

# Teaching and Learning International Survey (TALIS)

Website: <https://nces.ed.gov/surveys/talis/>

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## 1. OVERVIEW

The Teaching and Learning International Survey (TALIS) is a survey of International Standard Classification of Education (ISCED) Level 2<sup>1</sup> teachers and principals, which is equivalent to grades 7, 8 and 9 in the United States. The study is a collaborative effort of the Organization for Economic Cooperation and Development (OECD) and participating education systems. Representatives of each education system form the TALIS Board of Participating Countries, which sets policies and standards for the administration, analysis, and reporting of TALIS. Each education system administers TALIS according to the guidelines set by the TALIS Board of Participating Countries. In the United States, TALIS 2013 was conducted by the National Center for Education Statistics (NCES) of the Institute of Education Sciences, U.S. Department of Education.

The initial administration of TALIS, in 2008, was the first large-scale international survey of the teaching workforce, the conditions of teaching, and the learning environments of schools in participating education systems. TALIS 2013 was the second administration. TALIS 2013 had 34 education systems participating, including the United States. The number increased to 38 in 2014 when four additional education systems decided to participate. The United States did not participate in TALIS 2008 and thus the United States administered TALIS for the first time in 2013.

### Purpose

TALIS is part of the Indicators of Education Systems (INES) project, a project which was launched by OECD to help create a system of education indicators for cross-national comparisons for the use of policymakers, consumers, and private industry. TALIS has been designed to increase the international information available to OECD countries and a set of partner countries on teachers and the conditions under which they work. The overall objective of TALIS is to provide international indicators and policy-relevant analysis on teachers and their workplaces in order to help education systems develop and review policies that create the conditions for improved learning and spur further investigation into differences within and between education systems.

### Components

TALIS consists of two instruments: a principal questionnaire and a teacher questionnaire. The 2013 principal questionnaire collects information on principal's personal background information, school background information, school climate, job satisfaction, school leadership, teacher appraisal and feedback, principal continuous professional development and teacher induction and mentoring. The 2013 teacher questionnaire collects information on teacher's background information, teacher continuous professional development, teacher appraisal and feedback, mentoring and induction, teaching practices, beliefs and attitudes, school climate, and job satisfaction.

## INTERNATIONAL SURVEY OF TEACHERS AND PRINCIPALS

TALIS collected data in the following areas:

- Continuous professional development
- Teacher appraisal
- School leadership and management
- School climate
- Teachers' instructional beliefs
- Teachers' pedagogical and professional practices

<sup>1</sup> For additional information on UNESCO's ISCED levels, see <http://uis.unesco.org/en/topic/international-standard-classification-education-isced>.

The questionnaires can be completed online or with paper-and-pencil.

### **Periodicity**

Although TALIS was first administered internationally in 2008, the United States began participating in the second administration in 2013.

## **2. USES OF DATA**

Data from TALIS will be used to document the conditions of teaching and schooling that may be related to student learning and to develop comparative education indicators geared toward informing policy discussions about teachers and teaching.

## **3. KEY CONCEPTS**

TALIS 2013 focuses on six themes motivated primarily by the collective policy interests of participating education systems and secondarily by current theory and research, described below.

***Continuous Professional Development.*** This includes a profile of in-service professional development (types of activities, participation rates, intensity of participation, mentoring and induction programs), needs and demands for in-service professional development, barrier preventing participation in in-service professional development, perceived impact of in-service professional development, and initial teacher education.

***Teacher Appraisal.*** This includes a profile of teacher appraisal (frequency, criteria, outcomes) and perceptions of the effectiveness and impact of teacher appraisal.

***School Leadership and Management.*** This includes a profile of school leadership and management styles (including indicators on the roles and functions of school leaders) and distributed/team leadership.

***School Climate.*** This includes disciplinary climate, teacher-student relations, a profile of teachers' working time, teacher and principal job satisfaction, and parent-teacher and parent-school relations.

***Teachers' Instructional Beliefs.*** This includes a profile of teachers' beliefs about teaching; teachers' and principals' perceptions about contextual, school, and classroom conditions that affect school and teachers' effectiveness and teachers' beliefs about student assessment and practice.

