Rural-urban disparity essay

This study examines differences in educational attainment between rural and monaural youth, using data from the National Educational Longitudinal Study. Given preexisting differences in family and student backgrounds between rural and metro areas, a series of statistical models including propensity sore matching methods are used to address selection bias in the estimates of the effects of reality on educational attainment. Results show that there are few differences in postsecondary attendance and attainment between rural and metropolitan youth when students are matched on preexisting background characteristics.

Significant gaps in educational attainment exist between those students who come from advantaged versus disadvantaged backgrounds for both rural and metropolitan youth. Policy implications are discussed. Results from the National Educational Longitudinal Study of 1988-2000 U. S. Adolescents, regardless of their socioeconomic and demographic background, have higher educational aspirations than ever before (Alderman 2006; Angels and Dalton 2008; Schneider and Stevenson 1999).

This is also the case for rural youth who have tended to have lower educational aspirations than monaural youth (Cob, McIntyre, ND Pratt 1989; Healer and Fickler 1993; Huh 2003; Rosewoods 1996). A recent study shows that almost 9 out of 10 rural adolescents aspired to attend college (Emcee et al. 2010). Indeed, over the past three decades, there has been an increase in educational attainment for young adults in rural areas (Gibbs 2003). In 2000, approximately 16 percent of mentor adults age 25 and older graduated from a four-year college, which is more than double the 1970 rate (Gibbs 2003).

Yet the rural-monaural gap in educational attainment persists especially with respect to postsecondary enrollment and attainment. Young adults in rural areas are less likely Han their counterparts in monaural areas to attend college and thus earn a college degree (Gibbs 2003; Provisions et al. 2007). However, previous research documenting the rural-monaural gap in postsecondary attainment has major limitations, especially given their reliance on census data such as the Current Population Survey (Gibbs 2003) and American Community Survey (Provisions et al. 2007).

In not all but many cases, rural young adults, especially those talented adolescents, need to leave their home communities to seek educational and employment opportunities (Corbett 2000; Crockett, Shaman, and Jackson-Newswomen 000). Automation of youth from rural communities may thus have consequences for estimating the level of educational attainment of young adults in both rural and monaural areas (Howled and Gun 2004). Specifically, it may lead to underestimating postsecondary degree completion rates in rural areas, while overestimating those in In that regard, to assess rural-monaural differ rents in educational metro areas. Attainment, it is important to use longitudinal data that follow youth from high school to postsecondary education. Indeed, research using longitudinal data reveals a Mathew differing pattern especially with respect to rural-monaural differences in postsecondary attainment. In their analysis of the National Longitudinal Survey of Youth (ONLY), Blackwell and McLaughlin (1998) found that although rural youth aspired to fewer years of education than their urban counterparts in 1979 (age 14 to 17), they came closer to achieving their goals than urban youth by 1990 (age 25 to 28).

Using data from the National Education Longitudinal Study of 1988 (NELL: 88), Bibcock and Delude (2005) and Dolman (2006) also found few rural-urban differences in bachelor's degree attainment. Although these studies using longitudinal data offer important insights into a better understanding of rural-monaural differences in educational attainment, it is still unclear whether reality (I. E. , residential or school location) indeed matters in educational attainment or observed rural-monaural differences simply reflect preexisting differences in background characteristics between rural and monaural adolescents.

To control for preexisting differences, prior studies (e. G. , Bibcock and Delude 2005; Blackwell and McLaughlin 1999; Rosining and Crowley 2001) have used regression-based methods with a limited number of aground variables. However, such statistical adjustment by itself cannot ensure removal of selection bias unless additional procedures are taken for modeling the selection process (Rosenberg and Rubin 1983, 1984). While there are a variety of alternative methods to control for selection bias (see Schneider et al. 007), one useful way is to mimic random assignment to treatment conditions by ensuring that students have equivalent chances of being in one particular group or in another, often referred to as the propensity score matching (GSM) method (Rosenberg and Rubin 1983, 1984). The GSM technique uses the predicted probability (I. . , propensity score) from logistic regression to match students from the treated and control groups on their relative probability of being assigned to the treatment.

