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Why Not Stats, Graphs, Data, and Science?



Why, Why, Why?

Why do we put "stats", "graphs", "data," and "science" together?

By George Dell, MAI, SRA, ASA, CDEI

Why, Why, Why?

Why do we put “stats”, “graphs”, “data,” and “science” together?

Editor's comments: We are bombarded with news items about Big Data, appraisers being obsolete, etc. etc. George shows how the new data science relates to the old "3 comps" method. Appraisers are no longer the only source of data. Lots is available online and available to anyone. Why are appraisers needed? Someone needs to see what is happening in the real world and analyze the data and explain what is happening.

I took George's first class a few years ago. At that time he was using Excel, which is not a statistics program and is limited. He has switched to "R" statistics software. My first statistics class was in 1962. I used multiple regression statistical software (SPSS) in the late 1970s in graduate business school. Finally, someone is teaching appraisal classes with good stats software and modern data analysis techniques.

In undergrad I studied science and worked in labs for 7 years after graduating. I still consider myself a scientist. I found appraisal education very limited. I am so glad George uses the word "Science"!

This article may seem a bit "over the top" but it is understandable. If you want to learn more, take George's classes. I don't know anyone else who is doing this. Of course, he wrote a great article on 1004MC problems after it was adopted discussing all the problems with the "analysis".

Simple. Together, they give a better recipe for solving client problems of value, risk, return, and forecasting. They enable a better model, which optimizes computer power and the human ability to visualize and generalize from facts, logic, metaphors, and stories. Together, they act to sharpen expert judgement, not to replace it!

Number summaries (descriptive statistics) help the human brain understand a large group of numbers. **Graphs** (plots, “charts”) provide a *visual* representation of a large group of numbers. **Data** is the raw material, to be converted into useful information via an orderly, logical process called **science**.

In this article, first, we look at the whole for its parts. We’ll use this principle of the scientific method of *reduction*: break a problem into smaller parts, study the parts, then put it all back together. We will also see how data science is both an art *and* a science!

Data science is a unifying concept. It’s replacing traditional *statistics* in today’s world of big data. What’s less recognized is that data science is also replacing traditional *data analysis*.

What is data analysis?

Data analysis is a process of inspecting, cleansing, transforming, and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. The practice of data analysis does not have today’s advantage of instant, comprehensive data. It also has limited analytical tools, such as the accountant’s.

Traditional data analysis:

- Uses limited, structured data sources (MLS, public records, commercial sources)
- Impedes scalability to greater amounts of data (beyond 4 or 5 comps)
- Avoids multi-dimensional data complexity (like market data)

Traditional data analysis focuses on the analyst’s conception of limited similar data. The largest mistakes are the result of the *black swan* effect – unexpected (even catastrophic) results from failure to consider outliers, or why something does *not* fit.

What is data science?

Data science:

- Uses multiple data sources: (structured, unstructured, observed, transformed, maps;
- Complete data sets, size-optimized (the competitive market segment[®]);
- Integrates subject matter expertise.

Data science focuses on the market's conception of the complete relevant data set. Large costly mistakes are avoided in two ways: 1) going back further into the *assumptions* of a discipline (such as the required definition of market value); and, 2) going deeper into the data, to pick up the unintended results from *partial* data analysis.

Data science emphasizes a deeper principle of analyst integrity: Do not assume the swan will be white every time. Seek the black swan. Figure out how it got here.

The traditional appraisal process requires good data judgment: “**Trust me, I know a good comp when I see it!**” The valuation data science[©] tenet is: “**Let the data speak for itself.**”

As we proceed to look at the parts of this reduction, we will consider:

- *Where do **statistics** make sense?*
- *How do visuals, plots, **graphs** fit in?*
- *When does **data** become information?*
- *What is the skill and art of data **science**?*

Stats

What is statistics?

Statistics are misunderstood. Statistics are misused. Statistics are statistics.

Stats can be troublesome. To know the why, the what, and the how of statistics can help rescue the appraisal profession. Continued misuse and misunderstanding will help bury it. Let's look at these three questions. We look at misused words, statistics, and the opportunity.

First: “**The main problem with statistics is words.**” (On average, which meaning did you mean to mean?)

Statistics is the *study* of data.

Statistics are random *sample* approximations of population parameters.

A statistic is a *summary* number of any data set.

Inference is “a conclusion based on evidence and reasoning.” (Logical inference).

Inference is “a sampling approximation of population parameters.” (Statistical inference)

Bias can be personal or analytical

Objective can be personal, analytical, or the goal.

Each of these words are important to appraisal analysis and reporting. They are often used sloppily. This is a “**why**” to the *confusion* of statistics in appraisal.

What types of statistics?

Let's next look at the “**what**” of statistics. There are four primary types of statistics:

1. **Descriptive statistics**: summary parameters of any data set (mean, median, standard deviation, skew, kurtosis, and percentiles).
2. **Inferential statistics**: parameters of a random sample, to *approximate* population parameters.
3. **Bayesian statistics**: current data combined with prior knowledge or belief, to interpret probability.
4. **Non-parametric**: non-normal or ordinal data analyzed from ranking rather than parameters

Inferential statistics and the “Body of knowledge” of appraisal education

Of the four types, descriptive, Bayesian and nonparametric are very useful for valuation. **Inferential statistics are not very useful.** “*We don't do no random samples.*”

For appraisal, the exact *opposite* is required: *We pick our comps very carefully.*

The main problem is that our “advanced” body of knowledge emphasizes inferential statistics.

Appraisal education devotes insufficient time to proper modeling and communication (including graphs), but a lot of time on **p-values, t-scores** and **confidence intervals**, which do not apply to judgement/convenience selection of comps (where the data is subjectively selected).

The How of statistics and how appraisers can use it

The **how** of statistics, can help return the profession to the technical aspects of methodologies, as was emphasized in earlier editions of the Appraisal Institute's *The Appraisal of Real Estate*.

