

WP 2006-01
January 2006



Working Paper

Department of Applied Economics and Management
Cornell University, Ithaca, New York 14853-7801 USA

Terrorism and Residential Preferences: Evidence in New York State

David Kay, Charles Geisler, and Nelson Bills

It is the Policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age or handicap. The University is committed to the maintenance of affirmative action programs which will assure the continuation of such equality of opportunity.

Terrorism and Residential Preferences: Evidence in New York State

Abstract

This paper uses 2004 polling data for New York State residents to examine the relationship between attitudes about terrorism threats, in the aftermath of 9/11, and residential preferences. The analysis shows that, risk aversion notwithstanding, the percentage of people planning to move because of added risks of terrorism was low but proximity to the New York City core increases this impulse slightly. The status quo is pronounced. People weigh flight against the solidarity and security of established social networks and opt to take their chances with the latter. Despite a widely reported consensus that further terrorist attacks are coming, our findings reinforce the conclusion that this is a relatively small consideration in residential location decisions. Connections between threat awareness and location are strongest in Upstate New York urban places. In rural upstate New York, arguably communities with least perceived threat, terrorism seems to have fortified residents' tendencies to stay put.

Introduction:

Scholars have probed the factors which contribute to global city status and repeatedly documented the advantages such cities enjoy over less prominent urban centers (Clark, 2003; Sassen, 2001; Smith and Timberlake, 2002; Taylor, 2004). Little has been ventured, however, about the disadvantages of high profile global cities. Among these is the vulnerability to violence inflicted by groups alienated by the power and lifestyles concentrated in such cities. In striking important targets in global cities, terrorists have found a potent way to activate global conflict, transcending forms of cross-border warfare that only a generation ago were triggered by declarations of war between nation states.

Risk has been elevated to a spectacular plane as global cities reveal vulnerability to terrorism. In September of 2001 New York City was terrorized by the use of nonmilitary weapons, civilian airliners, seemingly designed to amplify the symbolic, psychological, political, and economic repercussions of the attack. The residents of London, Madrid, Tokyo, New Delhi, Paris, Cairo, Bonn, Caracas, Mexico City, and Washington D.C. are all witnesses to the fact that the attacks on New York City, for all their gravity, were not unique. These residents, and those of other "pinnacle urban places," face a landscape of risk potentially different from the crime, congestion, and staggering costs of living that often accompany urban life. One option is to exit. Urban flight has long been fed by the yearning of city dwellers for an enhanced sense of security (Low 2003). Removing oneself and one's family from cities perceived as vulnerable to terrorism is a risk-reduction strategy that urban dwellers may find increasingly compelling in response to this dramatic new risk.

If terrorism has indeed created a new dynamic of location preferences, there could be implications for urban form, city vitality, rural development, and a host of other topics linked to sprawl, smart growth, and related land use issues. Terrorism's relation to these topics has received provisional attention. Several authors have reasoned that terrorism is

unlikely to drive large changes in existing development patterns (Eisinger 2004, Rossi-Hansberg 2004, Glaeser and Shapiro 2001), though Baen (2003) dissents.

However, this work is largely speculative and deduced from historical and cross cultural precedent. Analysis of preferences and related market effects that is grounded in observation of empirical data in the United States is still thin. Krueger (2004) summarizes evidence that New York City's residential real estate markets, while not unscathed by 9/11, have exhibited a hardy resilience. Comparing immediately pre- and post/9-11 samples far from Manhattan in Columbus, Ohio, however, Roe, Irwin, and Morrow-Jones (forthcoming) find statistically significant changes in residential preferences. Elsewhere they found (Morrow-Jones, Irwin and Roe 2002) that in the immediate aftermath of 9/11 Ohio households were "more likely to avoid more urban and densely populated neighborhoods and are more likely to choose more rural, lower density neighborhoods. In other words, the attacks of September 11th appear to have greatly increased the importance of low density as a desirable neighborhood characteristic."

The generalizability of these limited results is unclear. Several empirical questions are worthy of further analysis: Has the heightened security threat had measurable effects on the individual calculus of neighborhood and residential choice? How widespread are any effects? Have longstanding if idealized preferences of urban populations for rural and small town living been reinforced? If location preferences have indeed been affected, is the influence important enough to substantively affect observed behavior in the real estate market? Finally, can we distinguish in the residential market between effects of 9/11 and other influences behind the on-going drift of Americans to nonmetropolitan places? This paper seeks answers to several of these questions.

Date Sources and Study Location

Early in 2004 a Cornell University survey of New York State residents (the annual Empire State Poll, or ESP) provided insights into the relationship between attitudes about terrorism threats and residential preferences.¹The ESP's stratified random sample generated 820 responses from New Yorkers living in upstate and downstate locations.² A supplemental sample of 200 residents from non-MSA upstate counties permitted contrasts to be drawn between downstate, upstate "rural" (non-MSA) and upstate "urban" (MSA) counties. In what follows, we report descriptive as well as multivariate statistical results that address the questions just posed.

These 2004 data provide a unique research opportunity. They are collected in the state that shouldered the major burdens of the United States attacks. Their time of collection is fortuitous as well. Immediately after 9/11, there was speculation in the

¹ Every listed household within New York State had an equal chance of inclusion. Once the household was sampled, every adult had an equal chance of being interviewed. In no more than one time in twenty should chance variations in the sample cause the results to vary by more than 3.5 percentage points from the answers that would have obtained if all New York state residents had been interviewed.

² Downstate was defined as New York City, Westchester, and the Long Island counties, with the remaining counties of the state defined as Upstate. Comparisons between the overall state and the two geographic regions occur with a one in twenty chance of sampling error greater than 4.9 percentage points.

popular media that fear in high profile urban areas would force the relocation of city residents to other states or lower profile (often more rural) places of residence (Furfaro 2001; Krueger 2004). Realtors, planners, and service providers outside the urban core braced themselves and waited. Since then, business journalists and other close observers of housing preferences, including some far from New York City, have continued to speculate whether terrorism has influenced residential real estate markets. (Krueger 2004; Bassine 2003; Wasserman 2003). By 2004, potential out-migrants in urban areas had digested much additional information about their risk levels and their alternatives. The shock had, to some degree, worn off and New Yorkers could respond to ESP questions with perspective.

Substantively, the 2004 survey was well tailored to the questions we have identified and put a test of the following hypotheses within our reach:

Risk Aversion Hypothesis (A) – High density urban areas are a demonstrated terrorist target. Because a majority of people are risk averse, more people will now prefer to live outside of urban centers, reinforcing preexisting preferences for suburban and rural, lower density locations.

