A comparison of future recruitment needs in urban and rural hospitals:
The rural imperative

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Background. The potential impact of shortages of the surgical workforce on both urban and rural hospitals is undefined. There is a predicted shortage of 30,000 surgeons by 2030 and the need to train and hire more than 100,000 surgeons. The aim of this study is to estimate the average recruitment needs in our nation’s hospitals for 7 surgical specialties to ensure adequate access to surgical care as the U.S. population grows to 364 million by 2030.

Methods. We used the census figure of 309 million in 2010 for U.S. population. Currently there are estimated to be 3,012 urban hospitals and 1,998 rural hospitals in the U.S. (American Hospital Association’s Trend Watch report, 2009). At 253 million people (82 % of the population of 309 million in 2010) receive healthcare in urban hospitals; 56 million people receive healthcare in rural hospitals (18%). We assumed a workforce model based on our previous publications, equal population growth in all geographic areas, recruitment by rural hospitals limited to Ob-Gyn, General Surgery, and Orthopedics, and that the percentage of the population receiving care at urban and rural hospitals will stay constant.

Results. Rural hospitals will have to recruit an average of 3.4 OBGYN’s, and an average of 1.6 Orthos, and 2.0 GS for a total of 7 full-time equivalents in the period from 2011 to 2030. Urban hospitals which have to recruit surgical specialists will have to recruit ten Ob-Gyns, about 5 Orthos, 6 GS’s, 5 ear, nose, and throat surgeons (ENT’s), an average of 2.5 urologists, a neurosurgeon, and a thoracic surgeon to meet the recruiting goals for the surgical services for their hospitals.

Conclusion. Rural hospitals will be in competition with urban hospitals for hiring from a limited pool of surgeons. As urban hospitals have a socioeconomic advantage in hiring, surgical care in rural areas may be at risk. It is imperative that each rural hospital analyze local future healthcare needs and devise strategies that will enhance hiring and retention to optimize access to surgical care.

The Patient Protection and Affordable Care Act (PPACA) encourages the health sector to form Accountable Care Organizations (ACO). The ACO’s aim is to provide accessible and integrated care. Surgical specialists will be needed to provide coordinated care in their designated market area. If rural hospitals cannot recruit surgeons, the hospitals cannot form viable ACOs and participate in the new healthcare delivery system. Failure to recruit surgical specialists will also negatively impact the financial health of the rural communities.

The aim of this study is to estimate the average recruitment need in our nation’s hospitals for 7 surgical specialties, including obstetrics and gynecology, orthopedic surgery, general surgery, otolaryngology, urology, neurosurgery, and thoracic surgery in order to ensure adequate access to surgical care as the U.S. population grows to 364 million by 2030 in both rural and urban sectors.
MATERIALS AND METHODS

We used the census figure of 309 million in 2010 as a baseline for the U.S. population. Currently, there are estimated to be 3,012 urban hospitals and 1,998 rural hospitals in the U.S. according to the American Hospital Association’s Fast Facts survey in 2008. At present, 253 million people (82% of the population of 309 million in 2010) receive healthcare in urban hospitals; 56 million people receive healthcare in rural hospitals (18%).

Our population analysis algorithm has 2 features. First, if the population of the United States is estimated to be 364,000,000 in 2030 we will need 27,300 General Surgeons (GS) based upon a ratio of 7.50 general surgeons per 100,000 population.

The second feature, to calculate the surgeons available, we take the current supply and add to that the number of Board certifications per year and then subtract the number of retirees. For instance, in 2005 the U.S. had 21,000 practicing GS. Board certifications in GS are approximately 1,000 per year. If we assume that the average GS retires in 30 years, then 700 GS will retire. So, if we repeat the calculations 25 times (2006–2030), that leaves 24,775 GS in practice in 2030. The results from these calculations for all the specialties included in this study are illustrated in Table I. The figures in the column To be trained 2011–2030 are taken from our previous work and simply add future shortages to the number of residents we can train from 2011 to 2030.