Because treated students are matched to control students with the same (or similar) propensity score, direct comparisons of the outcomes of the treated student groups and the control student groups yield unbiased estimates of the treatment effect. This way, the GSM method allows for the drawing of a causal inference from non-experimental settings (Rosenberg and Rubin 1983, 1984). In this study, by implementing this alternative approach (I. E. GSM), we revisit rural-monaural differences in educational attainment, focusing on postsecondary entry and completion.

We draw on data from the NELL, which are very well suited for addressing the issues of selection bias as well as automation of rural youth previously described, given their detailed student and parent components and longitudinal nature. Our rationale for choosing NELL data over other more recent datasets such as the Education Longitudinal Study (ELSE) is that although the ELSE has followed a more recent cohort since 2002, its second follow up (2006) does not yet provide data that can be used to examine extrasensory persistence and attainment. In other words, no U. S. Institutional high school sample but the NELL data that follows students from high school to postsecondary education is currently available. We aim to extend previous research by more rigorously assessing the role of reality in educational attainment with longitudinal data and more sophisticated statistical models. However, the current study does not seek to provide a definitive answer about the causal effects of reality on educational attainment. Rather, we hope to address limitations of prior studies that have examined rural-anural disparities in educational attainment.

REVIEW OF LITERATURE Determinants of Youth’s Educational Attainment Research has identified a host of factors as sources of differences in educational attainment, including family background, demographic background (e. G. , gender, race/ethnicity), and school resources (e. G. , curriculum intensity) (see Goldbrick-Arab, Carter, and Wagner 2007 for the literature review; also see Deli-Amen and Turtle 2007). Of these varying factors, socioeconomic status (SEES) measured by parental education and family income is one of the most powerful determinants of educational attainment (Dolman 1999, 2006; Bibcock 2007; Caber, La Nasa, and

Burk 2001; Goldbrick-Arab 2006; Swell and Hauser 1972; Walpole 2003). Numerous studies document that children from high-SEES families being more likely than their counterpart from low-SEES families to complete high school (Coleman 1988; McNealy 1999; Smith, Bullied, and Seraphic 1995), go on to college (Bibcock and Delude 2005; Caber and La Nasa 2001; Kim and Schneider 2005), and earn a college degree (Dolman 1999, 2006; Caber, La Nasa, and Burk 2001; Walpole 2003). Beyond SEES, another influence of family characteristics on educational attainment includes family structure and the number of siblings (Coleman 1988; Downey 1995;

Powell and Statesman 1989). Children from two-parent households are more likely than children from sing-parent households to complete high school (Coleman 1988; Smith, Bullied, and Seraphic 1995) and enroll in a postsecondary institution (Bibcock and Delude 2005; Kim and Schneider 2005). Children with a greater number of siblings show relatively lower school performance (Dooley 1995) and are more likely to drop out of high school (Coleman 1988). Numerous studies of educational attainment also

document demographic disparities (see Goldbrick-Arab et al. 007; Deli-Amen and Turtle 2007 for the literature review). With respect to race/ethnicity, research suggests that minority students, especially black and Hispanic adolescents, are less likely than white students to enroll in college and complete college degree (Dolman 2006; Goldbrick-Arab 2007). Exceptions are Asian American youth: Children from Asian immigrants show higher levels of educational achievement and attainment than white children (see Aka and Thompson 2003 for the literature review).

Among NELL eight graders, 95 percent of Asian students entered college, compared to 77 percent of white and black students and 70 percent of Hispanics (Angels et al. 002). Several studies reveal the significant gender gap in educational attainment. A growing trend of the gender gap is the reversal from a favoring of males to a favoring of females in college entry as well as college completion (Buchanan and Dippier 2006; U. S. Department of Education 2004).

