



# Idaho Rural Family Physician Workforce Study: The Community Apgar Questionnaire

Prepared for:

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Idaho Department of Health and Welfare

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July 2008

## Acknowledgements

This research was funded by the Idaho Department of Health and Welfare, Office of Rural Health and Primary Care (contract HC596600) through a grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration. The authors thank Steven Millard, President of the Idaho Hospital Association, and Neva Santos, Executive Director of the Idaho Academy of Family Physicians, Inc., for their assistance in this research.

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## **Idaho Rural Family Physician Workforce Study: The Community Apgar Questionnaire**

### **Executive Summary**

During the first year study of the rural family medicine physician workforce in Idaho, it became apparent that community factors play a key role in the recruitment and retention of physicians. While prior workforce studies often investigated characteristics of the candidate-physician, this study identifies community factors which help determine the success of achieving and maintaining an adequate local physician workforce. Some of these characteristics may be modifiable, while others may not. The goals of this study are to identify opportunities for improvement in physician retention and recruitment in rural Idaho and develop a better understanding of community factors in this dynamic process.

Just as the Apgar score is used to quantify resources and capabilities of the newborn that are indicative of current functioning, the Community Apgar Questionnaire (CAQ) seeks to serve the same purpose for family physician recruitment to rural communities. It should be noted that the Apgar score of a newborn is not necessarily prognostic of the longer-term outcome and similarly, this tool is designed to function as a real-time measure. In the construction of the CAQ, factors important in recruitment and retention were identified by literature search, site visits during year one research and in discussions with rural physicians and hospital administrators. Factors fell into the following 5 classes: Geographic, Economic, Scope of Practice, Medical Support, and Hospital and Community Support. With each class containing ten factors, a total of fifty factors were used to comprise the CAQ score. A series of 3 open-ended questions were also administered to validate the factors and identify any factor seen as significant but not addressed within the scoring classes.

The CAQ was administered in a structured interview to provide consistency of interpretation of the questions amongst the respondents. A total of eleven rural Idaho communities differing in geography and other known variables were selected, some communities identified historically to have more success in recruitment and retention (labeled alpha or A) and some historically noted to have more challenges (labeled beta or B). In each community, the Chief Executive Officer or Administrator of the hospital and the physician with recruiting responsibilities participated individually in the interviews. Community Apgar scoring used a method of summing parameters within each category after being weighted for perceived importance as judged by the respondent. In this way, the most important parameters in physician recruitment, be it an advantage or disadvantage for that community, was weighed for its relative importance and summed to form the class scores. This is a quantitative method used to represent the interview process. In some ways this interview was similar to that which would occur with a physician-applicant. The overall summated score then provided each community with a cumulative Community Apgar Score.

The primary limitation of this study is the number of communities surveyed. A total of 11 physicians and 11 CEOs participated in the survey. One community was unable to identify qualified participants for the interview because of change in staff and lack of knowledge of the community. All other communities invited to participate did so. A second limitation is that statistical power associated with the use of small sample size analysis is low for this study. Another possible limitation is that because factors were limited to fifty, other factors may exist that also impact physician workforce. This limitation was accounted for by asking open-ended questions to give each respondent the opportunity to identify any significant missing parameters and discuss these. Notably, these discussions most often identified factors already contained within the CAQ.

In these eleven communities results regarding self-perception of advantages and challenges identified recreational opportunities as the highest community advantage with spousal satisfaction identified as the

greatest challenge. For each community, there were no significant differences between hospital administrator and physician responses, demonstrating internal consistency in the identification of advantages and challenges for each community. Differences in scores were seen between communities however which correlated to the historical recruitment trends identified as alpha or beta. Overall, obstetrics, C-sections and mental health provision of care by physicians were each seen as challenges to recruitment while inpatient medicine, emergency room coverage, and teaching were seen as advantageous. The overall greatest advantage ratings occurred in the areas of recreational opportunities, income guarantee, and community need and support of the physician. Spousal satisfaction was most commonly identified as the single most significant barrier and had the overall lowest rating, being reported as the greatest disadvantage. C-section services provision also had a low rating and therefore was reported to be one of the most significant challenges.

Differences in importance ratings occurred between administrators and physicians but only rarely between community types. Thus, whether these parameters were seen as an advantage or disadvantage in recruitment to any particular community, their relative importance in recruitment was consistently recognized. Differences did occur between the perceptions of administrators and physicians however and reveal differing priorities between certain factors in the recruitment decision. Spousal satisfaction was rated as a high area of importance and was the most frequently mentioned greatest barrier in the opened-ended responses as well. This was followed by recreational opportunities, schools, and perception of the community. Additional factors reported as important included income guarantee, revenue flow and loan repayment. Obstetrics, inpatient care, and emergency room coverage were also important factors. Call/practice coverage, stability of physician workforce and perception of quality were identified as important. Also seen as important was the physical plant and equipment, community need/support of physician, plans for capital investment, and internet access.

The overall rank ordering of classes by mean Community Apgar Scores in these Idaho communities was as follows: Hospital and Community Support; Economic; Medical Support; Scope of Practice and Geographic. There are statistically significant differences within all classes and across classes where alpha communities score higher on mean Community Apgar Scores. These statistical differences are not found by respondent type within any class or across classes. This suggests that significant mean score differences between community types are not influenced by differences in community Apgar ratings for hospital administrators or physicians. The results suggest that the CAQ consistently both quantifies self-report of community assets and capabilities and furthermore correlates to historical experience in workforce trends for a particular community. While individual communities had different Community Apgar Scores for various factors, trends reflecting the overall group as a whole were also identified. Overall, the highest Apgar scores were seen for recreational opportunities, income guarantee, community need/support of physician, and internet access. The overall lowest Apgar scores were seen for spousal satisfaction, shopping and other services, schools, C-section provision, mental health provision, and electronic medical records.

The CAQ seems to not only discriminate between communities with greater assets and capabilities and those with lesser assets and capabilities but also appears to accurately correlate to historical community-specific workforce trends. This assessment allows for identification of both modifiable and non-modifiable factors and also may suggest which factors are most important for a community to address with limited available resources. Therefore the CAQ may be used by communities to assess that community's relative strengths and weaknesses, their relative importance, and to gain a better understanding of which factors are seen as most important from the physician point-of-view. The CAQ may have a role in a community's self-evaluation, prioritization of improvement plans, advertising considerations and negotiation strategy for successful recruitment and retention of family medicine physicians in their rural Idaho community. Should

communities choose to collaborate, this tool could also be used to share successful strategies communities have used to overcome disadvantages which may be difficult or impossible to modify. The CAQ could also be used to track a community's progress over time, similar to the clinical use of Apgar scores in newborns, as this instrument is designed to be a real-time assessment tool providing guidance for the most helpful interventions at the present.

## Introduction

The American Academy of Family Physicians released a report in September of 2006 which suggested that Idaho, along with Nevada, Arizona, Florida and Texas, would experience serious shortages of family medicine physicians by 2020. Two general factors associated with the projected shortfall of family medicine physicians in these states included population growth and an increase in the number of elderly citizens. In 2007, the Idaho Legislature directed the State Board of Education to commission a study on graduate medical education opportunities in Idaho to determine how expansion of these opportunities could impact the state's physician work force. The study found that access to physicians is extremely limited in Idaho and that Idaho ranks high in the number of physicians age 55 and older. The report recommended that Idaho increase its physician work force to reach the median level of the 50 states. Even at current population levels, attaining the median would require a 42 percent increase in the number of Idaho physicians. Projected population growth, demographic changes and retirement trends will require an even higher increase in the number of physicians practicing in Idaho.

Many Idaho family medicine physicians practice in rural areas. These rural areas experience significant challenges in recruiting and retaining family medicine physicians. These challenges can materially impact local community access to health care, both for general medical care and for specific medical services such as obstetrics. Information on the recruitment and retention of family medicine physicians in Idaho is of significant interest to Idaho rural hospitals, educational institutions, federal and state government agencies, legislators and the rural community at large.

Boise State University (BSU) originally entered into a contract (HC565300) with the Idaho Department of Health and Welfare (IDHW) in November of 2006 to conduct research related to the Idaho Family Medicine physician rural work force in partnership with the Family Medicine Residency of Idaho (FMRI). Generally, the purpose this contract was twofold: (1) to support the goals and objectives of the State Office of Rural Health grant (CFDA 93.913); and, (2) to support the mission of the State Office of Rural Health and Primary Care to improve access to quality healthcare services for the people of Idaho. Furthermore, this research was aligned with the IDHW Strategic Plan FY 2005-2008, Goal 3, to integrate health and human services.

Specifically, BSU and FMRI agreed to provide the following services and deliverables in the first year of the contract.

1. To research recruitment and retention issues faced by rural hospital administrators and rural family medicine physicians in states similar to Idaho and produce a summary of research findings.
2. To use the research findings noted in #1 to develop and implement survey instruments to gather Idaho-specific information about rural family medicine physician recruitment and retention challenges experienced by rural hospital administrators and practicing rural family medicine physicians in Idaho. BSU and FMRI agreed to provide copies of these instruments to the Department of Health and Welfare – Office of Rural Health and Primary Care.
3. To analyze the survey results and to create a written summary of the findings with recommendations.

BSU and FMRI successfully provided these services and deliverables in July 2007. It is particularly noteworthy that the Idaho Academy of Family Physicians and the Idaho Hospital Association worked collaboratively with BSU and FMRI in producing these results. The findings of the first year of the study indicated that Idaho family medicine physicians had a broad scope of practice, used technology to advance clinical and educational goals and were generally satisfied with their rural practice. Idaho rural hospital administrator results produced similar findings regarding scope of work, technology use and satisfaction

patterns. The findings were formally presented to both state and regional groups at several conferences and are expected to be published in various media forms including magazines and peer-reviewed journals.

In November of 2007, BSU entered into a second contract (HC596600) with the Idaho Department of Health and Welfare (IDHW) to conduct a second year of research related to the Idaho family medicine physician rural work force, again in partnership with the Family Medicine Residency of Idaho (FMRI). As in the first year, the general purpose of the contract was twofold: (1) to support the goals and objectives of the State Office of Rural Health grant (CFDA 93.913); and, (2) to support the mission of the State Office of Rural Health and Primary Care to improve access to quality healthcare services for the people of Idaho. This research was also aligned with the IDHW Strategic Plan FY 2005-2008, Goal 3, to integrate health and human services.

Specifically, BSU and FMRI agreed to provide the following services and deliverables in the second year of the contract.

1. To develop an objective measurement tool to assess the characteristics and parameters of rural Idaho communities which are associated with the ability of the community with regard to successful recruitment and retention of a complete medical staff. BSU and FMRI agreed to provide a copy of this instrument to the Department of Health and Welfare – Office of Rural Health and Primary Care.
2. To administer the measurement tool to medical leaders in a structured interview format in selected rural Idaho communities.
3. To analyze the survey results and to create a written summary of the findings with recommendations.

This report serves as the deliverable to the above-referenced BSU and FMRI commitments. Once again, it is particularly noteworthy that the Idaho Hospital Association and the Idaho Academy of Family Physicians collaboratively with BSU and FMRI in producing these results. Appendix A contains the measurement tool, the Community Apgar Questionnaire (CAQ), developed by the research team. Appendix B defines the factors used in the CAQ in layman's terms. The administration of the CAQ in the structured interview format is described in the Methods Section. The Results Section provides summary and comparative data analysis of the CAQ in terms of community characteristics and parameters associated with successful recruitment and retention of a complete medical staff. Finally, the Discussion section establishes a framework to incorporate these findings into actionable knowledge for the State of Idaho.

## **Methods**

### *Human Subjects Review and Approval*

The research methods described in this section as well as the Community Apgar Questionnaire (CAQ) found in Appendix A were reviewed and approved by the Boise State University Human Subjects Institutional Review Board on March 21, 2008. Drs. Baker and Schmitz were identified as the co-principal investigators for the research and were responsible for the conduct of the study.

### *Survey Development*

The CAQ was developed by the researchers based on (1) a literature review conducted during the year one research, (2) site visits to rural communities conducted during year one research and (3) discussions with rural physicians and hospital administrators. The CAQ is constructed of 50 factors which represent specific elements related to physician recruitment and retention in rural areas. These factors were classified into five major classes based on their characteristics. Each class contains ten factors and labeled Geographic, Economic, Scope of Practice, Medical Support and Hospital and Community Support. In addition, there are three open-ended qualitative questions at the end of the instrument.

The CAQ was designed to produce an assessment comparable to the Apgar score which is used in clinical practice to assess infants' medical needs immediately after birth. The neonatal Apgar score is obtained by summing individuals scores assigned to five critical dimensions associated with infant's observed physical conditions. The Community Apgar Score, derived from the CAQ, is similarly constructed from the sum of the scores of the five classes of factors in the CAQ to create a repeatable measure of a community's assets and capabilities. This measure is intended to prognosticate the success of a community in recruiting and retaining rural family medicine physicians. In addition, the CAQ is designed to be used to differentially diagnose a community's relative strengths and challenges in order to prioritize improvement efforts.

### *Selection and Recruitment of Target Populations*

The target communities for the CAQ were selected based on site visits to rural communities conducted during year one research and by discussions with research colleagues at the Idaho Hospital Association, the Idaho Academy of Family Physicians and the Office of Rural Health and Primary Care of the Idaho Department of Health and Welfare. Twelve rural communities containing critical access hospitals were selected from these discussions. The degree of historical success in recruiting and retaining rural family medicine physicians in each community was identified by the researchers prior to the data analysis. Communities with more success in recruiting and retaining rural family medicine physicians were labeled as alpha or "A" communities and those with less success were labeled as beta or "B" communities. These assignments to either alpha or beta community status were based on site visits from year one research, input from research colleagues identified above and by experience in placing family medicine physicians in rural Idaho communities by physician leaders in the Family Medicine Residency of Idaho.

The target population for the CAQ was (1) the hospital administrators for rural hospitals in the selected twelve communities and (2) physician leaders in these communities who had responsibilities for recruitment and retention activities. The physician leaders were selected in consultation with the hospital administrator in the twelve communities. The recruitment of these individuals was done by phone and email by co-principal investigator David Schmitz, MD and was supported by the Idaho Hospital Association. The

recruitment of these individuals was facilitated by presentations of year one research results to various groups of Idaho rural health leaders in 2007.

### *Survey Administration Process*

The hospital administrators and physicians who agreed to participate in the study were mailed the CAQ and a consent form post their agreement to participate in the study. One hour interviews were scheduled for each participant in the rural communities. Hospital administrators and physicians were interviewed separately and in private locations. Prior to the interviews, the consent form was reviewed with and executed by the participants. David Schmitz, MD, reviewed the consent form with participants and conducted the interviews. The CAQ was completed during these interviews.

### *Data Processing, Analysis and Storage*

The completed CAQ's were processed at Boise State University by researchers who entered these data into an SPSS database. The qualitative questions were reviewed by the co-principal investigators and these responses are discussed in the Results Section.

SPSS (Version 15.0) was used for the statistical analysis. Descriptive statistics were used to organize respondent ratings to factors on the CAQ. Numerical scores were constructed to describe sections in the CAQ that address advantages and challenges, importance and Apgar scores. These score constructions are described more fully in the Results Section. Descriptive statistics were employed to organize these results and Mann-Whitney U tests were used for all tests of statistical significance reported in this research. The Mann-Whitney U test is the appropriate statistical test to assess differences in median scores when sample sizes are low. It is a conservative statistical test with less power to detect statistically significant differences than the t-test is. In other words, although the Mann-Whitney test is the appropriate test to use in this situation, it may result in type II errors. That is, it may fail to detect statistically significant differences when they actually exist. Consequently, marginally significant findings (defined as p values greater than 0.05 and less than 0.10) are identified in the Results Section.

These data have been stored in locked files and password protected hard drives at the Center for Health Policy at the College of Health Sciences, Boise State University and the Family Medicine Residency of Idaho. Access to the raw data has been limited to the research investigators.

## Results

The results for this study are organized into six sections. First, general Community Apgar Questionnaire (CAQ) findings are presented. The second section portrays CAQ class and factor findings describing rural community advantages and challenges. Third, rural communities' assessment of the importance of CAQ classes and factors are detailed. Fourth, the Community Apgar Scores are presented by CAQ classes and factors. Fifth, data describing the differential diagnosis capability of the CAQ model are presented. And sixth, the qualitative results from the three open-ended questions of the CAQ are described. The tables and figures supporting these results are found in the Tables and Figures sections of the report.

### General CAQ Findings

The participation rate of the interviews was 91.7% where eleven of the twelve identified rural communities agreed to participate in the study. One community could not participate in the study because of health care leadership transitions but this community did indicate that they would participate at a later date. Eleven critical access hospital administrators and eleven rural physicians who had leadership roles in recruitment and retention participated and completed a CAQ in a structured interview format. The overall responses (N=22) for the CAQ are found in Table 1 while Table 2 and Table 3 provide the CAQ responses by hospital administrators (N=11) and physicians (N=11) respectively. Tables 1-3 provide responses for the 50 factors of the CAQ within the five classes of the instrument.

### CAQ Advantages and Challenges Findings

The qualitative ratings of the CAQ advantages and challenges section were converted to numerical scores based on the following:

Major advantage = +2;  
Minor advantage = +1;  
Minor challenge = -1;  
Major challenge = -2.

Average advantages and challenges scores were calculated for the 50 factors and five classes of the CAQ. The five classes are Geographic, Economic, Scope of Practice, Medical Support and Hospital and Community Support. The average scores for factors within and across each class were rank ordered and statistical tests were conducted to identify differences between hospital administrator and physician scores, as well as between community A and B scores within and across classes. These analyses are discussed below by class and across classes.

#### *Geographic*

Table 4 and Figure 1 and 2 show the advantages and challenges mean scores for the ten factors in the Geographic class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Recreational opportunities were identified as the highest community advantage followed by religious/cultural opportunities and climate. Spousal satisfaction was identified as the greatest community challenge followed by shopping/other services and schools. Three of the ten factors in this class were positive. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that A communities had significantly

higher scores in social networking ratings ( $p=0.02$ ) and marginally significantly higher scores in perception of community ( $p=0.07$ ) and schools ( $p=0.08$ ).

### *Economic*

Table 5 and Figures 3 and 4 show the advantages and challenges mean scores for the ten factors in the Economic class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Income guarantee was identified as the highest community advantage followed by moving allowance, start-up/marketing costs and loan repayment. Part-time opportunities was identified as the greatest community challenge followed by payor mix and signing bonus. Nine of the ten factors in this class were positive. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in income guarantee ( $p=0.05$ ), competition ( $p=0.04$ ) and payor mix ( $p=0.02$ ). No marginally significant differences between community types were observed.

### *Scope of Practice*

Table 6 and Figures 5 and 6 show the advantages and challenges mean scores for the ten factors in the Scope of Practice class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Teaching was identified as the highest community advantage followed by inpatient care and mid-level supervision. C-section was identified as the greatest community challenge followed by mental health and obstetrics. Seven of the ten factors in this class were positive. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in inpatient care ( $p=0.02$ ). No marginally significant differences between community types were observed.

### *Medical Support*

Table 7 and Figures 7 and 8 show the advantages and challenges mean scores for the ten factors in the Medical Support class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Transfer arrangements were identified as the highest community advantage followed by perception of quality and mid-level provider workforce. Allied mental health workforce was identified as the greatest community challenge followed by emergency medical services, specialist availability and call/practice coverage. Nine of the ten factors in this class were positive. There were no significant differences between hospital administrator and physician scores and one marginally significant differences in the nursing workforce factor ( $p=0.08$ ). Comparisons between community types showed that A communities had significantly higher scores in stability of physician workforce ( $p=0.00$ ) and call/practice coverage ( $p=0.02$ ) and marginally significantly higher scores in perception of quality ( $p=0.09$ ) and allied mental health workforce ( $p=0.07$ ).

### *Hospital and Community Support*

Table 8 and Figures 9 and 10 show the advantages and challenges mean scores for the ten factors in the Hospital and Community Support class. Each table/figure also contains p-values for the statistical test across occupation and community types. Community need/support of physician was identified as the highest community advantage followed by internet access and hospital leadership. Electronic medical records were identified as the greatest community challenge followed by hospital sponsored CME and televideo support. Nine of the ten factors in this class were positive. There were no significant differences between hospital

administrator and physician scores and one marginally significant difference in the hospital sponsored CME factor ( $p=0.07$ ) where administrators had higher scores. Comparisons between community types showed that A communities had significantly higher scores in internet access ( $p=0.00$ ) and plans for capital investment ( $p=0.00$ ) and marginally significantly higher scores in physical plant and equipment ( $p=0.06$ ).

### *Advantages and Challenges Findings Across Classes*

Table 9 and Figures 11 and 12 show the advantages and challenges mean scores for the five classes within the CAQ. Each table/figure also contains p-values for the statistical tests across occupation and community types. Class scores were calculated by summing scores across all ten factors in a class. A summary score across classes was constructed by summing the scores across classes in the CAQ. Hospital and Community Support was identified as the highest community advantage followed by Economic, Medical Support, Scope of Practice and Geographic. Four of the five classes in the CAQ were positive. There were no significant or marginally significant differences between hospital administrator and physician scores either within or across classes. Comparisons between community types showed that A communities had significantly higher scores within all classes [Hospital and Community Support ( $p=0.00$ ), Economic ( $p=0.04$ ), Medical Support ( $p=0.00$ ), Scope of Practice ( $p=0.01$ ) and Geographic ( $p=0.03$ )] and across classes ( $p=0.00$ ).

### CAQ Importance Findings

The qualitative ratings of the CAQ importance section were converted to numerical scores based on the following:

Very important = +4;  
Important = +3;  
Unimportant = +2;  
Very unimportant = +1.

Average importance scores were calculated for the 50 factors and five classes of the CAQ. The five classes are Geographic, Economic, Scope of Practice, Medical Support and Hospital and Community Support. The average scores for factors within and across each class were rank ordered and statistical tests were conducted to identify differences between hospital administrator and physician scores and between community A and B scores within and across classes. These analyses are discussed below by class and across classes.

### *Geographic*

Table 10 and Figures 14 and 15 show the importance mean scores for the ten factors in the Geographic class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Spousal satisfaction was identified as the highest area of importance for the community followed by recreational opportunities, schools and the perception of the community. Shopping/other services was identified as the lowest area of importance for the community followed by demographics/patient mix and climate. Comparisons between respondent types showed that hospital administrators had significantly higher importance scores for demographic/patient mix ( $p=0.01$ ). There were no marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed no significant differences and one marginally significant difference in that B communities had higher scores in perception of community ( $p=0.06$ ).

### *Economic*

Table 11 and Figures 16 and 17 show the importance mean scores for the ten factors in the Economic class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Income guarantee was identified as the highest area of importance for the community followed by revenue flow and loan repayment. Start-up/marketing costs were identified as the lowest area of importance for the community followed by part-time opportunities, competition and payor mix. Comparisons between respondent types showed that hospital administrators had significantly higher importance scores for employment status ( $p=0.03$ ) and competition ( $p=0.03$ ). Respondent type comparisons also showed one marginally significant differences in that hospital administrators had higher scores for moving allowance ( $p=0.09$ ). There were no significant or marginally significant differences between A and B community scores.

### *Scope of Practice*

Table 12 and Figures 18 and 19 show the importance mean scores for the ten factors in the Scope of Practice class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Obstetrics was identified as the highest area of importance for the community followed by inpatient care and emergency room coverage. Mid-level supervision was identified as the lowest area of importance for the community followed by nursing home and administration. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that B communities had significantly higher scores for nursing home ( $p=0.05$ ). There were no marginally significant differences between A and B community scores.

### *Medical Support*

Table 13 and Figures 20 and 21 show the importance mean scores for the ten factors in the Medical Support class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Call/practice coverage was identified as the highest area of importance for the community followed by stability of physician workforce and perception of quality. Mid-level provider workforce was identified as the lowest area of importance for the community followed by emergency medical services and ancillary staff workforce. Comparisons between respondent types showed that hospital administrators had significantly higher importance scores for perception of quality ( $p=0.03$ ) and nursing workforce ( $p=0.01$ ). Respondent type comparisons also showed marginally significant differences in that hospital administrators had higher scores for transfer arrangements ( $p=0.07$ ), ancillary staff workforce ( $p=0.06$ ) and emergency medical services ( $p=0.07$ ). There were no significant or marginally significant differences between A and B community scores.

### *Hospital and Community Support*

Table 14 and Figures 22 and 23 show the importance mean scores for the ten factors in the Hospital and Community Support class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Physical plant and equipment was identified as the highest area of importance for the community followed by community need/support of physician, plans for capital investment and internet access. Community volunteer opportunities were identified as the lowest area of importance for the community followed by televideo support and hospital sponsored CME. There were no significant or marginally significant differences between hospital administrator and physician scores. There were no significant or marginally significant differences between A and B community scores.

### *Advantages and Challenges Findings Across Classes*

Table 15 and Figures 24, 25 and 26 show the importance mean scores for the five classes within the CAQ. Each table/figure contains p-values for the statistical tests across occupation and community types. Class scores were calculated by summing scores across all ten factors in a class. A summary score across classes was constructed by summing the scores across classes in the CAQ. Medical Support was identified as the highest area of importance for the community followed by Geographic, Economic, Hospital and Community Support and Scope of Practice. Comparisons between respondent types showed that hospital administrators had significantly higher scores for within classes Medical Support (p=0.01), Geographic (p=0.00) and Economic (p=0.01) and across classes (p=0.03). There were no marginally significant differences between respondent types. There were no significant or marginally significant differences between A and B community scores either within or across classes.

### CAQ Apgar Findings

The numerically converted qualitative ratings of the CAQ advantages/challenges and importance sections were used in the following algorithm:

$(\text{Community advantage/challenge score}) * (\text{community importance score}) = \text{Community Apgar Score}$ .

This algorithm creates a community asset and capability measure derived from a community advantage/challenge score weighted by importance metric.

Average Community Apgar Scores were calculated for the 50 factors and five classes of the CAQ. The five classes are Geographic, Economic, Scope of Practice, Medical Support and Hospital and Community Support. The average Community Apgar Scores for factors within and across each class were rank ordered and statistical tests were conducted to identify differences between hospital administrator and physician scores and between community A and B scores within and across classes. These analyses are discussed below by class and across classes.