Stability Hypothesis (B) – Terrorism is likely to reinforce preferences for stability. When people feel vulnerable, the importance of proximity to family and friends, known social networks and survival systems, and sticking to familiar routines increases. People living in rural areas will have their preference for rural areas reinforced, but unlike in Hypothesis A, urban residents will also be less likely to want to move.

Salience Hypothesis (C) – Residential choice involves complex behavioral change with multiple determinants that involve planning, lifestyle change, major financial commitments, and long term decision making. From this perspective, terrorism is in fact an issue with comparatively low salience and little relation to attitudes about residential location. Little or no change will be visible in attitudes or in behavior after three years of relatively tranquil living and working have passed.

Readers will note in the first two of the above hypotheses that background migration patterns are referenced. We therefore begin with an overview of a potentially confounding context—recent nonmetropolitan demographic trends, first for the nation and then for New York State.

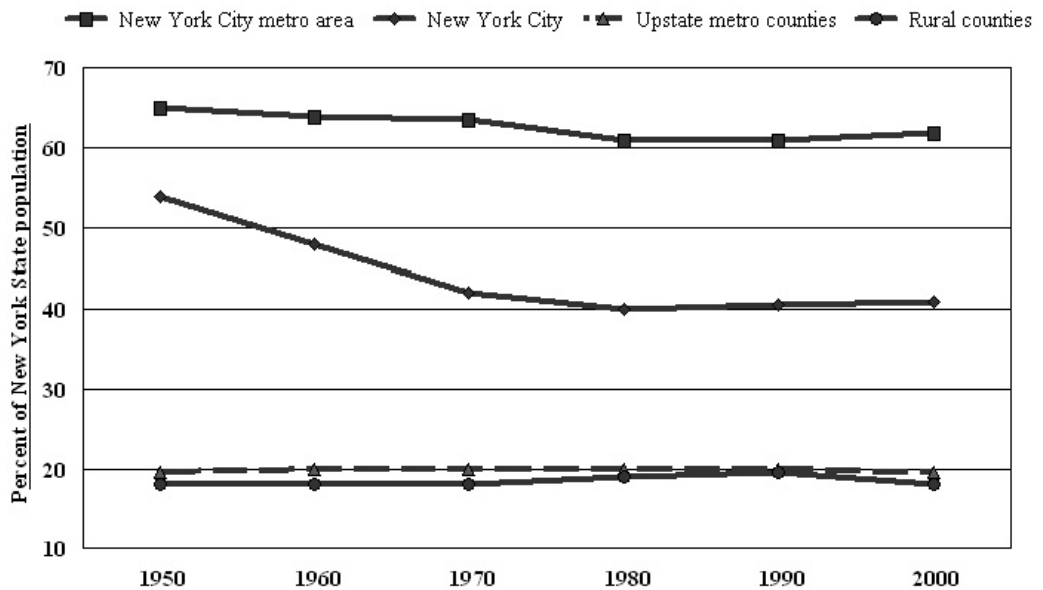
Pre-9/11 Metropolitan and Nonmetropolitan Growth

Deciding which motivations spur Americans to relocate to nonmetropolitan areas has long interested planners as well as demographers. Several years before 9/11, Johnson and Beale (1998) summarized the research on nonmetropolitan population growth and concluded that most rural areas in the U.S. were growing at a rate unprecedented in over 20 years. In the 1970s and 1980's, as more people retired and commuting distances yawned, rural living boomed. But other forces were at work as well. Beale (1978:49) underscored the fear factor: "...with the continued crises in the cities over racial conflicts,

riots, pollution, crime, and drugs, how long could the traditional sources of attraction to cities outweigh the disenchantment and second thoughts that were bound to affect the decisions of individuals and businesses?”

More recently, Pendall (2003) highlighted the movement of people, jobs, and businesses out of upstate city centers during the 80’s and 90’s as a consequence of sprawl. But downstate appeared to be different. Because of population concentration in New York City, small demographic out migrations can have significant ripple effects on suburbs and outlying rural areas. According to Eberts and Merschrod (2004), between 1950 and 1970 the City's population was stable, but fell as a percentage of the state total. In the 1990s, however, the City’s growth achieved the impressive rate of 9.4 percent independent of its suburbs (Figure 1). The same authors worried that this growth might be stymied by the events of 9/11 but found solace in the City’s recovery from previous set-backs and its status as a world-class city. Like others (e.g., Eisinger 2004, GAO 2002), they speculated that any population loss would be temporary and that the relevance of 9/11 would fade. Our follow-up research, based on opinion poll as opposed to census data, may be viewed as a test of this “resiliency theory” and its implications for residential preference in New York State.

Figure 1. Percent of New York State population in selected groupings of counties, 1950-2000

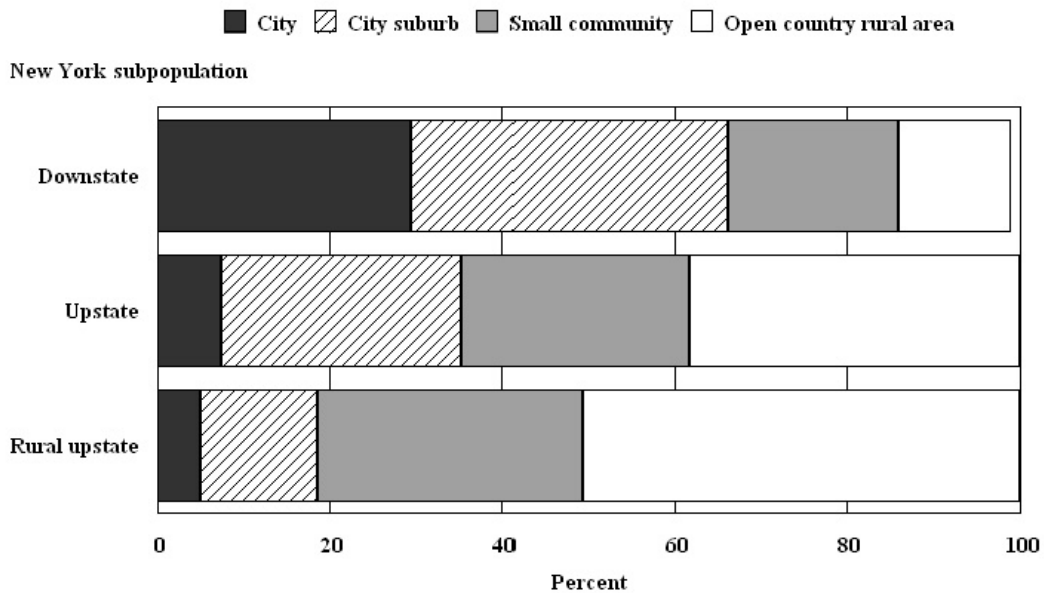


Source: Eberts and Merschrod (2004)