Finally, a good deal of research suggests that high school factors such as tracking and academic coursework matter in the transition to college and subsequent performance (Dolman 1999, 2006; Goldbrick-Arab 2007). Using data from the High School and Beyond (HAS&B) Survey, Dolman (1999) identified a “ toolbox” of high school courses considered crucial in math, science, and foreign language. He found that students who took advanced levels of these courses are disproportionably likely to enter a four-year institution and perform better in college (Dolman 1999). Using data from the NELL, Dolman (2006) confirmed his previous finding.

The Role of Reality in Youth’s Educational Attainment While a great deal of research has examined rural-monaural differences in educational aspirations (Howled 2006; Huh 2003; Rosewoods 1996) and school performance (Fan and Chin 1999; Howled and Gun 2004; Lee and McIntyre 2000), emitted research has explicitly tested rural-monaural disparities in educational attainment on a large scale (Blackwell and McLaughlin 1998; Rosining and Crowley 2001). Furthermore, little research has explicitly investigated rural-monaural differences in postsecondary attainment using longitudinal data.

Consequently, relatively little is known about the role of reality in youth’s postsecondary attainment. Nevertheless, previously described evidence concerning the role of family background and school resources have important implications for potential rural- monaural differences in postsecondary attainment, given the socioeconomic and educational challenges of many rural areas across the U. S. (Conger and Elder 1994; Hobbs 1994; Lighter and McLaughlin 1995; Provision et al. 2007; Rosining and Crowley 2001).

Specifically, while rural poverty rates are significantly higher than those in monaural settings (O’Hare 2009; Rogers 2005), discrepancies in rural and urban poverty have been increasing since the last sass (O’Hare 2009). In addition, rural children were once relatively more likely than monaural children to live in traditional family arrangements, but it is no longer true (O’Hare and Churchill 2008). Furthermore, students in rural schools have tended to have the least opportunity to take AP courses (Graham 2009). Rural schools have long faced a shortage of teachers with advanced degrees (Monk 2007; Provision et al. 2007).

Likewise, many rural communities have experienced a dramatic Job loss with regards not only to technical, business, and other professional careers, but also to many service, labor, or agricultural occupations, which have been mainstay of rural communities for generations (Conger and Elder 1994; Gibbs, Siskin, and Corporate 2005; Hobbs 1994; Lighter and McLaughlin 1995). All these rural socioeconomic and educational features may constrain and shape educational aspirations and attainment of rural youth, leading to the rural-monaural gap. Indeed, while documenting the rural disadvantages in educational aspirations and attainment (Cob et al. 989; Healer and Fickler 1993; Huh 2003; Rosewoods 1996; Rosining and Crowley 2001), a large body of research has attributed the lower educational aspirations and attainment of rural youth to higher rates of poverty, poorer schooling conditions, lower parental and teacher expectations, and lower school achievement (see Howled and Gun 2004 for the discussion; also see Howled 2006). Further, it is believed that rural students receive education that is inferior to that of their counterpart students in monaural settings (Edmonton and Koehler 1987).

However, this rural deficit model is not fully supported by empirical evidence. With respect to school performance, for example, in their examination of the NELL, Fan and Chin (1999) found that rural students perform as well as their counterpart students in metropolitan schools. The authors concluded that, things being equal, rural adolescents “ do not suffer disadvantage simply as the result of their residence in rural areas or their attendance at rural schools” (Fan and Chin 1999: 31).

In their investigation of the National Assessment of Educational Progress (NAPE) assessment scores from 1992-1996, Lee and McIntyre (2000) even found a rural advantage in math achievement, with rural students outperforming their monaural counterparts. This supports a ‘ rural strength model’ (Edmonton and Koehler 1987). Regardless of whether evidence supports the rural deficit or strength model, most previous research has major limitations that preclude drawing strong conclusions about the causal effects of reality on educational outcomes.

