December, 2000

MONITORING HOUSING IN BERMUDA

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Monitoring Housing in Bermuda

Executive Summary

Massachusetts Institute of Technology

Why Monitor Bermuda Housing on an Ongoing Basis?

Rents and house prices in Bermuda are currently rising, making it increasingly difficult for families to find affordable housing. However, unlike most developed nations, Bermuda does not currently possess consistent ongoing measures of rents, house prices, or housing affordability. Currently, many basic questions about the nature and scope of the housing problem remain unanswered. For instance:

- How much have rents and prices actually risen? How does this differ among housing types, or for different types of households? For example, how do rents differ for long-term renters versus recent-movers? What are the costs faced by first-time homebuyers?
- How many families have trouble finding housing they can afford, and how might their housing needs be met?
- How is the housing stock changing over time in response to rising rents?
- How are rents, prices and affordability likely to change in the future?

Monitoring Strategy

Currently, the Bermuda Housing Corporation and government agencies are limited in their ability to assess housing problems, and consequently in their ability to offer solutions. This report recommends the ongoing collection of a relatively small number of housing-related variables that are crucial for an understanding of the Bermuda housing market. These recommended variables are the most indispensable ones and are chosen regardless of current availability. In addition to information already collected by government departments, the collection and presentation of new information has begun.

An Ongoing Collaborative Effort

MIT researchers are working with the Bermuda Housing Corporation and data-collecting government departments to move ahead with implementation of this monitoring strategy. Several new collaborative efforts are underway:

- A **Bermuda Annual Rent Survey** is being designed. It will gather ongoing critical information about rents, rental dwellings, renter households, and household incomes.
- A **Bermuda Annual House Price Index** for 1993-1999 is nearing completion and will be released in the fall of 2000. This index is based on all house transactions during the past seven years and includes controls for house size and quality, along with neighborhood location.
- An **Annual Rental Housing Affordability Index** is being designed. It uses data from the Bermuda Annual Rent Survey, along with ongoing information about the housing stock.

In addition, this collaborative effort has already led to new housing variables being included in the *2000 Census of Population of Housing*, along with ongoing MIT research comparing Bermuda with other island housing markets such as Guernsey.

Short-Term Benefits

In the short term, this undertaking is summarizing valuable information about the current state of the Bermuda housing stock, housing needs, house prices, and changes in demand due to expansion and contraction in different employment categories. The Bermuda House Price Index measures how much prices have risen in the past three years, following a period of steady prices. The Index also compares how prices have changed in different parts of the market. In addition, a profile of the number of and type of work permits in effect is being tabulated as a starting point for ongoing monitoring. To better interpret the impact of employment trends on different segments of the housing stock, this tabulation includes occupation and number of dependents. Additional tabulations are being explored with the Immigration Department.

Longer-Term Benefits

This ongoing monitoring effort will greatly enhance our understanding of how the housing market functions over time. This will allow us to address more complex issues such as the nature of the relationship between changes in economic conditions and rents under differing policy scenarios. For the first time, the data will be complete enough to support meaningful forecasting. Longer-term benefits, summarized in this overview, are carefully discussed in the full report.

Organization of this Report

The first two chapters of the report are an introduction and an overview of Bermuda housing problems, along with a discussion of the need for monitoring. The subsequent chapters are organized in terms of dynamic demand and supply variables, followed by the market outcomes of rents, house prices, and housing affordability. Each chapter begins with a summary of recommendations, followed by their rationale, the state of current data collection and detailed recommendations.

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Chapter 1
Purpose of Report

Information Requirements for Timely Housing Market Monitoring

This report to the Bermuda Housing Corporation recommends a feasible strategy for collection of the ongoing quantitative information needed to monitor the Bermuda housing market. The purpose is to focus on the relatively small number of housing-related variables that are crucial, regardless of current availability. The report examines the current status of these variables and recommends specific actions. Some recommended variables are already available, and need only be selectively assembled and made available in a timely fashion. Other variables are currently not available, and recommended for collection.

Although this effort requires discussion of important aspects of the Bermuda housing market, it should not be viewed as an update to previous detailed reports which analyze Bermuda housing by assembling and presenting a great deal of currently available data. Rather, this report examines data currently collected solely in the context of recommending variables for ongoing monitoring. It is driven by what is essential to monitor, not solely by what already exists.

This report thus explains the need for focused ongoing data collection and the importance of the housing market monitoring that will be made possible. The recommended variables are intended to capture the unique features of the Bermuda housing market and ultimately make possible both an improved dynamic understanding of how the market functions and the subsequent improved ability to evaluate housing policy alternatives. These goals will be achieved through the timely monitoring of key variables and the creation of a housing market forecasting model. The chapters are organized in terms of dynamic demand and supply variables, followed by the market outcomes of rents, house prices, and housing affordability. Each chapter begins with a summary of

recommendations, followed by their rationale, and the state of current data collection, and detailed recommendations.

This report on data is part of a larger cooperative effort between the Bermuda Housing Corporation and the Massachusetts Institute of Technology. Other components include detailed analyses of housing policies, comparisons with related islands, and construction of a forecasting model.

Background: The Bermuda Housing Market

Bermuda is a relatively small island, and its housing stock reflects the unique political, social and economic forces that have influenced the island over the years. Recent trends such as changing immigration patterns, changing household structure, and increased incomes exert a powerful influence in the housing market. At the same time, Bermuda has a legacy of strong traditions and land-use regulations that help to maintain the low-density character of its neighborhoods. Understanding how these forces interact in the housing market is critical for assessing housing problems such as affordability, for anticipating future change, and for making informed policy choices.

The housing requirements of households are intimately tied to the economy of the island. For decades, the mainstay of the Bermuda economy was tourism, providing service jobs with moderate wages for both Bermudian and non-Bermudian workers. Since the 1960's, international business, primarily insurance, has grown substantially, joining tourism as a twin pillar of the economy by the 1990's. In a recent New York Times article, Bermuda was dubbed "…the third leg with New York and London in the world's central insurance triangle."[1] This economic shift altered patterns of immigration, employment and income. The growth of finance and insurance sparked demand for workers in high income brackets, including professionals, administrators, and managers. A good deal of this demand has been met by immigration by foreign workers, although the number of well-educated Bermudians in white-collar professions has also increased. Altogether, recent

[1] New York Times, "Bermuda Takes the Risk", April 28, 1999.

economic changes have led to higher incomes and improved standards of living, particularly for certain segments of the population.

Meanwhile, demographic changes similar to those encountered in many parts of the developed world have occurred. Birth rates have declined, and longevity has increased. The size of Bermudian households has declined, partly due to an increase in the number of single parent households.

These economic and demographic changes have altered the demand for housing. While foreign workers have long played a role in Bermuda's economy, the recent growth in the number of higher-income non-Bermudians has placed new pressures on the housing market. There has not only been increased demand for housing due to higher incomes, but also due to the increased presence of North Americans accustomed to high levels of housing consumption.

Given the legal restrictions on foreign homeownership, non-Bermudians exert a disproportionate influence on the rental housing market. The extent of this influence is compounded by the fact that companies often include housing allowances in the compensation of foreign workers. Along with Bermudians in higher income jobs, these workers have thus increased demand for high-end rental units.

Increased demand for housing led to rising rents beginning in the mid-1980s. This encouraged construction of new dwelling units, especially small rental units and condominiums for more affluent households. A high percentage of these new dwelling units were additions to existing buildings. Recognizing opportunity, many middle and high-income Bermudians have added rental units to their homes, usually between one and three small one- or two-bedroom units. As a result, the relative number of single family homes has declined. While the pressure on the rental housing market abated somewhat during the recession of the early 1990's, rents have been rising in recent years. A further contributing factor to the tightening of the rental market has been the loss over the last several decades of available dwellings in Hamilton. As Bermuda has grown and

prospered, conversions of residential properties to more profitable retail and commercial uses has occurred.

Despite improved incomes, housing costs and rents have become an increased proportion of household budgets. This placed a special burden on low-income families who already were spending a large portion of their incomes on housing.

Recent changes in the Bermuda housing market raise questions about how economic, demographic and regulatory factors interact. How well does the current stock of housing in Bermuda meet the needs of the population? How do recent economic and demographic trends such as growth of the international business sector, or declining household size, influence rents, house prices, and new construction? How does pressure at the top end of the housing market impact affordability for low-income households? How would another economic recession impact housing prices and rents? To best answer these types of questions, it is necessary to monitor trends in the housing market over time, and to develop adequate measures of rents, prices and affordability. Ongoing monitoring, along with development of forecasting tools, will make possible quantitative and realistic assessment of the housing market and help to evaluate current and potential policy measures.

As discussed above, the goal of this report to the Bermuda Housing Corporation is to recommend the collection of variables that will contribute to ongoing monitoring and assessment of the Bermuda housing market. Chapter 2 presents an overview of housing challenges in Bermuda, and discusses the need for monitoring and forecasting. Chapter 3 contains recommendations for collection of demand-side housing market variables: population and households (3a); employment (3b); and income (3c). Chapter 4 includes recommendations for supply-side housing market variables. Chapter 5 considers alternative types of indices to monitor rental affordability, and makes recommendations for an index specifically targeted to the needs of Bermuda. Chapter 6 presents the rationale and methodology for a proposed Bermuda Annual Rent Survey. The new Bermuda House Price Index is introduced and discussed in Chapter 7.

Chapter 2
Housing Problems in Bermuda and the Need for Monitoring

Affordability. The most pressing housing issue in Bermuda is the lack of affordable housing. In recent years, the number of households in Bermuda has increased, largely due to an influx of foreign workers. This led to escalating housing costs, particularly for rental households. Increased rents impact affordability for households at all income levels, but they are particularly burdensome for low-income families.

The increased importance of international business is changing the Bermuda economy, influencing the type of housing demanded by households over the longer term. Unfortunately, it is difficult to fully understand the nature and scope of recent changes in the housing market because several key pieces of information necessary for ongoing monitoring purposes are either not collected, or only collected as part of the decennial Census. In order to find appropriate policy measures to address housing problems in Bermuda, continuous and ongoing monitoring of key housing market variables is required. This will provide not only a better understanding of how the housing market functions and how it is changing, but also help identify which households are more likely to need assistance, and how their housing needs might best be met.

Unique factors influencing Bermuda housing. There are several key features of the Bermuda housing market that make it unique. First, Bermuda is an island, which means that the housing market is geographically self-contained, and its boundaries easily defined. This is helpful for monitoring purposes, since virtually everyone who works in Bermuda must live in Bermuda: there is no "overflow" of households to surrounding areas. There is also no alternative locale for new development of dwelling units. Bermuda's size and location increase construction costs, since most materials must be imported. A significant portion of the workforce is imported as well, which can amplify changes in the demand for rental units resulting from fluctuations in the economy.

Furthermore, the housing market is bifurcated: except for a small percentage of the most valuable properties and some condominiums, ownership of residential properties is limited to Bermudian citizens. Consequently, the majority of non-Bermudians must look to the rental market for homes. Finally, the island's low-density land-use traditions and planning regulations also exert a strong influence in the housing market, working to maintain the character of the island. These traditions and regulations also place restrictions on the total number of dwelling units that can be built.

Changing employment patterns, rising rents. During the past two decades Bermuda has experienced periods of rising rents, both before and after the recession of the late 1980's and early 1990's. The common perception is that rents have increased since the mid-1990's, for all types of dwelling units. However, there is currently no consistent, reliable, ongoing measure of rents or household income in Bermuda. This makes it difficult to assess the scope of the rental affordability problem, how it has changed over time, and what types of households suffer most from the burden of high rents.

Cyclicality in the housing market. In evaluating the Bermuda housing market, it is important to distinguish between cyclical fluctuations and longer-term changes in the type of housing demanded by households. Because housing in Bermuda is tied to the island's economy, rents tend to rise with strong economic growth. When demand for housing subsequently increases, there are typically periods of short supply (and perhaps eventual overbuilding), as new development adjusts the total housing stock according to changes in housing demand. Since new units are always only a small portion of total units, the housing stock can only adjust slowly. Hence, there will always be periods of relatively higher rents during periods of employment growth. However, careful monitoring of the housing market over time can provide important clues about how the housing market operates, such as the length of time it takes for new units to be built in response to increased demand, or how much rents and housing prices increase with improved household incomes. An understanding of these cyclic effects will facilitate forecasting of future short-term changes in the housing market, and be very useful for evaluating alternative policy responses.

Long-term structural changes in the housing market. Bermuda is also experiencing long-term structural changes in the housing market. Economic change is intimately connected to housing needs. The growing importance of international business in the Bermuda economy has a major impact on the type of housing units required by households. As discussed in the previous chapter, the composition of the workforce in Bermuda has changed over the last few decades. Total employment declined during the recession, temporarily decreasing pressure on the housing market. Employment growth resumed after 1993, with the highest growth in professional, technical, managerial and administrative jobs, linked to growth in the international business sector. Between 1993 and 1998, growth in these occupational categories was 23 percent. Meanwhile, the tourism industry did not recover as well. Service employment declined 6 percent during the recession (1989 to 1993), then continued to decline another 3 percent after 1993.

