

A hand holding a glowing, wireframe brain against a dark blue background. A network of white lines and dots is overlaid on the brain, extending across the page. The word 'INTUITION' is written in large, white, outlined letters across the brain.

INTUITION

AND ITS ROLE IN THE DIRECT COMPARISON APPROACH



By George Canning, AACI, P.App,
Canning Consultants Inc., London, ON

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fter studying the Direct Comparison Approach (DCA) for 42 years, the conclusion reached is that it is an intuitive executed valuation model. The questions that this article attempts to answer are what part of the intuitive process can be relied upon in the DCA, how could it be improved, and what is the general conscience about intuition?

We can test the role of intuition by using two methods. Method 'A' is the grid adjustment approach that relies solely on intuition. Method 'B' also has a grid adjustment process based upon intuition, but it includes some basic mathematics to help steer the 'intuitive ship.'

The subject is a converted office building that was sold on March 29, 2021 for \$650,000 in London, Ontario. It was exposed on the MLS marketplace. The building is 2,702 square feet and is 128 years old. The lot size is 4,004 square feet. There are 800 square feet of basement finishing. It is located on Oxford Street East, which is a strong, four-lane arterial road system. The building had been used as a doctor's office.

The comparables selected are as follows:

COMPARABLE	1	2	3	4	5	6
Sold	January 2020	June 2017	January 2018	March 2020	May 2019	May 2019
Building Size in Sq Ft	3,428	2,010	2,482	2,919	2,069	4,749
Building Age in Years	104	147	114	112	125	116
Basement Finishing in Sq Ft	1,327	891	1,241	1,231	685	1,309
Zoning	R3-1,R9-7, OR2, OC6, R02	R2-2(7)	OC4,R3	AC4	OC5, R3	OC2, R3
Lot Size in Sq Ft	6,000	8,060	3,833	6,270	6,500	4,980
General use	Dental	Medical	Dental	General Office	General Office	Retail
Location	Arterial Rd	Arterial Rd	Non-Arterial	Arterial	Arterial	Non-Arterial
Selling price per Sq Ft of Bldg	\$233.37	\$280.35	\$266.92	\$196.99	\$312.71	\$192.67

Before any analysis, the variance in the selling prices per square foot of building was 62%. The effective date of the appraisal was February 9, 2021. We selected these predictor variables: location, building size, building age, lot size, basement finishing, and condition. They were selected based on my intuitive sense of what most buyers would consider when purchasing a converted office. The sales were adjusted for time at 1% per year.

METHOD "A"

Sale	1	2	3	4	5	6
SP per Sq Ft of Building	\$233.37	\$280.35	\$266.92	\$196.99	\$312.71	\$192.67
Time	+1%	+4%	+3%	+1%	0%	+2%
Time Adj	\$235.70	\$291.56	\$274.93	\$198.96	\$312.71	\$196.52

ADJUSTMENTS

Location	0	0	0	-	0	0
Building Size	-	0	-	-	0	-
Building Age	-	0	0	0	0	0
Lot Size	-	-	+	-	-	0
Basement Finish	-	0	-	-	+	-
Condition	+	+	+	++	+	+
Adjusted Selling Price	\$290.00	\$300.00	\$280.00	\$275.00	\$325.00	\$235.00

We compared the characteristics of each sale to that of the subject property. The conclusion was reached that indexes #1, #2, and #5 are the best comparables. When the adjusted rates are applied to the subject's building size, we obtain a market value between \$600,880 and \$673,400. This is a difference of 12%. We started with a variance of 62% in the selling prices per square foot of building. Therefore, by using intuition alone, we were able to substantially reduce the 'going in' variance of the sales. The actual selling price of the subject building fell within that range.

METHOD 'B'

Method 'B' using quality point analysis strictly adheres to the DCA. It will use the same predictor variables as selected in method 'B'. The adjustments to the sales are not +, -, or words such as lower, higher, or equal. Quality Point (QP) uses an ordinal scale of 1-4-9-16-25-36-49. How this works is that any sale that has a similar predictive variable characteristic would be given the same score. It is like putting all the white shirts in one bin, blue in another, etc. There are no values attached to this process. We are sorting out to what bin each of the predictor variables belongs. **In some cases, we relied strictly on intuition.** At this stage, there is no direct comparison with the subject property. We know the sales are comparable to the subject and it will be dealt with later in the analysis. We are building a model to 'explain' and 'reduce' the variation in the selling prices of the comparables. The sales have been 'time' adjusted as indicated in method 'A' (we had used 1% per year).

