

## Depreciated Cost Analysis Webinar

This document is provided to teach Depreciated Cost Analysis by using the Solomon Sidekick User Manual.

The key concepts are economic age-life depreciation and marginal cost. These topics are explained on pages 5 and 6.

Before we talk about how depreciated cost analysis works, we need to understand why we need this information.

**USPAP** states that appraisers must be aware of, understand and correctly employ those recognized methods and techniques that are necessary to produce a credible appraisal. USPAP goes on to state that it is not sufficient for appraisers to simply maintain the skills and the knowledge they possess when they become appraisers. Each appraiser must continuously improve his or her skills to remain proficient in real property appraisal. This is from Standards Rule 1-1, General Development Requirements (a).

435 **STANDARDS RULE 1-1, GENERAL DEVELOPMENT REQUIREMENTS**

436 **In developing a real property appraisal, an appraiser must:**

437 **(a) be aware of, understand, and correctly employ those recognized methods and techniques that are**  
438 **necessary to produce a credible appraisal;**

439 Comment: This Standards Rule recognizes that the principle of change continues to affect the manner in  
440 which appraisers perform appraisal services. Changes and developments in the real estate field have a  
441 substantial impact on the appraisal profession. Important changes in the cost and manner of constructing  
442 and marketing commercial, industrial, and residential real estate as well as changes in the legal framework  
443 in which real property rights and interests are created, conveyed, and mortgaged have resulted in  
444 corresponding changes in appraisal theory and practice. Social change has also had an effect on appraisal  
445 theory and practice. To keep abreast of these changes and developments, the appraisal profession is  
446 constantly reviewing and revising appraisal methods and techniques and devising new methods and  
447 techniques to meet new circumstances. For this reason, it is not sufficient for appraisers to simply maintain  
448 the skills and the knowledge they possess when they become appraisers. Each appraiser must continuously  
449 improve his or her skills to remain proficient in real property appraisal.

In section (b), the appraiser is warned not to commit a substantial error of omission or commission. Diligence is required to analyze data that has a significant effect on the credibility of the assignment results.

450 **(b) not commit a substantial error of omission or commission that significantly affects an appraisal; and**

451 Comment: An appraiser must use sufficient care to avoid errors that would significantly affect his or her  
452 opinions and conclusions. Diligence is required to identify and analyze the factors, conditions, data, and other  
453 information that would have a significant effect on the credibility of the assignment results.

The foregoing begs at least two questions: what are recognized methods, and what do we need to know about data analysis to use recognized methods in a credible way?

## Recognized Methods

### Quantitative Adjustments

Several techniques are available to quantify adjustments to the sale prices of comparable properties:

- data analysis techniques such as paired data analysis, grouped data analysis, and secondary data analysis
- statistical analysis, including graphic analysis and scenario analysis
- cost-related adjustments (cost to cure, **depreciated cost**)
- capitalization of income differences

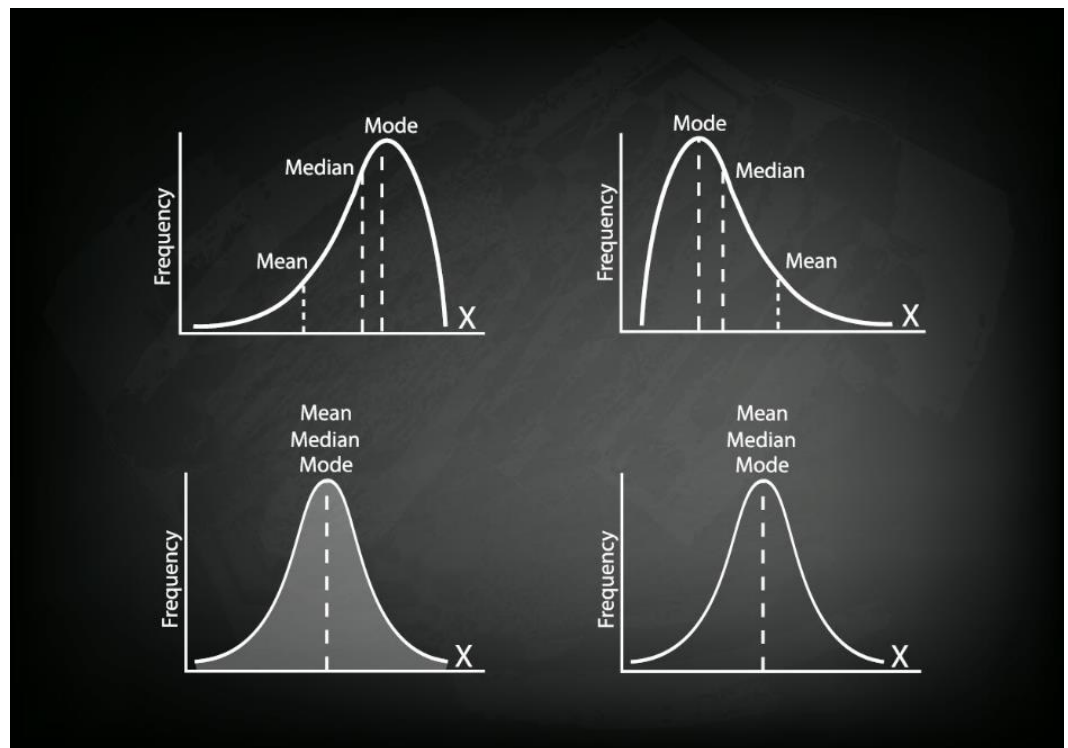
The Appraisal of Real Estate – 14<sup>th</sup> Edition p398

### Data Analysis

Knowing which recognized method applies to a particular appraisal problem requires an understanding of sample size and sample distribution. A normal distribution requires a minimum of 15 observations. A skewed distribution requires a minimum of 30 observations.<sup>1</sup> A normal distribution has similar mean median and mode.

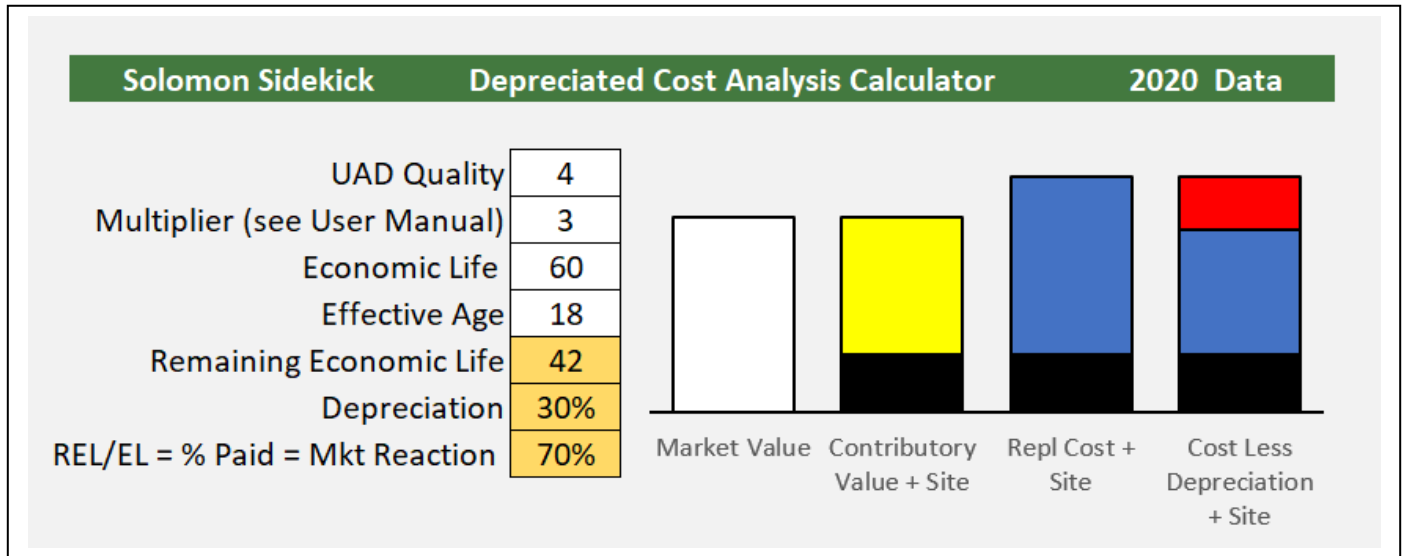
A skewed distribution has a mean that differs from the median and the mode.