***Teachers' Pedagogical and Professional Practices.*** This includes a profile of teaching practices, a profile of cooperation among teaching staff, teaching special

education needs students, pedagogical use of technology, and a profile of student assessment practices.

## **4. SURVEY DESIGN**

The survey design for TALIS data collections is discussed in this section.

### **Target Population**

The desired TALIS target population consisted of schools where ISCED Level 2 education is provided along with the affiliated principals and teachers. No subject matter was excluded from the scope of TALIS teachers. Thus, coverage of TALIS extended to all teachers of ISCED Level 2 and to the principals of the schools where they teach.

The formal definition of a classroom teacher is a person whose professional activity involves the planning, organizing, and conduction of group activities whereby students' knowledge, skills, and attitudes develop as stipulated by educational programs. In short, it is one whose main activity is teaching. An ISCED Level 2 teacher is one who, as part of his or her regular duties in school, provides instruction in programs at ISCED Level 2. In the United States, ISCED Level 2 teachers are those who provide any instruction for grades 7, 8, and/or 9. Teachers who taught a mixture of programs at different levels including ISCED Level 2 programs in the target school were included in the TALIS universe, as well as teachers who engaged with individual or small groups of students in "pull in" or "push out" programs. There was no minimum cut-off for how much ISCED Level 2 teaching—that is, either the number of classes or students—these teachers need to be engaged in to be included.

Some 140 U.S. schools participated in the U.S. TALIS 2013 survey; 111 principals and 2,034 teachers completed questionnaires. Data collection occurred from March through May 2013.

### **International Sample Design**

The sample design for TALIS 2013 was a stratified two-stage probability sample. This meant that teachers (second stage units or secondary sampling units, abbreviated as SSUs) were randomly selected from the list of in-scope teachers for each of the randomly selected schools (first-stage or primary sampling units, abbreviated as PSUs).

Although TALIS's intent was to be as inclusive as possible, guidelines allowed for schools to be excluded for approved reasons (e.g. remote regions, very small schools, special needs only schools). TALIS also had set guidelines for teacher exclusions including: 1) substitute, emergency, or occasional teachers; 2) teachers of adults; 3) teachers on long-term leave; 4) teacher aides; 5)

pedagogical support staff; and, 6) health and support staff. For more information, please refer to *TALIS 2013 U.S. Technical Report* (NCES 2015-010).

International technical standards for the TALIS 2013 main study required that the teacher sample size be a minimum of 3,400 surveyed ISCED Level 2 teachers for the main study, or the National Defined Target Population. The school sample size must be a minimum of 200 schools for the main study, or all schools that have ISCED Level 2 teachers in the National Defined Target Population.

The minimum number of teachers required within each sampled school is suggested to be 20 to allow for reliable estimation and modeling, while allowing for some amount of nonresponse. In schools where fewer than 20 teachers of ISCED Level 2 are found, all will be in the sample. In schools where the number of teachers of ISCED Level 2 is between 21 and 30, it is suggested that all the available teachers be sampled. However, each education system will have the choice to determine the sample size cutoff. The United States decided to select 22 teachers from any schools with 22 or more eligible teachers. This number was based on calculations which estimated the total number of TALIS eligible teachers at 201 sample schools, and anticipated a yield of at least 3,500 teachers (before refusals). Based on the experience from the previous TALIS, this would provide a sufficient level of precision for the analysis (after refusals).

### Response Rate Targets

**School response rates.** The technical standards for the TALIS 2013 main study required that school response rates must be at least 75 percent of sampled schools. If a response rate was below 75 percent then an acceptable response rate can still be achieved through agreed upon use of substitute schools. Two substitute schools were preselected to replace each school in the sample. Although substitute schools could be called upon to replace nonresponding schools, education systems were encouraged to do all they can to obtain the participation of the schools in the original sample.

Education systems must obtain participation by 50 percent or more of the original sampled schools. Education systems that experienced less than 75 percent sample school participation after substitution have to demonstrate convincingly that their sample was not significantly biased. TALIS established three response rate zones—good, fair, or poor. “Good” meant the education system’s data were included in the international database. “Fair” meant that the education system’s data may not be recommended for full inclusion in international comparisons. “Poor” meant that the education system’s data were not included in the international comparisons. The TALIS Board of Participating Countries made the

final decision on whether to include the education system’s data in international comparisons while taking into account various other factors.