We also assumed equal population growth in all geographic areas, the percentage of the population receiving care at urban and rural hospitals staying constant, and that recruitment by rural hospitals would be limited to obstetrics and gynecology (Ob-Gyn), general surgery (GS), and orthopedics (Ortho).

In Table II we show the Recruitment Goals for both the Urban and Rural hospitals. The entries in the second column of Table II are taken from the fifth column in Table I.

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**Table I.** Estimated shortages of surgeons by 2030

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Surgeons needed</th>
<th>Surgeons in practice</th>
<th>Shortage</th>
<th>Total to be trained 2011–2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ob-Gyn</td>
<td>50,135</td>
<td>36,499</td>
<td>13,636</td>
<td>37,636</td>
</tr>
<tr>
<td>Ent</td>
<td>11,502</td>
<td>8,986</td>
<td>2,516</td>
<td>8,516</td>
</tr>
<tr>
<td>Ortho</td>
<td>23,660</td>
<td>19,305</td>
<td>4,355</td>
<td>17,355</td>
</tr>
<tr>
<td>General</td>
<td>27,300</td>
<td>24,775</td>
<td>2,525</td>
<td>22,525</td>
</tr>
<tr>
<td>Urology</td>
<td>12,048</td>
<td>8,164</td>
<td>3,884</td>
<td>9,084</td>
</tr>
<tr>
<td>Neuro</td>
<td>3,858</td>
<td>3,630</td>
<td>228</td>
<td>2,728</td>
</tr>
<tr>
<td>Thoracic</td>
<td>5,169</td>
<td>3,175</td>
<td>1,994</td>
<td>3,994</td>
</tr>
<tr>
<td>Total</td>
<td>133,672</td>
<td>104,534</td>
<td>29,138</td>
<td>101,838</td>
</tr>
</tbody>
</table>


**Table II.** Recruitment goals

<table>
<thead>
<tr>
<th>Specialty or location</th>
<th>Total needed to be trained and hired 2011–30</th>
<th>Urban and rural hospitals recruitment goals 2011–30</th>
<th>Total hires per year 2011–30</th>
<th>Hires per hospital 2011–30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ob-Gyn</td>
<td>37,636</td>
<td>30,862</td>
<td>1,543</td>
<td>10.2</td>
</tr>
<tr>
<td>Ortho</td>
<td>17,355</td>
<td>14,231</td>
<td>712</td>
<td>4.7</td>
</tr>
<tr>
<td>General</td>
<td>22,525</td>
<td>18,471</td>
<td>924</td>
<td>6.1</td>
</tr>
<tr>
<td>Ent</td>
<td>8,516</td>
<td>6,983</td>
<td>349</td>
<td>4.7</td>
</tr>
<tr>
<td>Urology</td>
<td>9,084</td>
<td>7,449</td>
<td>372</td>
<td>2.5</td>
</tr>
<tr>
<td>Neuro</td>
<td>2,728</td>
<td>2,237</td>
<td>112</td>
<td>0.7</td>
</tr>
<tr>
<td>Thoracic</td>
<td>3,994</td>
<td>3,275</td>
<td>164</td>
<td>1.1</td>
</tr>
<tr>
<td>Urban totals</td>
<td>83,507</td>
<td>4,175</td>
<td></td>
<td>27.7</td>
</tr>
<tr>
<td>Rural*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ob-Gyn</td>
<td>37,636</td>
<td>6,774</td>
<td>339</td>
<td>3.4</td>
</tr>
<tr>
<td>Ortho</td>
<td>17,355</td>
<td>3,124</td>
<td>156</td>
<td>1.6</td>
</tr>
<tr>
<td>General</td>
<td>22,525</td>
<td>4,055</td>
<td>203</td>
<td>2.0</td>
</tr>
<tr>
<td>Rural totals</td>
<td>13,953</td>
<td>698</td>
<td></td>
<td>7.0</td>
</tr>
</tbody>
</table>