The distribution of sale prices usually results in a mean that is higher than the median.



<sup>1</sup> Marvin A. Wolverton, An Introduction to Statistics for Appraisers, p171-172 published by the Appraisal Institute

## Solomon Sidekick 2020



### Solomon Sidekick Installs on Your Computer

One advantage is that the calculator will remain open on your desktop as long as you need. Other Solomon calculators are web-based and time out after 60 minutes of non-use.

A second advantage is that I am able to make revisions and improvements without the expense and delay of programming.

Also, the data and program are protected from unauthorized use. The calculator will only work on the computer it is installed upon. If you change computers, let me know and I will provide another copy for you.

You can reach me at [scullen2@comcast.net](mailto:scullen2@comcast.net).

The calculator will lock on January 1, 2021 when the 2020 data expires.

This application is licensed to one user. If you think someone would benefit from this spreadsheet, please have them download their personal version at [www.SolomonAppraisal.com](http://www.SolomonAppraisal.com).

### Solomon Sidekick does not replace the other Solomon calculators.

The intended use of this calculator is to derive depreciated cost adjustments when effective age is known or inferred by the scope of work of the assignment. In the desktop realm, appraisers are commonly instructed to assume that the interior condition is equal to the exterior condition. The exterior inspection usually rates condition and provides an exterior photo. This information, together with year built from public data, allows the appraiser to credibly estimate effective age within the scope of work. For example, the effective age of a 18 year old house can be reasonably estimated at 18 years if it is judged to be in average condition. Depreciated cost adjustments are then calculated from an effective age estimate of 18 years, together with a quality rating.

Solomon Sidekick uses licensed cost data to develop adjustments, but it does not complete the Cost Approach. If you need the Cost Approach and Site Value extraction, use the web-based applications Solomon Cost and Solomon Site.

Solomon Sidekick works from effective age calculations done with Solomon Cost or any other cost service. Page 4 of the workbook is designed so that you can calculate effective age quickly and document both the process and the results.

You can improve your workflow by adding Solomon Sidekick to your appraisal tools. After you have calculated the Cost Approach in Solomon Cost, use the effective age calculation in Solomon Sidekick to complete your report. The benefit is two-fold. First, Solomon Sidekick will not time-out. Second, all data will remain until you change it.

Third, there is no need to open individual surveys and manually apply adjustment rates to each comp. Percentage adjustments for 21 features can be applied instantly to any comparable market value.

Solomon Sidekick is designed to keep you profitable and compliant, even if your workload shifts from traditional to desktop assignments.

### Peer Consensus Survey Calculator\*

\*Surveys are a recognized secondary data technique.

Market Value	225000				
3rd Bedroom	4320				
4th Bedroom	1733				
Fronts Busy Road	12825				
Backs Freeway	11835				
Backs Water Tower	8955				
Backs Power Lines	8010				
Backs Railroad Tracks	10575				
In Ground Pool	Cold Winter	8100	Mild Winter	10058	
Pole Building, average condition, gravel floor, per 1000sf.	4260				
Steel Building, avg condition, concrete floor, power, per 1000sf.	14120				
Condition of Q4	C1 vs C2	C2 vs C3	C3 vs C4	C4 vs C5	C5 vs C6
	13050	15975	20025	26100	68625
Quality of C3	Q1 vs Q2	Q2 vs Q3	Q3vs Q4	Q4 vs Q5	Q5 vs Q6
	22950	16875	15975	18900	22950

Based on surveys archived for subscribers of SolomonAppraisal.com.

Watch this 5 minute video for the inspiration behind the surveys.

<https://www.youtube.com/watch?v=iOucwX7Z1HU>

The video refers to a discovery made in 1906 by Sir Francis Galton. Galton discovered that many non-expert opinions are better than one expert opinion, *if* the opinions are gathered in a blind survey. Galton was the first to use a survey. He discovered concepts he called Central Tendency and Standard Deviation. His work led to regression analysis. If there were a Mt Rushmore of statistics, he would be there. If I am interpreting Galton well, the peer consensus of many appraisers, working in different markets, is more reliable than one local expert, for answers to certain types of questions.

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Calculator Locks on 1/1/2021

## Depreciated Cost Analysis

**Depreciation:** Sidekick assumes economic age-life depreciation. Economic age-life depreciation is built-in to the 1004 and other residential report formats. To the right is how economic age-life is defined in the “The Dictionary of Real Estate Appraisal 6<sup>th</sup> Edition” published by the Appraisal Institute.

“The Appraisal of Real Estate 14<sup>th</sup> Edition”, also published by the Appraisal Institute, goes deeper.

“In the economic age-life method, the most important concepts are

total economic life (EL)

effective age (EA)

remaining economic life (REL)

In applying the concepts of economic life, effective age and remaining economic life expectancy, the appraiser considers all elements of depreciation in one calculation. Therefore, the effective age estimate includes not only physical wear and tear but also any loss in value for functional and external considerations.”

$EL - EA = REL$

$EA / EL =$  the percentage of depreciation

$REL / EL =$  the percentage of cost paid by the market

**Cost:** depreciated cost analysis assumes current replacement cost. Not the cost at the time the house was built, and not reproduction cost. There are many sources of unbiased third party cost data. Sidekick licenses data from “National Building Cost 2020”, published by Craftsman Book Company.

Cost data is typically published as average cost. Average cost is the correct basis for cost calculations. For example, 1500sf of GLA at an average cost of \$140.00/sf has a total cost of \$210,000.

**Average cost is not a good basis for depreciated cost analysis adjustment calculations.**

Here is why. 1500 sf costs \$140 per square foot, but 1300 sf costs \$147.70 per square foot. We need to solve for the marginal cost, the cost of one more square foot, to get a solid basis for DCA adjustments.

	GLA Size	Avg Cost \$/sf	Total Cost	Adjustment at Cost
Comp 1	1500 sf	140.00	\$210,000	
Comp 2	1300 sf	147.70	\$191,600	
Change	200sf		\$18,000	\$90

Total cost of 1500 sf minus total cost of 1300 sf divided by the 200 sf difference in size: \$90. The cost of one more foot, not the average cost of all square feet, is the correct basis for a square foot adjustment.

**economic age-life method.** A method of estimating depreciation in which the ratio between the effective age of a building and its total economic life is applied to the current cost of the improvements to obtain a lump-sum deduction; also known as the *age-life method*. See also **modified economic age-life method**.

**Analysis:** By combining the concepts of economic age-life depreciation and marginal cost, we can calculate a depreciated cost analysis adjustment.

If effective age is 18 years, and economic life is 60 years, there is 30% depreciation.

$EA\ 18 / EL\ 60 = 30\%$  depreciation.

When there is 30% depreciation, the market is paying 70% of cost.

If marginal cost of GLA is \$90, and the market pays 70%, the GLA adjustment is \$63.

**Two more facts for your analysis:**

1. Houses do not depreciate equally throughout the structure.

A house with overall lifespan of 60 years includes components with shorter and longer lifespans. Here are some examples from "Study of Life Expectancy of Home Components" published by National Association of Home Builders and Bank of America Home Equity in 2007.

Decks: 20 years, Asphalt roofing: 20 years, Aluminum Gutters: 20 years, Windows: 30 years, Furnaces: 15-20 years, Dishwashers: 9 years, Carpet: 8 -10 years, Wood Floors: Lifetime.

Notice how everything above, except the deck, is included in GLA? The deck is easy. It has 33% of the 60 year overall lifespan. Decks depreciate three times as fast as houses. We have survey results that indicate GLA depreciates faster than the house as a whole. A survey of Solomon users showed a consensus of 62% of 60 years. Use sensitivity analysis within the grid to see what makes most sense in your market. You are an analyst, not a data entry clerk.

2. Houses do not have the same construction cost throughout the United States. Cost varies by climate and other location factors (labor rates and material costs), proximity to urban areas, construction (brick vs frame) and economies of scale. All other things being equal, the cost of one house among many in a subdivision is less than a one-off build.

Sidekick uses licensed cost data that includes multipliers for location (by zip code) and other factors. The cost data is designed to work by combining all applicable multipliers into one number. In the example above with GLA at \$90, a zip code multiplier of +12% and subdivision economies of scale (-9%), the multiplier to use in the calculation is +3%.  $12\% - 9\% = 3\%$ .