2004 ESP Descriptive Results

Empire State Poll data for 2004 indicate that several of the residential preference patterns found nationally through the early 1990's (Brown et al. 1997) were also observable in New York State a decade later. Figure 2 broadly confirms majority satisfaction with existing location. Thus, 67% of respondents from the most heavily urbanized downstate counties prefer to live in cities or city suburbs, while 82% of respondents from upstate rural counties state their preference for rural and small town locations. The latent pressure for population movement out of the urban centers is also in evidence.³ Clearly, many small and rural communities of the state would be transformed if even a small fraction of the 33% of downstate residents and 59% of urban upstate residents wishing to live in more bucolic locations actually shifted to nearby small town and rural environs.

Figure 2. If you could choose the kind of community to live in, which would you prefer?



The 2004 ESP also probed into respondents' attitudes about the terrorist attack. Earlier state and national poll results (Huddy 2002, Eisinger 2004) had documented initial high anxiety levels focused in the vicinity of New York City, though anxiety had already abated everywhere over time. When asked in 2004 to identify the "most

³ Though some residents of the most populous downstate and upstate urban counties already live in locations they might describe as a "small community" or "open country rural area", the vast majority of such residents live in the urban core of their county. The portion of the downstate population living in the urban core ranges from 100% in New York City to 97% in Westchester County. In upstate counties containing the state's large cities, the percent of population in the urban core is 93% (Rochester), 91% (Buffalo), 90% (Albany), and 87% (Syracuse). (US Census Bureau)

important issue facing New York State”, just 7 percent of downstate respondents designated security/terrorism as the most important issue. This proportion was higher than the one and two percent in the upstate urban and rural samples respectively.

Consistently, Figure 3 shows that a large majority of the state’s residents (three quarters or more, depending on the urbanization/metro status of their county) asserted that their residential location preferences had not been affected by the attacks. However, within the minority that was affected, a significantly greater proportion of downstate residents were represented compared to urban upstate residents. Interestingly, the proportion of rural upstate residents affected was also greater than for the urban upstate residents, and in fact was quite similar to that in the downstate region. In each type of county the number of respondents whose preferences were strengthened outstripped the percentage with weakened preferences. Rural residents’ preferences were vastly more likely to be strengthened than weakened (23% vs. 3%). The split was less dramatic in the upstate urban counties (11% vs. 3%) and was much closer to parity (13% vs. 8%) in the downstate counties.

Figure 3. Has the ongoing threat of new terrorist attacks changed your preferences for the kind of community to live in?

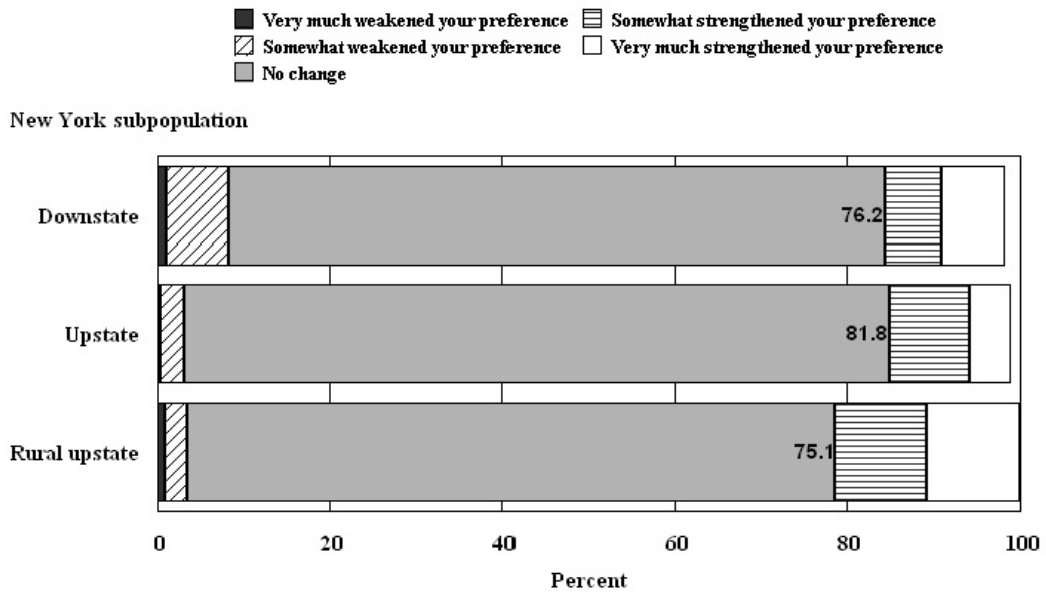
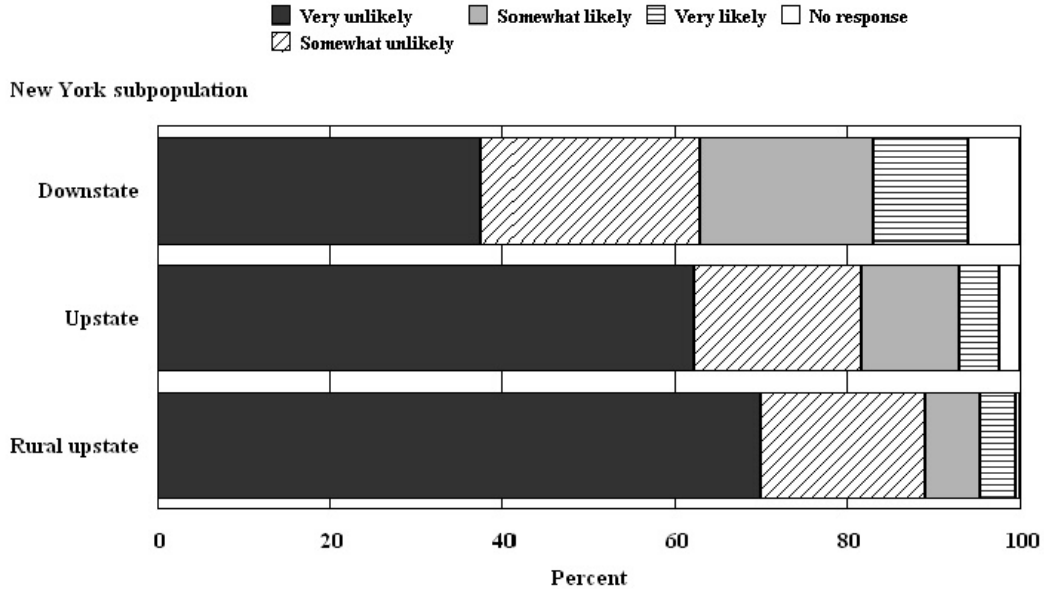


Figure 4. How likely do you think it is that your local community will suffer an attack as serious as the one in New York City and Washington, DC some time in the next 12 months?



