

A Refined Household Service Value

by J. Matthew Sims

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Abstract: *This presentation proposes a comprehensive methodology for valuing household services based on the skill level employed by the average person. Arguments for the use of unskilled-level occupations and wages are presented as a refinement to other methods that use average wages without consideration to skill level. It builds on the methodology proposed by Sims in the Journal of Forensic Economics in 2021 and in their upcoming journal, and utilizes the most current skill-level data from U.S Bureau of Labor Statistics' Occupational Requirements Survey, and 2022 occupational wage data from the Occupational Employment and Wage Survey. Additionally, this presentation compares and contrasts the household service value presented here with the household service value in The Dollar Value of a Day: 2020 Dollar Valuation by Expectancy Data, using 2022 wages.*

I. Introduction

Forensic economists are often asked to value an individual's household services as an aspect of economic damages. This paper focuses on the valuation of the economic productive output of an individual for the benefit of the individual's household and offers a method to refine the hourly value of household services by incorporating newly published skill levels that have been defined by the U.S. Department of Labor. The key is to understand how the new skill-level data from the Occupational Requirements Survey works. This allows a determination of appropriate occupations and the appropriate unskilled-level wage for each occupation to use in household service valuation.

Many publications focusing on household service value have noted the importance of the consideration of skill. Gauger and Walker (1980, p. 7) attempted to define unskilled wages as the wage rate assigned to the work done by "12-17 year olds," which was the minimum wage. Tinari (1998, p. 258) attempted to define higher-levels of skill, noting that some occupations "provide highly specialized advice that would go beyond the type of advice and counsel that family members would typically provide to one another." Tinari then created a table of occupations and wages, excluding occupations that would require these high-level skills. The publishers of *The Dollar Value of a Day* (Expectancy Data, 2020) acknowledge that skill level was not incorporated in their estimates. They wrote, "The wages used to determine value are averages and do not reflect the skills or efficiencies that individuals may possess in performing specific activities" (p. 3). Bryant, Zick, and Kim (1992) commented on one type of skill related to the use of tools, stating "productivity differences between the home and the marketplace based on skill and equipment may bias the market alternative cost estimates of the value of household work

time” (p. 13). To date, however, none have offered a systematic or reliable method to incorporate an appropriate level of skill until Sims (2021).

Sims presented a methodology to estimate unskilled wage levels within a single Standard Occupational Classification published by the U.S. Bureau of Labor Statistics (BLS, 2022a) occupation that can be used to value household services. This can be accomplished using up-to-date skill-level data from the Occupational Requirements Survey (ORS) (BLS, 2022b), called Specific Vocational Preparation (SVP). Information regarding SVP (also from BLS, 2022b), and the wage percentiles set forth in the Occupational Employment and Wage Survey (BLS, 2022c). Sims previously relied on the 2018 and 2020 ORS data sets; however, the 2022 ORS contains additional occupations with SVP data. Further research is provided here documenting the relationship between wages and SVP within a single occupation, specifically SVPs 7 and 8, in support of this methodology. That research supports the updated methodology recommended herein and is discussed in more detail in the section entitled, “The Relationship Between SVP and Wages.”

In the latter part of 2022, the Occupational Requirements Survey program published the fourth year of data from a planned five-year survey. This is scheduled for completion at the end of 2023. Although the 2022 survey data is still considered ‘preliminary,’ it includes standard errors, rendering it useful for forensic practitioners. However, there is now sufficient data included from the 2022 ORS to build a more comprehensive household service value, based on occupational wages at unskilled levels only. With the latest skill-level data now available, a more refined and theoretically complete household service value can be estimated. The hypothesis and what this author will refer to as “**SVP-based methodology**” are presented herein.

This paper defines “skill” and briefly describes how skill level is used in the U.S. Social Security Administration’s disability determination process. The Occupational Requirements Survey is also described, and the relationship between wages and skill level presented. An SVP-based methodology that can be used to determine a more appropriate and applicable household service value is then described. Forensic economists can use this methodology to prepare local area estimates of their own in only a few minutes. Finally, a basic statistical comparison is made between the methodology presented here, and the one set forth in *The Dollar Value of a Day* publication.

