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ABSTRACT

This study examines how accurately first-year undergraduate students at a public university self-report family income. A comparison of student-reported income to financial aid records found that less than 40 percent of students in three incoming classes of first-year undergraduates (1995, 1996, 1997) accurately reported family income on an entering student survey. Three sources of data were used for the study: first-year student self-reported survey data; institutional student data records; and institutional financial aid files. Other measures included race and predicted grade point average. The results show a significant negative correlation between self-reported and actual earnings, with students in the lower income categories more likely to over-report actual family earnings and students in higher income categories more likely to under-report actual family earnings. However, once income level is controlled for, minority students are significantly more likely to under-report actual earnings, as are students whose parents have not earned at least a baccalaureate degree. Gender was not a significant factor in any of the three years measured. (Contains 9 references.) (CH)

Running head: VALIDITY OF STUDENT-REPORTED FAMILY INCOME

The Validity of Students' Self-Reported Family Incomes

by

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The Validity of Students' Self-Reported Family Incomes

This study examines the accuracy with which first-year undergraduate students at a public institution are able to report family income on an entering student survey administered during a summer orientation program for new students. A comparison of student-reported family income to financial aid records found that less than 40% of students were accurate in their reporting of family income on an entering student survey. A significant negative correlation exists between the accuracy measure and actual earnings (r=-.554), with students in the lower income categories more likely to over-report their family's actual earnings and students in the higher income categories more likely to under-report actual family earnings. Additionally, once income level is controlled for in the model, minority students are significantly more likely to under-report actual earnings, as are students whose parents have not earned at least a baccalaureate degree.

earnings including: 1) a lack of clarity on the definition of family earnings, 2) faulty memory, 3) conscious or unconscious distortion of earnings, and 4) miscoded responses.

The limited research that has investigated the validity of self-reported family income has suggested that adolescents and young adults appear to be aware of both the educational attainment and occupational status of their parents, (Borus and Nestel, 1973; Collins, 1973; Corcoran, 1980) but appear to be less aware of their parents' earnings (Kayser and Summers, 1973). Kayser and Summers (1973) compared youth and parents' reports of income and found that they were statistically unrelated. More recently, Romano and Mareno (1994) compared community college students' reported family incomes to the income reported on the parents' federal income tax returns and found that less than one-third of students were able to accurately report family income. In a related study of financial aid awards, Trusheim (1994) found that college students had little difficulty accurately reporting the type of financial aid awards that they received, but were far less able to accurately report the award amounts, usually underestimating their awards.

Accuracy of reporting has also been shown to vary by income level, race, sex, parents' education and job status (Romano and Mareno, 1994; Olivas, 1986; Tusheim, 1994). Previous research, focusing on the accuracy of estimates of family income for use in financial aid decisions, found that financial aid applications for students from low-income families more frequently contained overestimates of family income while applications from higher income families tended to underestimate family income (Romano and Moreno, 1994; Sharon and Horch, 1972). Additionally, because a higher proportion of minority students come from the lower income families, these students are more likely to over-report income than are their Caucasian classmates (Olivas, 1986).

The Validity of Students' Self-Reported Family Incomes

Introduction

Each year a large number of higher education institutions gather information on parents' income via student surveys. Subsequently, these self-reported measures of family income are used as a proxy for family socioeconomic status in research studies, institutional profiles, and higher education reports. Yet little research has been published that investigates the potential response bias introduced when students are asked to report family income. This study examines the accuracy with which first-year undergraduate students at a public institution are able to report family income on an entering student survey administered during a summer orientation program for new students. In addition, various student characteristics are examined to determine if particular groups of students are more aware of their family's income than are others.

The issue of response bias, particularly as it relates to self-reported personal economic indicators, is not new (Perry and Crossley, 1950) but it has had limited impact on the use of such measures by higher education researchers. "Despite substantial evidence of the invalidity of survey responses, and despite a considerable array of textbook cautions about nonsampling error (Bradburn and Sudman, 1988; Fowler 1984), the usual strategy adopted by researchers seems to be 'indifference' (Jencks et al., 1972)." (Trusheim, 1994).