**At 70% market reaction the GLA adjustment is \$65.**

**$\$90$  (marginal cost) x 1.03 (multiplier) x 70% (percentage paid by the market) = \$65**



## Multipliers

Construction costs are higher in some cities than in other cities. Add or deduct the percentage shown on this page or page 8 to adapt the costs in this book to your job site. Adjust your estimated total project cost by the percentage shown for the appropriate city in this table to find your total estimated cost. Where 0% is shown it means no modification is required. Factors for Canada adjust to Canadian dollars.

These percentages were compiled by comparing the construction cost of buildings in nearly 600 communities throughout North America. Because these percentages are based on completed projects, they consider all

construction cost variables, including labor, equipment and material cost, labor productivity, climate, job conditions and markup.

Modification factors are listed alphabetically by state and city, followed by the first three digits of the postal zip code.

These percentages are composites of many costs and will not necessarily be accurate when estimating the cost of any particular part of a building. But when used to modify costs for an entire structure, they should improve the accuracy of your estimates.

<b>Alabama Average</b> -4%	Salinas 939 1%	Atlanta 303 12%	Muncie 473 -8%	Camden 048 -10%
Aniston 362 -8%	San Bernardino 923-924 2%	Augusta 308-309 -2%	South Bend 466 -2%	Cutler 046 -7%
Auburn 368 -4%	San Diego 919-921 8%	Buford 305 -2%	Terre Haute 478 -3%	Dexter 049 -4%
Bellamy 369 5%	San Francisco 941 27%	Calhoun 307 -9%		Northern Area 047 -8%
Birmingham 350-352 2%	San Jose 950-951 17%	Columbus 318-319 -3%	<b>Iowa Average</b> -3%	Portland 041 2%
Dothan 363 -7%	San Mateo 943-944 21%	Dublin/Fort Valley 310 -8%	Burlington 526 1%	
Evergreen 364 -10%	Santa Barbara 931 7%	Hinesville 313 -6%	Carroll 514 -11%	<b>Maryland Average</b> 2%
Gadsden 359 -9%	Santa Rosa 954 16%	Kings Bay 315 -10%	Cedar Falls 506 -4%	Annapolis 214 8%
Huntsville 358 -1%	Stockton 952 4%	Macon 312 -4%	Cedar Rapids 522-524 2%	Baltimore 210-212 7%
Jasper 355 -8%	Sunnyvale 940 20%	Marion 300-302 4%	Cherokee 510 1%	Bethesda 208-209 13%
Mobile 365-366 -2%	Van Nuys 913-916 8%	Savannah 314 -4%	Council Bluffs 515 -1%	Church Hill 216 -4%
Montgomery 360-361 -2%	Whittier 906 8%	Statesboro 304 -11%	Creston 508 1%	Cumberland 215 -8%
Scottsboro 357 -4%		Valdosta 316 -1%	Davenport 527-528 1%	Elkton 219 -5%
Selma 367 -5%	<b>Colorado Average</b> 1%		Decorah 521 -8%	Frederick 217 7%
Sheffield 356 0%	Aurora 800-801 7%	<b>Hawaii Average</b> 20%	Des Moines 500-503 5%	Laurel 206-207 8%
Tuscaloosa 354 -4%	Boulder 803-804 4%	Aliamau 968 22%	Dubuque 520 -4%	Salisbury 218 -6%
	Colorado Springs 808-809 0%	Ewa 967 20%	Fort Dodge 505 -3%	
<b>Alaska Average</b> 23%	Denver 802 8%	Halawa Heights 967 20%	Mason City 504 -3%	<b>Massachusetts Average</b> 12%
Anchorage 995 26%	Durango 813 -1%	Hilo 967 20%	Ottumwa 525 -6%	Ayer 015-016 6%
Fairbanks 997 27%	Fort Morgan 807 -2%	Honolulu 968 22%	Sheldon 512 -7%	Bedford 017 15%
Jenau 998 19%	Glenwood Springs 816 4%	Kailua 968 22%	Shenandoah 516 -14%	Boston 021-022 37%
Ketchikan 999 18%	Grand Junction 814-815 0%	Luahalei 967 20%	Sioux City 511 5%	Brookton 023-024 20%
King Salmon 996 23%	Greeley 806 5%	Mililani Town 967 20%	Spencer 513 -7%	Cape Cod 026 4%
	Longmont 805 2%	Pearl City 967 20%	Waterloo 507 -3%	Chicopee 010 7%
<b>Arizona Average</b> -4%	Paposa Springs 811 -4%	Wahiawa 967 20%		Dedham 019 18%
Chambers 865 -8%	Pueblo 810 0%	Wailuku 967 20%	<b>Kansas Average</b> 0%	Fitchburg 014 11%
Douglas 855 -8%	Salida 812 -6%		Colby 677 -8%	Hingham 020 19%
Flagstaff 860 -7%		<b>Idaho Average</b> -9%	Concordia 669 -12%	Lawrence 018 14%
Kingman 864 -5%	<b>Connecticut Average</b> 8%	Boise 837 -5%	Dodge City 678 -4%	Nantucket 025 9%
Mesa 852 3%	Bridgeport 066 6%	Coeur d'Alene 838 -10%	Emporia 668 8%	New Bedford 027 6%
Phoenix 850 3%	Bristol 060 12%	Idaho Falls 834 -9%	Fort Scott 667 -6%	Northfield 013 2%
Prescott 863 -6%	Fairfield 064 9%	Lewiston 835 -11%	Hays 676 -13%	Pittsfield 012 1%
Show Low 859 -7%	Hartford 061 11%	Meridian 836 -9%	Hutchinson 675 -6%	Springfield 011 8%
Tucson 856-857 -5%	New Haven 065 7%	Pocatello 832 -10%	Independence 673 29%	
Yuma 853 2%	Norwich 063 3%	Sun Valley 833 -8%	Kansas City 660-662 5%	
	Stamford 068-069 12%		Liberal 679 14%	<b>Michigan Average</b> 1%
<b>Arkansas Average</b> -7%	Waterbury 067 6%	<b>Illinois Average</b> 4%	Salina 674 -7%	Battle Creek 490-491 -1%
Batesville 725 -9%	West Hartford 062 5%	Arlington Heights 600 14%	Topeka 664-666 -1%	Detroit 481-482 7%
Camden 717 -2%		Aurora 605 14%	Wichita 670-672 -4%	Flint 484-485 -4%
Fayetteville 727 -4%	<b>Delaware Average</b> 2%	Bellevue 622 0%		Grand Rapids 493-495 1%
Fort Smith 729 -7%	Dover 199 -4%	Bloomington 617 -1%	<b>Kentucky Average</b> -4%	Grayling 497 -7%
Harrison 726 -12%	Newark 197 6%	Carbondale 629 -4%	Ashland 411-412 -4%	Jackson 492 -1%
Hope 718 -8%	Wilmington 198 4%	Carol Stream 601 14%	Bowling Green 421 -5%	Lansing 488-489 0%
Hot Springs 719 -13%		Centralia 628 -3%	Campton 413-414 -11%	Marquette 498-499 3%
Jonesboro 724 -9%	<b>District of Columbia</b>	Chicago 618 -2%	Covington 410 2%	Pontiac 483 12%
Little Rock 720-722 -3%	<b>Average</b> 12%	Champaign 618 -2%	Elizabethtown 427 -10%	Royal Oak 480 7%
Pine Bluff 716 -11%	Washington 200-205 12%	Chicago 606-608 15%	Frankfort 406 7%	Saginaw 486-487 -5%
Russellville 728 -4%		Decatur 623 -7%	Hazard 417-418 -10%	Traverse City 496 -2%
West Memphis 723 -2%	<b>Florida Average</b> -5%	Galesburg 614 -4%	Hopkinsville 422 -5%	
	Altamonte Springs 327 -3%	Granite City 620 3%	Lexington 403-405 1%	<b>Minnesota Average</b> -1%
<b>California Average</b> 9%	Bradenton 342 -6%	Green River 612 5%	London 407-409 -7%	Bemidji 566 -6%
Alhambra 917-918 8%	Brooksville 346 -7%	Joliet 604 13%	Louisville 400-402 2%	Brainerd 564 -3%
Bakersfield 932-933 2%	Daytona Beach 321 -9%	Kankakee 609 -3%	Owensboro 423 -4%	Duluth 556-558 2%
El Centro 922 0%	Fort Lauderdale 333 2%	Lawrenceville 624 -6%	Paducah 420 0%	Fergus Falls 565 -10%
Eureka 955 7%	Fort Myers 339 -6%	Oak Park 603 18%	Pikeville 415-416 -8%	Magnolia 561 -8%
Fresno 936-938 -2%	Fort Pierce 349 -10%	Peoria 615-616 6%	Somerset 425-426 -11%	Manikato 560 -4%
Herlong 961 9%	Gainesville 326 -9%	Peru 613 2%	White Plains 424 -4%	Minneapolis 553-555 13%
Inglewood 902-905 9%	Jacksonville 322 -2%	Quincy 602 16%		Rochester 559 -1%
Irvine 926-927 13%	Lakeland 338 -8%	Rockford 610-611 3%	<b>Louisiana Average</b> 2%	St Cloud 563 2%
Lompoc 934 3%	Melbourne 329 -8%	Springfield 625-627 0%	Alexandria 713-714 4%	St Paul 550-551 12%
Long Beach 907-908 9%	Miami 330-332 1%	Urbana 619 -4%	Baton Rouge 707-708 10%	Thief River Falls 567 -2%
Los Angeles 900-901 8%	Naples 341 -2%		Houma 703 4%	Willmar 562 -6%
Marysville 959 9%	Ocala 344 -12%	<b>Indiana Average</b> -3%	Lafayette 705 8%	
Modesto 953 1%	Orlando 328 1%	Aurora 470 -5%	Lake Charles 706 13%	<b>Mississippi Average</b> -6%
Mojave 935 5%	Panama City 324 -11%	Bloomington 474 -2%	Mandeville 704 -3%	Clarksdale 386 -9%
Novato 949 18%	Pensacola 325 -8%	Columbus 472 -4%	Minden 710 -5%	Columbus 397 0%
Oakland 945-947 24%	Saint Augustine 320 -2%	Elkhart 465 -4%	Monroe 712 -8%	Greenville 387 -14%
Orange 928 17%	Saint Cloud 347 -2%	Evansville 476-477 4%	New Orleans 700-701 2%	Greenwood 389 -10%
Oxnard 930 2%	St Petersburg 337 -6%	Fort Wayne 467-468 -1%	Shreveport 711 -4%	Gulfport 395 -6%
Pasadena 910-912 9%	Tallahassee 323 -6%	Gary 463-464 8%		Jackson 390-392 -3%
Rancho Cordova 956-957 4%	Tampa 335-336 -1%	Indianapolis 460-462 4%	<b>Maine Average</b> -5%	Laurel 394 -7%
Redding 960 -3%	West Palm Beach 334 -2%	Jasper 475 -8%	Auburn 042 -4%	McComb 396 -11%
Redmond 948 17%		Jeffersonville 471 -5%	Augusta 043 -5%	Meridian 393 3%
Riverside 925 4%	<b>Georgia Average</b> -4%	Kokomo 469 -8%	Bangor 044 -6%	Tupelo 388 -7%
Sacramento 958 3%	Albany 317 -6%	Lafayette 479 -5%	Bath 045 -6%	
	Athens 306 -5%		Brunswick 039-040 -1%	