II. Specific Vocational Preparation

The U.S. Social Security Administration (2000) defines skill as: “knowledge of a work activity that requires the exercise of significant judgment that goes beyond the carrying out of simple job duties and is acquired through performance of an occupation that is above the unskilled level” (i.e., requires more than 30 days to learn). Skills are acquired during Past Relevant Work and may also be learned with recent education that provides for direct entry into skilled work. An individual does not gain skills that could potentially transfer to other work by performing “unskilled” work. Likewise, an individual cannot transfer skills to unskilled work or to work involving a greater level of skill than the work from which they acquired those skills.

The *Revised Handbook for Analyzing Jobs*, published by the U.S. Department of Labor (1991), defined nine distinct and increasing levels of skill, called Specific Vocational Preparation. Specific Vocational Preparation (SVP) is the “lapsed time required by a typical worker to learn the techniques, acquire the information, and develop the facility needed for average performance in a specific job-worker situation.” This training may be acquired in a school, work, military, institutional, or vocational environment. It does not include the

orientation time required by a fully qualified worker to become accustomed to the special conditions of any new job. Nor does it include the amount of time that a worker spends to acquire basic education often learned in schools (up to two years of core college coursework).

According to *The Revised Handbook for Analyzing Jobs*, specific vocational training includes:

- a. vocational education (high school; commercial or shop training; technical school; art school; and that part of college training which is organized around a specific vocational objective);
- b. apprenticeship training (for apprenticeable jobs only);
- c. in-plant training (organized classroom study provided by an employer);
- d. on-the-job training (serving as learner or trainee on the job under the instruction of a qualified worker);
- e. essential experience in other jobs (serving in less responsible jobs which lead to the higher-grade job or serving in other jobs which qualify).

Note that general life experience is not considered SVP. Emphasis should be given to the words “Specific,” “Vocational” and “Preparation.” The two primary designations of SVP are “skilled” and “unskilled.” Skilled work is further broken down into three classifications: semi-skilled, skilled and highly skilled. For our purposes, forensic economists need only differentiate between the two primary designations: unskilled and skilled. The following are the SVP numerical levels, the time (vocational preparation) definitions, and the skill-level designations for each:

SCALE OF SPECIFIC VOCATIONAL PREPARATION

<u>Level</u>	<u>Time</u>	<u>Designation</u>
1	Short demonstration only	Unskilled
2	Anything beyond short demonstration up to and including 1 month	Unskilled
3	Over 1 month up to and including 3 months	Semi-Skilled
4	Over 3 months up to and including 6 months	Semi-Skilled
5	Over 6 months up to and including 1 year	Skilled
6	Over 1 year up to and including 2 years (Cert/AA)	Skilled

7	Over 2 years up to and including 4 years (AA/BA/BS)	Skilled
8	Over 4 years up to and including 10 years (MS/PhD)	Highly Skilled
9	Over 10 years	Highly Skilled

NOTE: The levels of this scale are mutually exclusive and do not overlap.

Along with the SVP skill levels above, *The Revised Handbook for Analyzing Jobs* also defines two kinds of skill designations associated with SVPs 3-9: (a) “Work Field” skills, and (b) “Materials, Products, Subject Matter, and Service” (MPSMS). Work Field skills are those related to tool and technology use, such as use of a drill press or a software package. MPSMS skills are related to the end product or subject, such as working with cabinets or teaching a subject. Work Field contains 96 defined skills, and MPSMS contains 336 defined skills.

Specific Vocational Preparation, along with these two additional skill designations, are used by vocational experts who work with the Social Security Administration in a matching methodology called Transferrable Skills Analysis. MPSMS and Work Field skills are not associated with occupations at the SVP 1 or 2 levels precisely because those occupations are considered “unskilled.” In essence, an individual has to develop SVP beyond level 2 in order to acquire MPSMS and/or Work Field skills, through work and/or the other vocationally-based skill development processes indicated. SVP, MPSMS and Work Fields are related to the minimum job qualifications people need to be hired in specific occupations. These are skills that would be listed on an individual’s resume or job application, in one way or another.