The **how** must embrace currently available technologies. In particular:

- Emphasize the *optimization of data size* for analytics, relenting the tradition of three to six comps.
- Utilize *complete data sets*, to focus on data enhancement *before* its use, not after it's selected.
- Reverse the order of “the valuation process” to put *data analysis first*, to identify comparable data.

- Capitalize on *modern analytics software* which enhances the appraiser's knowledge and skills
- Integrate *visual tools*, primarily graphs to optimize the brain-machine team.
- Develop *standards, theory, and protocols* for Evidence Based Valuation[®] emphasizing the use of the complete Competitive Market Segment[®] wherever data is robust.

The Who of data analysis and professional appraisal associations

The **who**: There is a huge opportunity for our professional organizations, such as the AI, the ASA, the IAAO, the ASFMRA; as well as our quasi-governmental agencies and regulatory bodies including the Appraisal Subcommittee, the Appraisal Foundation, Fannie Mae, Freddie Mac, and the FHFA.

Whoever grabs the opportunity will have the credit: To **“help prevent the next economic meltdown.”**

The answer is *simpler* than it seems. **Someone just needs to ask the question:** “Can we move to this?”

Graphs

Graphs are pretty, have colors, and show things - easier to understand than just the numbers.

Graphs are visual. The human ability to see and to visualize is stupendous. It's the main connect between the world about us and our ability to think, reason, and make decisions. Visualization includes graphic plots, tables, maps, moving and interactive displays, including three even four-dimensional interface.

Numerical descriptives (**summary parameters**), such as mean, median, variance, skew, and quantiles, provide a way to summarize data so the human brain can cope and go on. For example, if you have the mean and the extremes of the data set, you already know a lot.

Plots and graphs provide even easier visual insight. For example, a distribution curve (like the bell curve) can connect with the human brain so quickly, that we tend to take it for granted. It also presents the *shape* of the data, (like is it peaked or flat or skewed).

"The Appraiser brain" overload and understanding large amounts of data

In valuation, “the appraiser brain” can easily absorb and compare four or five sales data. The human brain is *extremely* good at generalizing from even two or

three data points. But present the brain with eight or ten data points and it simply zonks out.

At that point, **summary parameters and plots of the data allow the human brain to understand the data**, no matter how large. Why is this important?

Data: how much, how to use, limits of inferential statistics

It's important to understand and analyze whatever data is available. USPAP requires it! (See Standards Rule 1-4.)

Analytically, it is important because you never want to throw away perfectly good information. **More information *always* provides a truer and surer answer** (accuracy and precision).

One of the main deficiencies of vintage traditional appraisal is the "information loss" that occurs when you use just three or four comps, when the CMS (Competitive Market Segment)[®] is larger, and can provide a surer and truer result.

Graphs help fill in this important part of the analysis challenge. Computers provide the quick way to summarize data. Summary parameters are all you need.

The difficult and convoluted inferential sample statistics are not necessary (such as p-values, confidence intervals, and hypothesis tests). In fact, they only serve to confuse the issue. "Appraisers don't do no random samples."

Just because they are called "advanced analytics" doesn't make them an appropriate model for valuation.

MOST USEFUL GRAPHS for appraisers

The most useful graphs for appraisers include the following:

- **Histograms** and **boxplots**, to describe a neighborhood, market segment, or property type;
- **Bar plots**, to show and compare any two or more groupings of data; and,
- **Scatterplots**, to show the association of two measure variables, such as price on size.

USES OF GRAPHS

There are four primary uses for plots of data: explore, classify, predict, and explain.

- **Exploring** helps with scope of work, identifying the CMS (Competitive Market Segment),[®] and the important elements of comparison (predictor variables).
- **Classification** methods categorize data, for example: "*Is it a comp, or not a comp?*"

- **Prediction** is the predominant model and purpose in valuation.
- **Explanation** in reporting of valuation results is a visually concise and clear method.

In the Valuemetrics.info classes, we emphasize that valuation modeling means using the right plots to help answer the right question. The use of the right plot is a science in itself.

Just because you learn to create a pretty graph, does not mean it communicates well.

Finally, and most importantly, visual tools optimize the relationship between the strengths of the human brain and the algorithmic power of the computer.

Data science explicitly recognizes the need for the subject matter expert. Evidence Based Appraisal[®] is the valuation application of data science.

Data

Appraisers add Value to Data

Data is data. It only becomes useful in two ways. Simple, huh?

Appraisers and asset analysts **add value to data** by a systematic process. The analysis turns data into useful information. The information can then become knowledge, useful for making a decision. Analyst judgment is still required. The *judgment is improved* when there's an understanding of the underlying science.

Data becomes useful in part by categorizing (like picking comps), or associating (like applying simple regression).

Types of data

But first we need to really understand some things about **the nature of data**.

It's important to understand data basics because the type of data has everything to do with how it can be **analyzed and visualized and presented**.

It's also important to understand that the levels of data are different from the types of data, as well as the different ways in which computers handle data types.

For the asset analyst, **data levels are the way to think critically** and get the best understanding from whatever and however the data shows up.

There are four data levels: nominal, ordinal, interval, and ratio. Each of these strongly influence how we make modeling decisions:

- Nominal (name) Qualitative Can only be counted
- Ordinal (order) Qualitative Can also be put in sequence
- Interval (even spacings) Quantitative
Can also be added/subtracted

- Ratio (true zero) Quantitative
Can also be multiplied/divided

You might compare these “analytic” data levels to common basic “atomic” ways in how a computer sees them: **integers** (whole numbers), **Booleans** (0 and 1), **characters** (alphabetic), **floating-point** numbers (decimal point moveable), and **alphanumeric** strings (letters and numbers).

“R” enables some larger, useful data types, like: **vector** (a row or column); **matrix** (a table with same data types); an **array** (matrix of 3+ dimensions); **data frames** (different data types); **lists** (ordered collection), and; **factors** (categorical).

This may seem daunting, but in practice, **appraisers already know intuitively** how to deal with such stuff!

