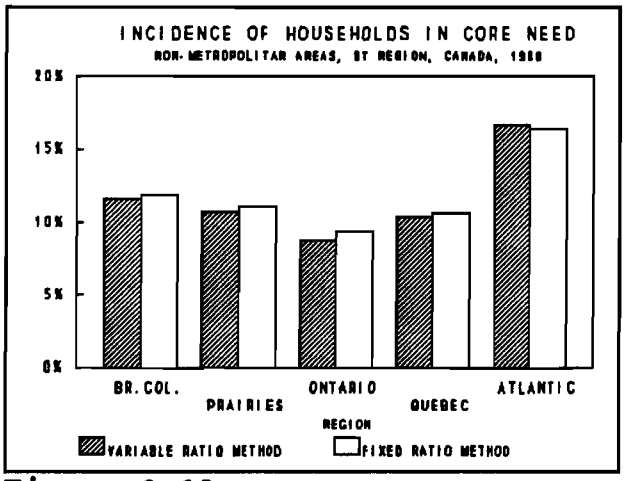

Figure 3.19

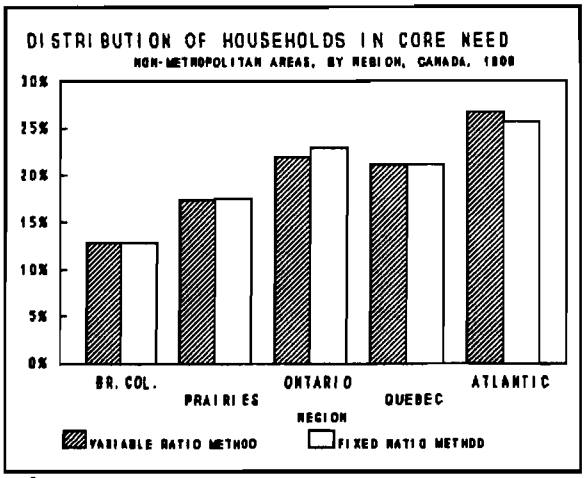

Figure 3.20

When the variable- and fixed-ratio estimates in Non-metropolitan Canada are compared, one finds that the level of core housing need changes relatively little with the change in methodology. There are two aspects that stand out when the pattern presented in Figure 3.19 is examined: (1) a wider gap between the two estimates in Ontario, and (2) a reversal of the pattern in the Atlantic Region, the only instance where the variable-ratio method produces a higher estimate of core need incidence than does the fixed method. Figure 3.20 illustrates changes in the distribution of non-metropolitan households in core housing need when the variable ratio criterion is applied in place of a fixed ratio. In this case, changes in the distribution are, in general, consistent with the pattern shown in the preceding figure: an increased proportion of core need households is contributed by the Atlantic Region, a larger reduction takes place in Ontario, and little change occurs elsewhere.

TABLE 3.26 All Households and Those in Core Housing Need by Region and Area Canada, 1988

REGION & AREA		TOTAL HOUSEHOLDS		IN CORE NEED					
				VARIABLE		FIXED		INCIDENCE	
		#	%	#	%	#	%	V'ABLE	FIXED
CANADA - TOTAL		8,979,753	100.0%	1,209,205	100.0%	1,259,776	100.0%	13.5%	14.0%
METROPOLITAN		5,411,191	60.3%	807,352	66.8%	848,276	67.3%	14.9%	15.7%
NON-METROPOLITAN		3,568,562	39.7%	401,853	33.2%	411,500	32.7%	11.3%	11.5%
BR.COL.	M	657,978	7.3%	122,958	10.2%	128,548	10.2%	18.7%	19.5%
	N-M	447,658	5.0%	51,738	4.3%	53,057	4.2%	11.6%	11.9%
PRAIRIES	M	872,487	9.7%	136,723	11.3%	142,332	11.3%	15.7%	16.3%
	N-M	651,700	7.3%	69,983	5.8%	72,071	5.7%	10.7%	11.1%
ONTARIO	M	2,247,752	25.0%	276,285	22.8%	287,633	22.8%	12.3%	12.8%
	N-M	1,007,475	11.2%	87,966	7.3%	94,212	7.5%	8.7%	9.4%
QUEBEC	M	1,537,885	17.1%	255,136	21.1%	273,318	21.7%	16.6%	17.8%
	N-M	817,067	9.1%	84,664	7.0%	86,742	6.9%	10.4%	10.6%
ATLANTIC	M	95,089	1.1%	16,250	1.3%	16,445	1.3%	17.1%	17.3%
	N-M	644,662	7.2%	107,502	8.9%	105,418	8.4%	16.7%	16.4%