The central problem lies in its reliance on observational data, which are often considered inappropriate for drawing a causal inference due to the lack of randomization (Rosenberg and Rubin 1983, 1984). In a nongovernmental setting, direct comparisons between the treatment and control groups may be misleading because individuals exposed to one treatment tend to differ systematically from individuals exposed to the other treatment (Rosenberg and Rubin 1983, 1984).

This is clearly the case in research about the rural-monaural achievement gap, given systemic differences in background heartsickness between rural and monaural adolescents previously described. To hold student background characteristics constant and examine the effects of reality on educational outcomes, random assignment to families that vary in residence only (rural vs.. monaural) is needed but impossible. Although lack of randomization in a nongovernmental setting makes it difficult to estimate the causal effects of reality, it does not necessarily mean that drawing causal inference from observational studies is impossible.

Rather, it highlights the importance of addressing the selection issue n observational studies in order to establish the causal relationship between reality and educational attainment. In this study, to address the selection bias inherent in observational data, we employ a series of statistical models including the GSM technique, which allows us to draw a causal inference about the role of reality in educational attainment. RESEARCH QUESTIONS Guided by previous literature on the rural-monaural achievement gap and its limitations, the current study addresses the following research questions: 1 .

To what extent do rural-monaural differences exist in achieving their educational goals (I. . , high school completion, college enrollment, and college degree)? 2. If there are observed rural-monaural differences in educational attainment, does this result prove robust when preexisting differences in socioeconomic and demographic background between rural and non-rural youth are taken into account? DATA AND METHODS Sample We drew on data from the National Education Longitudinal Study, a large, nationally- representative data set.

In 1988, the National Center for Education Statistics (ONCE) drew random samples of approximately 25 eight graders in each of about 1, 000 randomly selected middle schools. NELL followed these students through high school 1990 and 1992, and beyond in 1944 and 2000 (at age 26 or 27). The NELL: 88-00 panel consists of approximately 12, 100 students. All of our measures came from the 88-00 postsecondary transcript data containing more accurate information about postsecondary attainment. The exceptions are family structure and number of siblings, which we extracted from the 1994 wave and merged with the 88-00 transcript data.

Due to small sample sizes, American Indian/Alaska Native and multiracial students were excluded. Missing reality identifiers and weights resulted n the final analytic sample of 11, 700 with rural youth being approximately 30 percent. Table 1 shows the percentage distribution of the high school graduation status, postsecondary participation, and highest degree (completed by 2000) for the 1992 high school seniors by reality. Results show few differences in high school completion status between rural and monaural students. Of approximately 3, 630 rural students, 83. 1 percent earned an academic diploma; 8. percent obtained a GEED or other; and 7. 8 percent failed to complete high school by 2000. The corresponding rates for monaural students are 82. percent, 8. 3 percent, and 8. 0 percent, respectively. On the other hand, results of Table 1 show differences in postsecondary participation between rural and monaural students. Among rural youth, 70. 1 percent had enrolled in a postsecondary institution by 2000. Among monaural youth, 78. 6 percent had enrolled in a postsecondary institution eight years after high school graduation (when students were on the right track), showing 8. percent point higher than the rate of rural students. TABLE 1 ABOUT HERE Results also reveal differences in the highest degree between rural and monaural youth. Among rural youth, 4 percent and 6. 5 percent earned a certificate or an associate degree, respectively. The corresponding rates are 3. 5 percent and 5. 1 percent, respectively, showing a slightly lower than those rates of rural youth. On the other hand, 25. 6 percent of rural youth earned a bachelor’s degree or above, whereas 30. percent of monaural youth did so, showing approximately a five percentage point difference. It is interesting to note that a relatively greater proportion of monaural youth (31. 6%) who had enrolled in a postsecondary institution