### *Geographic*

Table 16 and Figures 27 and 28 show the mean Community Apgar Scores for the ten factors in the Geographic class. Each table/figure also contains the p-values for the statistical tests across occupation and community types. Recreational opportunities were identified as the most significant community asset and capability followed by religious/cultural opportunities and climate. Spousal satisfaction was identified as the least developed community asset and capability followed by shopping/other services and schools. Four of the ten factors in this class were positive. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in perception of community (p=0.03) and social networking (p=0.01). A communities also had marginally significantly higher scores in demographics/patient mix (p=0.09) and schools (p=0.09).

### *Economic*

Table 17 and Figures 29 and 30 show the mean Community Apgar Scores for the ten factors in the Economic class. Each table/figure contains p-values for the statistical tests across occupation and community types.

Income guarantee was identified as the most significant community asset and capability followed by loan repayment, revenue flow and moving allowance. Part-time opportunities were identified as the least developed community asset and capability followed by payor mix and signing bonus. Nine of the ten factors in this class were positive. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in income guarantee ( $p=0.03$ ), competition ( $p=0.04$ ) and payor mix ( $p=0.02$ ). A communities also had marginally significantly higher scores in revenue flow ( $p=0.09$ ), moving allowance ( $p=0.09$ ) and signing bonus ( $p=0.08$ ).

### *Scope of Practice*

Table 18 and Figures 31 and 32 show the mean Community Apgar Scores for the ten factors in the Scope of Practice class. Each table/figure contains p-values for the statistical tests across occupation and community types. Inpatient care was identified as the most significant community asset and capability followed by teaching and emergency room coverage. C-section was identified as the least developed community asset and capability followed by mental health and obstetrics. Seven of the ten factors in this class were positive. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in inpatient care ( $p=0.01$ ). There were no marginally significant differences between A and B community scores.

### *Medical Support*

Table 19 and Figures 33 and 34 show the mean Community Apgar Scores for the ten factors in the Medical Support class. Each table/figure contains p-values for the statistical tests across occupation and community types. Transfer arrangements were identified as the most significant community asset and capability followed by perception of quality and mid-level provider workforce. Allied mental health workforce was identified as the least developed community asset and capability followed by emergency medical services and specialist availability. Nine of the ten factors in this class were positive. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in stability of physician workforce ( $p=0.00$ ), call/practice coverage ( $p=0.02$ ) and allied mental health workforce ( $p=0.03$ ). A communities also had marginally significantly higher scores in perception of quality ( $p=0.06$ ) and specialist availability ( $p=0.09$ ).

### *Hospital and Community Support*

Table 20 and Figures 35 and 36 show the mean Community Apgar Scores for the ten factors in the Hospital and Community Support class. Each table/figure contains p-values for the statistical tests across occupation and community types. Community need/support of physician was identified as the most significant community asset and capability followed by internet access and hospital leadership. Electronic medical records were identified as the least developed community asset and capability followed by hospital sponsored CME and televideo support. Nine of the ten factors in this class were positive. There were no significant or marginally significant differences between hospital administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in internet access ( $p=0.00$ ), plans for capital investment ( $p=0.01$ ) and physical plant and equipment ( $p=0.02$ ). A communities also had marginally significantly higher scores in demographics/patient mix ( $p=0.09$ ) and schools ( $p=0.09$ ). There were no marginally significant differences between A and B community scores.

### *Advantages and Challenges Findings Across Classes*

Table 21 and Figures 37, 38 and 39 show the mean Community Apgar Scores for the five classes within the CAQ. Each table/figure contains p-values for the statistical tests across occupation and community types. Class scores were calculated by summing scores across all ten factors in a class. A summary score across classes was constructed by summing the scores across classes in the CAQ. Hospital and Community Support was identified as the most significant community asset and capability followed by Economic, Medical Support, Scope of Practice and Geographic. Four of the five classes in the CAQ were positive. There were no significant or marginally significant differences between hospital administrator and physician scores either within or across classes. Comparisons between community types showed that A communities had significantly higher scores within all classes [Hospital and Community Support (p=0.00), Economic (p=0.03), Medical Support (p=0.00), Scope of Practice (p=0.04) and Geographic (p=0.02)] and across classes (p=0.00).

### CAQ Differential Diagnosis Capabilities

As stated in the Methods section, the CAQ was designed to produce a score comparable to the Apgar score which is used in clinical practice to assess infants' medical needs immediately after birth. The infant Apgar score is obtained by summing individuals scores assigned to five critical dimensions associated with infant's observed physical conditions. The Community Apgar Score, derived from the CAQ, is similarly constructed from the sum of the scores of the five classes in the CAQ to create a measure of a community's assets and capabilities. This measure is intended to predict the success of a community in recruiting and retaining rural family medicine physicians. In addition, the CAQ is designed to be used to differentially diagnose a community's relative strengths and challenges in order to prioritize improvement efforts.

Table 21 and Figures 37, 38 and 39 show that the CAQ appears to differentiate between A and B communities both within classes and across classes. There are statistically significant differences within all classes and across classes where A communities score higher on mean Community Apgar Scores. These statistical differences are not found by respondent type within any class or across classes. This suggests that significant mean score differences between community types are not influenced by differences in community Apgar ratings for hospital administrators or physicians.

Table 22 and Figure 40 illustrates how the CAQ may be able to differentiate A and B community types when total Community Apgar Scores are summed across respondent type classes. Hospital administrator and physicians Apgar scores are added together to produce a cumulative Apgar score. This cumulative Apgar score appears to discriminate between A and B communities.

The CAQ seems to be useful in differential diagnosis of a community's relative strengths and challenges. Figures 41, 42 and 43 portray community five cumulative Community Apgar Scores. Figure 41 highlights that Geographic and Medical Support class cumulative Community Apgar Scores for community five may be areas of concern. Figures 42 and 43 provide a drill down on the 10 factors for the Geographic and Medical Support classes. With this level of comparative analysis, rural communities may be able to target specific factors for improvement with limited resources and to identify areas of relative strength for marketing purposes.

## Qualitative Results

The CAQ contains three open-ended questions. These questions are listed below and a summary of respondent answers are provided for each question.

1. What are the greatest barriers to recruitment and retention of family medicine physicians?

Spousal satisfaction was the most important barrier reported. The reasons for spousal dissatisfaction ranged from lack of adequate employment opportunities, which was most frequently mentioned, to distance from cultural opportunities. A demanding scope of practice and the number of work hours was cited as important as was challenges in adequate reimbursement for the overall amount of work. Challenges in physical plant and equipment were again recognized as important.

2. What can be done to overcome these barriers?

Rural Training Tracks and other rural physician training experiences prior to recruiting were seen as potential solutions to these workforce challenges. Respondents felt that this would impact preparedness both socially and with regard to training for rural practice. Physicians “working to be a part of the community” was seen as important to social integration and recruitment/retention success. Physician collegiality and organization between physicians was seen as important. Improvement in physical plant and equipment was suggested as key in conjunction with support of community and political leaders.

3. What reasons has a successful physician candidate given for not accepting a position in the community? What did that person ultimately do instead (if you know)?

Lack of social acceptance and a feeling of “fitting in” seemed linked to the failure of the retention of previously recruited physicians. This frequently involved the socialization of the spouse as well. Most often, the departing physician and spouse relocated to a less rural environment.

## **Discussion**

The Discussion section is divided into six areas. First, the research limitations of this study are identified. The second area describes the survey administrative process. The third area addresses community advantages and challenges findings. The fourth area describes community importance findings. The fifth area addresses Community Apgar Score findings. The sixth area describes the utility of the Community Apgar Questionnaire (CAQ) as a tool to differentially diagnosis rural communities' assets and capabilities related to recruitment and retention of family medicine physicians.

### Research Limitations

The primary limitation of the research is the small number of communities (N=11) and CAQ respondents (N=22) which agreed to participate in the study. The communities and respondents that participated in the research may not represent the entire eligible respondent classes and thus may limit the ability to generalize the findings to other rural communities. The researchers did attempt to select communities that represented the Idaho family of critical access hospitals across various dimensions including geographic region of the state.

A second limitation of the research is that small sample sizes and the use of the Mann-Whitney U statistical test limited statistical power to detect differences between groups. Increasing sample sizes and employing statistical tests with more power (e.g., t-test) in these comparisons would enhance the probability of detecting statistically significant differences between groups, if such differences actually exist.

A third possible limitation of the research is that because CAQ factors were limited to fifty, other factors may exist that also impact physician workforce. This limitation was accounted for by asking open-ended questions to give each respondent the opportunity to identify any significant missing parameters and discuss these. Notably, these discussions most often identified factors already contained within the CAQ. Examples included spousal satisfaction, scope of practice and work hours, physical plant and social opportunities.

### The CAQ Administrative Process

The CAQ was administered by a family physician with rural practice and physician recruiting experience. This allowed for an interview style similar to a candidate physician employment interview during which factors could be discussed in a natural manner. This also allowed for consistent clarification of questions on the CAQ when needed. Respondents relied on their self-assessments and knowledge, including previous and current recruitment and medical staff workforce experiences.

### Community Advantages and Challenges Scores

In these eleven communities results regarding self-perception of advantages and challenges identified recreational opportunities as the highest community advantage with spousal satisfaction identified as the greatest challenge. For each community, there were no significant differences between hospital administrator and physician responses, demonstrating internal consistency in the identification of advantages and challenges for each community. Differences in scores were seen between communities which correlated to the historical recruitment trends identified as alpha or beta. The results therefore suggest that the CAQ consistently both quantifies self-report of community assets and capabilities and additionally correlates to historical experience in workforce trends for a particular community. This conclusion is further validated by

the self-reported factor “stability of physician workforce” which was significantly different between the alpha and beta communities. It is logical that beta group communities were also noted to have significant challenges with call/practice coverage.

Overall, obstetrics, C-sections and mental health provision of care by physicians were each seen as challenges to recruitment while inpatient medicine, emergency room coverage, and teaching were seen as advantageous. Respondents explained that emergency room coverage as an option allowed for physician opportunity to generate more income and that some physicians found emergency room work stimulating while others did not. Required emergency room work was seen as a potential disadvantage because of the number of requisite work hours and on call hours this service represented. Obstetrics and C-section provision of services were seen as challenging because of the skill set required and physician lifestyle impact both for work hours and on call duty hours. It was also mentioned that physicians with these skills would not be easily recruited to a community that did not utilize this particular scope of practice. Mental health provision of care was seen almost universally as a challenge, regardless of the community and practice setting. Availability of ancillary mental health workforce then was seen as a key factor in relieving this stress. Teaching was seen as an advantage because physicians enjoyed the experience and felt teaching improved their own knowledge. Community need and support of the physician was scored high while electronic medical records were most often seen as a challenge, generally due to lack of funding and/or infrastructure. The overall greatest scores occurred in the areas of recreational opportunities, income guarantee which had been recognized previously as key to recruitment and therefore already in place, and community need and support of the physician. The overall lowest scores for the most important challenges included spousal satisfaction which was most commonly identified as the single most significant barrier and C-section services provision for the reasons stated above.

The responses to the open-ended questions generally confirmed the responses to the questionnaire and often provided historical examples in physician recruitment, retention, or loss further validating the quantitative method of the CAQ. The most frequently mentioned factor in the failure of recruitment or retention of rural family physicians was lack of spousal satisfaction.

### Community Importance Scores

Within the Geographic class, spousal satisfaction was rated as the highest area of importance and was the most frequently mentioned greatest barrier in the opened-ended responses as well. During the interviews, respondents reiterated frequently that lack of spousal satisfaction was most often the “deal breaker” whether prior to recruitment or in the decision for an otherwise retained physician to leave practice in their rural community. This was followed by recreational opportunities, schools, and perception of the community. Some physician families had utilized home schooling programs in communities facing perceived school challenges. Perception of the community was important in recruiting but not as significant in retention. Among Economic factors, income guarantee was rated to have the highest importance, followed by revenue flow and loan repayment. Within the Scope of Practice class, obstetrics was identified as most important followed by inpatient care and emergency room coverage. Respondents reported that offering obstetrics was important to physicians wishing to utilize this aspect of their scope of practice and similarly with inpatient care. Emergency room coverage was felt to be important in a similar manner for some while seen as a source of income generation that was important to supplement the other physician scope of practice areas. For Medical Support, call/practice coverage followed by stability of physician workforce and perception of quality were identified as most important. Respondents reported that regardless of the size of the medical staff and general work hour requirements, time off and practice coverage were key issues in both recruitment and retention. Stability of physician workforce and perception of quality of care were both seen as important

to recruiting and as significant indicators regarding the existing medical staff environment. Regarding Hospital and Community Support, physical plant and equipment was identified as the highest area of importance, followed by community need/support of physician, plans for capital investment and internet access. Respondents explained that the physical plant had an impact on the perception and practicalities of delivering care to patients as well as the impression made upon a physician applicant. Community need for an additional physician and the sense of community support for physicians were regularly recognized as very important to recruitment regardless of the community's current assessment of their success in doing so.

Differences in importance ratings occurred between administrators and physicians but only rarely between community types. Thus, whether these parameters were seen as an advantage or disadvantage in recruitment to any particular community, their relative importance in recruitment was consistently recognized. Differences did occur between the perceptions of administrators and physicians however and reveal differing priorities between certain factors in the recruitment decision. For example, hospital administrators had higher scores for demographic/patient mix, employment status, competition, perception of quality, and nursing workforce. Physician respondents generally dismissed any importance of patient ages or other demographics amongst the patients being seen. Employment status and concerns surrounding competition between primary care providers were seen as less important, perhaps as physicians felt more secure in the financial position of their practice than did the administrator respondents putting themselves in the role of a potential physician applicant. The difference in the importance of perception of quality may be attributable to physicians similarly being more secure in this factor or could be due to physician underestimation of existing quality issues. Nursing workforce issues seemed less of a concern to physicians as physician respondents frequently implied that they could "make do" if nursing workforce issues became a problem.

Administrators overall scored the importance ratings higher than physicians and by class scored Medical Support, Geographic and Economic factors higher than physicians in importance. No such difference was demonstrated in the classes of Hospital and Community Support and Scope of Practice. Medical Support class differences may be explained by administrator respondents being the manager of much of the resources in the medical support class. Economic class factors as a class generally involve contract or "offer" construction and negotiation which is likewise managed by the hospital administrator in most cases. Regarding Geographic, it may be that physician respondents have a higher degree of self-selection for rating these factors as less important.

### Community Apgar Scores

The overall rank ordering of classes determined as advantages in these Idaho communities was as follows: Hospital and Community Support; Economic; Medical Support; Scope of Practice and Geographic. Only Geographic class factors overall scored as a disadvantage to recruitment. Each class was significantly different with regard to advantage or disadvantage scores between alpha and beta communities as well as the summary score of all classes. There were no significant differences between administrators and physicians in the scoring of these classes.

There are statistically significant differences within all classes and across classes where alpha communities score higher on mean Community Apgar Scores. These statistical differences are not found by respondent type within any class or across classes. This suggests that significant mean score differences between community types are not influenced by differences in community Apgar ratings for hospital administrators or physicians. As for cumulative Community Apgar Scores, each alpha community assessment scored a higher cumulative Community Apgar Score than each beta community. Within each class however, scores of alpha communities were occasionally lower than those of some beta communities. This data supports the validity

of the CAQ while recognizing that in various communities, successful recruiting and retention may be in the face of specific disadvantages. An example of this phenomenon would include an increasing Economic class score as incentives for recruitment are implemented in response to lower scores for stability of physician workforce and call/practice coverage disadvantages in recruitment.

The results suggest that the CAQ consistently both quantifies self-report of community assets and capabilities and furthermore correlates to historical experience in workforce trends for a particular community. Again, this conclusion is further validated by the self-reported factor “stability of physician workforce” which was significantly different between the alpha and beta community assignments. As stated above, it is logical that these same communities were also noted to have significant challenges with call/practice coverage. Interestingly, allied mental health workforce was uniquely a challenge in beta communities while nursing and other ancillary hospital staff were not significantly different between alpha and beta communities. This is particularly important given the reporting of provision of mental health services by the physician as a recognized challenge in rural Idaho practice environments. Alpha communities were more likely than beta communities to have higher Community Apgar Scores for income guarantee, payor mix, and competition factors. There was no such significant difference seen for loan repayment. This may be because loan repayment availability is usually inversely correlated to the physician workforce in a community, an example being the scoring system of the National Health Service Corps program. Scores for social networking and perception of community were significantly lower in beta communities than alpha communities while recreational opportunities and access to a larger community were not significantly different. Alpha communities scored inpatient care as a greater advantage to recruitment while all other scope of practice factors were not significantly different between alpha and beta communities. Understanding that alpha communities also reported to have greater resources with regard to physical plant and may have greater staffing resources may explain the differentiation in the inpatient care score between the two community groups. Alpha communities also scored significantly higher for factors of physical plant and equipment, plans for capital investment and internet access.

### CAQ Utility as a Differential Diagnosis Tool

The CAQ seems to not only discriminate between communities with greater assets and capabilities and those with lesser assets and capabilities but also seems to accurately correlate to historical community-specific workforce trends. This assessment allows for identification of both modifiable and non-modifiable factors and also may suggest which factors are most important for a community to address with limited available resources.

Therefore, the CAQ may be used by communities to assess their relative strengths and weaknesses, the relative importance of CAQ factors, and to gain a better understanding of which CAQ factors are seen as most important from the physician point-of-view. The CAQ may have a role in a community’s self-evaluation, prioritization of improvement plans, advertising considerations and negotiation strategy for successful recruitment and retention of family medicine physicians in their rural Idaho community. Should communities choose to collaborate, this tool could also be used to share successful strategies communities have used to overcome disadvantages which may be difficult or impossible to modify. The CAQ could also be used to track a community’s progress over time, similar to the clinical use of Apgar scores in newborns, as this instrument is designed to be a real-time assessment tool providing guidance for the most helpful interventions at the present. An example of such utilization of the CAQ can be hypothesized for community five, illustrated as follows.

Community five has historically experienced challenges in recruitment and retention of physicians. The cumulative Community Apgar Score for community five was 53. This score, although positive unlike the other cumulative Community Apgar Scores for beta communities, is lower than the average Community Apgar Score for the eleven communities in this study. The classes rated as most challenging were Geographic and Medical Support. The Economic class was scored higher than the mean for all communities and represents the efforts and economic incentives being utilized to overcome recruitment disadvantages in the other areas. Within the Geographic class, recreational opportunities was an advantage while social networking, perception of the community, patient mix and demographics were seen as the greatest disadvantages to recruitment. Factors from the Medical Support class seen as challenges included stability of the physician work force, specialist availability, call/practice coverage, and allied mental health workforce. Nursing workforce was seen as a distinct advantage.

Community five may benefit from the information provided on the CAQ by gaining a better inventory of factors important in the recruitment of physicians relative to their peers and to strategize plans for improvement, advertising and negotiation with prospective physician recruits. Discussing these findings with physicians involved in the recruiting process may also help to share ways in which successfully retained physicians have superseded the recognized challenges. Offsets for non-modifiable parameters could be developed in relation to their importance. The most significant factors that can be changed could be addressed directly.

Identifying the root cause(s) for the physician stability problem seems to be key for this community. It also appears this may be linked to practice/call coverage and mental health and other specialty support, both which can contribute to lower physician retention. Creative solutions for social networking and community perception may be as simple as finding out a physician's social interests and encouraging these or as complex as referring community-wide issues to local government or philanthropic agencies. The overall general recognition of the importance and promotion of key recruitment advantages including recreational opportunities, income guarantee and community support would also be relevant. Overall, the interview and recruitment process will emphasize the all-important factor of spousal satisfaction. Finally, CAQ results are best interpreted by the participants and serve as a tool to illuminate and illustrate self-perceived assessments relative to their peer communities, interestingly enough, who are often recruiting too.

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Table 1  
Overall Distribution of Survey Responses [N=22]

Class/Factors	Level of Advantages and Challenges				Level of Importance			
	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Geographic</b>								
access to larger community	4 (18%)	5 (23%)	9 (41%)	4 (18%)	5 (23%)	16 (73%)	1 (5%)	0 (0%)
demographics/patient mix	2 (9%)	8 (36%)	11 (50%)	1 (5%)	2 (9%)	14 (64%)	6 (27%)	0 (0%)
social networking	1 (5%)	7 (32%)	9 (41%)	5 (23%)	6 (27%)	13 (59%)	3 (14%)	0 (0%)
recreational opportunities	16 (73%)	6 (27%)	0 (0%)	0 (0%)	15 (68%)	7 (32%)	0 (0%)	0 (0%)
spousal satisfaction	1 (5%)	3 (14%)	8 (36%)	10 (45%)	20 (91%)	2 (9%)	0 (0%)	0 (0%)
schools	3 (14%)	4 (18%)	7 (32%)	8 (36%)	13 (59%)	8 (36%)	1 (5%)	0 (0%)
shopping and other services	1 (5%)	3 (14%)	14 (64%)	4 (18%)	1 (5%)	16 (73%)	5 (23%)	0 (0%)
religious/cultural opportunities	5 (23%)	8 (36%)	7 (32%)	2 (9%)	2 (9%)	18 (82%)	2 (9%)	0 (0%)
climate	2 (9%)	10 (45%)	9 (41%)	1 (5%)	2 (9%)	16 (73%)	4 (18%)	0 (0%)
perception of community	1 (5%)	7 (32%)	11 (50%)	3 (14%)	10 (45%)	11 (50%)	1 (5%)	0 (0%)
<b>Economic</b>								
employment status	4 (18%)	11 (50%)	6 (27%)	1 (5%)	5 (23%)	15 (68%)	2 (9%)	0 (0%)
part-time opportunities	2 (9%)	6 (27%)	6 (27%)	8 (36%)	2 (9%)	14 (64%)	6 (27%)	0 (0%)
loan repayment	9 (41%)	7 (32%)	3 (14%)	3 (14%)	13 (59%)	9 (41%)	0 (0%)	0 (0%)
income guarantee	11 (50%)	7 (32%)	3 (14%)	1 (5%)	16 (73%)	6 (27%)	0 (0%)	0 (0%)
signing bonus	4 (18%)	9 (41%)	5 (23%)	4 (18%)	7 (32%)	13 (59%)	2 (9%)	0 (0%)
moving allowance	6 (27%)	10 (45%)	6 (27%)	0 (0%)	10 (45%)	10 (45%)	2 (9%)	0 (0%)
start-up/marketing costs	4 (18%)	13 (59%)	5 (23%)	0 (0%)	3 (14%)	11 (50%)	8 (36%)	0 (0%)
revenue flow	7 (32%)	8 (36%)	7 (32%)	0 (0%)	15 (68%)	7 (32%)	0 (0%)	0 (0%)
payor mix	3 (14%)	8 (36%)	9 (41%)	2 (9%)	4 (18%)	13 (59%)	5 (23%)	0 (0%)
competition	4 (18%)	11 (50%)	5 (23%)	2 (9%)	5 (23%)	10 (45%)	7 (32%)	0 (0%)
<b>Scope of Practice</b>								
obstetrics	2 (9%)	8 (36%)	7 (32%)	5 (23%)	12 (55%)	9 (41%)	1 (5%)	0 (0%)
C-section	2 (9%)	5 (23%)	4 (18%)	11 (50%)	4 (18%)	16 (73%)	2 (9%)	0 (0%)
emergency room coverage	6 (27%)	10 (45%)	5 (23%)	1 (5%)	7 (32%)	14 (64%)	1 (5%)	0 (0%)
endoscopy/surgery	2 (9%)	12 (55%)	4 (18%)	4 (18%)	3 (14%)	13 (59%)	5 (23%)	1 (5%)
nursing home	2 (9%)	16 (73%)	3 (14%)	1 (5%)	1 (5%)	9 (41%)	11 (50%)	1 (5%)
inpatient care	4 (18%)	14 (64%)	4 (18%)	0 (0%)	8 (36%)	14 (64%)	0 (0%)	0 (0%)
mental health	0 (0%)	7 (32%)	8 (36%)	7 (32%)	1 (5%)	13 (59%)	8 (36%)	0 (0%)
mid-level supervision	1 (5%)	18 (82%)	3 (14%)	0 (0%)	0 (0%)	8 (36%)	14 (64%)	0 (0%)
teaching	4 (18%)	15 (68%)	3 (14%)	0 (0%)	4 (18%)	10 (45%)	8 (36%)	0 (0%)
administration	3 (14%)	13 (59%)	6 (27%)	0 (0%)	2 (9%)	11 (50%)	7 (32%)	2 (9%)

Table 1 (Cont.)  
Overall Distribution of Survey Responses [N=22]

