Prevalence and Correlates of Food Insecurity Among Students Attending a Midsize Rural University in Oregon

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ABSTRACT

Objective: To examine the prevalence and identify correlates of food insecurity among students attending a rural university in Oregon.

Methods: Cross-sectional nonprobability survey of 354 students attending a midsize rural university in Oregon during May, 2011. The main outcome was food insecurity measured using the US Department of Agriculture Household Food Security Survey Module: 6-Item Short Form. Socioeconomic and demographic variables were included in multivariate logistic regression models.

Results: Over half of students (59%) were food insecure at some point during the previous year. Having fair/poor health (odds ratio [OR], 2.08; 95% confidence interval [CI], 1.07–4.63), being employed (OR, 1.73; 95% CI, 1.04–2.88), and having an income < $15,000/y (OR, 2.23; 95% CI, 1.07–4.63) were associated with food insecurity. In turn, good academic performance (grade point average of ≥ 3.1) was inversely associated with food insecurity.

Conclusions: Food insecurity seems to be a significant issue for college students. It is necessary to expand research on different campus settings and further strengthen support systems to increase access to nutritious foods for this population.

Key Words: food insecurity, college students, rural, Oregon (*J Nutr Educ Behav*. 2014;46:209-214.)

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INTRODUCTION

Household food insecurity is defined as the limited or uncertain availability of nutritionally adequate and safe foods, and limited or uncertain ability to acquire acceptable foods in socially acceptable ways.[1] As measured by the US Department of Agriculture Household Food Security Module,[2] food insecurity is a marker of economic hardship because it assesses the adequacy and stability of a household's food supply over the preceding 12 months for active, healthy living of all household members. The most recent national data in 2011 indicate that 14.9% of all households (17.9 million) were food insecure.[3] Furthermore, low-income households with incomes < 185% of the poverty threshold (34.5%) and households with children (20.6%) were higher than the national average.[3]

Previous research has observed that food insecurity can disrupt optimal development throughout the life cycle, from the prenatal period into the elder years.[4-9] A growing body of literature has documented the effects of food insecurity on cognitive, academic, and psychosocial development among school-aged and teenage students. These studies consistently observe that food insecurity is associated with lower academic performance, poor health, and decreased psychosocial function.[4,10,11]

Among college students, financial hardship can translate into budget demands that compete with food dollars (eg, tuition, textbooks, housing, utilities, health care).[12,13] Over the past 30 years, the price of higher education has steadily outpaced inflation, the cost of living, and medical expenses.[14] Recent changes to federal loan policies regarding the amount and duration of federal aid received, as well as how soon interest will begin to accrue after college, may exacerbate the financial challenges students face.[15] Food insecurity, as a potential consequence of the increasing cost of higher education, and its likely impact on student health, learning, and social outcomes should not be considered an accepted aspect of the impoverished student experience, but a major student health priority.[16]

College students face life-changing milestones during their transition to adulthood that may have long-lasting effects.[17,18] Food insecurity during these years can potentially affect college students' cognitive, academic, and psychosocial development.[4] However, little research has addressed this issue. Studies addressing food insecurity among college students suggest a higher prevalence of food insecurity compared with the general population.[19,20] A study in Hawai'i found that 45% of students were food

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insecure or at risk of food insecurity,[20] whereas another study in Australia found that almost 72% of students were food insecure.[19] No such studies have been conducted in the continental US or in rural areas. The purpose of the current study was to address this gap in the literature by analyzing the prevalence of food insecurity and identifying its correlates among students attending a rural university in Oregon.

METHODS

Design and Participants

The authors distributed a cross-sectional, nonprobability, Web-based, 40-item survey via e-mail to all students (N = 5,438) attending a midsize rural university in western Oregon during May, 2011. A total of 354 students completed the survey (7% response rate). The e-mail contained an informed consent form and provided a link to the survey where participants confirmed consent before beginning the survey. The study was part of a broader effort to increase access to food among students on campus. The online survey was open for a 2-week period during which weekly reminders were sent.[21,22] The study protocol was approved by the institutional review board at this university.

Theoretical Framework

Based on previous research,[2,3,19,20,23] relevant factors associated with food insecurity among university students were included. Questions regarding credit card debt,[24] employment,[25] and financial aid[26] were also added. Table 1 shows the correlates used in this model.

