Georgia State University

ScholarWorks @ Georgia State University

Geosciences Faculty Publications   Department of Geosciences

The Internet and Home Purchase

Risa Palm
Georgia State University, risapalm@gsu.edu

Recommended Citation

THE INTERNET AND HOME PURCHASE
RISA PALM* & MICHELLE DANIS**

* College of Arts and Sciences, Office of the Dean, Campus Box 3100, University of North Carolina, Chapel Hill, North Carolina 27599-3100, USA. E-mail: palmr@email.unc.edu

** Department of Economics, University of North Carolina, Chapel Hill, North Carolina 27514, USA. Bureau of the Census and Triangle Census Research Data Center, Duke University, Durham, North Carolina 27708, USA. E-mail: Danis@email.unc.edu

In the pre-internet era, information was a key determinant of the geographic nature of intra- urban moves. Information was a far more limited commodity, and therefore subject to management and even manipulation. Information brokers, particularly real estate agents, could order and limit the kinds of information to which prospective buyers gained access, with the potential of strongly biasing search space. In the past few years, a vastly enriched information source on housing vacancies has become available through real estate industry-sponsored sites on the internet. This rich information source has the potential to influence spatial patterns and processes in the search for housing by eliminating information barriers in the search process. Three hypotheses were tested with data from Wake County (Raleigh), North Carolina. First, those with less prior familiarity with the destination area would make more frequent use of the internet. Second, internet users would visit fewer houses personally because they would have more prior information about the market, eliminating the need for some personal home visits. Third, internet users, armed with greater information about the house, neighborhood, and prices of other recent sales, would pay less for the same housing/neighborhood bundle. Recent movers in Wake County, North Carolina, were surveyed in early 2000, and the characteristics of web users were compared with nonusers. The major finding of this research is that to date, the internet has had little impact on search patterns, except that those using the internet tend to visit a larger number of houses personally than those who do not use the world wide web as an information source.

Key words: Residential mobility, housing search, internet

INTRODUCTION: HOUSING SEARCH UNDER PRE-INTERNET INFORMATION CONSTRAINTS

The choice of where to live is a very significant one. The purchase of a home involves a major financial commitment, particularly with the assumption of a mortgage debt that is sometimes in excess of twice the yearly income of the household. The neighborhood or community in which the household lives also provides a setting for both ascribed social status and is also the locus of the lifestyle of the household. Obviously, the residential decision is not merely a matter of free choice, but instead is constrained and enabled by many factors beyond the control of the household, such as the supply of particular types of housing at a given time, or the availability of mortgage credit.

Geographers traditionally focused on one of the constraints to selecting the house: the availability of information on housing vacancies. The household seeking a new residence needs information on the housing unit itself including number of rooms, age, style, amenities as well as the neighborhood including reputation of the local schools, and social status ascribed to the area. Many people have access to availability vacancies through an information network influenced by family ties, ethnic group membership, previous experience within the area, or informal information from friends or colleagues. Information on most vacancies is also available from more public sources such as newspaper advertisements or the files of real estate agents. Within the past few years, a panoply of information about vacancies has become available to those who have access to the internet. But, what was the situation before this form of information was available? How did information constraints of the pre-internet period constrain the housing search?

Several models of residential mobility were developed in the 1970s and 1980s as scholars in economics, geography and sociology focused on understanding housing search behavior. Clark and Flowerdew (1982) noted that many studies of residential search within economics focused on the influence of both information and uncertainty on search procedures, and particularly the notion of sequential learning on decision-making (Rothschild 1973). In geography, the influence of information on search was translated into the concept of 'awareness space' and 'search spaces' (Wolpert 1965; Moore & Brown 1970). They concluded that the housing search process is hierarchical: that before any specific house is investigated, the prospective buyers must search for and choose among various information channels, and also competing regions within the area. Huff (1982, p. 127) found that search was 'spatially biased' and that prospective buyers developed anchor points around which the search was particularly intense. Smith et al. (1982) studied real estate information available in newspaper advertisements and found that the real estate agents who place advertisements 'optimize the degree of ambiguity' with respect to price or location of the vacancy in order to entice response from prospective buyers and thereby gain clients. The lack of universal access to vacancy information (for example, that available in the multiple listings service data) means that information can be controlled and channeled to induce preferred buyer behavior. The authors concluded that there is need for more universal access to

vacancy information to reduce search inefficiencies. In another study, Smith and Clark (1980, p. 123) put this finding even more boldly: 'changing the format and availability of information provision may, in the long run, have a significant impact on the search patterns and final housing choices of mobile households'.