*Same pool as urban.
To define the recruiting issues, we include some typical offers made to surgical specialists from Merritt, Hawkins, and Associates in Table III and compensation figures from Cejka Search in Table IV.9-11

### RESULTS

To obtain the Urban and Rural Hospitals Recruitment Goals 2011 to 2030, Column 3, we multiply Column 2 by 0.82 for the urban hospitals and by 0.18 for the rural hospitals (Table II). To calculate Total hires per year 2011 to 2030 in Column 4 we divide Column 3 by 20 years. To obtain the Total hires per hospital 2011 to 2030, Column 5, we divide Column 3 by 3,012 for the urban hospitals and 1,998 for the rural hospitals. For general surgery the urban hospitals need to recruit 18,471 general surgeons, which is derived by multiplying 22,525 by 0.82 as shown in Column 3. Next, dividing 18,741 by 20 gives the total number of hires per year which is 924 as shown in the fourth column. Then, by dividing 18,741 by 3,012 we get the hires per hospital from 2011 to 2030 which equals 6.1 shown in the fifth column. In similar fashion for the rural hospitals, using the same calculations we took the pool of Generals (22,525) and multiplied it by 0.18 which equals 4,055 in the third column. Then, dividing 4,055 by 20 we get 203 total hires in the fourth column, and by dividing 4,055 by 1,998 we obtain 2.0 hires per rural hospital from 2010 to 2030 in the fifth column.

Examination of recruitment goals, in Table II, shows that the rural hospitals will need to recruit an average of 3.4 Ob-Gyns, an average of 1.6 Orthos, and 2.0 Generals for a total of 7 full-time equivalents per year to maintain their surgical staff.

### DISCUSSION

The rural scenario—some aspects. A weakness of this population analysis is that we assumed equal growth in urban and rural areas and that may not be the case. Some rural areas may increase in population and some may decrease. However, compensating any decrease in growth, population dynamics is gradually increasing the ages of residents in these areas as more retirees are choosing rural locations. In addition, more people of Hispanic descent are moving to rural areas for employment.12 Any adjustments for unequal population growth may not be able to be addressed without longitudinal regional population growth studies.

If one accepts the premise of equal growth, then population analysis leads us to believe that there will be a shortage of surgical specialists in almost all areas, particularly in the fields of obstetrics and gynecology, orthopedic surgery, general surgery, ear, nose, and throat, urology, neurosurgery, and thoracic surgery. As both urban and rural hospitals will need to recruit aggressively to maintain the public’s access to surgical specialists, the rural hospitals stand to be disadvantaged the most. Recruiting 1 full-time surgeon every 3 years by rural hospitals may not seem very formidable. However, we believe that due to the many factors to be discussed, the recruitment difficulties, and the competition for the surgical specialists will indeed prove to be formidable particularly in rural locations.

The most commonly accepted method of classifying rural or urban locations is by using the Rural-Urban Commuting Area (RUCA) tool, which is based on census tracts rather than counties. Using...
RUCA codes, locations are classified into metropolitan (continuously built-up areas of 50,000 or more population), large rural (10,000 to 49,999 population), small rural (2,500–9,999 population) and isolated small rural areas (≤2,500 population). As shown in Table V, only 11% of all clinically active physicians and 16% of all GS practice in rural locations. The density of surgeons in rural (small and isolated small) is 4.67/100,000 people compared to 6.74 nationally in the U.S. The proportion of GS younger than age 40 is declining and those older than 50 years in age has increased. Maldistribution is particularly evident in Montana, Idaho, Wyoming and Vermont where the entire rural population lives in Primary Care Hospital Service Areas with surgeon supply less than half the national average. If we assume equal geographic distribution of surgeons, about 18% would be practicing in rural communities. The maldistribution of Ob-Gyns could be alarming.