As an analyst, what’s important are the data levels. These put the appraiser brain into clarity of action and decision and modeling.

Data levels and modeling decisions

It’s the four levels of data that are important to the appraiser/analyst.

First, the data level initially determines what type of models are possible. Then to know the data level helps the analyst make some important **modeling decisions**:

- 1) Whether to use descriptive summary numbers (parameters) or not;
- 2) What type of analysis (“statistics”) can work;
- 3) What type of graph(s) assist the human modeling brain, and the decision maker’s brain;
- 4) When transforming the data level might help.

Transforming the data from one type to another is an important part of the analyst/modelers job. It takes the subject matter expert – the appraiser – to make these decisions.

Computers are really good at algorithms. The human brain is really good at model selection.

Data is the starting point. It becomes information with the three basic analytical tools. Next, we look at the three simple but powerful tools to extract information from data - how data analysis came to be data science.

Science

Stats, Graphs, Data, and now – Science. Why is science relevant? Isn't good judgement important?

Science is: “**the systematic study of the structure and behavior of the physical and natural world through observation and experiment.**”

So how does this relate to valuation?

First, we can get rid of a big chunk. **Appraisers cannot do experiments.** *Appraisers must rely on **observation** of what already exists* in the natural world.

If anything, this is an objective of valuation – to rely on what actually has happened (sales), rather than what could have happened, or hypothetically could be construed to have happened.

Can we get rid of another chunk? Do appraisers work with the physical world, or the natural world? Physical science usually includes physics, chemistry, geology, and astronomy. Natural science usually includes things from nature, including biology, human behavior, and arguably – economics.

While appraisal inherently involves physical property, **the valuation study itself is about human economic behavior.** This is the study of the interaction of *human beings*. Beings who act on both economic cues and personal preference cues. (Income properties vs. amenity properties). The physical properties provide data to measure and classify human responses and interactions

As we know, **appraisers work with whatever data is available or can be mined.** Valuation analysts work with data in two types: 1) data that can be used as is; and, 2) data that has to be generated – personally observed, mutated (calculated) from existing data, or enhanced by further data mining (called verification).

So, for the purpose of valuation, or asset analytics – we reduce our **definition of valuation data science.**

Valuation is the systematic study of the structure and behavior of the natural world through observation.

This is important. For example, the analysis is *not* the study of the population of all the houses in a neighborhood. Our analysis is the study of all the measurable human interactions in a market segment. The measurable human interactions are called “sales”.

How about judgment? Will science replace appraisers? NO. Not at all. Science itself requires human involvement.

There's science in art. Think of the harmonic ratios of music. The perspectives and ideal proportions of drawings. The kinetic balance of dance. The physical/sexual response to body proportions. Science in art.

Similarly, there is art in science. Abductive reasoning required to identify a subject of a study, and an initial direction of search. (Appraisers call it scope of work). There's the categorizing function. (Appraisers ask: Is it a comp, or not a comp). There's the association function. (Appraisers call it "making adjustments"). This is the art of valuation.

But wait, there's more! Competent human judgment is required as an analysis progresses. We call it modeling. As an asset analysis proceeds, the subject-matter expert, the appraiser – must make modeling decisions. A valuation goal, the appraised value, has three parts. Scientists call it accuracy, precision and relevance. For our purposes we can call it with three simpler words:

1. **Trueness** – are we getting the *right* answer?
2. **Sureness** – how reliable is our answer (the range)?
3. **Suitability** – was the right question asked?

These are the goals of valuation. We now have the parts to compare Valuation Data Science to traditional "vintage" classical opinion-based valuation. Yes, judgment and art are still required. But EBV (Evidence-Based Valuation)[©] emphasizes the words "see the analysis, see the result." Data science sharpens and enhances appraiser judgment. It does not replace it.

Summary

How do Stats, Graphs, Data, and Science go together? How is this stuff different from the long-established classical, traditional appraisal "process"? Is this technology or a new theory?

Is data science somehow better? Or is it just mumbo-jumbo to look impressive? Is there something wrong with traditional appraisal theory?

The traditional emphasis on three approaches continues to align with the way valuation problems arrive, and the data available to solve them. What *has* changed is technology. This includes hardware, computation, software, and brain-machine interface.

What is missing is a profession that focuses on what appraisers have *always* done well - but now takes advantage of **what can be done**.

We hear these things:

- "Computers will never replace the appraiser."

- “The end is near. The appraisal profession is dying.”
My opinion? Both are wrong. Yes, both are wrong.
- Computers sharpen appraiser judgment.
- The profession itself will change (or be replaced).

Appraisers can blame the technology – or embrace it!

Who will take advantage of the opportunity? The appraisal profession – or someone else? I say appraisers have the best and highest set of competencies in markets, in identifying valuation problems, and in the ability to understand and implement the needed modeling skills.

The ability to do instantaneous statistics is here. The ability to create instantaneous graphs is here. Instantaneous data is here, (*and we don't need to take samples*). And the science of data is here.

What appraisers do need to learn is analytics software. Canned commercial software will not do it. The accountant's spreadsheet will not do it. These simply do not encourage and enable the modeling skills so necessary. The modeling skills require subject matter expertise. **The expertise is best provided by experienced appraisers – armed with a newer, friendlier computer competence.**

Data science is a new field, perhaps less than 15 years old. Yet there are graduate level degrees offered all over the world. Today it's considered the hottest new field for employment.

The difference between data science, data analyst, and data scientist (appraiser)

The difference between data science and statistics is that **data science recognizes and requires a subject matter expert** (the appraiser?). *The data analyst is an expert in analysis of given data. The data scientist understands and insists on the importance of field-related expertise.* This is a big difference!

Summary statistics enable the human brain to understand and analyze sets of data. Plots and visuals expand this human strength. These allow the human brain to do what it does so well: generalize, formulate questions, try alternate solutions, and interface with the algorithmic computer power in an instant. Quickly and clearly. Easily and understandably.

