

**Feasibility Study  
For a Survey of Consumer  
Intentions to Buy or Renovate**

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**April 1998**

**Disclaimer**

This study was conducted by Prairie Research Associates, for Canada Mortgage and Housing Corporation under Part IX of the National Housing Act. The analysis, interpretations 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.

**FEASIBILITY STUDY FOR A SURVEY OF  
CONSUMER INTENTIONS TO BUY OR  
RENOVATE**

Prepared for:  
Canada Mortgage and Housing Corporation

Canada Mortgage and Housing Corporation, the Federal Government's housing agency, is responsible for administering the National Housing Act.

This legislation is designed to aid in the improvement of housing and living conditions in Canada. As a result, the Corporation has interests in all aspects of housing and urban growth and development.

Under Part IX of this Act, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research. CMHC therefore has a statutory responsibility to make available information which may be useful in the improvement of housing and living conditions.

This publication is one of the many items of information published by CMHC with the assistance of federal funds.

## **ABSTRACT**

### **Objectives of the Study**

Canada Mortgage and Housing Corporation (CMHC) client surveys have identified the need to increase the quality and timeliness of information about the intentions to purchase a home or to undertake renovations. A consumer intentions survey could provide CMHC and its clientele with a short-term indicator of local housing activity, and give important insights into the following questions:

- Are there differences between the purchase intentions of first-time and repeat buyers?
- What size of home are purchasers looking for? How much are they looking to spend?
- Why are people choosing to buy or renovate? Why are people *not* choosing to buy or renovate? Are decisions related to the economic conditions, or lifestyle choices and preferences?

This research looks at the feasibility and cost of a survey instrument that addresses these key issues and objectives.

### **Nature of the Research**

The study involved two components: 1) an analysis of the literature on the relationships among consumer intentions, confidence, and purchase activity, and 2) the design and pre-test of a questionnaire as the basis for determining the feasibility of a program to track consumer intentions with respect to housing. The literature review provided the theoretical and conceptual context for the pre-test instrument; the pre-test itself provided information about the costs and effectiveness of the proposed instrument.

### **Findings/Conclusions**

After reviewing a series of methodological options, we conclude that a telephone survey represents the most cost effective way for CMHC to undertake a study of housing intentions. The methodology is akin to that used by the University of Michigan Survey Research Centre on its Index of Consumer Sentiment. We have proposed a sample questionnaire (Appendix A) that has already been pre-tested for question phrasing and flow. The questionnaire collects a range of information about respondents' housing intentions and the reasons for these intentions.

Large sample sizes will be needed to generate statistically valid information for the sample groups that CMHC has identified. This raises the cost of the study accordingly. However, the quality of information generated is also much improved. Factors such as the precision, frequency, and resolution of the survey must be weighed in determining business feasibility.

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## **1.0 INTRODUCTION**

Canada Mortgage and Housing Corporation (CMHC) client surveys have identified the need to increase the quality and timeliness of information about the intentions to purchase a home or to undertake renovations. CMHC clientele consists of the home building industry, financial institutions, local and provincial planning departments, and the research community.

This report presents the results of research undertaken to examine the feasibility of a regular consumer intentions survey of Canadian households.

### **1.1 Context and Rationale for the Study**

Many explanations exist for changes in the patterns of home purchases. A downturn in housing starts is most likely a result of economic uncertainty in employment and financial markets, the collapse of housing as a speculative hedge against inflation, and changes in the basic demographics of the Canadian population. At the same time, home renovation activity has increased sharply as households adjust to growing families, aging parents, and also attempt to preserve and increase the value of their home through modification rather than moving.

Macroeconomic trends track these changes. Unfortunately, collecting and processing this macroeconomic data for each major housing market is a slow and costly procedure. These macroeconomic indicators, therefore, are poor short-term predictors of activity in the housing market. A consumer intentions survey could provide CMHC and its clientele with a short-term indicator of local housing activity, and give important insights into the following questions:

- Are there differences between the purchase intentions of first-time and repeat buyers?
- What size of home are purchasers looking for? How much are they looking to spend?
- Why are people choosing to buy or renovate? Why are people *not* choosing to buy or renovate? Are decisions related to the economic conditions, or lifestyle choices and preferences?

This research looks at the feasibility and cost of a survey instrument that addresses these key issues and objectives.



## **1.2 Overview**

This report presents the results from an investigation into the theory and practice of using consumer surveys to forecast intentions to buy or renovate housing. In the following section, we discuss the relationships between purchase intentions and actions at the individual and national levels. This discussion highlights the theoretical and design issues that must be considered in a survey exercise.

Following this introduction, we review a number of specific techniques and methodological issues for measuring consumer intentions and purchase decisions. At the micro level, purchase intentions are often measured through in-depth mail surveys or focus group experiments. Neither of these methods are practical for timely and cost effective forecasting of short term housing demand. Random sample telephone surveys are better suited to this exercise.

Having decided on a telephone survey as the best option for investigating housing intentions, we then outline many of the survey parameters (questionnaire design, sample selection, etc.) needed to mount such an effort. As is often the case, there is a very strong relationship between precision of the estimates and cost required to complete the research.

For this reason, we address the business feasibility of the research in a separate section which makes the cost-accuracy trade-off explicit.

## **2.0 THEORETICAL AND DESIGN ISSUES**

The decision to buy a house or to renovate an existing dwelling is complex. Home buyers must be confident they can meet monthly mortgage payments for several years, while bearing the risk that the value of the home might fall (but hopefully increase). First-time homeowners must decide if they want to move into new or pre-owned homes. Existing homeowners face the same choice, compounded further by a decision to move up- or down-market. Existing homeowners face yet another choice in that they may renovate instead of moving. Yet choosing to renovate can be costly and raises the spectre that renovation costs will not be recouped when the house is sold.

For these reasons, houses are traditionally regarded not only as consumption items (a large-ticket consumer durable), but also as long-term financial investments—both of which must be considered when measuring the demand for housing. For example, consumer preferences, lifestyle choices, and family status may drive a decision to buy or renovate a home. (The same variables may drive a decision *not* to buy or renovate.) Correspondingly, confidence in the economy, employment prospects, and the overall market environment may influence the decision to invest (or not to invest) in a home.

These features seriously complicate any study that tries to understand why people buy or choose to renovate a home or not. Before considering the study's design, however, a review of the relevant literature can help determine answers to the following fundamental questions:

- Can consumer intentions to purchase or repair housing in the short term accurately be discerned from a survey questionnaire?
- Do intentions as communicated by survey respondents accurately represent actual future behavioural patterns? If not, can biases be identified? That is, is there a constant and discernable link between the two?
- Over what period is a survey likely to be accurate? In other words, how do we determine the “short term?”
- Have studies like this been conducted elsewhere? Is there an established methodological procedure that can be followed? Are there validated ways of posing housing intention questions to respondents?

In the following sections, we take up these issues and try to extract lessons for developing measures to understand and better forecast housing intentions.

## 2.1 Traditional Approaches to Explaining Consumer Behaviour

Standard research methods usually rely on sophisticated mathematical models to explain or forecast changes in economic activity. Often, these techniques use statistical models to represent a hypothesised link between an aggregate economic outcome (such as the national demand for housing), and quantifiable economic indicators that are directly observable or easily proxied (frequently referred to as the independent, or explanatory variables). The fundamental assumption behind such modelling techniques is that there is a relatively stable, explicit relationship between the independent variables and the economic outcome under study. In particular, researchers expect that known values in the independent variables can be used to calculate predictable outcomes.

There are several drawbacks to using such modelling techniques when looking at specific consumption decisions. First, forecasts and calculations made using these “macroeconomic” models rely on large quantities of aggregated data. Variables such as the average price level are computed at the national, provincial, or city level. Collecting and preparing the relevant data required for use in a forecasting model requires significant effort, and is very time-consuming. Most significantly, several important indicators of consumption are out of date as soon as they are released.

*Data on the real economy, such as retail sales or industrial production requires a lengthier collection process. Publication is six to eight weeks after the fact, even in countries with the most efficient statistical services (DeAnne 1996).*

In the case of consumer spending and investment, the best data often reflect what happened two or three months ago, never what is happening now.

A second problem is that time series data such as housing sales are comprised of the individual decisions of a large number of households. Using averages (such as average income, or average wealth) for a spatial unit of analysis such as a province or Census Metropolitan Area (CMA), can never substitute for understanding how individual decisions are made. Information at the decision-maker level is needed to understand changes in household behaviour. This information can then be aggregated to higher geographic levels, instead of conversely trying to extricate smaller micro effects and forecasts from a large aggregate set of independent variables. This is particularly important for something like the housing market which can experience significant variation within a single data collection area. In many cases, it makes no sense to think about housing markets at the national or provincial levels—housing markets are inherently local in nature.

Addressing such problems in the data usually means turning away from traditional sources of information on consumer activity. In this respect, surveys of consumer behaviour and attitudes have many advantages. First, surveys are quick to implement and analyse. As a result, the data are much more current than those obtained from other sources. Further, because they are collected at the household level, surveys can overcome the aggregation problems associated with macroeconomic data.

The Michigan Survey Research Centre at the University of Michigan has collected survey data at the micro level (i.e., households) on consumer expectations about their current and future economic

well-being since the early 1950s. Monthly, the Centre asks a number of respondents questions concerning expected and current economic conditions at the individual and the aggregate (city, provincial, or national) levels. The questionnaire also probes consumers' willingness to purchase large consumer durables given the current economic climate. Respondents are selected based on a number of screening questions to isolate the effect of their age, income, and other attributes that might affect or be correlated with their response.

From this data, the Centre compiles an Index of Consumer Sentiment (ICS). This index is widely reported as a leading indicator for movements in the U.S. economy. There is an implicit assumption about the quality of the index in the attention it receives—namely, the index is thought to provide information not readily available from more “traditional” economic data, such as interest rates, Gross Domestic Product, unemployment, and savings rates.

Survey-based indicators like the ICS have the potential to provide quick, inexpensive, and geographically focused economic data at the micro level. Unfortunately, while the indices of consumer confidence can be measured in great detail with relative ease, identifying their role in influencing or even simply forecasting specific consumption decisions can be daunting. The problem is understanding what phenomena are reflected in consumer sentiment and expectations, and what these sentiments mean in terms of specific future consumer behaviour. Like the term “public opinion”, the notion of “consumer sentiment” is defined concretely only in the context of a statistically valid random sample where measures are collected over a short time span. When removed from this context, or when data are not collected according to these guidelines, the concept of consumer intentions becomes unidentifiable.

**FIGURE 1 Components of the Consumer Sentiment and Confidence Index**

Consumer sentiment or confidence surveys generally include five questions in the following format. (These specific questions make up the Michigan Survey Research Centre's Index of Consumer Sentiment.)

1. Would you say that you and your family are better off or worse off financially than you were a year ago?
2. Now, looking ahead, do you think that a year from now people (your family living with you) will be better financially, or worse off, or just about the same as now?
3. Now turning to business conditions in the country as a whole, do you think that during the next 12 months we'll have good times financially, or bad times, or what?
4. Looking ahead, which would you say is more likely: that in the country as a whole we'll have continuous good times during the next 5 years or so, or that we will have periods of widespread unemployment and depression, or what?
5. About the big things that people buy for their homes, such as furniture, house furnishings, refrigerator, stove, television and things like that. For people in general, do you think now is a good time or a bad time to buy major household items?

Various modifications have been made on this questionnaire format, but most of the major confidence surveys use this format. The most notable changes relate to the response categories, not question phrasing. For example, the following tables contrast the questions and responses to the ICS and the Consumer Confidence Index (CCI) used by the European Community.

Components of the CCI (European Indicator)					
Question Items	Response Categories				
Financial situation of your household compared to a year ago		Worse now	Same	Better now	
Financial situation of your household a year from now vs. now		Will be worse	Same	Will be better	
Business conditions in the country during the next 12 months	Bad times	Qualified bad	Pro-con	Qualified Good	Good times
Continuous good times vs. unemployment or depression in the country during the next five years.	Bad times	Qualified bad	Pro-con	Qualified Good	Good times
Buying major household items (furniture, stove, T.V. etc.) now		Bad time	Pro-con	Good time	
Source : Bechtel et. al. (1993)					

Components of the CCI (American Indicator)					
Question Items	Response Categories				
Financial situation of your household now compared to 12 months ago	A lot worse	A little worse	Same	A little better	A lot better
Financial situation of your household over the next 12 months	A lot worse	A little worse	Same	A little better	A lot better
General economic situation in the country now compared to 12 months ago	A lot worse	A little worse	Same	A little better	A lot better
General situation in the country, prospects over next 12 months	A lot worse	A little worse	Same	A little better	A lot better
Major purchases (furniture, washing machine, T.V., etc.) at present		Should postpone	Not right or wrong	Yes, right time	
Source: Bechtel et. al. (1993)					

The biggest difference between these two formats are the possible response choices. The American ICS restricts the respondent to three choices in three of the five questions: an optimistic view, a pessimistic view, and a neutral or unchanged outlook. The European CCI gives the respondent a choice of a very optimistic (pessimistic) or a somewhat optimistic (pessimistic) outlook. This additional response category in the CCI allows for a more finely scaled analysis of the results. Note however, that this does not materially change the nature of the survey.

