

For Local Price

Construction Type	Local Price
Apartment	4.9176, 4.5573, 5.0597, 14.4598, 5.05, 8.2464, 9.0384
Condo	4.5429, 3.891, 5.898, 16.4202, 5.9592, 7.7841
House	5.0208, 5.6039, 5.8282, 5.3003, 6.2712, 5.6039, 6.6969

$$\begin{aligned}\text{Mean for Apartment} &= \frac{4.9176 + 4.5573 + 5.0597 + 14.4598 + 5.05 + 8.2464 + 9.0384}{7} \\ &= 7.3327\end{aligned}$$

$$\begin{aligned}\text{Mean for Condo} &= \frac{4.5429 + 3.891 + 5.898 + 16.4202 + 5.9592 + 7.7841}{6} \\ &= 7.4159\end{aligned}$$

$$\begin{aligned}\text{mean for House} &= \frac{5.0208 + 5.6039 + 5.8282 + 5.3003 + 6.2712 + 5.6039 + 6.6969}{7} \\ &= 5.7607\end{aligned}$$

$$\text{Standard deviation, } \sigma = \sqrt{\frac{1}{n-1} \sum (x_i - \bar{x})^2}$$

$$\begin{aligned}\text{S.D. for Apartment} &= \sqrt{\frac{1}{(7-1)} \left\{ (4.9176 - 7.3327)^2 + (4.5573 - 7.3327)^2 \right. \\ &\quad + (5.0597 - 7.3327)^2 + (14.4598 - 7.3327)^2 \\ &\quad + (5.05 - 7.3327)^2 + (8.2464 - 7.3327)^2 \\ &\quad \left. + (9.0384 - 7.3327)^2 \right\}} \\ &= 3.6160\end{aligned}$$

$$\begin{aligned}
 \text{SD for Condo} &= \sqrt{\frac{1}{(6-1)} \left\{ (4.5429 - 7.4159)^2 + (3.891 - 7.4159)^2 \right. \\
 &\quad + (5.898 - 7.4159)^2 + (16.4202 - 7.4159)^2 \\
 &\quad \left. + (5.9592 - 7.4159)^2 + (7.7891 - 7.4159)^2 \right\}} \\
 &= 4.6112
 \end{aligned}$$

$$\begin{aligned}
 \text{SD for House} &= \sqrt{\frac{1}{(7-1)} \left\{ (5.0208 - 5.7607)^2 + (5.6039 - 5.7607)^2 \right. \\
 &\quad + (5.8282 - 5.7607)^2 + (5.3003 - 5.7607)^2 \\
 &\quad + (6.2712 - 5.7607)^2 + (5.6039 - 5.7607)^2 \\
 &\quad \left. + (6.6969 - 5.7607)^2 \right\}} \\
 &= 0.5701
 \end{aligned}$$

## For Bathrooms

Construction Type	Bathrooms
Apartment	1, 1, 1, 2.5, 1, 1.5, 1
Condo	1, 1, 1, 2.5, 1, 1.5
House	1, 1, 1, 1, 1, 1, 1.5

$$\text{Mean for Apartment} = \frac{1+1+1+2.5+1+1.5+1}{7} = 1.2857$$

$$\text{Mean for Condo} = \frac{1+1+1+2.5+1+1.5}{6} = 1.3333$$

$$\text{Mean for House} = \frac{1+1+1+1+1+1+1.5}{7} = 1.0714$$

$$\begin{aligned} \text{S.D for Apartment} &= \sqrt{\frac{1}{(7-1)} \left\{ (1-1.2857)^2 + (1-1.2857)^2 + (1-1.2857)^2 \right. \\ &\quad \left. + (2.5-1.2857)^2 + (1-1.2857)^2 + (1.5-1.2857)^2 \right. \\ &\quad \left. + (1-1.2857)^2 \right\}} \\ &= 0.5669 \end{aligned}$$

$$\begin{aligned} \text{S.D for Condo} &= \sqrt{\frac{1}{(6-1)} \left\{ (1-1.3333)^2 + (1-1.3333)^2 + (1-1.3333)^2 \right. \\ &\quad \left. + (2.5-1.3333)^2 + (1-1.3333)^2 + (1.5-1.3333)^2 \right\}} \\ &= 0.6055 \end{aligned}$$

$$\begin{aligned} \text{S.D. for House} &= \sqrt{\frac{1}{(7-1)} \left\{ (1-1.0714)^2 + (1-1.0714)^2 + (1-1.0714)^2 \right. \\ &\quad \left. + (1-1.0714)^2 + (1-1.0714)^2 + (1-1.0714)^2 \right. \\ &\quad \left. + (1.5-1.0714)^2 \right\}} \\ &= 0.1890 \end{aligned}$$