As the number of professional, administrative and managerial workers with relatively high salaries has increased, this has increased pressure on the high end of the housing market. A significant percentage of workers in these occupational categories are non-Bermudians, who are legally restricted in their ability to own property. Their presence puts a disproportionate pressure on the market for rental housing. However, during the last several years, there has also been growth in the number of Bermudians employed in these relatively high paid job categories (Employment, Chapter X). Hence, in the future, it will be important to closely monitor the composition of the workforce, not only to consider changes in the economy, but also to understand the impact of more subtle changes in employment trends on the market for housing. Fortunately, there is already a considerable amount of ongoing information produced about employment in Bermuda. We thus recommend focusing on a few key employment variables that should be made available soon after they are collected.

Pressure on the housing stock. Important clues about the housing market can be gleaned from an ongoing analysis of the number and types of new dwelling units. In recent years, most new housing units produced were small, expensive rental units and

condominiums targeted at relatively affluent renters and buyers. High construction costs make it difficult to construct units at affordable rents. Furthermore, because Bermuda is a relatively small island, the supply of land for new development is limited. For these reasons, a high percentage of units added to the dwelling stock were units added to existing buildings rather than new stand-alone development. While this has helped to relieve some of the pressure of heightened demand, it nevertheless raises questions about how long this will remain a practicable way to increase the housing supply in general, and the number of units with affordable rents in particular. Meanwhile, many properties are left unused because their owners choose to leave them vacant for personal reasons, because the title is caught up in a trust dispute, or for other reasons.

Booming local housing market. These factors -- increased demand for housing, high construction costs, and limited land for development -- work together to keep rents and home prices high in Bermuda. Because of a lack of information, it is difficult to know exactly how much rents have risen in recent years, and how this has impacted households of different income levels. The high demand for rental housing has led some Bermudian homeowners to purchase additional homes for use as rental properties. In many cases, a household will "trade up" to a larger house while maintaining ownership of its existing dwelling. High rents, along with the tax-free status of rental income and low comparative returns from the Bermuda stock market, combine to make rental properties a very attractive investment for Bermudians. Rising property values make it easier for homeowners to purchase a second home, due to increased rents and the subsequent increased home values. Lenders also see the booming housing market as favorable for investment, making them more likely to provide mortgage financing. Chapter 7 presents a Bermuda Housing Price Index that will be helpful in analyzing these issues.

High demand for housing in the open housing market. The fact that the residential market is divided into homes that can be purchased only by Bermudians (the "local market") and homes that can be purchased by both Bermudians and non-Bermudians, (the "open market") has complicated repercussions for both owner-occupied and rental housing. The division is made based on the annual rental values (ARV's) that are set by

the Land Valuation Department for tax purposes. Until late 1999, the determination was based on a cut-off point set in 1989, originally intended to restrict the number of residential properties available to non-Bermudians to 250. During the 1990's, the number of properties considered part of the open market increased to approximately 330. After making improvements to their dwellings, many homeowners just below the cut-off point were able to have their homes re-valued, and receive ARV's high enough to push them into the higher priced open market. The cut-off point was recently modified, reducing the number of homes in the open market to approximately 270.

Impact of Non-Bermudians on the rental market. While the policy of restricting ownership of residential property helps to ensure that homes are available to Bermudians, it also has implications for the rental market. First, since most non-Bermudians must rent their homes, an increase in the number of non-Bermudians can have a disproportionate effect on the rental market, driving up rents. Second, the restricted supply of housing units available for purchase by non-citizens inflates the value of those properties relative to those available on the local market. This creates an incentive for homeowners at the high end of the local market to find ways to have their ARV raised, causing a slow drain of homes out of the local market.

Overcrowding. The short supply of affordable housing also contributes to overcrowded housing conditions. When rents are high and the supply of large, affordable units is limited, some households may be forced to live in housing that is inadequate for their needs. At the same time, other households are "overhoused", meaning that they occupy more housing space than might be expected (for instance, a single person living in a 3-bedroom unit). Another issue that has been raised is the shortage of "child friendly" units such as two and three bedroom cottages. Further analysis is necessary to determine the circumstances of households in these situations.

Rent subsidies for foreign workers. Rent subsidies offered to non-Bermudians by their employers can also work to drive up rents. According to information from the 1991 Census (the most recent figures currently available), non-Bermudian rental households

were more likely to pay higher rents than Bermudians, but these rents represented a smaller percentage of total household income spent on rent. Ongoing monitoring of rents, incomes, and household characteristics will shed more light on this issue.

Changes in Bermudian households. Demographic changes in the population are also important to consider in the context of the housing market. There has been a growing number of single-wage households, especially female headed and elderly households. If this trend continues, it will be important to understand the role of these households in the housing market -- what types of housing they inhabit, and whether they are more likely to suffer from a lack of affordable housing.

The need for housing data. The lack of useful information about the housing market can, in itself, be seen as one of the most significant housing problems in Bermuda. Valuable information about rents, housing characteristics, and households are collected as a part of the Census of Population and Housing, but the usefulness of this information is limited because it is only collected every ten years. Factors influencing the housing market can change rapidly, and the lack of continuous, ongoing data for monitoring makes it difficult to understand current or historical changes in the housing market, or evaluate policy alternatives. This report recommends ongoing collection of several key housing market variables, which together will provide a comprehensive understanding of both the demand and supply sides of the housing market. Recommended variables include:

Recommended Demand Variables

1) Measures of Households and Population:
    a) Total Population and Households
    b) Non-Bermudian Households and Population
    c) Household Dependents of Non-Bermudian Employees
    d) Rental Households, by Size and Type
2) Employment Measures:
    a) Total Employment

b) Non-Bermudian Employment
c) Non-Bermudian Professional, Technical and Related, and Administrative and Managerial Employment (combined)
d) Non-Bermudian Service Employment

3) Income Measures:
a) GDP Per Capita
b) Employment Income Per Worker
c) Employment Income For Select Industries
d) Income of Rental Households

Recommended Supply Variables

1) Total Housing Stock
2) Changes in the Housing Stock
a) New Construction: Completions
b) Conversions and Additions
c) Housing Loss: Abandonment and Demolitions
3) Building Permits
4) Derelict Housing and Renovations

Recommended Measures of Affordability

1) Bermuda Annual Rent Survey
2) Bermuda House Price Index
3) Index of Affordability

Some of these variables, such as key employment data, are already available, but need to be assembled and made available soon after collection. Other critical information, such as household income and rent, will be collected as part of the proposed new Rental Housing Survey.

Answering housing questions. Once this information is brought together, it will help to answer many previously unanswered, or only partially answered questions about the housing market. Some examples are:

- What is the up-to date composition of the housing stock? How much and what kind of housing is being built, and how does this relate to changes in the economy?

- What is the impact of non-Bermudians in the housing market? How does this group operate distinctly from Bermudians, and how is employment of foreign workers related to rents?

- How do shifts in key economic sectors impact the demand for housing? How is the market for dwelling units related to changes in the tourism industry, or growth in the international business sector? If the number of people in professional and managerial occupations continues to grow, how best can their housing needs be met?

- How many households, and what types, suffer from a lack of affordable housing? If the number of foreign workers continues to grow, how will this impact the rents paid by low-income Bermudians?

Forecasting. Monitoring key variables that influence the type and quantity of housing available for the population will shed light on these questions and others. These "time-series" data can be combined to build a forecasting model, which will allow analysts to play out alternative housing market scenarios based on different future economic and policy assumptions. This will be helpful in evaluating the effectiveness of current housing policies, and developing new housing programmes that are sustainable over the longer term.

Affordability Index. One of the most practical and gratifying outcomes of ongoing data collection will be the rental affordability index. Specially tailored to reflect the unique characteristics of the Bermuda housing market and to meet the needs of researchers and

policymakers, this index will provide improved understanding of the nature and scope of the rental affordability problem.

Bermuda Housing Corporation Programmes

The Bermuda Housing Corporation (BHC) administers several housing programmes aimed to promote home ownership and provide affordable housing for Bermudians. Given the BHC's important role, this ongoing monitoring effort will be invaluable in examining the programmes it currently administers, evaluating proposed changes to those programmes, and generating potential new programmes. The BHC currently administers a broad range of initiatives:

Rental Programme

The BHC owns and manages 323 residential units (as of the end of 1999), providing housing for approximately 1015 Bermudians. A number of these properties are rented at subsidized rents to households who would otherwise find it difficult to locate affordable housing. Many of the tenants also receive assistance from the Department of Financial Assistance, which administers the Housing Allowance and Social Assistance programmes.

Private Sector Rental Programme

The private sector rental programme is designed to promote the accessibility of target renter groups to private sector rental housing. The BHC places itself as an intermediary between landlords and tenants, and guarantees that the rent will be paid and the property will remain in good condition. As of June 1999, 92 houses were provided to tenants through this programme.

Vacant and Derelict Project

One of the ways the BHC is working to expand the number of housing units available to low-income residents is by identifying and renovating vacant and derelict properties. Once properties are identified, assistance is provided to property owners in the form of

financial assistance for renovations. Many of these properties eventually become part of the private sector rental programme, discussed above.

100 Houses Project

The BHC is currently working to expand its portfolio of rental units by constructing residential units on several sites on the island. The goal is to build 100 dwellings by the end of 2000.

Senior Housing

The Bermuda Housing Trust owns three senior housing developments that are managed by the BHC. The BHC collects rents, arranges maintenance, and screens applicants. 62 units are provided at below market rents to low income seniors.

Mortgage Programmes

Under the Private Sector Mortgage Programme, the BHC promotes accessibility to private sector home financing by providing mortgage guarantees. The lending criteria for these mortgages are less stringent than that of conventional financing. This programme benefits households who would otherwise not have an opportunity to purchase their own home. The BHC also holds a portfolio of 236 home mortgages and 62 leasehold loans.

Leasehold/Condominium Project

The BHC is in the process of upgrading and converting several developments to condominiums for sale. As leases expire, the units are converted to condominiums, then sold to the tenants. The BHC provides administration assistance to several condominium projects that were previously rental properties owned by the BHC.

Other BHC programmes include the Housing Information and Research Programme. This programme produces a Quarterly Bulletin, and responds to housing-related questions from government and the private sector. The BHC, in cooperation with the Massachusetts Institute of Technology, initiated and supports the monitoring and forecasting effort presented in this report.

The State of Housing in Bermuda

Once efforts are underway to monitor the housing market, the BHC may choose to produce an annual report, *The State of Housing in Bermuda*, which would provide an overview of the housing market, focusing on the issue of affordability.

Chapter 3 (A)
Population and Households

Recommended Key Information

1. **Total Households and Population**
2. **Non-Bermudian Households and Population**
3. **Household Dependents of Non-Bermudian Employees: 0, 1, and 2 or More**
4. **Size and Type of Rental Households**

Recommended Release Dates

Data for 1: *2000 Census of Population and Housing* (Preliminary Release)

Quarterly Data for 2-3: Two Months after End of Quarter

Annual Data for 4: Four Months after May Rent Survey

Sources

Statistics Department: *2000 Census of Population and Housing*; Annual Rent Survey

Department of Immigration: Ongoing Work Permit Process and Household Size

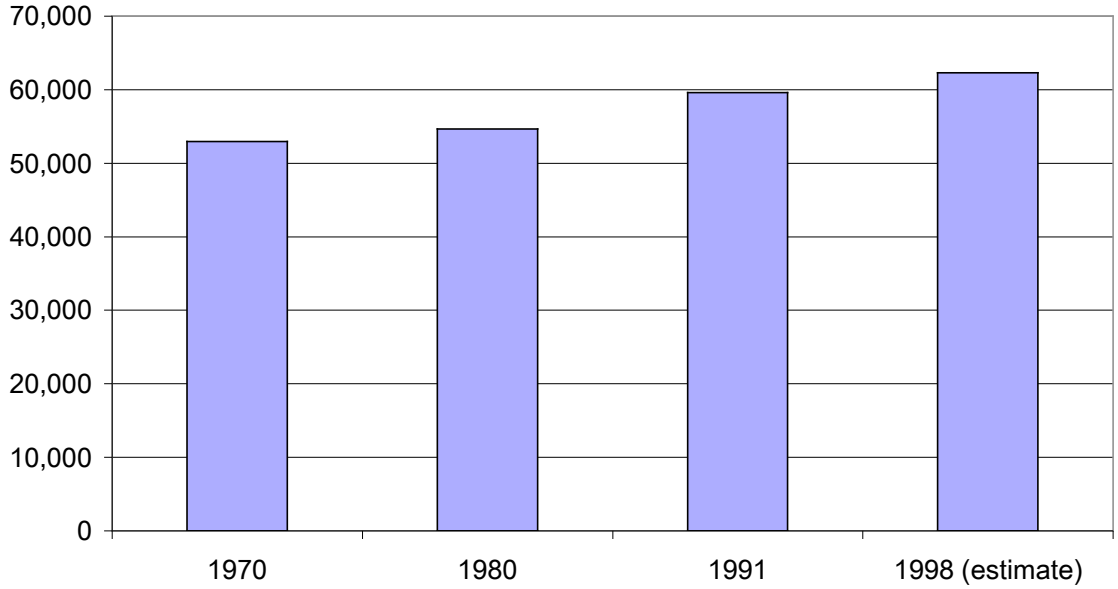
Rationale

Knowledge of the demographic makeup of the population is central to an understanding of how Bermuda's housing market operates. Appropriate information about households, along with income and employment, provide a full profile of housing demand, especially changes in demand due to economic conditions and immigration. A critical question in Bermuda is how well the housing stock meets the needs of households. Thus, it is important to observe the ways households change over time, and how these changes interact with changes in the Bermuda housing stock. In particular, it will be useful to develop an understanding of changes in household size and structure over time, and the distinctive household characteristics of the non-Bermudian population.

