



## **PROPERTY MONITOR DYNAMIC PRICE INDEX (DPI) USER GUIDE**

Index Manual & Methodology (2019)

# PROPERTY MONITOR DYNAMIC PRICE INDEX (DPI) USER GUIDE

## 1. Introduction and Overview

Real estate markets globally are cyclical in nature and when analyzed overtime not only show short-term patterns for seasonality or new development project launches but the greater long-term trends of property value and the impacts of macroeconomic factors. There are several statistical methods that could be used to calculate the trends in Dubai property values, the simplest of which would involve calculating the average of the sales prices recorded for properties during a period. However, more complex statistical methods are generally preferred in order to control for variations in mix of properties being transacted, outliers and unusual transactions, and changes in data volumes during each period. These methods and the resulting creation of price indices are important to ensure that the underlying trend in property values is captured, rather than changes in the characteristics of the properties being transacted.

In emerging markets, it's common for additional historic transactional data to be digitized and made available, as well as previously confidential or limited access datasets to be made public. Traditional indices have not been built to incorporate the addition of new data and at the end of a reporting period are deemed to final. This approach is problematic and leaves room for inaccuracies and ongoing misrepresentation of market trends.

Property Monitor ("PM"), a leading real estate data analytics and market intelligence provider, has developed a next generation family of indices utilizing a vast pool of historic datasets, proprietary algorithms, and machine learning, the Property Monitor Dynamic Price Index (Property Monitor DPI) family. The Indices are built to dynamically repopulate should any new datapoint or datasets become available always ensuring that the fullest data set available is incorporated.

The Property Monitor Dynamic Price Index family and the current methodology that is employed to calculate the Indices is detailed in this User Guide.

## 2. Market Coverage

The Property Monitor Dynamic Price Index family (the "Property Monitor DPI", "PMDPI", "DPI", "Index" or "Indices") are indicators of trends in Dubai property prices measuring the changes in values during a particular time period for particular geographic market areas. The Indices cover Dubai at the macro Emirate level and 42 Dubai localized geographic community levels.

A full list of the Property Monitor Dynamic Price Index family is available at: [propertymonitor.ae/pmdpi/index-list](https://propertymonitor.ae/pmdpi/index-list)

## 3. Data

### Data Sources

Property Monitor DPI utilizes what we believe is the most comprehensive pool of datasets aggregated from both government and private organizations. Datasets included in the Indices are as follows and the total datapoints incorporated from such aggregate to c.110,000 p.a.:

- DLD sales registrations for new development projects / Off-Plan properties (Oqood registrations)
- DLD sales registrations for completed projects and Resale market (Title Deed registrations)
- RICS surveyor valuations
- Active Listings
- Off Market (historical and withdrawn listings)
- Pending Sales (SPA / MOUs)

### Cleansing

Property Monitor DPI follows a stringent cleansing process whereby extreme values, outliers, and potentially erroneous and inaccurate datapoints that are atypical and may distort the series are removed from the dataset. Asking prices are discounted to allow for any brokerage transaction negotiation margin, using a proprietary arithmetical formula calculated by PM and representative of actual transactions relative to original asking prices. Additionally, Property Monitor DPI uses a number of criteria to select which datapoints to include, for example:

- Property type: Apartments, Townhouses, Villas
- Minimum and maximum property sizes that align with the property type and geographic location, and known property availability
- Minimum and maximum property price per square foot that align with the property type and geographic location, and known property availability
- Sales occurring at an "arms-length" that represent true market prices.

### Sample Size

The number of datapoints that are used for a given month will depend on the volume of monthly sales activity and out of these only those datapoints that meet the criteria of the cleaning process. The monthly sample size will therefore vary from month-to-month. Communities included in Property Monitor DPI are subject to minimum monthly sample size of datapoints.

Property Monitor's comprehensive pool of datasets provides a sufficient sample size to produce a representative property price series. Net figures quoted in PM's monthly, quarterly and annual reports are not a guide to the sample size used in Property Monitor DPI as variances will occur due to the cleansing and basket selection processes.