While forensic economists do not really need to know how to perform a Transferrable Skills Analysis, understanding how SVP fits into the Transferrable Skills Analysis methodology allows economists to use unskilled- versus skilled-level SVP to identify appropriate occupations and to understand the importance of using only unskilled wage levels in estimating household services value. Now, there are a few other Transferrable Skills Analysis methods out there, but this methodology will be shown here as it gives the best example.

A Transferrable Skills Analysis considers a person's work history (a list of past occupations), and identifies the skills acquired or required by those occupations, and attempts to match them to other occupations (if any) that the individual would be qualified to perform. Each skilled-level occupation has a specific SVP skill-level and a set of Materials, Products, Subject Matter, and Service MPSMS and/or Work Field skills associated with it. The Transferrable Skills Analysis typically utilizes a computer program to match an individual's skill set to other occupations requiring the same skill(s), at and equal or lower SVP. Work (medical) restrictions are then considered to eliminate occupations the person can no longer perform.

Although Specific Vocational Preparation and Transferrable Skills Analysis have been around for decades, they are used predominantly in the Social Security disability determination process, and economists are often unfamiliar with them. Transferrable Skills Analysis requires specialized industry software to perform and is not something forensic economists are typically able to do without that software, but unskilled- versus skilled-level SVP determination is something we can readily understand and incorporate into forensic economic practice.

For example, when assessing an individual's household service value, if that individual has *never worked as a carpenter*, which has SVPs of 6 through 8, they would not possess the MPSMS and/or Work Field skill(s) required to work in that occupation. Therefore, that individual, as well as the average person, could not be hired into that occupation, nor should any of that occupation's wages be used to value their household services. SVP is something economists can readily determine using the individual's work history (occupations in their resume). It can be found on a resume, or listed on a job application. One then looks up the associated SVP level(s) in the ORS data. For further information, see Sims (2021). For more history and other information on Transferrable Skills Analysis, see Truthan & Karman (2003).

III. Occupational Requirements Survey

The skill-level data used in the methodology described can be found in the Occupational Requirements Survey. “The Occupational Requirements Survey is conducted by the Bureau of Labor Statistics under an interagency agreement with the Social Security Administration. The ORS provides information about the requirements of work in the U.S. economy including: Education, training, and experience requirements (literacy, credentials, on-the job training)” (BLS, 2022b). The Occupational Requirements Survey (ORS) is where SVP data at the occupational level can be obtained.

The U.S. Bureau of Labor Statistics continues, saying “The most recent dataset is for the 2022 reference year estimates. This dataset includes data from four of five samples in the second wave. These estimates are considered preliminary for the second wave and will be considered final once data from the five samples are combined and published for the 2023 reference year. Updated estimates will be published annually for each reference year by combining data from each collected sample. Final datasets will remain available indefinitely while preliminary datasets will be replaced with each annual update ... The 2022 reference year estimates are calculated using the 2018 Standard Occupational Classification system.” When complete, the 2023 ORS will contain data on 426 detailed occupations, representing over 90% of the civilian labor force. Note that it is not their intention to provide data for all occupations in the Standard Occupational Classification system.

IV. The Relationship Between Specific Vocational Preparation and Wages

The hypothesis presented here is that skill levels have a positive relationship with wage levels, even within occupations. The same has been proved to be true of the positive relationship between education level and expected wages. In the Bureau of Labor Statistics’ Working Paper

489, pre-ORS data from the National Compensation Survey was used, and wages were found to follow a predictable pattern: there was a positive relationship between SVP and mean wages (Gittleman, Monaco, Nestoriak, 2016). Those researchers estimated the average hourly wage for SVPs 1-2 was \$11.54, SVPs 3-5 was \$17.32, SVPs 6-7 was \$27.26, and SVPs 8-9 was \$43.44. The following image shows the average wage rates per SVP, and by educational attainment:

Figure 5: Average Hourly Wages by SVP and Education Categories



The authors of that paper found, “The results for specific vocational preparation (SVP) are similar to those for education requirements. All the coefficients are significantly positive relative to the omitted group of short demonstration.” Further, they note, “The fact that ORS has data by the job rather than averages for the occupation as a whole means that it should be possible to use ORS elements to explain within-occupation wage variation.”

