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Addressing Rural Healthcare Disparities Using Behavioral Economic Insights

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Market Report	Year Ago	4 Wks Ago	3-19-16
Livestock and Products, **Weekly Average**			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight.	163.11	132.00	139.00
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb.	277.73	198.24	198.51
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	218.88	165.76	166.35
Choice Boxed Beef, 600-750 lb. Carcass.	246.04	226.24	231.77
Western Corn Belt Base Hog Price Carcass, Negotiated.	57.61	51.55	61.18
Pork Carcass Cutout, 185 lb. Carcass 51-52% Lean.	67.78	69.65	75.80
Slaughter Lambs, wooled and shorn, 135-165 lb. National.	145.67	143.71	136.57
National Carcass Lamb Cutout FOB.	367.44	359.79	347.62
Crops, **Daily Spot Prices**			
Wheat, No. 1, H.W. Imperial, bu.	5.19	3.93	3.85
Corn, No. 2, Yellow Nebraska City, bu.	3.69	3.33	3.41
Soybeans, No. 1, Yellow Nebraska City, bu.	9.29	8.21	8.48
Grain Sorghum, No.2, Yellow Dorchester, cwt.	7.41	5.48	5.55
Oats, No. 2, Heavy Minneapolis, Mn, bu.	3.14	2.66	2.46
Feed			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton.	200.00	250.00	175.00
Alfalfa, Large Rounds, Good Platte Valley, ton.	77.50	82.50	77.50
Grass Hay, Large Rounds, Good Nebraska, ton.	105.00	85.00	85.00
Dried Distillers Grains, 10% Moisture Nebraska Average.	172.50	134.50	133.00
Wet Distillers Grains, 65-70% Moisture Nebraska Average.	55.50	51.50	51.50
* No Market			

Nonmetropolitan residents, those living outside central urbanized areas greater than 50,000 in population, are one of the largest medically underserved populations in the United States. Twenty percent of the U.S. population lives in nonmetropolitan areas, yet only nine percent of primary care providers are practicing in such areas (Rosenblatt and Hart 2000, 348). In addition to a geographic imbalance of healthcare practitioners, nonmetropolitan residents suffer from higher rates of chronic diseases and disability, report higher levels of obesity, are older on average, and are more likely to report being in fair or poor health than their metropolitan counterparts (Ricketts 2000, 640 and USDA ERS 2009, 43).

In response to this rural healthcare disparity, federal and state programs have been established to incentivize healthcare providers to practice in geographic regions that have been identified as having a shortage of primary care, dental, and mental healthcare providers. These geographic areas are called Health Professional Shortage Areas (HPSA), and over 60 million Americans live in a shortage area for primary care. Nationally, over half of these HPSA designations are in nonmetropolitan counties, while in Nebraska, over 85 percent of these designations are in nonmetropolitan counties (U.S. DHHS 2016).[1]

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[1]Healthcare facilities in metropolitan areas may also be designated a Health Professional Shortage Area and are eligible to receive state and federal funds.

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Being designated a shortage area makes these areas eligible to benefit from programs that incentivize providers to practice in such areas. In Nebraska, two incentive programs are administered from state funds, 1) the Nebraska **Student Loan** Program (SLP), and 2) the Nebraska **Loan Repayment** Program (LRP). Under the SLP, the state awards forgivable student loans to medical, physician assistant, dental, and graduate-level mental health students who agree to practice one year in a state designated shortage area for every year they accept the forgivable loan. Under the LRP, physicians, physician assistants, nurse practitioners, dentists, pharmacists, occupational and physical therapists, and mental healthcare providers receive funds to pay back student loans for three years once they begin to practice in a shortage area. Both programs require the participants to practice in a state designated shortage area for a certain period of time in exchange for the financial incentive (NE DHHS 2015). A table summarizing the differences between the programs is provided below.

Although both programs exist to alleviate the rural healthcare disparity, the programs have important differences in the structure and timing of the healthcare provider's decision to commit to serve in a HPSA area in return for the incentive, which may influence their effectiveness. Additionally, the SLP has implemented changes in the administration of the program over time: in 1998, participants began receiving semi-annual letters reminding them of their practice obligation to the State of Nebraska until their obligation was completed; in 2007, the cost of defaulting on the obligation was changed from 24% simple interest to 150% principal + 8% simple interest. In the LRP, the cost of default has remained constant at 125% of funds received.

Initial analysis suggests that the effectiveness of the two programs in recruiting healthcare providers into nonmetropolitan shortage areas differs significantly. Since its inception, nearly 45 percent of SLP participants have failed to complete their practice obligation, compared to only eight percent of LRP participants. However, the SLP default rate has decreased over time, suggesting that the administrative and financial changes mentioned above have positively influenced the completion rate.