## 2.2 Consumer Expectations and Sentiment: From Katona to Present

Because of the important effects that individual decisions about housing have on the economy generally, it is useful to consider current thinking about the relationship between consumer sentiment and economic activity. Particularly important in this context is the relationship between indicators of consumer confidence (such as the ICS) and economic activity.

Surveys have been used to measure consumer confidence since the 1950s. The pioneer in this area is George Katona, who developed the ICS at the University of Michigan (see Figure ). Katona (1975) believed that a household's response to an external economic stimulus (e.g., change in employment status) is a function of the attitudes of household members at the time of the change. More directly, household attitudes determine the household's response to changing economic conditions. Because household attitudes differ widely, so too will household responses, regardless of the nature or level of the stimulus.

This thinking prompted a revision in the way some economists looked at the world. In neo-classical economics, the relationship between economic stimulus and household response is assumed to be direct and predictable. Katona introduced a buffer (i.e., consumer attitudes) into this relationship. In particular, Katona (1975) hypothesised that *"attitudes and expectations intervene between stimuli and response and they change before behaviour changes."* Thus in the Katona model, the stimulus affects the consumer's "ability" to make a purchase. Consumer confidence measures the consumer's "willingness" to make a purchase. The response reflects the actual "consumption decision" made by the consumer.

In this way of thinking, consumer "attitudes" to economic stimuli affect their response to those stimuli. Thus measuring attitudes gives us a reasonable way to predict what responses are likely to be. As Zagórski and McDonnell (1995) state:

*The relationship between consumer confidence and the willingness to spend is assumed to be a direct one: for any given set of economic and social circumstances, the higher the level of consumer confidence the higher the level of expenditure that can be expected.*

In the discussion following Katona's work, five hypotheses have emerged to enhance current thinking in this area. These hypotheses attempt to explain how (or even if) consumer sentiment plays a role in the economy.<sup>1</sup>

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<sup>1</sup> See Fuhrer (1995) for a detailed discussion.

- H1) Sentiment independently causes economic fluctuations.
- H2) Sentiment accurately forecasts economic fluctuations.
- H3) Sentiment captures consumers' forecasts of economic fluctuations.
- H4) Sentiment reflects current, respondent-specific economic conditions.
- H5) Sentiment reflects only current, widely known economic conditions.

If Hypotheses 1 through 4 are true, knowing consumer sentiment gives us an indication of likely changes in the economy (and by extension, housing demand). On the other hand, if consumer sentiment only reflects current, widely known economic conditions (H5), then there is nothing to be learned from surveying the public. Note that while these hypotheses pertain mainly to aggregate phenomena (e.g., how national confidence affects the national economy), they are based on the principle that national measures are the aggregated responses of individuals. Thus national consumer confidence is a function of the confidence of many individuals, and, by extension, aggregate housing demand is a function of the housing choices of many individuals.

These hypotheses were tested extensively with respect to the interaction between national confidence and the national economy following the sharp decline of the ICS and subsequent U.S. recession immediately after the Gulf war. For example, Fuhrer (1995), Matsusaka and Sabordone (1995), Kinsey and Collins (1994; 1990), and Throop (1992) each tested the first hypothesis, namely that consumer sentiment causes economic fluctuations. In every study except Fuhrer's, the authors found significant statistical evidence to support the hypothesis. These studies used various methodologies, including tests for Granger causality, rational expectations models, error correction models, and simultaneous equations.

## FIGURE 2      Econometric methods

**Granger Causality** tests the hypothesis that X causes Y with a two-stage procedure. First, regression techniques are used to see if lagged values of X *can predict* future values of Y. Secondly, the same process is used to verify the hypothesis that lagged values of Y *should not* predict future values of X.

An **Error Correction** model, is one that compensates for a set of time-series data that drift apart over time at a constant rate. If this type of problem is not corrected, the error term in the linear regression will not produce a random series with a fixed variance (the variance would increase or decrease as a function of time).

The theory of **Rational Expectations** states that "people make economic decisions in a way that accounts for all available information, and that they use information in such a way as to avoid past mistakes." Therefore, the expected value of a variable one period in the future is the actual value of that variable, plus a random error term (unpredictable given the information available at the time the expectation is formed).

A system of **Simultaneous Equations** allows for the estimation of interdependent variables, whose relationship is defined by a system of equations. For example, a market equilibrium model where the interaction of the variables included in the model have an important implication for both the interpretation and estimation of the model's equations.

The second hypothesis (consumer sentiment accurately forecasts economic fluctuations) has been tested by Zagórski and McDonnell (1995), Fuhrer (1995), Carroll et. al. (1994), and Kinsey and Collins (1994). All of the studies concluded that there was reason to believe that consumer sentiment accurately forecasts economic fluctuations.

Zagórski and McDonnell (1995) and Throop (1992) tested the third hypothesis (sentiment captures consumers' forecasts of economic fluctuations). In their work, using factor analysis and error correction models respectively, both studies concluded that there is reason to accept this hypothesis.

Hypotheses 4 and 5 have not yet been empirically tested.



Based on these empirical studies, we can conclude that measuring consumer sentiment provides additional information to the analyst, and that may be useful for forecasting short term housing demand. This conclusion is concisely stated by Huth et. al. (1994), who concluded that:

*Prior research<sup>2</sup> has demonstrated that Indices of Consumer Confidence, Indices of Consumer Sentiment, the Conference Board, and the University of Michigan expectation measures provide a priori information regarding future consumer purchases. This finding is expected for consumer purchases characterized by extensive decision making. Housing, automobiles, and non-automobile durables should be the best candidates for prediction.*

### 2.3 Can We Accurately Measure Intentions?

Although indicators like the ICS seem to reveal useful information about the macroeconomy, a number of important issues must be considered before these can be adapted to a specific purpose like predicting the intent to buy or renovate a home. It is noteworthy that all of the aforementioned studies (including Huth et. al. (1994)) have focussed on the relationship between national consumer confidence measures and the national economy, not specific subsectors like housing, automobiles, etc.

To expect that someone can reveal their intentions concerning a specific action or possibility implies that the respondent has considered the action, and has developed clear and definite opinions on the subject. If not, simply asking the question may change the respondent's behaviour and/or opinion. For example, asking someone who has never considered buying a home "What are the chances you will buy a home in the next 12 months?", changes the respondent's frame of reference. Before answering the question, the respondent may think about buying a home, and then decide they will or will not. By asking the question, the interviewer has made the respondent's opinions more concrete, polarized, and accessible. Further, this respondent may even buy a home after the interview—thereby initiating an action that would not have occurred in the absence of the survey. If this happens regularly, it may bias the survey results by underestimating (or overestimating) the actual demand or true attitudes of the population.

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<sup>2</sup> Huth et. al., are referring specifically to research by Throop (1991), Kelly (1990), Juster and Watchel (1972), Muller (1963), and Tobin (1979).

In a recent study, Morwitz et. al. (1993) conducted a number of tests designed to verify if measuring consumer intent has a significant impact on consumer behaviour. Their research sought to verify three hypotheses critical to intention surveys:

- H1 In a controlled experiment, measuring intent once will change the treatment group's future purchases of a product.
- H2 The impact of repeated measures of intent over time depends on the initial level of intent. (a) Those with high levels of intent will have increased purchase rates, (b) and those with low levels of intent will have decreased purchase rates (polarization).
- H3 The measurement and polarization effects (H1 and H2) should be stronger among those consumers with less experience in the product class (those consumers who are less knowledgeable about the specific product).

The study tested these hypotheses using successive mail out questionnaires in a quasi-experimental design resulting in a sample size of over 40,000 households. Using tests of multiple proportions and logit models, the researchers concluded that there is statistical support for hypotheses H1 ( $p < 0.01$ ), H2b ( $p < 0.01$ ), and H3 (insofar as H3 pertains to H1 and H2b, both significant to  $p < 0.05$ ).

Didow et. al. (1983) also stress the importance of considering how the composition of the respondents affects the results of a consumer intention survey. This study considers the responses of respondents without firm intentions or opinions (revealed by responses such as "Neutral" or "I don't know"), and concludes on the basis of a principal components analysis that these responses may mean a variety of different things, which may adversely affect the study results. Specifically, depending on the economic and social situation (or context) of the survey, the true value of ambiguous responses may lie anywhere on a large continuum of values. This context must therefore be considered before the true nature of ambiguous responses can be discerned.

A study by Berger et. al. (1994) used a logit model to estimate the relationship between attitudes, behavioural intentions, and knowledge (on the basis of a mail-out questionnaire). Berger et. al. concluded that:

*... in highly involving purchase categories (in this case when the potential monetary outlay is large and there are relatively unknown alternatives) attitudes alone are not very good predictors of purchase intentions, and that it is fruitful to include a measure of knowledge.*

The total effect of these factors (bias, polarization, and knowledge) on housing intentions is unknown, but probably small. The importance of a housing decision is such that a survey intervention is unlikely to push undecided respondents into changing their housing plans. More likely, in fact, is that respondents will be conservative, sticking with the status quo. The same holds for respondents who have little knowledge about the current state of the housing market—we would not expect these respondents to spontaneously decide to move or renovate. These reasons for not wanting to move or renovate could be identified and monitored within the survey, enhancing the information collected and avoiding possible bias.

## 2.4 Do Intentions Translate Into Behaviour?

Assuming that we can measure intentions accurately, it is nevertheless reasonable to ask what this means. In particular, what are the chances that intentions will translate into behaviour?

On this subject, the Bemmaor (1995) notes that *“(A)pparently, purchase intents are not accurate predictors of subsequent purchase behaviour.”*<sup>3</sup> Further, and perhaps more disturbing, he comes to the conclusion that *“individual-level discrepancies do not often resolve at the aggregate level.”* In other words, aggregating individual purchase intentions to create a composite index at the national (or some other) level may produce bias.

Why would behaviour not follow from stated intentions? Manski (1990) argues that between the time of the stated intention and the action, new information may be revealed to the respondent that alters his or her actions. Manski went on to say that:

*... even if individuals have rational expectations and stated intentions are best predictions of behaviour, intentions and behaviour need not coincide. The two may diverge whenever the information available to respondents at the time of the survey is more limited than the information they possess at the later time when behaviour is determined.*

Manski developed upper and lower confidence bounds for his behavioural estimates as a way of controlling for the uncertainty that behaviour would follow from intent. (Note that Manski did not define the explicit process whereby expressed intentions deviate from actual respondent behaviour.)

New information does not need to be respondent-specific. Because of the feedback loop that is theorized to exist between consumer confidence and the national economy, changes in macroeconomic conditions might affect confidence, which in turn affects purchasing decisions. Thus relative stability in macroeconomic conditions may be a precursor to reliable

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<sup>3</sup> Bemmaor relies on research from Juster (1966), Belk (1985), and others in making this assertion.

measurement of purchasing intentions. In other words, if unemployment in a specific city increases unexpectedly by 3.5% in July, it may be prudent to revise previously forecasted summer housing sales, or to simply shelve the previous forecasts and re-estimate on the basis of a new consumer survey. Another choice is accounting for such macroeconomic fluctuations in an index of housing intentions. (Note that this approach removes much of the simplicity inherent in using a survey-based measure, and brings the exercise much closer to the traditional macroeconomic modelling process.)

Unfortunately, it is impossible to get an *a priori* indication of how long economic and social circumstances will be relatively constant. It may, however, be possible to get consumers to indicate a length of time over which they *expect* the economic and social climate to be relatively unchanged. This could be done, for example, by measuring the degree to which consumer confidence measured by the ICS remains constant.<sup>4</sup> Therefore, a good theoretical definition of the short-term for the purpose of this study may be the time frame over which economic forecast questions of the ICS remain relatively constant, implying that the economic and social circumstances surrounding respondents are relatively consistent. This definition could be operationalized in the survey in a number of ways, including modifying questions Q3 and Q4 in the ICS (see Figure ), or potentially interpolating between respondent's future expectations as expressed in the two questions.

Although Bemmaor and Manski raise cautions about using intentions to predict behaviour, they do not rule out its usefulness in forecasting demand for goods or services. In fact, the use of intentions and confidence surveys as a forecasting tool is widespread:

- Allenby, Lichung, and Leone (1995), for example, used consumer confidence to predict retail fashion sales in the United States.
- Bartels, Murray, and Weiss (1988) used consumer sentiment to forecast telecommunications traffic in Australia.
- McDonnell and Defris (1976) used Australian consumer sentiment to predict the demand for new motor vehicles.
- Praet and Vuchelen (1989) looked at the contribution of consumer confidence in forecasting the effects of oil prices on private consumption.

Allenby, Lichung, and Leone (1995) conclude that "*confidence measures are valuable inputs*" and that they can yield new and valuable information to the forecasting process.