To understand data, the practitioner must understand data types, data levels, and how computers deal with data. The practitioner must understand how to transform (convert) data from one level to another. And must understand how to model and deal with the trade-off between information loss and comprehension.

Where to get more information

In the Valuemetrics classes, starting with *Stats, Graphs, and Data Science 1* – we integrate the art, the science, the analytic software, the concepts, the protocol and the practice of asset analytics. The future.

The future is bright for those competent in modeling – the use of stats, graphs, and the art of data science. Will it be appraisers? Or will it be practitioners *called by a different name?*

Someone has to do it.

About the author

George Dell, MAI, SRA, ASA, CDEI provides a basic course, approved in most states for appraiser CE: *Stats, Graphs, and Data Science1*. For further information visit www.georgedell.com.

Access is free to class information, a link to the voluntary support group of the National Appraisers Forum (Yahoo Groups), as well as useful analytical tools in the files section there. It is our intent to provide tools, insight, and a professional community to share information on preparing for the near-future shift to Evidence Based Valuation Practice.©

I believe that appraisers can survive and prosper.

Disability - your greatest risk

Many appraisers worry about the risk of getting sued on an appraisal, but one of your greatest risks is becoming disabled and unable to work. To appraise at your full capacity, you have to be able to walk, hear, and see.

If disabled, you may be able to continue working, but at reduced capacity. Or, you may not be able to do field work but you can do desktop appraisals and reviews. But, you will probably not be able to work at all for a period of time.

Since appraisers spend a lot of time driving, getting in an auto accident is a much higher risk than for people working in an office. Other risks include getting injured during an inspection, plus the risks we all have of a serious medical problem.

Jack Jones had a successful appraisal business, netting him over \$100,000 per year. Combined with his wife's income of \$45,000 per year as a dental hygienist, they have a very comfortable life, with two kids in college and one in high school.

One day, Jack was driving down the freeway and was rear-ended by a large truck. He had emergency surgery for massive injuries. His family was informed that he will survive, but it will be many months before he can return to work, even on a part-time basis.

After the initial jubilation that he will live, his wife starts thinking about how they will make it financially. His medical insurance will cover the medical and rehabilitation costs. All of Jack's net income was generated by his own appraising and reviewing. The fee splits from his appraisers won't even cover his overhead. Jack and his wife have enough in savings to cover 4 months of lost income, but they don't have any disability insurance.

Even if Jack has associate appraisers in his office to do appraisals, he still produced about 30% of the income himself. Plus, he reviewed all their work and was the primary contact for clients.

For appraisers that work solo, the risk is significantly higher, as there is no one else to do appraisals to provide income.

We all have insurance for autos and fire. Most of us have life insurance. Almost all of us have E&O insurance. But, your greatest risks aren't not being sued over an appraisal or having your house burn up.

The Social Security Administration estimates that one in four 20-year-olds will become disabled and unable to work before they reach the age of 67. Also, 5.6 percent of working Americans will experience a short-term disability (six months or less) due to illness, injury, or pregnancy on average every year.

Do It Now

Don't wait. Do it now. I had back surgery in 1988, two years after starting my business. I was very fortunate - it was successful and I had a full recovery with only 6 weeks off work. I had an office manager and two associate appraisers which really helped. Did I have disability insurance before the surgery? No. Did I get it? Yes, but it excluded any back problems.

An appraiser I have known for many years was diagnosed with advanced breast cancer at the age of 62. Her prognosis was not good and she did not expect to survive very long. She had a 5 year policy for a relatively low premium with "own occupation" coverage for appraising and received \$2,000 per month until she was 65. It was partial income replacement but really helped. She survived and is healthy now. She regularly encourages the appraisers to get disability insurance.

Life vs. disability insurance

Should you have life, disability, or both?

The reason for life insurance is to protect your family financially if you die. As you get older and your children leave home, this is less important. I had a disabled spouse and had life insurance for many years to payoff our mortgage plus provide some additional income. When he passed away, I dropped the insurance.

Disability is a much greater risk than death, but the coverage is for much lower amounts - monthly payments up to 60% of your income. Self employed persons can't get workers comp coverage (unless they are incorporated). Most people are not disabled for the rest of their lives. This insurance can help you if unable to work for a short or long period.

Disability insurance keeps you going while you are recovering. I no longer have disability insurance as I receive \$3,000 in Social Security per month. (I waited until age 70 to start collecting.)

Risk of becoming disabled for appraisers

There are lots of varying statistics on becoming disabled at some time during your working life, varying from 80% to 20%. Much of the data and analyses come from the disability insurance industry.

But, these numbers are averages. Appraisers work in the field, which is much riskier than an office job.

I sprained my ankle and had other "encounters" will stuff hidden in grass, broken concrete, ladders, etc.

I used www.whatsmypdq.org to determine Personal Disability Quotient(PDQ) for appraisers. This is from a non-profit organization, Council for Disability awareness.

The example I used: Female, Age 55, Height 5 ft. 3 inches, weight 135. There were four choices for type of job - Mostly Office, Little Office, Little Physical, Mostly Physical. I selected Little Office. No tobacco, average healthy lifestyle, no treatments for high blood pressure etc,

Here are the results:

- Your chances of being injured or becoming ill and unable to work before you retire for 3 months or longer - 13%
- If you do become disabled for 3 months, your chances of the disability lasting 5 years or longer - 46%
- The average length of a long-term disability for someone like you is 85 months.

To calculate the financial risk or Earnable Income Quotient (EIQ), I used an income of \$75,000 per year, annual increase of 3%, and retirement at age 70. The answer was \$\$1,394,919.

Results for selecting Little Physical for type of job the probability of being disabled for 3 months or longer increased to 28%. The other numbers were the same.

I strongly recommend doing this analysis for yourself. It only takes a few minutes and is very easy to do.

Social Security disability

You have Social Security disability coverage, if you have enough quarters in. But, it typically takes over a year to get started, and the benefits are relatively low compared with current earnings. The maximum monthly benefit is \$1,710.