**Teacher response rates.** A minimum response rate of 75 percent of sampled teachers in participating schools (original sample or substitute school) was required. Responding schools that yielded at least 50 percent of sampled teachers were considered as participating schools; schools that failed to meet that threshold were considered as “nonparticipating” even though the number of responding teachers may be enough to contribute to some of the analyses.

### Sample Design in the United States

The design of the U.S. school sample for TALIS 2013 was developed to follow international requirements as given in the TALIS 2013 Sampling Manual—Main Survey Version (OECD 2012). However, it is also worth noting that United States did not meet the international participation rate standards.<sup>2</sup> The TALIS 2013 U.S. sample was based on a stratified two-stage probability sample design. At the first stage the primary sampling units were individual ISCED Level 2 schools, selected systematically with probability proportional to size from the stratified sampling frame. At the second stage, the secondary sampling units were the in-scope teachers, selected randomly within the sample schools.

The U.S. school sampling frame was developed from two national databases in the National Center for Education Statistics—public schools in the Common Core of Data (CCD) and private schools in the Private School Universe Survey (PSS). These sources provide full coverage of all TALIS-eligible teachers in the education system in the United States. The TALIS school frame was constructed using the 2010-11 CCD and the 2009-10 PSS, the most current data at the time of the TALIS frame construction.

The sampling frame for the main study used two explicit strata: school control (i.e., public/private) and grade structure. The grade structure is defined with the following categories:

- Middle-Junior, which includes middle school (grades 6 to 8) or junior high (grades 7 to 9, or grades 7 and 8);
- High school (grades 9 to 12); and
- Other (any other grade structure that includes at least one ISCED Level 2 grade).

<sup>2</sup> To learn more on this matter, please refer to <https://nces.ed.gov/surveys/talis/talis2013/index.asp>.

The sampling specifications for selecting the schools for the main study specified the following three implicit stratification variables: (1) region (Northeast, Midwest, South, and West), (2) percent minority students, and (3) number of ISCED Level 2 teachers (measure of size). Within each explicit stratum the schools were sorted by a hierarchical combination of the implicit stratum variables in order to improve the representativeness of the sample across these variables.

The sample schools were allocated to the different explicit strata proportionally to the total number of ISCED Level 2 teachers. Given the small proportion of the schools in the combined private middle-junior and high school stratum, the proportional allocation for this combined stratum was increased from 3 to 4 schools, resulting in a final sample of 201 schools. During the data collection, three schools were found to be out-of-scope, reducing the sample to 198 schools. Per international guidelines, any school declining to participate is replaced by a pre-selected similar school.

To allow for reliable estimation and modeling, while taking into account the expected levels of nonresponse, the sample size for the U.S. TALIS main study was set at 22 ISCED Level 2 teachers within each participating school, or all of the eligible teachers when the school had 22 or fewer. In schools with more than 22 eligible teachers, a random sample of 22 eligible teachers was drawn. The distribution of eligible teachers at eligible schools is an estimate since teacher lists were not available.

School coordinators were asked to provide lists of all eligible teachers in the school (using a standardized Teacher Listing Form). To reduce burden, a Teacher Listing Form was provided to the school coordinators both in hard copy and in electronic form.

Once the Teacher Listing Form was received from a school, it was formatted for importing into *WinW3S*, the sampling software developed by the International Association for the Evaluation of Educational Achievement (IEA) and provided by OECD for use on this project. After importing the list from a school, the appropriate validation checks were run, the teachers were sampled, and the Teacher Tracking Forms were output from *WinW3S*.

### **Data Collection and Processing**

The TALIS Board of Participating Countries developed technical standards that provided standardized procedures for all education systems to follow. NCES was responsible for the implementation of TALIS in the United States in accordance with the international standards and procedures. TALIS 2013 data collection and associated tasks were carried out through a contract with Strategic Analytics, Inc. and its two subcontractors, Strategic Research Group, Inc. (SRG), and Sabre Systems, Inc.