Read (1993) repeated the observation that the urban housing market is characterized by imperfect information, differentiating it from the ideal econometric model or other markets such as the labor market. Particularly significant is the cost of acquiring information, and the impacts of 'imperfect information' on the equilibrium between costs and vacancies (Read 1993). Teixeira (1995) focused on the role of the real estate agent in constraining information available to potential buyers, particularly along the lines of ethnicity. Noting that real estate agents are key providers of information about the housing market, he stressed their importance in processes of neighborhood change or stability. Other examples in the long literature on racial 'steering' by real estate agents is provided in Roychoudhury and Goodman's (1996) study of discrimination in metropolitan Detroit on the part of clients and real estate agents. In this study, and those on which it was patterned (Yinger 1981, 1986), real estate agents claim an active role in providing or limiting the information field of prospective buyers in the selection of homes they show to specific buyers. The agents thus control and direct the information available to home buyers, and can affect the general nature of client search.

Baryla and Zumpano (1995) presented evidence of the impact of real estate agents on search behavior in their analysis of a sample of 526 homebuyers collected in 1987 by the National Association of Realtors. They found that real estate agents reduce buyer search duration and also reduced initial differences in the knowledge base between in-migrants to the urban area and those undertaking intra- urban moves. They concluded that real estate agents add value to the search process, a finding that should encourage the sponsors of their research (the National Association of Realtors). In a similar, but more analytical, vein Angelin (1997) found that real estate agents contributed to both shortening the search time and also reducing the 'search effort' in his study of Windsor, Ontario. In this study, information affected the search process in three ways: prior unfamiliarity with the housing market, the effectiveness of the real estate agent in matching buyer desires with available housing, and the extent to which real estate agent newspaper advertisements contributed to the stock of public information about housing vacancies.

To summarize, in the pre-internet era, information was a key determinant of the geographic nature of intra-urban moves. Information was a far more limited commodity, and therefore subject to management and even manipulation. Information brokers, particularly real estate agents, could order and limit the kinds of information to which prospective buyers gained access, with the potential of strongly biasing search space. Empirical findings on the impacts of this information distribution process on length of search, spatial nature of the search, and ethnic bias in vacancies examined were legion.

HOW THE INTERNET CHANGES THE HOUSE SEARCH PATTERN

The primary goal of the study reported here was to explore the extent to which home-buyers use the internet as an information source, as opposed to more conventional sources of information. Changes in the home search process hypothesized since the internet include:

- remnants of the previous information-bias process remain because of the practical limits on buyer time/energy set by the need for personal visits to homes;
- systematic variability in internet use varying by demographic, geographic and income characteristics;
- reduction in information constraints on the home purchase process resulting in a better match between supply and demand characteristics.

This study tested three specific hypotheses with data from Wake County, North Carolina.

1. Those with less prior familiarity with the destination area would make more frequent use of the internet. Prior familiarity was estimated by calculating the distance between the origin zip code and destination zip code of the movers.
2. Internet users would visit fewer houses personally because they would have more prior information about the market, eliminating the need for some personal home visits.
3. Internet users, armed with greater information about the house, neighborhood and prices of other recent sales, would pay less for the same housing/neighborhood bundle.

Data collection – The population sampled was those owner occupiers[1] who had a deed transfer registered between January and August 1999 in Wake County, North Carolina. A total of 1,200 randomly selected households were contacted between January and April 2000. The sample was limited to recent purchasers of dwellings in Wake County. The list from which the sample was drawn was a full list of property transfers between January and August 1999.

The questionnaire probed the experience of recent movers in finding and selecting a house. Respondents were asked about the number of houses for sale personally visited in the course of their search, the perceived importance of several housing and neighborhood characteristics in their decision to purchase their current dwelling, and the importance of various sources of information in the selection and purchase decision. Respondents were also asked whether they used information from the internet in their search and their rating of the internet as a source of information on various characteristics of the house and neighborhood that were important in their purchase decision. Several demographic and economic questions (age, education, ethnicity and income) were posed, as well as the location of their previous home by zip code and the type of previous residence (single family detached home, condominium, or rental unit).

The format of the questionnaire, the timing and content of mailings, and also the format of all of the cover materials used in the survey followed strictly the methods suggested in Dillman's recent book on mail surveys (Dillman, 2000). The first contact was a pre-notice letter indicating

that the recipient would soon be receiving a request to help with an important survey. The second contact followed one week later, and consisted of a survey with a cover letter outlining the usefulness of the survey, a promise of confidentiality of response, and an explanation of how respondents were selected, as well as a contact address. The third contact, sent one week after the survey mailing, was a postcard thank you/reminder. The fourth contact followed three weeks later and included a replacement questionnaire and a cover letter again outlining the research and urging their participation. The fifth and final contact occurred eight weeks after the original mailing and was sent by priority mail to indicate the importance of the respondent's participation in the survey, but also to avoid the potential annoyance associated with certified mail experienced in previous surveys.[2] Each step increased the cumulative response rate. In total, 73% of the original 1,200 households sampled returned the questionnaire.

