

NEWS & RELEASE

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How long will the office tenant continue to stay?

Analysis of Length of Occupancy | Office Tenants in Tokyo 23 Wards

Xymax Real Estate Institute estimated the Average Occupancy Period of Office Tenants (Tokyo 23 Wards), which is represented by the time until fifty percent of the tenants to depart from the building, estimated with the Kaplan–Meier method.

Currently available indicators in the real estate market include data of market rent and rental growth of office buildings, but very few indicators of the occupancy period exist due to difficulties in obtaining and analyzing data.

This analysis may be used in various situations related to real estate management by the real estate market players as a guide of tenant turnover assumptions when estimating income from the asset.

Findings from Analysis

- Average Occupancy Period of Office Tenants: 10.0 years (120 months)
 (From the start of the occupancy to the time until fifty percent of the tenants to depart from the building)
- Comparison by Building & Tenant (1 tsubo = 3.3 sqm)

Building Location	Tokyo Central 5 Wards: 8.7 years ↔ Tokyo Other Wards: 13.8 years
Building Gross Floor Area	Over 2,000 tsubo: 11.1 years ↔ Below 2,000 tsubo: 9.4 years
Building Age	Constructed after 1991: 9.7 years ↔ Constructed before 1990: 10.5 years
Space Occupied by a Tenant	Over 100 tsubo: 11.1 years ↔ Below 100 tsubo: 9.4 years

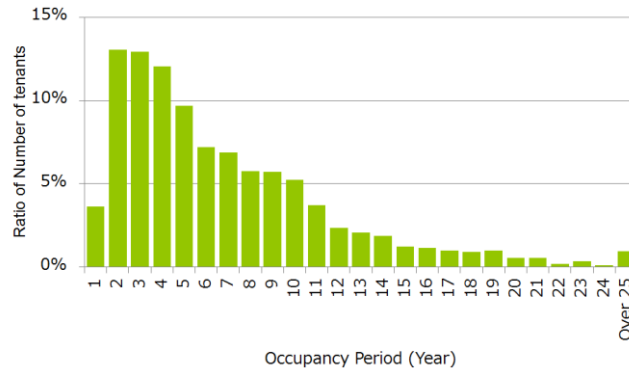
Data used in Analysis

Subject	Office tenants of office buildings in Tokyo 23 Wards (352 buildings, 2018 tenants)
Period	September 1967 – December 2013
Occupancy Started	Month of the initial start of occupancy by the tenant
Occupancy Ended	Month of the final departure of the tenant
Occupancy Period	Period from occupancy to departure (in number of months) Average length: 6.4 years (76.7 months)
Ending Flag	Tenants that have already departed from the office building as of the date of this analysis (803 tenants) and tenants that occupy the office space on the date of this analysis (1,215 tenants) are analyzed distinctively.
Type of Building	Location: Tokyo Central 5 Wards (68.4%) Building Age: Constructed in 1990 (average) Gross Floor Area: 1,890 tsubo (average)
Type of Tenant	Size of Space Occupied by a Tenant: 100 tsubo (average)

Occupancy Period Distribution

Figure 1 shows the distribution of the occupancy period, ranging from less-than two years to over 20 years. The average length of occupancy calculated by dividing the aggregated occupancy period by the number of tenants is 6.4 years (76.7 months).

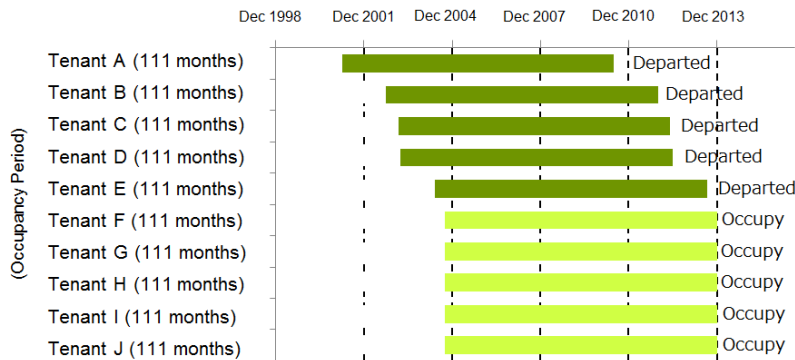
Figure 1: Distribution of Occupancy Period



Background & Method of Analysis: Departed Tenants & Ongoing Tenants

Figure 2, as an example, shows tenants with a same occupancy period (111 months or 9.25 years). The left edge of the bar represents the start of occupancy, and the right edge of the bar represents the end of occupancy. Bars of the ongoing tenants as of the date of this analysis (December 2013) are shown in light color.