From 1 perspective recruitment, to practice surgery in rural areas may seem difficult because of professional and, sometimes, social isolation, difficulty obtaining cross coverage, trainees with insufficient training in the wide spectrum of GS required for rural communities, and the challenge of keeping abreast of new knowledge and technology. Maldistribution is particularly evident in Montana, Idaho, Wyoming and Vermont where the entire rural population lives in Primary Care Hospital Service Areas with surgeon supply less than half the national average. If we assume equal geographic distribution of surgeons, about 18% would be practicing in rural communities. The maldistribution of Ob-Gyns could be alarming.

From another point of view, the rural community has other advantages: a close knit community, a potentially less hectic life style, and easier access to outdoor recreational activities. Rural communities, however, present other socio-economic challenges as well. Rural Americans tend to be older, poorer, less likely to have private insurance, and to be less healthy, have lower life expectancy, and have less access to healthcare. Also, nonmetropolitan areas are ethnically less diverse, although recent trends may change this.

However, for those surgeons trained with an eye towards rural practice, the opportunity of being a critical part of a community, the independence, and a chance to treat a wide spectrum of surgical diseases can be attractive. Comprehensive medical school rural programs have been advocated as being a successful way to increase rural physician supply. Rabinowitz et al have estimated that the number of rural physicians would double if each medical school had ten students per class in such a program. Trainees are more likely to locate in a rural area if they had a “rural upbringing” or rural exposure via education or recreational activities through 4 pathways including familiarity, sense of place, community involvement and self-actualization. Indeed, some programs that focus on training rural surgeons report 76% of categorical residents electing to practice GS, with two thirds of those choosing to practice in rural communities with a population <10,000. The opportunity to improve the lives of rural residents with lack of access to quality care may prove to be very attractive for these trainees.

Another consideration is the training of the future rural surgeon. Assessment of the workloads and practice patterns of general surgeons has shown that rural surgeons do more endoscopy and open abdominal procedures than urban surgeons. A program designed to train a rural workforce will need to preferentially train surgeons for what they will be doing.

Lack of access to proper health care poses considerable risk to women in rural communities, which are home to 17% of all women over the age of 15 and where 18% of all births in the U.S take place. The 5.8 million (28%) rural women in counties without Ob-Gyns are negatively affected. Women in rural communities with limited access to Ob-Gyns have been shown to have a higher incidence of premature deliveries, prolonged hospitalizations, and a 17.6% greater risk of infant mortality. These women are more likely to undergo cesarean sections and less likely to be offered vaginal birth after CS. Rural hospitals may also lack Ob-Gyns or surgeons capable of performing cesarean sections because less than 30% of the pregnant population will use the facilities. With regard to physician supply, most women physicians have traditionally preferred urban locations rather than rural areas presumably due to spousal concerns, long working hours, and concerns similar to their male colleagues. However, this gap may be narrowing.

### Table V. Medical school graduates (1988–1997) practicing in rural areas in 2005

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Number (%) in large rural areas</th>
<th>Number (%) in small rural areas</th>
<th>Number (%) in isolated small rural areas</th>
<th>Total number (%) in rural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>General surgery</td>
<td>614 (11)</td>
<td>242 (4.3)</td>
<td>60 (1.1)</td>
<td>916 (16.4)</td>
</tr>
<tr>
<td>Ob-Gyn</td>
<td>870 (8.2)</td>
<td>219 (2.1)</td>
<td>46 (0.4)</td>
<td>1,135 (10.7)</td>
</tr>
<tr>
<td>Ortho</td>
<td>523 (10.4)</td>
<td>132 (2.6)</td>
<td>28 (0.6)</td>
<td>683 (13.5)</td>
</tr>
</tbody>
</table>