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<sup>4</sup>

Recall that empirical research by Zagórski and McDonnell (1995), Fuhrer (1995); Matsusaka and Sabordone (1995), Kinsey and Collins (1994; 1990), Carroll et. al. (1994), and Throop (1992) suggests that consumer sentiment accurately forecasts economic fluctuations.

## **2.5 Using Questionnaire Data to Understand Housing Intentions: Practical Considerations**

As we have pointed out, surveys can be used to forecast short-term consumption decisions of the respondents. By cross-classifying results and looking at specific market segments and responses, consumer behaviour can be “disassembled”, giving us improved insight into the dynamics of consumer decision-making.

Our ability to do this accurately, however, depends heavily on the practical elements associated with the study design and questionnaire construction. Unfortunately, the research literature provides little guidance in this respect. Few articles have addressed specific implementation procedures to follow when constructing a purchase intentions survey, and even fewer consider the importance of the specific structure of the questionnaire. Finally, although some authors occasionally mention consumer intentions in the context of housing (e.g., Allenby et. al. (1996), Zagórski and McDonnell (1995), and Huth et. al. (1994)), virtually no significant research has been completed on the actual conduct of this type of research at anything but the most theoretical level.<sup>5</sup>

Whitlark, Geurts, and Swenson (1993) discuss some of the practical issues involved in forecasting consumer purchases from a consumer intentions survey. For the most part, their recommendations stem from many of the issues already discussed. In particular, they recommend a three-step procedure for forecasting unit sales of a product:

- 1) Determine the demographic profile of the most likely target market (in this case, owners, renters, etc.).
- 2) Estimate the product's likelihood of purchase in the target market using a purchase intention survey over a specific time frame.
- 3) Forecast unit sales by combining likelihood of purchase with size of the target market and a small set of important consumer attributes.

Consistent with other findings on consumer intentions, Whitlark et. al. conclude that considering a respondent's knowledge and familiarity with the product is a vital step in ensuring accurate responses and predictions.

*...forecasting accuracy [is improved] if questions first assess how familiar respondents are with the product category...*

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<sup>5</sup> Note that the methodology for conducting general macroeconomic consumer confidence surveys like the ICS is more established. See Figure 1 for more detail.

In other words, the more knowledgeable respondents are about their purchase decision, the more accurate their predictions about behaviour are likely to be.

Whitlark et. al. also consider an issue critical for most intentions surveys—namely, how long is the “short-term”? In their test, the authors received 291 valid responses from respondents who were asked if they would purchase a variety of products over a three or a six month period. Respondents were then contacted after the appropriate time had passed and asked if they had purchased the specified products in the last 3 or 6 months. The pooled (across products) results from this study resulted in a number of important observations.

First, respondents were significantly better at predicting their purchase intentions (to buy or not to buy) over a six-month time horizon than over a three-month time horizon. This observation is important in the context of forecasting the purchase of a major durable such as the housing intentions index. It implies that choosing a very short “short-term” period may result in inaccurate predictions, as consumers are not able to identify the precise date (or even identify a specific month) that they will purchase a particular item. The interplay of the purchase and its timing is very important here. It is easy to defer the purchase of a home by six months or a year. For many, a missed window such as the start or end of the school year may shift the purchase date by several months.

Second, Whitlark et. al. used a five-point intention scale to measure the intent to buy. Using the responses to their questionnaires in conjunction with the actual behaviour of the participants, the authors were able to compute the probability of purchasing an item based on the expressed intention. Table 1 details their results.

TABLE 1

Probability of Purchase for Five Purchase Intention Categories		
Expressed Purchase Intent	% that bought over ...	
	3 months	6 months
Definitely will not buy	1.11%	4.28%
Probably will not buy	2.12%	8.99%
Might/might not buy	4.95%	20.76%
Probably will buy	22.74%	52.84%
Definitely will buy	64.05%	75.30%
Source: Whitlark et. al. (1993)		

These results indicate the degree of discrepancy between the expressed short-term purchase intentions, and the actual behaviour of respondents. There is clearly evidence to support weighting intention responses based on the observed difference between intentions and

behaviour. In particular, knowing how a particular response category translates into a specific purchasing decision is fundamental to developing an accurate index.

Note that we cannot expect the same behavioural results in the housing intentions survey, as the Whitlark study concentrated on several low ticket consumer non-durables in addition to higher priced durables, and the questions used to solicit intentions will undoubtedly be phrased differently. However, the idea of weighting the intention categories on the basis of behaviour is still valid.

A final point of interest from Whitlark et. al. is their brief investigation into the significance of the question wording in an intention survey. Their research, and work by Mollester and Youtz (1990), demonstrate that question phrasing can have a significant effect on both the type and quality of the responses received on a consumer intentions survey. Whitlark et. al. note that:

*... some probability phrases appear to have more precise meanings than others ... the probability categories such as "certain," "high chance," "even chance," "low chance," and "never" are much better terms than "definitely," "probably," and "might." In particular, the term "might/might not buy" often used for purchase intention surveys needs to be replaced by a phrase such as "equally likely to buy as not to buy," since everyone can truthfully answer that they "might or might not buy."*

Attention will therefore have to be paid to the question phrasing and language employed in the housing intentions questionnaire.

## 2.6 Implications for Study Design

To summarize, can we measure intentions? And if so, can these be used to create a reliable indicator of short term housing demand? Empirical research suggests in fact that consumer intentions are measurable, and that they can be used to better understand consumer behaviour. At the same time, however, we must be sensitive to the process. In particular, we should consider the following elements when developing a measure of housing intentions:

- The population surveyed in developing the index should have already considered and formed firm opinions on whether it will look for housing in the short-term.

With the help of a rigorous screening question (such as "Have you looked at any homes in the last two months?") we can ensure that only those who have information and definite opinions on housing will be included in the survey.

At the same time, asking why some people are *not* considering a home purchase or renovation allows us to collect collateral information about this aspect of consumer behaviour.

- Ambiguous or neutral responses must be considered within the context of the current environment, implying that a questionnaire needs to be considered within the context of the socioeconomic environment.
- The more knowledgeable a respondent is about housing options, the more closely his or her behaviour is likely to correspond to intentions. This implies a need to “calibrate” intentions data using collateral information about the respondent.
- Finally, also on the subject of calibration, follow-up is needed to confirm the degree to which intentions actually result in behaviour. In turn, this information can be used to weight future intentions data to develop more accurate measures of housing demand.



### **3.0 STUDY OPTIONS AND ALTERNATIVE APPROACHES**

Recent academic studies on purchase intentions, and the ongoing surveys on consumer confidence conducted by the Michigan Survey Research Centre and the Conference Board use a variety of methodologies to collect data from respondents. The three most popular methodologies are mail-out questionnaires, experimental test groups, and telephone questionnaires.

#### **3.1 Mail-Out Questionnaires**

A mail-out survey questionnaire is one potential format for the survey of housing intentions. The Conference Board in New York uses a mail-out questionnaire to construct its Consumer Confidence Index by mailing to a sample of 5000 respondents, of whom 3500 typically respond. Although a comprehensive mail-out survey may cost about as much as a telephone survey, it is less intrusive than a questionnaire administered by a telephone interviewer, and as such, it may elicit a greater degree of candour from respondents on sensitive issues and subjects. Mail-out surveys provide a vehicle for "selling" the validity of the research.

However, there are several drawbacks associated with the mail format that limit its effectiveness for constructing a short-term index of housing intentions. Firstly, a comprehensive mail-out takes time. To obtain a reasonable response rate (approximately 50%), may require a survey period of a month and a half from the time of the initial mailing of the questionnaires. Clearly, a time delay of this magnitude would severely erode the value of a survey questionnaire designed to collect data on housing sales over the next three months (only a month and a half of valid data would remain after all the questionnaires had been collected). This lengthy survey period is required because follow-up telephone calls and secondary mailings to tardy respondents must be undertaken to increase the overall response rate. Naturally, one way around this problem is to mail out a greater number of survey questionnaires to begin with, and therefore increase the total number returned (although not the percentage). However, this leads to a second shortcoming endemic to mail-out questionnaires.

Mail-out surveys frequently suffer from a respondent self-selection bias. Certain groups of individuals will generally be more responsive than others<sup>6</sup>. If the number of survey questionnaires mailed out is simply increased, the additional returns that will be generated inevitably come from more individuals with the same characteristics. Therefore, simply increasing the number of questionnaires mailed out will not ensure an unbiased statistical sample of the population. To get an accurate statistical representation of the entire population, additional contact must be made with

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<sup>6</sup> For example, people who are unemployed may have more free time, and therefore be more likely to fill out a survey questionnaire than a fully employed individual. A second example could be interest groups that feel strongly about a subject: an environmentalist may be more likely to respond to a mailed questionnaire on air pollution, or a person looking for a home may be more likely to answer a questionnaire on housing prices.

respondents who fail to respond to the initial mailing. This contact generally takes the form of a telephone call, or follow-up letter, or quite frequently a combination of both.

Mail-out surveys assume that respondents are literate. If some respondents cannot read and/or write in either English or French, this will eliminate them from the list of potential respondents. This consideration is very important in areas such as Vancouver, where large ethnic populations are purchasing significant quantities of real-estate.

A final drawback to using a mail-out questionnaire in this context is the limitations that this format imposes on the complexity of the survey. Questionnaires which require the respondent to move through extensive skips depending on the responses, or a complicated scale, are not suited to mail surveys.

### **3.2 Experimental Test Groups**

Experimental test groups have been used in a variety of academic studies to determine consumer intentions. These settings provide a controlled environment in which to test a specific hypothesis with respect to consumer intentions or behaviour. These hypotheses are generally very specific<sup>7</sup>. As a rule, these studies are both lengthy and complex, requiring a group of several hundred people to gather for several hours and answer a variety of questions.

It would prove to be a very daunting (and expensive) task to recruit 300 respondents for several hours in each CMA for use in this type of study. The high time and respondent requirements of this type of study make them unsuitable for use in this short-term indicator of consumer intentions to purchase or renovate housing.

### **3.3 Telephone Questionnaires**

The survey format used most frequently by survey researchers for constructing indices of Consumer Intentions is a telephone survey<sup>8</sup>. Telephone surveys have many advantages over

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<sup>7</sup> For example "The Dollar Value of Product Quality: The Effect of Pricing Versus Overall Linking on Consumer Stated Purchase Intent for Pizza" (Moskowitz, 1995), "An Exploratory Study of the Responses and Relationships Involved in the Evaluation of, and in the Intention to Purchase New Rock Music" (Lacher and Mizerski, 1994), and "The Effects of Mood, Involvement and Quality of Store Experience in Shopping Intentions" (Swinyard, 1993).

<sup>8</sup> This survey format is used by the University of Michigan Survey Research Centre, The Conference Board (Canada), ABC News and Money Magazine, "STORES" magazine's buying intentions survey, the Institute für Konsumenten-und Sozialanalysen AG (Switzerland) and Market Research Africa (South Africa) although the latter also administers the same questionnaire using in-person interviews. Several other institutes also use telephone and in-person interview methods, which have most of the advantages of telephone interviews, but are more expensive to administer.

mail-out questionnaires and experimental test groups in the context of the consumer intentions survey.

Telephone surveys are quick. A survey questionnaire with 500 respondents can be completed in a single evening if there are enough interviewers and if the questionnaire is short enough. Further, in modern survey operations the data are generally immediately recorded in an electronic format, thus reducing the processing time over mail-out data which must be scanned or keyed into a computer prior to statistical manipulation.

Secondly, telephone surveys allow for quick, easy, and accurate construction of sample frames. It is a relatively straightforward task to construct a database of telephone numbers from one of the many CD-ROM directories of Canadian telephone numbers that are published. Further, by using random digit dialling, unlisted numbers, unpublished numbers, and numbers in new houses and subdivisions can be accessed, resulting in a very representative respondent sample.

Telephone questionnaires can be made much more complex than mail-out surveys. Complex question skips that depend on the respondents' answers are simple to administer using a computerized interviewing system. In a telephone survey, a questionnaire with complex skips appears to be both simple and concise to the respondent.

The same survey in a mail-out format would be long, complex, and misleading, and would result in the collection of considerable false data. Given that the survey of consumer intentions to purchase or renovate will likely be very complex, this is a very important advantage.

In telephone surveys, respondents are screened over the phone, and classified according to filter questions that identify their behaviour and attributes. Although, theoretically, telephone surveys do not suffer from the same self-selection respondent bias as mail survey questionnaires, the refusal rate on telephone surveys has been increasing in recent years, and correspondingly so is the risk of sampling bias. One way to circumvent this problem is to keep the questionnaire short: many more respondents will consent to participate in a 5 minute survey than a 15 minute one. A disciplined research team and call back strategies for those not at home or who wish to answer later, are other mandatory features of the research strategy.

### **3.4 Survey Design Considerations**

In addition to deciding what format (mail, test group, or telephone) the survey should be in, there are several other considerations that must be weighed when designing the survey of Consumer Intentions to Purchase or Renovate. These include issues of the sample area(s), sample size, sampling error and survey frequency.