Similarly

Construction Type	Local price	Mean	SD
Apartment	4.9176, 4.5573, 5.0597, 14.4598, 5.05, 8.2969, 9.0381	7.3327	3.6160
Condo	4.5429, 3.891, 5.098, 16.4202, 5.9592, 7.7891	7.4159	4.6112
House	5.0208, 5.6039, 5.8282, 5.3003, 6.2712, 5.6039, 6.6969	5.7607	0.5701

Construction Type	Bathrooms	Mean	SD
Apartment	1, 1, 1, 2.5, 1, 1.5, 1	1.2857	0.5669
Condo	1, 1, 1, 2.5, 1, 1.5	1.3333	0.6055
House	1, 1, 1, 1, 1, 1, 1.5	1.0714	0.1890

Construction Type	Land Area	Mean	SD
Apartment	3.472, 4.05, 4.455, 12.8, 5, 5.15, 7.8	6.1039	3.2585
Condo	2.275, 4.155, 5.85, 9.8, 6.666, 7.102	6.025	2.5448
House	3.531, 9.52, 6.435, 4.9883, 5.52, 9.52, 6.902	6.6309	2.2990

Construction Type	Living Area	Mean	SD
Apartment	0.998, 1.232, 1.121, 3, 1.02, 1.664, 1.5	1.505	0.7091
Condo	1.175, 0.988, 1.24, 3.12, 1.121, 1.376	1.5533	0.9234
House	1.5, 1.501, 1.225, 1.55, 0.975, 1.501, 1.488	1.3917	0.2129

Construction Type	Garages	Mean	SD
Apartment	1, 1, 1, 2, 0, 2, 1.5	1.2143	0.6986
Condo	1, 1, 1, 2, 2, 1	1.3333	0.5164
House	2, 0, 2, 1, 1, 0, 1.5	1.0714	0.8381

Construction Type	Rooms	Mean	SD
Apartment	7, 6, 6, 9, 5, 8, 7	6.8571	1.3452
Condo	6, 6, 7, 10, 6, 6	6.8333	1.6021
House	7, 6, 6, 6, 5, 6, 7	6.1429	0.6901

Construction Type	Bedrooms	Mean	SD
Apartment	4, 3, 3, 5, 2, 4, 3	3.4286	0.9759
Condo	3, 3, 3, 5, 3, 3	3.3333	0.8165
House	4, 3, 3, 3, 2, 3, 3	3	0.5774

Construction Type	Age of home	Mean	SD
Apartment	42, 54, 42, 14, 46, 50, 23	38.7143	14.6824
Condo	40, 56, 51, 42, 32, 17	39.6667	13.9523
House	62, 32, 32, 30, 30, 32, 22	39.2857	12.7242



Normal distribution,  $P(x_j | c = c_i) = \frac{1}{\sqrt{2\pi}\sigma_{ij}} e^{\left\{ \frac{-(x_j - \bar{x})^2}{2\sigma^2} \right\}}$

$$P(\text{Local price} = 6.0931 | \text{class} = \text{Apartment}) = \frac{1}{\sqrt{2\pi}(3.616)} e^{\left\{ \frac{-(6.0931 - 7.3327)^2}{2 \times (3.616)^2} \right\}}$$

$$= 0.1090$$

$$P(\text{Bathroom} = 1.5 | \text{class} = \text{Apartment}) = \frac{1}{\sqrt{2\pi}(0.5669)} e^{\left\{ \frac{-(1.5 - 1.2857)^2}{2 \times (0.5669)^2} \right\}}$$

$$= 0.6552$$

$$P(\text{Land Area} = 6.7265 | \text{class} = \text{Apartment}) = \frac{1}{\sqrt{2\pi}(3.2585)} e^{\left\{ \frac{-(6.7265 - 6.1039)^2}{2 \times (3.2585)^2} \right\}}$$