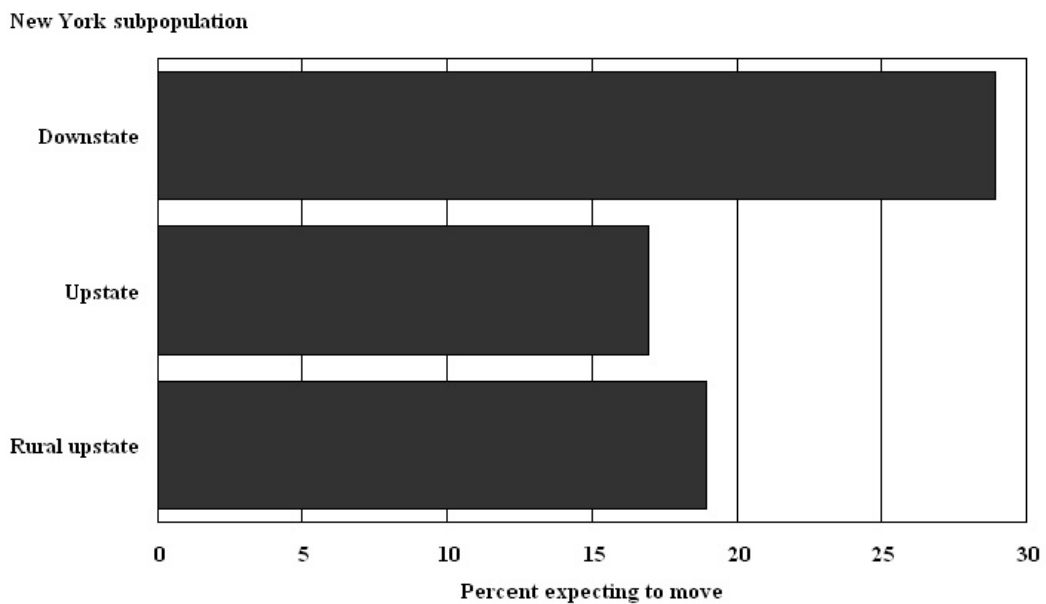
These results are consistent with an overall preference for lower risk non-metro locations, but do not directly address that issue. The results, reframed using existing preferences rather than the type of county as the point of reference, again support the conclusion that the threat of terrorism has strengthened preferences for small communities and rural locations, and undermined preferences for city locations. Individuals with preferences for city/suburban living were least likely (only 16/18%) to say that the ongoing threat of terrorism had affected their preference, while those who prefer small town/rural living were more likely (27/23%) to say the threat has affected their preference. Moreover, the threat of terrorism had strengthened more than it had weakened preferences for small town/rural living by a factor of approximately five to one. In contrast, the number of residents with a weakened preference for a suburban location nearly equaled the number with a strengthened preference, and the number of residents with a weakened preference for an urban location was double the number whose preference was strengthened.

Two additional questions from the ESP asked respondents how likely they thought a major terrorism attack would be during the upcoming year, first in their own communities and second elsewhere in the U.S. Downstate residents were significantly more concerned about their communities than were residents elsewhere in the state (Figure 4). Just over one in ten downstate residents thought an attack in their community was very likely, nearly twice the proportion of upstate residents. About one in three downstate residents thought an attack very or somewhat likely. At the other end of the spectrum, only 38% of residents of downstate counties thought an attack very unlikely,

much less than the 60% of urban upstate and 70% of rural upstate residents who thought an attack was very unlikely.

Logically, many more people thought an attack likely somewhere else in the United States. Fewer than one in four New Yorkers were sanguine enough to believe that an attack on the U.S was very or somewhat unlikely. Unlike the concerns about one’s own community, this proportion varied little across the downstate and upstate county groupings.

Figure 5. Do you expect to be living in your community (approximately your county) five years from now?



Several other items in the state poll shed light on perceived community risk. Respondents were asked to compare across the “full range of possible risks” the overall security of their community against that of other U.S. communities. The sense of security was highest upstate, with insignificant differences between rural and urban upstate counties. Conversely, insecurity was clearly highest downstate. Nevertheless, only 7% of downstate residents said their community was among the nation’s “least secure”.

Finally, the relationship between the level of perceived risk of a terrorist attack in the respondents’ community and their expectation of leaving their community within five years was explored. This is the closest the survey data takes us to an association between attitudes and behavior.

Responses to the question, “Do you expect to be living in your community (approximately your county) five years from now?”, again varied by geography. Figure 5 shows that the percentage of respondents expecting to move was greater downstate (29%) than upstate (17-18%). For both the downstate and upstate urban respondents, proportionately more residents who thought an attack likely said they expected to move within five years (35% vs. 29% of those saying an attack was unlikely in downstate counties; 21% vs. 18% in urban upstate counties; 15% vs. 18% in rural upstate counties). However, none of the two way chi-square tests pass standard thresholds of statistical significance. Reinforcing this lack of significance, perhaps, is the fact that none of those expecting to move mentioned terrorism-related motivations for moving in an open ended follow up question. A similar bivariate look at the relationship between the expectation of moving and the designation of “security/terrorism” as the most important issue facing New York State also revealed no statistically significant differences.

The analysis to this point lends some provisional weight to the logic of Hypothesis A (Risk Aversion), though the bivariate relationship between perceived risk and planned relocation was statistically insignificant. Most New Yorkers did not feel at risk of terrorist attack in their 2004 place of residence. Among those who did, however, proximity to the global city was an evident factor. Those living in upstate places felt safer than did those living in and adjacent to that city. We also found that rural residents were almost as likely as downstate residents to report that their residential preferences were affected by the 2001 attacks. However, for rural residents, preferences for rural living were more likely reinforced than changed. Among these respondents would likely be some who themselves had recently relocated and others who sensed that more people were now opting to move to rural localities.