FOOD INSECURITY

The researchers used the US Household Food Security Survey Module: 6-Item Short Form to measure food insecurity status.[2] The 6-item scale has been shown to have reasonably high specificity and sensitivity and minimal bias with respect to the 18-item measure.[27] The 6 items of the food security scale were reduced to 2 categories: 0 = food secure and 1 = food insecure.[27] The internal consistency of the scale (Cronbach $\alpha = .83$) was similar to a previous study that used the same 6-item scale.[28]

Statistical Analysis

Summary statistics were calculated for all variables included in this study. The researchers used chi-square goodness-of-fit tests to compare the fit of the sample with selected campus-wide demographic characteristics provided by the university's registrar office. A 2-step multivariate logistic regression model was built to evaluate the association between correlates and food insecurity status (step 1), adjusting for sociodemographic factors (step 2). All analyses were conducted using Stata 11 (StataCorp, College Station, TX, 2009). The Hosmer-Lemeshow test[29] was performed to assess model fit using the lfit command.

RESULTS

Table 2 presents the summary statistics for all variables included in the study. The sample was representative of the student population at this university for full-time ($\chi^2_{\text{goodness of fit}} = 0.10$; $P = .75$), undergraduate ($\chi^2_{\text{goodness of fit}} = 1.98$; $P = .16$), and Latino students ($\chi^2_{\text{goodness of fit}} = 1.29$; $P = .26$) but overrepresented female students ($\chi^2_{\text{goodness of fit}} = 24.5$; $P = .01$). Less than a third of the sample reported residing on-campus (29%). Those who reported residing off-campus either lived with roommates (35%) or had other arrangements (36%), such as living by themselves (18%) or with their parents (4%). Half of the students (50.3%) said they had a job in addition to attending college. Those who reported the number of hours worked (n = 164) worked an average of 18.2 h/wk (SD, 9.3 h/wk). The majority of students (79%) reported having health insurance, which was obtained primarily from their parents (67%) or the university (22%). Few students (12%) reported having no credit card debt. The majority of participants were female (73%), single (73%), and 18–24 years of age (72%). Eight percent reported being Hispanic or Latino.

Food insecurity affected 59% of students. Participation in food assistance programs (emergency food from a church, food pantry/bank, or emergency kitchen; Special Supplemental Nutrition Program for Women, Infants and Children; Supplemental Nutrition Assistance Program [SNAP]/food stamps; or private organizations) reached 27% of the sample. Most of these were SNAP recipients (n = 67; 70%). Table 3 presents the results of the final multivariate logistic regression model. The value ($P = .74$) for the Hosmer-Lemeshow test indicated good model fit. Income < $15,000 was the strongest correlate of food insecurity among this sample of students (odds ratio [OR], 2.23; 95% confidence interval [CI], 1.07–4.63). Similarly, students reporting fair or poor health were more likely to be food insecure (OR, 2.08; 95% CI, 1.07–4.63). Employed students and those participating in food assistance programs were also more likely to be food insecure (OR, 1.73, 95% CI, 1.04–2.88; and OR, 1.91, 95% CI, 1.05–3.45, respectively). However, students with a grade point average of ≥ 3.1 were 60% less likely to be food insecure (OR, 0.40; 95% CI, 0.22–0.69). No significant associations were found with living arrangement, health insurance status, physical activity, enrollment status, or demographic factors.

DISCUSSION

The current study found that the prevalence of food insecurity (59%) among a sample of college students attending a midsize rural university in Oregon was higher than that of the general population (15%), or even other college student populations (eg, 39% among students at the City University of New York[30]; 45% among students at the University of Hawai'i at Manoa[20]). Food insecurity is an indicator of economic hardship that college students are facing. A recent story in *The Atlantic*[31] pointed out that across the country, stretching financial aid dollars or wages from part-time work has become more challenging for college students during the Great Recession, partly because "parents have fewer resources to help out, there is greater competition for work-study jobs, and many schools have increased tuition to cover their expenses." Without

Table 1. Description of Correlates of Food Insecurity Among Students at a Midsize Rural University, Oregon