$$= 0.1202$$

$$P(\text{Living Area} = 1.652 | \text{class} = \text{Apartment}) = \frac{1}{\sqrt{2\pi}(0.7041)} e^{\left\{ \frac{-(1.652 - 1.505)^2}{2 \times (0.7041)^2} \right\}}$$

$$= 0.5594$$

$$P(\text{Garages} = 1 \mid \text{class} = \text{Apartment}) = \frac{1}{\sqrt{2\pi}(0.6986)} e^{\left\{ \frac{-(1 - 1.2143)^2}{2 \times (0.6986)^2} \right\}}$$

$$= 0.5498$$

$$P(\text{Rooms} = 6 \mid \text{class} = \text{Apartment}) = \frac{1}{\sqrt{2\pi}(1.3952)} e^{\left\{ \frac{-(6 - 6.8571)^2}{2 \times (1.3952)^2} \right\}}$$

$$= 0.2421$$

$$P(\text{Bedrooms} = 3 \mid \text{class} = \text{Apartment}) = \frac{1}{\sqrt{2\pi}(0.9759)} e^{\left\{ \frac{-(3 - 3.4286)^2}{2 \times (0.9759)^2} \right\}}$$

$$= 0.3712$$

$$P(\text{Age of home} = 44 \mid \text{class} = \text{Apartment}) = \frac{1}{\sqrt{2\pi}(14.6824)} e^{\left\{ \frac{-(44 - 38.7143)^2}{2 \times (14.6824)^2} \right\}}$$

$$= 0.0255$$


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$$P(\text{local price} = 6.0931 \mid \text{class} = \text{condo}) = 0.083$$

$$P(\text{Bathroom} = 1.5 \mid \text{class} = \text{condo}) = 0.6344$$

$$P(\text{land Area} = 6.7265 \mid \text{class} = \text{condo}) = 0.1509$$

$$P(\text{living Area} = 1.652 \mid \text{class} = \text{condo}) = 0.4296$$

$$P(\text{Garage} = 1 \mid \text{class} = \text{condo}) = 0.6273$$

$$P(\text{Rooms} = 6 \mid \text{class} = \text{condo}) = 0.2175$$

$$P(\text{Bedrooms} = 3 \mid \text{class} = \text{condo}) = 0.4495$$

$$P(\text{Age of homes} = 41 \mid \text{class} = \text{condo}) = 0.0272$$

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$$P(\text{local price} = 6.0931 \mid \text{class} = \text{house}) = 0.5904$$

$$P(\text{Bathroom} = 1.5 \mid \text{class} = \text{house}) = 0.1613$$

$$P(\text{land Area} = 6.7265 \mid \text{class} = \text{house}) = 0.1772$$

$$P(\text{living Area} = 1.652 \mid \text{class} = \text{house}) = 0.8824$$

$$P(\text{Garage} = 1 \mid \text{class} = \text{house}) = 0.4742$$

$$P(\text{Rooms} = 6 \mid \text{class} = \text{house}) = 0.5658$$

$$P(\text{Bedrooms} = 3 \mid \text{class} = \text{house}) = 0.6909$$

$$P(\text{Age of homes} = 41 \mid \text{class} = \text{house}) = 0.0239$$

$P(\text{Local Price} = 8.3607 \mid \text{Class} = \text{Apartment}) = 0.1060$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{Apartment}) = 0.6552$

$P(\text{Land Area} = 9.15 \mid \text{Class} = \text{Apartment}) = 0.0791$

$P(\text{Living Area} = 1.777 \mid \text{Class} = \text{Apartment}) = 0.5259$

$P(\text{Garage} = 2 \mid \text{Class} = \text{Apartment}) = 0.3034$

$P(\text{Rooms} = 8 \mid \text{Class} = \text{Apartment}) = 0.2067$

$P(\text{Bedrooms} = 4 \mid \text{Class} = \text{Apartment}) = 0.3444$

$P(\text{Age of Homes} = 48 \mid \text{Class} = \text{Apartment}) = 0.0222$

$P(\text{Local Price} = 8.3607 \mid \text{Class} = \text{Condo}) = 0.0847$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{Condo}) = 0.6344$