<b>Missouri Average</b> -3%			Binghamton	137-139	-2%	<b>Oregon Average</b> -3%			Arlington	760	1%	Lewisburg	249	-14%
Cape Girardeau	637	-5%	Bronx	104	10%	Adrian	979	-12%	Austin	786-787	12%	Martinsburg	254	-5%
Caruthersville	638	-7%	Brooklyn	112	7%	Bend	977	-5%	Bay City	774	39%	Morgantown	265	-4%
Chillicothe	646	-4%	Buffalo	142	1%	Eugene	974	-3%	Beaumont	776-777	18%	New Martinsville	262	-9%
Columbia	652	-4%	Elmira	149	-3%	Grants Pass	975	-5%	Brownwood	768	-8%	Parkersburg	261	1%
East Lynne	647	4%	Flushing	113	15%	Klamath Falls	976	-8%	Bryan	778	8%	Romney	267	-7%
Farmington	636	-8%	Garden City	115	15%	Pendleton	978	-3%	Childress	792	-14%	Sugar Grove	268	-8%
Hannibal	634	-2%	Hicksville	118	14%	Portland	970-972	10%	Corpus Christi	783-784	18%	Wheeling	260	5%
Independence	640	5%	Ithaca	148	-5%	Salem	973	-2%	Dallas	751-753	6%	<b>Wisconsin Average</b> 0%		
Jefferson City	650-651	-5%	Jamaica	114	14%	<b>Pennsylvania Average</b> -1%			Del Rio	788	0%	Amery	540	-1%
Joplin	648	-6%	Jamestown	147	-7%	Allentown	181	3%	El Paso	798-799	-7%	Beloit	535	5%
Kansas City	641	6%	Kingston	124	-4%	Altoona	166	-8%	Fort Worth	761-762	2%	Clam Lake	545	-8%
Kirksville	635	-15%	Long Island	111	30%	Beaver Springs	178	-5%	Galveston	775	24%	Eau Claire	547	-2%
Knob Noster	653	3%	Montauk	119	7%	Bethlehem	180	4%	Giddings	789	6%	Green Bay	541-543	3%
Lebanon	654-655	-12%	New York	100-102	31%	Bradford	167	-8%	Greenville	754	3%	La Crosse	546	0%
Poplar Bluff	639	-10%	(Manhattan)	100-102	31%	Butler	160	-2%	Houston	770-772	26%	Ladysmith	548	-2%
Saint Charles	633	1%	New York City	100-102	31%	Chambersburg	172	-7%	Huntsville	773	26%	Madison	537	8%
Saint Joseph	644-645	-1%	Newcomb	128	0%	Clearfield	168	-3%	Longview	756	1%	Milwaukee	530-534	6%
Springfield	656-658	-8%	Niagara Falls	143	-6%	DuBois	158	-10%	Lubbock	793-794	-7%	Oshkosh	549	4%
St Louis	630-631	8%	Plattsburgh	129	-1%	East Stroudsburg	183	-5%	Lufkin	759	8%	Portage	539	0%
<b>Montana Average</b> -3%			Poughkeepsie	125-126	1%	Erie	164-165	-6%	McAllen	785	-6%	Prairie du Chien	538	-7%
Billings	590-591	-2%	Queens	110	17%	Genesee	169	-4%	Midland	797	10%	Wausau	544	-3%
Butte	597	-3%	Rochester	144-146	2%	Greensburg	156	-4%	Palestine	758	2%	<b>Wyoming Average</b> -1%		
Fairview	592	12%	Rockaway	116	10%	Harrisburg	170-171	3%	Plano	750	7%	Casper	826	1%
Great Falls	594	-6%	Rome	133-134	-4%	Hazleton	182	-3%	San Angelo	769	-6%	Cheyenne/Laramie	820	-2%
Havre	595	-9%	Staten Island	103	8%	Johnstown	159	-9%	San Antonio	780-782	8%	Gillette	827	3%
Helena	596	-2%	Stewart	127	-5%	Kittanning	162	-6%	Texarkana	755	-8%	Powell	824	-3%
Kalispell	599	-6%	Syracuse	130-132	2%	Lancaster	175-176	-1%	Tyler	757	-7%	Rawlins	823	8%
Miles City	593	-7%	Tonawanda	141	-1%	Meadville	163	-9%	Victoria	779	12%	Riverton	825	-6%
Missoula	598	-6%	Utica	135	-6%	Montrose	188	-4%	Waco	765-767	-3%	Rock Springs	829-831	1%
<b>Nebraska Average</b> -8%			Watertown	136	-1%	New Castle	161	-3%	Wichita Falls	763	-9%	Sheridan	828	-3%
Alliance	693	-10%	West Point	109	6%	Philadelphia	190-191	11%	Woodson	764	-3%	Wheatland	822	-3%
Columbus	686	-7%	White Plains	105-108	14%	Pittsburgh	152	6%	<b>Utah Average</b> -3%			<b>UNITED STATES TERRITORIES</b>		
Grand Island	688	-8%	<b>North Carolina Average</b> -4%			Pottsville	179	-8%	Clearfield	840	0%	Guam		18%
Hastings	689	-9%	Asheville	287-289	-7%	Punkstutawney	157	-3%	Green River	845	-3%	Puerto Rico		-21%
Lincoln	683-685	-4%	Charlotte	280-282	7%	Reading	195-196	2%	Ogden	843-844	-9%	<b>VIRGIN ISLANDS (U.S.)</b>		
McCook	690	-9%	Durham	277	0%	Scranton	184-185	1%	Provo	846-847	-6%	St. Croix		2%
Norfolk	687	-10%	Elizabeth City	279	-8%	Somerset	155	-9%	Salt Lake City	841	1%	St. John		20%
North Platte	691	-6%	Fayetteville	283	-6%	Southeastern	193	8%	<b>Vermont Average</b> -5%			St. Thomas		5%
Omaha	680-681	0%	Goldsboro	275	0%	Uniontown	154	-6%	Albany	058	-7%	<b>CANADIAN AREA MODIFIERS</b>		
Valentine	692	-15%	Greensboro	274	-3%	Valley Forge	194	11%	Battleboro	053	-4%	These figures assume an exchange rate of \$1.00 Canadian to \$.76 U.S.		
<b>Nevada Average</b> 1%			Hickory	286	-8%	Warminster	189	11%	Beecher Falls	059	-8%	<b>Alberta Average</b> 13%		
Carson City	897	-4%	Kinston	285	-9%	Warrendale	150-151	5%	Bennington	052	-6%	Calgary		14%
Elko	898	9%	Raleigh	276	3%	Washington	153	8%	Burlington	054	4%	Edmonton		14%
Ely	893	-3%	Rocky Mount	278	-7%	Wilkes Barre	186-187	-1%	Montpelier	056	-4%	Fort McMurray		12%