Health reform: Implications for rural areas. Recent health reform legislation (PPACA) has been touted as being particularly favorable for rural communities. It will supposedly decrease the uninsured population in rural areas from 8.1 million to 1.9 million people. This is largely because it is expected that since the rural population is more likely to be employed by small businesses, or in lower income groups, they would benefit more from individual subsidies and expanded Medicaid coverage. The National Health Services Corps has been given over $1 billion from 'stimulus' dollars to assist in recruitment of physicians to rural areas. Some of these funds have led to commitment from 5,000 recent medical school graduates to serve in rural America for 3 to 5 years in exchange for paying off tuition and school loans. An additional $32 million has been awarded to improve access to healthcare in rural America. This includes $22 million to hospitals, $3 million to assist in recruitment and retention of healthcare professionals, and $500,000 for assisting residency programs in rural hospitals. The problem of social and professional isolation, technology gaps, and excessive call still remains; retention of these graduates once their obligation finishes is uncertain.

The inability of a rural hospital to form an ACO in their community without at least some surgical services is obvious. General surgery, orthopedic surgery, and obstetrics and gynecology are essential services for a rural hospital. GS are needed to take care of trauma and to perform appendectomies and other general surgical procedures. Essential for a rural hospital are Ortho surgeons to cast fractured limbs. Most people in the United States also want to deliver their babies in their home town.

Recruitment/contract challenges. In addition to the disadvantages mentioned, recruitment strategies may not differentiate a rural hospital from its urban competitor. The value proposition must extend beyond financial considerations, which are now common in view of the workforce shortage. Unless hospitals hire an expensive hiring consulting firm, their internal recruitment process may be inefficient; sometimes the existing medical staff may interfere or discourage new competition. It is not uncommon for surgical residents to receive up to 50 offers in their junior years. So, the process of recruiting must begin early and take advantage of residency based networks. In the younger surgeon (<35 years) being recruited, geographical location, call schedule, practice setting, compensation, and professional growth opportunities, in that order, are important factors in choosing a job.

From a rural hospital’s standpoint, the GS is a critical factor in their financial success. Rural hospitals may depend on up to 60% of their revenue from surgical services. With early retirements and an aging surgical workforce, rural hospitals will be competing with urban hospitals. To make matters worse, Doty et al, in a survey of rural hospital administrators, report that 34% of hospitals are faced with a surgeon leaving or retiring within 2 years; one third of the hospitals are currently searching for a surgeon.

In Table III, we list some of the features of recent recruitment offers. Ninety-five percent of the clients of Merritt, Hawkins, and Associates give relocation allowances. Seventy-six percent give a signing bonus as well. In their 2009 report, only 31% of clients had educational loan forgiveness as a recruiting incentive in employment contracts. In the 2010 report, the loan forgiveness feature has already increased to 38%. In an era of workforce shortages, we suspect that the future employment model for both rural and urban hospitals will consistently offer this critical feature. A well-conceived compliance plan must be in place to prevent violation of federal recruiting regulations with not-for-profit status at risk, in addition to severe penalties, and exclusion from Medicare and Medicaid.

To recruit recent graduates from surgical training programs, a physician compensation package must include the features shown in Table III plus starting salaries in Table IV that range from $260,000 in general surgery to $450,000 in neurosurgery. If the objective is to recruit somebody who has already been in practice, the median salary for this group of specialists is now more than $300,000 and ranges almost all the way to $550,000.

Recruiting/community issues. Most of the surgeons to be recruited are married with children and may form a 2-income family. Of the 16 GS residents finishing our program between 2007 and 2011, 13 were married and all of their spouses had careers of their own. In recruiting such a family, there has to be a place for the surgeon’s spouse (“trailing spouse” syndrome). If the spouse is a physician, there may be a place for him or her in the recruiting organization. On the other hand, if the spouse is a lawyer or a business person, there may or may not be opportunities to practice law or have a job in that community. Similarly, recruited families want excellent educational opportunities for their children. If the rural public school system is not good, private schools may involve additional cost and present transportation problems.
Cost of living is important as well. With 2-income families that might be surprising, but if both are doctors, they may have a combined debt of more than $400,000 which has to be serviced. In that instance, cost of living is even more important.