Figure 2: Start and End of Occupancy (Tenants with 111 months occupancy)



As the graph above shows, the occupancy period of the departed tenants has been determined, but that of the ongoing tenants is undetermined because the tenants are expected to continue to stay. Accordingly, although all the above ten tenants have the same occupancy period as of the date of this analysis, each of the occupancy period represents a different meaning. When it comes to analysis of data like this, it is appropriate to use a method that can separate the departed tenants and ongoing tenants.

We, therefore, applied one of the survival analyses called Kaplan-Meier method (see below) which is often used in medical, engineering and marketing researches. With this method, we can separate the undetermined data (ongoing tenants) from other data (departed tenants) and find out the trend of the ratio of remaining tenants.

Survival Analysis

Death, failure or contract expiration is considered an "event" in the survival analysis. The rate of occurrence of the event is modeled. Time to event or factor of occurrence of event is analyzed. This method is used in many fields including the medication analysis and the survival analysis after operation in medical research, rate of failure analysis in reliability engineering, and customer survival analysis in marketing.

Kaplan-Meier Method

One of the survival analyses. No particular probability distribution needs to be assumed in the estimation of the survival rate. Explanatory variable is not included in this method. In our analysis, the departure of tenants is considered an "event", tenants that occupy the space as of the date of analysis, a "censored data", and the ratio of remaining tenants, a "survival rate".

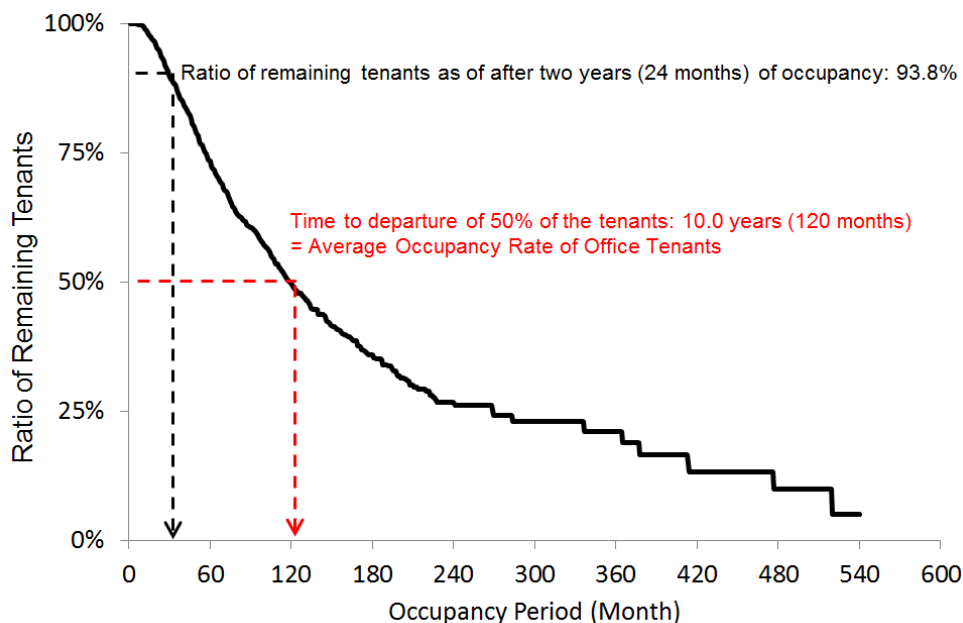
Analysis Result: Time until fifty percent of tenants to depart is 10 years

The ratio of remaining tenants by the length of occupancy derived from the Kaplan-Meier method is shown in Figure 3. The ratio of remaining tenants at the initial point is 100% (occupancy period = 0 month). The ratio decreases as the occupancy period becomes longer.

Our analysis found that the period from the start of the occupancy to the time until fifty percent of the tenants to depart from the building (Average Occupancy Rate of Office Tenants) is 10 years. This means that fifty percent of tenants continue to stay beyond 10 years.

In Japan, lease of office space is generally a two-year contract. Figure 3 shows that 93.8% of tenants continue to stay over two years; in other words, only 6.2% of tenants leave within two years. Regardless of the length of the initial contract, many tenants renew the lease and stay longer than two years.