Also, you must be unable to perform any gainful activity and the disability must be expected to last at least 12 months or result in death.

Where to get disability insurance

Disability insurance policies are available from many insurance brokers and companies. Check with your personal insurance broker. The Appraisal Institute offers a group disability and professional overhead coverage to its members through Appraisal Institute Insurance Trust. Check to see if any of your groups or E&O companies offer it.

Please note that some people say that it can be difficult to collect from your disability insurance company and it make take awhile. Be sure to Google companies you are interested in to see if there are any problems getting paid.

One useful website is www.diattorney.com. It is a site set up and maintained by attorneys who represent claimants in disability claim disputes. It contains information, articles and comments/complaints on all of the major disability insurance underwriters in the country. Use the pull down menu on the upper left of the home page.

Advice from a knowledgeable insurance broker about purchasing disability insurance

"As a general rule I would suggest that appraisers research disability insurance thoroughly before purchasing it just as they would any important insurance product. In addition to reading the policy carefully and asking questions regarding any provisions that are unclear, I recommend finding out as much as possible about a company's practices with respect to actual claims."

"As with any insurance product it is also important to verify that the company is large enough and financially strong enough to meet its claim obligations as disability claims can last for many years and benefits may well represent an important source of an appraiser's income in the event that he or she is unable to

work in the event of an illness or accident. That is certainly one reason that the Appraisal Institute chose New York Life as its insurance carrier."

"It has always concerned me that most self-employed appraisers do not carry disability insurance. Many seem to believe that Social Security disability benefits will be sufficient, not realizing that these benefits are limited, hard to qualify for and do not begin for six months even if they are approved."

"I would suggest using a local broker as long as the appraiser is comfortable with the person and he or she is knowledgeable regarding disability. I think it is especially helpful with this product as it is rather complicated and difficult even for insurance people who are not disability experts to understand."

Private disability insurance

Disability insurance can only be purchased for partial, not full, replacement of income, typically 60%. The insurance company wants to be sure you are financially motivated to return to work.

However, disability income from a private policy is generally not taxable, so it's probably closer to your after-tax income.

What to look for in a policy:

1. Coverage for "own occupation".
2. Both non-cancellable and guaranteed renewable.
3. Optional inclusion of partial disability.
4. Optional cost of living adjustments.

Primary cost factors:

1. The dollar amount of income to be received. (The higher the income, the higher the premiums.)
2. Length of waiting time before benefits start. (The shorter the wait, the higher the premiums.)
3. Duration of the benefits. (The longer the duration, the higher the premium.)

For an appraiser, you should get coverage for "own occupation", or coverage if you are unable to appraise. Many companies try to deny insurance by saying you must be able to do "any gainful occupation", such as Social Security does.

Your policy should be both non-cancellable and guaranteed renewable.

You may want to include coverage for partial disability: unable to perform one or more parts of a job.

A cost-of-living adjustment ensures that your benefit goes up over time. This is particularly important for any very long-term disability.

Disability coverage for you, your spouse, or both?

How much income do you want to replace if disabled? If you or your spouse provide most of your family income, you will probably want to insure only the higher-earning person.

If you want as much protection as possible, insure yourself and your spouse.

Long term individual coverage costs

You can expect to pay between 1% - 3% of your annual gross income for a quality policy.

Most long term benefits continue until age 65 or your retirement age under Social Security.

Example: If you are earning \$50,000 per year you can expect to pay between \$500 - \$1500 per year depending on your occupation, age and the level of benefits and optional riders that you include on your policy.

Quotes vary widely, so shop around. All the options can make it confusing.

Here's a sample quote for "own occupation": The cost varies with age, gender and occupation. A healthy, 35-year-old man who earns \$75,000 per year in a white-collar profession would pay about \$100 a month to The Guardian for a policy with a \$4,000 monthly income benefit that continues to age 65 if he's permanently injured. If he buys it at 40, the same insurance costs about \$120 a month.

Sample quotes for: payment to age 65, \$3,000 per month income, 90 day waiting period, total and partial disability.

As you get older, your risk increases. Below are sample comparative rates.

Partial disability:

Age 35: \$1,200 per year (\$40 per \$100 of coverage)

Age 45: \$1,800 per year (\$60 per \$100 of coverage)

Age 55: \$2,550 per year (\$85 per \$100 of coverage)

Only full disability

Age 35: \$1,020 per year (\$34 per \$100 of coverage)

Age 45: \$1,560 per year (\$52 per \$100 of coverage)

Age 55: \$2,220 per year (\$74 per \$100 of coverage)

- Cost of Living adjustment increases payments by about 20%

- Increasing the waiting period from 90 to 180 days would decrease the payment by about 10%. Reducing the waiting period further, from 60 to 30 days would increase the payment an additional 20%.

- A lifetime benefit would increase the payment by about 20%. However, there are many variables, such as when the disability started and whether it was due to accident or illness.

Short term disability coverage - another option

Most disability lasts less than one year. Short term insurance is much less costly than long term.

New businesses and part-timers

It is very difficult for new business owners to obtain disability insurance as they have no income stream.

Part timers who work less than 26 to 30 hours per week typically can't get coverage as insurers figure there's no incentive to return to work.

Professional overhead insurance

Another cost-effective option is professional overhead insurance, which is short term, typically one to two years, and covers actual business overhead expenses such as office rent, support staff salaries, and insurance. You must continue to be in business after becoming disabled.

For a 45-year-old, with a 30-day waiting time, and a 12-month period, a typical premium is \$27 per year per \$100 of coverage. For example, a \$3,000 per month coverage would cost \$810 per year. A 24-month benefit would cost \$34 per \$100, or \$1,020 per year.

Group insurance

Check with organizations you are a member of to see if they offer a group disability insurance plan, which may be cheaper than a personal plan. The Appraisal Institute has disability and professional overhead group insurance.

Key person disability

What if your partner or a key employee became disabled? This insurance reimburses the business for the loss of a key employee and allows funding of temporary replacement or training of a successor.