Another incentive that can be offered by rural institutions is purchase of the home of a surgeon being recruited, either directly, or as a signing bonus to compensate the surgeon for the loss in selling their existing residence in view of the significant decline in home prices.

In conclusion, the average urban hospital must hire and retain almost thirty surgeons in the next 20 years to achieve the desired goal; a rural hospital must hire and retain seven. Rural hospitals will be in competition with urban hospitals for hiring from a limited pool of surgeons. Since urban hospitals have some socioeconomic advantages in hiring, surgical care in rural areas may be even more at risk. It is imperative that each rural hospital analyze local future healthcare needs and devise strategies that will enhance hiring and retention to optimize access to surgical care. These strategies should include educational loan forgiveness programs, upgrading medical technology, providing access to continuing medical education programs, home purchasing options, signing bonuses, affiliations with medical schools, and facilitating rural rotations for surgical residents.

If the rural hospitals fail to meet these recruiting challenges and the Balanced Budget Act of 1997 is not revised to permit the training of more surgeons, there will be a “perfect storm” effect that could lead to the demise of the rural hospitals that provide so much of the nation’s surgical care.

REFERENCES
DISCUSSION

Dr Nathaniel Soper (Chicago, IL): I think what’s been pointed out is that we are headed for some issues. Now, it may end up being ultimately that these bidding wars are good for general surgeons, but I think it’s not going to be good for the population whom we serve, as there is going to be a shortage unless something is done.

I have several questions for the authors.

One is somewhat methodologic. I’m not familiar with the population analysis workforce model that was published previously, but there are a number of assumptions in it, including equal population growth between rural and urban areas. And I’m not sure if there isn’t still a shift going on. And also the fact that was given, that about a third of general surgeons in rural areas are saying they’re going to be leaving in the next two years? Is that included in those assumptions?

A couple of other questions.

How can we select medical students who are interested in rural surgeries, especially for those rural programs? I think it’s really critically important that we do get at least a certain cohort of individuals coming straight out of medical school who indicate an interest in rural programs, because we are going to have to serve those individuals.

Last, it appears to me as one of the biggest problems is that the number of ACGME-approved residency slots in surgical specialties has not changed for years. We are developing new medical schools, going to be churning out more physicians. But I think the basic problem, really, is not so much the division between rural and urban, but the supply.

How are we going to increase the number of people coming out by 1500 per year almost is what you’ve said we are ultimately going to need to be able to meet this shortfall?

Dr Bhagwan Satiani (Columbus, OH): First of all, there are 3 or 4 different models with which you can calculate supply and demand. This happens to be a simplification of the federal model that they’ve used. Now, a caveat there: Every single projection in the last 50, 75 years has been wrong. And we all know that, starting with the American Surgical Association study way back several years ago. So you have to look at this model and say, “Okay. This is the best we can do right now.”

About the medical student issue. I think that if you look at comprehensive medical school rural programs, they’re called MSRP’s, and this is probably one of the most successful ways to increase the physician supply to rural areas. For example, if you took medical schools and took ten medical students out of the class and put them into the MSRP program, you could double the supply of rural surgeons. Double it. That’s how important that is.

In fact, there was a study from New Zealand and Australia, they’ve actually looked at this because they have large rural areas, and the strongest predictor of selecting a rural practice is a rural background. Period. People in this country have done studies looking at the predictors. And those are what you expect, including whether or not you like to hunt. And people have gone and looked at those numbers. But to me, looking at the data, it’s the rural background that really sticks out.

So, overall, right now, there are only 25 general surgery programs out of 250 or something which have a commitment to attract and train rural surgeons.” That’s it. So, that’s 1 of our points in the manuscript we make; American surgery is going to have to give this a separate track within residency programs. And I don’t know if we can talk to program directors, how difficult that will be. We don’t think so.
As far as the funding for training residents, with the budget deficits a mile high, we don’t see any possibility of an increase or for the Balanced Budget Act being revised. We don’t think it’s going to happen. So, I think whatever needs to be done, we are going to have to tinker with the system and increase the value proposition and not just go to Congress for more money.