The information site focused on was the URL of the National Association of Realtors. Although each realty office may produce a website touting the properties it lists and has recently sold, the most comprehensive of these sites is REALTOR.com®. This site contains information on all properties listed by members of this organization in every part of the nation. At any time, approximately 1.4 million houses are listed on this website, providing information that is far more detailed than that which can be gleaned from newspaper advertisements or even by personal inspection of a property. The site invites the browser to enter a location, a zip code or a multiple listing service number. The visitor unfamiliar with an area can search within an entire city or select particular neighborhoods. After focusing on a local area, the site lists the number of houses available for sale, and asks the browser to select between single family and condominiums (or both), and then price range, square footage, number of bedrooms and number of baths. The site narrows the number of houses in the selected location according to the criteria the browser has entered. Each listing display provides an address, a small photograph and a brief description of the house. When the browser finds a house that seems interesting, he/she can select to go on a 'virtual tour' and find out a great deal more information. A small map tells the prospective buyer the location of the house and directions to it if the buyer wishes to inspect it. The website also provides information on the year the house was built, the number of rooms, bedrooms and bathrooms along with the dimensions of each, the average home price in the neighborhood, indicators of the quality of the local public schools (for example, performance on standardized test scores and numbers of National Merit Finalists in the high school graduating class), and a numerical indicator of crime risk for both violent and non-violent crime in the zip code. It also provides information on 'dominant lifestyle profiles' including the median age, median household income, level of unemployment, type of occupational structure, educational attainment, mix of single-family homes and multiple family homes and average home value compared to the national average.

Clearly, the website of the National Association of Realtors contains a wealth of information, not only about the home, but also about sale values of neighborhood houses and characteristics of the neighborhood. The use of this website can expand the knowledge base of the buyer at almost no

additional cost, and therefore should have an impact on both the search for housing and the negotiated price. The search should be better informed and more efficient. Use of the web should also reduce the equilibrium price paid for a particular bundle of housing and neighborhood/locational characteristics, since buyers can learn of alternatives within the housing market with far greater ease and less cost.

HYPOTHESIS 1: INTERNET BY NEWCOMERS TO THE METROPOLITAN AREA

The first hypothesis was that prospective buyers moving from outside Wake County, and even more from out of state, would be more likely to use the internet for information on the housing market. This hypothesis was clearly confirmed, although the causal connection is not necessarily clear (Figure 1). Households who had previously lived in Wake County, the largest portion of the sample, and also those who had moved within North Carolina, but from outside Wake County, were less likely to use the internet than those who had moved from out of state.
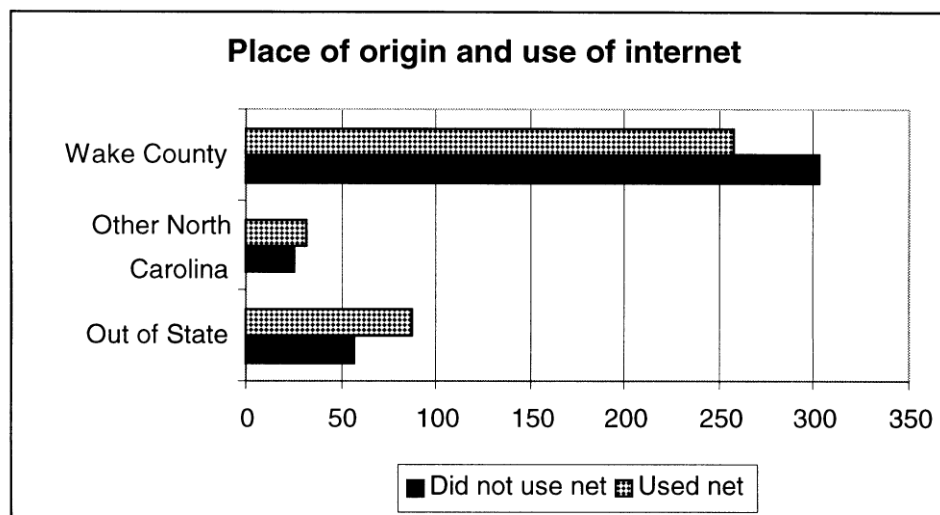

Figure 1. Place of origin and use of the internet.