Class/Factors	Level of Advantages and Challenges				Level of Importance			
	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Medical Support</b>								
perception of quality	5 (23%)	12 (55%)	5 (23%)	0 (0%)	14 (64%)	8 (36%)	0 (0%)	0 (0%)
stability of physician workforce	9 (41%)	5 (23%)	5 (23%)	3 (14%)	15 (68%)	7 (32%)	0 (0%)	0 (0%)
specialist availability	3 (14%)	10 (45%)	9 (41%)	0 (0%)	7 (32%)	14 (64%)	1 (5%)	0 (0%)
transfer arrangements	6 (27%)	12 (55%)	4 (18%)	0 (0%)	10 (45%)	9 (41%)	2 (9%)	1 (5%)
nursing workforce	5 (23%)	9 (41%)	7 (32%)	1 (5%)	11 (50%)	9 (41%)	2 (9%)	0 (0%)
allied mental health workforce	3 (14%)	4 (18%)	12 (55%)	3 (14%)	2 (9%)	18 (82%)	2 (9%)	0 (0%)
mid-level provider workforce	2 (9%)	16 (73%)	4 (18%)	0 (0%)	2 (9%)	14 (64%)	6 (27%)	0 (0%)
ancillary staff workforce	3 (14%)	13 (59%)	5 (23%)	1 (5%)	5 (23%)	11 (50%)	5 (23%)	1 (5%)
emergency medical services	1 (5%)	14 (64%)	5 (23%)	2 (9%)	6 (27%)	9 (41%)	6 (27%)	1 (5%)
call/practice coverage	7 (32%)	6 (27%)	5 (23%)	4 (18%)	17 (77%)	5 (23%)	0 (0%)	0 (0%)
<b>Hospital and Community Support</b>								
physical plant and equipment	10 (45%)	4 (18%)	1 (5%)	7 (32%)	16 (73%)	5 (23%)	1 (5%)	0 (0%)
plans for capital investment	8 (36%)	10 (45%)	2 (9%)	2 (9%)	13 (59%)	6 (27%)	2 (9%)	1 (5%)
electronic medical records	3 (14%)	4 (18%)	8 (36%)	7 (32%)	6 (27%)	16 (73%)	0 (0%)	0 (0%)
hospital leadership	6 (27%)	15 (68%)	1 (5%)	0 (0%)	8 (36%)	12 (55%)	1 (5%)	1 (5%)
internet access	9 (41%)	11 (50%)	2 (9%)	0 (0%)	9 (41%)	13 (59%)	0 (0%)	0 (0%)
televideo support	2 (9%)	11 (50%)	9 (41%)	0 (0%)	1 (5%)	11 (50%)	10 (45%)	0 (0%)
hospital sponsored CME	3 (14%)	8 (36%)	8 (36%)	3 (14%)	2 (9%)	12 (55%)	8 (36%)	0 (0%)
community need/support of physician	10 (45%)	10 (45%)	2 (9%)	0 (0%)	14 (64%)	8 (36%)	0 (0%)	0 (0%)
community volunteer opportunities	5 (23%)	16 (73%)	1 (5%)	0 (0%)	1 (5%)	9 (41%)	12 (55%)	0 (0%)
welcome and recruitment program	7 (32%)	8 (36%)	7 (32%)	0 (0%)	6 (27%)	15 (68%)	1 (5%)	0 (0%)

Table 2  
Hospital Administrator Distribution of Survey Responses [N=11]

Class/Factors	Level of Advantages/Challenges				Level of Importance			
	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Geographic</b>								
access to larger community	2 (18%)	3 (27%)	5 (45%)	1 (9%)	2 (18%)	9 (82%)	0 (0%)	0 (0%)
demographics/patient mix	1 (9%)	5 (45%)	4 (36%)	1 (9%)	2 (18%)	9 (82%)	0 (0%)	0 (0%)
social networking	1 (9%)	4 (36%)	5 (45%)	1 (9%)	5 (45%)	5 (45%)	1 (9%)	0 (0%)
recreational opportunities	9 (82%)	2 (18%)	0 (0%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)	0 (0%)
spousal satisfaction	0 (0%)	3 (27%)	2 (18%)	6 (55%)	11 (100%)	0 (0%)	0 (0%)	0 (0%)
schools	2 (18%)	1 (9%)	4 (36%)	4 (36%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
shopping and other services	1 (9%)	2 (18%)	7 (64%)	1 (9%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
religious/cultural opportunities	3 (27%)	5 (45%)	2 (18%)	1 (9%)	1 (9%)	9 (82%)	1 (9%)	0 (0%)
climate	1 (9%)	4 (36%)	5 (45%)	1 (9%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)
perception of community	1 (9%)	3 (27%)	6 (55%)	1 (9%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
<b>Economic</b>								
employment status	2 (18%)	6 (55%)	2 (18%)	1 (9%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
part-time opportunities	1 (9%)	4 (36%)	2 (18%)	4 (36%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)
loan repayment	5 (45%)	2 (18%)	2 (18%)	2 (18%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
income guarantee	5 (45%)	3 (27%)	2 (18%)	1 (9%)	9 (82%)	2 (18%)	0 (0%)	0 (0%)
signing bonus	3 (27%)	4 (36%)	2 (18%)	2 (18%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
moving allowance	3 (27%)	4 (36%)	4 (36%)	0 (0%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
start-up/marketing costs	3 (27%)	6 (55%)	2 (18%)	0 (0%)	2 (18%)	5 (45%)	4 (36%)	0 (0%)
revenue flow	4 (36%)	3 (27%)	4 (36%)	0 (0%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
payor mix	0 (0%)	6 (55%)	4 (36%)	1 (9%)	2 (18%)	6 (55%)	3 (27%)	0 (0%)
competition	2 (18%)	4 (36%)	3 (27%)	2 (18%)	4 (36%)	6 (55%)	1 (9%)	0 (0%)
<b>Scope of Practice</b>								
obstetrics	0 (0%)	5 (45%)	4 (36%)	2 (18%)	4 (36%)	7 (64%)	0 (0%)	0 (0%)
C-section	0 (0%)	3 (27%)	3 (27%)	5 (45%)	2 (18%)	8 (73%)	1 (9%)	0 (0%)
emergency room coverage	3 (27%)	4 (36%)	3 (27%)	1 (9%)	3 (27%)	7 (64%)	1 (9%)	0 (0%)
endoscopy/surgery	0 (0%)	7 (64%)	2 (18%)	2 (18%)	1 (9%)	6 (55%)	4 (36%)	0 (0%)
nursing home	1 (9%)	8 (73%)	1 (9%)	1 (9%)	1 (9%)	4 (36%)	5 (45%)	1 (9%)
inpatient care	1 (9%)	8 (73%)	2 (18%)	0 (0%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
mental health	0 (0%)	3 (27%)	5 (45%)	3 (27%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)
mid-level supervision	1 (9%)	7 (64%)	3 (27%)	0 (0%)	0 (0%)	4 (36%)	7 (64%)	0 (0%)
teaching	3 (27%)	6 (55%)	2 (18%)	0 (0%)	2 (18%)	3 (27%)	6 (55%)	0 (0%)
administration	2 (18%)	7 (64%)	2 (18%)	0 (0%)	1 (9%)	7 (64%)	3 (27%)	0 (0%)

Table 2 (Cont.)  
Hospital Administrator Distribution of Survey Responses [N=11]

Class/Factors	Level of Advantages/Challenges				Level of Importance			
	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Medical Support</b>								
perception of quality	2 (18%)	6 (55%)	3 (27%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)	0 (0%)
stability of physician workforce	6 (55%)	1 (9%)	2 (18%)	2 (18%)	9 (82%)	2 (18%)	0 (0%)	0 (0%)
specialist availability	0 (0%)	7 (64%)	4 (36%)	0 (0%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
transfer arrangements	3 (27%)	7 (64%)	1 (9%)	0 (0%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
nursing workforce	5 (45%)	3 (27%)	3 (27%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)	0 (0%)
allied mental health workforce	2 (18%)	2 (18%)	6 (55%)	1 (9%)	2 (18%)	8 (73%)	1 (9%)	0 (0%)
mid-level provider workforce	1 (9%)	7 (64%)	3 (27%)	0 (0%)	1 (9%)	8 (73%)	2 (18%)	0 (0%)
ancillary staff workforce	2 (18%)	6 (55%)	2 (18%)	1 (9%)	5 (45%)	4 (36%)	2 (18%)	0 (0%)
emergency medical services	0 (0%)	7 (64%)	2 (18%)	2 (18%)	5 (45%)	4 (36%)	2 (18%)	0 (0%)
call/practice coverage	4 (36%)	2 (18%)	3 (27%)	2 (18%)	9 (82%)	2 (18%)	0 (0%)	0 (0%)
<b>Hospital and Community Support</b>								
physical plant and equipment	6 (55%)	2 (18%)	0 (0%)	3 (27%)	9 (82%)	1 (9%)	1 (9%)	0 (0%)
plans for capital investment	4 (36%)	4 (36%)	2 (18%)	1 (9%)	7 (64%)	3 (27%)	1 (9%)	0 (0%)
electronic medical records	1 (9%)	3 (27%)	5 (45%)	2 (18%)	4 (36%)	7 (64%)	0 (0%)	0 (0%)
hospital leadership	2 (18%)	8 (73%)	1 (9%)	0 (0%)	5 (45%)	5 (45%)	1 (9%)	0 (0%)
internet access	4 (36%)	7 (64%)	0 (0%)	0 (0%)	4 (36%)	7 (64%)	0 (0%)	0 (0%)
televideo support	2 (18%)	5 (45%)	4 (36%)	0 (0%)	1 (9%)	7 (64%)	3 (27%)	0 (0%)
hospital sponsored CME	3 (27%)	4 (36%)	4 (36%)	0 (0%)	2 (18%)	6 (55%)	3 (27%)	0 (0%)
community need/support of physician	5 (45%)	5 (45%)	1 (9%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)	0 (0%)
community volunteer opportunities	2 (18%)	9 (82%)	0 (0%)	0 (0%)	0 (0%)	3 (27%)	8 (73%)	0 (0%)
welcome and recruitment program	4 (36%)	3 (27%)	4 (36%)	0 (0%)	5 (45%)	5 (45%)	1 (9%)	0 (0%)

Table 3  
Physician Distribution of Survey Responses [N=11]

Class/Factors	Level of Advantages/Challenges				Level of Importance			
	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Geographic</b>								
access to larger community	2 (18%)	2 (18%)	4 (36%)	3 (27%)	3 (27%)	7 (64%)	1 (9%)	0 (0%)
demographics/patient mix	1 (9%)	3 (27%)	7 (64%)	0 (0%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)
social networking	0 (0%)	3 (27%)	4 (36%)	4 (36%)	1 (9%)	8 (73%)	2 (18%)	0 (0%)
recreational opportunities	7 (64%)	4 (36%)	0 (0%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)
spousal satisfaction	1 (9%)	0 (0%)	6 (55%)	4 (36%)	9 (82%)	2 (18%)	0 (0%)	0 (0%)
schools	1 (9%)	3 (27%)	3 (27%)	4 (36%)	6 (55%)	4 (36%)	1 (9%)	0 (0%)
shopping and other services	0 (0%)	1 (9%)	7 (64%)	3 (27%)	1 (9%)	6 (55%)	4 (36%)	0 (0%)
religious/cultural opportunities	2 (18%)	3 (27%)	5 (45%)	1 (9%)	1 (9%)	9 (82%)	1 (9%)	0 (0%)
climate	1 (9%)	6 (55%)	4 (36%)	0 (0%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)
perception of community	0 (0%)	4 (36%)	5 (45%)	2 (18%)	3 (27%)	7 (64%)	1 (9%)	0 (0%)
<b>Economic</b>								
employment status	2 (18%)	5 (45%)	4 (36%)	0 (0%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)
part-time opportunities	1 (9%)	2 (18%)	4 (36%)	4 (36%)	0 (0%)	7 (64%)	4 (36%)	0 (0%)
loan repayment	4 (36%)	5 (45%)	1 (9%)	1 (9%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
income guarantee	6 (55%)	4 (36%)	1 (9%)	0 (0%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
signing bonus	1 (9%)	5 (45%)	3 (27%)	2 (18%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)
moving allowance	3 (27%)	6 (55%)	2 (18%)	0 (0%)	3 (27%)	6 (55%)	2 (18%)	0 (0%)
start-up/marketing costs	1 (9%)	7 (64%)	3 (27%)	0 (0%)	1 (9%)	6 (55%)	4 (36%)	0 (0%)
revenue flow	3 (27%)	5 (45%)	3 (27%)	0 (0%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
payor mix	3 (27%)	2 (18%)	5 (45%)	1 (9%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)
competition	2 (18%)	7 (64%)	2 (18%)	0 (0%)	1 (9%)	4 (36%)	6 (55%)	0 (0%)
<b>Scope of Practice</b>								
obstetrics	2 (18%)	3 (27%)	3 (27%)	3 (27%)	8 (73%)	2 (18%)	1 (9%)	0 (0%)
C-section	2 (18%)	2 (18%)	2 (18%)	5 (45%)	2 (18%)	8 (73%)	1 (9%)	0 (0%)
emergency room coverage	3 (27%)	6 (55%)	2 (18%)	0 (0%)	4 (36%)	7 (64%)	0 (0%)	0 (0%)
endoscopy/surgery	2 (18%)	5 (45%)	2 (18%)	2 (18%)	2 (18%)	7 (64%)	1 (9%)	1 (9%)
nursing home	1 (9%)	8 (73%)	2 (18%)	0 (0%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)
inpatient care	3 (27%)	6 (55%)	2 (18%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
mental health	0 (0%)	4 (36%)	3 (27%)	4 (36%)	1 (9%)	7 (64%)	3 (27%)	0 (0%)
mid-level supervision	0 (0%)	11 (100%)	0 (0%)	0 (0%)	0 (0%)	4 (36%)	7 (64%)	0 (0%)
teaching	1 (9%)	9 (82%)	1 (9%)	0 (0%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)
administration	1 (9%)	6 (55%)	4 (36%)	0 (0%)	1 (9%)	4 (36%)	4 (36%)	2 (18%)

Table 3 (Cont.)  
Physician Distribution of Survey Responses [N=11]

Class/Factors	Level of Advantages/Challenges				Level of Importance			
	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Medical Support</b>								
perception of quality	3 (27%)	6 (55%)	2 (18%)	0 (0%)	4 (36%)	7 (64%)	0 (0%)	0 (0%)
stability of physician workforce	3 (27%)	4 (36%)	3 (27%)	1 (9%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)
specialist availability	3 (27%)	3 (27%)	5 (45%)	0 (0%)	4 (36%)	6 (55%)	1 (9%)	0 (0%)
transfer arrangements	3 (27%)	5 (45%)	3 (27%)	0 (0%)	3 (27%)	5 (45%)	2 (18%)	1 (9%)
nursing workforce	0 (0%)	6 (55%)	4 (36%)	1 (9%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)
allied mental health workforce	1 (9%)	2 (18%)	6 (55%)	2 (18%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
mid-level provider workforce	1 (9%)	9 (82%)	1 (9%)	0 (0%)	1 (9%)	6 (55%)	4 (36%)	0 (0%)
ancillary staff workforce	1 (9%)	7 (64%)	3 (27%)	0 (0%)	0 (0%)	7 (64%)	3 (27%)	1 (9%)
emergency medical services	1 (9%)	7 (64%)	3 (27%)	0 (0%)	1 (9%)	5 (45%)	4 (36%)	1 (9%)
call/practice coverage	3 (27%)	4 (36%)	2 (18%)	2 (18%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
<b>Hospital and Community Support</b>								
physical plant and equipment	4 (36%)	2 (18%)	1 (9%)	4 (36%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
plans for capital investment	4 (36%)	6 (55%)	0 (0%)	1 (9%)	6 (55%)	3 (27%)	1 (9%)	1 (9%)
electronic medical records	2 (18%)	1 (9%)	3 (27%)	5 (45%)	2 (18%)	9 (82%)	0 (0%)	0 (0%)
hospital leadership	4 (36%)	7 (64%)	0 (0%)	0 (0%)	3 (27%)	7 (64%)	0 (0%)	1 (9%)
internet access	5 (45%)	4 (36%)	2 (18%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
televideo support	0 (0%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)	4 (36%)	7 (64%)	0 (0%)
hospital sponsored CME	0 (0%)	4 (36%)	4 (36%)	3 (27%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)
community need/support of physician	5 (45%)	5 (45%)	1 (9%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
community volunteer opportunities	3 (27%)	7 (64%)	1 (9%)	0 (0%)	1 (9%)	6 (55%)	4 (36%)	0 (0%)
welcome and recruitment program	3 (27%)	5 (45%)	3 (27%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)

Table 4  
Geographic Class Community Advantages and Challenges Mean Scores  
Rank Ordered by Overall Score

Geographic Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
recreational opportunities	1.73	1.82	1.64	0.48	1.83	1.60	0.38
religious/cultural opportunities	0.32	0.64	0.00	0.37	0.50	0.10	0.42
climate	0.14	-0.09	0.36	0.44	0.08	0.20	0.87
demographics/patient mix	-0.05	0.09	-0.18	0.70	0.33	-0.50	0.14
access to larger community	-0.18	0.00	-0.36	0.52	-0.17	-0.20	0.97
perception of community	-0.36	-0.27	-0.45	0.75	0.08	-0.90	0.07
social networking	-0.45	-0.09	-0.82	0.19	0.25	-1.30	0.02*
schools	-0.59	-0.64	-0.55	0.95	0.00	-1.30	0.08
shopping and other services	-0.77	-0.45	-1.09	0.24	-0.67	-0.90	0.97
spousal satisfaction	-1.05	-1.00	-1.09	0.80	-0.58	-1.60	0.12

(1) Higher scores indicate greater community advantage.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 5  
Economic Class Community Advantages and Challenges Mean Scores  
Rank Ordered by Overall Score

Economic Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
income guarantee	1.09	0.82	1.36	0.52	1.67	0.40	0.05*
moving allowance	0.73	0.55	0.91	0.61	1.08	0.30	0.12
start-up/marketing costs	0.73	0.91	0.55	0.40	0.83	0.60	0.42
loan repayment	0.73	0.55	0.91	0.90	0.67	0.80	0.67
revenue flow	0.68	0.64	0.73	1.00	1.00	0.30	0.14
employment status	0.50	0.55	0.45	0.90	0.75	0.20	0.35
competition	0.45	0.09	0.82	0.33	1.00	-0.20	0.04*
signing bonus	0.18	0.36	0.00	0.52	0.75	-0.50	0.11
payor mix	0.05	0.00	0.09	0.80	0.67	-0.70	0.02*
part-time opportunities	-0.55	-0.36	-0.73	0.70	-0.17	-1.00	0.23

(1) Higher scores indicate greater community advantage.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 6  
Scope of Practice Class Community Advantages and Challenges Mean Scores  
Rank Ordered by Overall Score

Scope of Practice Factors	Overall (1)	Administrator	Physician	p-value (2)	A Community	B Community	p-value (3)
	Score [N=22]	Score [N=11]	Score [N=11]		Score [N=12]	Score [N=10]	
teaching	0.91	0.91	0.91	0.75	1.17	0.60	0.42
inpatient care	0.82	0.73	0.91	0.56	1.33	0.20	0.02*
mid-level supervision	0.77	0.55	1.00	0.48	1.08	0.40	0.16
emergency room coverage	0.68	0.45	0.91	0.56	0.42	1.00	0.28
nursing home	0.68	0.64	0.73	0.95	0.83	0.50	0.54
administration	0.59	0.82	0.36	0.40	0.92	0.20	0.14
endoscopy/surgery	0.18	0.09	0.27	0.65	0.33	0.00	0.54
obstetrics	-0.23	-0.27	-0.18	0.90	-0.08	-0.40	0.67
mental health	-0.68	-0.73	-0.64	1.00	-0.33	-1.10	0.14
C-section	-0.77	-1.00	-0.55	0.56	-0.58	-0.90	0.63

(1) Higher scores indicate greater community advantage.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 7  
 Medical Support Class Community Advantages and Challenges Mean Scores  
 Rank Ordered by Overall Score

Medical Support Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
transfer arrangements	0.91	1.09	0.73	0.61	0.83	1.00	0.54
perception of quality	0.77	0.64	0.91	0.61	1.08	0.40	0.09
mid-level provider workforce	0.73	0.55	0.91	0.52	1.08	0.30	0.18
stability of physician workforce	0.55	0.64	0.45	0.61	1.75	-0.90	0.00**
ancillary staff workforce	0.55	0.55	0.55	0.90	0.75	0.30	0.35
nursing workforce	0.45	0.91	0.00	0.08	0.58	0.30	0.67
call/practice coverage	0.32	0.27	0.36	1.00	1.08	-0.60	0.02*
specialist availability	0.32	0.27	0.36	0.75	0.67	-0.10	0.18
emergency medical services	0.32	0.09	0.55	0.44	0.42	0.20	0.82
allied mental health workforce	-0.36	-0.18	-0.55	0.56	0.25	-1.10	0.07

(1) Higher scores indicate greater community advantage.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 8  
Hospital and Community Support Class Community Advantages and Challenges Mean Scores  
Rank Ordered by Overall Score

Hospital and Community Support Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
community need/support of physician	1.27	1.27	1.27	1.00	1.58	0.90	0.16
internet access	1.23	1.36	1.09	0.95	1.75	0.60	0.00**
hospital leadership	1.18	1.00	1.36	0.37	1.42	0.90	0.14
community volunteer opportunities	1.14	1.18	1.09	0.95	1.08	1.20	0.97
plans for capital investment	0.91	0.73	1.09	0.70	1.67	0.00	0.00**
welcome and recruitment program	0.68	0.64	0.73	1.00	0.75	0.60	0.63
physical plant and equipment	0.41	0.73	0.09	0.48	1.00	-0.30	0.06
televideo support	0.27	0.45	0.09	0.48	0.42	0.10	0.58
hospital sponsored CME	0.00	0.55	-0.55	0.07	0.08	-0.10	0.72
electronic medical records	-0.55	-0.36	-0.73	0.44	0.00	-1.20	0.12

(1) Higher scores indicate greater community advantage.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 9  
Class Community Advantages and Challenges Mean Scores  
Rank Ordered by Summary Score

Survey Classes	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
Hospital and Community Support	6.55	7.55	5.55	0.33	9.75	2.70	0.00**
Economic	4.59	4.09	5.09	1.00	8.25	0.20	0.04*
Medical Support	4.55	4.82	4.27	0.80	8.50	-0.20	0.00**
Scope of Practice	2.95	2.18	3.73	0.48	5.08	0.50	0.01**
Geographic	-1.27	0.00	-2.55	0.52	1.67	-4.80	0.03*
Summary Score Across Classes	17.41	18.64	16.09	0.65	33.25	-1.60	0.00**

(1) Higher scores indicate greater community advantage.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 10  
Geographic Class Community Importance Mean Scores  
Rank Ordered by Overall Score

Geographic Factors	Overall (1)	Administrator	Physician	p-value (2)	A Community	B Community	p-value (3)
	Score [N=22]	Score [N=11]	Score [N=11]		Score [N=12]	Score [N=10]	
spousal satisfaction	3.91	4.00	3.82	0.48	3.92	3.90	0.97
recreational opportunities	3.68	3.82	3.55	0.30	3.75	3.60	0.58
schools	3.55	3.64	3.45	0.65	3.50	3.60	0.87
perception of community	3.41	3.64	3.18	0.12	3.17	3.70	0.06
access to larger community	3.18	3.18	3.18	0.95	3.17	3.20	0.97
social networking	3.14	3.36	2.91	0.13	3.08	3.20	0.72
religious/cultural opportunities	3.00	3.00	3.00	1.00	2.92	3.10	0.54
climate	2.91	3.00	2.82	0.56	2.92	2.90	0.97
demographics/patient mix	2.82	3.18	2.45	0.01**	2.83	2.80	0.92
shopping and other services	2.82	2.91	2.73	0.48	2.83	2.80	0.97

(1) Higher scores indicate greater community importance.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 11  
Economic Class Community Importance Mean Scores  
Rank Ordered by Overall Score

Economic Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
income guarantee	3.73	3.82	3.64	0.48	3.83	3.60	0.38
revenue flow	3.68	3.73	3.64	0.75	3.75	3.60	0.58
loan repayment	3.59	3.73	3.45	0.30	3.67	3.50	0.54
moving allowance	3.36	3.64	3.09	0.09	3.50	3.20	0.31
signing bonus	3.23	3.45	3.00	0.15	3.42	3.00	0.20
employment status	3.14	3.45	2.82	0.03*	3.08	3.20	0.77
payor mix	2.95	2.91	3.00	0.80	3.00	2.90	0.77
competition	2.91	3.27	2.55	0.03*	2.75	3.10	0.31
part-time opportunities	2.82	3.00	2.64	0.24	2.83	2.80	0.92
start-up/marketing costs	2.77	2.82	2.73	0.85	2.83	2.70	0.72

(1) Higher scores indicate greater community importance.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 12  
Scope of Practice Class Community Importance Mean Scores  
Rank Ordered by Overall Score

Scope of Practice Factors	Overall (1)	Administrator	Physician	p-value (2)	A Community	B Community	p-value (3)
	Score [N=22]	Score [N=11]	Score [N=11]		Score [N=12]	Score [N=10]	
obstetrics	3.50	3.36	3.64	0.24	3.67	3.30	0.25
inpatient care	3.36	3.27	3.45	0.48	3.42	3.30	0.67
emergency room coverage	3.27	3.18	3.36	0.56	3.33	3.20	0.72
C-section	3.09	3.09	3.09	1.00	3.08	3.10	0.92
teaching	2.82	2.64	3.00	0.24	2.92	2.70	0.50
endoscopy/surgery	2.82	2.73	2.91	0.48	2.92	2.70	0.63
mental health	2.68	2.55	2.82	0.37	2.50	2.90	0.18
administration	2.59	2.82	2.36	0.24	2.42	2.80	0.35
nursing home	2.45	2.45	2.45	1.00	2.17	2.80	0.05*
mid-level supervision	2.36	2.36	2.36	1.00	2.17	2.60	0.09

(1) Higher scores indicate greater community importance.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 13  
 Medical Support Class Community Importance Mean Scores  
 Rank Ordered by Overall Score

Medical Support Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
call/practice coverage	3.77	3.82	3.73	0.75	3.75	3.80	0.87
stability of physician workforce	3.68	3.82	3.55	0.30	3.50	3.90	0.12
perception of quality	3.64	3.91	3.36	0.03*	3.58	3.70	0.67
nursing workforce	3.41	3.82	3.00	0.01**	3.25	3.60	0.35
transfer arrangements	3.27	3.64	2.91	0.07	3.00	3.60	0.16
specialist availability	3.27	3.27	3.27	0.95	3.25	3.30	0.92
allied mental health workforce	3.00	3.09	2.91	0.52	2.92	3.10	0.54
ancillary staff workforce	2.91	3.27	2.55	0.06	2.92	2.90	0.87
emergency medical services	2.91	3.27	2.55	0.07	2.67	3.20	0.20
mid-level provider workforce	2.82	2.91	2.73	0.52	2.75	2.90	0.72

(1) Higher scores indicate greater community importance.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 14  
Hospital and Community Support Class Community Importance Mean Scores  
Rank Ordered by Overall Score

Hospital and Community Support Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
physical plant and equipment	3.68	3.73	3.64	0.56	3.75	3.60	0.77
community need/support of physician	3.64	3.82	3.45	0.15	3.58	3.70	0.67
plans for capital investment	3.41	3.55	3.27	0.65	3.33	3.50	0.87
internet access	3.41	3.36	3.45	0.75	3.42	3.40	0.97
electronic medical records	3.27	3.36	3.18	0.48	3.33	3.20	0.63
hospital leadership	3.23	3.36	3.09	0.52	3.00	3.50	0.20
welcome and recruitment program	3.23	3.36	3.09	0.27	3.33	3.10	0.46
hospital sponsored CME	2.73	2.91	2.55	0.27	2.58	2.90	0.28
televideo support	2.59	2.82	2.36	0.12	2.50	2.70	0.58
community volunteer opportunities	2.50	2.27	2.73	0.13	2.50	2.50	0.87

(1) Higher scores indicate greater community importance.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 15  
Class Community Importance Mean Scores  
Rank Ordered by Summary Score

Survey Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
Medical Support	32.68	34.82	30.55	0.01**	31.58	34.00	0.18
Geographic	32.41	33.73	31.09	0.00**	32.08	32.80	0.50
Economic	32.18	33.82	30.55	0.01**	32.67	31.60	0.42
Hospital and Community Support	31.68	32.55	30.82	0.37	31.33	32.10	0.50
Scope of Practice	28.95	28.45	29.45	0.56	28.58	29.40	0.67
Summary Score Across Classes	157.91	163.36	152.45	0.03**	156.25	159.90	0.58

(1) Higher scores indicate greater community importance.