An early study of response bias related to personal income measures was conducted by Borus (1966). In his study of self-reported earnings for participants in a work program, Borus found that discrepancies did exist between respondent- and employer-reported earnings, and that respondent characteristics significantly contributed to these discrepancies. Characteristics contributing to response bias included: sex, age, education, level of earnings, and motivation to answer correctly. Borus also identified several potential causes of response error in self-reported

Most higher education studies have looked at the accuracy of family income by focusing on the validity of estimates of income as reported on a financial aid application. Only a single study was found to examine the accuracy of survey-reported family income (Romano and Moreno, 1994). Therefore, this study was designed to contribute to the literature by looking at a topic for which little research exists and to investigate the consistency of findings across multiple student cohorts.

Methodology

The three sources of data used to support this research study included: (1) first-year student survey data, (2) institutional student data records, and (3) institutional financial aid data files. Data were examined for three separate incoming classes of first-year undergraduate students: 1995, 1996, and 1997. Table 1 compares the demographics of the entering first-year class for each year with the sample used for this research study. Criteria used for selection into the sample included: family income information from the entering-student survey, the father's and mother's salary and wages and/or parents' annual gross income as reported on the student's financial aid application, and "dependent status" on the parents' federal income tax return as reported on the financial aid application.

Table 1. Comparison of Study Sample to Entering Student Population

	All Incoming Freshman			Study Sample		
	1995	1996	1997	1995	1996	1997
Number of Students	2,642	2,808	2,935	783	664	1,046
Gender (% Female)	59%	59%	60%	63%	65%	64%
Race (% Caucasian)	86%	84%	84%	81%	81%	79%
Parent's Education(% with BA Degree)	61%	55%	55%	48%	43%	40%
Predicted GPA (Average)	2.50	2.54	2.59	2.54	2.61	2.62
Percent Applying for Financial Aid	58%	61%	63%			

Survey Income. The self-reported family income measure, as reported on the first-year student surveys administered during orientation, asked students to report their parents' "pre-tax income" by selecting from a list of thirteen income ranges. Because these income ranges are not of consistent width, the survey categories were recoded into six categories of $10,000 income increments each, one category of $15,000 and two categories, with income increments of $50,000 and $75,000 respectively. The two categories wider than $15,000, representing the two highest income categories, were eliminated from the analyses because the range of incomes represented by these categories prohibits making comparisons of the accuracy of student responses. Thus, survey income as used in these analyses consists of seven income categories for students whose self-reported family incomes ranged from $0 to $75,000.

Actual earnings. Institutional student financial aid records provided the actual family income as reported on the student's financial aid application. Although this measure is also self-reported, applicants are instructed to report both mother's and father's wage and salary income as reported on specific lines of their parents' federal income tax documents. Over 91% of the sample indicated that the reported income had been obtained from their parents' actual federal income tax return(s); the remainder used an estimate of income. The decision to use wage and salary income rather than adjusted gross income (AGI) was based on the belief that students are more likely to be aware of their parents wage and salary income and less aware of other sources of income (dividends, interest, farm income, self-employed income, etc.) and losses which are included in the AGI calculation. In addition, in analyzing the AGI it was found that these data contained many more outliers and were less normally distributed. AGI was used in the few cases where no data were reported for parents' wage and salary income.

Accuracy. To determine the degree to which students accurately reported their family's actual earnings, the father's and mother's wages and salaries were summed and converted into categories matching those of the survey income measure. Once converted to categories, these income values were subtracted from their survey income category value, as reported during new student orientation. The resulting accuracy measure ranges from –6 to +6 with 0 representing a match between the two income categories. This thirteen level accuracy measure is normally distributed with approximately 39% of the students accurately reporting their family's actual earnings (Table 2).

Table 2. Frequencies for Accuracy of Self-reported Family Income

	1995	1996	1997	All
Under-reported (-6 to –1)	29%	34%	34%	32%
Accurately reported (0)	44%	38%	36%	39%
Over-reported (1 to 6)	27%	28%	30%	29%

Parents' Education. The educational levels of students' mothers and fathers were obtained from the entering survey and combined into a dummy variable to separate first generation college students from students who had one or both parents with at least a baccalaureate degree. Approximately 43% of students in the study sample compared to 57% of the entering student population had at least one parent with a college degree.