The DLD is the official land department in Dubai and responsible for the registration of transaction and transfer of ownership for all Off-Plan and Resale properties.

Cavendish Maxwell is the primary supplier of RICS surveyor valuations for inclusion in the Indices and the company is currently the UAE's largest surveying firm with a market share of the valuations conducted that has averaged c.40% over the last three years. This allows Property

Monitor to be confident that the series that incorporates valuation datapoints that are representative of the whole property market and compiled only by qualified RICS valuers.

Property Monitor's subscribers and third-party data providers are subject to audits for all Active Listing and Pending Sale transactional datapoints submitted. Collectively this pool of brokerage and developer industry professionals provide coverage market wide in Dubai of both Freehold and Leasehold properties.

## 4. Methodology & Dynamic Calculation

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The Property Monitor Dynamic Price Index family are calculated using a moving average algorithm of median prices and the Dutot price index formula with cleansing of extreme values and outliers. The Indices are published at the end of each calendar month and are subject to backward revision should any new datapoint or datasets become available. This is a unique feature of the Property Monitor DPI as it always uses the fullest data set available and takes into account data which was not available at the point of original index compilation.

### Median Price

The median price data is established by taking the median price per square foot of all datapoints in the applicable geographic region during a particular time period.

### Moving Average

A moving average is a widely used method in data analytics that helps smooth out price action by filtering out the noise from random short-term price fluctuations and aides to highlight longer-term trends. Property Monitor DPI uses a 3-month rolling average which allows the index to properly react to short term price movements but avoids distortion caused by short term factors such as a release of supply in a particular location or a series of unusual, high value or atypical transactions.

### Dutot Formula

The Dutot price index formula defined as the ratio of the unweighted arithmetic average of the prices in the current period to the unweighted arithmetic average of the prices in the base period.

$$P_{0:t}^D = \frac{\frac{1}{n} \sum p_t^i}{\frac{1}{n} \sum p_0^i} = \frac{\frac{1}{n} \sum \left( \frac{p_t^i}{p_0^i} \right) \cdot p_0^i}{\frac{1}{n} \sum p_0^i}$$

Where:

$n$  is the sample size of datapoints;

$p_t^i$  is the median price per square foot  $t$  months after the base period\*; and

$p_0^i$  is the median price per square foot at the base period\*

\*The Index Base Period of Property Monitor DPI for Dubai at the macro Emirate level is January 2008 and 42 Dubai geographic community levels may have varying base years dependent upon when properties began being developed.

### Outliers

Extreme values, outliers, and potentially erroneous and inaccurate datapoints that are atypical and may distort the data series are removed from the dataset during Property Monitor DPI's stringent cleansing process.

### Dynamic Calculation

Whereas all other real estate price indices in Dubai are published as "final" and only subject to revisions should there be significant errors or mistakes identified, the Property Monitor Dynamic Price Index family are built to dynamically repopulate as and when any additional datapoints or datasets become available. In emerging markets, it's common for additional historic data to be digitized and made available, as well as previously confidential or limited access datasets to be made public. The dynamic nature of the Property Monitor DPI allows for this data to be incorporated into the Indices and repopulate the historic time series periods. This results in improved accuracy of the Indices and may show changes in the monthly reported Index values. In cases where the addition of historic data modifies the longer-term trend patterns of an index time series, an announcement will be made with further analysis and insight shared in the next monthly report.

## 5. Errors & Adjustment

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Outside of the dynamic calculation of the Indices, it may be necessary to restate, revise or remove data from the Indices from time-to-time. In any such event, notifications will be included in monthly report released immediately following the period the adjustment was made.

## 6. Changes to Methodology

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Property Monitor reserves the right to update the underlying methodology and data cleansing processes, and to edit or discontinue the whole or any part (including any particular community level) of the Indices at any time, be it for regulatory or any other reasons.

Property Monitor DPI methodology is subject to quarterly review by PM's internal oversight function. In the case of any revision, update, or other modification to the underlying methodology this User Guide will be updated accordingly, and an announcement made in the forthcoming monthly report. Should any such modifications occur they will first be scrutinized by PM's internal oversight function before being applied and made public.