Some stats

- One in five Americans aged 35 and older will experience a long-term disability — one that lasts three months or longer — before their 65th birthday
- you are three times more likely to become disabled before age 65 than you are to die.

- 23,000 people are killed in accidents at home each year....350,000 will be disabled.
- 13,000 people are killed in work-related accidents each year....2,200,000 will be disabled.
- 21,000 people are killed in public accidents each year....2,700,000 will be disabled.
- 51,000 people are killed in vehicular accidents each year....2,000,000 will be disabled.

The most common reasons for short-term disability claims are:

Pregnancies (25%)

- Musculoskeletal disorders affecting the back and spine, knees, hips, shoulders, and other parts of the body (20%)
- Digestive disorders, such as hernias and gastritis (7.8%)
- Mental health issues including depression and anxiety (7.7%)
- Injuries such as fractures, sprains, and strains of muscles and ligaments (7.5%)

The most common reasons for long-term disability claims are:

- Musculoskeletal disorders (29%)
- Cancer (15%)
- Pregnancy (9.4%)
- Mental health issues including depression and anxiety (9.1%)
- Injuries such as fractures, sprains, and strains of muscles and ligaments (9%)

Where to get more information

Most of the companies offering disability insurance are large life insurance companies such as Northwestern, Equitable, and Prudential. Using a broker experienced in disability policies is a good option. Be sure to google the insurance company to see if there are any problems getting paid.

Check with your appraisal association or other business group to see if they have a group plan for personal disability or professional overhead insurance.

How to get started in commercial appraising: 5+ unit apartments

Many residential appraisers don't like working for AMCs. Mortgage rates are going up and lender business is going down.

I do lot of non-lender apartment form appraisals, mostly for estates. Commercial appraisal fees are down, but apartment fees are steady due to less competition.

Commercial (including apartments) appraising is much more steady with lots of non-lender options. How can you break into this business?

Learning how to appraise commercial property takes a long time (3-5 years++) because you appraise so many different property types (hotels, warehouses, retail, etc.) Commercial properties often have issues such as highest and best use and zoning conflicts.

You must be able to analyze leases, use a spreadsheet program, write narratives, and have good financial and math skills.

Commercial appraising is not for everyone, but I really like it. I prefer residential, as they are much easier due to good data, and I spend much less time per appraisals. But non-lender residential volume is low, so I also do commercial appraisals. Very few residential appraisers can make it financially doing only non-lender work.

Fortunately, appraising 5+ unit apartment properties is not much different than appraising 2-4 unit properties.

How to get started doing 5-10 unit apartments

Many commercial appraisers don't like to appraise apartments because of the relatively low fees and the use of form appraisals.

If you can appraise a 2-4 unit property, you can learn to appraise small apartment buildings with 5+ units. I find that 5+ units are easier to appraise than 2-4 units as they are purchased on their income producing capability. In contrast, 2-4 units are often not purchased by sophisticated investors, so appraising them has issues somewhat similar to homes, such as changing buyer motivations, etc.

You have already filled out the Fannie Operating Income Statements where current income and expenses are required. The apartment expenses are similar except you also are required to forecast expenses, plus consider a few more income items, such as laundry, and expenses such as projected property taxes and replacement reserves.

In my market, Fannie forms 71A and 71B are used, mostly 71B. They are in your forms software.

Does residential experience help?

This is a very controversial topic. When I started appraising in the 1970s at assessor's offices, you started in residential. The better residential appraisers were allowed to move into commercial appraising.

Since then there has been fairly strict "tracking". When you start in residential or commercial, you stay there. It is hard to move to the other field.

Personally, I find my residential skills very helpful in understanding the commercial market. Residential focuses much more on buyer motivation. You are only appraising two types of properties: single family and 2-4 unit properties so you really become an expert. The MLS data is much better than for other property types. I don't know of any commercial MLS' that have much data.

In contrast, commercial appraisers work on a wide variety of properties, such as apartments, industrial single and multiple tenants, retail stores and strip malls, etc. There are fewer transactions and finding out about them can be tough. Highest and best use is often a big issue. Almost every commercial appraisal I have done has something about it that was unique.

However, many commercial appraisers say it is difficult to train a residential appraiser to do commercial appraisals. They prefer to train someone with no appraisal experience. That is one of the main reasons I recommend starting in small apartments.

Do you like appraising 2-4 unit properties?

If you don't like doing them, you won't like appraising 5+ unit apartments. If you like doing them they can really help you get started doing 5+ apartment properties.

Appraising in a market where most properties are purchased by investors is most similar to appraising 5+ unit properties. They are concerned about the income and cash flow potential.

If you have never appraised a 3-4 unit property in an investor market, you can offer to do one for free for the owner just to see what it is like. 2 unit properties are often not investment properties, depending on the market.

What about math skills for apartments?

Have you ever done an income approach on a 2-4 unit property? For small apartments you need the same math skills as a 2-4 unit property - add, subtract, multiply, divide. If you can calculate a GRM, you can calculate a GIM and an OAR.

Have you ever filled out an operating statement for a 1-4 unit rental property, which are for lending purposes and are not financial statements? They are similar to filling out a current and projected financial statement for 5+ unit properties.

More complicated math, such as discounted cash flow analysis is not typical for most small apartment markets.

Apartment appraisal forms - 71A and 71B

For small apartments, typically under 20 units, a 4-page appraisal form, 71B, is typically used in many areas. Sometimes the 10-page 71A form is used. See which form is preferred in your area. I use the 71B form for apartments up to 30 units. For larger properties I do narrative reports.

The forms are available in most residential appraisal forms software. The forms are old so you will need to include additional material now required by USPAP. You can do it yourself and can use the form 1025 (2-4 units) as a guideline. It will be a very good exercise in understanding USPAP.

Take a look at the 71B form. It is a Fannie form, so it will look very familiar, except no adjustment grids. If you are an "old timer" it is similar to the old 2-4 unit appraisal form: focuses on income with no adjustment grids.