Correlate	Question	Level	Values
Self-reported health	How would you rate your overall health?	Discrete	0 = excellent, very good, good 1 = fair, poor
Moderate physical activity	How often do you participate in at least moderate physical activity? (Examples of moderate physical activity: walking, water aerobics, bicycling < 10 mph, tennis [doubles], ballroom dancing, general gardening)	Discrete	0 = 0–2 d/wk 1 = ≥ 3 d/wk
Having health insurance	Do you currently have health insurance?	Discrete	0 = no 1 = yes
Having a campus meal plan	Do you have a campus meal plan?	Discrete	0 = no 1 = yes
Participating in food assistance programs	Have you ever participated in any of the following food assistance programs: emergency food from a church, food pantry/bank, or emergency kitchen; Special Supplemental Nutrition Program for Women, Infants, and Children; Supplemental Nutrition Assistance Program (formerly known as food stamps); private organizations; other? Please select all that apply.	Discrete	0 = no participation 1 = participation in any food assistance program
Living arrangement	Where do you currently live?	Discrete	0 = lives off campus (with roommates, other) 1 = lives on campus
Credit card debt	How much credit card debt do you currently have?	Discrete	0 = ≤ $499; ≥ $500 1 = none
Undergraduate student	At Western, are you a…?	Discrete	0 = graduate student, other 1 = undergraduate student
Full-time student	Do you attend Western as a full-time or part-time student?	Discrete	0 = part-time student 1 = full-time student
Grade point average (≥ 3.1)	What is your grade point average?	Discrete	0 = < 3.1 1 = ≥ 3.1
Receives financial aid	Do you currently receive financial aid (including scholarships, private and federal loans, and/or grants)?	Discrete	0 = no 1 = yes
Employed	Besides attending college, do you have a job?	Discrete	0 = no 1 = yes
Income	What is your annual income?	Discrete	0 = ≥ $15,000 1 = < $15,000
Sex	What is your sex?	Discrete	0 = male 1 = female
Single	What is your marital status?	Discrete	0 = married, living with partner 1 = never married (single)
Latino	Are you Hispanic or Latino?	Discrete	0 = no 1 = yes
Age	What is your age (in years)?	Discrete	0 = ≥ 25 1 = 18–24

Table 2. Summary Statistics Among Students at a Midsize Rural University, Oregon (n = 354)

Variable	n (%)
Outcome variable	
Food insecure	208 (58.8)
Correlate	
Fair/poor health	66 (18.6)
Moderate physical activity (≥ 3 d/wk)	270 (70.6)
Has health insurance	279 (78.8)
Has a campus meal plan	92 (26.0)
Participates in food assistance programs	96 (27.1)
Living arrangement	
On campus	104 (29.4)
Off campus with roommates	123 (34.8)
Off campus other	127 (35.9)
Credit card debt	
None	41 (11.58)
≤ $499	252 (71.2)
≥ $500	61 (17.2)
Undergraduate student	306 (86.4)
Full-time student	310 (87.6)
Grade point average (≥ 3.1)	230 (65.0)
Receives financial aid	268 (75.7)
Employed	178 (50.3)
Income (< $15,000)	278 (78.5)
Female	258 (72.9)
Single	259 (73.2)
Latino	29 (8.2)
Age, y	
18–24	255 (72.0)
≥ 25	99 (28.0)

parents' safety nets, students are often forced to work many hours, some even working full-time while completing their college degrees. In this study, students reported working an average of 18 hours, ranging from 4 to 42 h/wk. Students who were employed were almost twice as likely to report experiences with food insecurity, which suggests that financial assistance and employment are falling short of meeting financial demands of attending a university. Time spent working many hours and lack of adequate food may affect students' academic success.[19,25] Previous studies have observed a relationship between lower academic performance and food insecurity.[4,7,11,32] Likewise, the results of this study suggest that students who report experiencing food insecurity are less likely to report a grade point average of ≥ 3.1.