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 16  
Geographic Class Community Apgar Mean Scores  
Rank Ordered by Overall Score

Geographic Factors	Overall (1)	Administrator	Physician	p-value (2)	A Community	B Community	p-value (3)
	Score [N=22]	Score [N=11]	Score [N=11]		Score [N=12]	Score [N=10]	
recreational opportunities	6.41	6.91	5.91	0.30	7.00	5.70	0.14
religious/cultural opportunities	0.82	1.91	-0.27	0.27	1.42	0.10	0.50
climate	0.18	-0.55	0.91	0.48	0.00	0.40	0.54
demographics/patient mix	0.00	0.36	-0.36	0.90	1.25	-1.50	0.09
access to larger community	-0.23	0.27	-0.73	0.52	0.17	-0.70	0.97
perception of community	-1.23	-1.18	-1.27	0.75	0.42	-3.20	0.03*
social networking	-1.36	-0.45	-2.27	0.37	1.00	-4.20	0.01**
schools	-2.18	-2.18	-2.18	0.95	-0.08	-4.70	0.09
shopping and other services	-2.23	-1.27	-3.18	0.30	-2.08	-2.40	0.82
spousal satisfaction	-4.00	-4.00	-4.00	0.52	-2.17	-6.20	0.11

(1) Higher scores indicate greater community assets and capabilities

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 17  
Economic Class Community Apgar Mean Scores  
Rank Ordered by Overall Score

Economic Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
income guarantee	4.14	3.27	5.00	0.75	6.42	1.40	0.03*
loan repayment	2.82	2.55	3.09	0.70	2.42	3.30	0.63
revenue flow	2.73	2.64	2.82	1.00	4.00	1.20	0.09
moving allowance	2.59	2.00	3.18	0.65	3.92	1.00	0.09
start-up/marketing costs	2.09	2.55	1.64	0.40	2.58	1.50	0.42
employment status	1.55	1.73	1.36	0.61	2.42	0.50	0.42
competition	1.18	0.27	2.09	0.44	3.00	-1.00	0.04*
signing bonus	0.95	1.45	0.45	0.56	2.83	-1.30	0.08
payor mix	0.27	-0.18	0.73	0.56	2.25	-2.10	0.02*
part-time opportunities	-1.55	-1.09	-2.00	0.80	-0.25	-3.10	0.14

(1) Higher scores indicate greater community assets and capabilities

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 18  
Scope of Practice Class Community Apgar Mean Scores  
Rank Ordered by Overall Score

Scope of Practice Factors	Overall (1)	Administrator	Physician	p-value (2)	A Community	B Community	p-value (3)
	Score [N=22]	Score [N=11]	Score [N=11]		Score [N=12]	Score [N=10]	
inpatient care	2.82	2.36	3.27	0.15	4.58	0.70	0.01**
teaching	2.64	2.73	2.55	1.00	3.50	1.60	0.31
emergency room coverage	2.23	1.27	3.18	0.24	1.58	3.00	0.38
nursing home	1.77	1.73	1.82	0.70	1.83	1.70	0.54
administration	1.73	2.18	1.27	0.24	2.67	0.60	0.20
mid-level supervision	1.64	0.91	2.36	0.22	2.33	0.80	0.46
endoscopy/surgery	0.68	0.18	1.18	0.48	1.25	0.00	0.54
obstetrics	-0.82	-1.18	-0.45	0.75	-0.25	-1.50	0.67
mental health	-1.95	-2.18	-1.73	0.70	-1.17	-2.90	0.25
C-section	-2.68	-3.45	-1.91	0.52	-1.92	-3.30	0.46

(1) Higher scores indicate greater community assets and capabilities

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 19  
 Medical Support Class Community Apgar Mean Scores  
 Rank Ordered by Overall Score

Medical Support Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
transfer arrangements	3.00	4.18	1.82	0.17	2.50	3.60	0.23
perception of quality	2.86	2.45	3.27	0.95	4.17	1.30	0.06
mid-level provider workforce	2.23	1.73	2.73	1.00	3.00	1.30	0.42
stability of physician workforce	1.82	2.18	1.45	0.56	6.25	-3.50	0.00**
ancillary staff workforce	1.59	1.82	1.36	0.56	2.50	0.50	0.28
nursing workforce	1.55	3.36	-0.27	0.08	2.08	0.90	0.72
call/practice coverage	1.32	1.00	1.64	0.95	4.25	-2.20	0.02*
specialist availability	1.23	0.91	1.55	0.65	2.58	-0.40	0.09
emergency medical services	0.91	0.36	1.45	0.85	1.17	0.60	0.67
allied mental health workforce	-1.05	-0.55	-1.55	0.85	0.92	-3.40	0.03*

(1) Higher scores indicate greater community assets and capabilities

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 20  
Hospital and Community Support Class Community Apgar Mean Scores  
Rank Ordered by Overall Score

Hospital and Community Support Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
community need/support of physician	4.73	4.82	4.64	0.65	5.75	3.50	0.28
internet access	4.23	4.55	3.91	0.90	6.08	2.00	0.00**
hospital leadership	3.73	3.27	4.18	0.85	4.25	3.10	0.82
plans for capital investment	3.27	2.82	3.73	0.75	5.83	0.20	0.01**
community volunteer opportunities	2.95	2.64	3.27	0.48	2.83	3.10	0.87
welcome and recruitment program	2.23	2.09	2.36	0.90	2.58	1.80	0.50
physical plant and equipment	1.59	2.55	0.64	0.61	4.08	-1.40	0.02*
televideo support	0.55	1.09	0.00	0.24	0.83	0.20	0.67
hospital sponsored CME	0.23	1.55	-1.09	0.19	0.83	-0.50	0.54
electronic medical records	-1.82	-1.45	-2.18	0.65	0.00	-4.00	0.14

(1) Higher scores indicate greater community assets and capabilities

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 21  
Class Community Apgar Mean Scores  
Rank Ordered by Overall Score

Survey Classes	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=12]	B Community Score [N=10]	p-value (3)
Hospital and Community Support	21.68	23.91	19.45	0.44	33.08	8.00	0.00**
Economic	16.77	15.18	18.36	0.90	29.58	1.40	0.03*
Medical Support	15.45	17.45	13.45	0.56	29.42	-1.30	0.00**
Scope of Practice	8.05	4.55	11.55	0.24	14.42	0.70	0.04*
Geographic	-3.82	-0.18	-7.45	0.75	6.92	-16.70	0.02*
Overall Apgar	58.27	61.18	55.36	0.75	113.42	-7.90	0.00**

(1) Higher scores indicate greater community assets and capabilities

(2) Mann Whitney U statistical test employed to test for differences between administrator and physician scores.

(3) Mann Whitney U statistical test employed to test for differences between A and B community scores.

\* Statistically significant at  $p \leq 0.05$

\*\* Statistically significant at  $p \leq 0.01$

Table 22  
 Cumulative Community Apgar Score by Hospital  
 Rank Ordered by Overall Cumulative Apgar Score

Hospital Code	Hospital Category	Overall Apgar (1) Score [N=22]	Survey Classes				
			Geographic	Economic	Scope of Practice	Medical Support	Hospital and Community Support
3	A	340	70	52	45	75	98
6	A	230	21	99	42	48	20
11	A	219	30	10	16	88	75
9	A	199	-49	67	30	76	75
8	A	195	33	40	15	37	70
4	A	175	-22	87	22	29	59
5	B	53	-37	68	18	-16	20
1	B	-3	-5	8	-4	3	-5
7	B	-30	-55	46	8	-21	-8
2	B	-40	-41	-64	-1	24	42
10	B	-59	-29	-44	-14	-3	31
Mean		116	-8	34	16	31	43

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- Figure 2: Geographic Class Community Advantages/Challenges Mean Score: A Community vs. B Community
- Figure 3: Economic Class Community Advantages/Challenges Mean Score: Administrator vs. Physician
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- Figure 5: Scope of Practice Class Community Advantages/Challenges Mean Score: Administrator vs. Physician
- Figure 6: Scope of Practice Class Community Advantages/Challenges Mean Score: A Community vs. B Community
- Figure 7: Medical Support Class Community Advantages/Challenges Mean Score: Administrator vs. Physician
- Figure 8: Medical Support Class Community Advantages/Challenges Mean Score: A Community vs. B Community
- Figure 9: Hospital and Community Support Class Community Advantages/Challenges Mean Score: Administrator vs. Physician
- Figure 10: Hospital and Community Support Class Community Advantages/Challenges Mean Score: A Community vs. B Community
- Figure 11: Class Community Advantages and Challenges Mean Score: Administrator vs. Physician
- Figure 12: Class Community Advantages and Challenges Mean Score: A Community vs. B Community
- Figure 13: Summary Class Community Advantages and Challenges Mean Scores: Overall by Respondent and Community Type

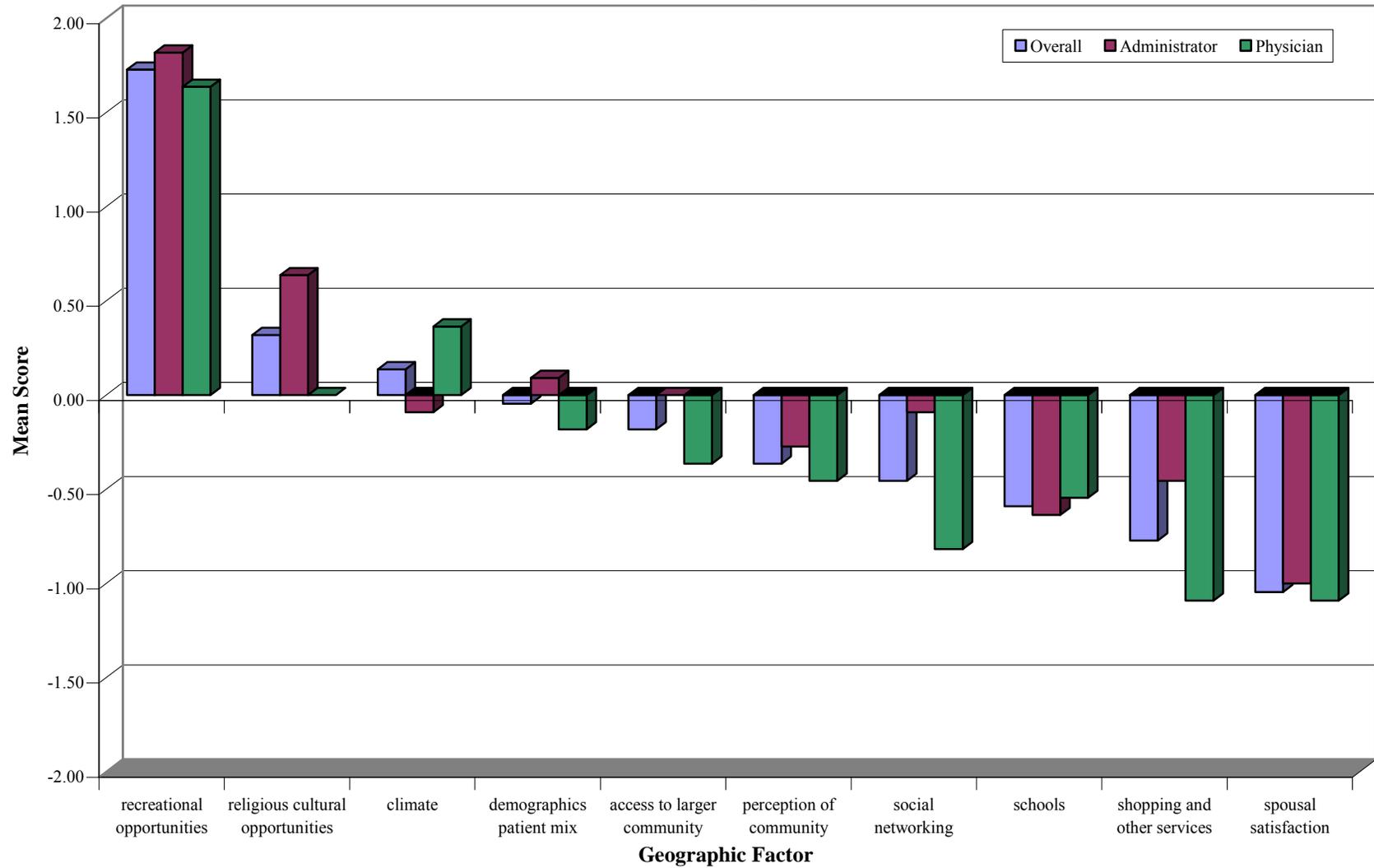
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- Figure 15: Geographic Class Community Importance Mean Score: A Community vs. B Community
- Figure 16: Economic Class Community Importance Mean Score: Administrator vs. Physician
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- Figure 31: Scope of Practice Class Community Apgar Mean Score: Administrator vs. Physician
- Figure 32: Scope of Practice Class Community Apgar Mean Score: A Community vs. B Community

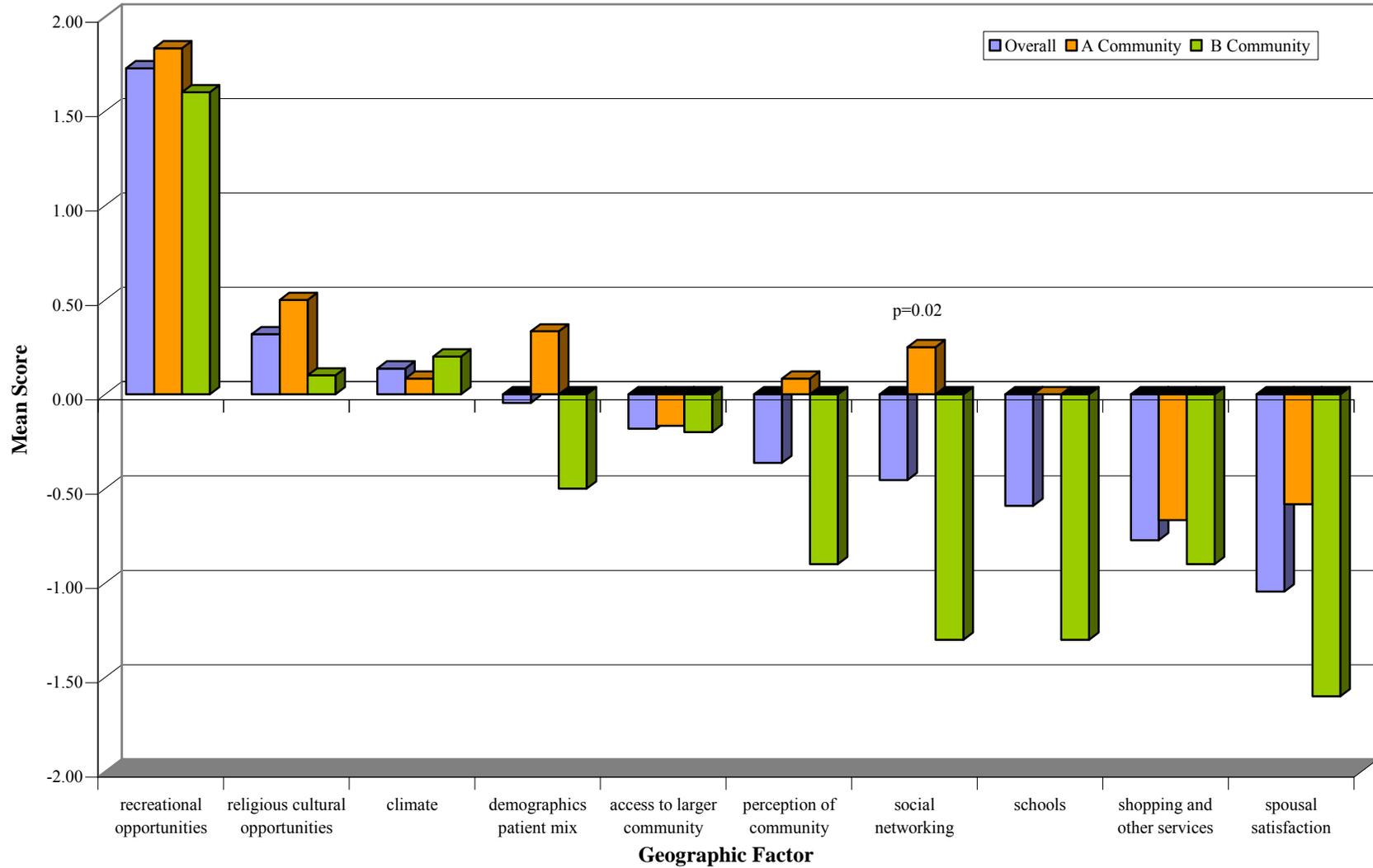
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- Figure 34: Medical Support Class Community Apgar Mean Score: A Community vs. B Community
- Figure 35: Hospital and Community Support Class Community Apgar Mean Score: Administrator vs. Physician
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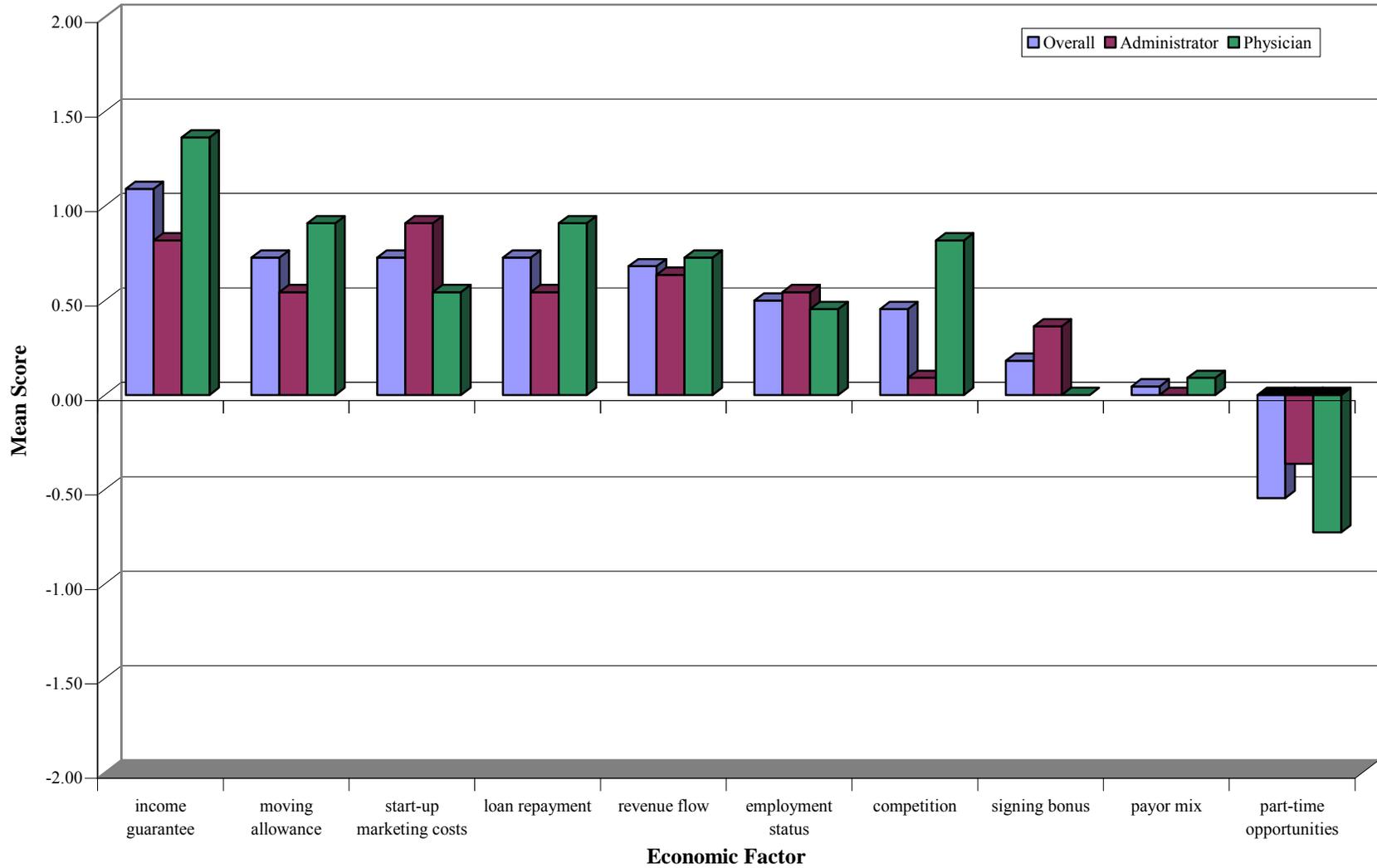
**Figure 1**  
**Geographic Class Community Advantages/Challenges Mean Score**  
**Administrator vs. Physician**



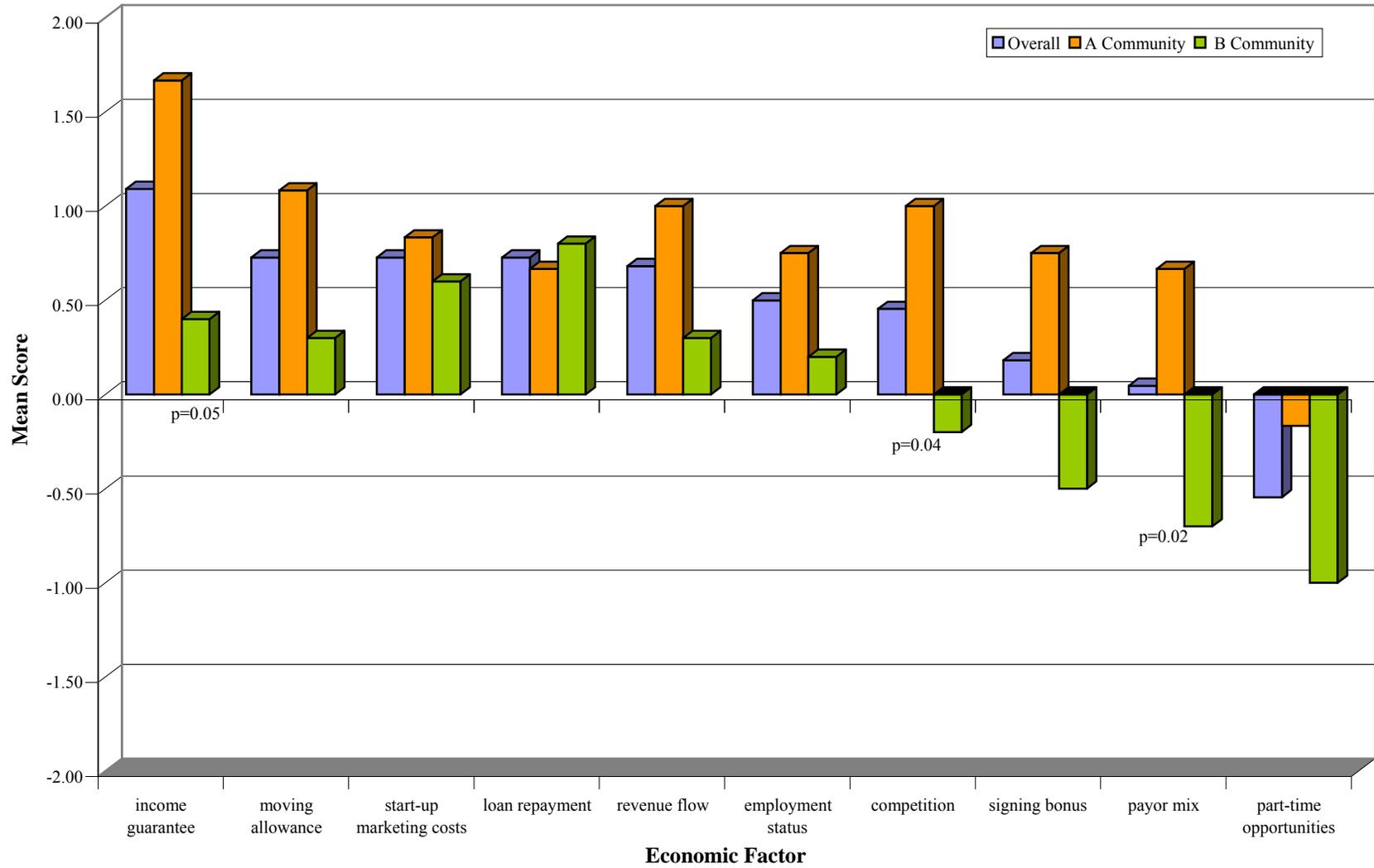
**Figure 2**  
**Geographic Class Community Advantages/Challenges Mean Score**  
**A Community vs. B Community**