Method 'B' based upon our intuitive sense produces a series of weights that are derived from the comparable sales via our scores and a solver. This is shown below.

PREDICTOR VARIABLES	Weights Market
Location	(x 0.41)
Building Age	(x 0.33)
Building Size	(x 0.05)
Condition	(x 0.16)
Basement Finishing	(x 0.05)
	(x 1.00)

One cannot say that location represents 0.41 or 41% of all sale prices of the comparables. There is no direct correlation. However, these weights do tell us something about the 'strength' of each predictor variable. Our review of the weights indicates nothing unusual.

QP can be tested to give the practitioner some guidance as to whether we are going in the right direction. There are two methods that are relied upon. #1 is to monitor the mean adjusted selling price per square foot of building. It is shown below.

COEFFICIENT OF VARIANCE

MEAN ADJUSTED SELLING PRICE OF THE COMPARABLES	
Mean	\$17.00
Standard Deviation in dollars	\$3.57
Coefficient of Variance as a percent of the Mean	21%



Economics Nobel Laureate Daniel Kahneman theorizes that intuitive thinking has both advantages and disadvantages: it is faster than a rational approach, but more prone to error.

The mean of the adjusted selling price per square foot of building is \$17.00, and the standard deviation or distance around the mean is \$3.87. The \$3.87 is converted to a percentage of the mean (21%). It is called the coefficient of variance. We started out with a 62% difference around the selling price per square foot of building of the sales and, after all our hard work, we got it down to 21%. Test #2 is to predict the selling prices of each sale against the time adjusted selling price per square foot of building for each sale. This is shown below.

RESIDUAL TESTING

SP PER SQ FT OF COMPARABLES (AFTER TIME)	\$252.04	\$285.96	\$274.93	\$198.96	\$312.71	\$196.53
PREDICTED SP PER SQ FT OF BUILDING BASED UPON OUR INTUITION	\$295.33	\$247.07	\$283.44	\$172.52	\$252.54	\$312.33
DIFFERENCE	17.18%	13.60%	3.09%	13.28%	19.15%	58.93%

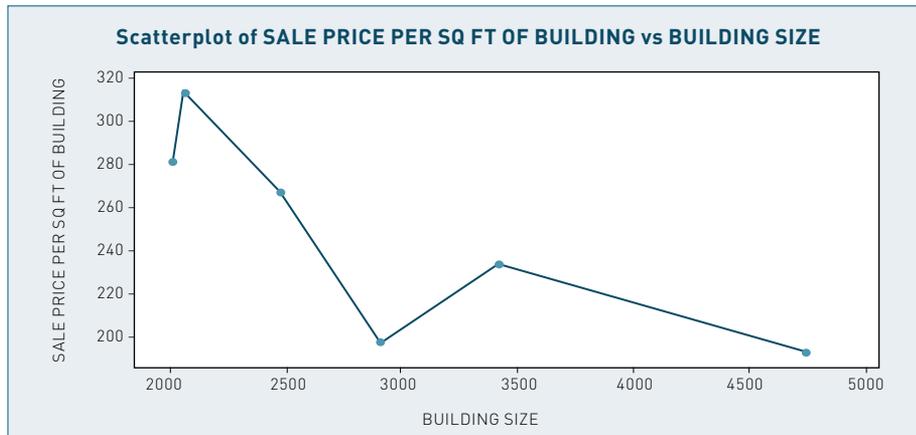
The differences between the two sets of numbers are not acceptable. The only one that is encouraging is that of index #3 at 3.09%. The rest we missed by a country mile.

BASIC SUMMARY

We applied two tests to model 'B,' and they indicate that our intuitive sense of trying to 'reduce' and 'explain' variation is not very good. In both models, we have 16% and 21% of unexplained variation in the selling price per square foot of building that is unaccounted for. It certainly tells us that our intuition is not all wrong, but why are we unable to explain a larger percentage of the difference in the selling prices per square foot of building of the sales?

