Mismatch Between Preferred and Actual Mixed-Use Neighborhood Types
Evidence from a City with Extreme Forms of Mixed-Use – Taipei

Abstract

In the wave of promoting sustainable development, compact city, smart growth, and neo-traditional neighborhoods, mixed land use has regained wide popularity among academics and planners to reduce auto-dependency, among other goals. Some research examined dissonance between actual and preferred neighborhood types in terms of automobile- versus transit-orientation, determinants of dissonance, and impacts of neighborhood preferences on choice. However, limited research has explicitly examined factors affecting choices and/or preferences for types of mixed-use neighborhood, extent and determinants of dissonance between preferred type of mixed-use neighborhood and their choice, and how this neighborhood preference affects residential choice.

The purposes of this paper are threefold. First, it will investigate factors that affect choices/preferences for different sizes of grain of diverse land uses, e.g., within-building, within-block, and between-block mixes. The factors include personal and household socio-economic characteristics, types of residence where they reside, and personal transportation modes. The second goal is to examine the extent and socioeconomic determinants of mismatch between neighborhood preferences and choices in terms of mixed-use types. The final purpose is to gauge the extent to which people can act upon their mixed-use preferences when choosing a residential neighborhood.

Key words: Mismatch, Mixed Land Use, Spatial Scale, YIMBY, NIMBY

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To conduct this research, the city of Taipei, Taiwan is selected for two reasons: one the one hand, it is one of the most land-use-mixed cities worldwide, providing experiences of various types of mixed-use neighborhoods; on the other hand, its mass rapid transit system started operating only some ten years ago (1996), which might affect people's transportation and residential self-selection. Descriptive statistics and multinomial logit models will be applied. Data needed for this research consist of second-hand socioeconomic data and a telephone survey compiled in early February, 2006. The sampling method for the survey was multistage cluster sampling: the first step randomly sampled phone numbers from yellow pages; and then, in order to incorporate those not listed in the yellow pages, the last four digits of the sampled phone numbers were replaced by a randomly selected four-digit number. Policy implications would then be developed for land use plan around transit station areas such as TOD, and the city in general.

1. Mixed Land Use

Mixed use is one of the primary components of neo-traditional development (TND) and transit oriented development (TOD), which are two popular models for pursuing sustainable development, and new urbanism. As discussed in the continuing debate over the role of land use as market-oriented or planning-oriented approach, the role of mixed use policy is still inconclusive. However, understanding mismatch between preferred and actual mixed-use neighborhoods could not only satisfy the market needs, but also lead to its success.

Unfortunately, little research addresses mixed-use mismatch, possibly due to limited cases. In addition, only limited research addresses mismatch in terms of TOD neighborhood characteristics as a whole. Under these circumstances, Taiwan could shed some light on this mixed-use mismatch topic since mixed-use communities overwhelm in the country, and extreme mixed-use-form, such as in-building mixed-use can be found easily there.

Past research shows that mixed use can be defined by types of uses, such as being mixed with same use of different intensity, compatible uses, incompatible uses, or even public facilities. It can also be defined by spatial scale wherein degree of mixed use is measured, such as in-building, in-block, or between-block mixed use.

Various levels of mixed use may imply different objectives and divergent strategies. For instance, fine-grain mixing creates vibrant neighborhoods. Jobs/housing makes more sense at intermediate spatial scale. The impact of in-building mixed use may differ from that of in-block mixed use regarding housing amenity, but not shopping accessibility.

There's a few reasons why Taipei or Taiwan is so mixed. First, "In-home" household-operated small business is very popular. Second, 3-4-story townhouses are widely preferred, where living space is located above business premise. Then, high real estate prices make it difficult to own respective housing and business spaces.

Mixed-use mismatch is too mixed or the other way around. There is some potential factors that might explain or cause mixed-use mismatch. For example,

one person might opt for mixed use but also for low density, which rarely exist in the some area. Also, preferences of household members may conflict each other. Short of preferred neighborhood types can be another factor, which is related to planning policy. Utility maximization theory assumes that, subject to budget and housing-market constraints, households will choose the alternative that corresponds best with their preferences. (Schwanen and Mokhtarian 2004)

Past research shows that US research focuses more on encouraging mixing, or 'Yes, in my backyard'(YIMBY) -oriented research, as opposed to tolerance level of Taiwan research, or 'No, not in my backyard' (NIMBY) -oriented research. Also, in the decision of housing location, household consider both accessibility brought by more mixed use and residential amenity resulted from less mixed use.

2. Research Methods

To conduct this research, the city of Taipei is selected. Descriptive statistics and multinomial logit models are be applied to investigate the extent of mixed-use mismatch from aggregate and disaggregate aspects. Data needed consist of second-hand socioeconomic data and a telephone survey compiled in early February, 2006. The sampling method for the survey was multistage cluster sampling: the first step randomly sampled phone numbers from yellow pages; and then, in order to incorporate those not listed in the yellow pages, the last four digits of the sampled phone numbers were replaced by a randomly selected four-digit number. The sample size of this survey is 543.