Additional validation of these findings is found in the statistical wages by education, as SVPs 6, 7 and 8 are directly associated with educational attainment. One source for educational

attainment related wages can be found in the Person Income Statistics, PINC-03 tables (U.S. Census Bureau, 2021). In the PINC-03 tables for Both Sexes, 18 Years and Over, Worked Full-Time, Year-Round, All Races, the 2021 median earnings of individuals with an Associate's degrees (SVP 6-7) were \$51,546, with a Bachelor's degree (SVP 7) were \$71,819, and with a Master's or PHD degree (SVP 8) were \$87,057 and \$120,746, respectively.

In further support, Torpey and Terrell (2015) from the U.S. Bureau of Labor Statistics researched median wages for workers with bachelor's degrees and master's degrees *within the same occupation* (emphasis added). Thirty-four occupations were analyzed, and those with a bachelor's degree (SVP 7) had median annual earnings of \$56,000 (in 2013), while those with a master's degree (SVP 8) had median annual earnings of \$68,000.

The research to date indicates there is a positive relationship between SVP and wages, even within a single occupation. Although further research is still needed, the results from these studies are both intuitive and informative. Existing research also supports the consideration of SVP when determining the appropriate wage rates to use when valuing household service work. The SVP-based methodology takes advantage of this new skill-level data from the government.

VI. A Comparison to *The Dollar Value of a Day*

The Dollar Value of a Day (DVD) has arguably been one of the most impactful publications in the last several decades regarding valuation of household services. It uses the specific services replacement cost method (Ireland and Ward, 1991) and employs multiple occupations and their respective wages, making it the predominant resource used to value household services (Schap, Luthy and Rosenbaum, 2020).

The wage rates used in the DVD publication are market rates, and do not account for the fact that most services provided by individuals in their homes are not performed by professionals

experienced in a particular occupation. In other words, the DVD makes no attempt to account for the lower skill levels and the corresponding lower values of services provided by individuals in their homes. By accounting for the lower level of skill possessed by the average person in a personal injury or wrongful death case, this paper makes the newest contribution towards household service valuation since the specific services replacement cost method was introduced. With the inclusion of skill level, inappropriate occupations and/or inappropriate wage rates can now be eliminated from the household service value, increasing the estimate's reliability and reducing uncertainty.

The methodology presented here can be easily applied by forensic economists relatively quickly and inexpensively. It can also be used to estimate a value for any geographic location and year for which OEWS wages rates are available (see Table 1). Instead of the national average wages used in Table 1, one can simply look up the appropriate wage percentiles for any local area. This is important in local areas where the minimum wage can be as low as the federal level, versus other areas where there is a living minimum wage. By contrast, the DVD publication uses a location adjustment to estimate a local area value, as they rely only on mean wages.

The Dollar Value of a Day relies on a total of 53 occupations, 45 of which were used in household services categories. Several occupations are used multiple times, or in multiple categories, for a total of 68. This author notes that in two instances there was one occupation that appears to have been inadvertently used twice within the same household service category. Specifically, in both the "Caring for and Helping Household Adults" and "Caring for and Helping Non-Household Members" categories, the occupation "Home Health and Personal Care Aides" was used twice (four times total). That occupation was used a total of 10 times in the

DVD. Using the same occupation multiple times gives that occupation even more weight in the employment-number weighting system.

The methodology presented here improves upon the quality of the summary statistics relative to the DVD. This author reviewed the 45 occupations used in the DVD, and found that the 2022 mean wage rate is \$17.28, with a standard deviation of \$2.45 and a range of \$9.89 (Table 2). By comparison, the mean wage rate using the SVP-based methodology presented here is \$13.95 with a standard deviation of \$1.11, and a range of \$6.05 (Table 1). A comparison of the two can be found in Table 3.