Looking at the intra-regional differences in core need estimates based on the alternative measures of shelter affordability (Table 3.26), Ontario was the only region where the difference did not diminish between the incidence of core need in metropolitan and non-metropolitan areas. There, with the application of variable cut-offs, this gap widened a little, from 3.4 to 3.6 percentage points. In all other regions, as well as at the national level, it narrowed. In the Atlantic region, it nearly disappeared completely as the rising incidence of core need in non-metropolitan areas approached the declining incidence in metropolitan areas. It should be noted, however, that the classification of areas of

residence in that region is arbitrarily modified by Statistics Canada to protect the anonymity of survey respondents. The observed result thus must be viewed with caution.

Two percentage distributions of households in core need included in this table, which correspond to the pair of core need definitions used, summarize geographic shifts in the composition of the core need group. Ignoring fractional differences, two mutually offsetting changes stand out: a lower proportion of core need cases in the metropolitan areas of Quebec (a change from 21.7% to 21.1%), and a corresponding increase in the non-metropolitan areas of the Atlantic region (from 8.4% to 8.9%). The variable ratio cut-off method can thus be summarized to produce a lower overall incidence of core need which applies uniformly across geographic regions and areas of Canada except that it finds the core need problem to be somewhat higher in the non-metropolitan areas of the Atlantic region and correspondingly lower in the metropolitan areas of Quebec.

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CHAPTER 4
Conclusions and Recommendations

4.1 Variable Ratio Methodology - Assessment and Recommendations

On the basis of information presented in the preceding chapters, the following assessment can be drawn up with regard to the proposed variable-ratio-based estimation procedure:

1) The method is an outgrowth of the current, fixed-ratio methodology. It is evolutionary rather than revolutionary in nature. It can be expected to refine the estimates.

2) Conceptual simplicity: the method is based on reasonably simple logic that can be readily followed by most people.

3) The method reduces dispersion in core housing need estimates at the same time as better identifying extreme cases where circumstances warrant it (single female parent families, for example);

4) As described in Appendix "B", this method is relatively simple to implement with the existing CMHC Core Need computer procedure;

5) Compared to the original fixed-ratio methodology, it produces results which, at least for 1988, show even greater concordance with another well-accepted indicator of household hardship - low income cut-offs, frequently viewed as a measure of poverty.

Table 4.1
Households in Core Housing Need
Per Cent Reporting Income Below Low-Income Cut-offs (1978 Base)
1988

Method	Per cent with Low Income
Fixed ratio	71.6%
Variable ratio	74.8%

In light of these findings, modifications to the existing CMHC Core Housing Need Model to incorporate the variable ratio aspect, in lieu of the traditional fixed (30%) standard, appear to be feasible and are recommended.

4.2 Revisions of the Basic Shelter Affordability Cut-off Point

The model developed for the application of variable shelter cost-to-income ratio cut-offs in the CMHC Core Housing Need Model takes the traditional 30 per cent threshold as the base which it then extends in both directions to create a scale of variable cut-off points. This approach permits placing the obtained variable ratio results alongside indicators based on the existing fixed ratio framework of core need measurement, thus creating an opportunity for an assessment of differences in the results attributable strictly to changes in methodology.