Mixed-use neighborhoods are classified by spatial scale into four types: In-building mixed-use residential, in-block mixed-use (residential), between-block mixed-use (residential), and residential neighborhood. The actual mixed-use types of a household ideally should be measured by their residential location and land use data. However both data are difficult to collect in Taiwan, so self-reported data are used instead.

3. Mixed land-use in Taipei

Here are some basic housing and neighborhood information collected from the survey. First, more than 90% of households live in condominium (Figure 1).

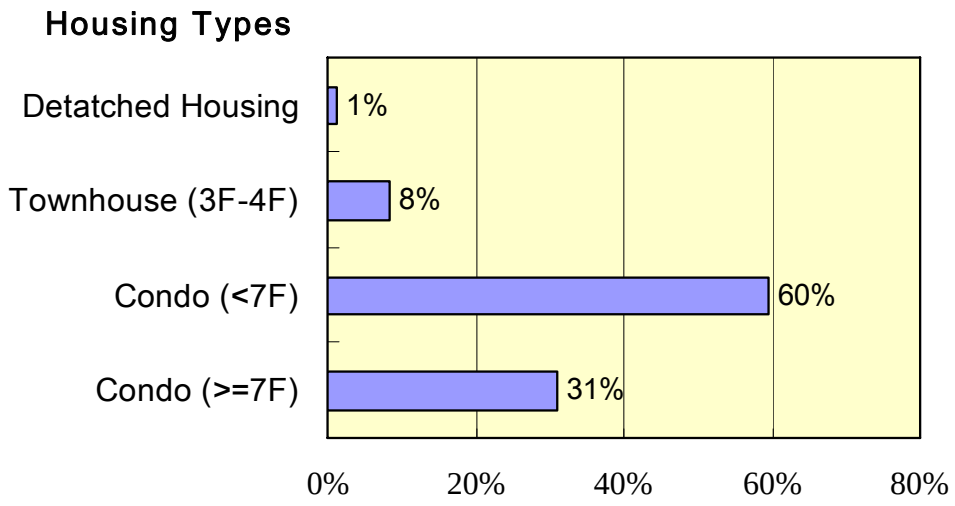

Figure 1 Housing Types in Taipei

Some 40% of households live in neighborhoods of some mixed-use. Households live in mixed-use buildings is ten percentage points (Figure 2).

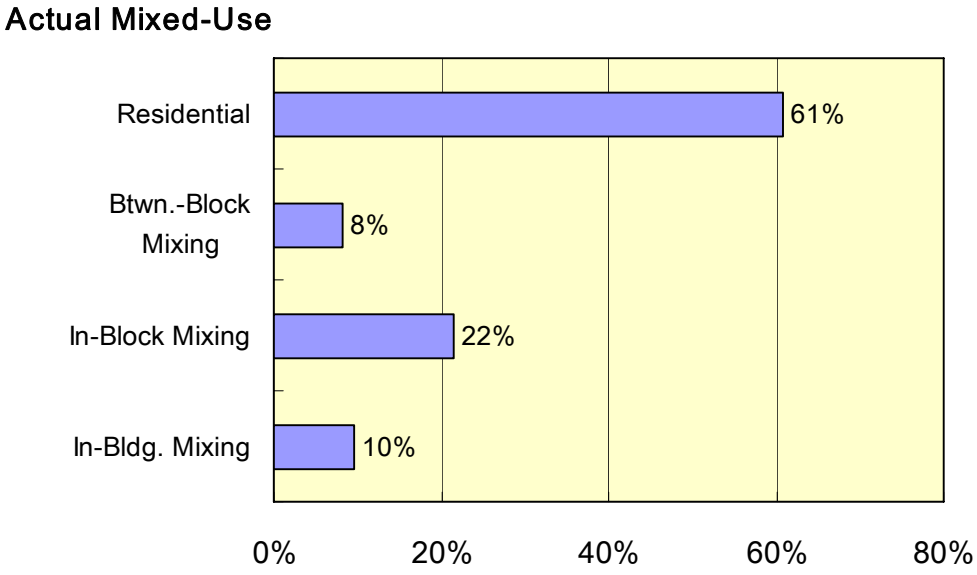

Figure 2 Distributions of Actual Mixed-Use Neighborhoods in Taipei

Furthermore, less in-building mix-use households report that accessibility is increased than in-block and between-block mixed use households. However, more of them report that amenity is degraded than the other two groups (Table 1).

The majority (56%) is not residing in their preferred mixed-use neighborhood type. More households prefer more mixing than less mixing （35% vs. 21%）. Nearly half of Households residing in residential neighborhood prefer to live in more mixed-use settings. About three quarters of Households residing in building with mixed use prefer to live in less mixed-use settings. Half of them still prefer commercial use in the neighborhood, but not in the buildings. Between-block mixed-use is under supply, compared to the over-supply of residential neighborhoods.

