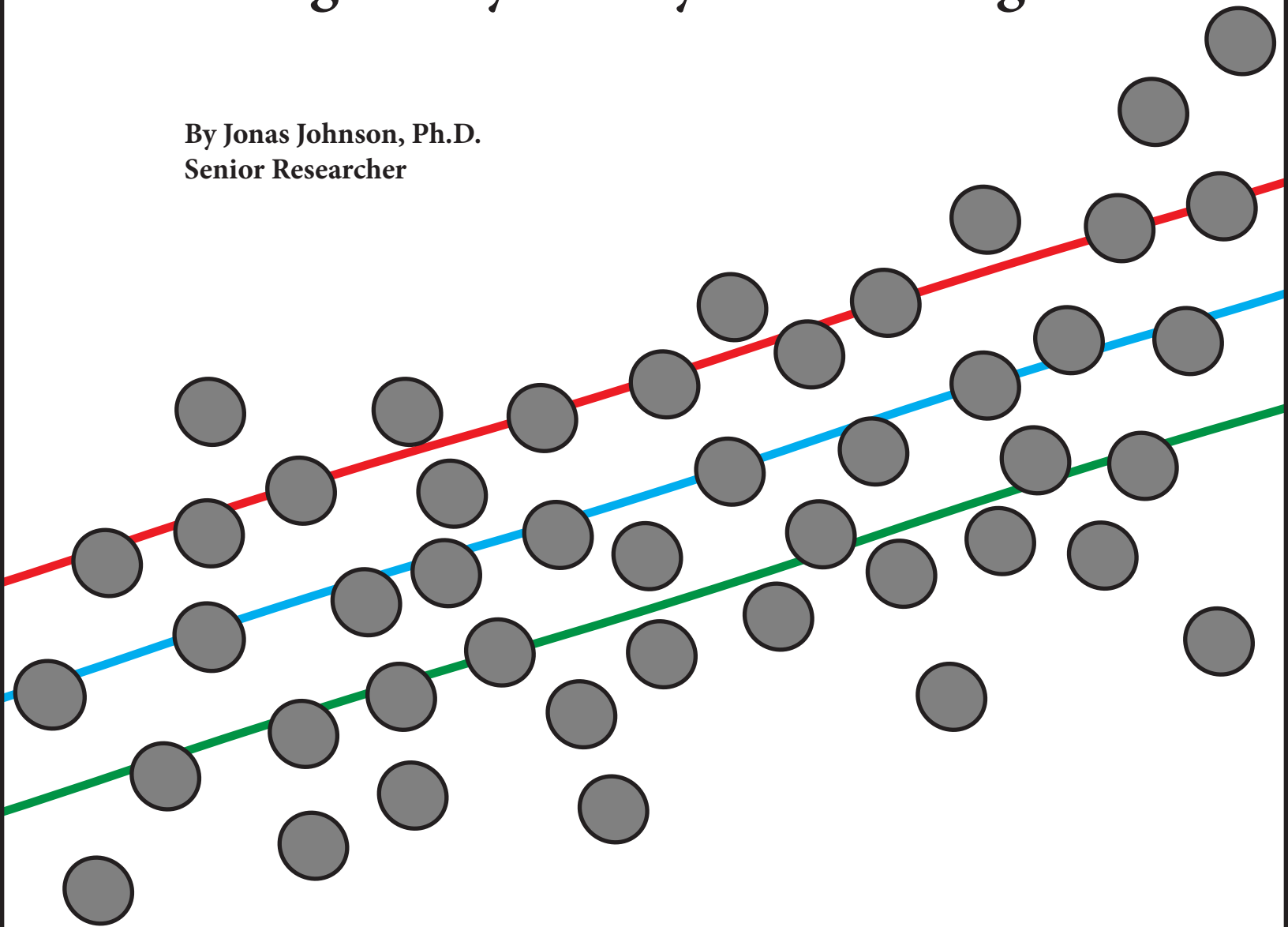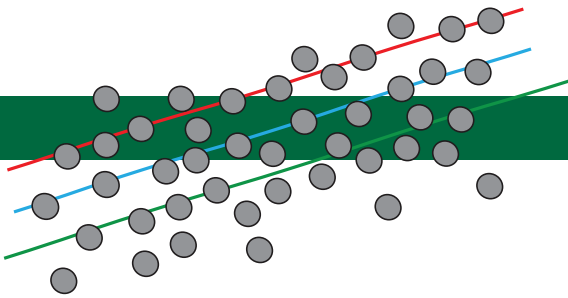# Evaluating Salary Survey Methodologies