With these findings on the relationship between 9/11 risks (as perceived directly and indirectly) and locational preference in mind, we now move to multivariate regression analysis to authenticate what has been provisionally established to this point.

Multivariate Analysis

Has the experience of September 11, 2001 and the way New Yorkers subsequently perceive the risks of terrorism affected their choices on where to locate their place of residence? Are more people relocating from urban to rural areas because of concern about terrorism? Data linking actual changes in residential location to perceptions of risk are required to address these questions fully. We are not aware that such data currently exist. However, the 2004 ESP polling data provide a first approximation by allowing us to see if there is a statistical relationship between concerns about terrorism and plans to relocate to a different community. If a relationship between this planned behavior and risk perception can be shown to exist, the case is strengthened that demographic and economic trends exhibited in New York State’s post 9-11 rental and real estate markets are influenced by concerns about terrorism.

The hypothesis addressed by this analysis is that individuals who perceive high risks of terrorism in their community will be more likely to have relocation plans. Given

the singular nature of the 2001 attack on New York City, we expect that concerns about terrorism will be most prevalent in New York City and that such prevalence will decrease progressively across the downstate region as a whole. Similarly, within the upstate counties, we expect concerns to be higher in the urban counties and lowest overall among residents of rural counties. Insofar as this is true, we hypothesize that the relationship between concerns about terrorism and plans to relocate should be most evident in the New York City population and least evident among the rural upstate population.

Responses to a number of ESP survey questions were analyzed using a multinomial logistic regression framework so that other variables influencing decisions to relocate could be controlled.⁴ This approach is structured so as to enable classification of respondents, in this case as either a) planning to move from the community or b) expecting to remain in the community, based on a set of predictor variables including indicators of perceived risk and demographic status. In addition, it enables estimates of the size and direction of the influence a given risk or demographic variable has on the likelihood that a respondent plans to stay or leave. The focus of this analysis was to determine if there were statistically significant and logically consistent relationships between stated plans to stay or leave and variables related to the perceived risks of terrorism.

The variables used in our multivariate analysis and basic statistics accompanying them appear in Table 1. Many of these statistics were introduced in the previous section, though Table 1 breaks out results for New York City. The dependent variable (STAYHERE, 1=yes) captures the responses of residents asked if residents “expect to be living in their community (approximately the county) five years from now”. The proportion of respondents planning to move was lowest upstate and highest in New York City.

Three questions provided measures of the perceived terrorist risks associated with living in the community. LOCLATTK and USATTK, with responses ranging from “very unlikely” to “very likely”, were based on the questions, “How likely do you think it is that [your local community or county/elsewhere in the United States (outside your local community)] will suffer an attack as serious as the one in New York City and Washington, DC some time in the next 12 months?” Rural residents were most inclined to think an attack “elsewhere” (including downstate) was likely, and as noted above, a much higher proportion of New York City/downstate residents thought an attack on their community was likely.

Respondents were also asked directly whether “the ongoing threat of new terrorist attacks [had] strengthened, weakened, or left unchanged your [previously stated] preference for living in a city/city suburb/small community/open country/rural area?” A simple binary version of this response (i.e. the threat has had an effect or not) constitutes the variable NEWLOCPREF.

⁴ An alternate analytic procedure for binary dependent variables is logistic regression. However, when all predictors are categorical or any continuous predictors take on only a limited number of values, a multinomial framework is preferred (SPSS).

Table 1. Number of observations and mean scores for each geographic area

Item/variable name	Description	New York City	Downstate (incl. NYC)	Urban Upstate	Rural Upstate
Geographic area					
No. observations		294	407	321	292
Dependent variable					
STAYHERE	Expects to be living in county in 5 years (Binary: 1=yes)	0.639	0.678	0.794	0.812
Independent variables					
USATTK	1-5 Scale: Likelihood of attack elsewhere in US (1=very unlikely)	3.69	3.75	3.70	3.84
LOCLATTK	1-5 Scale: Likelihood of attack locally (1=very unlikely)	2.60	2.42	1.78	1.60
NEWLOCPREF	Urban /rural location preferences changed by 9/11 (Binary: 1=yes)	0.242	0.227	0.143	0.253
CHNGLOCPREF * RURURBPREF	Urban/rural location preferences were strengthened (s)/ weakened (w) / no change (nc) Binary: 1=yes				
City, w		0.038	0.033	0.006	0.003
City, nc		0.322	0.246	0.082	0.042
City, s		0.024	0.018	0.000	0.000
Suburbs, w		0.042	0.033	0.009	0.017
Suburbs, nc		0.255	0.294	0.290	0.093
Suburbs, s		0.042	0.043	0.025	0.017
Rural, w		0.024	0.020	0.019	0.010

Table 1, continued

Rural, nc		0.171	0.234	0.483	0.609
Rural, s		0.080	0.080	0.085	0.208
TOTAL		1	1	1	1
TOPPROBLEM	Security/terrorism is top problem (Binary: 1=yes)	0.075	0.074	0.012	0.021
RISKLOHI	1-5 Scale: My community is relatively secure (1=among the least secure)	3.23	3.34	3.88	3.86
SAFETYCRIME	1-10 Scale: Satisfaction with crime rates (1=not at all satisfied)	5.58	5.98	6.70	7.19
DENSPREF	1-3 Scale: Preferred neighborhood density				
	Higher	0.041	0.032	0.047	0.065
	Lower	0.371	0.381	0.168	0.147
	About right	0.588	0.585	0.785	0.781
GENDER	Binary (Respondent was female=1)	0.541	0.545	0.536	0.521
PARTY	1-3 Scale: Political affiliation				
	Democrat	0.605	0.550	0.280	0.250
	Republican	0.085	0.120	0.324	0.370
	Other	0.276	0.302	0.377	0.363
BA_GRAD	Respondent has one or college/graduate degree (Binary: 1=yes)	0.456	0.479	0.414	0.332
YOUNGKIDS	Young children at home (Binary: 1=yes)	0.265	0.273	0.268	0.318
OLDERKIDS	Older children at home (Binary: 1=yes)	0.204	0.211	0.249	0.260
RACE	Binary: 1=Caucasian	0.289	0.432	0.919	0.942
FAMSIZE	Median size of family	2	3	3	3
RELIGION	Religious affiliation (Binary: 1=Christian)	0.497	0.543	0.673	0.702

However, the three responses (strengthened, weakened, or unchanged) refer to the previously stated preference for living in a city, a city suburb, or a small town/open country rural area. Thus, in interaction nine possible response categories cover the possibilities from weakened preferences for city living to strengthened preferences for rural living. Introducing this interaction as a set of dummy variables to the regression (as an alternative to NEWLOCPREF, or CHNGLOCPREF * RURURBPREF) tests whether the likelihood that respondents in any one of the nine categories plan to move differs from those in the other eight categories.