Educational attainment is one of the most important contributors for upward social mobility.[18] It is also an important marker in the transition to adulthood,[17] and a reflection of cumulative advantages and disadvantages.[33] Food insecurity among college students may signal previous trajectories of disadvantages and shape future trajectories into adulthood. Although students from middle- and upper-middle class families may experience short-term episodes of food insecurity, they are likely to have reliable sources of support (eg, parents, extended family). For low-income students, however, food insecurity is likely an outcome of their disadvantaged trajectories, which can make them more vulnerable to living in poverty and not completing higher education. Even worse, not only are they facing food insecurity, they may also be jeopardizing their potential for academic success and future earnings. Addressing food insecurity should be one of the considerations for policy makers in the context of promoting higher education as a stepping stone to the middle class. At this stage of transition into adulthood, more robust support systems might lead to successful educational attainment and social mobility.[17]

Limitations

The current study findings have several limitations. First, it was a cross-sectional study that relied on students' self-report. Second, the nonprobability, low-response rate sample may have increased the likelihood of sampling error and nonresponse bias.[34] However, the sample was representative of the university population for full-time, undergraduate, and Latino students; and overrepresented female students at this university. Third, the study used the short form of the US Department of Agriculture food security scale. Unlike the full 18-item scale, the short form scale does not directly measure children's food insecurity and does not capture the most severe adult food insecurity (in which children's food intake is likely jeopardized).

IMPLICATIONS FOR RESEARCH AND PRACTICE

The current study contributes to the understanding of food insecurity among young adults in higher education, and its associated challenges. A key finding is that food insecurity is a significant issue for more than half of college students surveyed. To have a better picture of the food insecurity situation across the country, it is necessary to expand the focus on college students' risk behaviors[35,36] to include social and economic factors influencing a student's health, including income, employment, debt, housing costs, and food insecurity. Future research should also explore food insecurity among college student families with children and assess not only eating behaviors but also the campus nutrition environment.[37] Moreover, longitudinal and qualitative studies should be considered to monitor the persistence of food insecurity throughout the college years.

It is also necessary to expand research on different campus settings and further strengthen support systems to increase access to nutritious foods for this population. When faced with food insecurity, people employ a variety of coping mechanisms such as using federal nutrition assistance programs, receiving food from other family members, and seeking emergency food boxes from food banks.[38-40] In this context, on-campus food banks and gardens may be valuable interventions.[20] A number of institutions across the country have implemented these initiatives or are in the process of doing so.[31] The Oregon Food Bank, for instance, has produced a manual on how to establish a campus food pantry.[41] Also, SNAP eligibility requirements for college students could be revised. However, food assistance initiatives have shown only a limited ameliorative effect,[42,43] which points to the need for broader food system, right-based approaches to food security.[43,44]

Table 3. Multivariate Logistic Regression of Factors Associated With Food Insecurity Among Students at a Midsize Rural University (n = 354)

	β	P	Odds Ratio	95% Confidence Interval
Fair/poor health	0.73	.03	2.08	1.09–3.95
Moderate physical activity (≥ 3 d/wk)	−0.42	.12	0.66	0.39–1.12
Has health insurance	−0.34	.35	0.71	0.35–1.44
Has a campus meal plan	0.70	.09	2.02	0.90–4.52
Participates in FAP	0.65	.03	1.91	1.05–3.45
Lives on campus	0.17	.67	1.19	0.54–2.63
Has no credit card debt	−0.89	.09	0.41	0.15–1.16
Undergraduate student	−0.22	.69	0.81	0.28–2.31
Full-time student	0.04	.95	1.04	0.31–3.51
Grade point average (≥ 3.1)	−0.93	.001	0.40	0.22–0.69
Receives financial aid	0.13	.68	1.14	0.60–2.16
Employed	0.55	.04	1.73	1.04–2.88
Income (< $15,000)	0.80	.03	2.23	1.07–4.63
Female	−0.04	.89	0.96	0.52–1.78
Single	−0.57	.11	0.56	0.28–1.13
Latino	−0.02	.96	0.98	0.40–2.36
Age, y (18–24)	0.38	.29	1.46	0.72–2.96
Intercept	0.46	.39	1.59	

FAP indicates food assistance programs (emergency food from a church, food pantry/bank, or emergency kitchen; Special Supplemental Nutrition Program for Women, Infants and Children; Supplemental Nutrition Assistance Program; private organizations).
Note: Moderate physical activity was determined per Centers for Disease Control and Prevention guidelines. The nonsignificant Hosmer-Lemeshow test ($\chi^2 = 5.13$; $P = .74$) indicates a good model fit.