Fallon	894	0%	Wilmington	284	-6%	Williamsport	177	-2%	Rutland	057	-7%	<b>British Columbia Average</b> 7%		
Las Vegas	889-891	3%	Winston-Salem	270-273	-5%	York	173-174	-1%	Springfield	051	-6%	Fraser Valley		6%
Reno	895	-1%	<b>North Dakota Average</b> 4%			<b>Rhode Island Average</b> 5%			White River Junction	050	-5%	Okanagan		6%
<b>New Hampshire Average</b> -1%			Bismarck	585	3%	Bristol	028	5%	<b>Virginia Average</b> -4%			Vancouver		9%
Charlestown	036	-5%	Dickinson	586	15%	Coventry	028	5%	Abingdon	242	-9%	<b>Manitoba Average</b> 0%		
Concord	034	-3%	Fargo	580-581	0%	Cranston	029	6%	Alexandria	220-223	10%	North Manitoba		0%
Dover	038	1%	Grand Forks	582	-1%	Davisville	028	5%	Charlottesville	229	-6%	Selkirk		0%
Lebanon	037	-3%	Jamestown	584	-4%	Narragansett	028	5%	Chesapeake	233	-4%	South Manitoba		0%
Littleton	035	-6%	Minot	587	9%	Newport	028	5%	Culpeper	227	-5%	Winnipeg		0%
Manchester	032-033	2%	Nekoma	583	-10%	Providence	029	6%	Farmville	239	-12%	<b>New Brunswick Average</b> -13%		
New Boston	030-031	3%	Williston	588	21%	Warwick	028	5%	Fredericksburg	224-225	-5%	Moncton		-13%
<b>New Jersey Average</b> 9%			<b>Ohio Average</b> 0%			<b>South Carolina Average</b> -1%			Galax	243	-10%	Newfoundland/Labrador		-3%
Atlantic City	080-084	4%	Akron	442-443	1%	Aiken	298	4%	Harrisonburg	228	-6%	<b>Nova Scotia Average</b> -8%		
Brick	087	2%	Canton	446-447	-2%	Beaufort	299	-2%	Lynchburg	245	-9%	Amherst		-8%
Dover	078	9%	Chillicothe	456	-2%	Charleston	294	-1%	Norfolk	235-237	-2%	Nova Scotia		-7%
Edison	088-089	13%	Cincinnati	450-452	3%	Columbia	290-292	-2%	Petersburg	238	-3%	Sydney		-8%
Hackensack	076	10%	Cleveland	440-441	3%	Greenville	296	8%	Radford	241	-9%	<b>Ontario Average</b> 7%		
Monmouth	077	12%	Columbus	432	5%	Myrtle Beach	295	-8%	Reston	201	7%	London		7%
Newark	071-073	11%	Dayton	453-455	1%	Rock Hill	297	-6%	Richmond	232	2%	Thunder Bay		6%
Passaic	070	12%	Lima	458	-5%	Spartanburg	293	-4%	Roanoke	240	-9%	Toronto		7%
Paterson	074-075	7%	Marietta	457	-5%	<b>South Dakota Average</b> -6%			Staunton	244	-7%	<b>Quebec Average</b> -1%		
Princeton	085	10%	Marion	433	-6%	Aberdeen	574	-7%	Tazewell	246	-6%	Montreal		-1%
Summit	079	16%	Newark	430-431	3%	Mitchell	573	-6%	Virginia Beach	234	-3%	Quebec City		-1%
Trenton	086	7%	Sandusky	448-449	-3%	Mobridge	576	-9%	Williamsburg	230-231	-3%	<b>Saskatchewan Average</b> 4%		
<b>New Mexico Average</b> -8%			Steubenville	439	1%	Pierre	575	-10%	Winchester	226	4%	La Ronge		3%
Alamogordo	883	-11%	Toledo	434-436	7%	Rapid City	577	-8%	<b>Washington Average</b> 0%			Prince Albert		2%
Albuquerque	870-871	-3%	Warren	444	-5%	Sioux Falls	570-571	-1%	Clarkston	994	-8%	Saskatoon		5%
Clovis	881	-11%	Youngstown	445	-3%	Watertown	572	-4%	Everett	982	2%	<b>West Virginia Average</b> -5%		
Farmington	874	-1%	Zanesville	437-438	-1%	<b>Tennessee Average</b> -2%			Olympia	985	-2%	Beckley	258-259	-5%
Fort Sumner	882	-2%	<b>Oklahoma Average</b> -5%			Chattanooga	374	2%	Pasco	993	1%	Bluefield	247-248	0%
Gallup	873	-7%	Adams	739	-10%	Clarksville	370	1%	Seattle	980-981	11%	Charleston	250-253	4%
Holman	877	-10%	Ardmore	734	-1%	Cleveland	373	-1%	Spokane	990-992	-3%	Clarksburg	263-264	-7%
Las Cruces	880	-8%	Clinton	736	-3%	Columbia	384	-7%	Tacoma	983-984	2%	Fairmont	266	-11%
Santa Fe	875	-8%	Durant	747	-11%	Cookeville	385	-8%	Vancouver	986	3%	Huntington	255-257	-4%
Socorro	878	-14%	Enid	737	-4%	Jackson	383	-2%	Wenatchee	988	-6%	<b>Wisconsin Average</b> 0%		
Truth or Consequences	879	-8%	Lawton	735	-8%	Kingsport	376	-5%	Yakima	989	-5%	Amery	540	-1%
Tucumcari	884	-8%	McAlester	745	-7%	Knoxville	377-379	-2%	<b>Wyoming Average</b> -1%			Beloit	535	5%
<b>New York Average</b> 6%			Muskogee	744	-8%	Memphis	380-381	1%	Casper	826	1%	Clam Lake	545	-8%
Albany	120-123	7%	Norman	730	-4%	Nashville	371-372	2%	Cheyenne/Laramie	820	-2%	Eau Claire	547	-2%
Amityville	117	9%	Oklahoma City	731	-3%	<b>Texas Average</b> 5%			Gillette	827	3%	Green Bay	541-543	3%
Batavia	140	1%	Ponca City	746	-1%	Abilene	795-796	-2%	Powell	824	-3%	La Crosse	546	0%
			Poteau	749	-7%	Amarillo	790-791	-2%	Rawlins	823	8%	Ladysmith	548	-2%
			Pryor	743	-6%				Riverton	825	-6%	Madison	537	8%
			Shawnee	748	-8%				Rock Springs	829-831	1%	Milwaukee	530-534	6%
			Tulsa	740-741	0%				Sheridan	828	-3%	Oshkosh	549	4%
			Woodward	738	5%				Wheatland	822	-3%	Portage	539	0%