Trends in Key Population and Household Information

Because annual and quarterly information about population and households is limited, current trends for all of Bermuda cannot be tracked with precision. Much of the information that is available is a product of the decennial Census of Bermuda. Nonetheless, important information can be drawn from some existing sources. For purposes of monitoring and forecasting, changes in employment, especially non-Bermudian employment, are closely related to changes in the number of households. In addition, existing work permit data can be used to track both the number and type of non-Bermudian households on a quarterly basis, and we recommend that this be done.

Figure 3.1
Total Population: 1970, 1980, 1991 and 1998



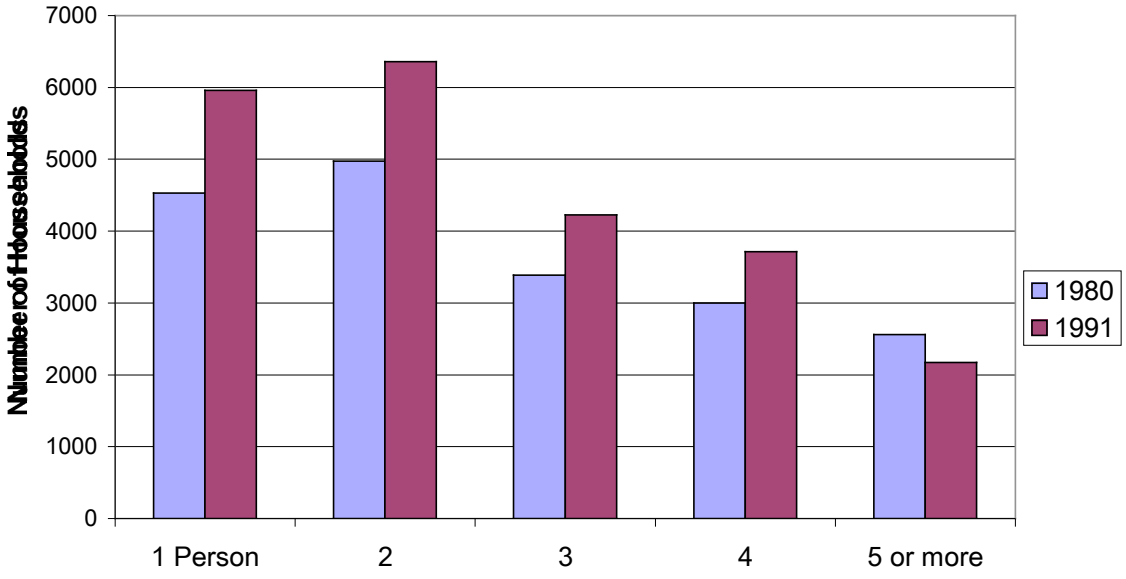
Source: Statistics Department, *Census of Population and Housing* and *Bermuda Digest of Statistics*

In anticipation of preliminary results from the 2000 Census, some trends from recent Census years can be reviewed. According to estimates from the Statistics Department, the population continued to grow during the past decade, a continuation of the 1980s growth trend (Figure 3.1). The number of households grew at an even faster rate than the population between 1980 and 1990, since the average size of households declined from

2.9 to 2.6 persons during the decade.[2] Based on employment data, it is possible that the number of households declined during the recession of the early 1990's, then grew after 1992 (see Chapter 3 (B), Employment).

Where household data becomes more critical is in understanding household composition and formation, two factors that have a strong influence on the demand for housing. Figure 3.2 shows total households by size in 1980 and 1991. While all household sizes grew from 1980 to 1991 (with the exception of 5 or more individuals), the most pronounced growth was in smaller households of one or two people. Figure 3.3 shows the breakdown of type of households.[3] The most common type of household is two parents, followed by single person households. One trend that will be interesting to follow in the future is the number of single parent households. (The number of single-parent households was not collected prior to the 1991 Census.)

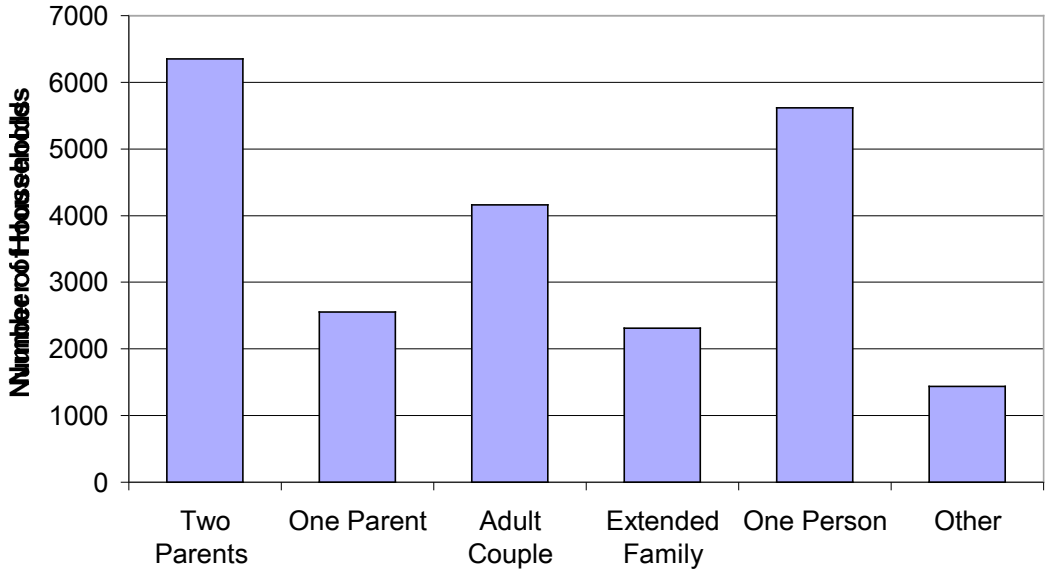
Figure 3.2
Persons Per Household, 1980 and 1991



Source: Statistics Department, *Census of Population and Housing*

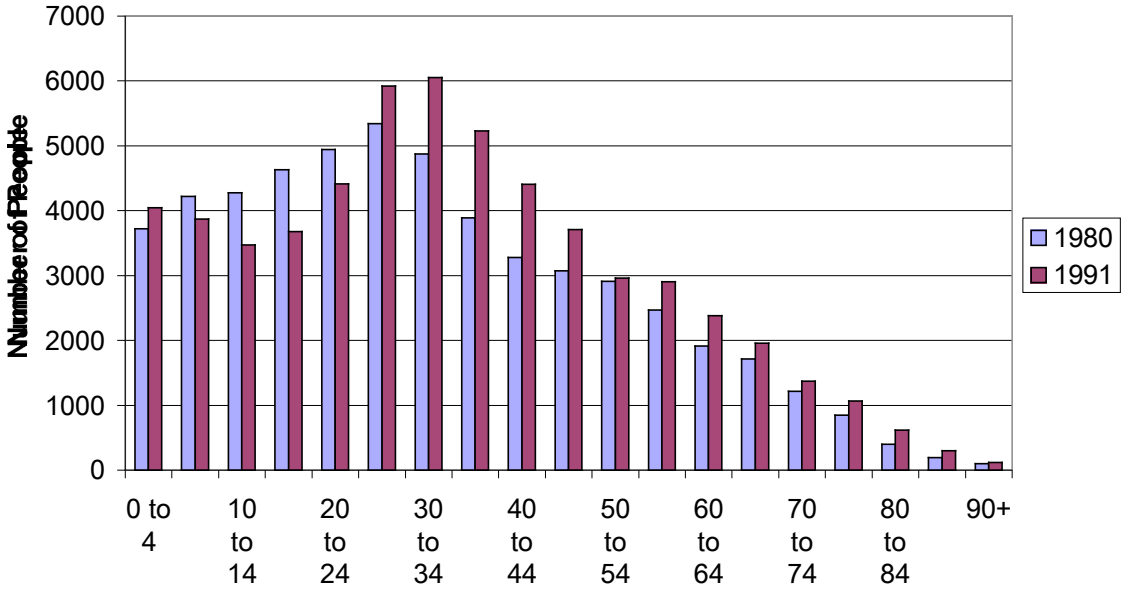
[2] A household is an individual or a group of individuals living in the same dwelling unit.
[3] Unfortunately, 1991 household types are difficult to compare to the previous Census due to a change in the way household types are categorized.

Figure 3.3
Households by Type, 1991



Source: Statistics Department, *Census of Population and Housing*

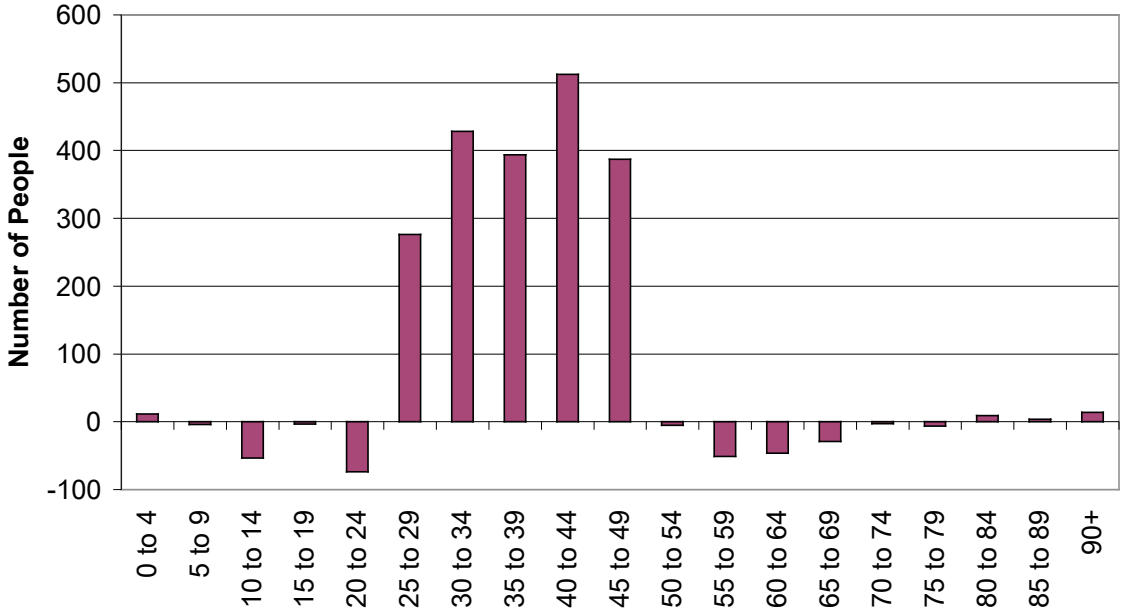
Figure 3.4
Distribution of Population, 1980 and 1991



Source: Statistics Department, *Census of Population and Housing*

Since household structure is closely linked to age, it is important to consider the potential impact of the changing age distribution of the population on households and the housing market. Figure 3.4 shows that the average age of the Bermudian population increased between 1980 and 1991. While this could be interpreted to mean that the Bermudian population is aging, closer inspection of the data reveals that much of the growth consisted of non-Bermudians in the 25 to 45 age range (Figure 3.5). This trend illustrates the importance of understanding the structure of non-Bermudian households: such understanding will help explain how changing non-Bermudian employment patterns are likely to impact specific sectors of the housing market. Fortunately, the Department of Immigration collects information about the number of dependents for foreign workers receiving work permits.

Figure 3.5
Change in Non-Bermudian Population by Age, 1980 to 1991



Source: Statistics Department, *Census of Population and Housing*

Status of Data

Census Data

As mentioned above, most population and household data are only available from the decennial Census of Bermuda, conducted by the Statistics Department. The Census information is reliable and comprehensive, but it is only produced every ten years. The Statistics Department produces annual population estimates using the Census years as benchmarks.

Non-Bermudian Household Data

The Department of Immigration is a good source for information about non-Bermudian households. This information is gathered on a continual and ongoing basis, as a part of the work permit process. One of the questions applicants are asked to answer on the work permit application is the number of dependents in their household. The number of non-Bermudians with active work permits is already reported on a quarterly basis, and we recommend that this be expanded to include a breakdown by number of dependents. Specifically, we recommend that the breakdown include non-Bermudian work permit holders with (1) no dependents, (2) one dependent, and (3) two or more dependents; and that these tabulations be done for each of the major occupational groups [see Chapter 3(b), Employment].