Therefore, it is necessary to consider other initiatives and policies to increase access to nutritious foods and, more broadly, improve students' economic stability (ie, are they able to address their basic needs, including food, so that they can focus on their education?).[26,45] In other words, the promise of higher education as a tool for a better future needs to be met with adequate financial and other social supports for college students (particularly those who are low-income, first-generation, and minority[45]) to succeed.

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REFERENCES

1. Nord M, Prell M. Struggling to feed the family: what does it mean to be food insecure? *Amber Waves*. 2007;5:32-39.
2. Bickel G, Nord M, Price C, Hamilton W, Cook J. *Guide to Measuring Household Food Security*. Alexandria, VA: Food and Nutrition Service, United States Department of Agriculture; 2000.
3. Coleman-Jensen A, Nord M, Andrews M, Carlson S. *Household Food Security in the United States in 2010*. Washington, DC: United States Department of Agriculture, Economic Research Service; 2012.
4. Alaimo K, Olson CM, Frongillo EA. Food insufficiency and American school-aged children's cognitive, academic, and psychosocial development. *Pediatrics*. 2001;108:44-53.
5. Alaimo K, Olson CM, Frongillo EA. Family food insufficiency, but not low family income, is positively associated with dysthymia and suicide symptoms in adolescents. *J Nutr*. 2002;132:719-725.
6. Conway KS, Kutinova A. Maternal health: does prenatal care make a difference? *Health Econ*. 2006;14:461-488.
7. Cook JT, Frank DA. Food security, poverty, and human development in the United States. *Ann N Y Acad Sci*. 2008;1136:193-209.
8. Lee JS, Frongillo EA. Nutritional and health consequences are associated with food insecurity among U.S. elderly persons. *J Nutr*. 2001;131:1503-1509.
9. Holben D. Position of the American Dietetic Association: food insecurity in the United States. *J Am Diet Assoc*. 2010;110:1368-1377.
10. Perez-Escamilla R, Pinheiro de Toledo Vianna R. Food insecurity and the behavioral and intellectual development of children: a review of the evidence. *J Appl Res Child*. 2012;3:Article 9.
11. Jyoti DF, Frongillo EA, Jones SJ. Food insecurity affects school children's academic performance, weight gain, and social skills. *J Nutr*. 2005;135:2831-2839.
12. Roberts R, Golding J, Towell T, Weinreb I. The effects of economic circumstances on British students' mental and physical health. *J Am Coll Health*. 1999;48:103-109.
13. Robb CA, Moody B, Abdel-Ghany M. College student persistence to degree: the burden of debt. *J Coll Stud Retention*. 2011;13:431-456.
14. Phillips M. Cost of college on the rise (again). http://www.freakonomics.com/2011/10/27/cost-of-college-on-the-rise-again/. Accessed January 20, 2013.
15. Hopkins K. Look out for these federal aid changes in 2012. http://www.usnews.com/education/best-colleges/paying-for-college/articles/2012/01/25/look-out-for-these-federal-aid-changes-in-2012. Accessed March 15, 2013.
16. Hughes R. Food insecurity: the skeleton in the national closet. *Public Health Nutr*. 2009;12:1973.
17. Settersten R, Ray B. *Not Quite Adults: Why 20-Somethings Are Choosing a Slower Path to Adulthood, and Why It's Good for Wveryone*. New York, NY: Bantam Books; 2010.