Strategic Analytics was responsible for project coordination, preparation of recruitment materials, preparation of the U.S. data files, and reporting. Sabre Systems was responsible for school and teacher sampling, data processing, and bias analyses. SRG was responsible for recruitment of schools and teachers, adaptation of the international instruments, and data collection. SRG worked closely with the school principal and a school coordinator (a school staff member designated by the principal) in conducting the data collection.

**Reference dates.** Each education system selected its own timeframe for survey administration, ranging from 12 days to 4 months, within the internationally prescribed time period of the end of the school year. The end of the school year was purposefully selected to guarantee comparability of collected data. During this period, principals and teachers were free to fill in the questionnaires whenever they chose. The overall target was 100% within-school participation.

**Data collection.** All data collection activities were conducted by mail, e-mail, and telephone. Quality control activities were performed by SRG and Strategic Analytics staff, as well as an international quality control monitor appointed by OECD.

Each participating school was required to designate a staff member to serve as school coordinator. School coordinators received a School Coordinator Manual to use in performing their activities. A significant portion of this document provided instruction on assembling a list of eligible teachers. The manual also covered distribution of the questionnaires, completing the Teacher Tracking Form, quality control that would be conducted during TALIS, and returning materials to SRG.

Beginning in February 2013, and continuing as schools agreed to participate, the school coordinators were contacted, and mailed and/or e-mailed an introductory letter along with the School Coordinator Manual and Teacher Listing Form. The Teacher Listing Form was offered as an Excel file delivered by e-mail, but was available on paper as well. SRG staff contacted school coordinators by telephone and e-mail to obtain the completed Teacher Listing Forms.

Following teacher sampling, SRG mailed the principal and teacher packets to the school coordinator, who was responsible for distributing them. SRG staff remained in contact with school coordinators by telephone and e-mail to encourage the completion of the questionnaires.

SRG received completed Teacher Listing Forms by mail or e-mail. Once received, they were reviewed for completeness and accuracy. One key check involved the number of teachers listed on the form. This was compared

to an estimate of teachers from the sampling frame, and if the number differed by more than 25 percent, the school coordinator was contacted to resolve the discrepancy. As problems were discovered, school coordinators were asked to resubmit a corrected Teacher Listing Form.

Once the Teacher Listing Form was deemed to be complete and accurate, the data were entered into *WinW3S*, the sampling software provided by OECD. After importing the list from a school, the appropriate validation checks were run, the teachers were sampled, and the Teacher Tracking Forms were output from *WinW3S*. A total of approximately 2,630 teachers (an average of 19 per school) were sampled. In schools with 22 or fewer eligible teachers, all were selected; in schools with 23 or more eligible teachers, 22 were randomly selected.

Following sampling, SRG staff mailed the school coordinator materials needed for the data collection. As schools received these packages, data collection began. The first packages were sent at the beginning of March 2013. Because of the length of time it took to recruit many of the schools, and in some cases, receive completed Teacher Listing Forms, data collection could not be started until much later. Data collection did not begin in many schools until mid-way or very late into the data collection phase. For this reason as well as the continued push to recruit additional schools, the deadline for data collection was extended from April 2013, to May 2013, with the approval of OECD.

SRG staff continued to contact schools on a regular basis throughout the data collection period. The first follow-up calls began in March 2013. Subsequently, the school coordinator was called and/or e-mailed at least once a week. These contacts continued until all sampled teachers had responded or data collection ended. From mid-April through May, NCES staff also contacted schools to encourage participation.

**Data processing.** The data collection in the United States was led by the staff at SRG. The SRG staff were responsible for processing the Teacher Tracking Forms and entering them into the *WinW3S* software for teacher sampling. The primary data collection mode in the United States was through online instruments. The online instruments were administered using the Online Data Collection (ODC) software provided by the IEA-DPC, but that resided on an NCES server for the U.S. collection. Paper responses were entered and verified using the Data Management Expert (DME) software, also provided by the IEA-DPC. The data entry and verification steps consisted of SRG staff entering the paper responses, as well as managing the collection of the online and paper responses. In the case of paper responses, SRG staff entered and

verified the data and, at the end of collection produced a DME file for both the teacher and school file.