$P(\text{Land Area} = 9.15 \mid \text{Class} = \text{Condo}) = 0.0738$

$P(\text{Living Area} = 1.777 \mid \text{Class} = \text{Condo}) = 0.4195$

$P(\text{Garage} = 2 \mid \text{Class} = \text{Condo}) = 0.3357$

$P(\text{Rooms} = 8 \mid \text{Class} = \text{Condo}) = 0.1910$

$P(\text{Bedrooms} = 4 \mid \text{Class} = \text{Condo}) = 0.3501$

$P(\text{Age of Homes} = 48 \mid \text{Class} = \text{Condo}) = 0.0239$

$P(\text{Local Price} = 8.3607 \mid \text{Class} = \text{House}) = 2.131 \times 10^{-5}$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{House}) = 0.1613$

$P(\text{Land Area} = 9.15 \mid \text{Class} = \text{House}) = 0.0947$

$P(\text{Living Area} = 1.777 \mid \text{Class} = \text{House}) = 0.3643$

$P(\text{Garage} = 2 \mid \text{Class} = \text{House}) = 0.2577$

$P(\text{Rooms} = 8 \mid \text{Class} = \text{House}) = 0.0155$

$P(\text{Bedrooms} = 4 \mid \text{Class} = \text{House}) = 0.1542$

$P(\text{Age of Homes} = 48 \mid \text{Class} = \text{House}) = 0.0175$

$P(\text{Local Price} = 8.14 \mid \text{Class} = \text{Apartment}) = 0.1076$

$P(\text{Bathroom} = 1 \mid \text{Class} = \text{Apartment}) = 0.6198$

$P(\text{Land Area} = 8 \mid \text{Class} = \text{Apartment}) = 0.1034$

$P(\text{Living Area} = 1.504 \mid \text{Class} = \text{Apartment}) = 0.5666$

$P(\text{Garage} = 2 \mid \text{Class} = \text{Apartment}) = 0.3034$

$P(\text{Rooms} = 7 \mid \text{Class} = \text{Apartment}) = 0.2949$

$P(\text{Bedrooms} = 3 \mid \text{Class} = \text{Apartment}) = 0.3712$

$P(\text{Age of Homes} = 3 \mid \text{Class} = \text{Apartment}) = 1.410 \times 10^{-3}$

$P(\text{Local Price} = 8.14 \mid \text{Class} = \text{Condo}) = 0.0855$

$P(\text{Bathroom} = 1 \mid \text{Class} = \text{Condo}) = 0.5662$

$P(\text{Land Area} = 8 \mid \text{Class} = \text{Condo}) = 0.1160$

$P(\text{Living Area} = 1.504 \mid \text{Class} = \text{Condo}) = 0.4314$

$P(\text{Garage} = 2 \mid \text{Class} = \text{Condo}) = 0.3357$

$P(\text{Rooms} = 7 \mid \text{Class} = \text{Condo}) = 0.2477$

$P(\text{Bedrooms} = 3 \mid \text{Class} = \text{Condo}) = 0.4495$

$P(\text{Age of Homes} = 3 \mid \text{Class} = \text{Condo}) = 9.048 \times 10^{-4}$

$P(\text{Local Price} = 8.14 \mid \text{Class} = \text{House}) = 1.155 \times 10^{-4}$

$P(\text{Bathroom} = 1 \mid \text{Class} = \text{House}) = 1.9654$

$P(\text{Land Area} = 8 \mid \text{Class} = \text{House}) = 0.1474$

$P(\text{Living Area} = 1.504 \mid \text{Class} = \text{House}) = 1.6305$

$P(\text{Garage} = 2 \mid \text{Class} = \text{House}) = 0.2577$

$P(\text{Rooms} = 7 \mid \text{Class} = \text{House}) = 0.2673$

$P(\text{Bedrooms} = 3 \mid \text{Class} = \text{House}) = 0.6909$

$P(\text{Age of Homes} = 3 \mid \text{Class} = \text{House}) = 1.526 \times 10^{-3}$



$P(\text{Local Price} = 9.1416 \mid \text{Class} = \text{Apartment}) = 0.0973$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{Apartment}) = 0.6552$