Concluding Thoughts on Population and Household Data Recommendations

While information about the total size of the population and the number of households is limited, this is compensated somewhat by an abundance of employment data: total employment is a useful proxy for the number of households, especially for non-Bermudians. However, it is still necessary to develop an understanding of trends in household structure. The Census of Bermuda provides valuable information about households, but change over time can only be observed in the data every ten years. More frequent, but less detailed data are available about the households of foreign workers. These data will be useful when considering the impact of employment changes on housing demand. Accordingly, we recommend that the Immigration Department expand

its reporting of non-Bermudian employment to include a breakdown by number of dependents. We also recommend that questions about household size and structure be included in the proposed Bermuda Annual Rent Survey, discussed in Chapter 6.

Chapter 3 (B)
Employment

Recommended Key Information

1. **Total Employment**
2. **Non-Bermudian Employment**
3. **Non-Bermudian Professional, Technical and Related, and Administrative and Managerial Employment**
4. **Non-Bermudian Service Employment**

Recommended Release Dates

Annual Data for 1 – 4: November of Collection Year (Preliminary)

Quarterly Data for 2 - 4: Two Months after End of Quarter

Sources

Statistics Department: Annual Employment Survey, conducted in August

Department of Immigration: Ongoing Work Permit Process

Rationale

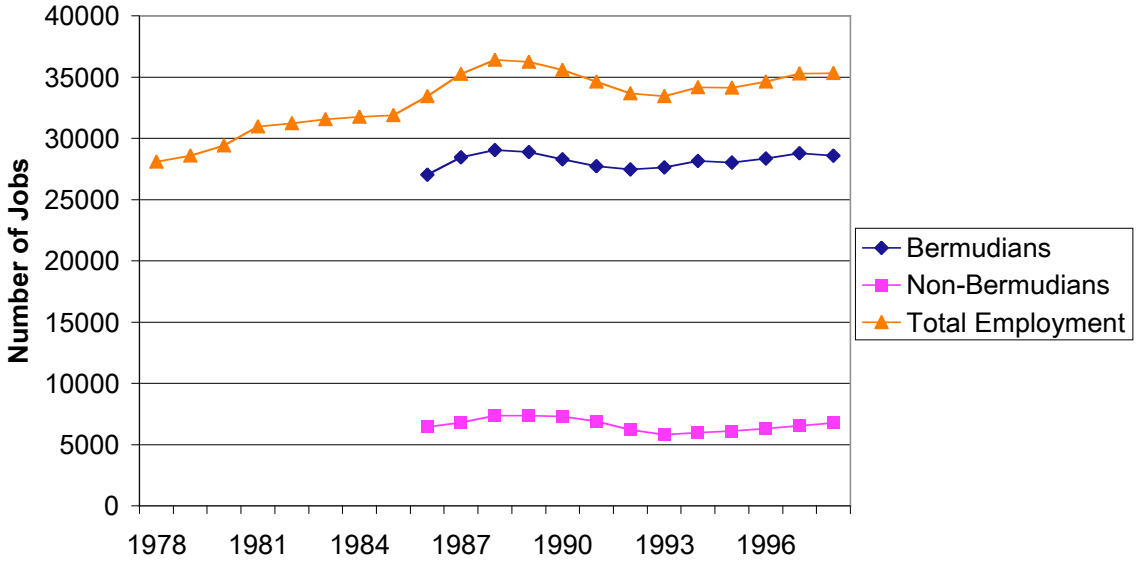
One of the most critical factors influencing the market for housing in Bermuda is employment. Changing patterns of employment can have a significant impact on the demand for housing. As total employment rises and falls, so does the demand for both owner-occupied and rental housing. Accordingly, house prices and rents are affected by employment growth. In Bermuda, this basic relationship is rendered more complex by the significant presence of non-Bermudians in both the job market and the housing market. Non-Bermudian workers are distributed differently by occupation and income than Bermudians. Employment trends over time also differ. Foreign workers play a special role in the housing market because they are legally restricted in their ability to purchase dwellings. For all of these reasons, changes in the composition of the

workforce can have a serious impact on the rental market. Consequently, discerning employment trends for both Bermudians and Non-Bermudians is necessary in order to monitor housing demand and understand housing market outcomes.

Trends in Key Employment Information

Monitoring total employment is essential for assessing total housing demand. Typically, there is a strong relationship between total employment and housing demand. Total employment levels rose during the 1980's, peaking in 1988, then dropped during the recession of the early 1990's. Since then, employment has increased, but has not yet reached the previous decade's peak. Figure 3.6 shows total employment in Bermuda since 1978, and broken down by Bermudian status after 1985.

Figure 3.6
Total Employment by Bermudian Status

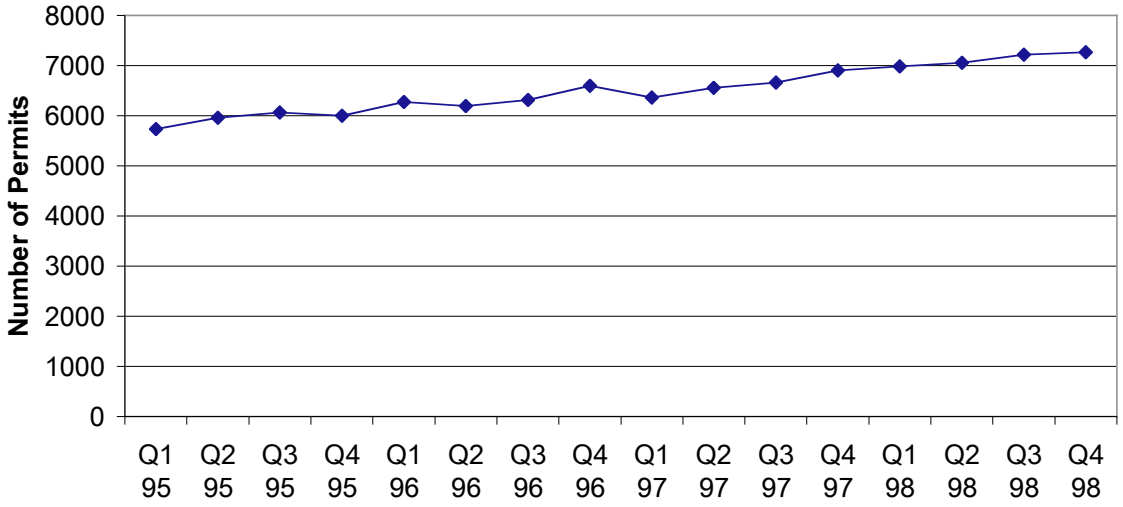


Source: *Annual Employment Survey*, Statistics Department, Ministry of Finance

Non-Bermudian employment tends to fluctuate slightly more than Bermudian employment, which is consistent with the expectation that the relative size of the non-Bermudian workforce would expand and contract along with the economy. The Department of Immigration tabulates the number of workers residing in Bermuda with

standard one to five year work permits, by quarter (Figure 3.7). Since non-Bermudian workers are required to have work permits, this information is essentially the same as that provided in Figure 3.6, but with increased frequency. The number of foreign workers has been increasing since the second quarter of 1993, after declining during the recession of the early 1990's.

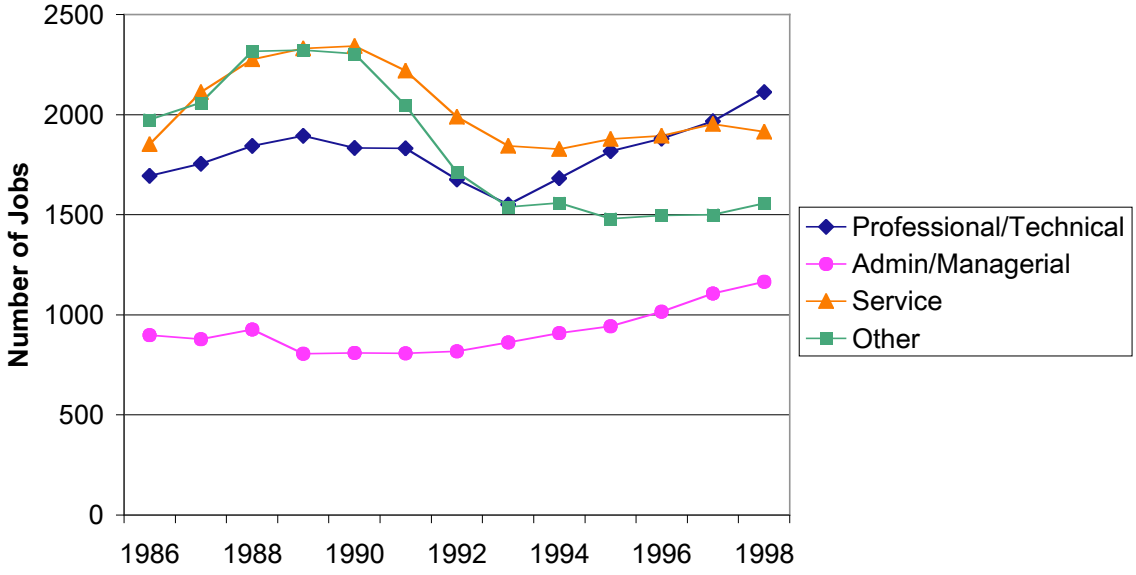
Figure 3.7
Number of Non-Bermudians Residing in Bermuda
With Standard 1 to 5 Year Work Permits, by Quarter



Source: Department of Immigration, Ministry of Labour, Home Affairs and Public Safety

It is essential to examine employment trends by occupation. Both the number and occupational composition of non-Bermudians in the workforce has a direct impact on the size of the rental housing market, as well as the type of housing required. Given that non-Bermudians are prohibited from owning most property, the relative proportions of Bermudians and non-Bermudians in the workforce influences the size of the rental housing market, rents, and home values. Recent growth in the international business sector puts direct pressure on the rental housing market. As the demand for higher quality rental housing rises, so do rents. Some Bermudian homeowners currently find it profitable to rent out their own homes, and find alternative housing. Thus, changes in the composition of the workforce can have complex effects on different segments of the market for both owner-occupied and rental housing.

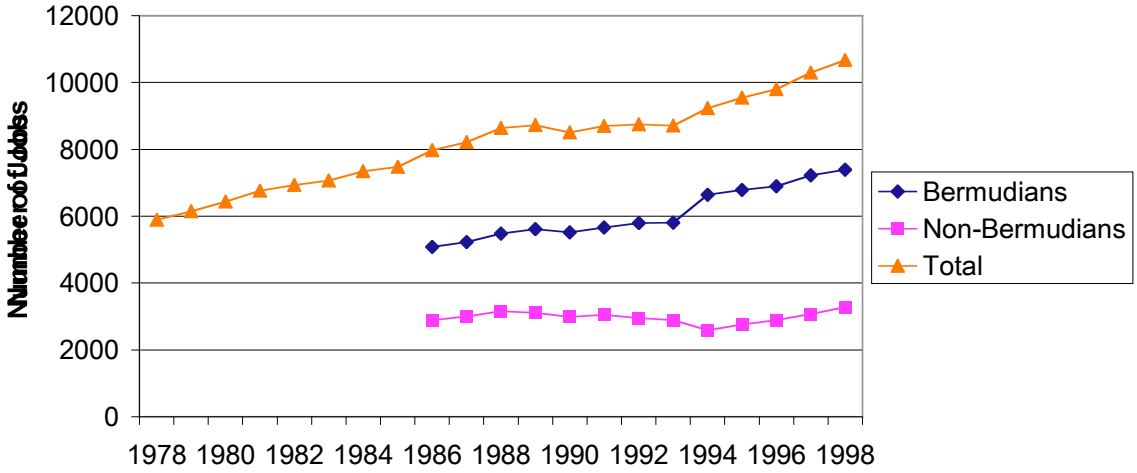
Figure 3.8
Non-Bermudian Employment by Occupation Type