Whether or not this 30 per cent threshold value is to be regarded as something that should remain forever constant represents a different concern. If it is intended to define the **levels** (incidence) of core need as the principal policy concern then, of course, development of an acceptable formula for periodic revisions of that level should at least be attempted. On the other hand, if it is **changes** or **differences** in levels that represent the main concern, then the initial, basic cut-off level in itself is of little significance. Whatever is established becomes the reference point for the exercise, like the zero mark on the Celsius temperature scale.

In reviewing the basic level of the shelter affordability threshold, it is essential to examine the statistical basis behind the current cut-off of 30 per cent. Through linkage of the cut-off to a statistical series through a suitable model, the potential could then be established to periodically adjust the threshold to reflect changing living conditions. In Canada the programme of periodic Family Expenditure Surveys (FAMEX), conducted by Statistics Canada, would be the most suitable statistical source for this purpose. A study, using the FAMEX data recently commissioned by CMHC[12] revealed a rather surprising stability over time in the shelter cost-to-income ratio at the national level. These figures, for three points in time, are shown in Table 4.2.

Table 4.2
Shelter Cost - to - Income (before tax) Ratio, Canada Average
(Units with "Mixed Tenure" are excluded)

Year	Ratio	
	Unrounded	Rounded
1978	14.7%	15%
1982	15.0%	15%
1986	14.6%	15%

Note: For this table, the "Shelter Cost" component of the ratio does not include repayment of the mortgage principal.

[12] Table 2.1, page 26, "An Examination of Household Housing Expenditures 1978-1986", Research Division , CMHC, 1990

If the ratios are rounded to eliminate decimals, they all take the same value, i.e. 15 per cent. Thus, ignoring fractional variations in these estimates, some of which may have been caused by definitional refinements, procedural changes, and other similar factors in the course of survey implementation, there is every reason to accept this historically-stable national average shelter cost-to-income ratio as a basis for setting the central shelter affordability cut-off value.

The relationship between this national shelter cost-to-income ratio and the cut-off point of 30 per cent, in mathematical terms, is simple and can be expressed as either:

(1) cut-off point = (national shelter cost-to-income ratio) X 2, or:
(2) cut-off value = (national shelter cost-to-income ratio) + 15%.

The second formula offers a more feasible definition than the first, as it uses a **fixed** proportion of income to serve as a "reserve" for shelter before the critical ratio value is reached. There is also a precedent for this type of approach in the widely-used indicator - Statistics Canada's low income cut-offs. In the latter, to the national ratio of [basic household costs (food, shelter and clothing)] - to - [income (before tax)], a cushion of 20% is added before the applicable low income cut-off point is set.

4.3 Pre- or After-tax Income?

When income **after** personal taxes is substituted into the shelter cost-to-income ratio at the national level, the ratio displays the same historical stability as was shown earlier for the ratio based on income before taxes.

After rounding, in all three years of observations the average national ratio stays at the level of 18 per cent, three percentage points higher than the ratio based on pre-tax income. The value of the "mark-up" required to bring this ratio to a basic after tax cut-off level would, as in the pre-tax case, involve establishing a fixed proportion of income as the maximum that should be spent by most households on their shelter.

Table 4.3
Shelter Cost - to - Income (after tax) Ratio, Canada Average
(Units with "Mixed Tenure" are excluded)

Year	Ratio	
	Unrounded	Rounded
1978	17.5%	18%
1982	18.0%	18%
1986	17.8%	18%

Note: The "Shelter Cost" component of the ratio does not include repayment of the mortgage principal.