#### **3.4.1 Sampling and Sampling Errors**

In a probability sample, the sample size determines the reliability and precision of the survey in two ways:

- First, larger samples improve the chances of drawing a sample that truly represents the distribution of the underlying population—in this case, the population of households looking to move or not. The larger the sample, the greater the chance that the representation will be true, or that the sample will *unbiased*.
- Second, larger samples increase the strength of the statistical statements that can be made concerning the survey results. If two surveys are undertaken, one with 500 responses and the other with 1,000, both will be correct on average (that is both will reflect the true distribution of the population and be unbiased), but the latter will be more *precise* (this concept is frequently referred to as efficiency). We can compute how precise the results of a survey will be based on the size of the sample.

The need for precision at the CMA level generally rules out many of the national Omnibus services currently available from a variety of firms (see Appendix C for a listing of some of these services). Although Omnibus surveys can provide CMHC with national data for a minimal cost, they generally do not provide CMA-level resolution.

The theoretical error rate of the survey is related to the sample size according to the following generalized formula:

$$\text{Sampling Error} = \pm 1.96 \sqrt{\frac{pq}{n}} \sqrt{\frac{N-n}{N-1}} \quad (1)$$

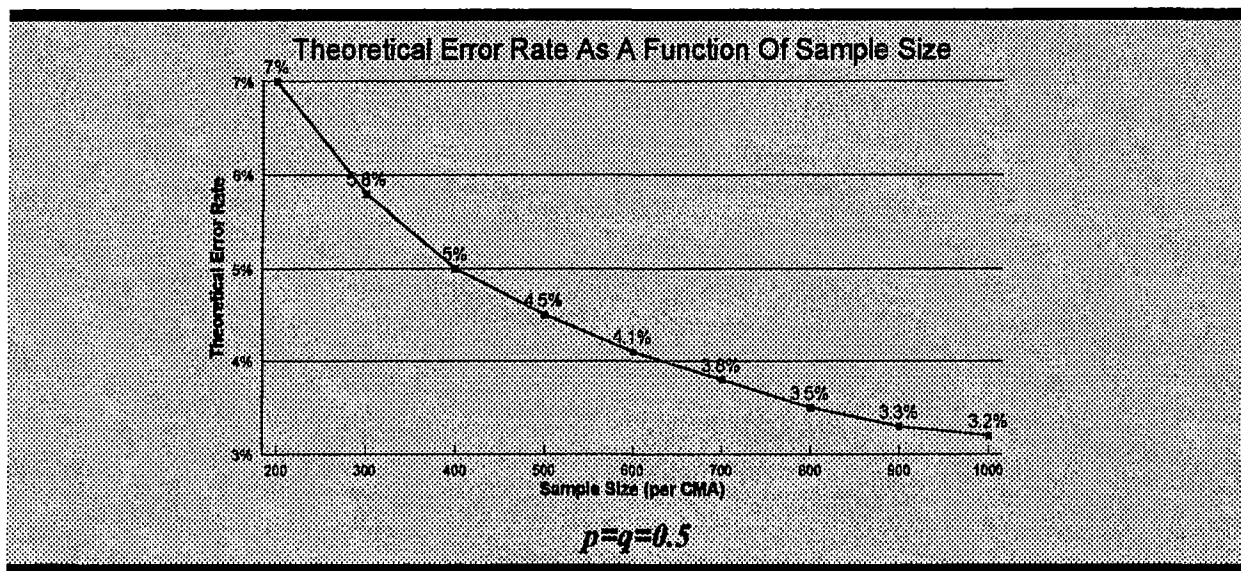
where  $p$  is the proportion of people who choose to do something (e.g., buy a home),  $q$  is the proportion who choose *not* to do something,  $N$  is the entire population (e.g., CMA population), and  $n$  is the sample size.

Two features of the error rate calculation are important for a survey of housing intentions:

- First, note that the sampling error becomes lower as  $p$  and  $q$  diverge. In other words, as the proportion of buyers or renovators falls ( $p$  approaches zero), the survey becomes more accurate for a given sample size  $n$ . Therefore, if only 5% of the people surveyed say that they will purchase a house, the error rate will be lower than if 50% had so indicated.

- Second, the sampling error is inversely related to the sample size—as the sample grows, sampling error falls. Note however that the relationship is not direct. Increasing the number of completed interviews by a constant number results in decreasing reductions to the theoretical error rate. Figure 3 shows the theoretical error rate for several standard completion levels.

**FIGURE 3    Theoretical Error Rate**



It is important to recognize that the error rate is calculated for the sample (or sub-sample) of interest. Although a nationally representative public opinion survey of 2,000 people has a very good error rate of 2.2%, the error rates for regional or local sub-samples are much higher. For example, based on population levels, the same national survey may only have included 200 responses from Manitoba and Saskatchewan. Of those responses, 40 might have come from Regina. The error rate on the Regina sub-sample is therefore 16%; eight times less reliable than the national sample.

In Canada, it makes little sense to talk about a “national” housing market. In some cases, even talking about housing markets at the provincial level is difficult—the market in Vancouver is very different from the market in Prince George. Thus while national or provincial studies will produce low error rates, using these results for detailed analysis of local housing markets is difficult and tenuous. At a minimum, the intentions survey should proceed at the CMA level.<sup>9</sup>

<sup>9</sup> CMHC has proposed that the national study include all CMAs, plus Hull, Charlottetown, Moncton, Prince George, and Kelowna. The CMAs in Canada are: St. John's, Halifax, Saint John, Chicoutimi-Jonquière, Quebec, Trois-Rivières, Sherbrooke, Montreal, Ottawa-Hull, Sudbury, Oshawa, Toronto, Hamilton, St. Catherines-Niagara, London, Windsor, Kitchener, Thunder Bay, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver, and Victoria.

As we point out in the section on the feasibility of a national housing intentions survey, obtaining the resolution needed to produce accurate estimates for various sub-samples beyond the CMA level (e.g., owners versus renters, home buyers versus renovators, etc.) implies very large sample sizes, which in turn implies high costs. We conduct a cost calculation based on the results from our pre-test in the section on survey feasibility.

### **3.4.2 Survey Frequency**

As with the problem of choosing the survey sample size, selecting the frequency of the survey requires a cost-benefit type comparison.

Increasing the frequency of the survey will augment the usefulness of the data to CMHC and to CMHC clients. However, there are only limited economies of scale to be had by increasing the frequency of the survey—doubling the number of times the survey is conducted per year will nearly double the annual cost.

Another factor of importance to include in this decision is the time interval covered by the survey. The optimal survey frequency should ensure that valid data on consumer intentions are always available. If the survey only measures consumer intentions over a six month period, then a bi-annual survey may be a good choice. If the survey only measures intentions over a three month interval, then a quarterly survey may be ideal.

## **4.0 RECOMMENDED APPROACH**

In the previous section, we concluded that a telephone survey of households represents the most cost-effective and practical approach to developing an index of short term housing intentions. This section expands on that conclusion and sets out the major parameters for a baseline study. This section focuses particularly on:

- Questionnaire design and development of a sample instrument (see Appendix A).
- Sample selection and composition.
- Analysis of the survey results and construction of an index of housing intentions.

Throughout this section, we refer only to the survey of intentions to buy a home. In almost every case, however, the reasoning applies equally to the survey of intentions to renovate. We refer to the home buying process for convenience only.

### **4.1 Questionnaire Design**

The science of survey sampling has matured to the point where discussions of sampling error often revolve around fractions of percentage points. Unfortunately, the principles of questionnaire design are much less precise. Experimental evidence suggests that even slight differences in questionnaire phrasing may often overwhelm the error associated with choosing a sample. This suggests that accurate questionnaire construction is fundamental to obtaining valid results. Because of this importance, drafting and testing an intentions questionnaire was a central task for this assignment. The final, tested questionnaire is provided in the Appendix.

#### **4.1.1 Structure of the Questionnaire**

The instrument can be divided into six sections:

- *Introduction:* Questions 1 and 2 introduce the survey to the respondent and identify whether he or she owns or rents the current home. Distinguishing owners from renters allows us to measure both the first-time and repeat buyer segments of the market.
- *Home buying intentions:* Questions 3 through 5 ask the respondent's intention to buy or not to buy a home in the next six months. If respondents do not intend to buy, we also ask the reason why.

- *Collateral information about a home purchase:* If the respondent is thinking about buying a home, Questions 6 through 14 collect information about his or her search pattern and home choice. This allows us to gain additional insights into home buying intentions.
- *Renovations intentions:* Questions 15 through 17 ask the respondent's intention to renovate or not to renovate their home in the next six months. Current renters (as defined in Question 2) do not go through this section or the next. If respondents do not intend to renovate, we also ask the reason why.
- *Collateral information about renovations:* If the respondent is thinking about renovating his or her home, Questions 18 through 24 collect information about his or her planning and choice of renovations. This allows us to gain additional insights into renovations intentions.
- *Demographics:* Questions 25 through 30 are used to collect demographic information for weighting and analysis.

#### 4.1.2 Issues Related to Questionnaire Design

The draft instrument was reviewed by CMHC and pre-tested before being finalized. The pre-test consisted of 142 monitored interviews, 50 of which were conducted with people who planned to buy a home or renovate within the next six months.<sup>10</sup> This allowed us to test all aspects of the questionnaire for question phrasing, clarity, and flow. Based on the results of the pre-test, we made a number of small changes to the wording and structure of the questionnaire.

The Terms of Reference for this project also outline two important issues with respect to specific question wording for the intentions instrument:

- First, the *specificity* of individual questions has a large impact on how intentions are measured. The more specific the question, the less likely that it will apply to an individual respondent. For example, many people might answer yes to a question that asked "Is now a good time to buy a home?" However, we expect that fewer people would respond affirmatively to a question that asked "Are you prepared to make an offer on a home that you've looked at in the last month?"

As we noted previously, there is little guidance within the literature on the effects of different question wording within an intentions survey. To address this issue, we

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<sup>10</sup> We conducted a separate test of 1500 interviews on a "short form" version of the questionnaire consisting of Questions 1 – 4, 15 – 16, and 25 – 30. This was designed to test the sampling fractions (% of respondents screened in or out) so that we could develop a reliable cost estimate for the baseline survey.



have therefore opted for a sequential approach that systematically refines the sample to reveal the respondent's intentions:

- First, we ask a general question in the form of "Are you *thinking* about buying a home at some point in the next six months?"
- For those who have thought about buying a home, we follow up with a very specific question about their intent: "What are the chances you will *actually buy a home* in that time?"

Of course, if respondents are not considering a home purchase or renovation within the next six months, we do not ask them their short term intention. This structured approach allows us to create both a "wide" and a "narrow" perspective on those who are actually considering a home purchase or renovation.

- Second, the *time frame of reference* also affects the measurement of housing intentions. In particular, the definition of the "short term" is important, especially when the term is used in the context of "short term housing demand." Over a long enough horizon, the proportion of people who intend to buy or renovate a home could be large. To be useful as an indicator of housing demand, the intentions survey must focus on a period that is immediate enough to separate those who will *probably* buy a home from those who might *possibly* buy one.

The builder and realtor's time frame must also be considered within the horizon for housing intentions. For the intentions survey to act as a useful indicator of short term housing demand, builders must have time to respond to changes. This creates a mediating factor in the definition of the short term—the short term must be near enough for the housing decision to be "real" to consumers, yet far enough away for the industry to plan necessary adjustments.

Again, there is little guidance within the literature on the optimal length of time for the short term. To address this issue, we have therefore opted to measure intentions at two different periods, namely three and six months.<sup>11</sup> Balancing the approach allows us to compare differences between an index calculated for a six month horizon and an index calculated for a three month horizon.

## 4.2 Sample Selection

The process used to select a sample and administer the questionnaire determines the cost and accuracy of the survey. In turn, cost and accuracy establish the feasibility of the project. For this

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<sup>11</sup> On the first draft of the instrument, we proposed a three year, one year, and six month horizon. After reviewing the draft with CMHC, we adjusted the time horizon to the six month and three month periods.

reason, our discussion of sample selection here underpins the feasibility analysis in the next section.

In this section, we address the following issues with respect to sample selection and sample size:

- Sample design and extraction.
- Sample weighting and analysis.

#### **4.2.1 Sample Design and Extraction**

The survey of housing intentions is designed to collect information about buying intentions as they exist now or in the near future. At the same time, however, we are interested in knowing what factors cause people to change their mind with respect to buying a home. Combined, these features give the survey both a cross-sectional and a longitudinal flavour. Although the combination of cross-sectional and longitudinal data usually points to a panel design, organizing a national panel of 15,000 respondents (or more) is a very significant undertaking—the costs of which likely outweigh the benefits.

In an earlier draft of this report, we considered mounting a panel design. Two issues caused us to reconsider this design:

- First, the costs of maintaining a proper panel are much more significant than we had originally anticipated. At \$50 per person (a typical incentive for remaining in a panel study), the cost of panel incentives alone amounts to approximately \$150,000 per CMA. Add to this the costs of regular contact with respondents to maintain panel integrity, handling and distribution costs of the incentives and contacts, etc. and the cost of the panel becomes very significant.
- Second, panel attrition (having people drop out of the study) is likely to be non-random in this case. In particular, those most likely to drop out of the panel are those who move—precisely the target group we are interested in tracking. While a range of procedures have been developed to deal with the effects of panel attrition (see Heckman 1979 for an example), it is not clear that these would resolve the bias introduced by the attrition.