Another ESP question that connects location to the risk of terrorism asked respondents to identify the “single most important problem facing people in New York State today” from a list that included “security/risk of terrorism” in a list of 11 items (also including employment, education, crime, etc.). TOPPROBLEM is a binary variable assigned 1 if security/risk of terrorism was selected. Only a small minority ranks this issue as the top problem, even in the New York/downstate counties. Moreover, while this indicator juxtaposes concern about terrorism with location, the question’s references the entire geography of New York State. Because this encompasses such a varied terrain it seems unlikely to reflect directly on a planned move.

Two other variables measure perceptions of personal safety and community security. First, on a ten point satisfaction scale, respondents ranked a number of community services or characteristics. Of most interest is “safety and crime” (SAFETYCRIME). Satisfaction levels were lowest in New York City and highest in the upstate rural counties. Within each sample, we expect higher levels of satisfaction to positively influence the probability that the respondent is planning to stay in the community. Second, broadening the scope of concern about “security” as broadly as possible, RISKLOHI summarizes responses to the question: “Most people want to live in a community in which risks are low. As you think about the full range of possible risks, how secure do you feel your community is compared to others in the United States?” Respondents answered on a five point scale, from among the least to most secure. Again, higher perceptions of security should be positively related to plans to stay in the community.

An additional variable capturing preferences for lower or higher density living at the neighborhood level was also included: “Thinking of your neighborhood, would you like to see a higher or lower density of population, or is it about right (DENSREF)?” Although individuals dissatisfied with density often leave a neighborhood without leaving an area altogether, we included this measure to see if there is nonetheless a relation between dissatisfaction with density at the neighborhood level and stated plans to leave the area. Our data show that while most respondents are satisfied with their neighborhood density, the vast majority of dissatisfied prefer lower rather than higher densities, even in the upstate rural counties. Downstate residents prefer lower density by much larger margins than do upstate residents; presumably, downstate or urban county dwellers wishing for lower density would be the least likely to expect to stay in their communities.

Finally, a number of personal and demographic characteristics of respondents were included as routine controls on the likelihood of moving. They include gender, political affiliation, level of education, family size, presence in the households of younger and older children, race, and religious identification. Reflecting known population differences, higher proportions of upstate residents are white, republican, and Christian. Upstate respondents were also more likely to have children and less likely to have graduated from college. Note that several variables (family size, children) are related to life cycle factors known to influence decisions to move.

Multinomial Logistic Regression Results

Table 2 presents results of the regressions on the four data samples respectively: the New York City sample only, the downstate sample including New York City, the sample of Upstate urban counties, and the sample of Upstate rural counties. A series of regression models were tested for each sample, with blocks of related variables successively introduced. We report in Table 2 results for the final, most comprehensive model (other results are available upon request). The two variables most directly related to perceived risks of the community to terrorism (USATTK and LOCLATTK) were included in all models, while other variables were allowed to enter the model in a forward stepwise procedure if they met a .10 significance level criterion.

Only in the upstate urban sample was either USATTK or LOCLATTK significant at acceptable levels of statistical confidence. In this case, the USATTK was highly significant in all model variations and actually tended to increase slightly in significance as other variables were introduced. We interpret the positive coefficient to show that the more likely urban upstate residents think a terrorist attack is in other parts of the country, the greater the odds that they plan to stay in their communities for at least five more years. This direction of effect is as expected, though the fact that the variable is significant in the sample of upstate urban communities but not in any other sample is cautionary, particularly in light of the low pseudo R-square. Note, also, that the urban upstate residents were the least likely group to say that the attacks had influenced their locational preferences. According to the $\exp(B)$ values estimated for this sample, an increase of one rank of perceived likelihood of attack elsewhere (e.g. from very unlikely to somewhat unlikely) increases the odds of remaining in the community by a factor of 1.46.

Although none of the estimated LOCLATTK parameters are significant, it is noteworthy that the sign on this parameter was negative across all but one model tested in all up and downstate samples, including the models reported in Table 2. Despite the statistically weak relationship, this negative sign is at least consistent with the hypothesis that the greater the expectation of an attack locally, the lower the odds that the respondent plans to still live in the community within five years.

Turning to the other terrorism related variables, the indicator TOPPROBLEM did not achieve an acceptable level of significance in any model in any of the geographic samples. Though not reported in Table 2, NEWLOCPREF was significant and negative

Table 2. Multinomial logistic regression results for New York City, Downstate (incl. NYC), Urban Upstate, and Rural Upstate Samples(a)

	Model 1	Model 2	Model 3	Model 4
Geographic area	New York City	Downstate (incl. NYC)	Urban Upstate	Rural Upstate
Number of cases	294	407	321	292
Cases dropped due to missing data	24	41	30	20
Cells with 0 frequency	50%	50%	50%	50%
Dependent has only 1 value,				
	100%	100%	100%	100%
Chi-sq, significance	0	0	0.001	0.001
Nagelkerke Pseudo R-Square (0-1 range)	0.188	0.207	0.095	0.177
Percent correct	69%	71%	82%	83%
Dependent Variable				
STAYHERE = yes	64%	68%	82%	82%
Intercept				
Beta - B	0.243	-0.621	-1.082	1.724
significance	0.752	0.382	0.108	0.02
Independent Variables				
USATTK: Beta - B	-0.007	0.081	0.379	0.121
significance	0.948	0.436	0.003	0.384
exp(B)	0.993	1.084	1.461	1.128
LOCLATTK: Beta - B	-0.057	-0.059	-0.061	-0.02
significance	0.57	0.525	0.675	0.926
exp(B)	0.945	0.943	0.941	0.986