Of course, you will need to change the certification and limiting conditions as it is not a 2-4 unit appraisal for Fannie Mae, plus add boilerplate so it conforms to the current USPAP.

The 71B form states that it is to be used only for apartments where the "loan request does not exceed \$750,000." Few, if any, clients care about the limit, including lenders.

Apartment appraisal fees

Apartment fees are substantially higher than 2-4 unit fees. My fees are at least twice the fees for 2-4 unit appraisals. Some markets, and clients, prefer narrative apartment reports. These reports are substantially higher.

Apartment data

If you do 2-4 unit appraisals, you are already getting rent comps. Rentometer at www.rentometer.com is an online service that gives good apartment data by city.

Your MLS may include some, or all, 5+ unit apartments, especially smaller apartment properties. Unfortunately, the only comp database in my market, and many other markets, is Costar, which is relatively expensive. You cannot get a reduced fee by purchasing only apartment data. You will be working under a supervisor and should be able to use that person's data sources.

How to get started writing narrative reports, if you want to do commercial appraisals

Most commercial appraisals are in narrative format. In some markets narrative reports are used for apartments. If so, its time for you to practice producing narratives. If you've written a term paper in college, you can do a narrative.

The best way to get started is to complete a residential appraisal you have done on a form and convert it into a narrative report. Just follow the form. Instead of checking boxes, write out your description and analysis.

What classes should you take for certified general?

Check the requirements for certified general in your state. Be sure to take your classes from the Appraisal Institute as they are preferred by most commercial appraisers.

If you already have a bachelor's degree, I strongly recommend taking finance and accounting classes as they will give you the foundation for commercial appraising. When I started appraising I came from a science background, so my math skills were strong. But I knew I lacked basic business education, so I got an MBA which dramatically improved my appraisal skills.

If you are licensed or certified residential appraiser, you probably already have basic appraisal principles, procedures, statistics, and USPAP. You will need to take an additional 210 hours of classes. Go to www.appraisalfoundation.org for the most recent appraisal licensing requirements. Also check with your state regulator, who may have more requirements. AQB requirements are the minimum.

Check www.appraisalinstitute.com to see when and where classes are offered.

Taking online classes is NOT recommended. If you are unable to find local classes, see which required classes are offered online by the Appraisal Institute. Live is much, much better for networking, with the instructor and other attendees. I still remember my first income class, which I took in 1977 from the Society of Real Estate Appraisers.

Do NOT take classes from any provider except the Appraisal Institute or other well known professional appraisal associations.

How many extra experience hours will you need?

You will need 3,000 hours total with at least 1,500 hours of non-residential experience. An additional 180 hours of education is required. These are the minimum requirements per the Appraisal Foundation.

Check with your state regulator for experience requirements, such as variety of appraisal types required and types of reports.

What about a college degree?

A college degree is required for certified general. A degree in finance, accounting, English, or real estate is preferred to get someone to train you.

What about getting an MAI designation?

If you want to make a good, steady income in commercial appraising, you need an MAI designation, which requires a bachelor's degree (or equivalent). I will never give up mine.

Difference between markets for 2-4 and 5+ units

I never use 4 unit apartments as a comp for a 5+ unit appraisal.

The market is totally different due to financing. Fannie Mae loans on 2-4 units and has good terms. 5+ units are similar to commercial buildings with much less favorable financing terms. As mentioned elsewhere, they are all about the income producing potential.

Do a 5 unit apartment building for free to see if you like it

You could use 4 unit appraisal you did and "simulate" a 5 unit building. Add another unit in the drawing yourself, such as a detached unit or a rear addition unit and put it on the sketch. Or, divide a larger unit into two smaller units. Put it on the sketch. Then you could easily see the difference, including the apartment form.

When I started my appraisal business in 1986, I needed sample reports as I had previously worked for assessor's offices. I offered to appraise two apartment buildings owned by a friend for free. He said yes, of course.

When I did my demonstration appraisal report for my MAI designation, I worked with two other appraisers. We all appraised small warehouses on the same small street. We contacted the owners and they all said Yes to a free appraisal.

Then, when you look for a supervisor, you will have a sample apartment form appraisal.

Tips on finding a supervisor

If you decide to pursue apartment appraising, the best place is to network at Appraisal Institute, ASA, NAIFA or other association meetings. It may help to network at other appraisal groups, such as your state coalition.

Classes are okay, there is much less time for networking. Also, you want to meet the appraisers looking for commercial trainees.

Many commercial appraisers don't like to do apartments, particularly small 5+ unit properties. You could do them for your supervisor. The apartment sales market is very active all over the country.

Fortunately, commercial appraisers do not expect a trainee to pay to be trained or work for free. As a licensed or certified residential appraiser, you will need to have a certified general supervisor review your work and "sign off" on your commercial appraisal experience.

For non-lender work, check your state requirements. You may not need a co-signature for non-lender work. However, you do need someone to advise you per USPAP's competency rule. Some states allow certified residential to do non-residential appraisals over a specified dollar limit and get experience credit.

Offer to "tag along" with a commercial appraiser on a small apartment assignment to see how the inspection is done. Then offer to do a parallel report and have him/her review it. You can offer to pay a review fee, if necessary.

Offer to work for a very low fee split.

If you can't find anyone to tag along with, try doing one yourself on the 71B form. They are not very difficult.

If you really want to do commercial appraising, I strongly recommend taking basic commercial appraisal classes from the Appraisal Institute, to show that you are motivated and serious about becoming a commercial appraiser. They are difficult and you will need good math skills and know how to use Word and Excel for commercial narrative appraisal reports.

Doing both commercial and residential - financial issues

I have always done both, but it is relatively unusual where I am. Most who do this started in residential, then moved to commercial, which is what I did. I like both. Residential is fast focusing much more on the market rather than the numbers. Commercial and apartments can be challenging and can take much longer than 1-4 unit appraisals.