remained incomplete, as compared to that of rural youth (28. For multivariate analysis, we focused on the postsecondary entrance status and highest degree status, given no observable differences in high school completion between rural and monaural youth. For the analysis of the highest degree status, we excluded those interminable cases (7. %) (see Table 1). With exceptions for educational attainment, reality, gender, we imputed missing data through an alternative algorithm suggested by King and colleagues (2001). In the multivariate models, we accounted for the initial sample clustering of students within schools using the NELL school identifier, and utilized he longitudinal second follow-up to fourth follow-up panel weight. Measure Educational Attainment. We are interested in two postsecondary attainment variables: postsecondary participation and postsecondary degree attainment.

Postsecondary participation was measured by whether or not the respondent had ever enrolled in a postsecondary institution as of 2000. Postsecondary degree attainment was measured by the highest degree attained by 2000 with four categories: (1) no postsecondary enrollment, (2) certificate/associate degree, (3) bachelor’s degree, and (4) no postsecondary degree. No postsecondary degree refers o students who had ever enrolled in college at any time after high school graduation but had not earned a college degree by 2000. Both measures of postsecondary enrollment and degree attainment were based on postsecondary transcript data.

Reality. The operational definition for “ reality’ or rural residence was measured by school location where schools are outside of Metropolitan Statistical Areas defined by Quality Education Data and NELL (Lippies, Burns,

and Macarthur 1996). Original responses denoted (1) rural, (2) suburban, and (3) urban, but we collapsed those into the dichotomous category (I. E. , rural vs.. Monaural). Controls. As described previously, socioeconomic and demographic backgrounds of youth play an important in determining their educational attainment.

Moreover, as will be seen in Table 2, there are significant differences in these backgrounds between rural and monaural youth. Accordingly, without controlling for these background variables associated with educational attainment and reality, it is not possible to obtain the credible relationship between educational attainment and reality. Therefore, drawing on literature, we included a number of measures of background variables that also may happen educational attainment of youth as controls. All background variables were measured at grade 12 (1992).

For family background, we included (1) parental education, (2) family income, (3) family structure, and (4) family size. Parental education was measured by the highest level of education that parent’s reported. Original responses were I? less than high school graduation, 2= high school graduation, 3= some college, 4= bachelor’s degree, 5= master’s degree, 6= doctorate or other professional degree. We collapsed these responses into the dichotomous categories: (1) some college or less and (2) bachelor’s degree and above.

Some college or less is reference category. Family income was based on the parent’s report of family income at grade 12. Original responses were or more, – $74, 999, – $49, 999, – $34, 999, 5=$1 5, 000 – $24, 999, and 6=

sees than $15, 000. We inverses and collapsed these categories into tracheotomies categories: (1) less than $25, 000, (2) $25, 000 – $49, 999, and (3) $50, 000 or more. Less than $25, 000 is the reference category. Family structure denoted whether students lived in two-parent families or in other forms of families (= 1).

Parent's reported the number of siblings that a student had at grade 12. For individual student heartsickness, we included (1) gender, (2) race/ethnicity, and (3) academic achievement. Gender was measured by the student's sex (female? I vs.. Male= O). Race/ethnicity was measured by students' self-reported race/ethnicity (Asian, Hispanic, black, and white). White students served as the reference group. Academic achievement was measured by the math/reading composite score from the standardized test administered by the NELL during the 12th grade.

Table 2 provides weighted descriptive statistics for all indicators. Because we already examined the unadjusted differences in outcome variables between rural and Monaural youth (see Table 1), we focus on rural-monaural differences in background variables. Results of Table 2 clearly show differences in socioeconomic background between rural and monaural youth. With respect to parental education, only 21 percent of rural youth had parent's who had a bachelor's degree or more, whereas 32 percent of monaural youth did so, showing more than 10 percentage point differences.