The hypothesized reason for this relationship is that people who are less familiar with the destination area make use of the internet to familiarize themselves with their new destination. Equally, however, those movers from out of state could simply be higher income, younger, or generally more likely to own a computer and use the internet. In order to test this secondary hypothesis, the relationship between place of origin and internet use was probed by holding constant demographic characteristics of the movers.

Logit models were formulated to test whether an individual's use of the internet in the search for housing was a function of place of origin (a surrogate for familiarity with the destination). Two different measures of familiarity with the destination were used: the distance the household moved, and whether or not the household previously lived in the Raleigh-Durham-Chapel Hill metropolitan statistical area (MSA). Both specifications included a dummy variable if the

respondent was male, the respondent's age and education level, a dummy variable if the respondent was white, and the sale price of the house purchased. Both models showed that men and younger respondents were more likely to use the internet to search for housing, and that there was no effect of education, race and house price. When holding the demographic variables constant, both models also confirmed that the internet is more likely to be used by newcomers to the area.

HYPOTHESIS 2: INTERNET USE AND NUMBER OF HOUSES INSPECTED

It was hypothesized that the number of houses visited by survey respondents would be a function partly of demographic characteristics of the home-buyer (age, education, race and family income), and partly the characteristics of the house (sale price and year built). Relative reliance on various sources of information about the housing market was also assumed to affect the number of houses considered. The survey asked respondents to rate several sources of information on their importance during the decision to purchase their homes, including advertisements in real estate brochures or magazines, newspaper advertisements, books or articles giving general advice to home-buyers, newspaper stories about the neighborhood, advice from friends, relatives or colleagues, driving through the neighborhood, information from a real estate agent, information on the internet, and information from a lawyer, insurance agent or mortgage lender. Respondents rated the sources on a scale of 1–5, with 1 being 'not at all important' and 5 being 'very important'. In the model specification for number of houses inspected, respondent evaluation of two most closely related information sources, newspaper advertisements and information from a real estate agent, were analyzed. Finally, we included a dummy variable equal to 1 if the buyer used the internet to search for houses for sale.

A simple cross tabulation of the number of houses personally inspected, whether or not the purchaser used the internet (Figure 2) shows a clear relationship: internet users personally visited more houses than those who did not use the internet to search for houses.

The modal number of houses visited by non-internet users was 7–10, while the mode for internet users was more than 20 houses inspected. Clearly, use of the internet does not reduce, but instead increases personal inspection of properties.

When various predictors of number of houses visited were analyzed together in an ordered logit model (Table 1), our hypothesis linking internet use with houses visited was again confirmed. The five variables associated with the number of houses visited were:

1. use of the internet (those who used the internet personally inspected more houses than those who did not);
2. importance of the real estate agent in the search process (those who depended on real estate agents inspected relatively more houses);
3. distance moved (those moving from further away were more likely to visit more homes);
4. income (high income households inspected more houses than lower income house-

holds), and, to a weaker extent;

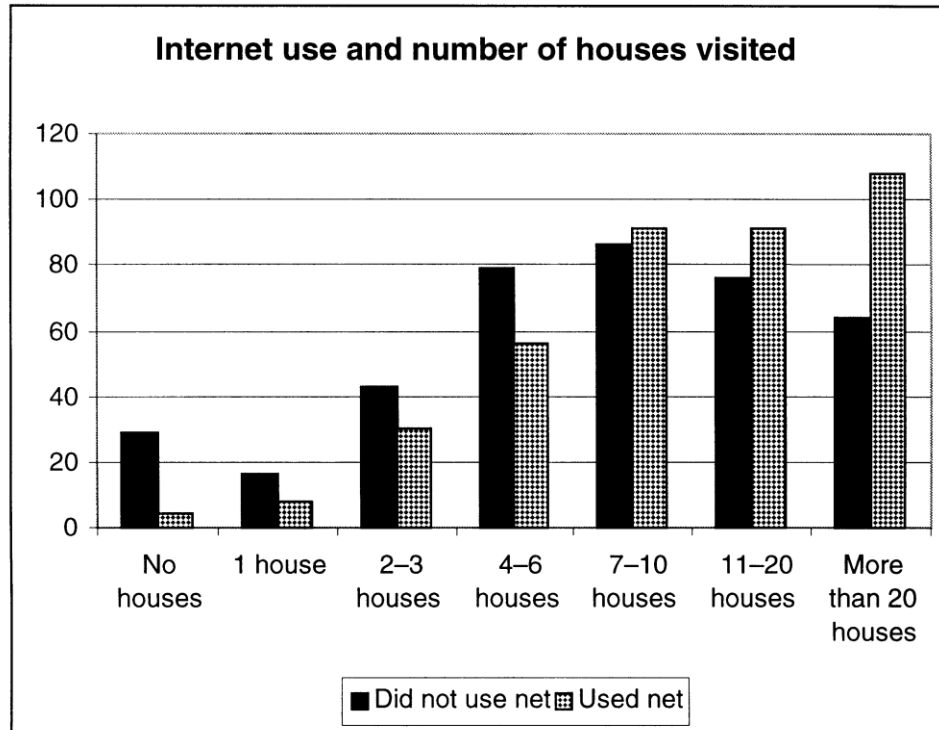5. race (African American buyers inspected fewer properties than white buyers).