Dr Philip Caropreso (Keokuk, IA): This current paper quantitates surgical recruitment numbers for urban and rural hospitals during the next 20 years. These concerns, however, are not new. Dr Chester McVay from Yankton, South Dakota, presented a paper, "Surgery in the Midwest, the Need, the Problem, and the Opportunity," in 1962.

The predicted recruitment goals and surgeon shortages are based on population models. Dr Lynge, in a paper, concluded that "defining workforce shortages is difficult, locale specific, and subjective." And Dr Ellison himself has stated that no formula is absolute in predicting or estimating future workforce. And you have addressed this. You have pointed out, and I’m familiar with at least 15 different definitions in the federal government. And depending on which definition you pick, population numbers can change in the millions.

In Dr Sheldon’s introduction for "Surgical Practice in Rural Areas," he described the migration of population off the farms and to urban areas in the 20th century. This is going to continue in the 21st century for rural America. For example, Iowa was ranked 30th in the population census in 2000. It will be ranked 48th in the population census by 2030. So, how do these population shifts affect the paper’s predictions and conclusions?

As identified in your discussion, there is a lower penetration of surgeons in rural areas compared to the national average. The numbers and types of operations have also decreased. Interventional radiology, evidence-based, nonoperative management, and even medications have been responsible for this decline. So, as medical progress continues, with fewer operations being performed, will these penetration numbers not be as critical and will shortage predictions become less significant?

Then, in terms of numbers further, the difference for successful recruitment of full-time equivalent surgeons between urban and rural is minimal. You’ve talked about the factors. These include, for successful recruitment, social and professional growth opportunities, scope of training, maintenance of current surgical knowledge and techniques, creation of accountable care organizations, compensation, and benefits. You could actually include these in a calculation from Harvard, the classic value evaluation, which is $V = pB – C$. Perception value equals perception benefit, minus the costs. Actually, some recruits have identified these as most important in order: Geographical distribution and location, call schedule, practice settings, compensation, and professional growth opportunities is last. You identify urban hospitals as having a recruitment advantage.

Recruitment may not just become a bidding war. If rural hospitals are truly recruitment impaired, does perception value play a role? How can perceptions of rural surgical practice be improved?

One last thing: The Iowa fellows of the American College of Surgeons recommend networking as the solution to recruitment challenges. And they ask this final question: Who will lead us in the effort? Their answer: The American College of Surgeons. How do the authors answer the question: Who will lead us in the future?

Dr Bhagwan Satiani (Columbus, OH): Thank you. Those are all very, very good points. You are obviously familiar with what’s going on in the country.

As far as the census is concerned, and that was the same question raised earlier, projection-wise, we have projections going to 2050, but I think the 20 years that we have addressed today is relevant. Nothing significant in terms of great percentages is going to change in that area. It might be minor changes, population moving one way or the other; but in 10 or 20 years, we don’t see a significant impact on what we’ve calculated.

As far as technical changes, you’re right. We could have a totally different set of procedures. But I want to remind you, if you look at what the rural surgeons do these days, there are three main things: Endoscopy, number one, Ob-Gyn, and urology.

If you look at what they do, those are the procedures they do. The abdominal procedures are pretty much, if you look at the percentage vs urban and rural, the abdominal procedures are pretty similar. They might be doing larger procedures abdominally in urban areas; but as far as the percentage of procedures, it’s pretty close. If you look at perception, I think 1 of the ways that we have discussed in the paper is don’t look at financial things alone. Geographic location, type of practice, if you look at recruiting surveys, that’s what young surgeons are looking for.

If you also compare incomes, which is also number four or five on the new recruits list, rural surgeon, if you factor in cost of living, the rural surgeons’ actual income is higher than urban surgeons. So, when you are recruiting, those are things you have to talk to the new recruits about.