In this application, the benefits of a panel lie primarily in repeated measurement. For example, by returning to the same respondents, we can check to see if intentions turn into actual behaviour. Questions such as “Six months ago, you said that ... What has happened since?” are possible in a panel study. This allows subsequent calibration of any intentions measures that we develop.

There are ways to achieve calibration without the expense of a national panel. For example, follow-up studies can be mounted on a smaller scale to recontact respondents in bell-weather

CMAs. Alternatively, forecasts generated from the intentions instruments can be compared after-the-fact to actual housing sales. Both of these strategies involve a much reduced expense compared to a panel.

Without the panel, sample development for the intentions survey closely resembles a traditional telephone survey of the general population. Sampling strategies for telephone surveys are well documented in the literature (Fink 1995, Henry 1990). Selection probabilities are assigned based on the population represented by the different area codes and prefix exchanges. The sample of available telephone numbers is then stratified by province, area code (as needed), and telephone exchange to the CMA level.

Random digit dialling (RDD) according to a modified Waksberg procedure ensures that every phone number within a specified stratum has an equal chance of being selected. According to the Waksberg procedure, a probability sample of working telephone numbers is extracted from the sample frame. The last two digits of the working numbers (or four, depending on the procedure) are then replaced by numbers generated randomly. This procedure improves the efficiency of screening the RDD sample for working household numbers.

All surveys are subject to some form of non-sampling error. Some households don't have a telephone. We know that younger householders are more difficult to find at home in the evening when most of the interviewing will take place. Men tend to respond to surveys less frequently than women. These non-sampling errors are difficult to control for except by weighting the sample at the point of analysis so that it reflects known characteristics of the population. Where the sample cannot be weighted, researchers generally assume that the non-sampling errors are random and therefore do not systematically bias the results.

During the pre-test, we discovered that non-response errors (a form of non-sampling error) for a housing intentions survey are *not random*, and therefore must be considered in developing a measure of housing intentions. In particular, we found that respondents who have just recently bought or renovated a home tended to refuse participating in the survey. Because these people would presumably have low intentions to buy or renovate, excluding them from the survey systematically *overestimates* the general intention to buy.

Because our ability to measure why people refuse a survey is limited, it is difficult to reliably track and adjust for the effects of this kind of non-response bias. We therefore recommend caution when interpreting the results of the survey.

#### 4.2.2 Sample Weighting and Analysis

Before the analysis, survey responses are weighted to ensure that the sample selected accurately reflects the general population of interest. In this case, because we are sampling household intentions towards housing, sample weights should be calculated on a per household basis from

information collected on the survey. Within the sample instrument, we provide five possible weighting variables:

- *Housing tenure (Question 2)*: Renters are more likely not to have a telephone, and hence are under-represented in telephone surveys.
- *Age of the household head (Question 25)*: Younger people are generally more difficult to find at home during the evening when most surveys are conducted. As a result, younger households may be under-represented in a telephone survey.
- *Age distribution of the household members (Questions 26 – 28)*: Again, the age factor may be important. Also, to the extent that household size and household mobility are correlated, it may be important to adjust for household size differences between the sample and the population.
- *Specific postal address of the household (Question 29)*: With digital technology, telephone exchanges are becoming less specific to discrete geographic areas. Particularly in the more densely populated areas, geographic weighting may be needed to more precisely identify a particular market.
- *Household income (Question 30)*: Low income groups have lower subscription rates for telephones, but also participate less in surveys when contacted.

#### 4.3 Analysing the Questionnaire Data

Once the survey data have been cleaned and weighted, a wide range of analytic options become available.

One approach is to construct a series of indexes for various components of housing intention. Equation describes a general model, which follows very closely the construction of the Index of Consumer Sentiment and other consumer confidence indicators:

$$IHI_t = \frac{X_t}{X_{Base}} * 100 \quad (2)$$

In this model, IHI is the index of housing intentions,  $X_t$  is the percentage of people who intend to buy a home in the given time, and  $X_{Base}$  is the percentage of people who intended to buy a home in the base or reference period. Of course, for the first iteration of the survey, the IHI value will equal 100.

The IHI can be calculated at a national, provincial, or local level for each household segment or target market (e.g., owners, renters, particular income groups, etc.), provided that the sample sizes are large enough to generate enough precision.

Because of the structure of the questionnaire, we can develop a slightly more refined version of the indicator for those who are specifically thinking about buying or renovating a home. In the case of home buyers, we ask respondents who are thinking about buying a home to predict the chances they will actually buy a home within the next six and three months. By weighting the responses of those who claimed a "high chance", a "50/50 chance", or a "low chance", this generates an index of the form:

$$IHBI_t = \frac{\sum_{i=1}^3 w_i X_{it}}{Base} * 100 \quad (3)$$

where IHBI is the index of home buying (or renovating) intentions,  $X_{it}$  is the percentage of people who claim a given chance of buying a home (high, 50/50, or low), and the  $w_i$  are the probabilities that we assign to the likelihood of the transaction actually taking place. These weights can be estimated from follow-up on an initial survey. As the survey evolves over time, and more longitudinal data accumulates, a more sophisticated model can be developed.

Equations (2) and (3) represent stylized models of the type of indexes that can be generated once the survey data has been analysed. Other measures are possible, whether these are indexes or population counts, including:

- Home buying or renovation intentions for each CMA, the major urban areas within a province, or for the major urban areas across the country as a whole. These can be for the next six months, the next three months, or for a combination of the two.
- The reasons for not buying or renovating a home within the next six months.
- Home buying intentions for first-time (current renters) or repeat home buyers.
- Renovations intentions among new home buyers.
- Intentions for certain kinds of home purchases or home renovations.
- Intentions among various income groups.

## **5.0 FEASIBILITY**

This section explores the feasibility of this project from a cost perspective. The time and response estimates are initially calculated based on the results of a pre-test of 1500 responses equally distributed across Vancouver, Winnipeg, and Toronto (that is 500 responses per city).

The pre-test was designed specifically to accomplish two separate tasks:

- To refine the draft survey instrument (see previous section); and,
- To provide a cost estimate for undertaking the project nationally.

Once the costs of the pre-test are estimated, we take the results, and expand them to estimate the cost of the study for the 30 regions of interest at the national level.

The pre-test was administered in the fashion outlined in the section on "Recommended Approach." The questionnaire was put onto a Computer Aided Telephone Interviewing (CATI) System, and telephone numbers were generated using random digit dialling according to a modified Waksberg procedure<sup>12</sup>.

We do not include the initial "set-up" cost of putting the questionnaire up on the CATI system. This task need only be undertaken once. However, other similar set-up costs, such as purchasing the required sample of telephone numbers, loading the sample into the computer system, cleaning and coding the data and running banners for each of the 30 sample areas, and the time required to service the computer interviewing system during the survey must be considered in these estimates.

### **5.1 Costs of the Pre-Test - A Taxonomy**

#### **5.1.1 Computer Programming - Setting Up the Survey**

As mentioned in the introduction to this section, the first cost incurred in running a telephone questionnaire pertains to setting up the questionnaire on a computerized interviewing system. The time required for this procedure is a function of the specific interviewing software being used, and the complexity of the survey<sup>13</sup>. Further, this cost need only be incurred once: once the survey is

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<sup>12</sup> Random digit dialling (RDD) according to a modified Waksberg procedure ensures that every phone number within a specified stratum has an equal chance of being selected. According to the Waksberg procedure, a probability sample of working telephone numbers is extracted from the sample frame. The last two digits of the working numbers (or four, depending on the procedure) are then replaced by numbers generated randomly. This procedure improves the efficiency of screening the RDD sample for working household numbers.

<sup>13</sup> A general estimation of the time required to set and test the survey used in this pre-test on a CATI

running on a computer system, it can be administered as many times as required for little to no additional set-up cost provided there are no changes to the questionnaire.

### **5.1.2 Acquiring and Preparing Sample Telephone Numbers**

Conducting a telephone survey requires that a sample of telephone numbers be acquired or generated. Although it is possible to construct a sample from telephone books, or electronic sources such as CD-ROMs, it is generally more efficient to purchase the sample from an external source. For example, the procedure for generating a sample for the CMA of Toronto involves the following steps<sup>14</sup>.

- i) Acquire all residential telephone numbers from the CMA of Toronto and convert them to an electronic format (this will involve manipulating over two million telephone numbers);
- ii) Replace the last two digits in each telephone number with random digits;
- iii) Eliminate all duplicate numbers (a few of these will occur as a result of the "randomization" of the last two numbers); and,
- iv) Randomly order all the telephone numbers, selecting the number required to complete the sample.

Sample telephone numbers generated to the specifications required for this survey questionnaire may be purchased from one of a number of sources for approximately 10 cents a number.

### **5.1.3 Interviewer Time**

The majority of telephone survey costs are directly related to the amount of time interviewing staff must spend on the project. Several factors contribute to the time requirements for a particular questionnaire, however these time costs can generally be classified into one of two categories:

- Respondent identification; and,
- Questionnaire administration.

Respondent identification refers to the interviewer time required to contact willing and qualified respondents. Questionnaire administration time refers to the time it takes an interviewer to ask a captive respondent all the questions in the questionnaire.

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system is 6 hours.

<sup>14</sup> An individual sample will have to be developed for each survey area. This would involve repeating the following procedure once for each sample area - that is repeating it 30 times.

The *quality* of the telephone numbers has a direct influence on the amount of time interviewers spend contacting eligible respondents. A data set with inaccurate numbers results in interviewers spending more time dialling out-of-service or otherwise inappropriate numbers (such as business telephone numbers and fax machines). Random Digit Dialling always has a significant proportion of not in service numbers because of the random generation process used to construct the sample. The Waksberg technique is intended to locate the randomization over relatively populated blocks of residential telephone numbers.

The *length* of the survey increases the interviewer time required to obtain the necessary completions in two ways.

- Larger surveys take longer to complete. The interviewer has more questions to ask, and therefore requires more time per questionnaire (questionnaire administration time).
- Larger surveys suffer from a higher refusal rate, or premature termination. As the length of the questionnaire increases, more time is demanded from potential respondents, and fewer people will be willing to volunteer to complete the questionnaire. This means that interviewers will spend more time trying to find respondents on a longer survey than a shorter one (respondent identification time).

As a general rule, it is best to keep “cold call” surveys under 15 minutes. Longer surveys usually result in a higher number of premature terminations. During the pre-test, the complete intentions questionnaire in Appendix A was administered in under five minutes.

#### **5.1.4 Long Distance Costs**

Any survey that involves respondents from across the country will involve a significant number of long distance calls. Naturally, there will be minor cost fluctuations depending on the location of the call centre(s) used for the study. For the purpose of this cost estimate, we will assume that the call centre is located in a central region, such as Manitoba or Saskatchewan. This may produce a slight overestimation of cost relative to a call centre in Eastern Canada that is positioned closer to the majority of CMAs.

#### **5.1.5 Analysis Costs**

The results from a survey must be analysed before they can be used. Further, the data that has been collected must be cleaned and coded before it can be analysed. With the aid of computerized statistical software this process can be done quickly and efficiently, especially since the data to be analysed will be in electronic format. However, the analysis will have to be completed for each CMA, which will extend the procedure.



## **5.2 Estimating Average Cost Per Completion**

To estimate the costs of the survey, we constructed an average cost per completion model based on the results of our survey pre-test and the various cost categories previously outlined. We then calculated the cost implications of a variety of different sample sizes, and compared the marginal costs of increasing the sample size to the marginal gains in statistical accuracy.

The survey pre-test collected approximately 500 completed questionnaires in Vancouver, Winnipeg, and Toronto respectively. The structure of the questionnaire is such that respondents who do not intend to buy or renovate a home skip very quickly to the end of the survey, resulting in what we termed a "short form completion." Those who anticipated buying or renovating a home passed through more questions on the survey, and took longer to complete it.

Based on the results of the pre-test, we constructed Tables 2 to 4. Table 2 shows the breakdown of respondents who would answer the long and short form. For the purpose of this pre-test, we only actually asked the first 50 qualified respondents to complete the long form. This sample of 50 responses allows us to calculate how much time is required to complete the long form (see Table 3). Using the rest of the pre-test results from the short-form survey, we can identify all respondents who would have answered the long form, and calculate the "projected" long form completion figures shown in Tables 2 and 3. Table 4 outlines the call summary from the pre-test.