Source: *Annual Employment Survey*, Statistics Department, Ministry of Finance

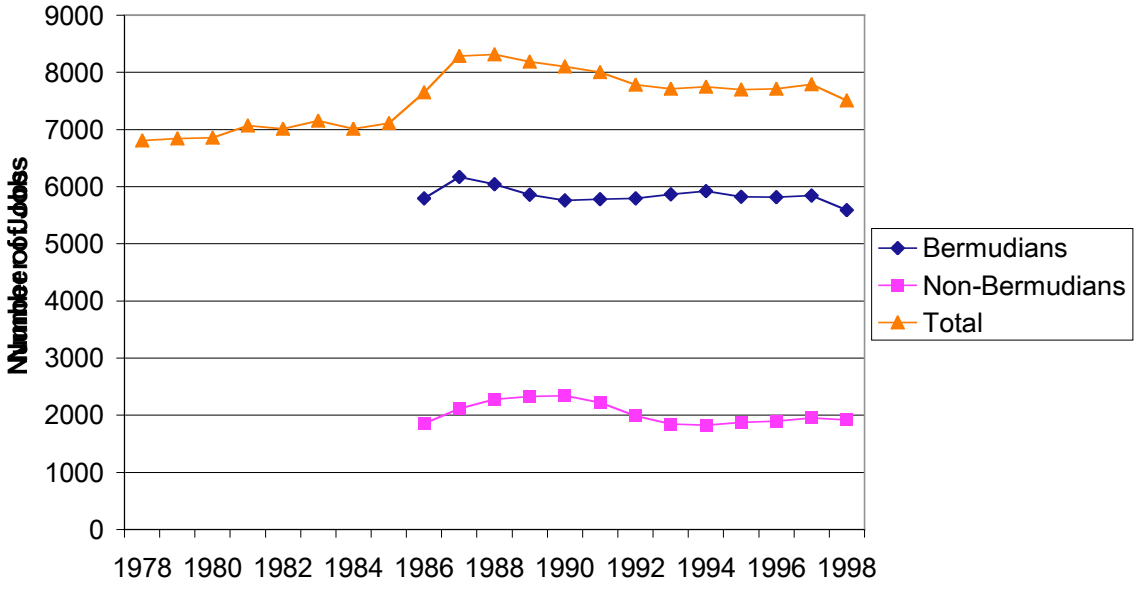
The above discussion illustrates that total employment information, while useful, is not sufficient to monitor meaningful trends in the Bermuda housing market. For the purpose of understanding the rental market in particular, more specific employment information relating to non-Bermudian employment is required. Of the six standard occupational categories, the top two in terms of income are (1) Administrative and Managerial, and (2) Professional, Technical and Related (see discussion in Chapter 3(c), Income). These two occupational categories accounted for nearly half of all non-Bermudian employment in 1998, and this percentage has been growing in recent years. Figure 3.8 shows trends in non-Bermudian employment for major employment categories. It is clear that the sizes of different occupational groups have changed in response to recent changes in the economy. Non-Bermudian employment in the top two income categories has increased during the 1990's. Meanwhile, service and other employment showed a different pattern, holding steady after a significant decline in the early 1990's. Since people with higher incomes can afford more expensive housing, these types of compositional changes in the

Figure 3.9
Professional/Technical and Administrative/Managerial Employment
By Bermudian Status



Source: *Annual Employment Survey*, Statistics Department, Ministry of Finance

Figure 3.10
Service Employment by Bermudian Status



Source: *Annual Employment Survey*, Statistics Department, Ministry of Finance

workforce affect the housing market. For example, increased numbers of non-

Bermudians in higher income occupational categories will have repercussions at the high end of the rental housing market.

It is thus important to have some broad measures of employment by occupation. We recommend combining the two top income categories, (1) Administrative and Managerial, and (2) Professional, Technical, and Related. Because significant numbers of non-Bermudians are also employed in Service jobs, this group should be monitored as well. Figures 3.9 and 3.10 show these two employment categories, including a comparison of non-Bermudian and Bermudian workers. Employment growth for Bermudians in higher income occupational categories has outpaced that of non-Bermudians in recent years. Meanwhile, both Bermudian and non-Bermudian service employment has remained essentially unchanged since the recession of the early 1990's.

Status of Data

Annual Data

The Employment Survey is a census of jobs in Bermuda, conducted annually by the Statistics Department of the Ministry of Finance. Employers are legally required to participate in the Survey, and those not responding are fined. The Survey collects information about all jobs at each firm, vacant or filled, as well as limited information about employees. Each job is classified according to industry and occupation. Currently, information collected about employees includes age, sex, race, Bermudian status, number of hours worked, whether part-time, whether a summer student, and whether owner of the firm. Much of this information has been compiled in a database since 1978. The published Survey includes not only a breakdown of employment by broad occupational categories, but also more detailed job types within each category.

Survey results are based on the period from August 2 to August 8. Surveys are mailed in August to every employer in Bermuda, with a requested return by the end of August. A reminder letter is sent to non-respondents in mid September. The final results are released during the following calendar year.

The Employment Survey provides extensive and useful data about employment in Bermuda. Its usefulness will be considerably enhanced by the November release of preliminary estimates of our four recommended key employment variables.

Quarterly Data

The Department of Immigration, in the Ministry of Labour, Home Affairs and Public Safety, is an excellent source for up-to-date information about non-Bermudian employment. Non-Bermudians who wish receive a work permit are required to fill out a detailed questionnaire about their prospective employment, including employer, occupation, wages and/or salary, and whether or not living quarters are provided by the employer. The Department classifies work permits by duration. This is useful because it allows distinguishing between foreign workers more likely to stay in residence for a short period of time and those who are more likely to have a longer-term effect on the housing market. The immigration information for non-Bermudian workers is similar to that provided by the annual Employment Survey, but with the advantage that it is collected continuously. This data source is an excellent complement to the Employment Survey. The Department currently tabulates on a quarterly basis the total number of non-Bermudians in residence with standard 1 to 5 year work permits. We recommend that the Department of Immigration also tabulate for release corresponding information for the important occupational groups constituting our variables number 3 and 4. Release of these quarterly variables two months after the end of each quarter will be instrumental in monitoring pressures on the housing market.

Concluding Thoughts on Employment Data Recommendations

Availability of four measures of total and non-Bermudian employment for broad employment categories will be extremely useful for monitoring the pivotal role of employment with respect to the housing market. Given that the Statistics Department and the Department of Immigration already collect detailed and reliable information about employment in Bermuda, no new data need be collected for this ongoing assessment. Timing of data availability is crucial. Housing market monitoring will be substantially enhanced by the availability of annual Employment Survey numbers for the four

variables by November of the Survey year. Likewise, it will be helpful for quarterly work permit data for variables 2, 3, and 4 to be available two months after the end of each quarter.[4]

[4] Typically, classifications according to Bermudian status include non-Bermudian spouses of Bermudians with other non-Bermudians. For employment purposes these spouses are included with Bermudians, which is appropriate for housing market analysis.

Chapter 3 (C)
Income

Recommended Key Information

1. **Gross Domestic Product (GDP) per Capita**
2. **Employment Income Per Worker**
3. **Employment Income For Select Industries**
4. **Household Income, Bermudian and Non-Bermudian**

Recommended Release Dates

Quarterly GDP Data for 1: Two Months after End of Quarter

Quarterly Employment Income Data for 2 - 3: Two Months after End of Quarter

Annual Household Income Data: Four Months after Annual May Rent Survey

Sources

Statistics Department: Annual Employment Survey, conducted in August;
Population Estimates, annual estimate; proposed Annual Rent Survey, conducted in May

Office of the Tax Commissioner: Employment Income

Rationale

Along with employment and number of households, income is one of the fundamental components of housing demand. Income influences both the number of households that seek housing and the type of housing they consume. Generally, growth in the economy results in new household formation, as more people can afford to form their own households. Conversely, during difficult economic times, more households will choose to "double-up" in order to save on housing costs. Income also influences the type and

quantity of housing consumed by each household: with higher incomes, households may choose to move to a larger dwelling or one with more amenities. Finally, income plays an important role in the decision whether to rent or buy a home.

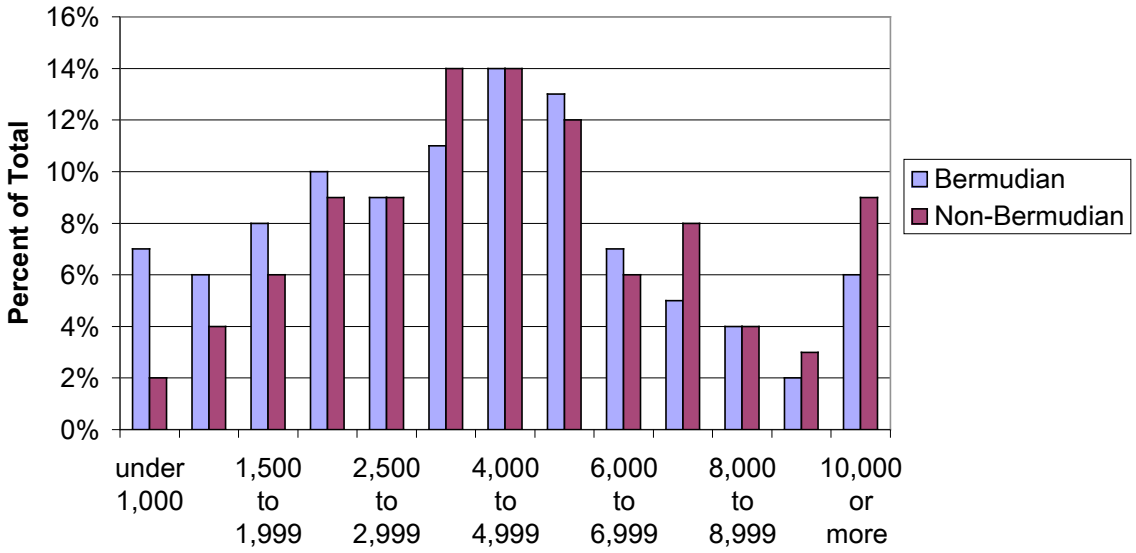
Income information is also useful in monitoring trends in Bermudian and non-Bermudian income and employment. As discussed in Chapters 1 and 2, and earlier in this chapter (3B, Employment), Bermudians and non-Bermudians operate differently in the housing market. Non-Bermudians are restricted in terms of property ownership rights, and their housing choices are also influenced by shorter time horizons and employer subsidies. Non-Bermudians are concentrated in three occupation groups: professional, technical and related; administrative and managerial; and service. Because the first two of these occupation groups have significantly higher incomes, it is critical to keep track of changes in income by occupational categories. Since non-Bermudian residents are concentrated in the rental market, income changes for these occupation categories can have a significant impact on rents.

Trends in Key Income Information

There is no source for ongoing data about household income, with information limited to that which is collected as a part of the Census of Population and Housing and the Household Expenditure Survey, both of which are only conducted every ten years. The most useful ongoing income information sources are total income from employment and total income from all sources (Gross Domestic Product).

Nonetheless, Census information can be useful as a benchmark, and is worth reviewing as we near the release of the 2000 Census. 1991 was the first year that the Census included questions about income, which were asked of one in seven households. Median household income in 1991 for all households, regardless of income source, was $48,588. Figure 3.11 shows the differences in the distribution of household income between Bermudian and non-Bermudian households.

Figure 3.11
Distribution of Monthly Household Income by Bermudian Status, 1991



Source: *Census of Population and Housing*, Statistics Department, Ministry of Finance

As shown in Table 3.1, the first two of these income categories have significantly higher incomes. In the absence of detailed annual household income data, monitoring employment trends provides some insight into the impact of differential income levels in

Table 3.1
Median Annual Household Income by Occupation Group, Race and Bermudian Status of the Head of Household, 1991

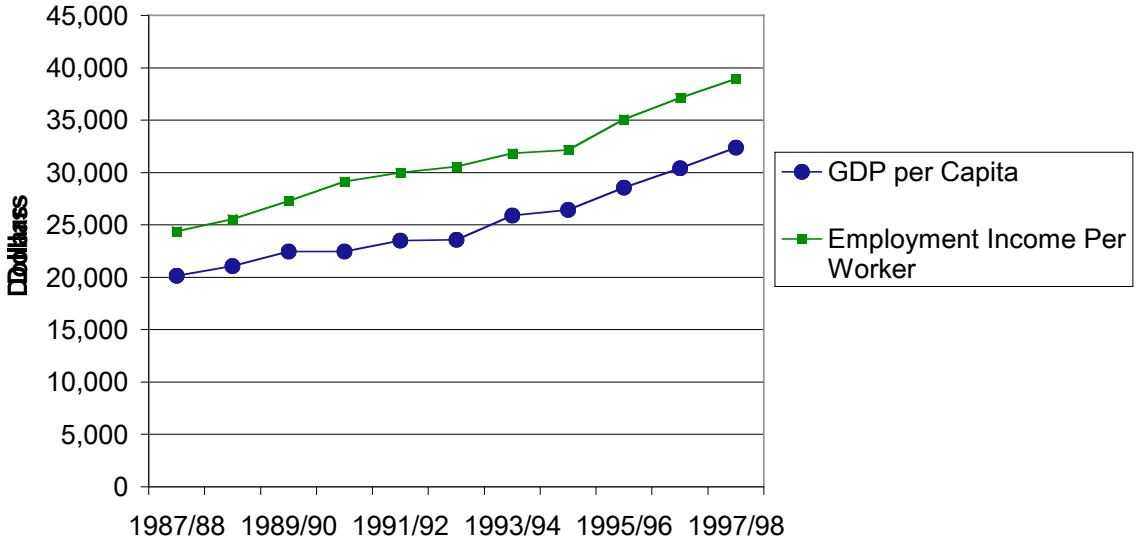
	Bermudian Head		*Non-Bermudian Head*	
	Black	White	Black	White
All Occupations	$48,204	$63,660	$51,204	$56,376
Professional, Technical & Related	$60,996	$70,500	$56,004	$66,672
Administrative & Managerial	$64,176	$74,352	*	$78,756
Clerical	$33,228	$49,500	*	$32,148
Sales	$39,000	$57,000	*	*
Service	$38,256	$58,500	$45,000	$49,200
Production, Transport & Related	$51,984	$54,300	$53,004	$51,432

*Sample size too small

Source: 1991 Census of Population and Housing

the housing market over time. For instance, if the number of non-Bermudians in high-income occupational categories increases, this leads to increased pressure on the high end of the rental market. While this type of information is helpful, it does not capture annual income changes by either broad occupational category or by important subcategories. We thus recommend that the proposed Bermuda Annual Rent Survey collect information about household income.