Table 1 Reported Impacts of Mixed-Use, by Increasing Accessibility and by Decreasing Amenities

		In-Bldg. Mixing	In-Block Mixing	Btwn.-Block Mixing
		%	%	%
Increasing Accessibility	Disagree	37%	23%	20%
	Some disagree	13%	8%	8%
	Neutral	24%	27%	27%
	Some Agree	17%	34%	39%
	Agree	8%	9%	7%
		100%	100%	100%
Decreasing Amenity	Disagree	38%	41%	42%
	Some disagree	26%	23%	23%
	Neutral	14%	16%	22%
	Some Agree	20%	15%	9%
	Agree	2%	5%	4%
		100%	100%	100%

4. Mixed land-use in Taipei

Different from the above (aggregate) analysis above, which investigates mixed-use mismatch at the market level, the following multinomial logit model investigates the extent to which individual household can act upon their mixed-use preference when choosing a residential neighborhood. Three sub-models are developed: residential, between-block mixed-use, and in-block mixed-sue sub-models.

The results of the models are shown in this table. The McFadden R square is 0.187. Below are brief findings derived from the sub-models. First, from the no-mixed-use residential model, households with preference for no-mixed-use setting are quite satisfied by the market in terms of quantity and quality. Those with preference for no-mixed-use residential neighborhoods are 8.6 times more likely to live in their preferred neighborhood than those with preference for In-building mixed-use neighborhood.

In addition, those households preferring no-mixed-use neighborhoods are less likely to live in their preferred neighborhoods. If they prefer to live in low-rise buildings with small spacing, also, they are more less likely to live in their preferred no-mixed-use neighborhood (more mismatched) if the worker of household is self-employed or own their own business.

From the in-block mixed-use residential model, households with preference for in-block mixed-use setting are quite satisfied by the market in terms of quantity and quality, which is similar models.

Finally, the between-block mixed-use model shows that between-block mixed-use neighborhood is under-supplies, possibly due to its quantity or overall quality.

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Table 2 Residence Choice of Mixed-Use Neighborhood Type: Multinomial Logit Model

Variable	Model

Preference for Residential Mixed-Use									
No-Mixed-Use Residential (1=No-Mixed-Use; 0=In-Building Mixed-Use)	2.15	0.00	8.59						
Between-Block Mixed-Use Residential (1= In-Block Mixed-Use; 0=In-Building Mixed-Use)				(0.25)*	(0.73)	(1.29)			
In-Block Mixed-Use Residential (1=In-Block Mixed-Use; 0=In-Building Mixed-Use)	2.13	0.02	8.39				1.86	0.03	6.43
Preference for Building Spacing Type:									
Low-Rise Buildings with Small Building Spacing (Given a Fixed Residence Density) (1=Low-Rise Buildings with Small Building Spacing; 0=Taller Buildings with Wider Building Spacing)	1.54	0.01	4.67	2.17	0.00	8.72	1.00	0.07	2.71
Socio-Economic Characteristics:									
Age under 25 (1=25 or over; 0= under 25)	-2.10	0.08	0.12						
Number of Household Automobiles				-0.82	0.05	0.44			
Job: (Other=Jobs other than (1) through (5) below)									
(1) Employee (1=Employee; 0=Other)									
(2) Business Owner (1=Business Owner; 0=Other)	-2.72	0.02	0.07				-1.95	0.10	0.143
(3) Self-Employed (1=Self-Employed; 0=Other)	-2.42	0.07	0.12						
(4) Housewife (1=Housewife; 0=Other)	-3.12	0.02	0.04				-2.62	0.05	-0.08
(5) Retired or Unemployed									
Transportation Mode:									
Transportation Mode to Work=Auto or Moped (1=Auto or Moped; 0=Other)	-1.26	0.01	0.28						
Transportation Mode for Shopping= Moped (1= Moped; 0=Other)	1.10	0.03	3.00						
Neighborhood Characteristics:									
Width of Road in front of Residence (Including Street Parking Space)									
(1) Road Width=1-2 Lanes (1=1-2 Lanes; 0=5 Lanes or more)	2.71	0.00	14.96	1.26	0.11	3.53	1.45	0.01	4.27
(2) Road Width=1-2 Lanes (1=3-4 Lanes; 0=5 Lanes or more)	1.30	0.04	3.68	1.88	0.02	6.53			

Number of Cases	
-2L(c): Log Likelihood Function Value, Constant-only Model	
-2L(B): Log Likelihood Function Value, Parameterized Model	
Model Chi-Square (Probability):-2[L(c) - L(B)]	148.1 (0.00)
Pseudo R^2	0.187 (McFadden R^2) 0.379 (Nagelkerke R^2)
% of Cases Correctly Predicted	63.3%

* Wald test ** Statistics insignificant.

5. Conclusion and Policy Implications

Much evidence collected from aggregate or disaggregate analysis suggest that the between-block mixed-use neighborhoods need to be increased. It could be achieved by adjusting locations of commercial or mixed-use blocks into residential neighborhoods. In addition, many prefer commercials “not in my building”, but “across the street.” Besides, Between-block mixed use is under-supplied. More people think in-building mixed-use degrades amenity than increase accessibility.

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