**TABLE 2**

Break Down Of Survey Completions From The Pre-Test				
	Census Metropolitan Area			
	Vancouver	Winnipeg	Toronto	Total
Number of Completions (Total)	520	510	527	1557
Short Form Completions (Total)	379	330	377	1086
Long Form Completions (Total)	141	180	150	471
Long Form - Housing Intentions	42	27	42	111
Long Form - Renovate Intentions	108	161	116	385
Long Form - Both Intentions	9	8	8	25

**TABLE 3**

Interviewer Time Per Completion From The Pre-Test		
	Interviewer Time	Number (Based On Pre-Test)
Short Form Completions	1.68 Min	1086
Long Form Completions	3.75 Min	471
Un-Completed Calls	2.39 Min	7090

**TABLE 4**

Call Record Summary Report From The Pre-Test				
	Census Metropolitan Area			Total
	Vancouver	Winnipeg	Toronto	
Sample	5000	5000	5000	15000
Total Numbers Called	2480	2757	3410	8647
Completions	520	510	527	1557
Average Number of Calls Per Completion	4.77	5.41	6.47	5.55
Breakdown of Numbers Called				
No Answer	185	231	368	784
Busy	20	14	34	68
Answering Machine	251	346	435	1032
Not In Service	366	712	675	1753
Fax/Modem Line	169	104	184	457
Business Line	182	176	334	692
Household/Respondent Refusal	512	481	479	1472
Language Difficulty/Hearing & Health Problems	103	42	174	319
Hard or Soft Appointment	121	83	136	340
Other	51	58	64	173
Completions	520	510	527	1557
Total Calls	2480	2757	3410	8647

Note that the high number of Not in Service, Fax/Modem, and Business numbers is a function of the Random Digit Dialling process. Using lists of published numbers (e.g., local telephone directories) would reduce the number of such calls, but would also exclude the 10-40% of unlisted numbers that exist in major metropolitan areas. In some cases, purchased lists may improve upon these numbers, but verified lists are also more costly to begin with. Note that because the Waksberg procedure localizes the RDD process on existing residential numbers, it is more efficient than a pure random strategy.

### 5.2.1 Sample Costs Per Completion

To calculate the average cost of purchasing a sample for each completion, we multiply the average number of numbers that were dialled for each completed survey by the average cost of sample numbers (approximately 10 cents a number<sup>15</sup>). As seen in Table 4, there are an average of 5.55 numbers used for each completed questionnaire, meaning that at 10¢ a number, the cost of the sample per completed survey is 55¢.

### 5.2.2 Preparing the Sample, and Supporting the Interviewing Process

Once the sample has been purchased, it must be set into the computer system. The computer system will also have to be maintained and serviced while the surveys are in the field. Again, the fact that we are dealing with 30 different sample areas, each with a survey completion quota, will complicate these procedures. We estimate that the cost of computer preparation and support for this survey will be approximately \$500 for each of the areas surveyed.

### 5.2.3 Average Interviewer and Supervisor Cost Per Completion

Based on the figures in Table 3 and using Equation (4), we can compute the average interviewer time required for each completion. In this equation,  $t_l$ ,  $t_s$ , and  $t_{ic}$  are the average amounts of time required to complete a long questionnaire, short questionnaire, and incomplete call respectively<sup>16</sup>. The variables  $n_l$ ,  $n_s$ , and  $n_{ic}$  are the numbers of long form respondents, short form respondents, and incomplete calls from the pre-test. This formula takes account of the fact that some proportion of completions will be long form, and another proportion will be short form, and weights the average time per completion accordingly.

$$\text{Interviewer Time Per Completion} = \frac{(t_l * n_l) + (t_s * n_s) + (t_{ic} * n_{ic})}{n_l + n_s} \quad (4)$$

<sup>15</sup> This estimate is based on an order for 150,000 telephone numbers. If the actual quantity of telephone numbers purchased is less than this the cost per number will increase, as most firms offer substantial quantity discounts..

<sup>16</sup> The "incomplete call" time accounts for all interviewer time that was not spent completing either a long or short survey. This includes time for dialling numbers, time spent talking with reluctant respondents, time spent calling disconnected telephone numbers, and computer down time.

Solving this equation using the figures in Table 3 yields an average of 13.2 interviewer minutes per completed survey.

Using a similar calculation strategy, we can calculate that the average number of supervisor minutes required for each completion is 2.3. It is important to separate interviewer hours, and supervisor hours as the two are billed at different rates. According to standard industry rates, supervisors are generally billed at \$25 an hour, and interviewers at \$16 an hour, meaning that each completion on average costs \$3.52 of interviewing time and \$0.96 of supervisor time.

#### **5.2.4 Average Long-Distance Cost Per Completion**

If we assume that the call centre is centrally located (for example in Manitoba or Saskatchewan), we can calculate the hypothetical long distance charges associated with completing one survey in each of the 30 areas (that is the cost of completing 30 surveys across the country). By applying the same type of calculations that were used to calculate sample cost and interviewer cost, and applying the average cost of long distance charges to each sample area we conclude that the average cost in long-distance charges per completion is \$2.32<sup>17</sup>.

#### **5.2.5 Data Cleaning and Reporting**

As previously mentioned, the data will have to be reported on for each individual CMA. This will result in the generation of 30 individual sets of banners, and 30 summary reports. Further, all of this data will have to be cleaned and coded prior to analysis. We estimate that the cleaning procedure will cost approximately 50 cents for each survey completion, and that the reporting procedure will cost approximately \$1200 for each CMA surveyed.

### **5.3 The Cost of the Survey at the National Level**

By compiling the cost data calculated in the previous section, we can calculate the total cost of conducting surveys of varying size at the national level. Table 5 presents the marginal cost of one survey completion. Table 6 presents the fixed cost of each survey, that is the costs that are independent of the sample size. Based on these figures, to extend the pre-test of 500 completions per area to the national level we would multiply the fixed costs by 30 (as there are thirty survey areas), and the variable costs by 15000 (as we will be wanting to collect 15000 completed surveys nationally). This results in a total fixed cost of \$51,000, and a variable cost of approximately \$116,400 for a total cost of \$167,400.

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<sup>17</sup>

Note that this includes the cost of dialling disconnected numbers, connecting to refusals, persuading reluctant respondents who terminate prematurely, etc.

**TABLE 5**

Variable Costs of Completing One Additional Survey						
Cost Per Individual Completed Survey	Sample Cost	Interviewer Cost	Supervisor Cost	Long Distance	Data Cleaning	Total Variable Cost
	\$0.55	\$3.52	\$0.96	\$2.23	\$0.50	\$7.76

**TABLE 6**

Fixed Costs of Completing A Survey Of One Site			
Cost Per Completed Site	Computer Maintenance and Sample Set-Up	Report Preparation (Summary Report)	Total Fixed Cost
	\$500	\$1,200	\$1700

#### 5.4 Confidence Levels Needed to Indicate Change

A detailed look at the pre-test results raises some important issues. Most important is that relatively few respondents indicated they are looking to buy or renovate a home within the next six months. Considering Table 2, for example, we see that only about 7% of the respondents are considering a home purchase within the next six months.

In the section on sampling errors, we noted that large sample sizes are needed to generate precise estimates for particular population groups. Large sample sizes are also needed to address a statistical problem related to the small numbers of potential home buyers or renovators that we discovered in the pre-test. *Attenuation* is a statistical problem that emerges in the study of rare phenomena. At its most basic, the problem means that it is difficult to distinguish changes in a real (but rare) phenomenon from random and unrelated occurrences. In the case of housing intentions, it means that it is difficult to specify whether an observed change is actually taking place (demand is on the rise) or whether the change is an artifact of random error in the sample.

Intuitively, it is easy to see why this is the case. Because the number of people looking to buy a home is small, slight variations in response have a large effect on any indicator that we develop. For example, based on the pre-test numbers, if 10 respondents across the country changed their mind about their intentions, the percentage of interested home buyers would change by a percentage point the next time we conducted the survey. Most officials would be reluctant to predict a trend on the basis of 10 responses.

**FIGURE 4 Error Types and Minimum Significant Change**

Two types of errors can occur in hypothesis testing:

- **Type 1 Error** is the probability of rejecting a hypothesis when it is actually true. In a survey of housing intentions, we commit a Type 1 error when we report that housing intentions have changed when in fact they have not.

The greater the *significance level* of a hypothesis test, the lower the probability of making a Type 1 error. This significance level is generally deemed to be acceptable at the 95% level or higher. On reported surveys, the phrase "accurate 19 times out of 20" refers to the survey's significance level.

- **Type 2 Error** is the probability of accepting a hypothesis when it is actually false. In a survey of housing intentions, we commit a Type 2 error when we report that housing intentions have *not changed* when in fact they have.

The greater the *power* of a hypothesis test, the lower the probability of making a Type 2 error. The power of a test is generally seen to be acceptable at the 90% level or higher.

The idea of *minimum significant change* (MSC) used in this report is related to both Type I and Type II errors. In our tests, we are attempting to verify if the increase or decrease in the proportion of people who will buy a house (or renovate) is significantly different from one survey to another. To calculate the MSC, we select an acceptable significance level and power in conjunction with the sample size of the survey (the number of respondents) and the proportion of respondents who said they would purchase in the earlier of the two surveys. In our calculations we used a significance level of 95% and a power level of 90%.

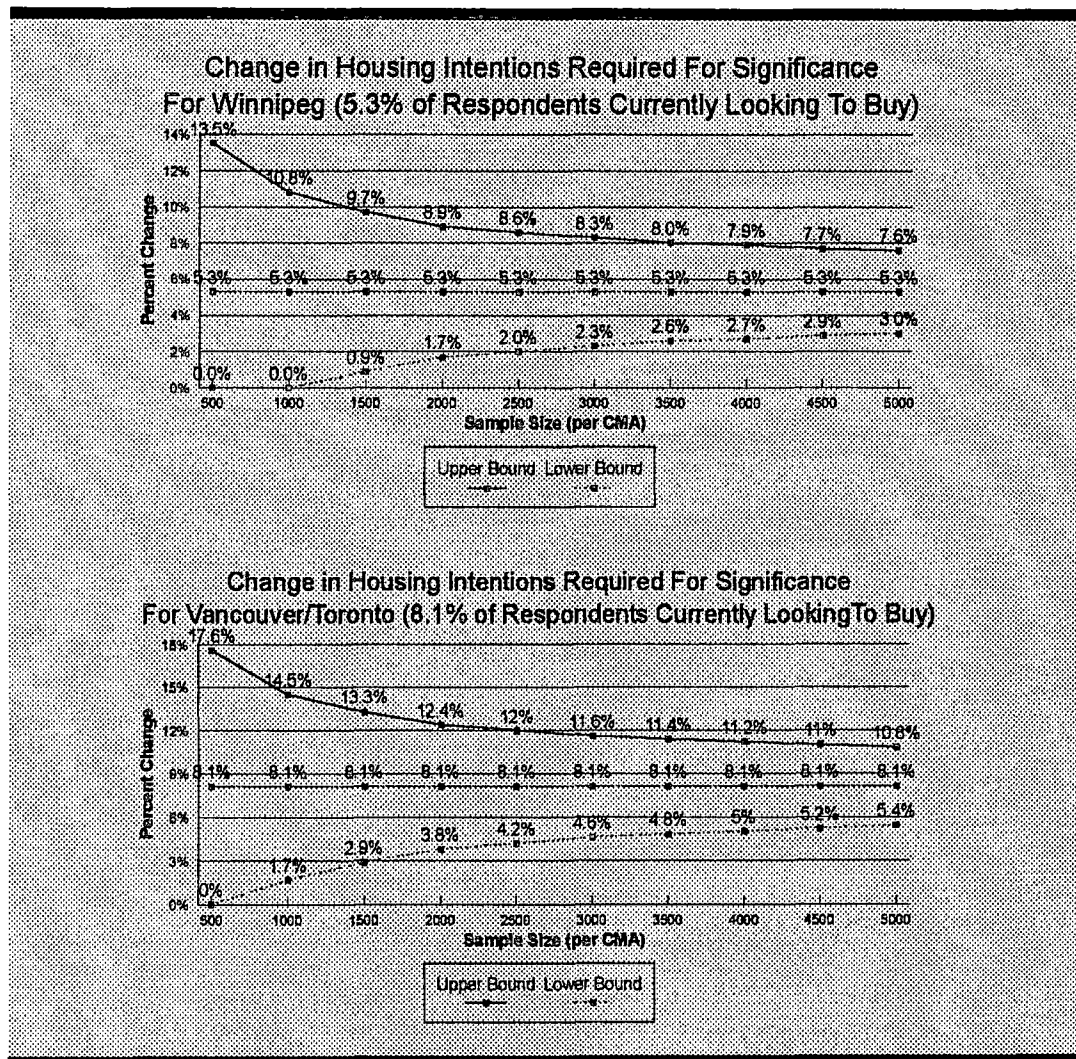
If a change in the housing index *equals* the MSC, there is *exactly* a 90% chance that a significant change has taken place.

If a change in the housing index is *smaller* than the MSC, there is *more than* a 95% chance that no significant change has taken place.

If a change in the housing intentions index *exceeds* the MSC, there is *more than* a 90% chance that a truly significant change has taken place.