Figure 3: Ratio of Remaining Tenants by Length of Occupancy

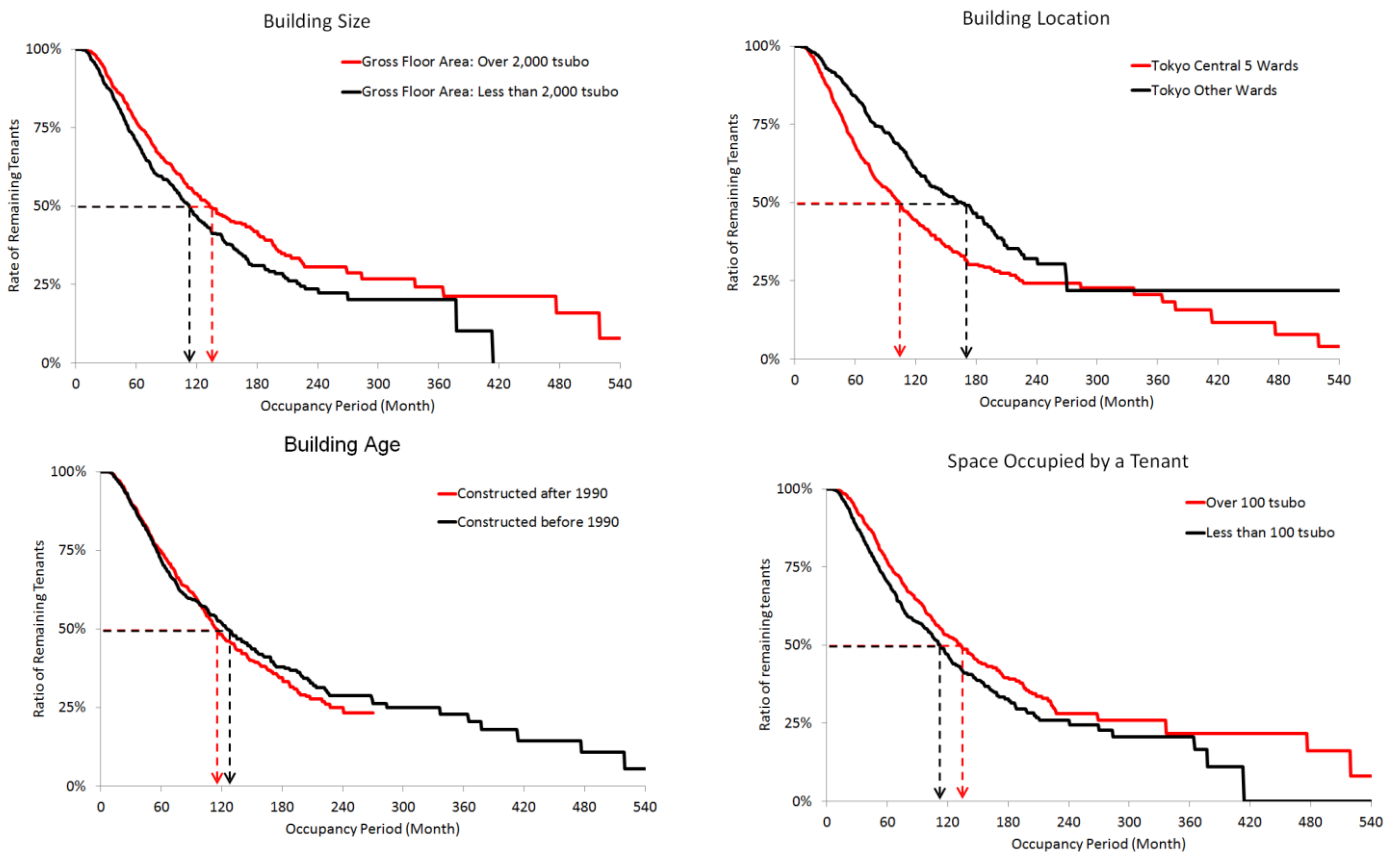


Comparison of Occupancy Period by Building & Tenant

Figure 4 compares the ratio of remaining tenants and Average Occupancy Period of Office Tenants based on attributes of the buildings (location, size, age) and tenants (occupied area).

The location comparison shows that the occupancy period in Tokyo Central 5 Wards was 8.7 years, shorter than 13.8 years in Tokyo's other wards. The building size comparison found that large-sized buildings (GFA over 2,000 tsubo) have a slightly longer occupancy period at 11.1 years, than buildings with less than 2,000 tsubo GFA at 9.4 years. The building age comparison resulted in only a marginal difference: 9.7 years for buildings constructed after 1991 and 10.5 years for buildings constructed before 1990. The tenant's occupied area comparison shows a slightly longer occupancy period for tenants of 100 tsubo or more at 11.1 years than tenants of less than 100 tsubo at 9.4 years.

Figure 4: Average Occupancy Period of Office Tenants by Building & Tenant



Total rental income from office buildings come closer to the market level every time the tenants change. Office buildings with longtime tenants mean market changes are relatively slowly reflected into the rental income since tenants rarely move in and out. In contrast, office buildings with shorter average occupancy period may be relatively easier to reflect the market to the rental income quickly.

Reference:

- 1) Atsushi Takizawa, Shuhei Matsubara, Naoki Kato, and Atsushi Kobayashi. (Sep., 2010). *An analysis of occupancy and vacancy lengths of tenants in office buildings in Tokyo five wards*, Journal of Architecture Planning, Architectural Institute of Japan, Vol.75 No.655
- 2) John P. Klein, Melvin L. Moeschberger. *Seizon Jikan Kaiseki* (translated into Japanese by Mamoru Uchinami) Original Title "Survival Analysis"