## 7. Key Administrative Dates & Release Schedule

### Key Administrative Dates

Key Administrative Dates that pertain to the Property Monitor Dynamic Price Index (Property Monitor DPI) family are as follows:

Date:	Key Administrative Event
November 2019	Public release of Property Monitor Dynamic Price Index (Property Monitor DPI) family
October 2019	Signoff of Property Monitor Dynamic Price Index (Property Monitor DPI) family by PM internal oversight
January 2008	Index Base Period* (base level = 100)

\*The Index Base Period of Property Monitor DPI for Dubai at the macro Emirate level is January 2008 and 42 Dubai geographic community levels may have varying base years dependent upon when properties began being developed.

### Release Schedule

PMDPI updates are calculated monthly and are released on the third (3<sup>rd</sup>) working day of the month following the reporting month (based on a Friday-Saturday weekend). Releases may be delayed due to public holidays.

Release time: between 1100-1200 GST Dubai (UTC +4)

A full Property Monitor DPI release schedule is available at: [propertymonitor.ae/pmdpi/release-schedule](http://propertymonitor.ae/pmdpi/release-schedule)

## 8. Disclaimers

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## 10. Further Information

To make the inquiry further about the Property Monitor Dynamic Price Index (PMDPI) family please refer to the relevant contact below:

Inquiry Type	Contact
General Inquiries	<a href="mailto:support@propertymonitor.ae">support@propertymonitor.ae</a>
Press & Media	<a href="mailto:press@propertymonitor.ae">press@propertymonitor.ae</a>
Usage & Licensing	<a href="mailto:sales@propertymonitor.ae">sales@propertymonitor.ae</a>
Complaints & Legal	<a href="mailto:legal@propertymonitor.ae">legal@propertymonitor.ae</a>

## 11. Glossary

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**Active Listing:** refers to a property which is current listed for sale publicly;

**DLD:** means the Dubai Land Department, the official land department of the Government of Dubai;

**Index Base Period:** means the calendar month and year of the initial value of the relevant Index;

**Off-Plan:** means a property which is available to purchase as new development project that has either yet to have construction commence or has yet to have construction completed, typically it refers to the first-time sale of a property and accompanying Oqood (opposite to Resale);

**Off-Market:** means an instance where a property that was previously listed for sale was removed from the market and did not progress to the signing of a SPA / MOU or final sale registration;

**Oqood:** means the DLD's official interim register (pre-Title Deed) for all sales and purchase agreements and other contracts of sale pertaining to the sale of Off-Plan properties between developers and buyers;

**Pending Sale:** refers to a property where a SPA / MOU has been executed between buyer and seller and the final transfer of ownership is yet to take place and/or be registered with the DLD;

**PM:** means Property Monitor Software & Services LLC a limited liability company incorporated and registered in the Emirate of Dubai, United Arab Emirates with Dubai Economic Department Trade License No. 731886 with its registered address at Office 2205, Marina Plaza Office Tower, Dubai Marina, PO Box 118624, Dubai, United Arab Emirates, with telephone no. +971 (4) 453-9525, its nominees, successors, successors-in-title or assigns;

**Property Monitor DPI:** means the proprietary Property Monitor Dynamic Price Index family and may also be referred to as the "Index", or "Indices", "PMDPI", or "PMI" herein;

**Resale:** means a completed property which is available to purchase and ready for occupancy, typically it refers to the subsequent sale(s) of a property and transfer of ownership via Title Deed (opposite to Off-Plan);

**RICS:** means the Royal Institution of Chartered Surveyors, a professional body promoting and enforcing the highest international standards in the valuation, management and development of land, real estate, construction and infrastructure;

**SPA / MOU:** means a binding sales & purchase agreement, memorandum of understanding, or other duly executed contract of sale for real property which is in place prior to the final transfer and registration of Title Deed of Oqood;

**Title Deed:** means DLD's official registration document that provides proof of ownership of a particular property; and

**User Guide:** means this document, as amended, replaced or substituted, from time to time.

Version Modified: 2019-11-18 09:32 AM GST

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