With respect to family income, only 25 percent of rural youth were from families whose annual income was $50, 000 or more, whereas the corresponding rate of monaural youth is 36 percent. In contrast, 41 percent

of rural youth were from families whose annual income was less than $25, 000, whereas the corresponding rate of monaural youth is only 30 percent. Differences in family structure and family size were minimal between rural and monaural youth. Results of Table 2 also clearly show differences in racial/ethnic background between rural and monaural youth. 4 percent of rural youth were white, whereas 68 percent of monaural youth were. 7 percent of rural youth were Hispanic and black, whereas the corresponding rates of monaural youth were 13 percent and 14 percent, respectively, both of which re roughly double rates of rural youth. Only 1 percent of rural youth were Asian, whereas 5 percent of monaural youth were Asian. No observable rural-monaural differences were detected in gender. Finally, results show the rural-monaural gap in academic achievement with monaural youth outperforming rural youth (51. vs.. 48. 6). These differences in the background characteristics between rural and monaural youth indicate that there are selection effects. Accordingly, this study uses a series of models that attempt to address this selection bias, including GSM. Analytic Strategies We implemented two analytic strategies for each of the outcome variables. For the analysis of postsecondary participation, using conventional logistic regression, we first analyzed the likelihood of being enrolled in a college (vs.. O college enrollment). For logistic regression, we introduced two models. The first model included the reality variable only to determine whether there was a significant difference in postsecondary enrollment between rural and monaural youth. The second model added parental education, family income, and race/ethnicity, along with the controls mentioned previously. The aim was to examine whether observed rural-

monaural differences, if any, would exist when other factors were taken into account.

We used STATS to utilize its survey (SW) commands, which allow for adjusting for stratification, clustering and individual weighting (Browne and Rust 2000). Second, using the GSM technique[I], we revisited the relationship between reality and postsecondary enrollment. Our intent was to determine whether the observable relationship between reality and postsecondary enrollment prove robust when students were matched on preexisting background characteristics. Note that we defined the propensity score as the probability of attending a rural high school, conditional on observed backgrounds.

For GSM analysis, following prior literature (Guy and Fraser 2009; Rosenberg and Rubin 1983, 1984), we first conducted logistic regression to generate propensity scores, using the controls shown in Table 1 as well as other covariates (not shown but available on request) associated with the likelihood of attending a rural high school. After estimating propensity scores using logistic regression, we created matched data in which students are as similar as possible notational on observed backgrounds by implementing the one-to-one caliper matching procedure.

In this matching process, we used the caliper size of a quarter of a standard deviation of the estimated propensity scores, following Rosenberg and Rubin (1985). To check the balance of the propensity scores in the matched sample, we conducted a t-test or chi-square test for each of covariates, depending on their scales, and found no systematic difference in the

covariates between rural and monaural youth (not shown). This suggested that the estimated propensity scores move most of the selection bias for the covariates in the matched sample.

Finally, using the optimally matched samples, we replicated the logistic regression described above. Likewise, for the analysis of postsecondary attainment, using conventional multinomial logistic regression, we first examined differences in the odds that youth attained different levels of postsecondary degree (I. E. , certificate/associate degree, bachelor's degree), compared with no postsecondary enrollment. For multinomial logistic regression, we also introduced two models: The first model added the reality arable only, while the second model the controls.

We then revisited the effects of reality on postsecondary attainment, using the GSM technique. Note that as the sample sizes differ by the outcome variables, those also vary across GSM analyses. The following section presents the results, beginning with postsecondary participation. RESULTS Rural-monaural Differences in Postsecondary Participation Is there the relationship between reality and postsecondary enrollment? If there is, does the relationship between reality and postsecondary enrollment hold when we intro for a host of other factors that also may shape students' odds of participating in postsecondary education?

Table 3 addresses these questions. Note that we present odds ratios for ease of interpretation. A ratio greater than one represents increased odds, whereas a ratio less than one represents decreased odds, of falling into the comparison category rather than the reference category.