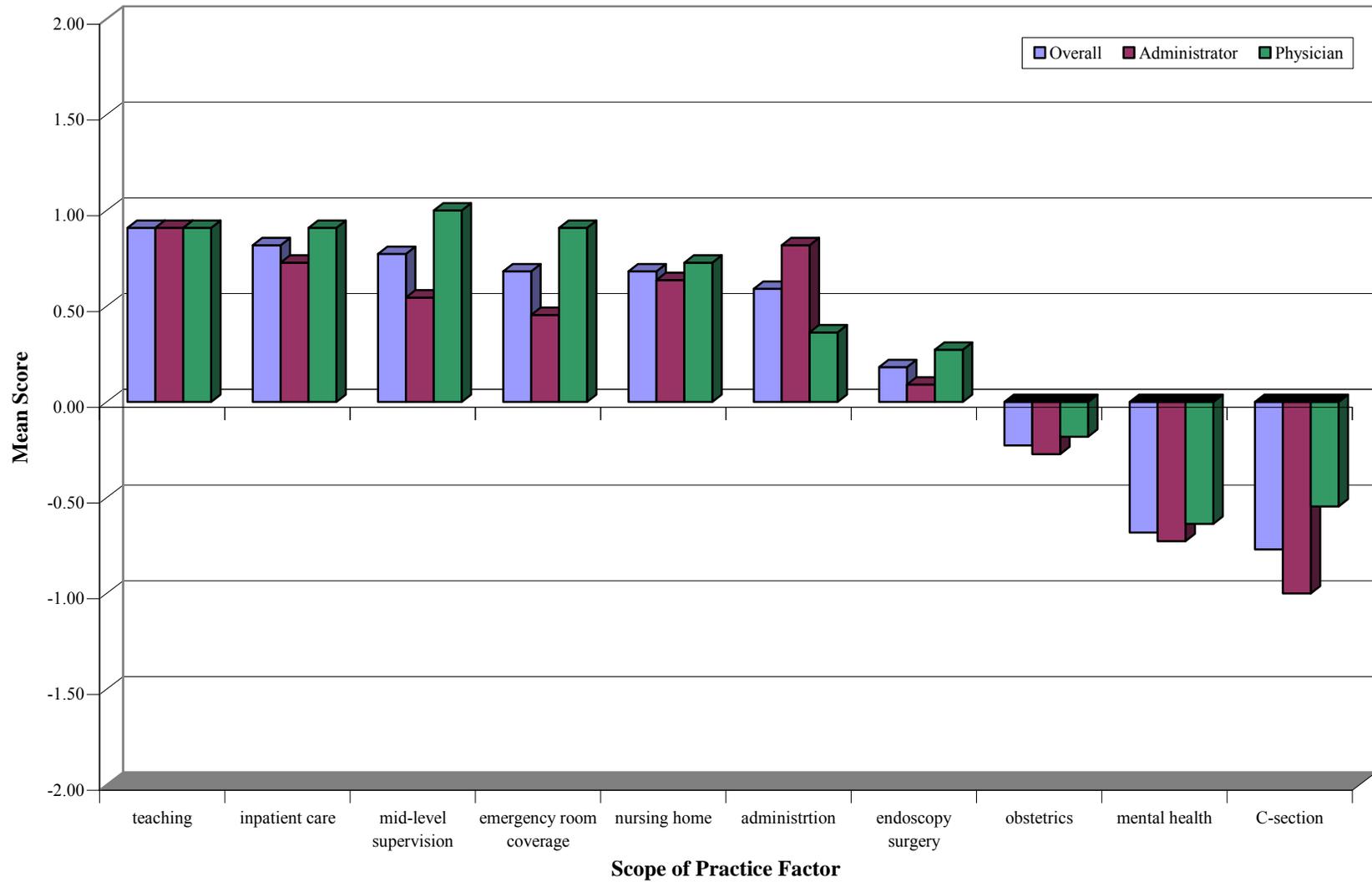
**Figure 3**  
**Economic Class Community Advantages and Challenges Mean Score**  
**Administrator vs. Physician**



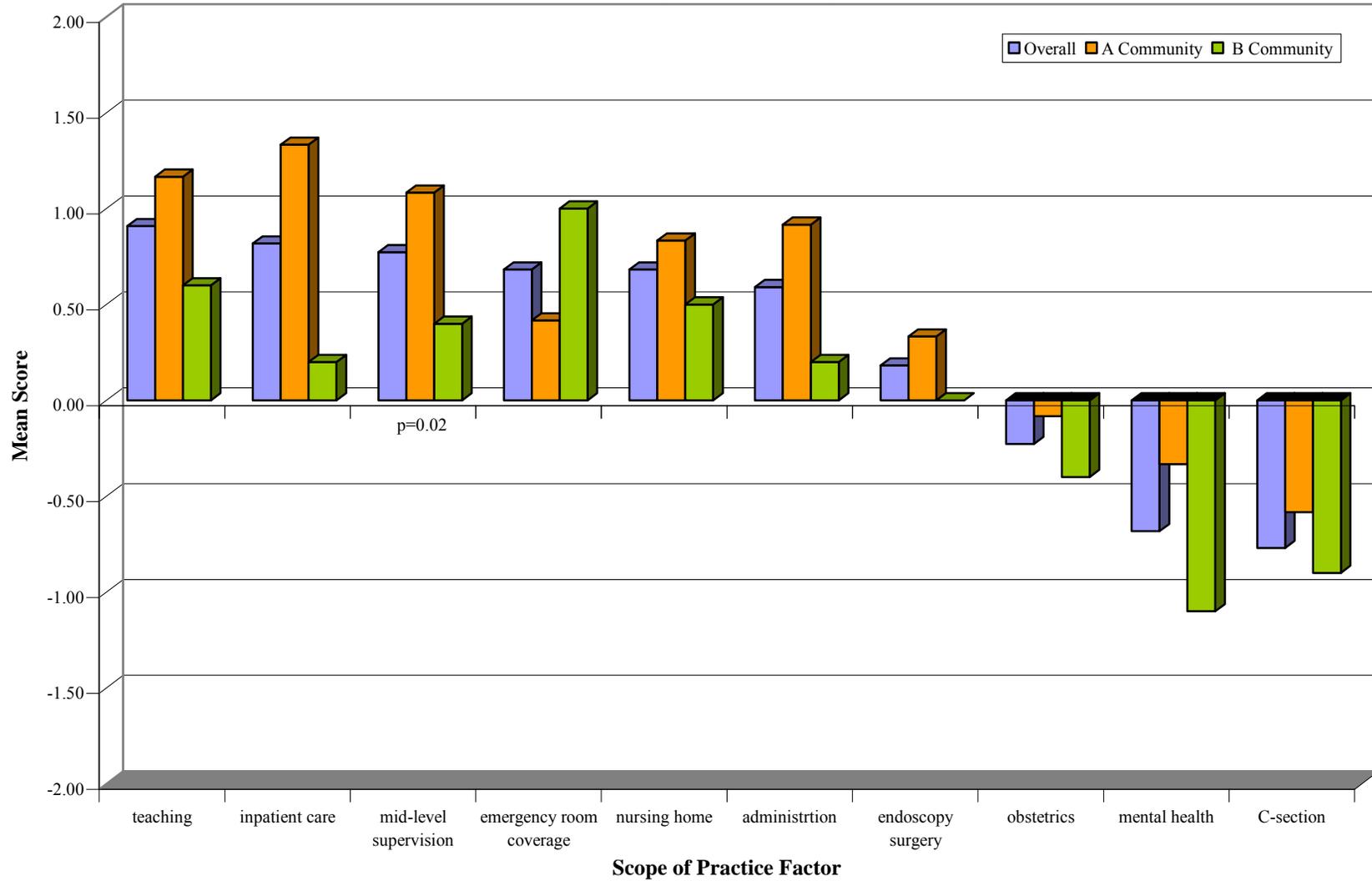
**Figure 4**  
**Economic Class Community Advantages and Challenges Mean Score**  
**A Community vs. B Community**



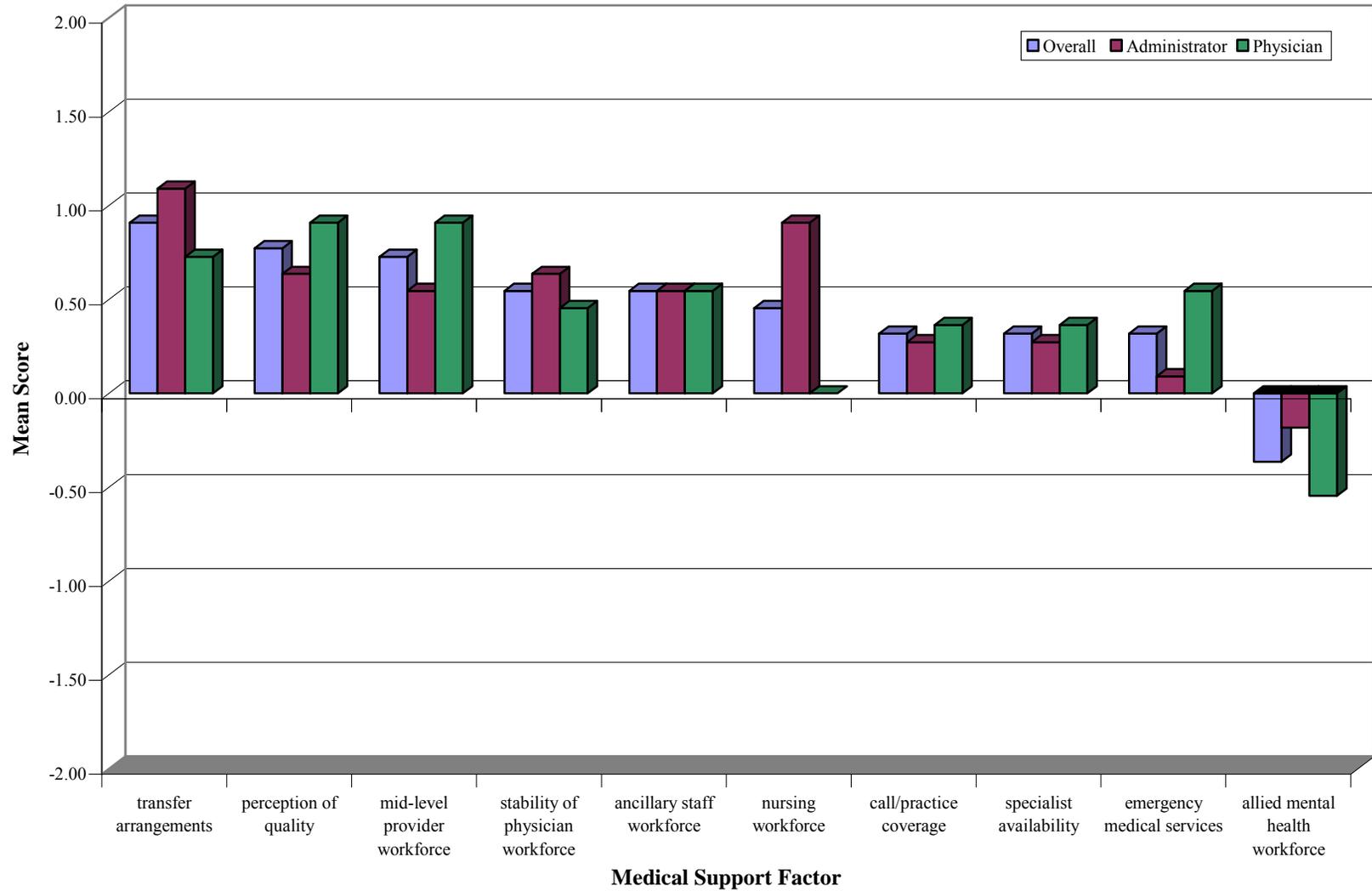
**Figure 5**  
**Scope of Practice Class Community Advantages and Challenges Mean Score**  
**Administrator vs. Physician**



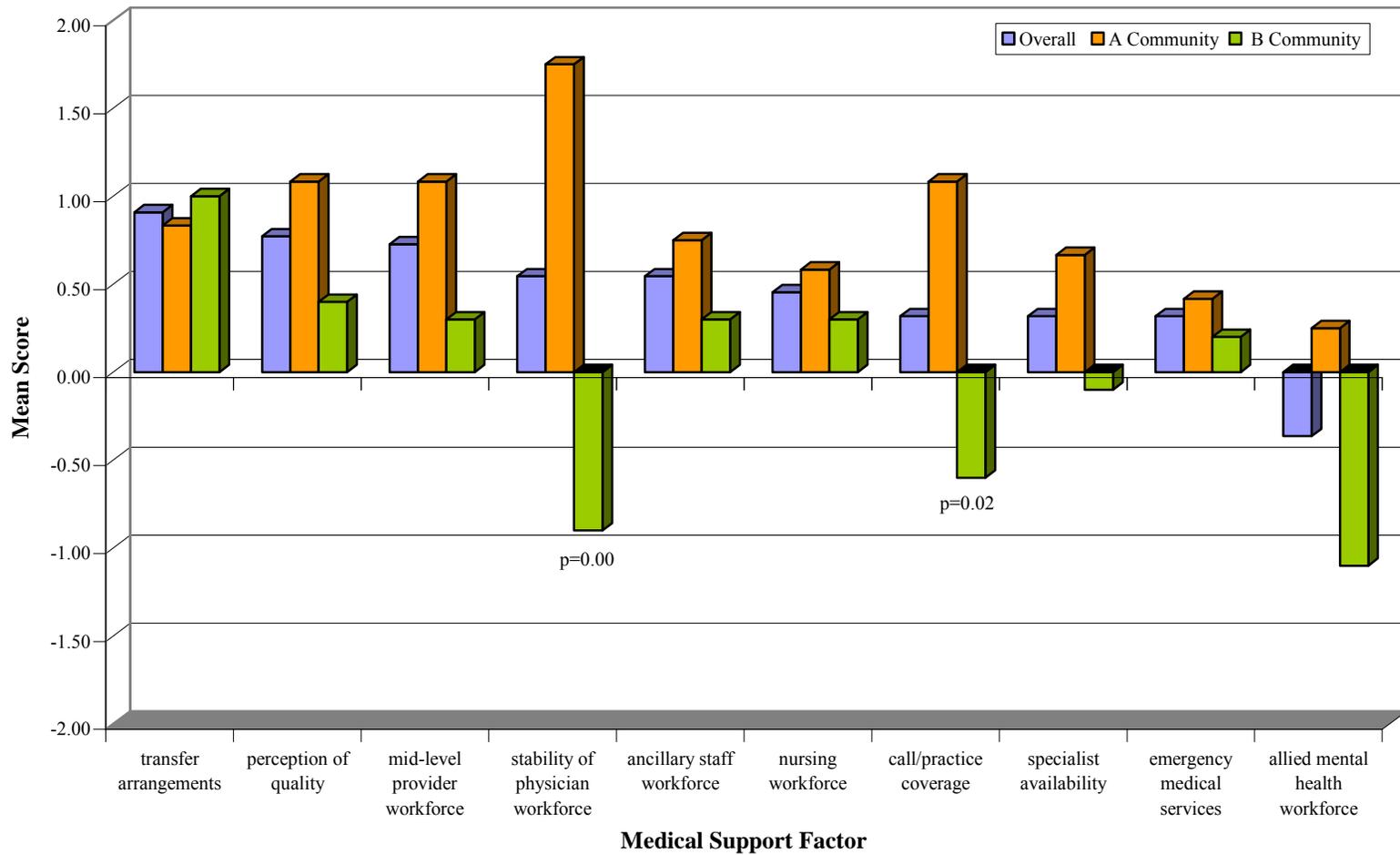
**Figure 6**  
**Scope of Practice Class Community Advantages and Challenges Mean Score**  
**A Community vs. B Community**



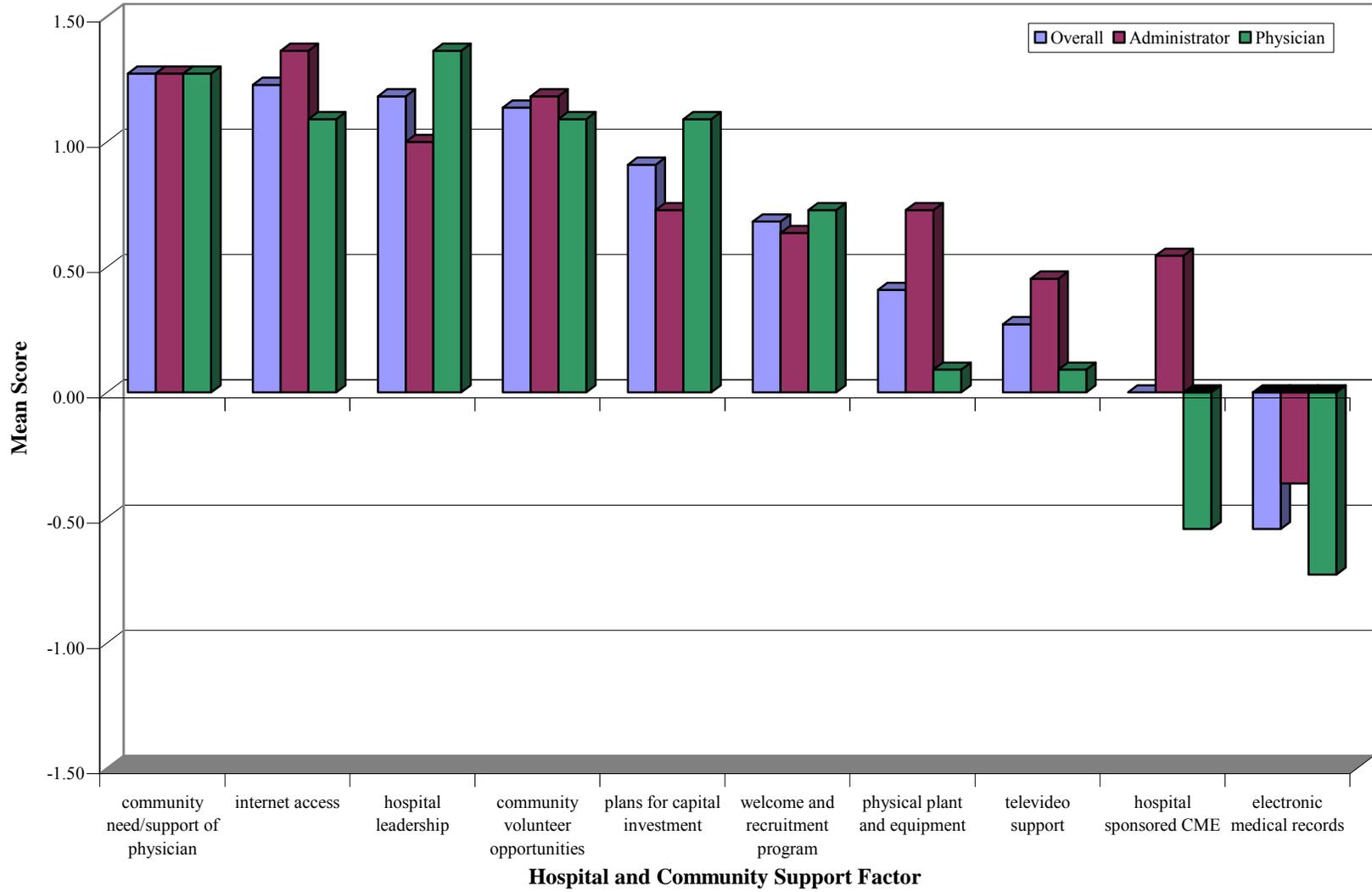
**Figure 7**  
**Medical Support Class Community Advantages and Challenges Mean Score**  
**Administrator vs., Physician**



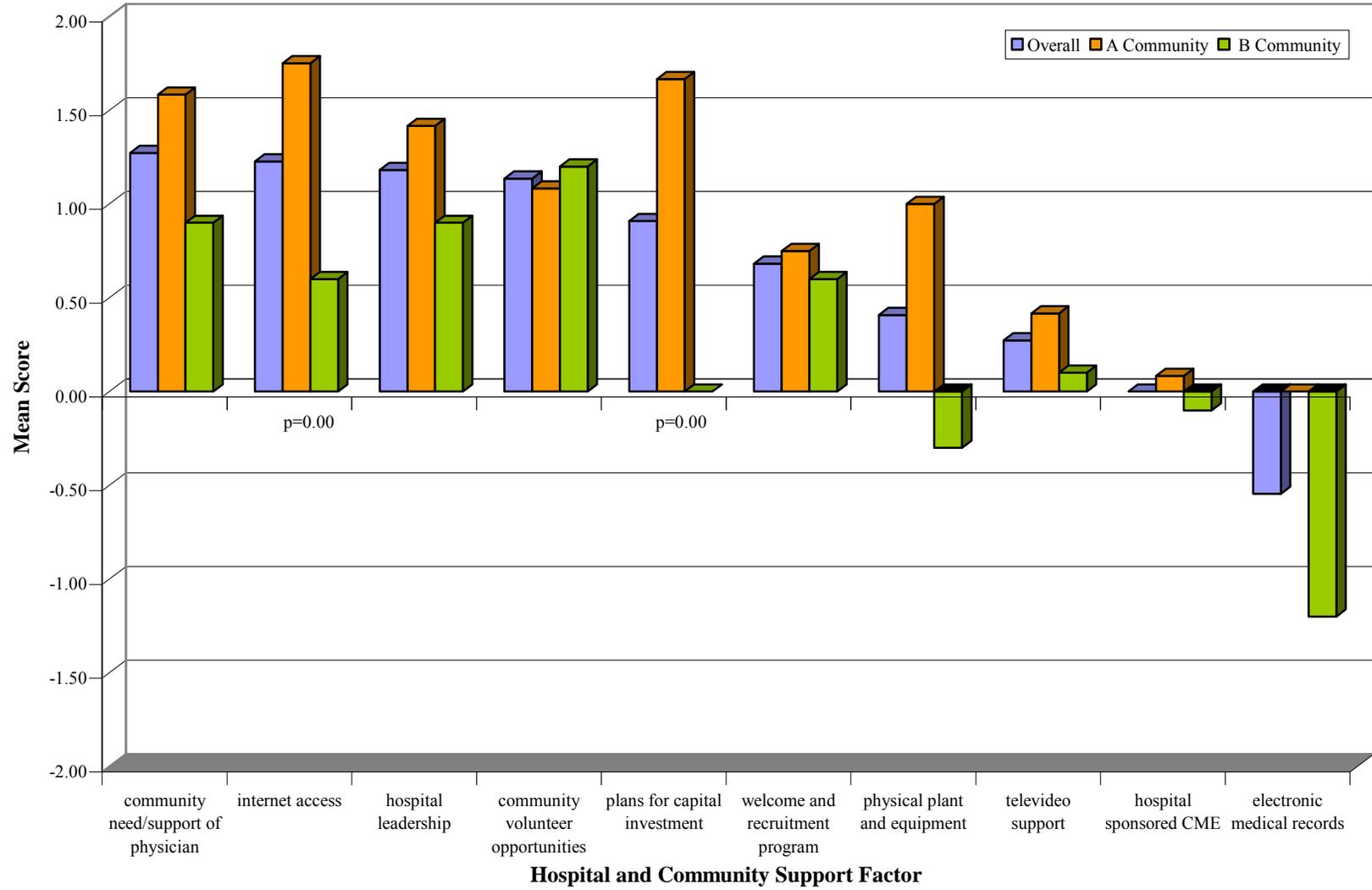
**Figure 8**  
**Medical Support Class Community Advantages and Challenges Mean Score**  
**A Community vs. B Community**



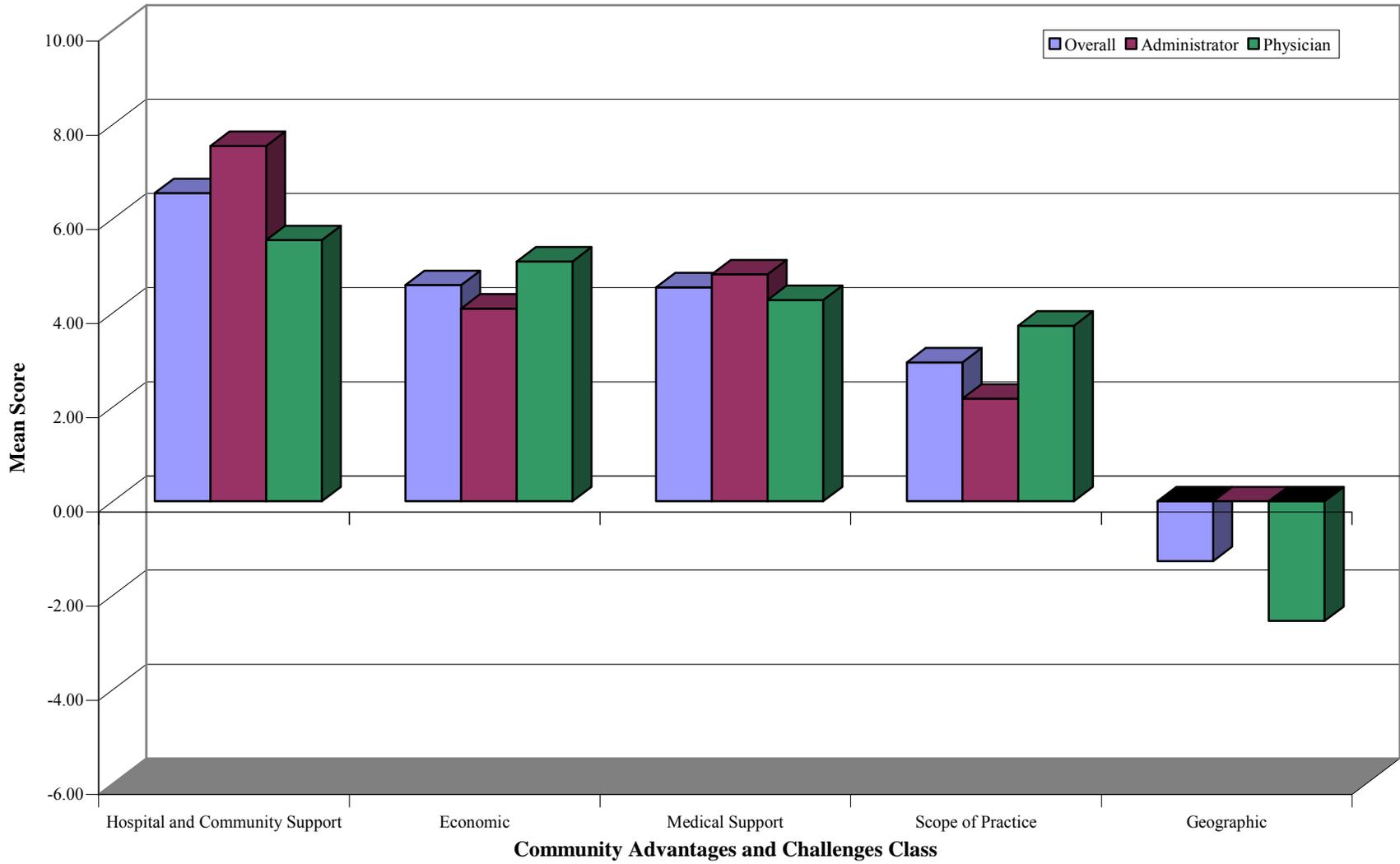
**Figure 9**  
**Hospital and Community Support Class Community Advantages and Challenges Mean Score**  
**Administrator vs. Physician**