Table 2, continued

CHNGLOCPREF*RURURBPREF:

significance	-1.725	-1.467	(b)	-2.584
exp(B)	<i>0.059</i>	<i>0.07</i>		0.011
	0.178	0.231		0.075
Beta – B (unchanged preference for cities)	(b)	0.817	(b)	-1.888
significance		0.098		0.02
exp(B)		2.264		0.151
Beta – B (unchanged preference for suburbs)	(b)	(b)	(b)	-1.85
significance				0.002
exp(B)				0.157
Omitted base: strengthened rural preference				
SAFETYCRIME: Beta - B	0.135	0.175	0.209	(b)
significance	0.03	0.001	0.001	
exp(B)	1.145	1.192	1.232	
DENSPREF: Higher preferred				
significance	-0.079	-0.573	(b)	-1.32
exp(B)	0.918	0.445		0.02
	0.924	0.564		0.267
DENSPREF: Lower preferred				
significance	-0.677	-0.611	(b)	-0.23
exp(B)	0.02	0.018		0.631
	0.508	0.543		0.794
DENSPREF: Omitted base “About right” dummy excluded				
GENDER: Beta - B	(b)	(b)	(b)	(b)
PARTY: Democrat				
significance	(b)	0.15	(b)	(b)
exp(B)		0.576		
		1.161		

Table 2, continued

PARTY: Republican

	(b)	1.629	(b)	(b)
significance		0.004		
exp(B)		5.099		
PARTY: Omitted base “Other”, dummy excluded				
BA_GRAD: Beta - B	(b)	(b)	(b)	(b)
YOUNGKIDS: Beta - B	(b)	(b)	(b)	(b)
OLDERKIDS	(b)	(b)	(b)	(b)
RACE	(b)	(b)	(b)	(b)
FAMSIZE	(b)	(b)	(b)	(b)
RELIGION	(b)	(b)	(b)	(b)

a) USATTK and LOCLATTK forced into model, others enter stepwise

b) Variable does not enter model in forward stepwise procedure at .10 significance

in some versions of the model for the New York City and downstate samples. This is consistent with the expectation that downstaters influenced by the attacks would be more likely to want to move away.

The alternative interaction variable reflecting a self-reported effect of the attacks on location preference (CHNGLOCPREF * RURURBPREF) included significant parameters as well, at least at a relaxed 0.1 level, for the downstate samples and also for the rural sample. Although we did not have clear expectations of relationships across each of the nine cells, in the New York/downstate samples we expected that individuals with weakened preferences for city living or strengthened preferences for rural living would be most likely to plan to move. In the rural upstate sample, we anticipated that individuals with weakened preferences for city living or strengthened preferences for rural living would be more likely than others to want to stay where they are. Negative coefficients on the significant terms signal a decreased likelihood of staying (increased likelihood of moving) compared to the benchmark group. The benchmark group was selected to be that with strengthened preferences for rural locations. Only coefficients that reflect significant differences from the benchmark are shown in Table 2.

The negative parameters on “weakened preference for suburbs” appear in all three samples with significant beta values (New York City, downstate, and rural). They suggest that residents with increased anxiety about terrorism’s effects on city suburbs are more likely to want to move than are those with a heightened preference for rural areas. For downstate residents, then, the push of fear may outweigh the pull of security, while rural residents with decreased draw to the suburbs are still more likely to plan to move than are those whose preference for living in a rural area was deepened.

Two other highly significant results obtain within the rural sample. Rural respondents with a strengthened preference for rural areas were more likely to plan to remain in their communities than were their rural neighbors who sustained their preference for either suburban or city locations despite the threat of terrorism. The latter would naturally be more likely to plan to leave a rural location behind.

The RISKLOHI and SAFETYCRIME variables, each representing different aspects of concern about safety and security not directly linked to terrorism, both had significant coefficients in all of the regional samples except the rural upstate one. In other words, while crime and overall perceptions of security showed up as influences on plans to move in the downstate and upstate rural areas, these factors were not important in the rural upstate area. In all cases, the positive coefficients conformed to our expectation that a perception of greater security in the community would lead to a greater probability of staying in the community. The consistently strong significance levels of the crime indicator underscores its importance. However, the more general RISKLOHI variable was not significant in each region's final model (and is therefore not included in Table 2) even as the significance of SAFETYCRIME increased, suggesting some correlation between the two measures.

The only other variable that achieves threshold levels of significance in a number of the models is the density preference variable, DENSPREF. The New York City and downstate results furnish the logical evidence that residents who prefer lower density neighborhoods are more likely to plan to move from their downstate communities than are those who are satisfied. This variable is not significant in the urban upstate sample. However, the significant results in the rural upstate sample are again logical, indicating that rural respondents who prefer higher density neighborhoods are more likely to plan to move from their communities than are those who are satisfied.

Finally, though race, family size, and party affiliation were significant in some formulations of the preliminary models, the more striking result is the lack of consistent explanatory power of any of these demographic variables in relation to plans to move. We suspect that additional demographic variables that more closely reflect life stage changes that typically drive location change (age, marital, or job status, etc.) would show up as significant in further analysis.

Conclusion

In this analysis we have sought to anticipate spatial responses to perceived risks of terrorism in a global city arena profoundly unsettled by terrorist attacks five years ago. Unlike threat responses in earlier eras, when citizens sought refuge in city precincts, global city culture is an anathema to certain terrorist groups today. This increases the vulnerability of high profile cities to attack, particularly as military strategies shift to "fourth generation warfare" (Lind, 2003), that is, from the clash of armies to the clash between suicide bombers and civilians.

Our analyses should be of use to planners preparing for the eventuality of population loss from high density places. Because residential choice is influenced by a mix of risk perceptions and demographic realities, we have controlled for these factors. With respect to our hypotheses, we found evidence that the percentage of people planning to move because of terrorism was low, though proximity to the global city increased this impulse slightly. Indeed, the status quo—either contemplating no move or moving without reference to terrorist attacks—was pronounced. Such risk may have paradoxical “stabilizing effects”: people weigh flight against the solidarity and security of established social networks and employment zones and most often opt for the latter.

These findings reinforce the conclusion that terrorist threats are a relatively small consideration on the greater game board of residential location decisions. In rural upstate New York, highly buffered from threat conditions, terrorist apprehensions seem to have fortified residents’ tendencies to stay put. This is probably buttressed by lower salience of other risks (such as crime) in rural places and strong local ties to fall back on in emergencies. Possibly, some rural residents surveyed in 2004 had already moved from “harm’s way” after 9/11 and wanted to justify their actions. This said, some rural residents wished to relocate to suburban areas where terrorist attacks were construed as “just another risk” among many.