This difference in completion rate, given the structural differences of the programs, may be explained, in part, by a behavioral economic concept known as *projection bias*. Projection bias refers to an individual's tendency to exaggerate the degree to which their future preferences reflect their current preferences (Loewenstein, O'Donoghue, and Rabin 2003, 1210). One common manifestation of projection bias is grocery shopping while hungry. In a state of hunger, an individual is likely to purchase more food and a greater amount of unhealthy options that their future, satiated self may not prefer. Hungry shoppers act as if their future taste for food will reflect such hunger (Loewenstein, O'Donoghue, and Rabin 2003, 1215).

In these incentive programs, the differences in timing of the decision to participate in a program, thereby obligating oneself to practice in a HPSA, may lead to a higher probability of projection bias in the SLP compared to the LRP. In the SLP, individuals receive the incentive while in training, and by participating in the program, agree to practice in a nonmetropolitan, medically underserved area. In this scenario, an individual is predicting their future preferences years in advance (up to seven years in the case of a medical student), compared to LRP participants, who receive the incentive once they are practicing, and make their decision to participate in the last year or two of training. New experiences or maturation can lead to discovery of or changes in preferences, while an individual's background—e.g., whether that person has lived in a rural area before or not—may also affect prediction of future preferences. Both changes and lack of experiences may make it more difficult for SLP participants to accurately predict their true future practice preferences, resulting in SLP participants being more likely to exhibit projection bias.

Additionally, projection bias may be influenced by the participants' perception of how binding their decision to participate is. Early on in the SLP, there was no follow-up or reminder of their service obligation during the course of the participant's education and training. Under this condition, an individual may not have perceived that receiving the in-

centive binds them to actually fulfill their service obligation. As participants began to be reminded of their service obligation, participants likely viewed their decision to participate as more consequential, and spent greater time considering their future practice preferences because predicting incorrectly would result in potentially significant loss of utility. Research shows that prompting individuals to think more carefully about future preferences reduces bias (Loewenstein et al. 2003, 1213), and it is probable that individuals are more likely to devote more cognitive resources to decisions that have greater consequences for their future selves. Thus, the greater cognitive effort put into considering future preferences, and how such preferences might change over the course of professional school, is expected to decrease projection bias among participants. Those who spend less time contemplating their future preferences may naïvely assume that their current preferences accurately represent their future ones, choose to participate in the SLP, and end up defaulting if changes in their practice preferences occur.

The high buyout rate of the SLP suggests that projection bias may reduce the effectiveness of this program. The differences in completion rate, coupled with structural differences between and within programs, suggest that there is reason to believe a particular design of incentive programs may be more useful in recruiting healthcare providers to practice in medical shortage areas. Other factors may also contribute to projection bias. For instance, individual differences, such as growing up in a rural location, should help some decision makers more accurately predict their future preferences. Apart from other potential sources of projection bias, studying the efficacy of program design can provide useful insights in addressing rural healthcare disparities. By identifying what factors contribute to the highest probability of completion, similar state and federal rural health incentive programs can adapt policies to positively influence the success rate of recruiting healthcare providers to serve populations in high need.

	Student Loan	Loan Repayment
Timing of Incentive	Received as a student	Received as a practicing
Practice Obligation	One year service per year incentive	3 years
Default Cost and Administrative Oversight	Varies by Period: 1: 24% interest 2: Semi-annual letter & 24% interest 3: 150% principal + 8%	125% funds received
Default Rate	Overall: 44.9% Default Ranges over time from 17% to >50%	8.45%

Citations

Loewenstein, George, Ted O'Donoghue, and Matthew Rabin. 2003. "Projection Bias in Predicting Future Utility." *The Quarterly Journal of Economics*, 118(4), 1209–1248.

NE Department of Health and Human Services. "Nebraska Rural Health Advisory Commission's Annual Report and Rural Health Recommendations." December 2015. Accessed on March 8, 2016. http://dhhs.ne.gov/publichealth/RuralHealth/Documents/Annual%20Report%202015%20FINALWEB.pdf.

Ricketts, Thomas. 2000. "The Changing Nature of Rural Health Care." *Annual Review of Public Health* 21: 639–657.

Rosenblatt, Roger and L. Gary Hart. 2000. "Physicians and Rural America." *Western Journal of Medicine* 173, no. 5 (November): 348–351.

United States Department of Agriculture, Economic Research Service. "Health Status and Health Care Access of Farm and Rural Populations." Carol Jones, Timothy Parker, Mary Ahearn, Ashok K. Mishra, and Jayachandran Variyam, Bulletin No. (EIB-57). August 2009, 72.

U.S. Department of Health and Human Services. 2016. "Designated Health Professional Shortage Areas Statistics." HRSA Data Warehouse. Last modified January 1, 2016. Accessed on March 8, 2016. Report generated at http://datawarehouse.hrsa.gov/topics/shortageAreas.aspx.

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