Transitioning from residential to commercial can be difficult financially. Many do residential appraisals to supplement their income from commercial appraisals. Most commercial supervisors want you to work full time for them.

It may be easier if you start part time doing apartment appraisals and then transition into commercial.

Should you do commercial (non-apartment) narrative appraisals?

If you're an experienced residential appraiser, you already know what you like about appraising.

Differences between commercial (non-apartment) appraising and residential appraising include:

- Much fewer comps and listings available.
- Expensive data.

- Time on the phone trying to get information from people on the sales and listings.
- Working with numbers and spreadsheets.
- Spending lots more time on each appraisal.
- Lots of learning in classes and individual training.
- Good writing skills for narrative reports.
- Spending most of your time in the office, instead of in the field.
- Need a network of other appraisers for advice, comparable rents, etc.

Useful book: "The Valuation of Apartment Properties"

The Appraisal Institute published the second edition of "The Valuation of Apartment Properties". The book uses two examples: a 12 unit building and a 150 unit property.

This book is "textbook" style and is written similar to basic appraisal books.

Since the book includes both the small apartment and the large apartment complex, some of the material is an over-kill for small apartments.

But the book has some practical information such as a sample pro-forma statement and how to calculate and use an Overall Capitalization Rate.

Most appraisals for small apartment properties are done on the 71A or 71B form. In some areas, narrative appraisals are done. The book does not go through the form.

If you're new to Income property appraising, buy this book.

To order the book, go to www.appraisalinstitute.com

What about fees for small apartment properties?

They are much higher than 2-4 unit appraisals, as many certified generals don't do them.

Useful book: "Using the Small Residential Income Property Appraisal Report"

The Appraisal Institute published this very practical book on appraising 2-4 unit properties using the 1025 form.

The book does not include a "sample" report, but goes through the report line by line explaining what is needed.

The Appendix includes an analysis of the Form 216, Operating Income Statement. This is used for lending purposes, not appraisal purposes, but requires most of the data needed for the 71A and 71B forms.

To order the book, go to www.appraisalinstitute.com.

Should you do apartment appraisals?

There are few opportunities for the future in residential lender appraising, the vast majority of appraisals. Expanding into commercial and apartments can help you withstand the large ups and downs in residential lending. Also, it can really help when expanding into non-lender work.

What's **UP** in technology



PROTECTING YOUR PRIVACY

Are Facebook, Uber, Amazon and Apple tracking you?

The public concerns about the use of these apps have been in the news lately, and many of you may be wondering how private your communications really are. Here we will answer your concerns and advise you how to mitigate your risk with four very popular devices/apps. These suggestions assume you are using an iPhone to access the apps.



Facebook Messenger App

Is Facebook reading your Messenger messages?

The answer is yes.

Facebook reads your Messenger conversations looking for conversations and images of child exploitation, malware and terrorism using their automated systems. Facebook will not use your Messenger conversations for targeted ads.

Facebook users can choose to encrypt any conversation to secure the communication. If someone sends you a Facebook Messenger message, point to the sending individual's picture and then choose the Secret Conversation option. At that point, the communication will only be visible to the two of you. To identify this, an image of a lock will appear next to the sending individual's picture and the message title will be tagged with the text "Secret Conversation". At that point the communication is completely private.



Uber App

Is Uber watching your every move?

The answer is now no, but they could be...

At one time, Uber was tracking you even when you weren't using the app. When users found out, they were pretty upset. Uber responded by fixing it, and promised not to track users unless they were using the app to secure a ride. The problem is that you might have accidentally set this option back on without realizing it. To check this, click Settings on your iPhone, scroll down and click on Privacy. NEXT, scroll to and select Location Services, and then scroll down to and select Uber. Choose to allow Uber to

track you only While Using The App. Uber will then not be able to track you unless you are using the Uber app.



Amazon Alexa

Is Amazon Alexa listening all of the time?

The answer is Yes and No, here's why...

Amazon Alexa is always listening for the wake word "Alexa" and it won't record until it hears it. Amazon does warn that in rare cases, Alexa will wake up if it hears a word that sounds like Alexa. To delete Alexa's recordings, open the Alexa app hit settings and scroll down to history. Click on any one of recordings and hit Delete Voice Recordings. That will delete your voice recordings history on Amazon's servers.



Apple's iMessage App

Are your Apple iMessages private?

Answer: Yes as long as they remain on your iPhone. Otherwise, they may not be...

Apple encrypts all of your iMessages so that no one other than you and the person you are communicating with can read them. If you are saving your iMessages to Apple's iCloud, the messages are encrypted, but Apple has the encryption key for these iCloud messages. If you are concerned about this risk, on your iPhone click Settings, then your Apple ID name, then iCloud and turn off Messages. Your message will no longer be stored in the iCloud and all your iMessages will be secure on your computer.

Conclusion

With the right settings these apps can be restricted to protect your privacy. It's always wise to check your apps privacy settings and address your concerns. The good news is that most of the app developers are keenly aware of your privacy and are including options to secure your private information. Always be aware of your risk mitigation options.

About the author

R. Wayne Pugh, MAI, CRE, CCIM, FRICS is CEO of real estate consulting and appraisal firm R. Wayne Pugh and Co., the head of Software for Real Estate Professionals Inc. and a principal member of Real Estate Counseling Group of America. He formerly served as president of the Appraisal Institute and as chair of the Louisiana Appraisal Board.



GRAPH

As you can see above, between 2013 and today, volume peaked in early 2013, declined, then peaked again in 8/16. The most recent peak was in early 2018. Today, it has declined and then came up a little and is down again. For many appraisers, volume started dropping in early 2017 and has been going up and down since then. The forecast is fewer loans in 2018 due to increasing interest rates. This is a good demonstration of the ups and downs of mortgage lending.

The survey covers approximately 75 percent of all U.S. retail residential mortgage applications, and has been conducted weekly since 1990. Respondents include mortgage bankers, commercial banks and thrifts. Base period and value for all indexes is March 16, 1990=100.

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