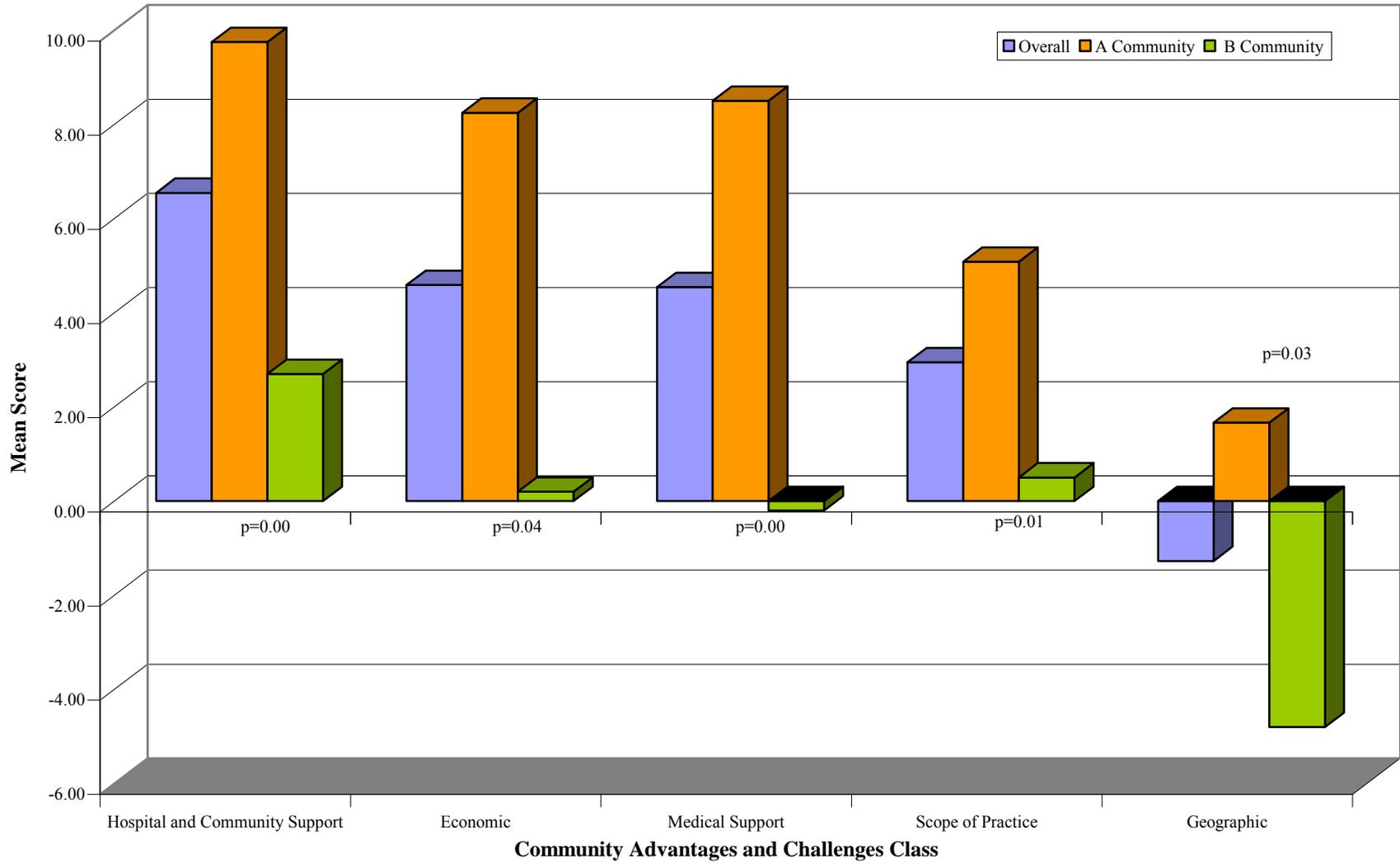
**Figure 10**  
**Hospital and Community Support Class Community Advantages and Challenges Mean Score**  
**A Community vs. B Community**



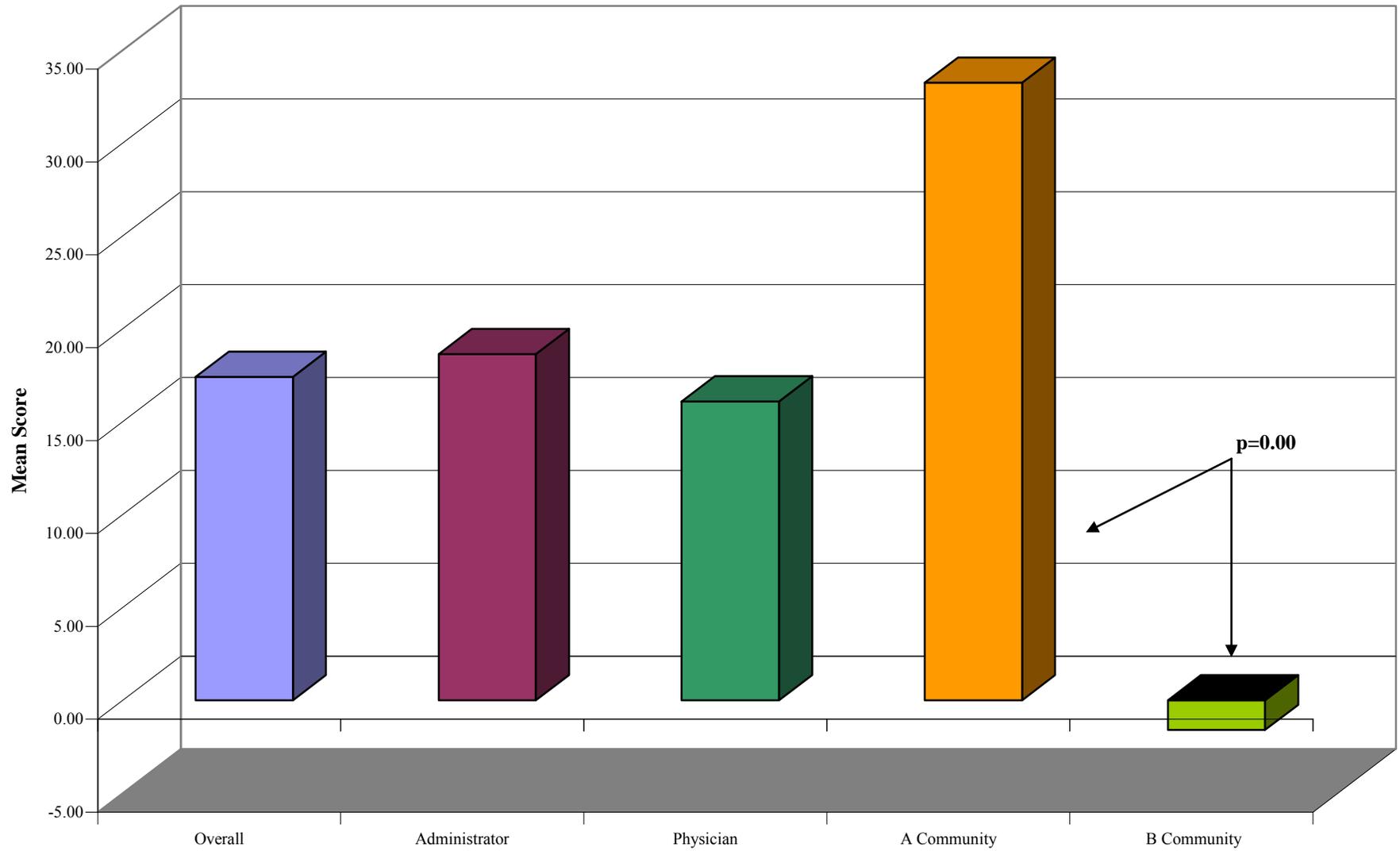
**Figure 11**  
**Class Community Advantages and Challenges Mean Score**  
**Administrator vs. Physician**



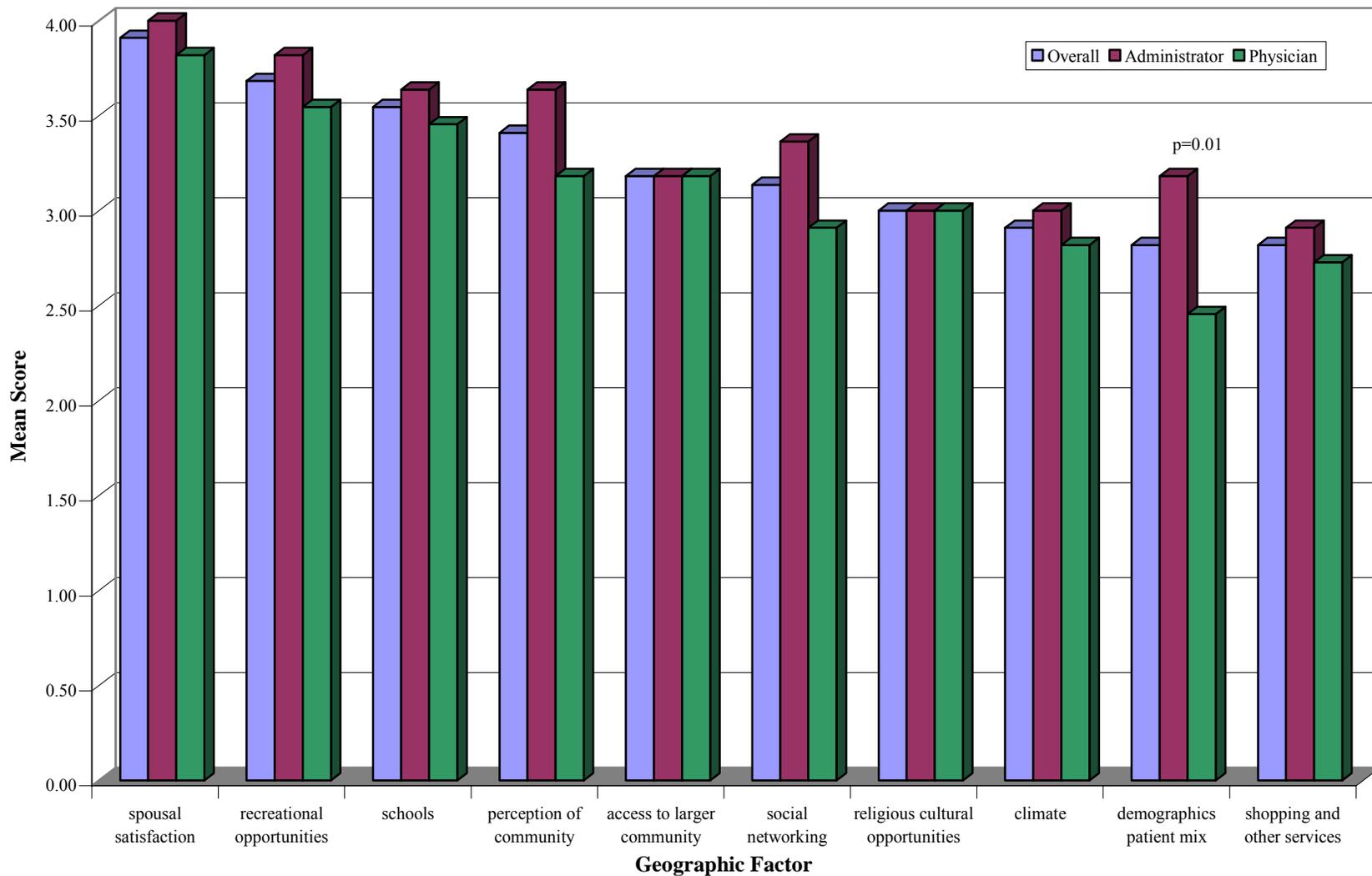
**Figure 12**  
**Class Community Advantages and Challenges Mean Score**  
**A Community vs. B Community**



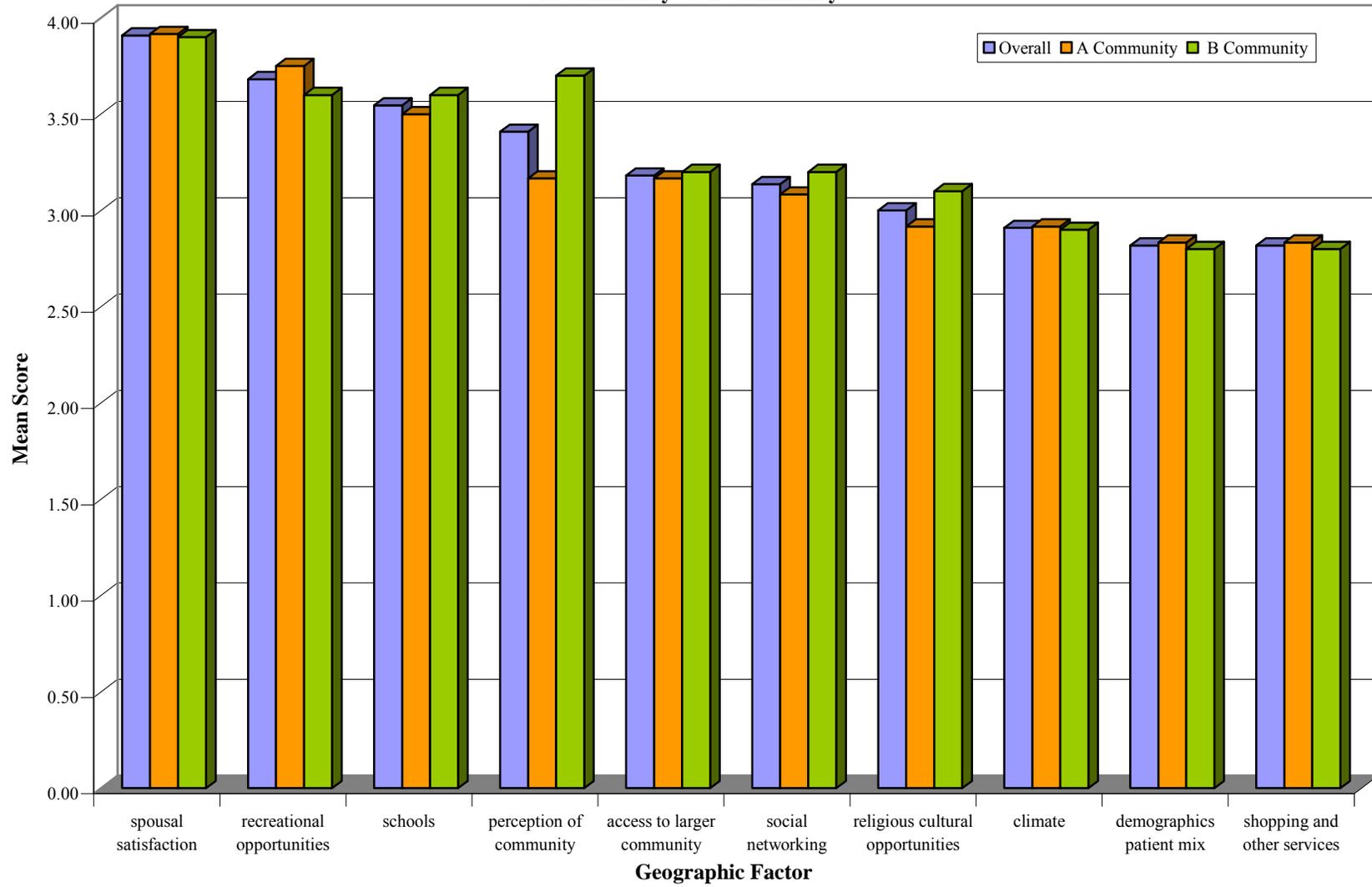
**Figure 13**  
**Summary Class Community Advantages and Challenges Mean Score**  
**Overall by Respondent and Community Type**



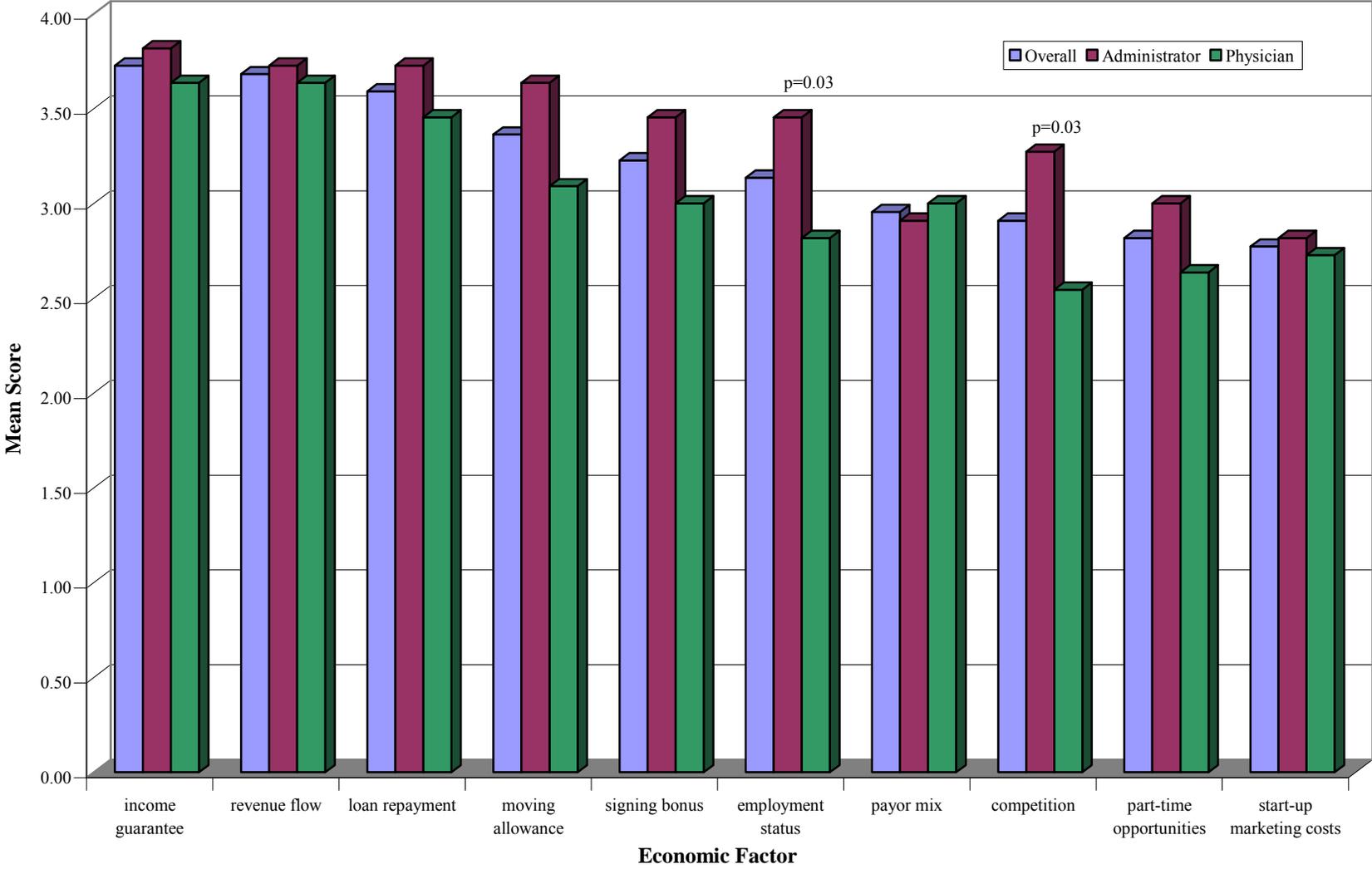
**Figure 14**  
**Geographic Class Community Importance Mean Score**  
**Administrator vs. Physician**



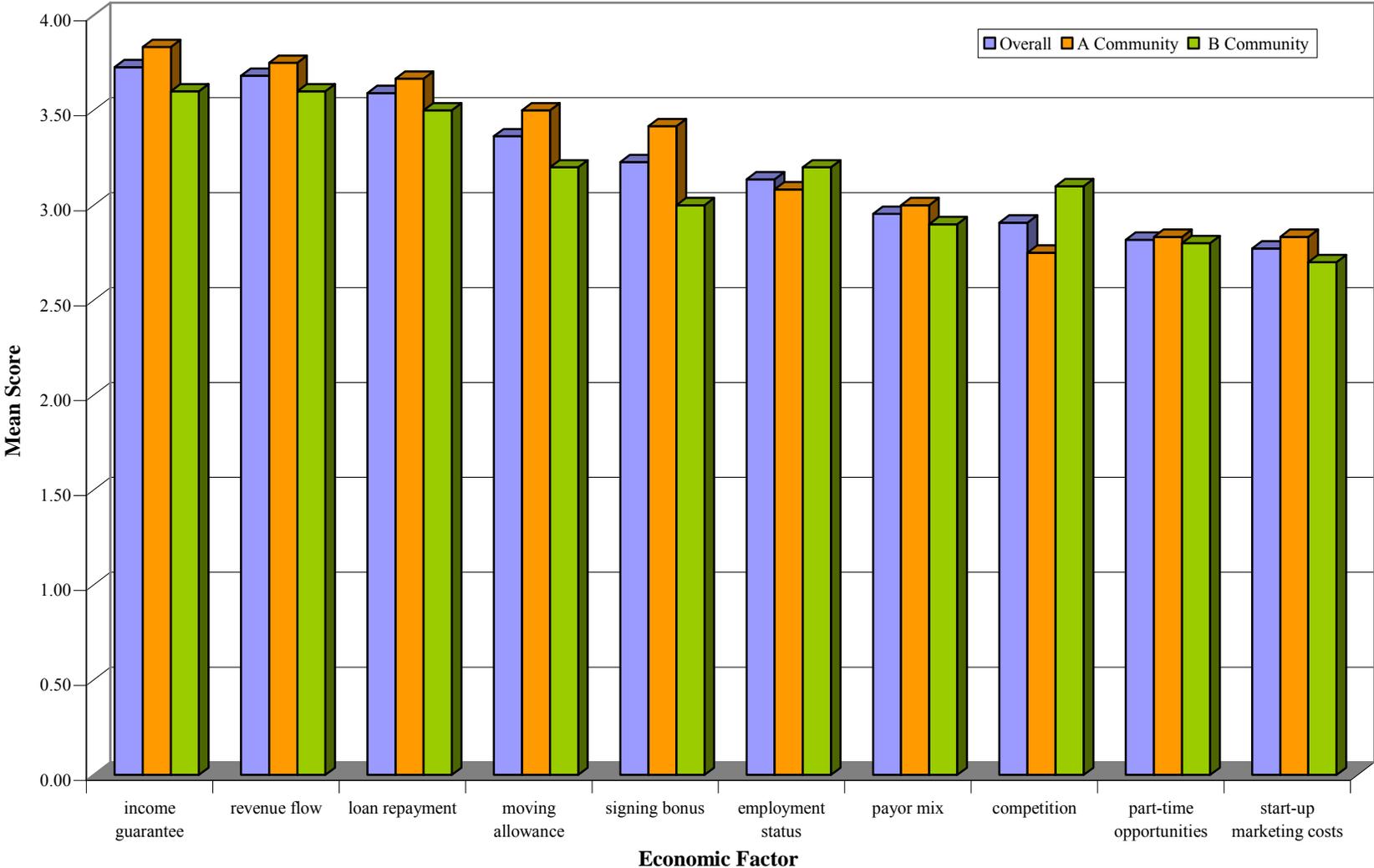
**Figure 15**  
**Geographic Class Community Importance Mean Score**  
**A Community vs. B Community**



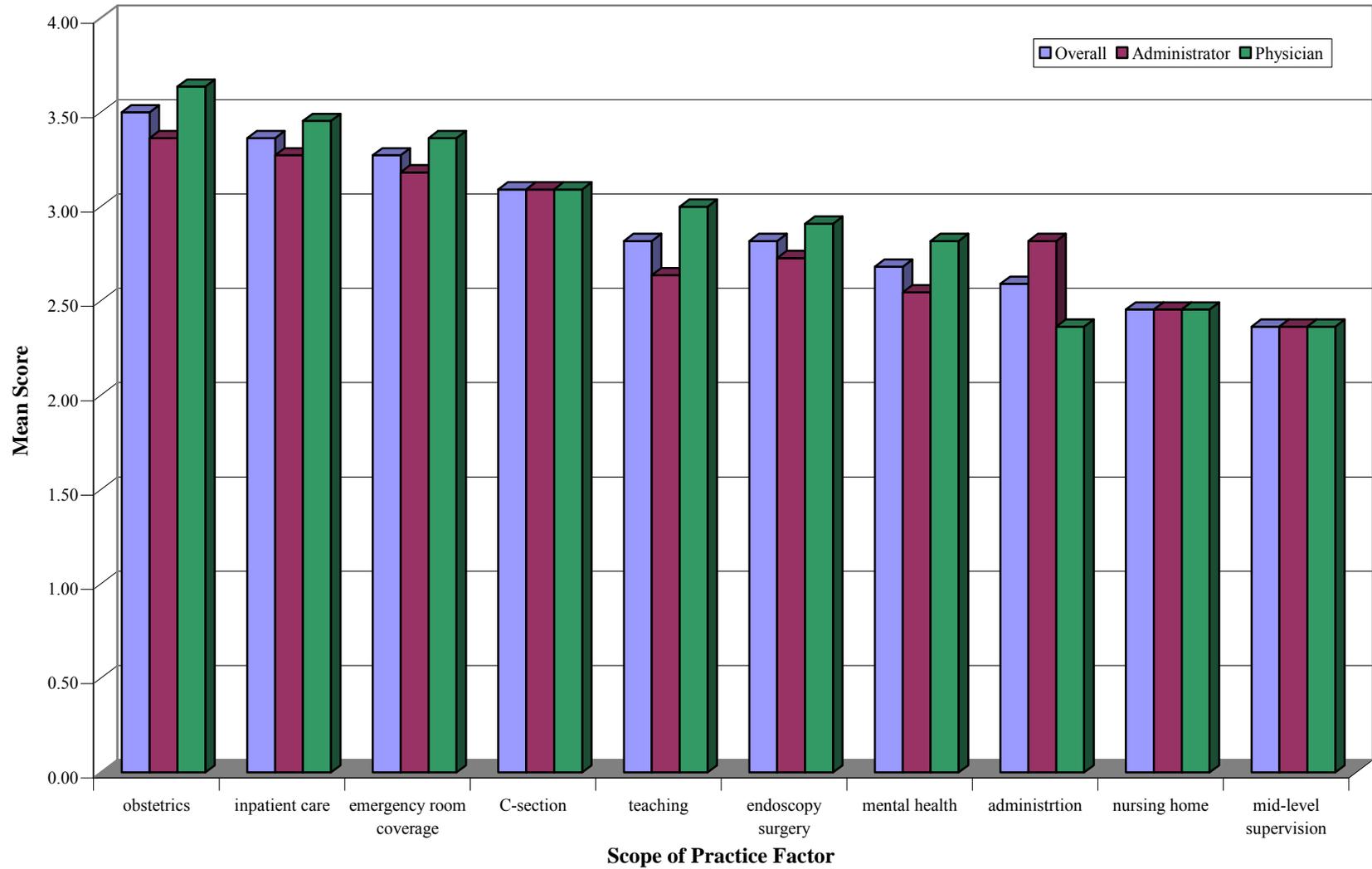
**Figure 16**  
**Economic Class Community Importance Mean Score**  
**Administrator vs. Physician**