Other independent measures. The institutional student data files provided the additional independent measures of race (Caucasian=1, non-Caucasian=0), gender (female=1, male=0), and predicted grade point average (GPA), a measure created by combining SAT or ACT scores and high school performance. As indicated in Table 1, the sample contains slightly more women and minority students than is represented in the overall first-year student population and the predicted GPAs are slightly higher.

Analyses were performed using a series of univariate and multivariate statistics to determine whether various individual and family factors contributed to the accuracy with which students report family income.

Results

A significant negative correlation exists between the accuracy measure and actual earnings (r=-.554), with students in the lower income categories more likely to over-report their actual family earnings and students in the higher income categories more likely to under-report actual family earnings. Table 3 provides income information for each of the thirteen accuracy categories to illustrate the strong relationship between family income and the accuracy with which students report that income. Looking at median income, for example, the income values for the under reporters, those in the minus category of accuracy, are much higher than the income values for the over reporters, those with positive values on the accuracy measure.

Table 3. Family Income Means and Medians by Level of Reporting Accuracy

Accuracy[a]	N	Median	Mean	Std. Dev.	Min.	Max.
-6	2	$ 68,751	$ 68,751	$ 562	$ 68,352	$ 69,150
-5	10	72,509	71,751	15,535	51,131	92,586
-4	35	77,079	72,424	17,300	41,658	111,507
-3	90	64,509	70,728	24,473	36,919	182,482
-2	183	61,580	63,814	19,692	21,150	134,591
-1	502	55,025	56,218	21,678	10,456	149,388
0	969	36,839	38,469	19,829	0	74,972
1	412	32,420	32,222	16,511	0	59,899
2	137	27,440	26,921	14,770	0	49,583
3	84	17,215	18,497	12,363	0	54,613
4	42	16,621	15,926	9,669	0	29,797
5	15	13,503	12,781	5,388	1,974	19,935
6	11	6,389	17,866	6,839	0	88,935

[a] 0=accurate reporting; negative numbers=under-reporting; positive numbers=over-reporting

Bivariate analyses were preformed to understand the relationship between the dependent measure of accuracy and each background measure: gender, race, predicted GPA, and parents' education. Initial analyses revealed two significant t-tests between subgroups of students on the

accuracy measure in the 1996 sample--between females and males and between Caucasians and minority students. In addition, a significant interaction was discovered when the accuracy measure was analyzed by race and year. In the1995 sample, both Caucasian and minority students had a negative mean accuracy measure indicating that on average, each was under-reporting their family's actual income. For the 1996 and 1997 samples, Caucasians, on average, under-reported their family income, while minority students tended to over-report family income.

Least square stepwise hierarchical regression analyses were performed for each of the three years under study and for the three years combined. The dependent variable in the model was the accuracy measure, the independent measure was actual earnings for the student's family, and background variables included gender, race, predicted GPA, and parents' educational level. A comparison of the regressions for each of the three years revealed little substantive differences in the outcomes. Therefore, in the interest of parsimony, only one analysis will be discussed—the regression model for the three years combined.

Table 4. Stepwise Hierarchical Regression Analysis to Determine the Accuracy of Student-reported Family Income

Variable	B	SE B	β
Model 1			
Independent			
Actual Earnings	-.000[a]	1.11	-.55 ***
F Statistic			1073.47 ***
Adjusted R^2			.31
Model 2			
Step 1-Independent			
Actual Earnings	-.000[b]	1.15	-.59 ***
Step 2-Background variables			
Female	-.142	0.05	-.04 *
Caucasian	.327	0.07	.08 ***
Predicted Grade Point Average	-.046	0.08	-.01
Parents' Education	-.267	0.05	-.08 ***
Change in *F* Statistic			15.57 ***
Adjusted R^2			.32

*p<.05, **p<.01, ***p<.001 [a] = -.0000365 [b] = -.0000388

The negative correlation between accuracy and actual earnings indicates that students who under-report their actual family earnings are more likely to be in the higher income categories. However, once income level is controlled for in the model, minority students are significantly more likely to under-report actual earnings, as are students whose parents have not earned at least a baccalaureate degree. Therefore, although these students tend to over-report when all income ranges are considered, they tend to under-report when looking within a single income range. While women also are significantly more likely to under-report family income than are their male classmates, caution must be used in interpreting this result because gender was not a significant predictor in any of the three individual years. The significance, in this case, may be a manifestation of sample size. When the independent measure, actual earnings, is regressed upon the accuracy measure, the model explains approximately 31% of the variance (r=.554); once the background variables are added to the model the amount of variance explained rises to 32% (r=.569), a significant change in the F-Statistic.