Internet use and number of houses visited

Figure 2. Number of houses visited by internet users and non-users.

Although some of these findings are expected (e.g., that real estate agent dependence would permit the inspection of a greater number of houses, and that high income households have a greater variety of houses for which they qualify financially), others were counter-intuitive. The research hypothesis, based on findings from previous essays on internet use, led one to expect that internet use would be associated with the number of houses inspected, but the expectation was that the internet would reduce the number of visits rather than increase it. It appears instead that the internet permits 'shoppers', those who want more information before making a purchase decision, to gather even more information, reinforcing home visits and stimulating others rather than increasing the 'efficiency' of the search.

Explanatory variable	Coefficient estimate	Standard error
Age category of respondent	0.121	0.086
Education level category of respondent	0.016	0.069
Dummy variable = 1 if respondent is black	−0.640*	0.373
Dummy variable = 1 if respondent is white	−0.169	0.299
Distance respondent moved	0.001**	0.0002
Household income category	−0.273**	0.0759
Net sale price of house	4.64E−07	7.21E−07
Year the house was built	−0.002	0.005
Importance of real estate agent in search process	0.281**	0.066
Importance of newspapers in search process	0.061	0.068
Dummy variable = 1 if respondent used the internet to search for housing	0.728**	0.161

 * Significance at the 90% confidence level.
** Significance at the 95% confidence level.

Table 1. Ordered logit model of number of houses visited by survey respondents

HYPOTHESIS 3: INTERNET USE AND HOUSE PRICE

In theory, those who use the internet should pay less for the same bundle of housing/ location characteristics than those who use less complete information sources. Kim (1992) demonstrated that a decrease in search costs decreased equilibrium price because the buyer was willing to search longer as search costs decreased. Since the internet is also a virtually cost-free information source, it should similarly reduce search costs and therefore equilibrium prices. An even more important reason why the internet should better inform bid prices is the fact that it provides information on houses recently sold in the neighborhood with their sales prices. Thus, armed with internet-based information, prospective buyers have almost as much information as real property appraisers when they bid on houses. This information should result in bid prices closer to the final market price, resulting in lower prices for internet users.

To test the effect of the use of internet information on home prices, a hedonic model of housing prices was formulated.[3] This model tested the sales price as predicted by a combination of a set of variables. The first variable calculated was the weighted average commuting distance to employment opportunities in the metropolitan area. Midwestern cities of the 1960s exhibited relatively simple structures surrounding a central business district (CBD), and could be analyzed using simple distance from the CBD as a measure of accessibility to employment opportunities. At present, however, most metropolitan areas, including the Raleigh-Durham-Chapel Hill MSA, are multi-centered in nature. Employment opportunities are not concentrated in the central area, but instead exist in several centers within the metropolitan area. To account for this spatial complexity, a single measure of accessibility to the set of employment locations in the