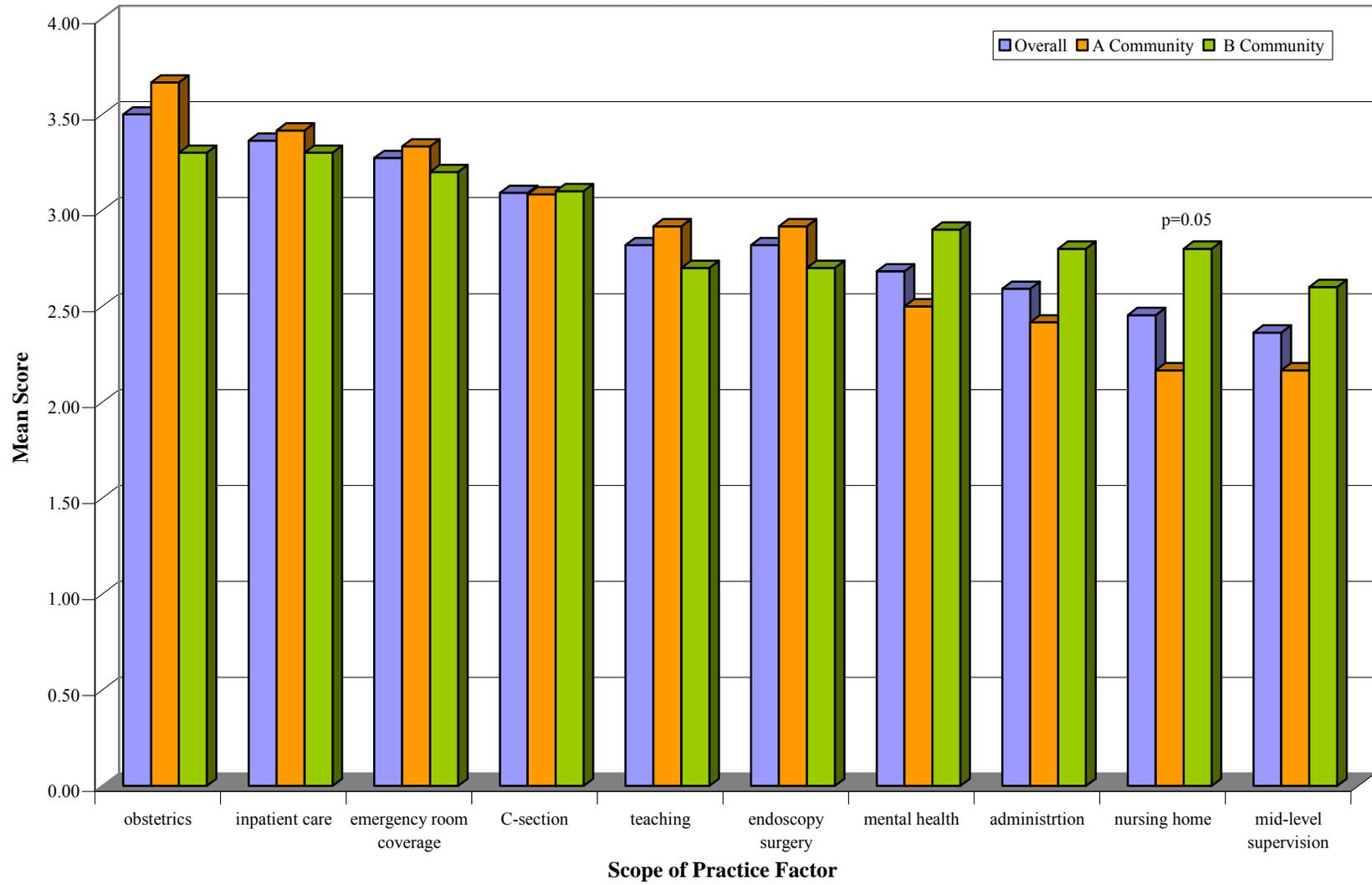
**Figure 17**  
**Economic Class Community Importance Mean Score**  
**A Community vs. B Community**



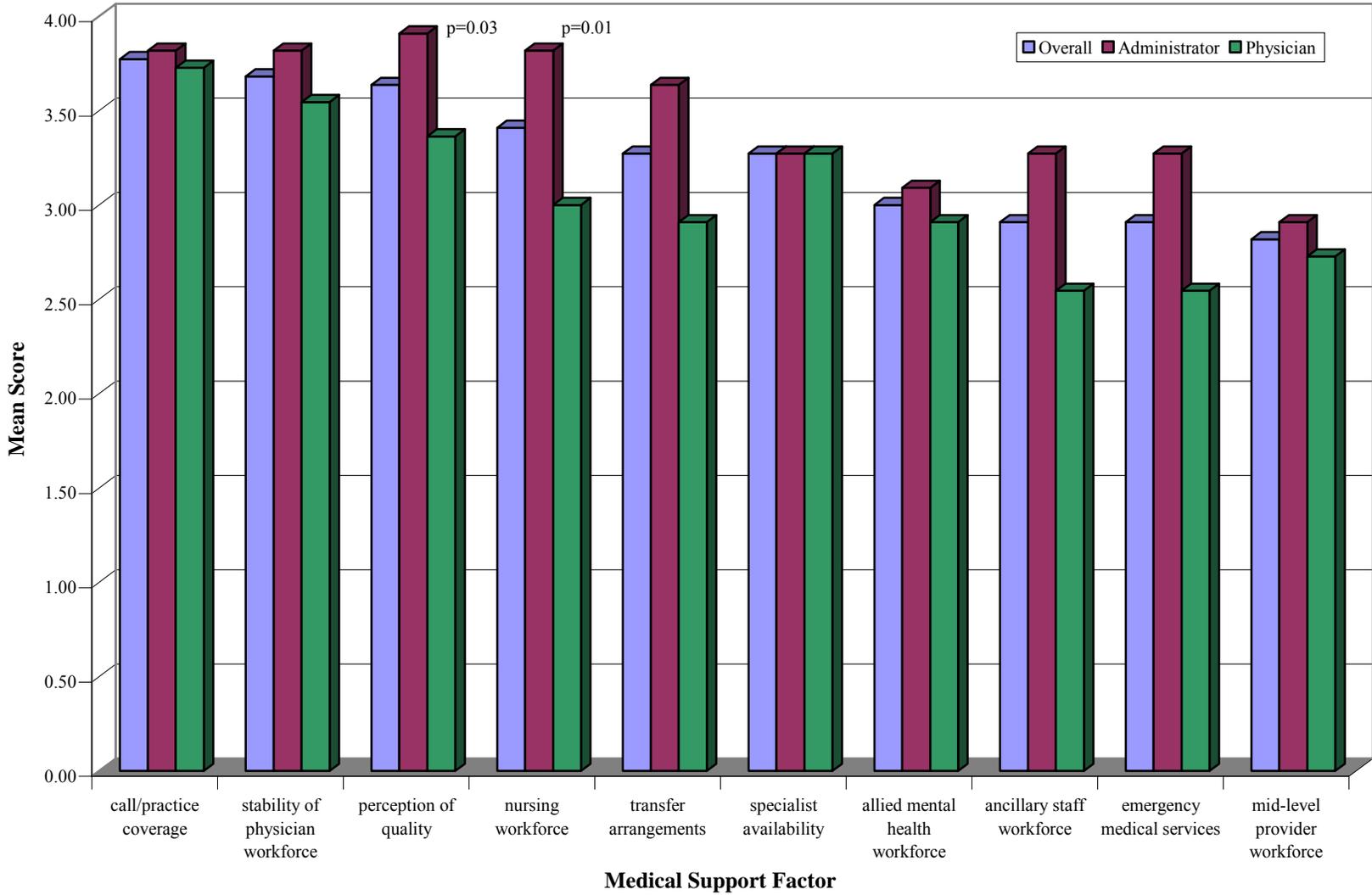
**Figure18**  
**Scope of Practice Class Community Importance Mean Score**  
**Administrator vs. Physician**



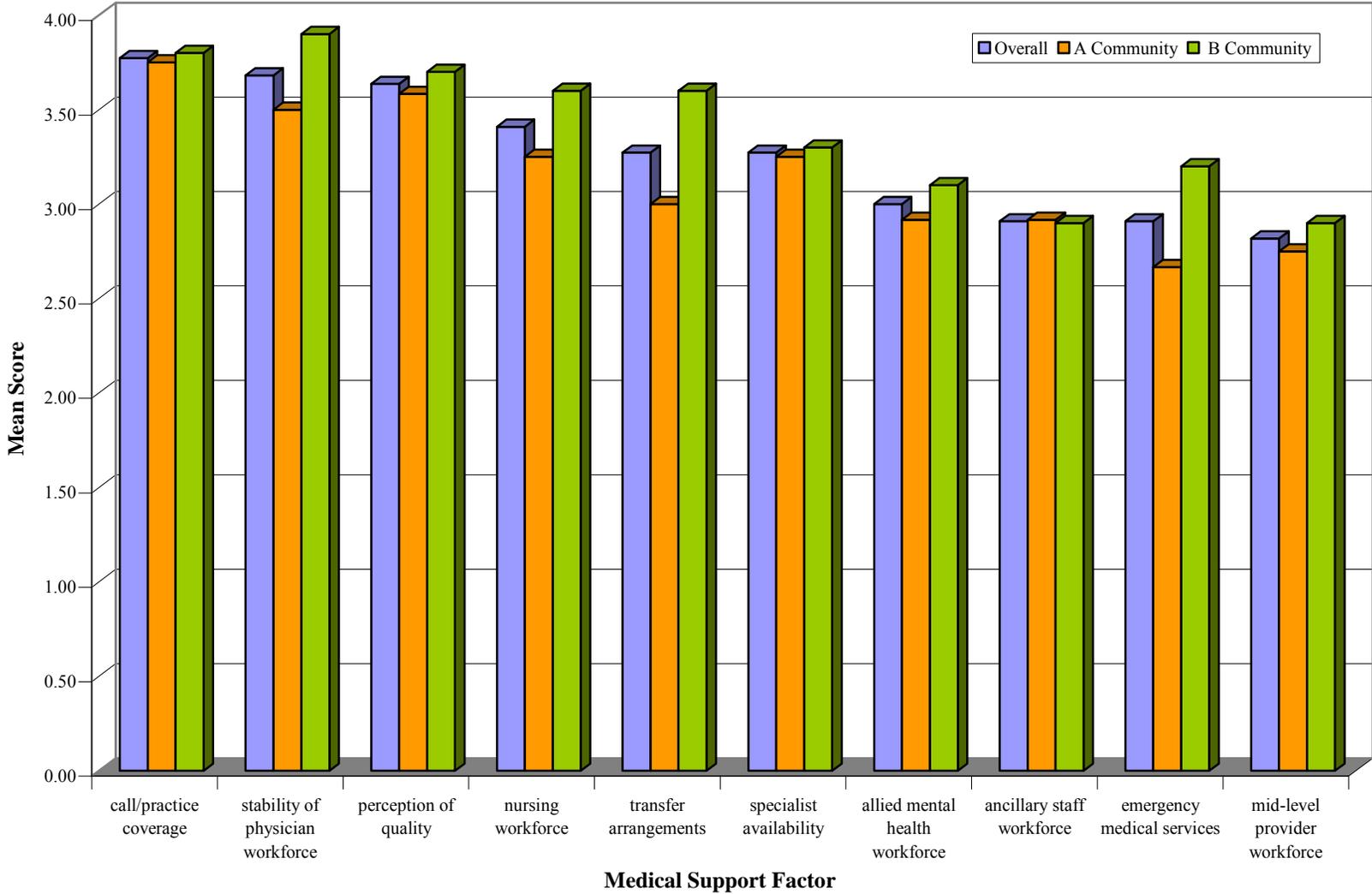
**Figure 19**  
**Scope of Practice Class Community Importance Mean Score**  
**A Community vs. B Community**



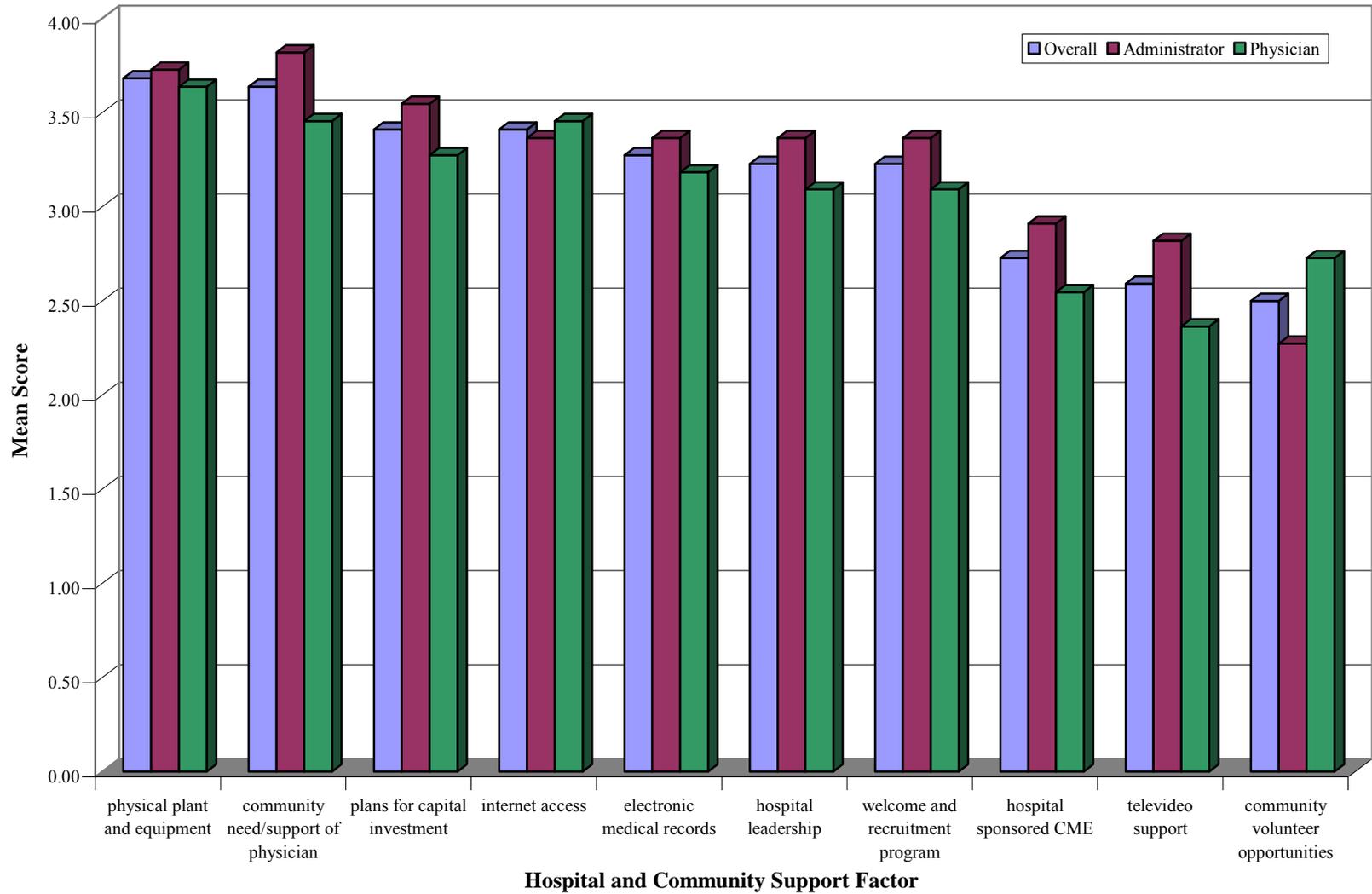
**Figure 20**  
**Medical Support Class Community Importance Mean Score**  
**Administrator vs. Physician**



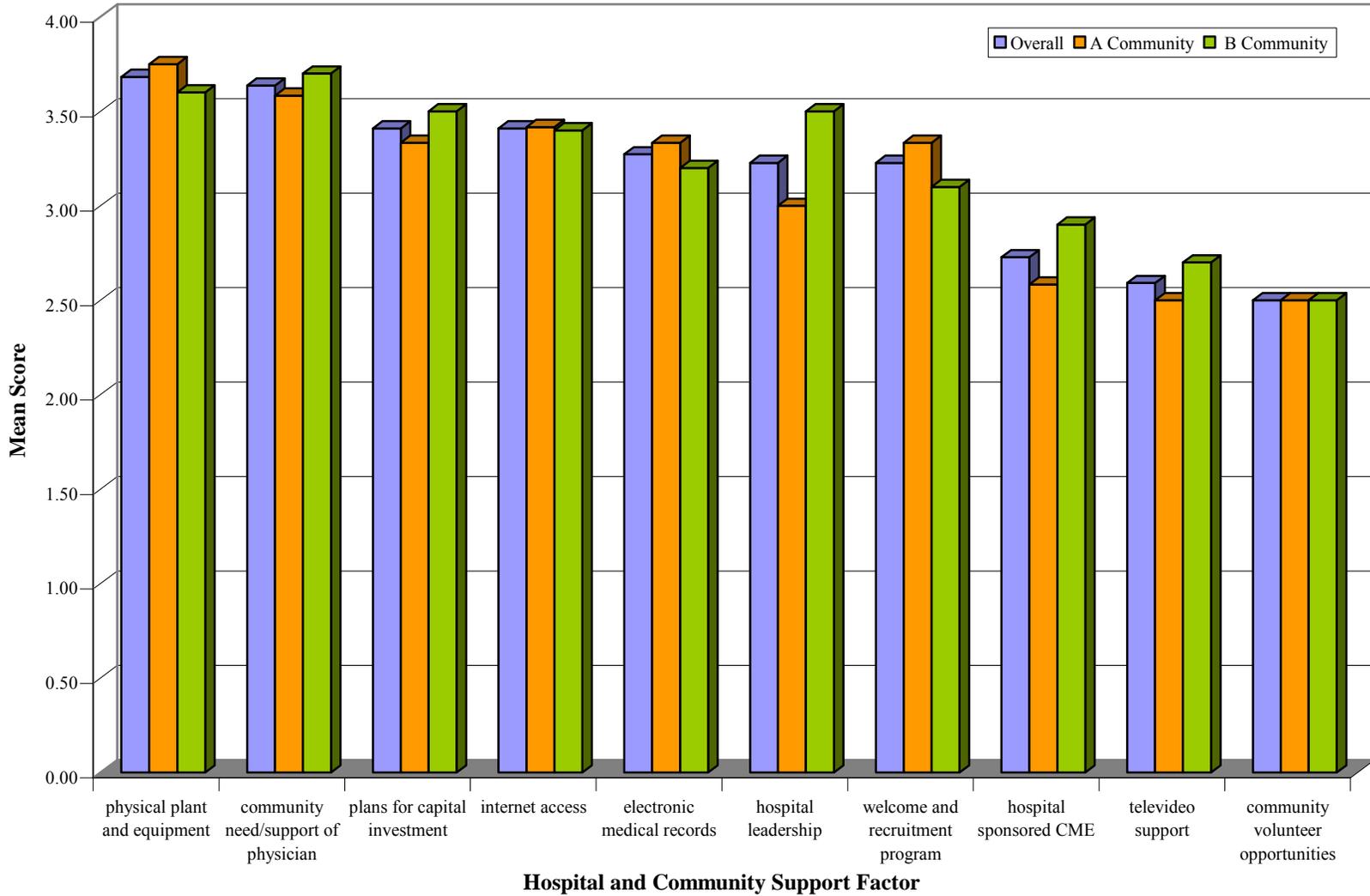
**Figure 21**  
**Medical Support Class Community Importance Mean Score**  
**A Community vs. B Community**



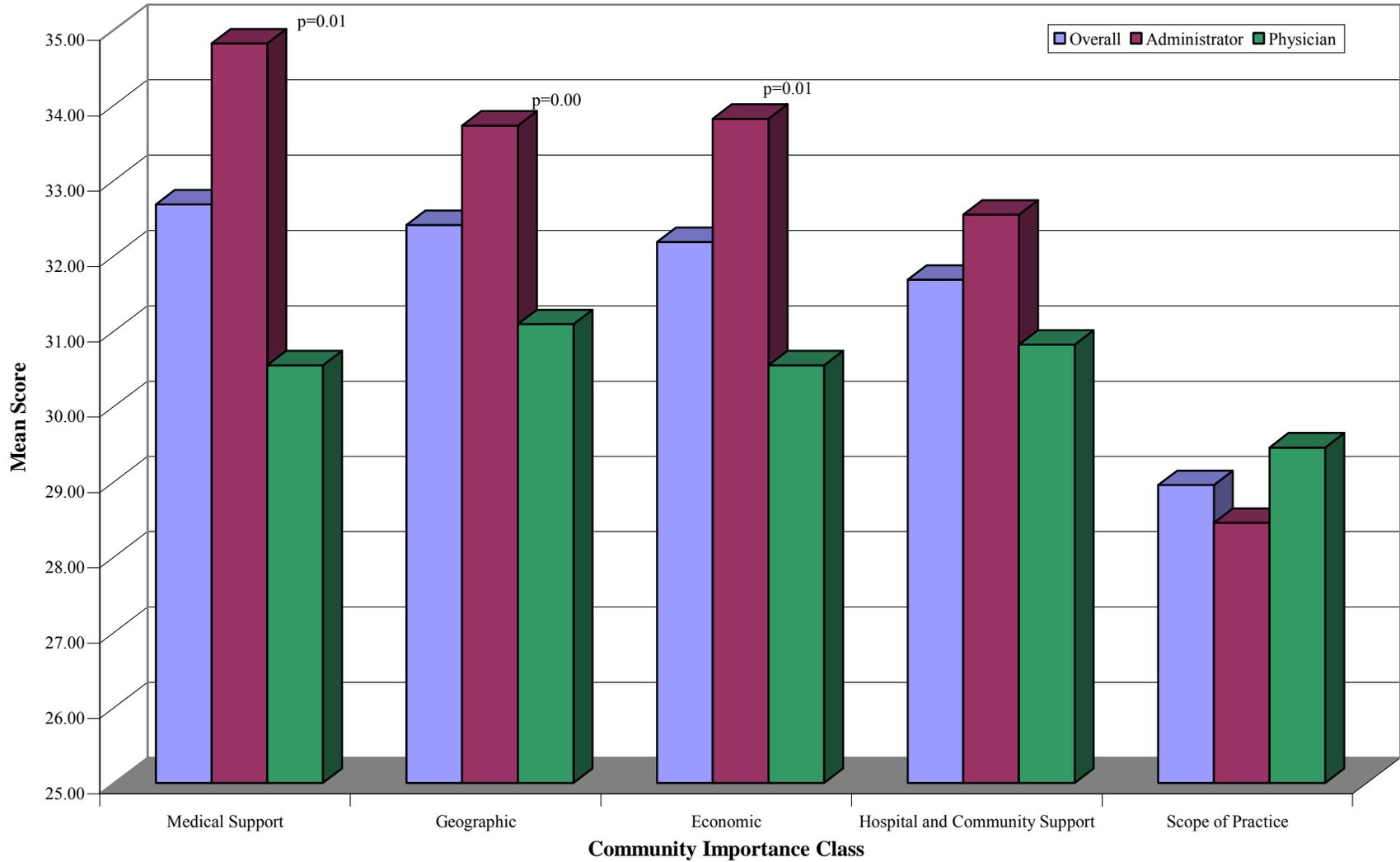
**Figure 22**  
**Hospital and Community Support Class Community Importance Mean Score**  
**Administrator vs. Physician**