Conclusions

The negative correlation between actual earnings and the accuracy measure is consistent with previous studies (Olivas, 1986; Romano and Mareno, 1994) and suggests that student-reported family income, as gathered through student surveys, has limited validity for institutional decision making. Less than 40% of the students in this study were able to accurately report their family's income on the entering student survey. Unfortunately, this study does not enable the identification of the potential causes for response bias. It is difficult to know the degree to which parents actually talk with their children about family income matters, but it would appear that these conversations are more likely to occur in families with moderate incomes. At the same time, this finding may be more related to upper and lower income students' hesitancy to

accurately report their family income when completing a survey in a classroom setting. As observed by Borus (1966), part of the response bias may be a result of student's lack of understanding of what is meant by "parents' pre-tax income" as requested on the survey or merely the result of a misplaced pencil lead.

While this study has the advantage of looking at three different entering classes of new students, it still suffers from some of the same limitations as previous studies. First, it is limited to a single institution, thereby restricting its generalizability. Second, it is limited to students who apply for financial aid, reducing the ability to examine the accuracy of student-reported family earnings for higher income families. Finally, it is limited by the quality of the survey income measure.

Implications

The fact that lower income students tend to over-report family income and students from higher income levels tend to under-report, has the effect of constricting the survey income measure. While this study was limited to students who applied for financial aid and who reported family income below $75,000 on the entering student survey, the findings suggest that institutions should be cautious in their use of income information gathered from students in this manner. The proportion of students who were accurate in their assessment of their family's income is slightly higher than most other studies (Olivas, 1994; Romano and Mareno, 1994), yet still less than 40% were able to accurately determine the appropriate survey income category.

Additionally, because the students who have greater financial need, particularly those from under-represented groups (minorities, first generation college students) tend to overestimate their family's earnings, the potential is great for administrators to underestimate the financial needs of their students. This could result in the under-appropriation of financial resources for

student support. At the same time, those from higher incomes tend to underestimate their family earnings, which could cause administrators to believe that they have many more students in the mid-range of incomes. The ramifications are exacerbated when these survey income data are reported to governing boards and governmental agencies that aggregate the data across institutions to make policy decisions regarding both funding and access.

Although many institutions rely on student-reported family income measures in their research efforts, these findings suggest that the validity of these measures are highly suspect. Furthermore, the significance of the background measures to further explain the discrepancies between actual earnings and survey income suggests that investigators need to carefully examine institutional data before analyzing. Institutional researchers must use caution in reporting self-reported family income and in using such measures in research studies.

Finally, researchers would be well advised to consider the methods for gathering such information. For example, the freshman orientation surveys used for this study were administered in a classroom setting. The possibility exists that particular groups of students may have over- or under-reported their family income not out of a lack of knowledge about their family's financial situation but because they were concerned that their peers sitting beside them might observe their responses. Discrimination based on family socioeconomic status must not be taken lightly given the importance of peer acceptance for college freshmen. Other impressions, such as the student's perception of his or her status as viewed by the survey administrators, might also have led to inaccurate reporting. Finally, given the variations in reporting patterns for various subpopulations, it is paramount that institutional researchers disaggregate data so as not to draw erroneous conclusions as a result of masked effects.

Institutions will continue to use family income information as a means to understand their students and as a decision making tool. Therefore, institutional researchers would be well advised to conduct similar studies on their students to determine the degree of confidence they can place in such measures of self-reported family income. At the very least, institutional researchers must consider how they collect, interpret, and share family income information to ensure that it most accurately reflects the profile(s) of their students.

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