Dr David Dexter (Erie, PA): When I graduated from my residency in the mid 1990s, the big question asked of me was, Am I going to be a general surgeon or am I going to be a subspecialist in a board-certified area? But I think we need to add another issue to what you have been evaluating.

Ever since I’ve been in Erie, I’ve been trying to recruit general surgeons. And the problem is, I can’t find many. I can find a lot of people who tell me that they are breast surgeons, minimally invasive surgeons, hepatobiliary surgeons, not-on-call surgeons. I can find a lot of people who are looking for jobs, but I can’t find many people who are willing to do general surgery and take trauma call, let alone cover call at night, and certainly I have a difficulty finding people who will do in-house calls.

So, my question is, how do you feel what is referred to as self-identification of graduating residents is going to impact your data by the time we reach 2050? And how do we as a profession, as a proud profession, how do we maintain our profession so that when it hits 2030 that I have a title that I can still call myself a general surgeon?

Dr Bhagwan Satiani (Columbus, OH): Totally legitimate comment. And all I can tell you as an observer there
is that American surgery is truly, truly concerned about the general surgeon’s role, and what does American surgery do? Not the government, not the state, what American surgery can do for the general surgeon to get there.

I know in our own program, I had an hour-long conversation with a resident who was thinking about going to my specialty, which is vascular surgery and general surgery. Very, very strongly encouraged him to stay in general surgery. He wanted to be rural; so this is perfect. I think it’s the one-on-one thing that’s probably going to work with the residents. Because all they see are these specialists, superspecialists. I totally agree. I think it’s got to come from the programs and the leadership, defining general surgery better, even going as far as changing the name, if that becomes an important issue.

Dr Mark Malangoni (Philadelphia, PA): I would like to try to remove some of the crepe that we’ve been hanging about this whole problem, because while we may not be able to solve the problem, we might be able to make it a more tolerable problem.

As has been suggested by most of the discussants, and also by your presentation, this is multifactorial. And we are not going to get our hands around all of it.

But I think there are 2 areas where we have an effect. And you’ve mentioned how important they are in your presentation.

One is linkage to someplace outside of the rural area. And if you are in Wyoming, there’s no medical school in Wyoming for you to link to. The nearest medical school that they are associated with is in Seattle. And it’s a thousand miles or more away. So, we have got to find a way to use our electronic resources to link with these people.

It’s very interesting that the American College of Surgeons has recently completed a survey of its fellows. And one of the most important things that the fellows of the American College of Surgeons have asked for is a web-based surgeon-to-surgeon consultation. They want to be able to get advice from the experts.

So, that’s an area where we might be able to make an improvement. And it might make individuals who would be a little frightened of going to a rural area for the reasons that you stated, less frightened of that. And they might see the advantages outweighing the disadvantages.

The second thing that you’ve mentioned is exposure. One of the down sides of duty hours and also perhaps preceding the duty hours, the contraction of healthcare more into specialty centers, is we have reduced a lot of the community hospital rotations for residents. And we have reduced rural hospital rotations for residents.

So, we’ve taken away that exposure for them. And we need to restore that exposure if indeed we are going to somehow try to affect this problem in some way.

Lastly, I want to emphasize what Dr Dexter just brought up. And that is, we’ve got to find a way to reverse what we have created. And that is this educational environment of everyone must be a subspecialist. And if you are not a subspecialist, you don’t have value added out in the community, or what you have value added for is a very limited number of procedures.

So, I just would make those comments and would appreciate your reflections on it.

Dr Bhagwan Satiani (Columbus, OH): We agree with everything you’ve said. As far as the medical schools and the location, for example, Wyoming. In the last 3, 4 years, where the 12 or 14 new medical schools have been constructed, some of those have been in semiurban areas, but I don’t recall one of them being in a truly rural area. Of course, choosing the sites for medical schools are all political decisions.

But I think maybe that’s a possibility and a partial solution: to locate one of those new medical schools in a rural area.