metropolitan area was calculated (Figure 3). This measure was dubbed the 'weighted average commute' or WAC.[4]
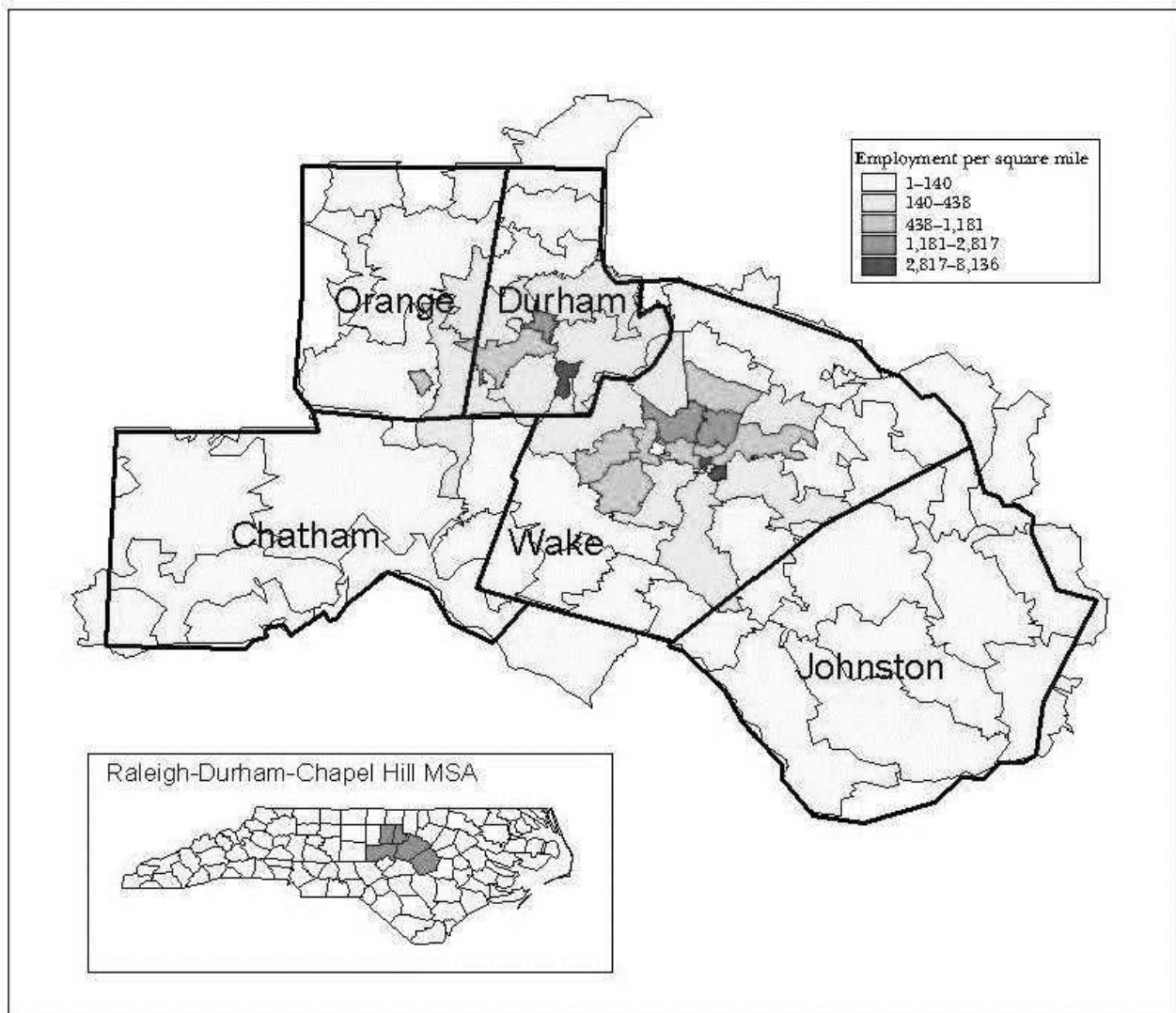

**Figure 3. Employment concentrations by zip code in the
Raleigh-Durham-Chapel Hill MSA.**

Other variables included in the hedonic model were a dummy variable for previous location (within or outside the Raleigh-Durham MSA) to test for prior familiarity with the destination neighborhood and the survey respondent's assessment of the importance of the real estate agent in the search process. Housing descriptors such as square footage and year of construction were included since these variables usually account for a large proportion of the value of a given house.

Neighborhood characteristics, specifically school quality and crime rate, were also tested for

their effect on sales price. School quality was assumed to be reflected in the 'ABC Score' calculated for each school by the North Carolina Department of Public Instruction[5]. Each school receives a performance composite score, based primarily on end-of-grade and end-of-course test scores. The school quality measure was the average ABC score weighted by the number of students enrolled in a school for all the schools in a particular zip code. Crime was measured using the APB/ Neighborhood Crime Check ratings. This variable is a ranking of the risk of violent crime in a zip code, measured on a scale of 1 (low)–10 (high).

The complex relationship between two prime information sources, the internet and the real estate agent, was also modelled. Internet users may also depend on real estate agents for information. This mutual dependence varies widely among buyers. In order to test this interaction, a new variable was created to place respondents in an internet/real estate agent dependency typology: respondents were placed in one of four classes depending on their use of the internet and their perception of real estate agent's importance. Dummy variables for each of the first three categories were included in the regression analysis.