For the sake of brevity, we made further intuitive decisions about our sales that improved our DCA in model 'B.' These were:

1. First, we found that there is an inverse relationship between the sale prices of the comparables and their building sizes. This was not obvious in model 'A.' Below is a scatterplot of data that clearly shows that.



QP can handle this market phenomenon quite easily. It is a lot more troublesome when using the standard +/-, better, worse type of adjustment format.

2. We also found that basement finishing and site size played no role in explaining the differences in the prices of the comparables.

We simply removed them from Model 'B.'

3. We also discovered that the time adjustments that we carefully work out on method 'A' were not correct after transposing the same time adjustments to method 'B.'

Whether we rely on our gut or turn to sober analysis to make a decision seems to depend on a variety of factors, such as our past experiences with similar situations and the complexity of the problem.

Many cognitive scientists argue that intuitive analytic thinking should not be viewed as opposites. Studies indicate that our decision-making often works best when we blend both strategies.

We are not surprised at this because time is not consistent in the marketplace and, in QP, we can do a time test to help with that. Largely, it is a trial-and-error process monitoring the coefficient of variance around the mean of the selling price per square foot of building of the comparables. After making some more intuitive adjustments to time, we were able to improve the coefficient of variance.

If we assume we made better intuitive decisions about the analysis of the sales, then we can run our two tests again.

RESIDUAL TESTING

SP PER SQ FT OF COMPARABLES (AFTER TIME)	\$235.71	\$280.35	266.92	\$196.99	\$312.71	\$192.67
PREDICTED SP PER SQ FT OF BUILDING BASED UPON OUR INTUITION	\$236.63	\$282.28	\$270.15	\$197.64	\$305.94	\$191.93
DIFFERENCE	0.39%	0.69%	1.21%	0.33%	2.16%	0.39%

We can see in the above test that we did not miss by much when it came to prediction after we further realigned our intuition.

COEFFICIENT OF VARIANCE

MEAN ADJUSTED SELLING PRICE OF THE COMPARABLES	
Mean	\$14.76
Standard Deviation in dollars	\$0.16
Coefficient of Variance as a percent of the Mean	1%

We were able to explain 99% of the variation in the selling prices per square foot of building of the sales. method 'B' ended with a predicted value range of \$651,000 to \$666,000 for the subject property. This analysis is not shown.

CONCLUSIONS

We can make all kinds of inferences about intuition and the two models of valuation. We cannot say that one model is preferred over the next because the difference is in the treatment of the intuition.

There is no question that intuition plays a role in the appraisal valuation process. This makes a lot of sense because valuers will develop some sense of various aspects of real estate throughout their careers, e.g., "Has the market moved up?" "Is Spruce Street still as good a location as Walnut Avenue?" "Are buyers prepared to pay more for a property with a larger building size?" All questions about real estate will eventually lead to the DCA. That is a very real fact about our business.

We also know that nobody has a perfect intuitive sense for every aspect of real estate. Therefore, it would conclude that, for every intuitive decision we make regarding real estate, there are going to be errors in that judgement.

In our two examples of analysis, the author made the best decisions for the sales in both instances. Both methods also lead the author astray, simply because his intuition was imperfect. However, further intuitive thinking, coupled with some testing of our ideas, enabled us to explain a very high percentage of the differences in the selling prices of the comparable sales.

The only lesson here is that a few simple mathematical tests might be the best defence against incorrect intuitive judgements involving real estate. In other words, intuition is not absolute. It can be pushed, pulled, and pounded upon until it helps us shape the data with which we are working. That is called data analysis. In that process, intuition is also honing our skills further. 📌

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The continuing debate about instinctive versus analytical decision-making is helpful because both types of decision-making have their good points. Teams or institutions can benefit from taking the time to work out the decision-making process that works best for them. We value leaders who can merge both types so that experience and new knowledge from the analysis can yield the best ideas. So, do your homework and take new trends and business realities into account; however, do not undervalue intuition while making decisions.