It will be recalled that in the delineation of variable cut-off levels, when expenditure levels were derived for each size of household (technically, the spending unit on the FAMEX data base), personal taxes were duly taken into account (see Chapter 2). Thus, **the developed series of variable cut-offs are meant for use with pre-tax household income.**

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APPENDIX "A"

Statistical Sources

The estimates of variable shelter cost-to-income ratios presented in this study for potential use in the CMHC Core Need Model have all been based on the 1986 FAMEX public-use micro-data tape (the 1986 Family Expenditure Survey, Statistics Canada). The available sample of spending units was first reduced by excluding **secondary** household units (mostly roomers and boarders), spending units occupying free accommodation and, finally, units whose tenure status during the reference year changed from a renter to owner, or vice versa[13]. In this latter case, shelter expenditure patterns tend to be much affected by transactions affecting the tenure change and thus are not representative of the situation over the longer run. These exclusions added up to 579,660 spending units out of 8,857,188.

Shelter costs as defined for purposes of the Core Need Model include, where applicable, regular repayment of mortgage principal. Regrettably, FAMEX micro-data files contain no such details. Instead, their corresponding variable shows the annual change in mortgage principal balance. In most cases, this annual change does represent the annual total of monthly **regular** payments made toward the reduction of mortgage indebtedness. In a minority of cases, however,this total appears either as a large negative[14] or positive figure, the result of major mortgage-related transactions, such as re-mortgaging (purchase of a new home) or a larger lump sum repayment of mortgage debt. There was an estimated number of 360,088 spending units showing either a negative total for principal payments or a positive figure of over $12,000. All of these records were also excluded from further analysis in order to retain only owners making regular mortgage payments for the study. This reduced the covered population of spending units down to 7,917,440, or slightly less than 90 per cent of the original total. For 1986, the average annual payments of principal for home owners with mortgages estimated from this adjusted universe amounted to $1,831.

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[13]These spending units all fall under tenure groups four and five on the FAMEX micro-data base.

[14]"The negative change in principal reflects that for these home owners, the sum of the repayments was more than offset by amounts added to the principal during the year, mainly by those purchasing another home." Quoted from page 18, EXPENDITURE IN CANADA 1986, Statistics Canada, Cat. 62-555

APPENDIX "B"

CORE NEED MODEL
Operational Implication of Variable Ratio Estimates

The presence or absence of potential shelter affordability problems should no longer be determined on the basis of the relationship between the household's observed shelter cost-to-income ratio (variable "STIR88) and a fixed 30% cut-off point. Instead, it should be determined by comparing actual shelter affordability (STIR88) to a series of such cut-off points, different for each household size group, as shown below:

Household Size	Shelter cost-Income Ratio Variable Cut-off	Income Adjustment Factor
1	35%	1.1666...
2	30%	1
3	28%	0.9333...
4-5	27%	0.9
6 or more	25%	0.8333...

Operationally, this can be implemented by creating a new variable, say "AFFORDABLE", where code 1 would identify households with shelter cost-to-income ratios which equal or exceed the cut-off value applicable to their household size (shown in the middle column of the table above). Code 2 would apply to all other, remaining households for whom shelter expenditures do not exceed the norm set for their household size. Code 1 in this variable together with the comparable codes in NOSCROWD and ADEQUATE, will then determine the first-stage selection of households for purposes of determining core housing need.

A similar type of adjustment is also required in the Norm Rent Income calculations. The factor, by which the applicable Norm Rent (Average Annual Shelter Costs /SHELTER) is to be divided, will now vary between 0.35 and 0.25, depending on the size of the household. The value so obtained, when compared to the household's income before tax (YTOTAL) will determine whether that household's income is below (code 1) or above (code 2) the norm rent income applicable to it (YLINE).

Alternatively, operationally, a simple procedure is available to obtain identical results. All it would require is producing an adjusted figure for household income (YTOTAL), by multiplying the original figure by the factors shown in the table above (last column), for the corresponding household size group, of course. If that adjusted YTOTAL is used in all stages of the CORE NEED model in lieu of actual YTOTAL, the existing computer system module should be able to create the required results without any further modifications.

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