The range and the standard deviation using the SVP-based methodology presented here are significantly reduced compared to those set forth in the DVD. The inclusion of wage rates reflective of fewer skill levels causes the population of wages to be grouped closer to the mean and to have a smaller range when compared to the wage rates for occupations that include higher-level skills. This difference in standard deviation and range demonstrates how inclusion of only more appropriate, unskilled wage rates helps the forensic practitioner to better define, refine, and more reliably estimate the economic value of household services. Reducing the standard deviation here is important for several reasons: (a) a smaller standard deviation indicates that the data is less variable and has a more reliable mean, (b) a smaller standard deviation makes it easier to identify patterns and trends in the data as well as outliers, making it easier to draw more meaningful conclusions, and (c) a smaller standard deviation helps to improve the predictability, by reducing the uncertainty around the estimation, particularly over time.

VIII. Conclusion

Household service valuation methods traditionally have not accounted for skill level. Accounting for skill level is the newest refinement we can add when estimating an individual's household service value. Skill level is important in both the proper selection of occupations, and the proper selection of wage percentiles. A person's household-service productivity should not be valued using the skilled-level wages of workers in a job who have developed higher-level skills through education and/or past work history. Federal guidelines and the Social Security's disability determination process have already developed a systematic method for excluding occupations that individuals would not be qualified to perform using the matching of acquired skills. By applying skill level to the process of household service valuation, a more theoretically complete and refined value can now be estimated for forensic purposes.

Forensic economists can readily ascertain the unskilled level (SVP 1 and 2) wages at specific percentiles and use them to estimate an improved household service value in a matter of minutes, at little to no cost. *A blank SVP-based household service sheet can be found attached to this paper.* The methodology presented herein incorporates more governmental data than ever before, in new and important ways. In addition, it is specifically designed for forensic use. The inclusion of skill level increases the reliability and meaningfulness of household services values, which may help it elevate it to become less of a "soft" economic damage.

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Table 1: SVP-Based Occupations and Unskilled Wages

SOC #	ORS Occupation	SVP % Unskilled	OEWS %ile	OEWS Unskilled 2022
31-0000	Healthcare Support Occupations	54.1%	25%	\$14.01
31-1120	Home Health and Personal Care Aides	78.2%	50%	\$14.51
35-0000	Food Preparation and Serving Related Occupations	74.0%	25%	\$11.75
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	8.5%	10%	\$13.32
35-2011	Cooks, Fast Food	87.3%	50%	\$13.29
35-2014	Cooks, Restaurant	44.7%	25%	\$13.80
35-2015	Cooks, Short Order	58.6%	25%	\$12.18
35-2021	Food Preparation Workers	80.9%	50%	\$14.32
35-3023	Fast Food and Counter Workers	93.2%	50%	\$13.43
35-3041	Food Servers, Nonrestaurant	80.1%	50%	\$14.57
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	90.0%	50%	\$14.00
35-9021	Dishwashers	98.8%	50%	\$13.98
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	92.1%	50%	\$13.33
37-0000	Building and Grounds Cleaning and Maintenance Occupations	74.3%	25%	\$13.72
	Janitors and Cleaners, Except Maids and Housekeeping			
37-2011	Cleaners	81.1%	50%	\$15.38
37-2012	Maids and Housekeeping Cleaners	90.2%	50%	\$14.40
37-3011	Landscaping and Groundskeeping Workers	72.8%	25%	\$14.61
39-0000	Personal Care and Service Occupations	54.4%	25%	\$12.80
39-2021	Animal Caretakers	75.1%	50%	\$14.20
39-3091	Amusement and Recreation Attendants	92.3%	50%	\$13.36
39-9011	Childcare Workers	60.0%	25%	\$11.31
39-9032	Recreation Workers	73.7%	25%	\$13.00
41-2011	Cashiers	94.7%	50%	\$13.58
41-2022	Parts Salespersons	38.2%	25%	\$13.96
41-2031	Retail Salespersons	81.7%	50%	\$14.71
43-0000	Office and Administrative Support Occupations	30.5%	10%	\$13.80
43-3031	Bookkeeping, Accounting, and Auditing Clerks	13.8%	10%	\$14.64
43-4171	Receptionists and Information Clerks	59.2%	25%	\$13.92
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	25.6%	10%	\$13.94
43-9061	Office Clerks, General	33.5%	10%	\$12.50
49-3023	Automotive Service Technicians and Mechanics	22.9%	10%	\$14.07
49-3093	Tire Repairers and Changers	72.9%	25%	\$14.12
49-9070	Maintenance and Repair Workers, General	9.9%	10%	\$14.05
51-6011	Laundry and Dry-Cleaning Workers	92.3%	50%	\$13.97
53-3031	Driver/Sales Workers	79.4%	50%	\$15.72