- **Category 1**: The information gatherer – This buyer used the internet and found real estate agents important. Of the 200 buyers who fit this category, 82% were white, 8% were African American, and the other 10% either did not report their ethnicity or were from another ethnic group. The median age group of these buyers was 25–35 years. The median house price for these purchasers was $147,250. These buyers had a mean weighted average commute (WAC) of 12.8 miles.
- **Category 2**: Internet-only buyer – This buyer used the internet and did not find real estate agents important. The 80 internet- only buyers were also predominantly white, with 85% in this ethnic group. Eight percent were African American, and the remainder of the buyers were Asian or Hispanic. The median age group of these buyers was 25–35 years, while the median house price was $152,500. These buyers had a mean WAC of 13.4 miles.
- **Category 3**: 'On their own' buyer – This buyer did not use the internet and did not find real estate agents important. The 54 buyers in this category were again predominately white (87%). Only 6% were African American. The median age group of these buyers was slightly higher than information gatherers or internet-only buyers, at 36–45 years. The median house price for these buyers was $152,500, and their mean WAC was 12.3 miles.
- **Category 4**: Traditional buyer – This buyer did not use the internet and found real estate agents important. These 201 buyers were again predominantly white (81%), with 10% African-American and the rest either not responding or belonging to another ethnic group. The median age group was again 36–45 years, the median house price was $152,000, and their mean WAC was 12.6 miles.

The hedonic regression (Table 2) accounted for 80% of the variance in house price: the

coefficient of determination (r2) was .805. Factors increasing the value of the house were, as expected, square footage (about $100 per square foot) and school quality. Age of housing had a small impact on price, but in a counter-intuitive way: new housing sold for slightly less than older housing.

Table 2. Hedonic regression of house price paid by survey respondents

```
Explanatory variable              Coefficient     Standard error
                                   estimate
Significant coefficients:

Weighted average commute (WAC)     -1,583.72*           878.23
Year built                           -490.46**          110.74
Square footage                        100.84**            2.24
Internet-only buyer                10,742.93**        5,155.37
School quality index                  877.57**          348.37
Crime index                        -2,129.37*        1,195.92
Constant                          908,890.6**         216,586

Insignificant coefficients:

Information gatherer                -1,267.42         3,889.88
'On their own' buyer                -4,326.42         4,824.85
Dummy variable equal to 1 if the     9,182.09         7,184.90
area is an outlying suburb

* Significance at the 90% confidence level.
** Significance at the 95% confidence level
```

House price was also affected by buyer internet use, but in a complex way. There was no statistically significant difference between prices paid by traditional buyers, 'own their own' buyers, and information gatherers. Those buyers who used the internet alone, however, who did not find real estate agents particularly important in the home search, actually paid more for their home compared with traditional homebuyers (those who did not use the internet but found real estate agents important): internet-use-only buyers paid $10,743 more for their homes.

It can be concluded from this complex relationship that traditional buyers who rely on real estate agents but do not use the internet, and buyers who seek a maximum of information by using both the internet and real estate agent information, are likely to pay less for a house than those who rely solely on the internet for information. This very interesting and unexpected relationship should be corroborated with data from other housing markets to see if this interaction reflects some generality about search/purchase behavior and negotiated price.

CONCLUSIONS

The goal of this paper was to explore the effects of using the internet on home-buyers' search for

new housing. It was hypothesized that internet use would be greater for inter-urban migrants than intra-urban migrants, would reduce the final price of the house and would also reduce the number of houses personally visited by the prospective buyer. Inter-urban migrants were indeed found to tend to use the internet more than intra-urban movers. Use of the internet combined with dependence on a real estate agent was found to reduce the final price for a housing bundle, but use of the internet alone does not have an effect on final house price. Furthermore, home-buyers who use the internet personally inspect more rather than fewer houses in the search process.

It is important to note that this survey, conducted in early 2000, reports on the impact of information available on the web for relatively early users. National statistics on use of the internet for information gathering and shopping are increasing dramatically year by year (Current Population Survey). It will be important to track the inevitable changes in this phenomenon of the provision of spatial information in virtual space and its impact on urban spatial patterns.

[1] Renters were not surveyed because the nature of a search for a rental unit is arguably different from that for a unit to be purchased.

[2] In previous surveys by the senior author (Palm & Carroll 1998; Palm 1995), the final step, as recommended in an earlier version of the total design method (Dillman 1978) was a second replacement survey with a cover letter sent by certified mail. Certified mail demands that the recipient sign for the letter. Since many respondents were not at home when the survey was delivered, the postal service would leave a note requesting the addressee to pick up the letter at the post office. In each of the surveys, some small fraction of the sample would complain that the inconvenience of having to pick up a survey at the post office was annoying to them. The innovation of using priority mail in the last step greatly reduced this inconvenience, and indeed we received no complaints about the sequence of mailings.