This research is but one step in grasping the spatial reconfiguring powers of terrorism among planners. The uncertain future of terrorism may reinforce existing locational tendencies, or it might reorient them entirely. As we are reminded by societies with longer experience in such matters, terrorist acts could migrate from global cities to smaller localities with universities, research centers, military installations, or religious headquarters. Research on residential responses to the anxieties of terrorism remains in its early stages.

List of References

Baen, John S. 2003. The Implications of September 11, 2001 and Terrorism on International Urban Form and Various Classes of Real Estate. Paper presented at the American Real Estate Society (ARES) Meeting, Monterey, California April 3 - 5, 2003. Available at: <http://www.coba.unt.edu/firel/Baen/911article.htm>

Bassine, David. 2003. "Fear of Terrorism. Gotham Gazette. September 29.

Beale, C. 1978. "People on the Land." Pp. 37-54 in T.R. Ford (ed.), Rural U.S.A.: Persistence and Change. Ames: Iowa State University.

Brown, David L., Glenn V. Fuguitt, Tim B. Heaton, and Saba Waseem. 1997. "Continuities in size of place preferences in the United States, 1972-1992" Rural Sociology, 62(4):408-428.

Clark, D. 2003 (2ND. ed.) . "Urban World, Global City". London: Routledge.

Eberts, P.R. and K. Mershcrod. 2004. "Socioeconomic Trends 2000 and Well-Being Indicators in New York State, 1950-2000". Albany: NYS Legislative Commission on rural Resources.

Eisinger, Peter. 2004. "The American city in the age of terror: A Preliminary Assessment", Urban Affairs Review, Vol. 40, No. 1, 115-130.

Furfaro, Danielle T. 2001. "Housing market swiftly regains stride." The Times Union (Albany, NY) September 22 p. b9.

Glaeser, Edward L. and Jesse M. Shapiro. 2001. "Cities and Warfare: The Impact of Terrorism on Urban Form. December 2001. Harvard Institute of Economic Research Discussion Paper Number 1942. Harvard University Cambridge, Massachusetts.

Huddy, Leonie; Khatib, Nadia; Capelos, Theresa. 2002. The Polls --Trends. Public Opinion Quarterly, Vol. 66 Issue 3, pp. 418-450.

Johnson, K.M. and C.L. Beale. 1998. "The Rural Rebound," Wilson Quarterly 12 (Spring):16-27.

Krueger, Alan B. 2004. "The commercial resilience of New York is clear three years after the 9/11 attacks. The New York Times." September 16. p. c2

Lind, Wm. S. 2003. "Wars Without Countries," The American Conservative (April 7):19-21.

- Low, Setha. 2003. *Behind the Gates: Life, Security and the Pursuit of Happiness in Fortress America*. New York, Routledge.
- Morrow-Jones, Hazel A., Elena G. Irwin, Brian Roe. 2002. *The Impact of The Sept. 11 Terrorist Attacks on Factors that Influence the Decision to Stay, Remodel or Move Among American Metropolitan Households*. 2001/02 NSF SGER Project.
<http://aede.osu.edu/programs/exurbs/homeowners/May02%20report.htm>
- Pendall, Rolf. 2003. *Sprawl Without Growth: The Upstate Paradox*. The Brookings Institution, Survey Series, Washington, D.C.
- Roe, Brian and Elena G. Irwin and Hazel A. Morrow-Jones. Forthcoming. *Changes in Homeowner Preferences Following September 11, 2001*. *Applied Economics Letters*
- Rossi-Hansberg, Esteban. 2004. *Cities under stress*. *Journal of Monetary Economics* 51: 903–927
- Sassen, S. 2001. *The Global City: New York, London, Tokyo*. Princeton: Princeton University Press
- Smith, D. and M. Timberlake. 2002. *Hierarchies of Dominance Among World Cities: A Network Approach*. Pp. 117-144 in S. Sassen (ed.), *Global Networks: Linked Cities*. New York: Routledge.
- SPSS. 2005. *Choosing a Procedure for Binary Logistic Regression Models*. SPSS Regression Models 13.0.
- Taylor, P.J. 2004. *World City Network: A Global Urban Analysis*. London: Routledge
- Van Crevald, M.L., 1991. *The Transformation of War*. New York: Free Press.
- Wasserman, Joanne. 2003. "Home for sale – sign of the times" *Gotham Gazette*. September 29.

OTHER A.E.M. STAFF PAPERS

SP No	Title	Fee (if applicable)	Author(s)
2005-05	Agricultural Biotechnology Risks and Economic Development: A Call for a Public-Private Partnerships to Stimulate Investments into African Biotechnology Industries		Roy, S. and R. Christy
2005-04	Smallholders' Cost Efficiency in Mozambique: Implications for Improved Maize Seed Adoption		Zavale, H., Mabaya, E. and R. Christy
2005-03	Adoption of Improved Maize Seed by Smallholder Farmers in Mozambique		Zavale, H., Mabaya, E. and R. Christy
2005-02	Farm Savings Accounts: Examining Income Variability, Eligibility, and Benefits		Gloy, B., LaDue, E. and C. Cuykendall
2005-01	Market Opportunities for New Sauerkraut Products		Cuellar, S. and W. Uva
2004-01	Medicaid, County Property Levies, and Property Tax Levies on New York Farmland		Bills, N.
2003-04	A Brief Overview of Mozambique's Rural Development and the Role of US Assistance		Kyle, S.
2003-03	Political and Economic Prospects for Mozambique and Angola		Kyle, S.
2003-02	We're Rich!! Or Are We? Oil and Development in Sao Tome e Principe		Kyle, Steve
2003-01	Marketing New York Wine in New York City		Presler, T.
2002-04	Impacts of Trade Liberalization on the New York Horticultural Sector		G. B. White, N. L. Bills, and I. Schluep
2002-03	Insights Into the Economic Viability of a New CEA System Producing Hydroponic Lettuce		Ilaslan, G., G.B. White, and R.W. Langhans
2002-02	Health Care and Genesee County, New York: Economic Implications of Reduced Hospital Services		Bills, N. and D. Kay

To order single copies of AEM publications, write to: Publications, Department of Applied Economics and Management, Warren Hall, Cornell University, Ithaca, NY 14853-7801. If a fee is indicated, please include a check or money order made payable to Cornell University for the amount of your purchase. Visit our web site: (<http://aem.cornell.edu/research/sp.htm>) for a more complete list of recent papers