**There are other factors that have an effect on cost.** Here is how these factors are described in our source, National Building Cost 2020.

**Note:** Tract work and highly repetitive jobs may reduce the cost 8 to 12%. Add 4% to the square foot cost of floors above the second floor level. Work outside metropolitan areas may cost 2 to 6% less. When the exterior walls are masonry, add 9 to 10% for class 2 and 1 structures and 5 to 8% for class 3, 4, 5 and 6 structures. The building area includes all full story (7'6" to 9' high) areas within and including the exterior walls of all floor areas of the building, including small inset areas such as entrances outside the exterior wall but under the main roof. For areas with a ceiling height of less than 80", see the section on half-story areas on page 30.

**My interpretation:**

**Repetitive Builds** Depending on the scale of the subdivision, subtract 8% to 12%. By scale I mean the difference between several houses in a small subdivision to hundreds of houses with few floorplans in a large subdivision.

**3<sup>rd</sup> Floor** I don't include this in my estimate of a multiplier because it is usually less than 1/3 of GLA.

**Outside Metro Areas** Depending on how far from a metro area (think labor rates), subtract 2% to 6%.

**Exterior masonry walls**

Q1	Q2	Q3	Q4	Q5	Q6
+10%	+9%	+8%	+7%	+6%	+5%

**Example 1:** Q4 Subject was built in a medium size subdivision within a metro area of zip code 55123:

$$12\% - 7\% = 5\%$$

**Example 2:** Subject was built as a Q3 Brick house 20 miles from a metro area in zip code 35901:

$$-9\% + 8\% - 4\% = -5\%$$

## Depreciated Cost Analysis Calculator

1. Enter UAD Quality Rating. 1 is highest and 6 is lowest. There are a total of 11 ratings included in National Building Cost, so you may use 1.5, 2.5, 3.5 etc.

2. Enter Multiplier as described on page 7.

3. Enter Economic Life. Use the guidance middle left or other known value.

4. Enter Effective Age. See page 3.

5. Remaining Economic life is calculated per page 3.

6. Percent depreciation is calculated per page 3.

7. Percent paid by market is calculated per page 3. This percentage applied to cost is also known as Contributory Value and Market Reaction.

8. Pie chart showing the share of cost that is paid by the market (75% in the example).

9. Enter subject GLA.

10. Low bracket (-20%) is calculated.

11. High bracket (+20%) is calculated.

12. EqD column shows adjustments calculated as if depreciation impacts each cost category equally. See page 4.

13. Enter the percentage of Economic Life to account for categories that have lifespans that are a fraction of the house as a whole. This fraction could be due to shorter lifespan as shown on page 4, or for functional depreciation such as a basement bath having less value than a bath above grade, or the diminishing returns of a second fireplace.

14. DCA adjustment calculations are column 12 x (column 13 / 100).

Solomon Sidekick
Depreciated Cost Analysis Calculator
2020 Data

UAD Quality 4 1

Multiplier (see User Manual) 2 2

Economic Life 60 3

Effective Age 15 4

Remaining Economic Life 45 5

Depreciation 25% 6

REL/EL = % Paid = Mkt Reaction 75% 7

25%

75%

8

GLA Bracketing +/-20% 9 10 11

EqD 12 13 14

	EqD	%EL	Adjust
Gross Living Area	69	62	43
Above Grade Full Bath	7616	100	7616
Above Grade Half Bath	3699	100	3699
Basement Size	14	100	14
Basement Finish	25	62	16
Basement Full Bath	7616	50	3808
Basement Half Bath	3699	50	1849
Fireplace	2517	100	2517
Additional Fireplace	2517	50	1258
First Garage Stall	11358	100	11358
Additional Garage Stall	7053	100	7053
First Carport	3360	100	3360
Additional Carport	2240	100	2240
100sf Deck	2448	33	808
100sf Covered Porch	3460	50	1730
100sf Screen Porch	4637	67	3107
100sf Enclosed Porch	5191	75	3893

**Depreciation**

**Depreciated Replacement Cost**

*also known as*

**Contributory Value**

**or Market Reaction**

Cost Data Econ Life Assumption	
Q1	70 Years
Q2	70 Years
Q3	70 Years
Q4	60 Years
Q5	60 Years
Q6	55 Years

See User Manual for Zip Code Multipliers. Also see User Manual for lower costs associated with multiple builds in subdivisions, higher costs related to masonry construction, etc. All multipliers are to be totalled into one number.

EqD means equal depreciation, the assumption that all components of the building depreciate at the same rate. %EL means percent of economic life. A deck has a 20 yr lifespan which is 33% of 60 yr lifespan of the house as a whole. Enter 33 to reflect shorter lifespan and faster depreciation. Same applies to functional depreciation for a second fireplace or basement bath. I use 50 for 50% of value.

Cost data is current through December 31, 2020. Calculator locks on 1/1/2021.

Cost Data Licensed from Craftsman Book Co. National Building Cost Copyright 2019 SolomonAppraisalLLC

## Peer Consensus Survey Calculator

Enter the market value of the comparable property. In my market, this is sale price after concessions.

Hit enter on your keyboard. You will see the percentage adjustment for 21 features applied to the comparable market value.

Adjustments will vary with market value. If you prefer to have the same adjustment for comps of different values, use the average of the comp market values.

There is one exception: the accessory building adjustments vary with building size and quality, not with comp sale price.

See following pages that show the survey questions and survey results.

**Peer Consensus Survey Calculator\***

\*Surveys are a recognized secondary data technique.

Market Value	<b>1</b>	250000
3rd Bedroom		4800
4th Bedroom		1925
Fronts Busy Road		14250
Backs Freeway		13150
Backs Water Tower		9950
Backs Power Lines		8900
Backs Railroad Tracks		11750
In Ground Pool	Cold Winter	9000
	Mild Winter	11175
Pole Building, average condition, gravel floor, per 1000sf.		4260
Steel Building, avg condition, concrete floor, power, per 1000sf.		14120

Condition of Q4	C1 vs C2	C2 vs C3	C3 vs C4	C4 vs C5	C5 vs C6
	14500	17750	22250	29000	76250
Quality of C3	Q1 vs Q2	Q2 vs Q3	Q3 vs Q4	Q4 vs Q5	Q5 vs Q6
	25500	18750	17750	21000	25500

Based on surveys archived for subscribers of SolomonAppraisal.com.  
 Watch this 5 minute video for the inspiration behind the surveys.  
<https://www.youtube.com/watch?v=iOucwX7Z1HU>  
 The video refers to a discovery made in 1906 by Sir Francis Galton. Galton discovered that many non-expert opinions are better than one expert opinion, *if* the opinions are gathered in a blind survey. Galton was the first to use a survey. He discovered concepts he called Central Tendency and Standard Deviation. His work led to regression analysis. If there were a Mt Rushmore of statistics, he would be there. If I am interpreting Galton well, the peer consensus of many appraisers, working in different markets, is more reliable than one local expert, for answers to certain types of questions.

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**Calculator Locks on 1/1/2021**

## Survey Questions and Results



### Bedroom Count Survey Results

June 2018

Assume you are engaged to appraise a single family detached, Q4 / C3 in a neighborhood with a median price of \$250,000. The subject and comps are near the median. There is an excellent comp across the street, identical in every way except bedroom count....

1. If the subject has 2 BR and the comp has 3, what would you expect the market reaction to be to the 3rd BR?
2. If the subject has 3 BR and the comp has 4, what would you expect the market reaction to be to the 4th BR?
3. If the subject has 4 BR and the comp has 5, what would you expect the market reaction to be to the 5th BR?

	3 <sup>rd</sup> BR	4 <sup>th</sup> BR	5 <sup>th</sup> BR
Sample Size	118	118	118
Mean	\$4797	\$1932	\$731
Median	\$5000	\$0	\$0
Mode	\$0	\$0	\$0
Mean as % of \$250,000	1.92%	0.77%	0.29%

The most frequent response (Mode) was zero adjustment. The Mean and Median both include the zero responses.

"A third form of data analysis, secondary data analysis, is used to support adjustments derived by other methods. This technique makes use of data that does not directly pertain to the subject or comparable properties. This secondary data describes the general real estate market and is usually collected by a data vendor research firm or government agency like the county assessor. Secondary data may need verification."<sup>1</sup>

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<sup>1</sup> The Appraisal of Real Estate – 14<sup>th</sup> Edition p400





### Adverse Location Adjustment Survey

June 2018

This is a 6 question survey of appraisers about location factors that may impact market value. For the purposes of this survey, assume we are considering the value of a median price, single family detached house.