**By Jonas Johnson, Ph.D.**
**Senior Researcher**

In the field of compensation, professionals rely on data to determine appropriate wages for individuals in their organization. The data is provided by research outlets that use a variety of methods to examine compensation practices in the marketplace. While compensation researchers genuinely work to provide accurate information, there remain inherent strengths and weaknesses to different methods of collecting, interpreting, and reporting data. Compensation professionals who understand these strengths and weaknesses are better equipped to analyze the results for use in determining pay, setting salary structures, and evaluating established compensation systems. For the purposes of this white paper, we will highlight the pros and cons of three methodologies, all of which utilize employer-provided data: surveys from national statistics offices, traditional salary surveys, and salary survey analytics.

## Government Salary Surveys

**PROS:** In the United States, the largest single compensation survey in terms of participation is conducted by the Bureau of Labor Statistics (BLS), U.S. Department of Labor. Having a large number of participants results in a high measure of reliability; averages calculated through the BLS Occupational Employment Statistical Survey (OES) will reflect the true average of an occupation more consistently than a survey with fewer participants. Additionally, because the OES is backed by the federal government, organizations that would ordinarily not participate in a salary survey may be more apt to provide data. The ability to gather data from a wider participation pool minimizes the likelihood of a skewed sample, which can occur when only one type of organization participates in a survey.

*"...there remain inherent strengths and weaknesses to different methods of collecting, interpreting, and reporting data."*

**CONS:** The previous factors make the OES survey an attractive tool for some compensation professionals; however, the broad scope of this particular survey comes at a price. Specifically, because the survey encompasses a large number of organizations, the survey questions and occupations covered must match the scope. This increase of scope limits the absolute accuracy of the survey. To make an analogy, imagine a satellite taking a snapshot of the entire United States. Although the picture would provide a large amount of information upon first glance, there wouldn't be enough resolution to pinpoint specific details of the landscape. Likewise, national statistics surveys provide a large amount of reliable data on the overall status of occupations, but lack the granularity of detail that compensation professionals seek to compose accurate pictures of specific jobs. Let's consider three limitations of the OES in the context of a single occupation: Physical Therapist.

1.  The OES questionnaire is set up to gather wage data by ranges as opposed to specific salary figures. Table 1 shows the OES salary ranges and description for Physical Therapists (SOC: 20-1123). Looking at the columns of ranges, an organization may report that its Physical Therapists fall within the $36.00 to $45.52 per hour range. Because data collection is based on ranges of about $10 per hour, the absolute accuracy of this salary survey is limited.

*Table 1*

| OCCUPATIONAL TITLE AND DESCRIPTION OF DUTIES | | NUMBER OF EMPLOYEES IN SELECTED WAGE RANGES (Report Part-time Workers According to an Hourly Rate) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | I | J | K | L | T |
| | Hourly (part-time or full-time) | under $9.25 | $9.25 - 11.49 | $11.50 - 14.49 | $14.50 - 18.24 | $18.25 - 22.74 | $22.75 - 28.74 | $28.75 - 35.99 | $36.00 - 45.24 | $45.25 - 56.99 | $57.00 - 71.49 | $71.50 - 89.99 | $90.00 and over | Total Employment |
| | Annual Salary (full-time only) | under $19,240 | $19,240 - 23,919 | $23,920 - 30,159 | $30,160 - 37,959 | $37,960 - 47,319 | $47,320 - 59,799 | $59,800 - 74,879 | $74,880 - 94,119 | $94,120 - 118,559 | $118,560 - 148,719 | $148,720 - 187,199 | $187,200 and over | |

| Physical Therapists - Assess, plan, and participate in rehabilitative programs that improve mobility, relieve pain, increase strength, and improve or correct disabling conditions resulting from disease or injury.    29-1123 | A | B | C | D | E | F | G | H | I | J | K | L | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |

*Source: Occupational Employment Report of Hospitals (622000), U.S. Department of Labor*
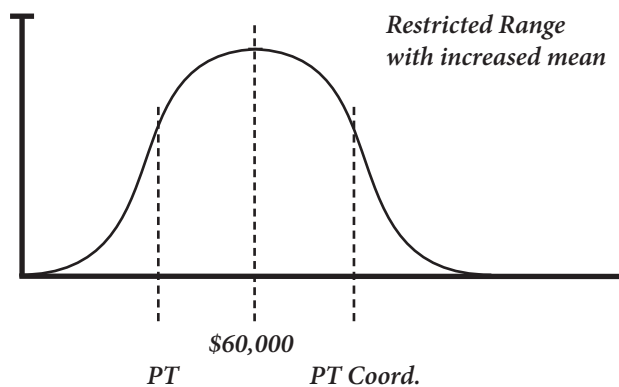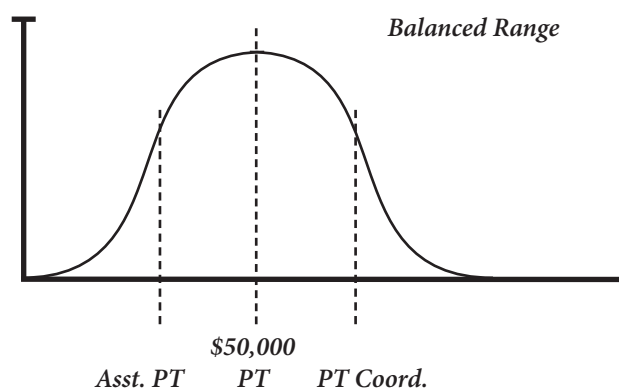
2. Within the OES survey, wage data are collected by job family rather than unique job. Within a single job family there may be jobs of multiple levels and functions. The BLS publishes a list of "Lay Titles," which provides information on the unique jobs within each job family (as defined by the BLS). Below is a list of the jobs reported within the Physical Therapists job family:

> *Kinesiotherapist*
> *Licensed Physical Therapy Assistant*
> *Pediatric Physical Therapist*
> *Physical Therapist (PT) AC*
> *Physiotherapist*
> *Pulmonary Physical Therapist*
> *Sports Physical Therapist*
> *Treatment Coordinator*

Note that there are Assistant PT, PT, and PT Coordinator level jobs included in this family. A potential problem arises in compensation when job family results are applied to individual level jobs. Essentially, the OES compares the average of several (related) jobs to a single occupation. If a greater proportion of the jobs in the family have higher (or lower) wages than that of the job of interest, then the value of the job family would not be an accurate measure. Unfortunately, without an external data source for individual level jobs, there is no way to determine if job family values are higher or lower than the job of interest. Statisticians refer to this comparison between an individual level variable and a group (family) level variable as a "level of analysis" limitation.