Figure 3.12
GDP Per Capita and Employment Income Per Worker, 1987 to 1998



Source: Office of the Tax Commissioner, Statistics Department

The only source of ongoing data about total income (including nonemployment income) comes from aggregate measures of national economic growth. Figure 3.12 shows Bermuda Gross Domestic Product (GDP) per capita and employment income per worker since 1987. Economic growth in Bermuda was negligible during the early 1990's, but grew at a significant rate after 1995. GDP per capita is thus useful as a measure of general economic health. Employment income per worker is a more targeted measure of wage and salary income, and is thus more relevant for the majority of households. Employment income is produced by the Tax Commissioner based on payroll tax payments by firms.

Status of Data

Household Income Data

The Statistics Department surveys household income for the Census of Population and Housing and the Household Expenditure Survey. These surveys are administered every ten years, the most recent being the 1991 Census and the 1993 Household Expenditure Survey. While these surveys provide important information about periodic benchmarks and longer-term changes in household income, they should be supplemented by a similar ongoing survey. We thus recommend that an income component be added to the proposed Annual Rent Survey in order to collect information about renter incomes. This will provide extremely valuable information about the income characteristics of renter households, which will be helpful in understanding rental housing demand. Additionally, this survey information on income is indispensable for our proposed rental housing affordability index (see Chapter 5, Bermuda Index of Housing Affordability).

GDP and Employment Income Data

The Office of the Tax Commissioner collects information about employment income from payroll tax records. Gross Domestic Product is also collected by the government of Bermuda. The employment income data is produced in an expeditious manner, and is available on a quarterly basis. Employment income is also collected for selected industry types. We recommend that employment income be collected on a quarterly basis, two months after the end of each quarter. This can be combined with annual employment figures to produce employment income per worker. The total employment number will come from the annual Employment Survey, conducted in August. As discussed in the employment section of this report, the total employment figure should be released on a preliminary basis each November. This can be combined with quarterly employment income numbers to produce a quarterly measure of employment income per worker. We also recommend the collection of employment income for selected industries, including international business; hotels and restaurants; banking, insurance and real estate; and business services.

Gross Domestic Product data should be made available on a quarterly basis, for use in calculating GDP per capita. Annual population estimates are produced by the Statistics Department, using data on births, deaths and estimated immigration. These estimates should be made available in a timely manner.

Concluding Thoughts on Income Data Recommendations

Income is an important to monitor because it is one of the most basic determinants of housing demand. Unfortunately, detailed information about household income is not collected frequently enough for the purpose of monitoring the influence of income on the housing market. The most useful existing data are aggregate measures of GDP per capita and employment income per worker. However, these provide little insight into how income differences across Bermudian status and employment categories relate to housing demand. Therefore, we recommend that in addition to the collection of the aggregate measures mentioned above, the proposed Annual Rent Survey be expanded to include income. This information on renter household income will be very useful for understanding how changes in income affect the demand for housing.

Chapter 4
The Existing Housing Stock, Supply Growth, and Current Availability

Recommended Key Information

(1) Total Housing Stock: An Ongoing Tally

(2) Changes in the Housing Stock

(a) New Construction

(b) Conversions and Additions

(c) Housing Loss: Abandonment and Demolitions

(3) Looking Ahead: Building Permits

(4) Derelict Housing and Renovations

Recommended Release Dates

Data for 1: 2000 *Census of Population and Housing* (Preliminary Release)

Data for 2 and 3: Two Months After End of Quarter

Data for 4:

Stage 1: Tax Relief List Each March

Stage 2: Status of List Each July

Sources

Statistics Department: 2000 Census

Department of Planning: Building Permits, Completions, Conversions and Additions

Land Valuation Department: Conversions, Additions and Demolitions

Bermuda Housing Corporation: Derelict Housing, Renovations

Rationale

Any assessment of housing needs in Bermuda requires a solid understanding of the current housing stock, including the number of units and their size, condition, structure type, ownership, and location. Timely monitoring of housing stock changes provides crucial information about how and when housing adjusts to changes in population, employment and income. New housing is costly and time-consuming to build and costly to renovate or convert from another use. As a result, the housing stock adjusts slowly to housing demand, with annual new supply making up only one to three percent of Bermuda's total housing stock. Consequently, changing household numbers, household composition, and household income have significant impacts on housing prices and rents in the short term. These prices and rents, in turn, influence the type of housing that is constructed, and ultimately, the composition of the housing stock.

Trends in Key Housing Stock Information

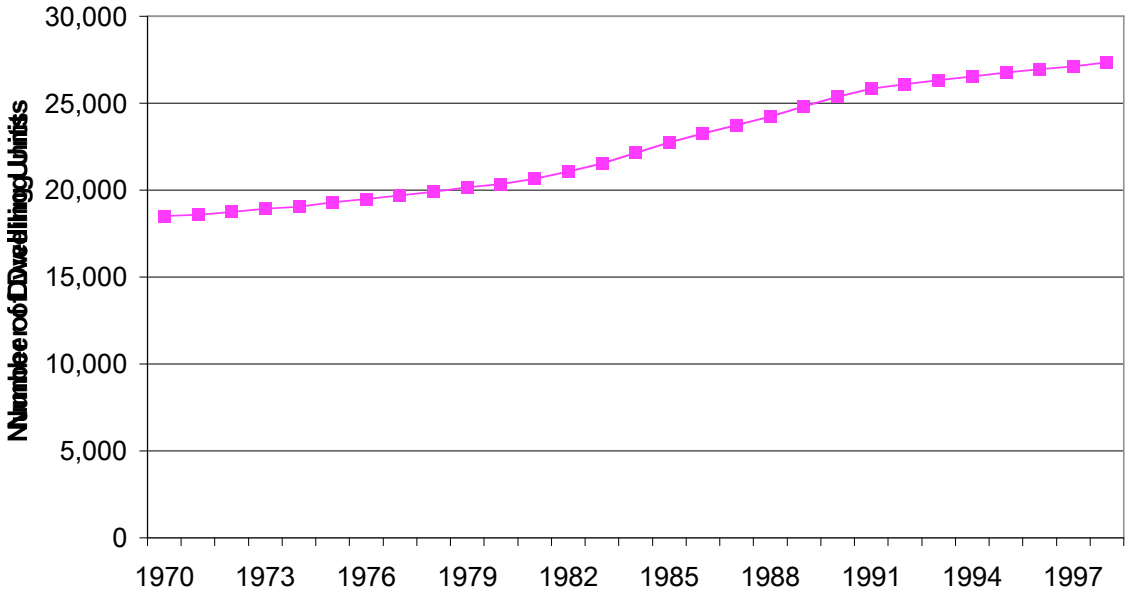
The Bermuda housing stock includes all existing dwelling units, whether rental, owner-occupied, or vacant. Because housing is long-lived and costly to replace, the existing stock is composed of units spanning a variety of sizes, styles and ages, reflecting what was built during past periods. In any one year, change in the overall housing stock depends on the number of new units, less the number of units removed. New housing units enter the housing stock either as new development (construction on vacant land), additions (additional dwelling units added to an existing residential structure) or conversions (when a non-residential structure is converted to residential use). Housing units are removed from the stock either through abandonment or demolition. From year to year, the size of the housing stock changes according to the relative amounts of new development, additions, conversions and removals. Ultimately, these changes determine the overall composition of the housing stock (for instance, the relative proportion of detached homes and apartments in Bermuda).

Existing information is sufficient to provide a good overview of the size and nature of the housing stock. Several significant changes have occurred over the past 30 years. The total number of dwelling units is growing, in response to economic and population

growth. The composition of these units is also changing, with the number of apartment units growing considerably faster than detached dwellings. The average number of dwelling units per building is increasing, due to new construction of apartment buildings and additional units added to existing homes. Since home ownership rates have increased slightly, this reflects an increase in condominiums.

Figure 4.1 shows growth in the Bermuda housing stock since 1970. The Census years (1970, 1980 and 1991) provide detailed benchmarks, and estimations were made for intervening years based on housing completions data from the Planning Department. The total housing stock has increased over time, with more rapid growth during the strong economic period of the 1980s, then slowing in the early 1990's.

Figure 4.1
Total Housing Stock, in Dwelling Units



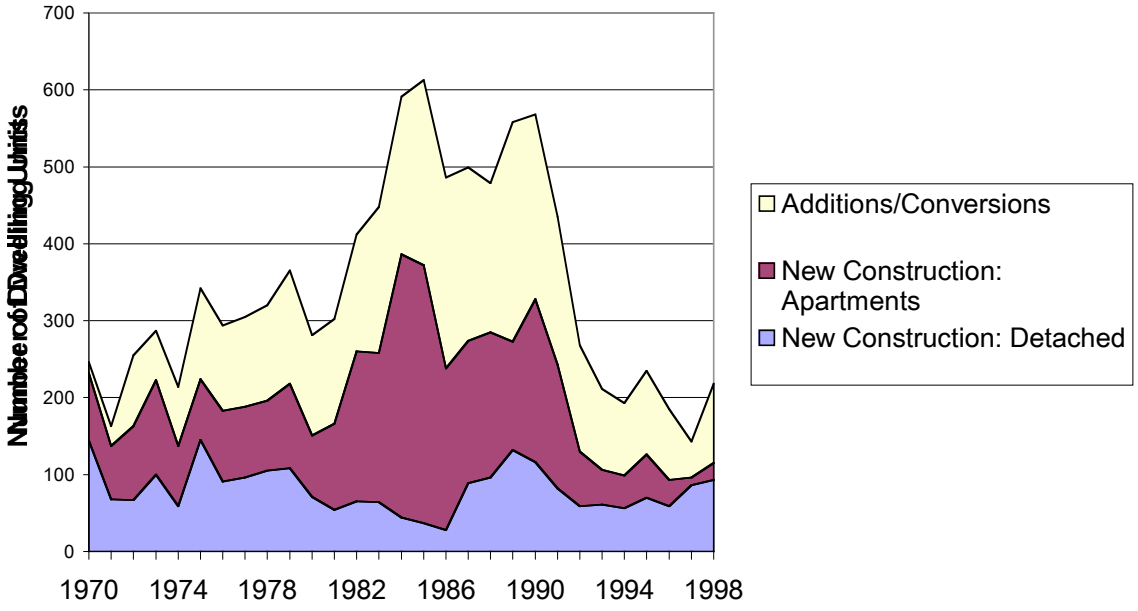
Source: Calculations based on information from Planning Department and *Census of Population and Housing*, Statistics Department, Ministry of Finance

A breakdown of this growth reveals a good deal about how the stock has been changing (Figure 4.2).[5] Most noticeable is the high proportion of new units resulting from

[5] A detached building may include one or two dwelling units, and an apartment building contains three or more dwelling units.

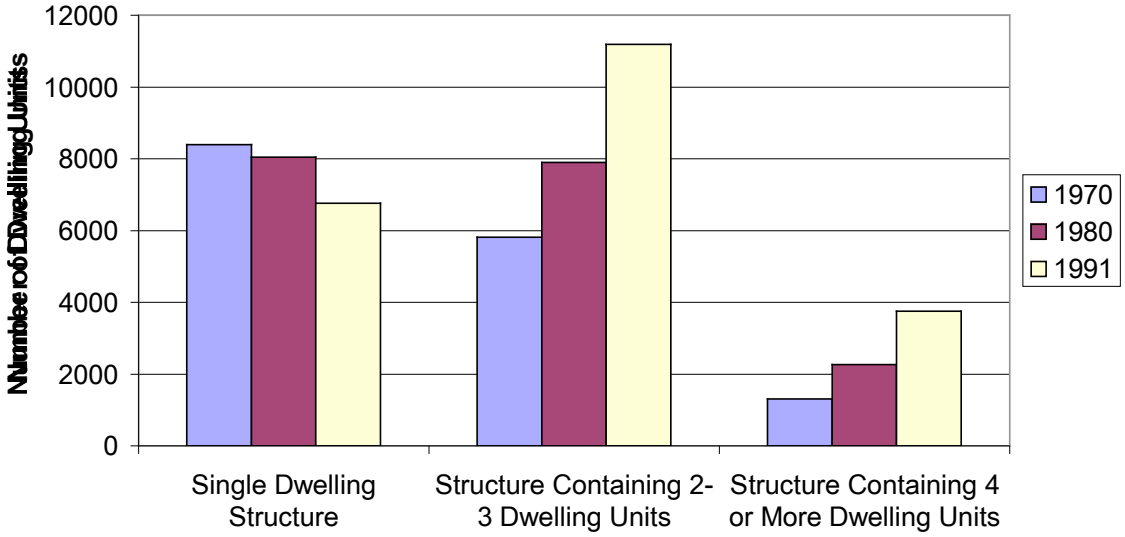
additions to, and conversions of, existing stock. This proportion has grown over time, and averaged about one-half of gross additions during the past decade. This trend is not surprising given the limited availability of vacant land for new development. Clearly, the high number of additions and conversions has implications for the type of housing units available for Bermudian residents. In particular, it means that the average number of dwelling units per structure has been increasing, and the relative proportion of single family homes declining. This trend can also be seen in Figure 4.3, which compares data from the last three Census years (1970, 1980 and 1991). During this period there was a modest decrease in the number of single detached units, and a substantial increase in the number of structures containing more dwelling units.