A good indicator of short-term housing demand should be able to identify significant changes in the market for houses over time. The indicator must be capable of statistically validating if the demand for housing will increase, decrease, or remain the same between survey periods. This means establishing confidence levels around the indicator so that we can decide when an observed change is large enough that it could not have been generated by chance. These confidence levels can be defined as the minimum significant change that we would need to observe in the indicator to rule out the possibility of chance errors in the sample.

**FIGURE 5** Bounds For A Statistically Significant Change As A Function of Survey Sample Size



Using a two-tailed binomial test,<sup>18</sup> we can compute the minimum change needed to rule out chance occurrences for a survey with a given sample size. That is, given a specific sample size, we can compute the smallest change in an intentions index that is needed to identify a change in market demand while ruling out random statistical events. Error bands for surveys of a given sample size based on our pre-test are listed in Figure 5. For Winnipeg, only 27 respondents (5.3%) indicated that they are considering purchasing a house in the next six months. In Vancouver and Toronto, 42 respondents (8.1%) said that they may purchase in the next six months (see Table 2).

<sup>18</sup>

The two sample binomial test used for this study is discussed in Deneberg (1987) p 76-83. We computed the statistics using a two-tailed test at a 5% significance level, and a 90% Power level.



As the figure shows, there is little statistical justification for undertaking a survey with a sample size of only 500 in a particular market if this will only detect changes in the housing market in excess of 9%. Of course, this has important implications for the cost of the survey.

Tables 7 and 8 use the results from the pre-test for Winnipeg, Toronto, and Vancouver to show how the minimum significant change and cost of the survey are both related to sample size for home buying intentions and home renovations intentions respectively. Note that the minimum significant change is also related to the relative frequency of the event under study. Because housing intentions were higher in Toronto and Vancouver than in Winnipeg, we need to observe more change in these centres to rule out random errors.

**TABLE 7**

TABLE 1

Minimum Significant Change for Home Buying Intentions, Cost of Survey, and Sample Size Based on Pre-Test Results						
CMA of Winnipeg				CMA of Vancouver and Toronto		
Sample Size	Cost for Survey	Minimum Significant Change *		Sample Size	Cost for Survey	Minimum Significant Change *
500	\$5,580	8.2%		500	\$5,580	9.5%
1000	\$9,460	5.5%		1000	\$9,460	6.4%
1500	\$13,340	4.4%		1500	\$13,340	5.2%
2000	\$17,220	3.6%		2000	\$17,220	4.3%
2500	\$21,100	3.3%		2500	\$21,100	3.9%
3000	\$24,980	3.0%		3000	\$24,980	3.5%
3500	\$28,860	2.7%		3500	\$28,860	3.3%
4000	\$32,740	2.6%		4000	\$32,740	3.1%
4500	\$36,620	2.4%		4500	\$36,620	2.9%
5000	\$40,500	2.3%		5000	\$40,500	2.7%
10000	\$79,300	1.6%		10000	\$79,300	1.9%

\* Differences between the base in the feasibility study and the level of change required for the change to be termed "statistically significant" at the given sample size.

Minimum Significant Change for Home Renovations Intentions, Cost of Survey, and Sample Size  
Total Sample  
Based on Pre-Test Results

Minimum Significant Change for Home Renovations Intentions, Cost of Survey, and Sample Size Total Sample Based on Pre-Test Results						
CMA of Winnipeg				CMA of Vancouver		
Sample Size	Cost for Survey	Minimum Significant Change *		Sample Size	Cost for Survey	Minimum Significant Change *
500	\$5,580	14.0%		500	\$5,580	12.7%
1000	\$9,460	9.8%		1000	\$9,460	8.8%
1500	\$13,340	8.0%		1500	\$13,340	7.2%
2000	\$17,220	6.8%		2000	\$17,220	6.0%
2500	\$21,100	6.2%		2500	\$21,100	5.5%
3000	\$24,980	5.6%		3000	\$24,980	4.9%
3500	\$28,860	5.2%		3500	\$28,860	4.6%
4000	\$32,740	4.9%		4000	\$32,740	4.4%
4500	\$36,620	4.6%		4500	\$36,620	4.1%
5000	\$40,500	4.4%		5000	\$40,500	3.9%
10000	\$79,300	3.1%		10000	\$79,300	2.7%

\* Differences between the base in the feasibility study and the level of change required for the change to be termed "statistically significant" at the given sample size.

Table 9 provides a budget grid that can be used to estimate the total cost of conducting a national survey of housing intentions. The table identifies the number of CMAs and survey iterations (waves) that can be completed with a given expenditure level. For simplicity, the table assumes the following:

- The minimum significant change acceptable to CMHC is 3.5% overall. The minimum significant change needed to observe changes for specific subsamples (e.g., owners versus renters) will be higher.
- The rate of intentions is uniform across the country, at about the rate observed in Toronto and Vancouver on the pre-test.

These two conditions imply a sample size in each CMA of 3000 completions.<sup>19</sup>

- The costs of completing the survey are uniform in each CMA.

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<sup>19</sup>

Recall from Figure , page that with populations over 1000, precision in the estimates is a function of the *sample* size, not the population. This allows us to use a constant sample size for CMAs with very different population levels.

TABLE 9

Cumulative Costs of a National Housing Study By Number of Waves and Number of CMAs Completed								
# of CMAs	Min. Sig. Change All	Min. Sig. Change Owners	Min. Sig. Change Renters	Sample Size	Wave 1	Wave 2	Wave 3	Wave 4
1	3.5%	4.6%	6.1%	3000	\$24,980	\$49,960	\$74,940	\$99,920
2	3.5%	4.6%	6.1%	3000	\$49,960	\$99,920	\$149,880	\$199,840
3	3.5%	4.6%	6.1%	3000	\$74,940	\$149,880	\$224,820	\$299,760
4	3.5%	4.6%	6.1%	3000	\$99,920	\$199,840	\$299,760	\$399,680
5	3.5%	4.6%	6.1%	3000	\$124,900	\$249,800	\$374,700	\$499,600
6	3.5%	4.6%	6.1%	3000	\$149,880	\$299,760	\$449,640	\$599,520
7	3.5%	4.6%	6.1%	3000	\$174,860	\$349,720	\$524,580	\$699,440
8	3.5%	4.6%	6.1%	3000	\$199,840	\$399,680	\$599,520	\$799,360
9	3.5%	4.6%	6.1%	3000	\$224,820	\$449,640	\$674,460	\$899,280
10	3.5%	4.6%	6.1%	3000	\$249,800	\$499,600	\$749,400	\$999,200
11	3.5%	4.6%	6.1%	3000	\$274,780	\$549,560	\$824,340	\$1,099,120
12	3.5%	4.6%	6.1%	3000	\$299,760	\$599,520	\$899,280	\$1,199,040
13	3.5%	4.6%	6.1%	3000	\$324,740	\$649,480	\$974,220	\$1,298,960
14	3.5%	4.6%	6.1%	3000	\$349,720	\$699,440	\$1,049,160	\$1,398,880
15	3.5%	4.6%	6.1%	3000	\$374,700	\$749,400	\$1,124,100	\$1,498,800
16	3.5%	4.6%	6.1%	3000	\$399,680	\$799,360	\$1,199,040	\$1,598,720
17	3.5%	4.6%	6.1%	3000	\$424,660	\$849,320	\$1,273,980	\$1,698,640
18	3.5%	4.6%	6.1%	3000	\$449,640	\$899,280	\$1,348,920	\$1,798,560
19	3.5%	4.6%	6.1%	3000	\$474,620	\$949,240	\$1,423,860	\$1,898,480
20	3.5%	4.6%	6.1%	3000	\$499,600	\$999,200	\$1,498,800	\$1,998,400
21	3.5%	4.6%	6.1%	3000	\$524,580	\$1,049,160	\$1,573,740	\$2,098,320
22	3.5%	4.6%	6.1%	3000	\$549,560	\$1,099,120	\$1,648,680	\$2,198,240
23	3.5%	4.6%	6.1%	3000	\$574,540	\$1,149,080	\$1,723,620	\$2,298,160
24	3.5%	4.6%	6.1%	3000	\$599,520	\$1,199,040	\$1,798,560	\$2,398,080
25	3.5%	4.6%	6.1%	3000	\$624,500	\$1,249,000	\$1,873,500	\$2,498,000
26	3.5%	4.6%	6.1%	3000	\$649,480	\$1,298,960	\$1,948,440	\$2,597,920
27	3.5%	4.6%	6.1%	3000	\$674,460	\$1,348,920	\$2,023,380	\$2,697,840
28	3.5%	4.6%	6.1%	3000	\$699,440	\$1,398,880	\$2,098,320	\$2,797,760
29	3.5%	4.6%	6.1%	3000	\$724,420	\$1,448,840	\$2,173,260	\$2,897,680
30	3.5%	4.6%	6.1%	3000	\$749,400	\$1,498,800	\$2,248,200	\$2,997,600

## **5.5 Revisiting the Precision of the Survey**

In addition to addressing the precision and attenuation issues associated with an index of housing intentions, the large sample sizes inherent in a national study of housing intentions have important benefits for the other information collected in the survey. Most important is that the quality of the collateral information collected during the survey is also much improved by the larger sample sizes. For example, based on the pre-test result, 3000 survey completions in Winnipeg identifies approximately 240 people who are looking for a new home, and from whom we collect information on the characteristics of the homes they are looking for. A sample of 240 completions is accurate to within 6.4%, providing fairly robust information to the industry at the local level.

On the converse side, approximately 2200 of the 3000 people surveyed in Winnipeg won't be looking to buy or renovate a home, and will provide reasons why. A sample of 2200 people is accurate to within 2.1%, giving us very robust information about the reasons for not buying or renovating.

## **6.0 CONCLUSIONS**

Information about household intentions to purchase or renovate a home can be useful to all segments of the housing industry, from builders and constructors, to realtors, financial institutions, and policy makers. A survey of housing intentions could provide CMHC and its clients with a short term indicator of local housing activity, and give important insights into why people choose or choose not to buy or renovate a home. This research looks at the feasibility and cost of a survey to gather such information.

Surveys of consumer confidence and intentions at the national level have strong theoretical underpinnings and have been used extensively to predict macroeconomic phenomena. Although work at the micro level is less well developed, intentions indicators have been used in a variety of industry settings to support forecasting and analysis. The methodology for such studies is proven and well known.

After reviewing a series of methodological options, we conclude that a telephone survey represents the most cost effective way for CMHC to undertake a study of housing intentions. The methodology is akin to that used by the University of Michigan Survey Research Centre on its Index of Consumer Sentiment. We have proposed a sample questionnaire (Appendix A) that has already been pre-tested for question phrasing and flow. The questionnaire collects a range of information about respondents' housing intentions and the reasons for these intentions.

Large sample sizes will be needed to generate statistically valid information for the sample groups that CMHC has identified. This raises the cost of the study accordingly. However, the quality of information generated is also much improved. Factors such as the precision, frequency, and resolution of the survey must be weighed in determining business feasibility.

**APPENDIX A**  
**SAMPLE INSTRUMENT**



**Canada Mortgage and Housing Corporation  
Survey of Housing Intentions**

---

**INTRODUCTION**

- 1 I am calling from .... We are calling to ask your opinion on buying or renovating a home. Our survey takes less than 5 minutes.

Are you one of the people in your home who is involved in major purchasing decisions?

(If yes, proceed, if no ask to speak to someone who is)

- 2 Do you own or rent your current home?

Own

Rent

**HOME PURCHASES**

- 3a Are you thinking about buying a home at some point in the *next* six months?

YES	→	SKIP TO Q: 3b
NO	→	SKIP TO Q: 4a
BOUGHT A HOME WITHIN A YEAR	→	SKIP TO Q: 15a

- 3b What are the chances that you will actually buy a home in that time? Would you say there is a 50/50 chance, a high chance, or a low chance?

HIGH	50/50	LOW
------	-------	-----

- 3c What about the next three months? Would you say there is a 50/50 chance, a high chance, or a low chance that you will buy a home?

HIGH	50/50	LOW
------	-------	-----

SKIP TO Q. 6

4a At any time in the *last* six months, have you thought about buying a home?