3. The OES survey has three job families associated with Physical Therapists: Physical Therapist Aides (31-2022), Physical Therapist Assistants (31-2021), and Physical Therapists (29-1123). This creates a potential issue for data in the Physical Therapists job family. Specifically, there is overlap between the lower end of Physical Therapists and Physical Therapist Assistants. The Physical Therapist job family is conceived of having three primary levels: PT Assistant, Physical Therapist, and PT Coordinator. However, participants may be expected to place data for the PT Assistant in the PT Assistant job family as opposed to the PT job family. Furthermore, because there is no PT Coordinator job family, participants may be expected to place those positions within the PT job family. This reduces the number of observations on the lower end of the job family and may increase the value
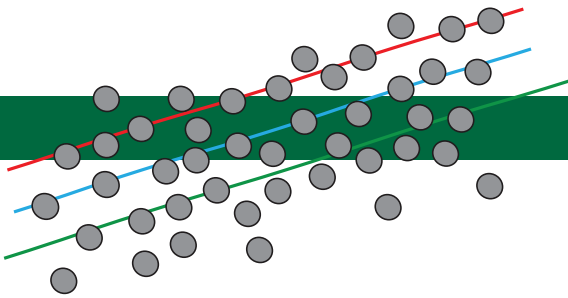
reported by the survey. This well-known confound of survey data is a statistical phenomenon referred to as "range restriction."



*Balanced Range*

*$50,000*
*Asst. PT    PT    PT Coord.*



*Restricted Range with increased mean*

*$60,000*
*PT          PT Coord.*

Although the OES does provide valuable survey data as a first step in a market review, the aforementioned limitations warrant the use of additional salary survey data that provide specific job and wage level data for comparison.

# Traditional Salary Surveys

PROS: At their base, salary surveys represent occupation-specific compensation data supplied by employers to a survey provider. The survey provider compiles data and reports averages through a hardcopy or electronic format. Because salary surveys collect occupation-specific data, organizations are able to make more accurate job matches for benchmarking purposes. This is a benefit to the survey from two different perspectives. First

of all, participating organizations are able to view differences between similar job descriptions of related jobs covered by the survey, which helps facilitate accurate job matching between the participants and the survey.

This targeted granularity enables salary survey providers to collect data at a level that satisfies compensation professionals' needs. In return, the results are reported with a high level of accuracy based on targeted job matches, unlike job family surveys that report broad occupations with general data.

Another strength of traditional salary surveys is their re-activity to market changes. Since salary surveys collect and report data from a specific window of time (typically done on an annual basis), they can be used to spot year-to-year market shifts.

CONS: Surprisingly, one of the pros of traditional salary surveys is also a limitation, that of data changes. Because salary surveys collect and report data on completely unique datasets for each publication period, these surveys may in fact be too reactive to fluctuations as reported by organizations. Statisticians refer to this as "sampling error," which is highlighted by occasional large fluctuations found in salary surveys from year to year. For example, let's consider the occupation of Registered Nurse as reported in a national salary survey. The survey results may indicate a salary of $65,000 for one year, and $85,000 the next. (To clarify, fluctuations of this nature are not uncommon.) Within the survey, these two separate findings accurately represent the data provided by participating organizations for each window of time. In this case, each survey accurately represents the sample, but there may be a factor in one (or both) of the samples that doesn't reflect reality. Truly, it is unlikely that the market value for a Registered Nurse jumped by $20,000 in a single year on a nationwide basis. As such, further analysis may be required.
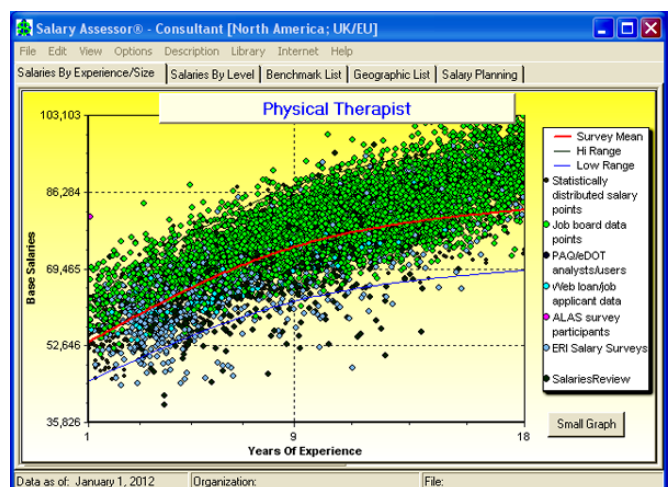
In sum, because salary surveys report data collected for a specific time frame, the results may show large fluctuations in the data reported over the span of multiple years. Annual salary surveys remain isolated from previous years' data in part by publication date, as well as by changes in participants from a year-to-year basis. For example, if a large organization that pays above the national mean decides not to participate in their "usual" survey for a given year, the reported mean for that survey will be lower than past years when the organization's data was included. The danger for organizations that