Figure 4.2
Annual Gross Additions to the Housing Stock, 1970 to 1998



Source: Planning Department

Figure 4.3
Structure Type by Number of Dwelling Units,
1970, 1980 and 1991



Source: *Census of Population and Housing*, Statistics Department, Ministry of Finance

Figure 4.4
Owning Versus Renting: 1970, 1980 and 1991

Source: *Census of Population and Housing*, Statistics Department, Ministry of Finance

Since the markets for owner-occupied and rental housing operate in distinct ways, it is important to monitor trends in owning versus renting. Figure 4.4 shows that while both owning and renting have been increasing, the proportion of owner-occupied housing grew relative to rental housing between 1970 and 1991. This trend, combined with the increased number of multi-unit buildings, is consistent with growth in the number of condominiums.

There is no annual measure of vacancies in Bermuda, with information limited to the Census years.[6] Thus the most recent official vacancy rate is not currently of use because it comes from the 1991 Census, a recession year. Measuring vacancies is difficult for several reasons, including difficulties in differentiating between vacant units that are available for sale or rent, and those that serve as guest quarters or are left vacant for other reasons. It is recommended that effort be focused instead on the measurement of other housng market variables – particularly rents. It is worth noting, however, that the housing stock continued to grow despite the high 1991 vacancy rate of 8 percent. This illustrates how housing construction lags housing demand. Due to the slow nature of the construction process, housing construction is sometimes completed subsequent to significant changes in housing market conditions. Ongoing monitoring of both housing demand and the housing stock should provide important clues about the ways in which development responds to changing economic conditions in Bermuda.

Status of Data

The Statistic Department's decennial Census inventories the entire housing stock, providing a "snapshot" of the total housing available at one point in time. Meanwhile, the Planning Department is a source for ongoing data about permits and new housing stock. Together, these two sources can be used to track the size of the housing stock, as well as providing information about structure type, size of unit, and other housing characteristics. The Bermuda Housing Corporation and the Land Valuation Department

[6] The Census distinguishes between "empty" and "vacant" dwelling units. Empty units are those deemed to be uninhabited, with no visible sign of future occupation. These include dwelling units considered habitable, but held off the market, as well as structures which have been abandoned because they are not habitable. Vacant dwelling units include units for rent but currently unoccupied, and holiday homes.

are the best sources for information about derelict housing and dwelling units removed from the housing stock.

Census Benchmark Data

The benchmark data for the Bermuda housing stock are from the decennial Census, conducted by the Statistics Department. The Census provides an inventory of all dwelling units, including vacant and empty units. For dwelling units occupied by households, information is collected about the dwellings, including structure type, number of dwelling units, age, ownership, and physical characteristics (e.g., number of bedrooms, source of water supply). This Census information is comprehensive and useful, its only drawback being that it is only available for years in which the Census is administered.

Using the Census results as benchmarks, we constructed the annual stock series provided in Figure 4.1 by factoring in annual new construction, conversions and additions from the Planning Department. To account for changes to the housing stock due to abandonment or demolition, annual compound rates of housing stock loss were calculated, and incorporated into the series. The next benchmark for this stock series will be available from the 2000 Census.

Supply Growth and Loss Data

The Planning Department collects data for permits issued, and monitors the number of new units from construction and conversions of existing stock. This information is collected on an ongoing basis.

In Bermuda, there are two basic types of permits required to construct housing, or add dwelling units to an existing structure. The first is planning permission, which is granted if the proposed development meets planning requirements and objectives. Permission lasts for two years, and can be renewed once for an additional two years. The second type of permit is the building permit, which is granted with approval of the construction documents. Building permits expire after five years. Unless a project is large, its

construction status is not monitored. Once construction is complete, it is included in the housing completions data. Planning permissions and building permit data are useful as advance indicators of the number of future additions to the housing stock. However, some caution needs to be exercised, since not all planning permissions and building permits lead to construction, and not all construction (e.g., additions) is done with a permit.

Gross additions to the housing stock are monitored by the Planning Department, including new construction, conversions, and additions to the housing stock. In addition to the number of units, type of structure (apartment or single-detached) and number of bedrooms are also recorded. This information is complemented by the Land Valuation Department, which monitors housing for tax purposes.

Derelict Housing and Renovations Data

Unfortunately, it is more difficult to keep track of housing removed from the stock. The Planning Department keeps records of building demolitions that legally require a permit because they are within 25 feet of a road, but does not undertake the difficult and uncertain task of keeping a count of the total number of dwelling units demolished. This subject is further complicated because a typical demolition is actually a replacement.

The Land Valuation Department is another source for information about derelict housing. The Department is alerted whenever a property owner requests that their property be removed from the tax rolls. This occurs when a building is uninhabitable, or if it is undergoing significant renovation. The Bermuda Housing Corporation has used this information in the past in an effort to learn the status of derelict dwelling units. We recommend that this be undertaken on an annual basis. Data on renovations are not currently collected in Bermuda, with the exception of low-income housing renovations involving the Bermuda Housing Corporation (see Chapter 2, Housing Problems in Bermuda and the Need for Monitoring).

Concluding Thoughts on Housing Stock Data Recommendations

Considerable information about the housing stock is already collected by the Statistics Department as part of the decennial Census, and by the Planning Department. Census data about the housing stock, while limited in availability, provides detailed information for use as benchmarks. This information is supplemented by information from the Planning Department about permits, new construction, additions and conversions, which are all available on an ongoing basis. Permit data will serve as an advance indicator of changes in the housing stock. Meanwhile, timely data about housing completions will contribute to monitoring the stock over time. To keep track of dwelling units removed from the housing stock, the Bermuda Housing Corporation should use information from the Department of Land Valuation to catalogue derelict dwelling units on an annual basis.

Chapter 5
Bermuda Index of Housing Affordability

Rationale

The most pressing housing issue in Bermuda is the lack of affordable housing, particularly for low-income households. As discussed in Chapter 2, "Housing Problems and the Need for Monitoring", increasing pressure on the rental market makes it difficult for many households to find homes at affordable rents. While the issue is commonly acknowledged, there is no effective procedure in place to assess the nature and scope of this problem. An accurate and reliable measure of affordability will provide a better understanding of the Bermuda rental market, and inform future housing policies and programs. This chapter presents several ways to measure housing affordability, and discusses their applicability and feasibility in the context of Bermuda. It concludes with recommendations for the primary features that should be included in Bermuda's affordability index.

There is no universal, "best" measure of housing affordability: several measures are used effectively in different countries. Since housing market characteristics, data availability, and policy priorities differ from place to place, affordability indicators work best when tailored to a specific location. Consequently, it is important to assess Bermuda, with its unique island economy and housing market, to see what type of affordability index will be most useful and practicable. Once reliable dynamic housing market information is collected, it will be used to create indicators of housing market conditions. Using a consistent indicator over time will be useful for understanding the nature and magnitude of the affordability problem. This indicator will assist the Bermuda Housing Corporation and other interested parties in developing effective housing policies.

Background on Measures of Affordability

Measures of housing affordability are designed to reflect the extent to which the cost of housing to households is greater than the amount determined to be a reasonable

expenditure based on their income. These measures consider the distribution of household expenditures and incomes, either at a single point in time, or over a period of time. However, household income and expenditure can be difficult to measure due to both a scarcity of data, as well as difficulties in defining housing costs and household income in a useful way. In constructing measures of housing affordability, there is always a trade-off between the usefulness of the indicator and the intensity of data requirements. Following is an overview of different types of affordability measures, including a discussion of the relevance and applicability of each type in Bermuda. The types are based on those presented in an excellent survey article by Bogdon and Can (1997).[7]

Percentage of Income Measure

The most basic and most frequently used measure of housing affordability is the percentage of income measure, calculated as the share of household income spent on housing. This method is often used by landlords as a way to gauge how likely a tenant is to be able to pay his or her rent, or by lenders as a way to assess a borrower's ability to make mortgage payments. In the United States, the federal Department of Housing and Urban Development uses as 30 percent of income standard to qualify for rental assistance. The 1988 Report of the Bermuda Task Force on Housing applied a 25 percent affordability standard. 50 percent of income is considered by many to indicate an oppressive household rent burden.

<u>Example</u>

Assuming a 30 percent of income standard, affordable rent for a household with monthly income of $2000 would be $600 or less. If the household's rent was $900, they would face an excess rent burden of $300.

The percentage of income measure is a useful, simple, and easy to understand measure of affordability. It does not require a tremendous amount of information, simply household

[7] Amy S. Bogdon and Ayse Can, "Indicators of Local Housing Affordability: Comparative and Spatial Approaches," *Real Estate Economics* V25: 1997 (43-60)

income and household expenditure on rent. It is simple to construct and easy to compare over time. While currently there is no ongoing source of data about household rent and income in Bermuda, this report recommends that this information be collected as a part of the Bermuda Annual Rent Survey (Chapter 6). This information will be required for the development of any affordability indicator.

This measure also has several drawbacks. It does not take into consideration differences in expenditure by households that reflect differences in dwelling quality or unit size. Some households may prefer to spend a greater portion of their income on housing than others do because they place a higher premium on housing services. Conversely, some households may not have been able to locate the type of dwelling they sought. Furthermore, applying a percentage cut-off for affordability is somewhat arbitrary, and does not take into account differing financial requirements among households. In other words, paying 30 percent of household income as rent may be more burdensome for some families than others. Finally, the income component of the measure is problematic because it considers only current income, which does not account for differences in expected income over the long term. As an example, a person who is temporarily unemployed may appear to face a heavy rent burden, but their burden is mitigated somewhat by the fact that their income is expected to be significantly higher in the future. Obviously, the affordability problem is worse for a household with the same current income and expenditure, but without the prospect of a future jump in income.

Shelter Poverty

The second type of affordability measure, the shelter poverty index, was developed as an alternative to the percentage of income measure. The aim was to develop a measure that would avoid applying a flat percentage standard for housing affordability across different income groups. This alternative is based on the idea that rental burdens differ according to income: spending 25 or 30 percent of household income on rent may be more difficult for households at the lowest income levels. Rather than a flat percentage, the shelter poverty measure uses a sliding scale based on income. The amount of income available for housing payments is determined by subtracting the expected cost of all other basic

household needs from total household income. The remainder is the amount of income that is presumed to be available for expenditure on housing, i.e., the amount the household can "afford". If this amount is less than the amount actually paid for housing, the household is considered "shelter poor".

Example

Assume a two-person household (single mother and child) with income of $1000 per month. The expected cost of all non-housing expenditure is applied according to household size and type. Suppose it has been determined that this household type requires $600 per month for all non-housing expenditures. The amount remaining is the implied rent that the family can afford to pay, $400. If the actual amount spent by the household on rent is greater than this amount, the household is considered "shelter poor."

The main advantage of the shelter poverty method is that it takes into consideration differences in housing requirements and rental burdens of households with different characteristics. Consequently, the standard can be adjusted to reflect increased financial pressure faced by larger households and ones which include more children, as well as households in the lowest income brackets.

Nevertheless, the shelter poverty method still manifests many of the same shortcomings as the percentage of income measure, including its failure to recognize differences in housing preferences or quality. Furthermore, it requires an assessment and categorization of the minimum expenditure on all other goods (other than housing) for different household types in order to determine the amount a household can afford to spend on housing. In Bermuda, the Household Expenditure Survey and the Retail Price Index could be used for this purpose.

Quality Adjusted Measure

Several attempts have been made to adjust the percentage of income measure to take into account differences in quality across dwelling units, and differences in the housing cost burden across households. As discussed above, some households may prefer to spend a

greater percentage of their income to inhabit a dwelling unit with more amenities. These households may appear to pay an excessive rent burden simply because they choose to trade-off expenditures on other goods for better housing. One way to address this issue is to consider what rent a household can afford, rather than the rent it actually pays. A common way to achieve this is to develop a standard for housing adequacy, then determine the percentage of households who would not be able to afford to live in adequate housing based on a percentage of their income.

Example

Assume standards are determined for adequate housing by size and type of household, and the cost of adequate housing for each category of household is known. Consider a household of three adults, with combined income of $3000 per month. Suppose the cost of adequate housing for this type of household is determined to be $1200, and the affordability standard is 30 percent of income. The expected rent burden for this household is 1200/3000, or 40 percent. Since 40 percent is greater than 30 percent, the household would be considered to have an affordability problem.