1. A \$400,000 median value house backs to a water tower. What is the impact on value of the water tower?

Sample Size	50
Minimum	\$0
Maximum	\$40,000
Mode	\$20,000
Median	\$12,000
Mean	\$15,920
Mean as % of \$400,000	3.98%



2. A \$400,000 median value house backs to power lines. What is the impact on value of the power lines?

Sample Size	50
Minimum	\$0
Maximum	\$40,000
Mode	\$8,000
Median	\$12,000
Mean	\$14,240
Mean as % of \$400,000	3.56%



3. A \$400,000 median value house is adjacent to a buried pipeline. What is the impact on value of the pipeline right-of-way?

Sample Size	50
Minimum	\$0
Maximum	\$40,000
Mode	\$0
Median	\$4,000
Mean	\$6,320
Mean as % of \$400,000	1.58%



4. A \$250,000 median value house backs to a freeway. What is the impact on value of the freeway noise?

Sample Size	50
Minimum	\$0
Maximum	\$25,000
Mode	\$12,500
Median	\$12,500
Mean	\$13,150
Mean as % of \$250,000	5.26%



5. A \$250,000, median value house has frontage on a busy, 40 mph road. What is the impact on value of the busy road?

Sample Size	50
Minimum	\$0
Maximum	\$40,000
Mode	\$8,000
Median	\$12,000
Mean	\$14,240
Mean as % of \$250,000	5.70%



6. A \$200,000, median value house backs to rail tracks. What is the impact on value of the rail tracks?

Sample Size	50
Minimum	\$0
Maximum	\$40,000
Mode	\$10,000
Median	\$10,000
Mean	\$9,400
Mean as % of \$200,000	4.7%



A survey like this is a form of secondary data. This is from The Appraisal of Real Estate – 14<sup>th</sup> Edition on page 400:

"A third form of data analysis, secondary data analysis, is used to support adjustments derived by other methods. This technique makes use of data that does not directly pertain to the subject of comparable properties. This secondary data describes the general real estate market and is usually collected by a data vendor research firm or government agency. Secondary data may need verification."



### Solomon Survey 101900 Results

#### Contributory Value of In-Ground Pool:

The survey question is about the contributory value of an average condition in-ground pool to single family houses in subdivisions with 6 different median prices. The responses were 1% increments of the Subdivision Median. The table shows count, median, mean and the mean as a percentage of median value. The survey was conducted in April 2019.

The survey asked the respondents to classify their climate according to the Koppen Climate Classification System. The first table combines four classifications:

Subdivision Median	Count	Median	Mode	Mean	Mean as %
150000	112	7500	7500	7460	4.97
200000	112	10000	10000	9786	4.89
300000	112	12000	15000	13741	4.58
500000	112	20000	25000	21920	4.38
750000	112	25000	20000	27679	3.69
1000000	112	40000	50000	43036	4.30

There are 50 responses from Moist Mid Latitude with Cold Winter:

Subdivision Median	Count	Median	Mode	Mean	Mean as %
150000	50	6000	7500	7460	3.92
200000	50	8000	8000	9786	3.90
300000	50	12000	12000	13741	3.60
500000	50	20000	20000	21920	3.68
750000	50	20000	15000	27679	3.13
1000000	50	30000	50000	43036	3.64

There are 32 responses from Moist Mid Latitude with Mild Winter:

Subdivision Median	Count	Median	Mode	Mean	Mean as %
150000	32	7500	7500	7078	4.72
200000	32	10000	10000	9250	4.63
300000	32	12000	15000	13406	4.47
500000	32	22500	25000	21875	4.38
750000	32	30000	30000	28438	3.79
1000000	32	45000	50000	44688	4.47



## Accessory Building

### Survey Results: Accessory Buildings

Below is a copy of the survey we conducted November 10 - 13, 2017. Below the survey questions are summary results. See page three for more detail on the results.

#### Accessory Buildings

Here is a survey about the contributory value of an accessory building like you would see on single family property with acreage. The Appraisal of Real Estate 14th Edition states that these can be considered as site improvements, so there is no need to calculate cost and depreciation. All we need to do is estimate the "as-is" value and include it with other site improvements.

#### Pole Barn



What is the contributory value of an average condition, 40x60 pole building with gravel floor and no electricity?

	Total	\$/sf
Average	10217	4.26
Median	10000	4.17
Most Frequent	10000	4.17

There were 46 responses in a multiple-choice format with 8 possible answers ranging from \$0 - \$35,000 in \$5,000 increments. See page three for more detail.

Pole Barn 40 x 60

\$15,000

\$10,000

\$15,000

\$10,000

\$20,000

\$10,000

\$10,000

\$15,000

0

\$10,000

\$10,000

\$15,000

\$10,000

\$10,000

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\$20,000

\$10,000

\$5,000

\$25,000

\$15,000

\$10,000

\$10,000

\$10,000

\$5,000

\$5,000

\$10,000

*Pole Barn 40 x 60 = 2400 square feet*

Mean 10217

Standard Error 694

Median 10000

Mode 10000

Standard Deviation 4709

Sample Variance 22173913

Kurtosis 1.82

Skewness 0.58

Range 25000

Minimum 0

Maximum 25000

Sum 470000

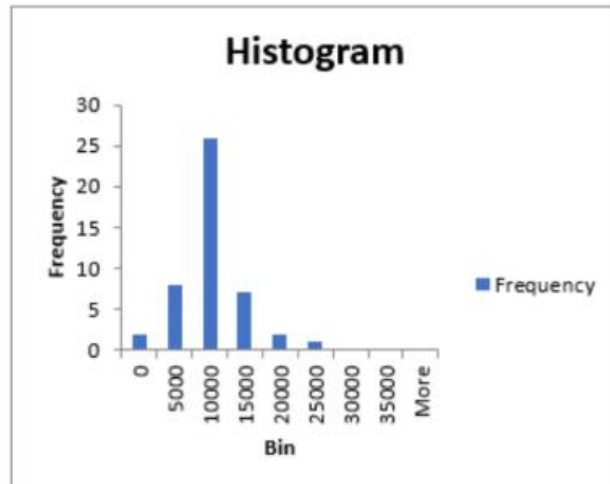
Count 46

Largest(1) 25000

Smallest(1) 0

Confidence Level(95.0%) 1398

<i>Bin</i>	<i>Frequency</i>
0	2
5000	8
10000	26
15000	7
20000	2
25000	1
30000	0
35000	0
More	0



## Steel Building



What is the contributory value of a 24x40 steel building with concrete floor and electricity? \*

	Total	\$/sf
Average	13556	14.12
Median	15000	15.63
Most Frequent	10000	10.42

There were 46 responses in a multiple-choice format with 8 possible answers ranging from \$0 - \$35,000 in \$5,000 increments. See page four for more detail.

Metal Blding 24 x 40

\$20,000

\$15,000

\$30,000

\$10,000

\$20,000

\$15,000

\$20,000

\$10,000

\$5,000

\$20,000

\$15,000

\$20,000

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\$30,000

\$15,000

\$10,000

\$10,000

\$5,000

\$5,000

\$10,000

Steel Building 24 x 40 = 960 square feet

Mean 13478

Standard Error 944

Median 12500

Mode 10000

Standard Deviation 6400

Sample Variance 40966184

Kurtosis 0.22

Skewness 0.67

Range 25000

Minimum 5000

Maximum 30000

Sum 620000

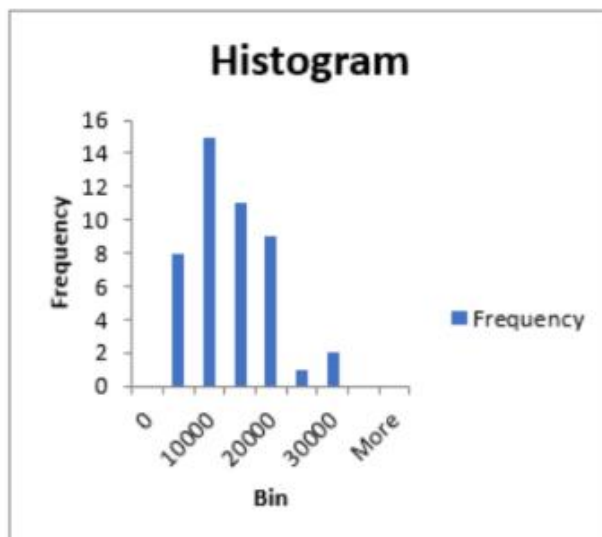
Count 46

Largest(1) 30000

Smallest(1) 5000

Confidence Level(95.0%) 1901

Bin	Frequency
0	0
5000	8
10000	15
15000	11
20000	9
25000	1
30000	2
35000	0
More	0





## Condition and Quality Adjustment Survey



### Condition and Quality Adjustment Survey

August 2018

The survey consisted of ten questions, five about condition and five about quality.