[3] . Outliers (houses with 350 or fewer square feet or prices with less than $70,000) were excluded from the analysis. The regression only includes houses with prices between $70,000 and $700,000. The regression model is applicable only to houses around the median home price of $150,500.

[4] To calculate the weighted average commuting distance, employment figures by zip code from the Census Bureau's ZIP Business Patterns data and the square mileage of each zip code in Chatham, Durham, Johnson, Orange, and Wake counties were assembled to compute employment per square mile. The areas with the highest employment concentration include downtown Raleigh, Research Triangle Park, the University of North Carolina-Chapel Hill, and Duke University. Distance to each of the top 12 employment concentration zip codes was computed for each respondent location. Each distance was

weighted by the gross level of employment to compute a single weighted average commute measure. The hypothesized relationship between the WAC and house price was expected to be negative: houses located close to multiple employment centres were hypothesized to command higher prices, ceteris paribus.

[5] . Enrolment figures were obtained from the National Center for Education Statistic's Public Elementary/Secondary School Universe Survey, 1998–1999. The weighted average ABC Score for all schools in a zip code was considered the measure of educational quality for all the homes in that zip code. The mean score was 77.2 with a standard deviation of 16.5. The scores ranged from a low of 67.7 for zip code 27591 in Wendell to a high of 89.8 for 27560 in Morrisville.

REFERENCES

Angelin, P.M. (1997), Determinants of Buyer Search in a Housing Market. Real Estate Economics 25, pp. 567–589.

Baryla, E.A. & L.V. Zumpano (1995) Buyer Search Duration in the Residential Real Estate Market: The Role of the Real Estate Agent. Journal of Real Estate Research 10, pp. 1–13.

Clark, W.A.V. & R. Flowerdew (1982), A Review of Search Models and their Application to Search in the Housing Market. In W.A.V. CLARK, ed., Modelling Housing Market Search, pp. 4–29, London: Croom Helm.

Dillman, D. (1978), Mail and Telephone Surveys: The Total Design Method. New York: Wiley.

Dillman, D. (2000), Mail and Internet Surveys: The Tailored Design Method. 2nd ed. New York: Wiley.

Huff, J.O. (1982), Spatial Aspects of Residential Search. In W.A.V. Clark, ed., Modelling Housing Market Search, pp. 106–129, London: Croom Helm.

Kim, S. (1992), Search, Hedonic Prices and Housing Demand. Review of Economics and Statistics 74, pp. 503–508.

Moore, E.G. & L.A. Brown (1970), Urban Acquaintance Fields: An Evaluation of Spatial Models. Environment and Planning A 2, pp. 443–454.

Palm, R. (1995), Earthquake Insurance: A Longitudinal Study of California Homeowners. Boulder CO: Westview Press.

Palm, R. & J. Carroll (1998), Illusions of Safety: Cure and Earthquake Hazard Response in California and Japan. Boulder CO: Westview Press.

Read, C. (1993), Tenants' Search and Vacancies in Rental Housing Markets. Regional Science and Urban Economics 23, pp. 171–183.

Rothschild, M. (1973), Models of Market Organization with Imperfect Information: A Survey. Journal of Political Economy, 81, pp. 1283–1308.

Roychoudhury, C. & A.C. Goodman (1996), Evidence of Racial Discrimination in Different Dimensions of Owner-Occupied Housing Search. Real Estate Economics 24, pp. 161–178.

Smith, T.R. & W.A.V. Clark (1980), Housing Market Search: Information Constraints and Efficiency. In: W.A.V. Clark & E.G. Moore, eds. Residential Mobility and Public Policy, pp. 100–125, Beverly Hills: Sage Publications.

Smith, T.R., W.A.V. Clark & J. Onaka (1982), Information Provision: An Analysis of Newspaper Real Estate Advertisements. In: W.A.V. CLARK, ed., Modelling Housing Market Search, pp. 160–186, London: Croom Helm.

Teixeira, C. (1995), Ethnicity, Housing Search, and the Role of the Real Estate Agent: A Study of Portuguese and Non-Portuguese Real Estate Agents in Toronto. Professional Geographer 47, pp. 176–183.

Wolpert, J. (1965), Behavioral Aspects of the Decision to Migrate. Papers of the Regional Sciences Association 15, pp. 159–169.

Yinger, J. (1981), A Search Model of Real Estate Broker Behavior. American Economic Review 71, pp. 591–605.

Yinger, J. (1986), Measure Racial Discrimination with Fair Housing Audits: Caught in the Act. American Economic Review, 76, pp. 881–892.