The quality adjusted method can lead to more sophisticated results than the basic percentage of income method, helping to identify households that choose to spend a greater portion of income on housing, as well as those that pay a smaller percentage of their income on housing, but bear a disproportionately high affordability burden. Employing a standard for housing adequacy is also a way to help adjust for differences in quality over time.

The most serious shortcoming of this measure is its failure to consider whether there is sufficient housing available which meets the minimum standard of housing adequacy. If a shortage of housing exists at this rent level, the results of the measure can be misleading. It may be that households are forced to live in housing that is beyond their means because there is no other housing available. This is an important consideration in Bermuda, where many factors work to limit the supply of housing, particularly at the low

end of the market. Additionally, this method requires detailed data about housing quality, in order to determine minimum standards for adequate housing.

Measures of the Supply of Affordable Housing Units

Another way to approach affordability is to assess the number of housing units that are available to low income households. One way to accomplish this is by calculating a vacancy rate for units at a certain rent level. A low vacancy rate implies that households find it difficult to find housing within that rent level. Another method is to count the total number of units that exist within a rent level category. A similar method is to count the number of dwelling units that are affordable to households with low incomes. This requires a definition of what is meant by low-income households. Once this is defined, a standard percentage for affordable rent such as 25 or 30 percent of income is applied, and the numbers of available units within that range are tallied.

Example

Suppose every household with income less than $2000 per month is considered low-income, 2000 families total. The affordability standard is 30 percent of income. Based on this standard, rents of less than $500 are considered affordable. The number of dwelling units available at this rent is tallied to be 1500. This implies a shortage of 500 affordable units.

Supply measures address the question of availability of housing units, which is the main drawback of the quality-adjusted measure presented above. They can also be useful in distinguishing between the problem of a lack of housing units, versus a lack of housing units with rents low enough to be accessible to low-income households. However, like many other affordability measures, these measures do not consider the issue of differences in unit size or quality, or differences in neighborhoods. Consequently, they may not accurately reflect the number of available housing units that would adequately satisfy the needs of low-income households. For instance, there might be many apartments that are affordable to low income households, but they might be studio units, while the households require two bedroom units. Some affordable units might be rented

by higher-income families that do not require affordable units. Units with low rents may not be available to the target group because they are occupied by longer-term residents. Clearly, this method requires that households be classified according to appropriate housing types. Unlike in the stylized example above, it would be unrealistic to assume that all renter households have the same housing requirements.

Furthermore, a measure that relies on information about the supply of housing would be particularly challenging to implement in Bermuda. As discussed in the housing stock chapter, counting available units and determining vacancies in Bermuda is difficult due to several reasons, including lack of data about units that are removed from the housing market as the result of demolition or other reasons, and trouble differentiating between units that are vacant for rent and those that are vacant but held off the market.

Affordability Mismatch

A final method used to measure housing affordability is to compare the distribution of household incomes to the distribution of housing costs. The goal would be to have these match up, with adequate housing available at all income and rent levels. First, households are divided into groups based on their size and income. Housing units are also divided into groups based on their size and cost relative to the income groups, using a standard percentage definition of affordability. The affordability mismatch measure is the number of housing units that are available to households in a certain income category, divided by the number of households in that category. If the mismatch measure is greater than one, there are sufficient affordable units available to that group. If, on the other hand, the result is less than 1, it indicates that there is not enough affordable housing available to that group. A major advantage of this method is that it considers households at different income levels and sizes separately, allowing for different standards of affordability where necessary. Furthermore, it presents a full picture, taking into account both the demand and supply sides of the housing market.

The main drawback of this method is its assumption that housing is available to the general renter population at rents paid by current tenants. This fails to take into account

longer-term renters, who may pay less for a dwelling than would be asked if the rental unit were to be offered anew on the market.

Criteria for Choosing an Affordability Indicator

Little is currently known about how affordability impacts households at different income levels in Bermuda. Demand appears to be growing primarily at this high end of the rental market, but this can translate into higher rents at all income levels. Not only is demand for housing growing, but the type of housing required by households is changing over time, related to changes in the economy. Given these structural changes occurring in the Bermuda housing market, any measure of affordability should consider the distribution of rents relative to the distribution of household incomes. Another complication is the fact that there is often a difference between the rent currently paid by a household, and the amount of rent the dwelling unit would be offered for if vacant and on the market. Thus, it will be necessary to find ways to distinguish between potential movers and renters who remain in the same dwelling over the longer term.

The fact that Bermuda is an island is advantageous, since it means that the housing market is finite, with precise boundaries. In other words, virtually no "spillover" of households can occur to other locations. Furthermore, the proposed Bermuda Annual Rent Survey provides an opportunity to collect ongoing information from renter households to be used in the Bermuda Affordability Index. The only major limitations are obstacles to measuring the supply of rental housing likely to be available at given rents. Also, it is difficult to ascertain the status of many empty dwelling units, in order to differentiate between units held off the market and ones that are available for rent. Nevertheless, the affordability index should include both supply and demand side variables, since the market determines housing availability.

Chapter 6
A Bermuda Annual Rent Survey

Recommended Data Collection

1. **Monthly Rent (and Adjustments such as Utilities, Maintenance)**
2. **Number of Rooms/Bedrooms**
3. **Dwelling Type (By Census Category)**
4. **Annual Household Income**
5. **Household Size**
6. **Household Type (By Census Category)**
7. **Bermudian Status of Head of Household**

Recommended Survey and Release Dates

Preliminary 2000 Census Data: November, 2000

Annual Rent Survey, Conducted Each May

Sampling Methodology: Similar to Household Expenditure Survey

Results Released in October

Source

Statistics Department, Ministry of Finance

Rationale

The proposed Bermuda Annual Rent Survey (BARS) represents a much-needed opportunity to collect information vital to an understanding of the Bermuda rental housing market. As discussed in Chapter 2, Housing Problems and the Need for Monitoring, the most serious housing problem in Bermuda is the lack of affordable rental housing. Because there is currently no source of consistent, ongoing data about rents, households and dwelling units, it is difficult to assess the nature and scope of the affordability problem.

Conducted in May of each year, the Survey will build and expand on information already collected at 10-year intervals for the Census of Population and Housing and the Household Expenditure Survey (HES). The sampling methodology will be similar to that used by the Statistics Department for the HES. A panel of housing units will be visited every year, providing quality adjusted "time-series" data that will accurately reflect changing rental market conditions. Combined with the other housing market variables recommended in this report, the Survey will make it possible to monitor conditions in the rental market, forecast future market scenarios, and evaluate alternative policy interventions. Finally, it will serve as the basis for the Bermuda Rental Affordability Index (Chapter 5).

The Need for Dynamic Data

The Bermuda Annual Rent Survey will complete the information required to monitor housing demand, supply and rents on an ongoing basis. Currently, some fundamental information about households and the housing stock is only collected as a part of the decennial Census of Population and Households and the Household Expenditure Survey. However, these "snapshots" of housing in Bermuda, taken at 10-year intervals, are not sufficient to capture the dynamic nature of the Bermuda housing market. As discussed in previous chapters, there are several variables necessary for monitoring purposes which need to be collected more frequently. These include rent, household income, household type, size of household, and rental unit characteristics. Household income is a particularly critical component of housing demand: generally, as incomes rise and fall, so does the demand for housing. Furthermore, the type of housing sought by individual households changes with income as well. With increased income, a household may choose to inhabit a different type of home, or be able to own rather than rent. Household type and size is also an important determinant of housing demand, since the number of people in a household, along with their relationship to each other, influences the nature of the housing they require. Perhaps most importantly, the Survey will collect information about rents, completing the information required to understand the relationship between supply, demand and rents. Because the same panel of housing units will be surveyed over time, the time-series data will control for quality over time.

Methodology

The Bermuda Annual Rent Survey sample will be drawn in a manner similar to that used by the Statistics Department for the Household Expenditure Survey, performed every ten years. Like the HES, BARS is intended to supplement the Census with a targeted survey, intended to address a specific area of policy concern. The primary differences from the HES are that the BARS will be conducted annually and that it will follow a sample of rental dwellings over time.

The most recent HES undertaken was in 1993. The sample was selected using a stratified two-stage random sample method. Census districts were divided into income classifications, according to median household income figures from the 1991 Census of Population and Housing. Approximately half of the districts were selected to be included in the most recent survey. The sample included 1060 households, a number sufficient to produce estimates accurate to +/- 5 percent at a 99 percent confidence level. Because the population of rental dwellings/households is smaller than that of all households, a smaller sample size would be sufficient for the BARS. The BARS will be conducted in May.

One of the primary goals of the BARS is to collect the information necessary to create an ongoing index of rents in Bermuda. The shelter component of the United States consumer price index (USCPI) can be used as a partial model for this effort. The USCPI shelter component has two main parts, residential rent and owner's equivalent rent. The residential rent index measures changes in the cost of shelter for renters, and the owner's equivalent rent index measures the same changes for owner occupants. The BARS will provide the information for the first of these two components.

The residential rent index in the U.S. is calculated for one and six month periods, based on interviews with renter households. The Bermuda rent index will be calculated annually. The sample for the USCPI is a stratified cluster sample, representing housing units built before the most recent decennial census. The Bermuda index will use the 2000 Census as a benchmark. To initiate the BARS, limited relevant Census data should be

released on a preliminary basis in November 2000. This information, tabulated by rental unit, will include rent; household size, type and income; and number of bedrooms. It will be very basic, but extremely useful for two reasons. First, given the scarcity of current information about rents and affordability, these data will provide a much-needed look at the state of the rental housing market, including variables that are needed to measure affordability. Second, this preliminary information will serve as the basis for drawing the sample for the BARS, which will commence in May of 2001. MIT researchers will simultaneously be working with the Bermuda Housing Corporation and other housing-related government bodies to develop the Bermuda Affordability Index, discussed in Chapter 5. Once the final Census information is released, the BARS sample can be refined using weights, discussed below.

Since primary sampling selection is done after each decennial Census, the primary sample only includes housing built before the last Census. The sample will thus be periodically updated with newly constructed housing units, based on building permit data.

The U.S. survey collects information about household demographics, rent, extra charges, dwelling unit characteristics, utilities and energy usage. The BARS will proceed in a similar manner. The U.S. Bureau of Labor Statistics uses the information from the housing survey to calculate the monthly economic rent for each renter unit in the survey. Economic rent is defined as the payment in exchange for all services provided by the landlord, as well as the value of any rent reductions. For example, if the landlord pays for utilities, this is included in the economic rent. Similarly, if the renter provides a service to the landlord (such as maintenance), the value of this service is added to the rent. An important consideration in these repeat interviews is accounting for changes in housing services (whatever the renter gets for their rent) received by tenants. For instance, consider an apartment where the landlord has historically paid for the cost of utilities. If this changes, and the renter begins to pay utility bills, the economic rent must be adjusted to reflect this change: the cost of the utility bill, less the value of any rent reduction received. Using this method, economic rents only change over time due to

changes in rents, rather than changes in quality of the rental unit. Following the USCPI, adjustments for changes in facilities (such as kitchen appliances, laundry equipment, etc.) as well as utilities will be made.

Weights will be assigned to each of the renter housing units in the sample to make them representative of the total rental housing stock. For example, the response from a two-bedroom unit will be multiplied by the number of housing units that unit proxies for in the actual rental housing stock. After the weights are applied, the economic rents will be aggregated for all properties. The change in rent will be calculated as the ratio of current rents to previous rents. The USCPI conducts enough panel surveys to determine changes over one and six months. Because of the intensive work required to administer this type of survey, we recommend that Bermuda collect data annually.

Concluding Thoughts on Proposed Bermuda Annual Rent Survey

Given the complex nature of the market for rental housing in Bermuda, it is difficult to know how rapidly rents are rising, and how this affects rental households. Information from the BARS will help provide answers to these questions, and ultimately facilitate a more sophisticated understanding of how rents respond to changes in population, employment, income, and the supply of housing units. The BARS will supplement and build on existing data collection efforts, using a sampling methodology designed to bring together reliable, consistent, ongoing information about rents, rental units, and renter households. This information can ultimately be used by government agencies and the Bermuda Housing Corporation to assess current policies, predict future rent fluctuations, and evaluate the usefulness of potential future housing policies.

Chapter 7
Bermuda House Price Index

Recommendation: Quality-Adjusted Annual House Price Index

Primary Data

1. **Transaction Prices**
2. **Structural Characteristics**
3. **Locational Characteristics**

Recommended Release Date

Initial Index for 1993-1999: 2000

Annual Index Update Each May

Source

Land Valuation Department

Overview

The Bermuda House Price Index is a quality-adjusted, transaction-based measure of house price changes for single- and two-family homes. It is a "hedonic price index" which takes advantage of all available property information to adjust for differences in size, quality, and location. The index uses recorded transaction prices combined with structure and location information. The initial index covers the years 1993 through 1999 and is based on 1619 usable "arms-length" market transactions.

A prototype version is currently being built in cooperation with the Massachusetts Institute of Technology. It is projected that this index, along with a detailed description of its construction, will be available in the fall of 2000. The Land Valuation Department will provide an annual update to the index each May.