18. Pallas AM. Educational transitions, trajectories, and pathways. In: Mortimer JT, Shanahan M, eds. *Handbook of the Life Course*. New York, NY: Plenum; 2003:165-184.
19. Hughes R, Serebryanikova I, Donaldson K, Leveritt M. Student food insecurity: the skeleton in the university closet. *Nutr Diet*. 2011;68:27-32.
20. Chaparro MP, Zaghloul SS, Holck P, Dobbs J. Food insecurity prevalence among college students at the University of Hawai'i at Manoa. *Public Health Nutr*. 2009;12:2097-2103.
21. Thomas SJ. *Using Web and Paper Questionnaires for Data-Based Decision Making: From Design to Interpretation of the Results*. Thousand Oaks, CA: Corwin Press; 2004.
22. Archer TM. Web-based surveys. *Extension J*. 2003;41:4TOT6.
23. Subramanian S, Delgado I, Jadue L, Vega J, Kawachi I. Income inequality and health: multilevel analysis of Chilean communities. *J Epidemiol Commun Health*. 2003;57:844-848.
24. Nelson MC, Lust K, Story M, Ehlinger E. Credit card debt, stress and key health risk behaviors among college students. *Am J Health Promot*. 2008;22:400-407.
25. Miller K, Danner F, Staten R. Relationship of work hours with selected health behaviors and academic progress among a college student cohort. *J Am Coll Health*. 2008;56:675-679.
26. Gutter M, Copur Z. Financial behaviors and financial well-being of college students: evidence from a national survey. *J Fam Econ Issues*. 2011;32:1-16.
27. Blumberg SJ, Bialostosky K, Briefel RR, Hamilton WL. The effectiveness of a short form of the Household Food Security Scale. *Am J Public Health*. 1999;89:1231-1234.
28. Gulliford M, Mahabir D, Rocke B. Reliability and validity of a short form household food security scale in a Caribbean community. *BMC Public Health*. 2004;4:22.
29. Archer KJ, Lemeshow S. Goodness-of-fit test for a logistic regression model fitted using survey sample data. *Stata J*. 2006;6:97-105.
30. Freudenberg N, Manzo L, Jones H, Kwan A, Tsui E, Gagnon M. *Food Insecurity at CUNY: Results From a Survey of CUNY Undergraduate Students*. New York, NY: Campaign for a Healthy CUNY; 2011.
31. Robbins K. Among dorms and dining halls, hidden hunger. *The Atlantic*. May 4, 2010. http://www.theatlantic.com/health/archive/2010/05/among-dorms-and-dining-halls-hidden-hunger/39766/. Accessed April 4, 2013.
32. Roustit C, Hamelin A-M, Grillo F, Martin J, Chauvin P. Food insecurity: could school food supplementation help break cycles of intergenerational transmission of social inequalities? *Pediatrics*. 2010;126:1174-1181.
33. Pallas AM. Educational participation across the life course: do the rich get richer?. In: Owens T, Settersten R, eds. *New Frontiers in Socialization: Advances in Life Course Research*. Oxford, UK: Elsevier Science; 2002:327-354.
34. Singleton RA, Straits BC. *Approaches to Social Research*. 3rd ed. New York, NY: Oxford University Press; 1999.
35. Cluskey M, Grobe D. College weight gain and behavior transitions: male and female differences. *J Am Diet Assoc*. 2009;109:325-329.
36. Greene GW, Schembre SM, White AA, et al. Identifying clusters of college students at elevated health risk based on eating and exercise behaviors and psychosocial determinants of body weight. *J Am Diet Assoc*. 2011;111:394-400.
37. Freedman MR. Development, evaluation, and validation of environmental assessment tools to evaluate the college nutrition environment. *J Am Coll Health*. 2010;58:565-568.
38. Swanson J, Olson C, Miller E, Lawrence F. Rural mothers' use of formal programs and informal social supports to meet family food needs: a mixed methods study. *J Fam Econ Issues*. 2008;29:674-690.
39. Heflin C, London AS, Scott EK. Mitigating material hardship: the strategies low-income families employ to reduce the consequences of poverty. *Sociological Inquiry*. 2011;81:223-246.
40. Mammen S, Bauer J, Richards L. Understanding persistent food insecurity: a paradox of place and circumstance. *Social Indicators Research*. 2009;92:151-168.
41. Cunningham SE, Johnson DM. *So You Want to Start a Campus Food Pantry? A How-To Manual*. Portland, OR: Oregon Food Bank; 2011.
42. Nord M, Golla AM. *Does SNAP Decrease Food Insecurity? Untangling the Self-Selection Effect*. Washington, DC: Economic Research Service, United States Dept of Agriculture; 2009.
43. Chilton M, Rose D. A rights-based approach to food insecurity in the United States. *Am J Public Health*. 2009;99:1203-1211.
44. Anderson MD. Beyond food security to realizing food rights in the US. *J Rural Stud*. 2013;29:113-122.
45. Engle J, Tinto V. *Moving Beyond Access: College Success for Low-Income, First-Generation Students*. Washington, DC: Pell Institute for the Study of Opportunity in Higher Education; 2008.