53-3033	Light Truck Drivers	66.9%	25%	\$16.15
53-3053	Shuttle Drivers and Chauffeurs	57.4%	25%	\$13.55
53-7061	Cleaners of Vehicles and Equipment	91.5%	50%	\$14.90
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	85.3%	50%	\$17.36

Number	39
Number below the 50th %ile	18
Minimum	\$11.31
Maximum	\$17.36
Range	\$6.05
Standard Deviation	\$1.11
Median	\$13.97
Mean	\$13.95

Table 2: DVD Household Service Occupations and Mean Wages

SOC #	SOC Occupation	OEWS Mean 2022
25-2011	Preschool Teachers, Except Special Education	\$18.58
29-2051	Dietetic Technicians	\$17.49
31-1120	Home Health and Personal Care Aides	\$14.87
31-9095	Pharmacy Aides	\$17.24
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	\$16.58
35-0000	Food Preparation and Serving Related Occupations	\$15.45
35-9021	Dishwashers	\$14.21
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	\$16.33
37-2012	Maids and Housekeeping Cleaners	\$15.35
37-2021	Pest Control Workers	\$20.29
37-3011	Landscaping and Groundskeeping Workers	\$17.92
39-2021	Animal Caretakers	\$15.46
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	\$15.66
39-5092	Manicurists and Pedicurists	\$16.14
39-5093	Shampooers	\$13.40
39-5094	Skincare Specialists	\$22.98
39-6011	Baggage Porters and Bellhops	\$15.93
39-9011	Childcare Workers	\$14.22
39-9032	Recreation Workers	\$16.43
39-9041	Residential Advisors	\$18.04
41-2011	Cashiers	\$13.81
41-2021	Counter and Rental Clerks	\$18.90
41-2031	Retail Salespersons	\$16.70
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$22.81
43-3071	Tellers	\$17.69
43-4021	Correspondence Clerks	\$20.46
43-4071	File Clerks	\$19.02
43-4151	Order Clerks	\$19.49
43-5021	Couriers and Messengers	\$17.43
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	\$17.41
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	\$16.49
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	\$18.29
49-2097	Audiovisual Equipment Installers and Repairers	\$23.29
49-3091	Bicycle Repairers	\$17.68
49-3093	Tire Repairers and Changers	\$16.81

49-9031	Home Appliance Repairers	\$22.84
49-9098	Helpers--Installation, Maintenance, and Repair Workers	\$17.67
51-6011	Laundry and Dry-Cleaning Workers	\$14.26
51-6021	Pressers, Textile, Garment, and Related Materials	\$14.73
51-6031	Sewing Machine Operators	\$15.93
51-6051	Sewers, Hand	\$16.08
51-7021	Furniture Finishers	\$19.17
53-3053	Shuttle Drivers and Chauffeurs	\$16.83
53-6031	Automotive and Watercraft Service Attendants	\$15.55
53-7061	Cleaners of Vehicles and Equipment	\$15.74

Number	45
Number below the 50th %ile	n/a
Minimum	\$13.40
Maximum	\$23.29
Range	\$9.89
Standard Deviation	\$2.45
Median	\$16.81
Mean	\$17.28

Table 3 Comparison

	<u>DVD</u>	<u>SVP-Based</u>	<u>Difference</u>	<u>Diff/DVD</u>
Number	45	39		
Number below the 50th %ile	n/a	18		
Minimum	\$13.40	\$11.31	\$2.09	16%
Maximum	\$23.29	\$17.36	\$5.93	25%
Range	\$9.89	\$6.05	\$3.84	39%
Standard Deviation	\$2.45	\$1.11	\$1.34	55%
Median	\$16.81	\$13.97	\$2.84	17%
Mean	\$17.28	\$13.95	\$3.33	19%