The five questions about condition adjustments asked for the expected market reaction to condition differences for a Q4, \$250,000 house with a land to value ratio of 25%. Sample size is close to the desired 30 which is considered credible for a non-normal distribution. A normal distribution has similar mean, median and mode.

Comparison	Sample Size	Median	Mode	Mean	Mean as % of Value
C1 vs C2	29	\$10,000	\$10,000	\$14,431	5.8%
C2 vs C3	29	\$18,750	\$25,000	\$17,750	7.1%
C3 vs C4	29	\$15,000	\$25,000	\$22,179	8.9%
C4 vs C5	28	\$23,000	\$25,000	\$28,964	11.6%
C5 vs C6	28	\$25,000	\$25,000	\$76,179	30.5%

The five questions about quality adjustments asked for the expected market reaction to quality differences between houses with C3 condition. The assumed prices varied due to quality. Sample size is close to the desired 30 which is considered credible for a non-normal distribution. A normal distribution has similar mean, median and mode.

Comparison	Value	Sample Size	Median	Mode	Mean	Mean as % V
Q1 vs Q2	\$750,000	28	\$50,000	\$50,000	\$76,178	10.2%
Q2 vs Q3	\$500,000	29	\$37,500	\$50,000	\$37,483	7.5%
Q3 vs Q4	\$300,000	29	\$20,000	\$15,000	\$21,179	7.1%
Q4 vs Q5	\$250,000	27	\$20,000	\$25,000	\$21,241	8.4%
Q5 vs Q6	\$200,000	28	\$20,000	\$20,000	\$21,761	10.2%

A survey like this is a form of secondary data. The Appraisal of Real Estate – 14<sup>th</sup> Edition, p400 defines Secondary data as:

"A third form of data analysis, secondary data analysis, is used to support adjustments derived by other methods. This technique makes use of data that does not directly pertain to the subject or comparable properties. This secondary data describes the general real estate market and is usually collected by a data vendor research firm or government agency. Secondary data may need verification."

## Market Time Adjustment Calculator

1. Enter the annual rate of appreciation. In this case, 3 means 3% increase. -3% would mean a decline of 3%.
2. Enter report effective date.
3. Enter comp address.
4. Enter comp sale price.
5. Enter concessions that are not included in the market value of the comp.
6. Market Value is calculated.
7. Enter comp contract date.
8. The interval between contract date and effective date is calculated.
9. The adjustment is calculated by applying a percentage of the annual rate to the market value.

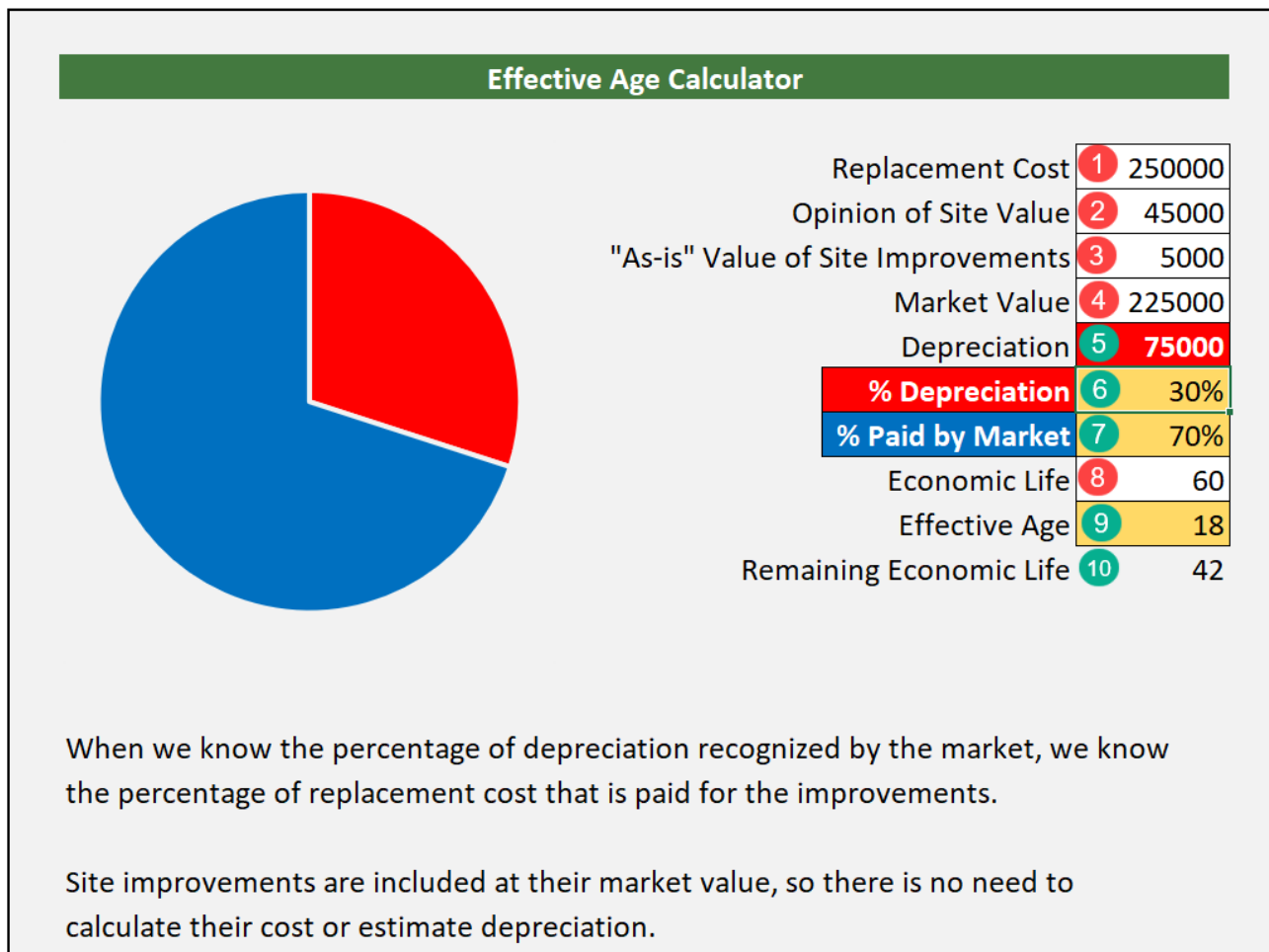
Market Time Adjustment Calculator						
1 Annual Rate of Change						3
2						11/8/2019
3 Comp	4 Price	5 Concessions	6 Value	7 Contract Date	8 Interval in Days	
123 Main St	350000	5000	345000	7/1/2019	130	3686
Adjustment = Value x Days/365 x Rate/100						
129 Main St	325000	5000	320000	4/1/2019	221	5813
132 Main St	365000	5000	360000	6/21/2019	140	4142
			0		43777	0
			0		43777	0
			0		43777	0
			0		43777	0
			0		43777	0
			0		43777	0
			0		43777	0

"Market time adjustments are developed by applying the annual rate of change to to comp market value for the interval in days between comp contract date and report effective date."

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## Effective Age Calculator

1. Enter replacement cost.
2. Enter site value.
3. Enter "As-is" Value of Site Improvements.
4. Enter market value.
5. Depreciation is calculated. In this example:  $250,000 - 45,000 - 5,000 - 225,000 = -75,000$



6. % depreciation is calculated. In this example:  $75,000 / 225,000 = 30\%$
7. % paid by market is calculated. In this case:  $100\% - 30\% = 70\%$  or  $(225,000 - 45,000 - 5,000) / 250,000$
8. Enter economic life.
9. Effective age is calculated. In this case:  $60 \times 30\% = 18$  years
10. Remaining economic life is calculated.  $60 - 18 = 42$  years or  $60 \times 70\% = 42$  years