The verification steps handled by SRG staff included an automatic validation of the paper surveys entered into the DME, as well as data checks that checked for duplicate codes and data output outside the expected valid range or values defined as valid. SRG staff reviewed the reports and verified that invalid entries had been correctly entered and that the available data corresponded to the expected based upon the participation indicators and entries on the tracking forms. The SRG staff provided the IEA-DPC staff with detailed documentation but did not make any changes to the data other than correcting data entry errors.

### Estimation Methods

**Weighting.** The use of sampling weights is necessary for the computation of statistically sound, nationally representative estimates when using a complex survey sampling procedure. Survey weights adjust for the probabilities of selection for individual schools and teachers. TALIS used a stratified multi-stage probability sampling plan with unequal probabilities of selection. The school sampling included a probability proportional to size systematic sample, while the teacher sample was a simple random sample within selected schools. Survey weighting for all participating education systems was carried out by Statistics Canada, as part of the TALIS consortium.

**School weights.** The schools weights were a function of the school base weight, or design weight, and a nonresponse adjustment factor. *School Base Weight* is the probability of selection using the systematic random sampling scheme with probability proportional to size. *Nonresponse Adjustment Factor* is an adjustment that allocates the weight of the nonresponding schools to responding schools so that estimates reflected the population the sample was intended to represent.

**Teacher weights.** The teacher weighting was more complicated than the school weighting because, while it was a simple random sample at the school level, it included the school base weight as well as four additional adjustment factors. The final teacher weight adjusted for school nonresponse, teacher nonresponse, and incidental inclusions, and included a multiplicity adjustment. The school base weight incorporates the probability of selection of the school into the teacher weight and the nonresponse adjustments account for participation, or lack of participation, at each level. The incidental inclusion adjustment accounts for teachers who are also principals in the U.S. case. The multiplicity adjustment factor adjusts for the fact that teachers working in more than one ISCED Level 2 school had more chance of being selected in the sample.

**School Base Weight** is the probability of selection using the systematic random sampling scheme with probability proportional to size. **School Nonresponse Adjustment** is an adjustment that accounts for nonresponse at the school level. School nonresponse adjustments were applied within the explicit strata, reallocating the weight of nonresponding schools within each stratum to the responding schools.

**Teacher Base Weight** is the inverse of the probability of selection of the teacher at the time of selection. **Teacher Nonresponse Adjustment** is an adjustment that allocates the weight of the nonresponding teachers to responding teachers so that estimates reflected the population the sample was intended to represent. The teacher nonresponse adjustment included adjustments within each explicit strata that accounted for nonresponding teachers as well as teachers that left the school after having been selected for the sample.

**Adjustment for Incidental Exclusions** is an adjustment to account for teachers who are also principals in the U.S. case. **Multiplicity Adjustment** is an adjustment that accounts for the fact that teachers working in more than one ISCED Level 2 school had more chance of being selected in the sample.

**Imputation.** No imputation was conducted for TALIS 2013.

**Measuring Trends.** In an effort to continue to improve TALIS while simultaneously maintaining consistency, new directions for the study have been adopted for the TALIS 2013. At the same time, many of the TALIS 2008 themes, scales, and indicators have been preserved. This approach serves the dual purpose of allowing for the analysis of trends and permitting the investigation of contemporary issues in teaching and learning. More specifically, the TALIS questionnaires are designed to allow for some trend analysis between TALIS 2008, TALIS 2013 and further cycles of TALIS, while permitting for additional inquiry into areas identified as high priority by participating OECD countries, partner economies and sub-national entities. TALIS 2013 was the first time that TALIS was administered in the United States. Thus, there is not sufficient information available to measure trends in the U.S. until data from new cycles are available.

#### **Future Plans**

The next cycle of TALIS data collection will take place in 2018.

## **5. DATA QUALITY AND COMPARABILITY**

A comprehensive program of continuous quality monitoring was central to ensuring full, valid implementation of the TALIS procedures and the recording of deviations from these procedures. National Project Managers (NPMs) and members of the TALIS 2013 Board of Participating Countries nominated suitably qualified individuals to carry out the international quality control monitoring program (IQCM), which was conducted externally to the national center. The IQCMs reviewed national TALIS materials to determine if the guidelines of the TALIS 2013 International Study Center (ISC) had been followed and visited schools to conduct standardized interviews on administering the survey with the School Coordinator (SC).