rely on these data is in interpreting the results; such a drop may be misinterpreted as a decrease in the market rate for a given job when, instead, the change may simply be due to year-to-year differences in the participating organizations. A compensation professional may be able to spot inconsistencies due to factors other than market changes by comparing data. For example, a year-to-year comparison of the same survey, or a comparison between levels of the same job within a single survey, may highlight outside factors. Consistencies within the results of comparisons lend credence to the accuracy of a survey.
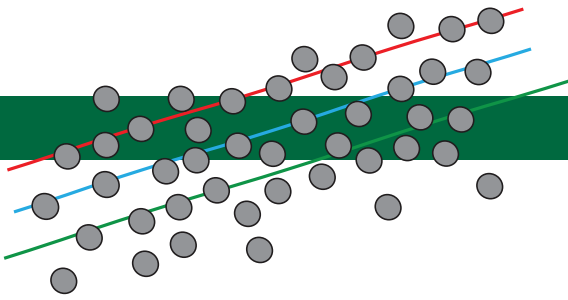
# Salary Survey Analytics

PROS: Salary survey analytics compile various sources of salary survey data over multiple years to provide large-scale analyses of compensation. The analytic methodology is designed to address the limitations of traditional salary surveys. By using multiple sources of data, analytics are able to increase the number of organizations represented in the data, which reduces the size of year-over-year fluctuations that are not due to true market changes. Furthermore, by examining the growth rates of these surveys over time, the methodology is able to put the findings of individual surveys into context.

To illustrate this, picture the mean of an occupation in a single salary survey as a point on a graph. This point provides no indication of growth over time. Now, picture numerous surveys conducted over multiple years as a cluster of



*Source: ERI Salary Assessor & Survey, U.S. National Average*

*Survey analytics combine data points from multiple salary surveys and other sources of compensation data.*

points on a graph. Examining new data within the context of previously collected salary surveys provides a more precise analysis of how that occupation's compensation has changed over time, and takes advantage of a powerful statistical trend called "regression to the mean."

While any given sample from a survey may be higher or lower than the true mean found in the national economy, a large number of surveys, compiled over time, will show data points clustered around the true mean. Salary survey analytics provide compensation professionals with salary figures that have a higher level of absolute accuracy than other methodologies.

# CONS:
Certain analytic methodologies may not be as reactive to changes in highly volatile job markets. Because analytics examine current data within the context of historical data, a sudden spike in wages for a specific job may not be immediately reflected in the results provided to customers. It should be noted that this limitation occurs during sudden changes in the marketplace rather than changes to the job due to normal growth. For example, survey analytics will lag the explosive growth of compensation found in situations such as the North Dakota oil boom. In situations such as these, one option to monitor the volatile trend is to have an industry group commission a custom salary survey tailored to the specific industry, jobs, and locations in question. In this case, the rapid change is not following historical patterns and may require an independent study.

## Summary:
Depending on your compensation data needs, there are plenty of options available. Nevertheless, each source of salary survey data uses different methodologies that have inherent strengths and weaknesses. While surveys conducted by governments typically have large, powerful sample sizes, the scope of the data is limited to salary ranges and job families. Narrowing the scope, traditional salary surveys represent individual jobs and specific salary figures. However, traditional surveys are limited by smaller sample sizes that may be prone to fluctuations due to factors other than market changes. Survey analytics correct for these fluctuations by collecting and analyzing multiple salary surveys over time. This combines the consistent results found in large-scale analyses with the job specific granularity of smaller surveys. Not only is it advisable to examine multiple sources of compensation data to accurately gauge the market for a given occupation, compensation professionals should also consider using sources with varying methodologies.