$P(\text{Land Area} = 7.3262 \mid \text{Class} = \text{Apartment}) = 0.1141$

$P(\text{Living Area} = 1.831 \mid \text{Class} = \text{Apartment}) = 0.5090$

$P(\text{Garage} = 1.5 \mid \text{Class} = \text{Apartment}) = 0.5252$

$P(\text{Rooms} = 8 \mid \text{Class} = \text{Apartment}) = 0.2067$

$P(\text{Bedrooms} = 4 \mid \text{Class} = \text{Apartment}) = 0.3444$

$P(\text{Age of Homes} = 31 \mid \text{Class} = \text{Apartment}) = 0.0237$

$P(\text{Local Price} = 9.1416 \mid \text{Class} = \text{Condo}) = 0.0807$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{Condo}) = 0.6344$

$P(\text{Land Area} = 7.3262 \mid \text{Class} = \text{Condo}) = 0.1376$

$P(\text{Living Area} = 1.831 \mid \text{Class} = \text{Condo}) = 0.4129$

$P(\text{Garage} = 1.5 \mid \text{Class} = \text{Condo}) = 0.7333$

$P(\text{Rooms} = 8 \mid \text{Class} = \text{Condo}) = 0.1910$

$P(\text{Bedrooms} = 4 \mid \text{Class} = \text{Condo}) = 0.3501$

$P(\text{Age of Homes} = 31 \mid \text{Class} = \text{Condo}) = 0.0236$

$P(\text{Local Price} = 9.1416 \mid \text{Class} = \text{House}) = 1.615 \times 10^{-8}$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{House}) = 0.1613$

$P(\text{Land Area} = 7.3262 \mid \text{Class} = \text{House}) = 0.1691$

$P(\text{Living Area} = 1.831 \mid \text{Class} = \text{House}) = 0.2229$

$P(\text{Garage} = 1.5 \mid \text{Class} = \text{House}) = 0.4177$

$P(\text{Rooms} = 8 \mid \text{Class} = \text{House}) = 0.0155$

$P(\text{Bedrooms} = 4 \mid \text{Class} = \text{House}) = 0.1542$

$P(\text{Age of Homes} = 31 \mid \text{Class} = \text{House}) = 0.0303$

$P(\text{Local Price} = 12 \mid \text{Class} = \text{Apartment}) = 0.0480$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{Apartment}) = 0.6552$

$P(\text{Land Area} = 5 \mid \text{Class} = \text{Apartment}) = 0.1156$

$P(\text{Living Area} = 1.2 \mid \text{Class} = \text{Apartment}) = 0.5159$

$P(\text{Garage} = 2 \mid \text{Class} = \text{Apartment}) = 0.3034$

$P(\text{Rooms} = 6 \mid \text{Class} = \text{Apartment}) = 0.2421$

$P(\text{Bedrooms} = 3 \mid \text{Class} = \text{Apartment}) = 0.3712$

$P(\text{Age of Homes} = 30 \mid \text{Class} = \text{Apartment}) = 0.0228$

$P(\text{Local Price} = 12 \mid \text{Class} = \text{Condo}) = 0.0528$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{Condo}) = 0.6344$

$P(\text{Land Area} = 5 \mid \text{Class} = \text{Condo}) = 0.1446$

$P(\text{Living Area} = 1.2 \mid \text{Class} = \text{Condo}) = 0.4015$

$P(\text{Garage} = 2 \mid \text{Class} = \text{Condo}) = 0.3357$

$P(\text{Rooms} = 6 \mid \text{Class} = \text{Condo}) = 0.2175$

$P(\text{Bedrooms} = 3 \mid \text{Class} = \text{Condo}) = 0.4495$

$P(\text{Age of Homes} = 30 \mid \text{Class} = \text{Condo}) = 0.0225$

$P(\text{Local Price} = 12 \mid \text{Class} = \text{House}) = 6.854 \times 10^{-27}$

$P(\text{Bathroom} = 1.5 \mid \text{Class} = \text{House}) = 0.1613$

$P(\text{Land Area} = 5 \mid \text{Class} = \text{House}) = 0.1364$

$P(\text{Living Area} = 1.2 \mid \text{Class} = \text{House}) = 1.2493$

$P(\text{Garage} = 2 \mid \text{Class} = \text{House}) = 0.2577$

$P(\text{Rooms} = 6 \mid \text{Class} = \text{House}) = 0.5658$

$P(\text{Bedrooms} = 3 \mid \text{Class} = \text{House}) = 0.6909$

$P(\text{Age of Homes} = 30 \mid \text{Class} = \text{House}) = 0.0296$