Despite the efforts taken to minimize error, as with any study, TALIS has limitations that researchers should take into consideration. This section contains a discussion of two possible sources of error in TALIS: sampling and nonsampling errors.

#### **Sampling Error**

Estimating sampling errors when dealing with a complex design like TALIS must incorporate the survey design and unequal weights to obtain unbiased estimates. Not accounting for either may lead to significant underestimation of the sampling error. There are a number of methods that take into account the complex sample design and provide appropriate estimates of sampling errors. The Balanced Repeated Replication (BRR) method is used for TALIS and 100 replicate weights are provided for the implementation of this method in the estimation of standard errors for all analysis when using the appropriate software and commands. The TALIS 2013 Technical Manual (OECD 2014b) covers this in greater detail and the IEA International Database (IDB) Analyzer software, available on the Internet (<http://www.iea.nl/data.html>), uses the replicate weights to produce the appropriate standard errors when used in conjunction with SPSS.

#### **Nonsampling Error**

Nonsampling error is a term used to describe variations in the estimates that may be caused by population coverage limitations, nonresponse bias, and measurement error, as well as data collection, processing, and reporting procedures. The sources of nonsampling errors are typically problems such as unit and item nonresponse, the differences in respondents' interpretations of the meaning of survey questions, response differences related to the particular time the survey was conducted, and mistakes in data preparation.

In general, it is difficult to identify and estimate either the amount of nonsampling error or how much bias it causes. In TALIS 2013, efforts were made to prevent such errors from occurring and to compensate for them when possible.

If there were no systematic differences among specific groups under study in their tendency to give socially desirable responses, then comparisons of the different groups would accurately reflect differences among groups. Readers should be aware that respondent bias may be present in this survey as in any survey; however, it is not possible to state precisely how such bias may affect the results.

**Coverage error.** The TALIS program of surveys aims to cover all teachers of a given ISCED level in a participating education system. For national reasons, participating education systems can choose to restrict the coverage of their national implementation of TALIS to parts of the education system. Ideally, all the members of a target population should be admissible to sampling and data collection. This is the option that TALIS chose. As a consequence, the international survey population (those who can be surveyed) is identical to the international target population (those who should be surveyed).

TALIS recognizes that attempting to survey teachers in very small schools, that is, schools with no more than three teachers at the ISCED level of interest, and those teaching in schools located in geographically remote areas tends to be costly, time consuming and statistically inefficient. Therefore, participating education systems can excuse those teachers from the TALIS data collection, thus creating a national survey population different from the national target population. TALIS 2013 therefore required the National Project Manager (NPM) for each education system to document the reasons for exclusion as well as the size, location, and clientele of each excluded school.

In TALIS 2013, the United States developed its school sampling frame from CCD and PSS. These sources provide full coverage of all TALIS-eligible teachers in the education system in the United States.

**Nonresponse error.** Nonresponse error results from nonparticipation of schools, teachers, and principals. TALIS international requirements stipulate that the weighted school response rate target is a minimum of 75 percent (after substitution). A minimum of 50 percent of schools from the original sample of schools are required to participate for data to be included in the international database. Substitute schools are allowed to be used (selected during the sampling process) to increase the response rate. TALIS 2013 also requires a minimum participation rate of 50 percent of sampled teachers from each school in order for that school and its respondents to be included.

**Unit nonresponse.** One-hundred fifty-two schools were recruited to participate in TALIS 2013. One of these schools never identified a school coordinator, leaving 151 schools. A further 11 of these schools did not return their

Teacher Listing Form, resulting in a final total of 140 participating schools. Of these, 122 schools had 50 percent or more response among teachers (78 original schools and 44 substitute schools). By the close of data collection close to 80 percent of principals and teachers responded.