YES

NO

4b IF YES TO Q. 4a BUT NO TO Q. 3. OTHERWISE, SKIP TO Q. 5

What made you reconsider buying a home? (DO NOT READ LIST)

- |   |  |
|---|--|
| <input type="checkbox"/> Change in my household's financial situation | <input type="checkbox"/> Satisfied with my existing home |
| <input type="checkbox"/> Change in my household's job situation       | <input type="checkbox"/> Like my neighbourhood           |
| <input type="checkbox"/> Can't afford the down payment                | <input type="checkbox"/> No longer need to move          |
| <input type="checkbox"/> Homes are too expensive/Cost is too high     | <input type="checkbox"/> Can't find the right home       |
| <input type="checkbox"/> Interest rates                               | <input type="checkbox"/> Hate moving                     |
| <input type="checkbox"/> Can't sell existing home                     | <input type="checkbox"/> Kids moved back home/moved away |
| <input type="checkbox"/> Don't Know                                   | <input type="checkbox"/> Just renovated existing home    |
| <input type="checkbox"/> Other (specify)                              | <input type="checkbox"/> Just bought a home              |

5 What would have to happen for you to consider buying a home?

- |   |  |
|---|--|
| <input type="checkbox"/> Change in my household's financial situation | <input type="checkbox"/> Deterioration in condition of existing home |
| <input type="checkbox"/> Change in my household's job situation       | <input type="checkbox"/> Developed health/mobility problems          |
| <input type="checkbox"/> Good price on existing home                  | <input type="checkbox"/> Found the right home                        |
| <input type="checkbox"/> Home prices dropped                          | <input type="checkbox"/> Kids moved back home/moved away             |
| <input type="checkbox"/> Interest rates                               | <input type="checkbox"/> Never moving again/Nothing                  |
| <input type="checkbox"/> Don't Know                                   |  |
| <input type="checkbox"/> Other (specify)                              |  |

IF NOT THINKING OF BUYING A HOME, SKIP TO Q: 15a

6 Have you contacted a builder for information about a new home?

YES

NO

- 7 Have you talked to a lender about obtaining a mortgage?
- YES → Have you been pre-approved for a mortgage? YES/NO  
NO
- 8 Have you consulted any publications for information on the housing market?
- YES NO
- 9 Have you talked to a realtor about buying a home?
- YES NO
- 10 In the last month, as part of your search for a new place to live, how many homes have you visited?
- Number \_\_\_\_
- 11 What would be your first choice in a home? Would you prefer to buy a ... (READ THE LIST)
- Brand new single family home in a new subdivision  
Brand new single family home in an established neighbourhood  
Pre-owned single family home less than 20 years old in an established neighbourhood  
Pre-owned single family home more than 20 years old in an established neighbourhood  
Condominium  
Other (specify)
- 12 How many square feet are you looking for? (DO NOT READ LIST)
- Less than 800 sq ft  
800 - 1000 sq ft  
1001 - 1200 sq ft  
1201 - 1400 sq ft  
1401 - 1600 sq ft  
1601 - 1800 sq ft  
1801 - 2000 sq ft  
2001 - 2500 sq ft  
2501 - 3000 sq ft  
3001 - 3500 sq ft  
Over 3500 sq ft

- 13 I am now going to mention a number of broad price ranges. Thinking about your next home, please stop me when I come to the right price range.

Under \$50,000  
50,000 to 100,000  
100,000 to 150,000  
150,000 to 200,000  
200,000 to 250,000  
250,000 to 500,000  
500,000 to 1,000,000  
Over 1,000,000

- 14 (SKIP IF RENTERS) Would this be more, less, or about the same as the value of your current home?

MORE          SAME          LESS

#### HOME RENOVATIONS (SKIP IF RENTERS)

- 15a (IF THINKING ABOUT BUYING A HOME) Even though you are thinking of moving, have you considered renovation as an alternative or to help you sell your home? By renovation I mean anything from painting a room to adding an addition to your house.

(IF NOT THINKING ABOUT BUYING A HOME) Have you thought about renovating your home in the *next* six months? By renovation I mean anything from painting a room to adding an addition to your house.

YES

NO

CURRENTLY RENOVATING OR WITHIN A YEAR



SKIP TO Q: 16a



SKIP TO Q. 25

- 15b What are the chances that you will actually renovate your home in that time? Would you say there is a 50/50 chance, a high chance, or a low chance?

HIGH

50/50

LOW

15c What about the next three months? Would you say there is a 50/50 chance, a high chance, or a low chance that you will renovate your home?

HIGH

50/50

LOW

SKIP TO Q: 18

16a At any time in the *last* six months, have you thought about renovating your home?

YES

NO

16b IF YES TO Q. 16a BUT NO TO Q. 15. OTHERWISE, SKIP TO Q. 17

What made you reconsider renovating? (DO NOT READ LIST)

- |   |  |
|---|--|
| <input type="checkbox"/> Change in my household's financial situation | <input type="checkbox"/> Satisfied with my existing home                 |
| <input type="checkbox"/> Change in my household's job situation       | <input type="checkbox"/> Just renovated existing home                    |
| <input type="checkbox"/> Homes are too expensive/Cost is too high     | <input type="checkbox"/> Just bought a home                              |
| <input type="checkbox"/> Sold existing home                           | <input type="checkbox"/> Don't want to make a mess/Don't need the hassle |
| <input type="checkbox"/> Don't Know                                   | <input type="checkbox"/> Kids moved back home/moved away                 |
| <input type="checkbox"/> Other (specify)                              |  |

17 What would have to happen for you to consider renovating your home?

- |   |  |
|---|--|
| <input type="checkbox"/> Change in my household's financial situation | <input type="checkbox"/> Deterioration in condition of existing home |
| <input type="checkbox"/> Change in my household's job situation       | <input type="checkbox"/> Developed health/mobility problems          |
| <input type="checkbox"/> Thinking of selling home                     | <input type="checkbox"/> Wanted to change the style of existing home |
| <input type="checkbox"/> Bought an older home                         | <input type="checkbox"/> Kids moved back home/moved away             |
| <input type="checkbox"/> Don't Know                                   | <input type="checkbox"/> Nothing, I like my existing home            |
| <input type="checkbox"/> Other (specify)                              |  |

IF NOT THINKING OF RENOVATING, SKIP TO Q. 25

18 Have you contacted a contractor for information about your renovations?

YES

NO

19 Have you talked to building materials supplier about the cost of materials?

YES

NO

20 Have you consulted any publications for information on home renovations?

YES

NO

21 What kind of home renovations are you planning to do (DO NOT READ LIST, CHECK ALL THAT APPLY)

☐ Paint/Wallpaper

☐ 1 room

☐ More than one room

☐ Whole house

☐ Kitchen

☐ Cabinets/countertops

☐ Complete renovation

☐ Bathroom

☐ Fixtures

☐ Tile

☐ Complete renovation

☐ Addition/Basement conversion

☐ Carpet/Flooring

☐ 1 room

☐ More than one room

☐ Whole house

☐ Add a fireplace

☐ Add/Refurbish Closets

☐ Rec Room

☐ New addition

☐ Basement conversion

☐ Wiring

☐ Doors

☐ Windows

☐ Furnace

☐ Hot water heater

☐ Foundation

☐ Exterior painting/stucco

☐ Roofing

☐ Build a garage

☐ Deck/patio

☐ Fence

☐ Ornamental lighting

☐ Add a pool

☐ Other (specify)

22 How much do you plan to spend on all the renovations you just mentioned?

Amount in Dollars \_\_\_\_

23 Of the renovations you mentioned, which is the most important to you? (SELECT ONE ONLY)

- |   |   |
|---|---|
| <input type="checkbox"/> Paint/Wallpaper              | <input type="checkbox"/> Rec Room                 |
| <input type="checkbox"/> 1 room                       | <input type="checkbox"/> New addition             |
| <input type="checkbox"/> More than one room           | <input type="checkbox"/> Basement conversion      |
| <input type="checkbox"/> Whole house                  |   |
| <input type="checkbox"/> Kitchen                      | <input type="checkbox"/> Wiring                   |
| <input type="checkbox"/> Cabinets/countertops         | <input type="checkbox"/> Doors                    |
| <input type="checkbox"/> Complete renovation          | <input type="checkbox"/> Windows                  |
| <input type="checkbox"/> Bathroom                     | <input type="checkbox"/> Furnace                  |
| <input type="checkbox"/> Fixtures                     | <input type="checkbox"/> Hot water heater         |
| <input type="checkbox"/> Tile                         | <input type="checkbox"/> Foundation               |
| <input type="checkbox"/> Complete renovation          | <input type="checkbox"/> Exterior painting/stucco |
| <input type="checkbox"/> Addition/Basement conversion | <input type="checkbox"/> Roofing                  |
| <input type="checkbox"/> Carpet/Flooring              | <input type="checkbox"/> Build a garage           |
| <input type="checkbox"/> 1 room                       | <input type="checkbox"/> Deck/patio               |
| <input type="checkbox"/> More than one room           | <input type="checkbox"/> Fence                    |
| <input type="checkbox"/> Whole house                  | <input type="checkbox"/> Ornamental lighting      |
| <input type="checkbox"/> Add a fireplace              | <input type="checkbox"/> Add a pool               |
| <input type="checkbox"/> Add/Refurbish Closets        | <input type="checkbox"/> Other (specify)          |

24 Thinking about your most important renovation, are you planning to do it yourself, get partial help from a contractor, or hire a contractor to do all of the work?

Do it myself

Do some with contractor

Let contractor do it all

**DEMOGRAPHICS**

And finally, a few background questions. We use this information to ensure that our sample is representative of the population.

- 25 In what year were you born?
- 26 How many people aged 5 and under normally live in your household?
- 27 How many people between the ages of 6 and 17 normally live in your household?
- 28 Including yourself, how many people 18 and over normally live in your household?
- 29 Please tell me the first three characters of your postal code
- 30 I am now going to mention a number of broad income categories. When I come to the category that best describes your total household income, please stop me.

Under 10,000  
10,000-20,000  
20,000-35,000  
35,000-50,000  
50,000-75,000  
75,000-100,000  
Over 100,000



**APPENDIX B**  
**BIBLIOGRAPHY**

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**APPENDIX C**  
**NATIONAL OMNIBUS SERVICES**

Comparison of OMNIBUS Services					
Firm	Type	Frequency	Sampling Method	\$/ question	
				Clsd	Open
EnviroNics (Focus Canada)	Door-to-door	Quarterly	2,000 interviews Stratified quota sample by region, community, age, and gender.	\$1,650	n/a
Market Facts (TeleNation)	Telephone	Bi-weekly	1,000 interviews All published telephone directories. Stratified quota sample by province and community size. Numbers selected by RDD.	\$690	\$1,500
Market Facts (Flexibus)	Mail	Quarterly	up to 10,000 mailed out, up to 7,000 returned Sample selected from MF's Consumer Mail Panel (50,000 households), balanced within province by age of head, population density, and household income.	\$495—1800 returns \$910—3600 returns \$1,450—6000 returns	\$1,195—1800 returns \$1,950—3600 returns \$2,950—6000 returns
ComQUEST	Telephone	Quarterly	1,500 interviews Stratified quota sample by province.	\$925	\$1,850
Gallup	Telephone	Monthly	1,000 interviews All telephone numbers. Numbers selected through list-assisted RDD, using truncated Casaday-Lepkowski approach.	\$1,000 + \$100 for each additional response	\$1,500
Canadian Facts (MultiFacts)	Telephone	Weekly	1,000 interviews DIGIT sample method. Stratified quota sample by region.	\$700 — \$1,040	N/A
Canadian Facts (Monitor)	In-home interviews	Monthly	2,000 interviews. Modified probability sample design	\$1,800 — \$3,000	N/A
Thompson, Lightstone & Company (Omnitel)	Telephone	Monthly	1,000 or 2,000 interviews Stratified quota sample by region.	\$750 — \$995	\$1,500 — \$1,950

**NODEID:** mpc

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JOB NAME: DC-9913410 Feasibility Study for Survey.jtk  
DISTRIBUTION: local

TITLE:

PROGRAMMER:  
NAME:  
DEPARTMENT:  
BUILDING:  
ROOM:  
ACCOUNT:  
ADDRESS:

SP00LID: 6168900034  
PRINTER: IP4000

PRINT DATE: 08/05/1999 19:37

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END

**Comparison of OMNIBUS Services**

Firm	Type	Frequency	Sampling Method	\$/ question	
				Clsd	Open
Environics (Focus Canada)	Door-to-door	Quarterly	2,000 interviews Stratified quota sample by region, community, age, and gender.	\$1,650	n/a
Market Facts (TeleNation)	Telephone	Bi-weekly	1,000 interviews All published telephone directories. Stratified quota sample by province and community size. Numbers selected by RDD.	\$690	\$1,500
Market Facts (Flexibus)	Mail	Quarterly	up to 10,000 mailed out, up to 7,000 returned Sample selected from MF's Consumer Mail Panel (50,000 households), balanced within province by age of head, population density, and household income.	\$495—1800 returns \$910—3600 returns \$1,450—6000 returns	\$1,195—1800 returns \$1,950—3600 returns \$2,950—6000 returns
ComQUEST	Telephone	Quarterly	1,500 interviews Stratified quota sample by province.	\$925	\$1,850
Gallup	Telephone	Monthly	1,000 interviews All telephone numbers. Numbers selected through list-assisted RDD, using truncated Casaday-Lepkowski approach.	\$1,000 + \$100 for each additional response	\$1,500
Canadian Facts (MultiFacts)	Telephone	Weekly	1,000 interviews DIGIT sample method. Stratified quota sample by region.	\$700 - \$1,040	N/A
Canadian Facts (Monitor)	In-home interviews	Monthly	2,000 interviews. Modified probability sample design	\$1,800 - \$3,000	N/A
Thompson, Lightstone & Company (Omnitel)	Telephone	Monthly	1,000 or 2,000 interviews Stratified quota sample by region.	\$750 - \$995	\$1,500 - \$1,950