**Table 1. TALIS school response rates: 2013**

School response rates <sup>1</sup>	Unweighted response rate	Weighted response rate
Before substitution	39.4 <sup>2</sup>	36.9
After substitution	61.6 <sup>3</sup>	60.8

<sup>1</sup>To be counted as a responding school, at least 50 percent of selected teachers had to return questionnaires.

<sup>2</sup>Based on 78 original schools out of 198 in-scope schools.

<sup>3</sup>Based on 78 original schools plus 44 substitute schools out of 198 in-scope schools.

SOURCE: Strizek, G., Tourkin, S., and Erberber, E. (2014). Teaching and Learning International Survey (TALIS) 2013: U.S. Technical Report (NCES 2015-010). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

**Unit nonresponse bias analysis.** The TALIS 2013 standards also require that nonresponse bias analyses need to be conducted if weighted school response rates are less than 75 percent (after substitution). NCES statistical standards for surveys stipulate that a nonresponse bias analysis is required at any stage of data collection with a weighted unit response rate less than 85 percent (without substitution).

The investigation into nonresponse bias at the school level for the U.S. TALIS 2013 school sample showed that there was no statistically significant relationship detected between participation status and the school characteristics that were available for analysis. It also suggested that there was evidence that the use of substitute schools reduced the potential for bias, based on an examination of the relative bias between estimates across the variables examined here. The application of nonresponse adjusted weights appears to have reduced, but certainly not eliminated, the potential for bias as evidenced by the smaller measures of bias in most categories.

The investigation into nonresponse bias at the teacher level, which is the unit level of analytic interest in TALIS, revealed that two of the variables examined (school control and grade structure) showed statistically significant relationships with teacher participation when examining base-weighted distributions. Based on the results of row-level t-tests, public school teachers were overrepresented among participating teachers in original schools while private school teachers were underrepresented among participating teachers. When taking into consideration all

participating teachers at both original and substitute schools, and accounting for the nonresponse adjustments, these results did not hold. The multivariate results were consistent with the bivariate findings in most respects. Neither school control nor grade structure were significant in the multivariate setting, but the percent of minority students was significantly related to nonresponse in the regression model in spite of the nonsignificant results for the model.

Taken all together, the investigation of unit-level nonresponse in the U.S. TALIS sample revealed there is potential for nonresponse bias in some estimates at the school and teacher level, although the amount of bias varied greatly depending on the unit level (school or teacher) and the variable being examined.

**Item nonresponse bias analysis.** NCES standards require nonresponse bias analysis when item-level analysis for all items with an item-level response rate below 85 percent. The item-level nonresponse bias analysis was limited to the single item with less than an 85 percent response rate that required analysis, item 24O2 in the teacher questionnaire. The analysis of the item on professional development in the area of implementation of national/state curriculum standards showed evidence of potential bias, particularly with respect to several categories of age and experience. There was little evidence of bias with respect to gender and full-time teaching status, but part-time teachers were less likely to respond to this item. Care should be taken when analyzing this item, particularly with respect to the variables that showed evidence of potential bias.

**Measurement error.** Measurement error is introduced into a survey when its instruments do not accurately measure the knowledge or aptitude they are intended to assess.

#### **Data Comparability**

The U.S. TALIS 2013 data may require confirmation of the estimates using other data sources, such as the Schools and Staffing Survey (SASS), when possible.

For example, when conducting unit nonresponse bias analysis, further evidence of potential bias in the U.S. TALIS teacher sample came from a comparison to a similar sample of teachers in the Schools and Staffing Survey (SASS). Based on comparisons of a limited number of key demographic characteristics shared between the two studies, the U.S. TALIS teacher sample appears to overrepresent teachers who report a full-time contract status and those that have the most number of years of teaching experience (i.e., 10+ years) while it underrepresents teachers who report a part-time contract

status and those with the fewest years of teaching experience (i.e., less than 4 years).

## **6. CONTACT INFORMATION**

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## **7. METHODOLOGY AND EVALUATION REPORTS**

Most of the technical documentation for TALIS is published by the OECD. The U.S. Department of Education, NCES, is the source of several additional references listed below.

#### **General**

Organization for Economic Co-operation and Development (OECD). (2014). TALIS 2013 Technical Report. <http://www.oecd.org/edu/school/TALIS-technical-report-2013.pdf>

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