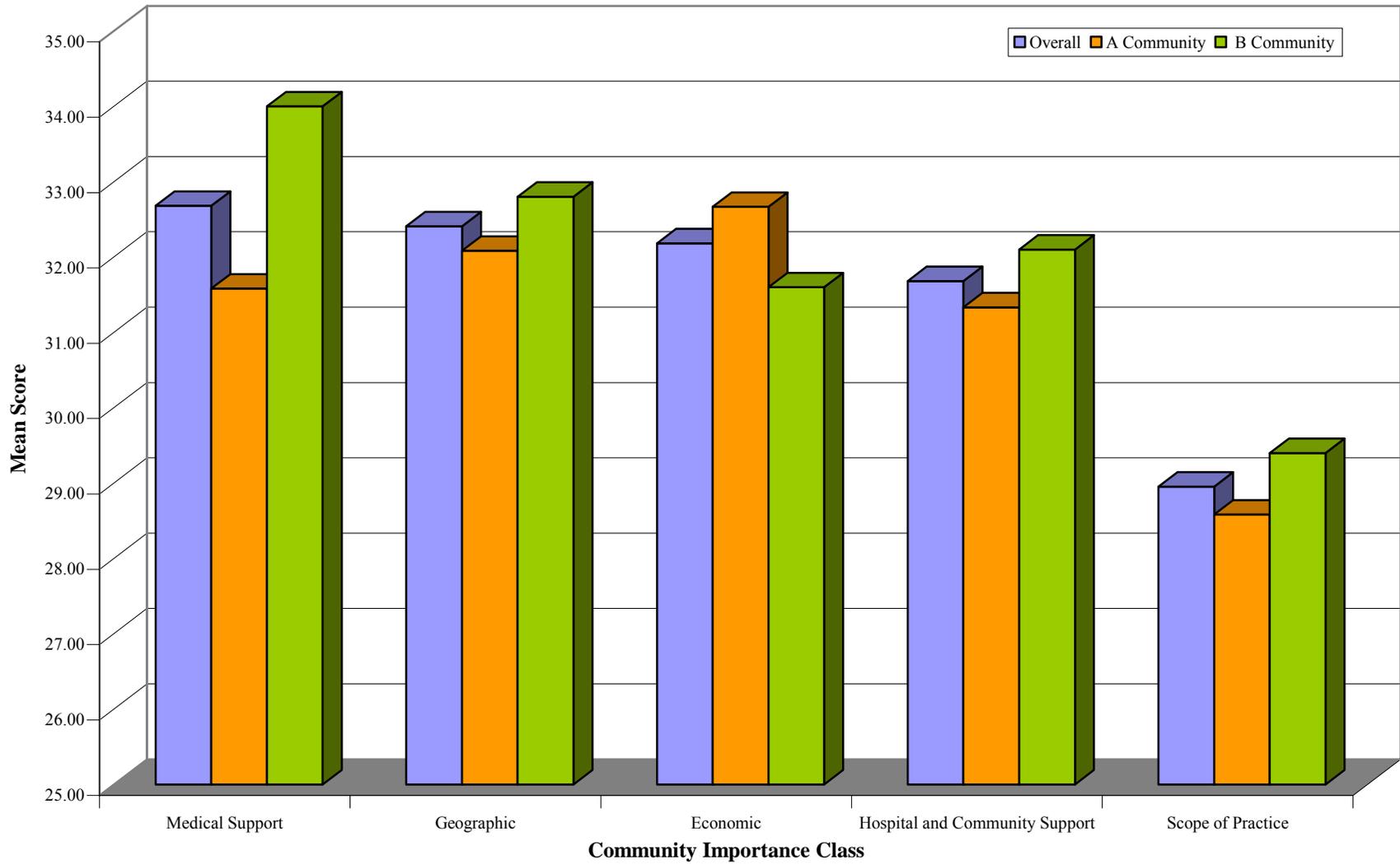
**Figure 23**  
**Hospital and Community Support Class Community Importance Mean Score**  
**A Community vs. B Community**



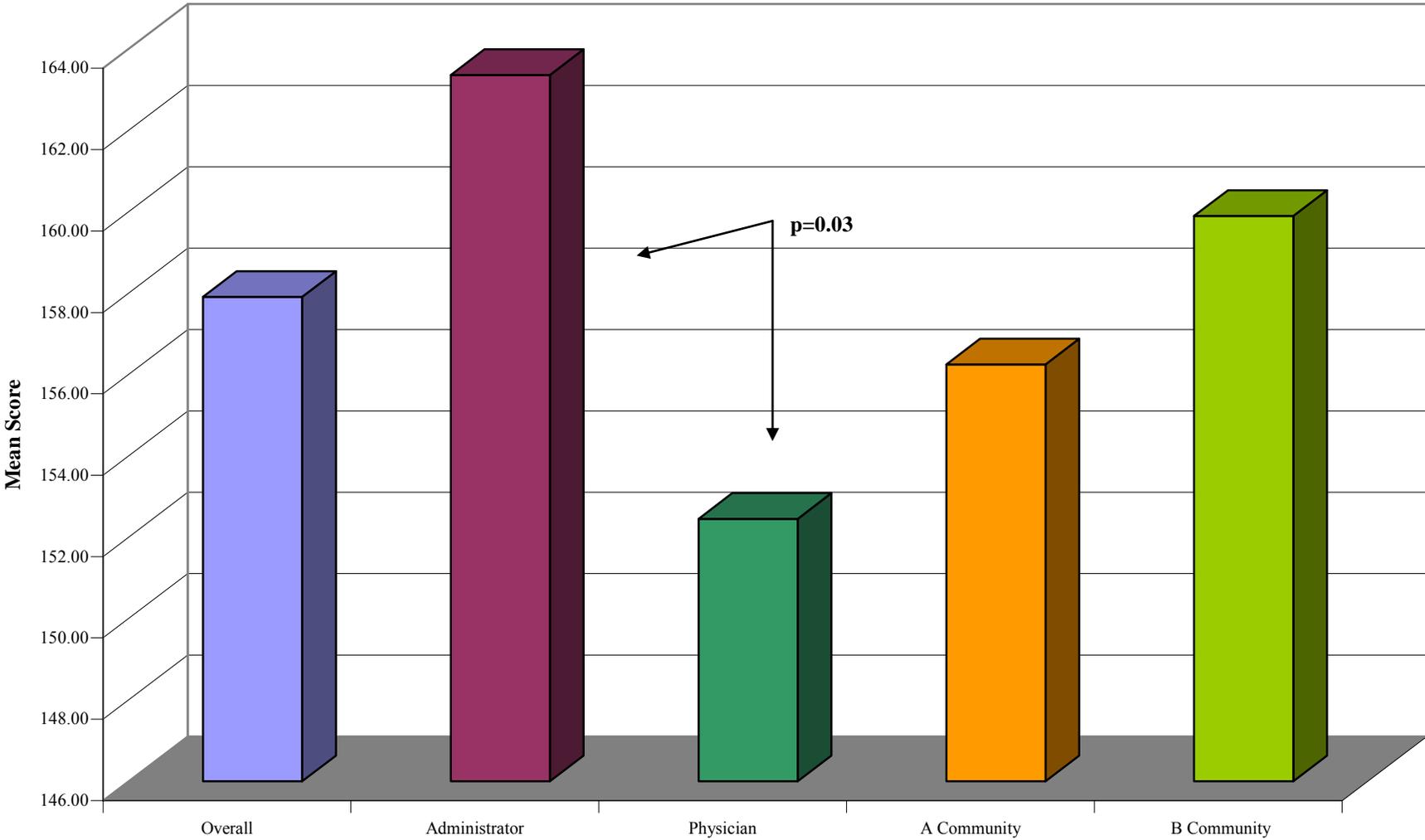
**Figure 24**  
**Class Community Importance Mean Score**  
**Administrator vs. Physician**



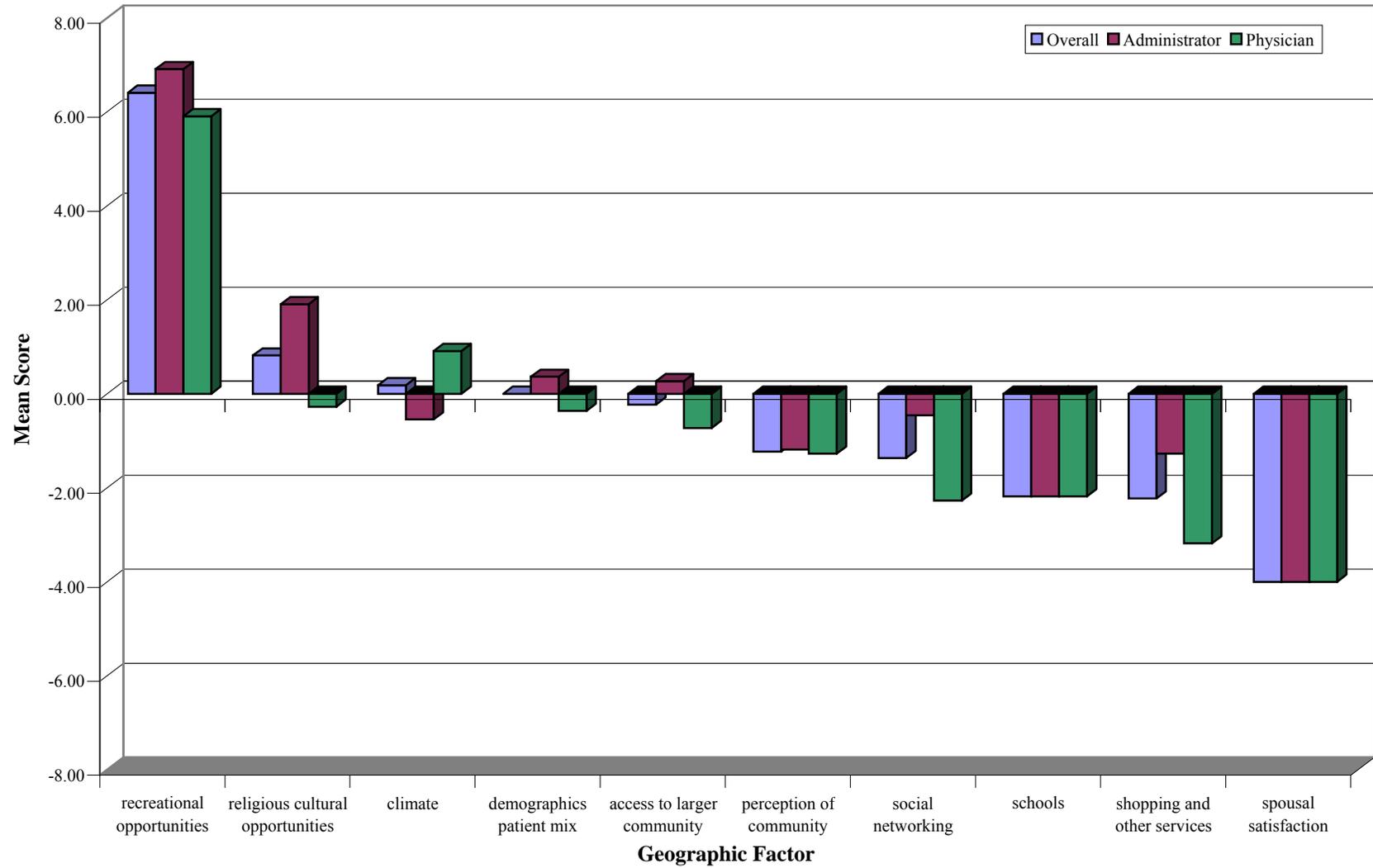
**Figure 25**  
**Class Community Importance Mean Score**  
**A Community vs. B Community**



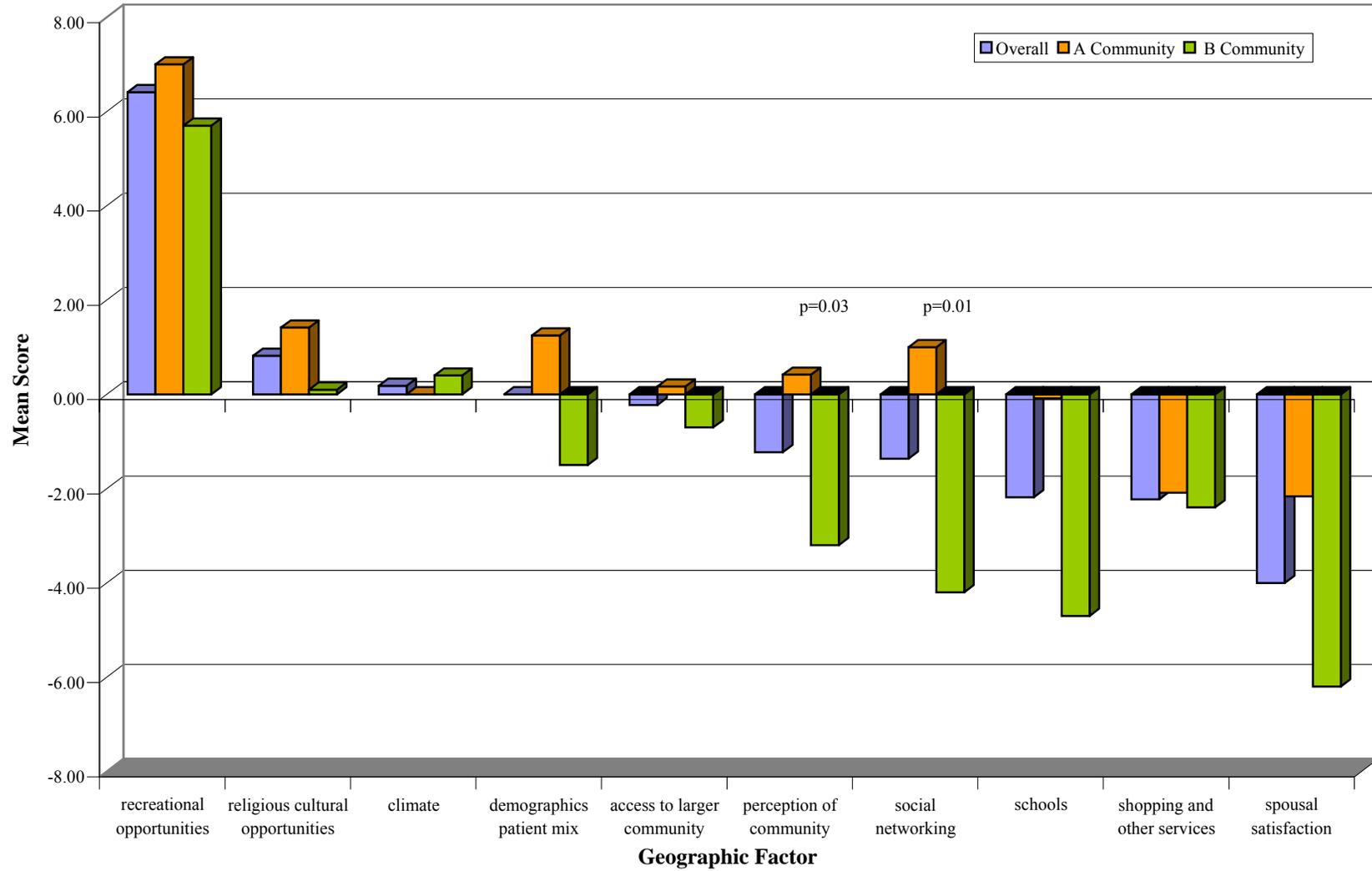
**Figure26**  
**Summary Class Community Importance Mean Score**  
**Overall by Respondent and Community Type**



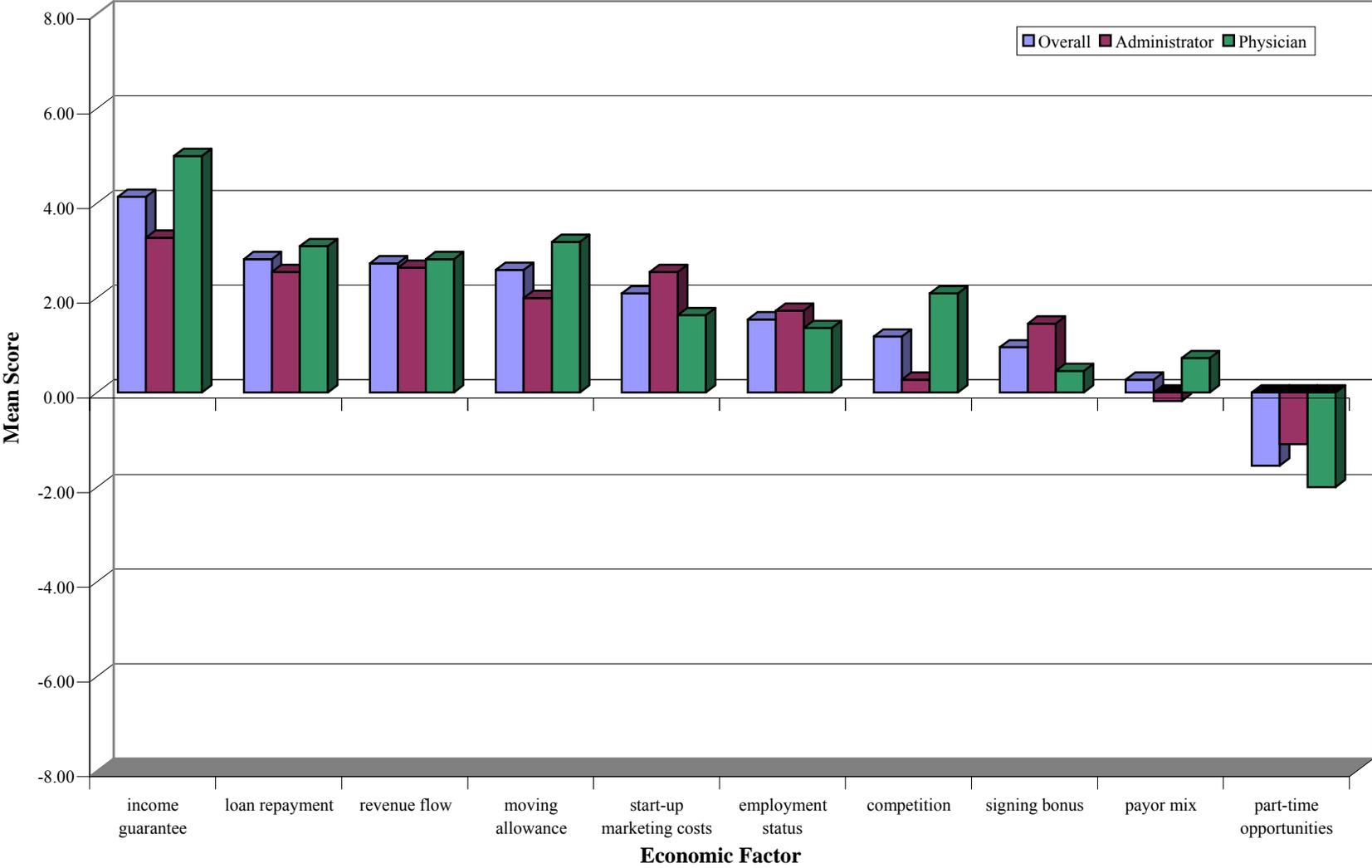
**Figure 27**  
**Geographic Class Community Apgar Mean Score**  
**Administrator vs. Physician**



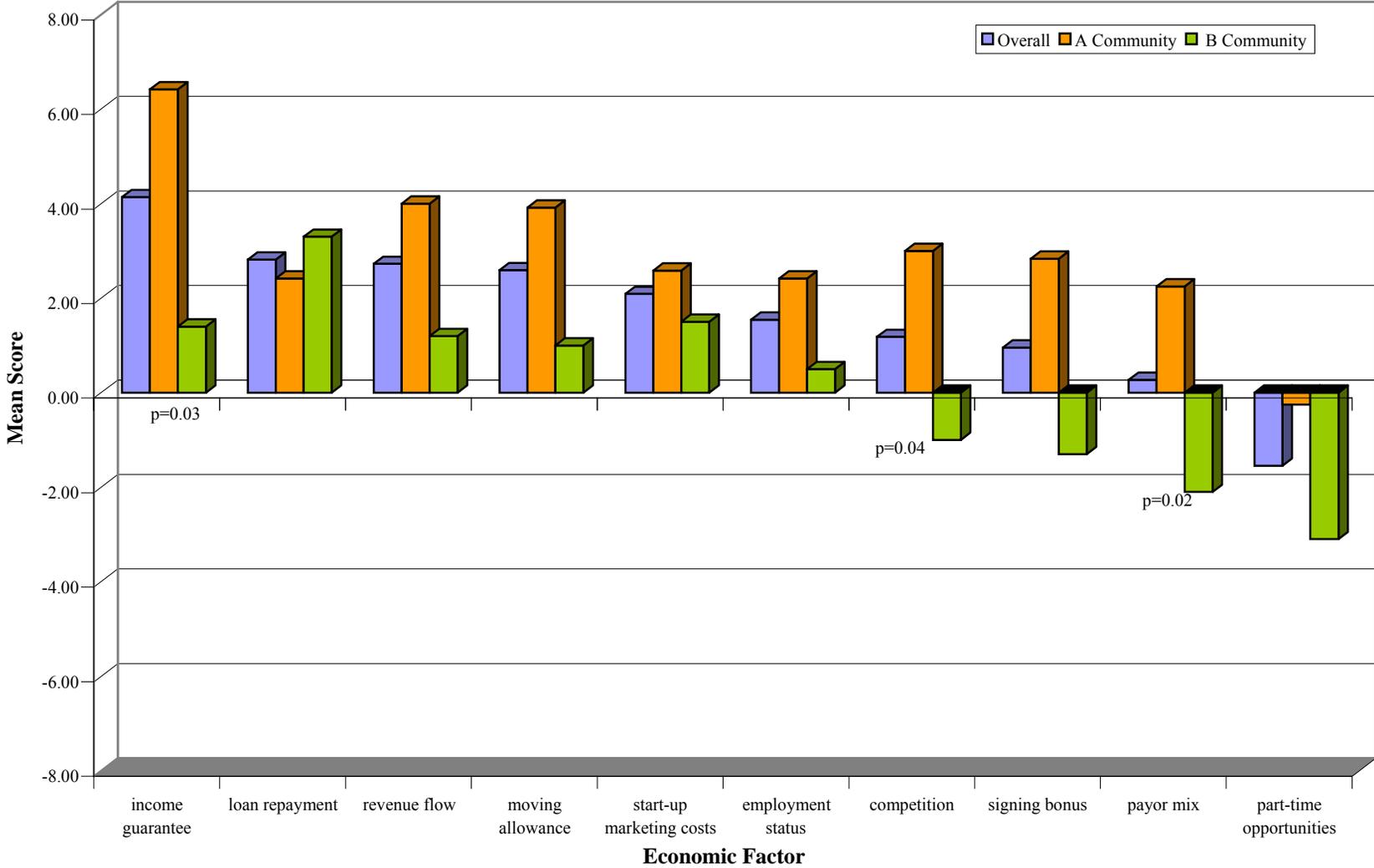
**Figure 28**  
**Geographic Class Community Apgar Mean Score**  
**A Community vs. B Community**



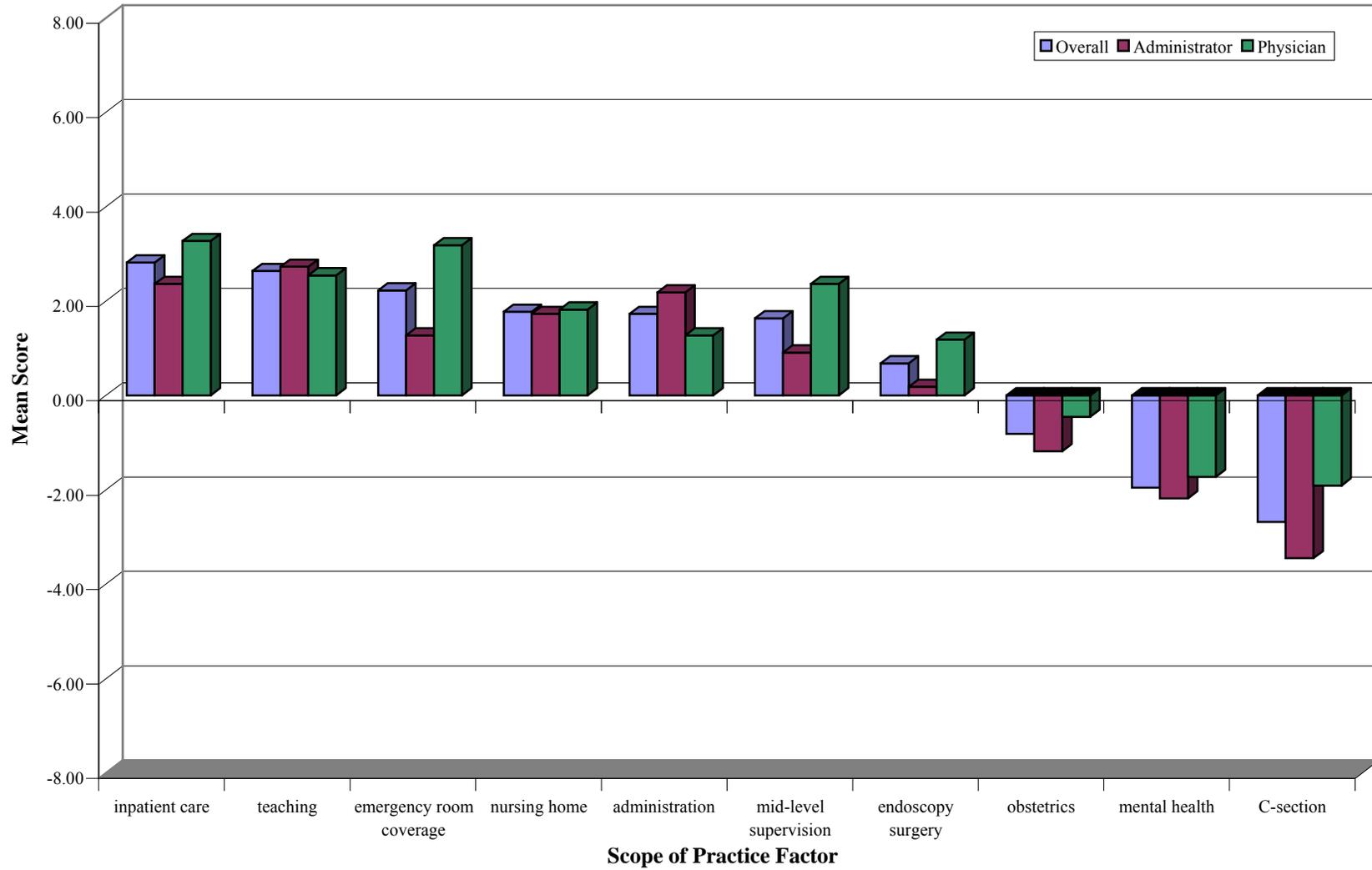
**Figure 29**  
**Economic Class Community Apgar Mean Score**  
**Administrator vs. Physician**



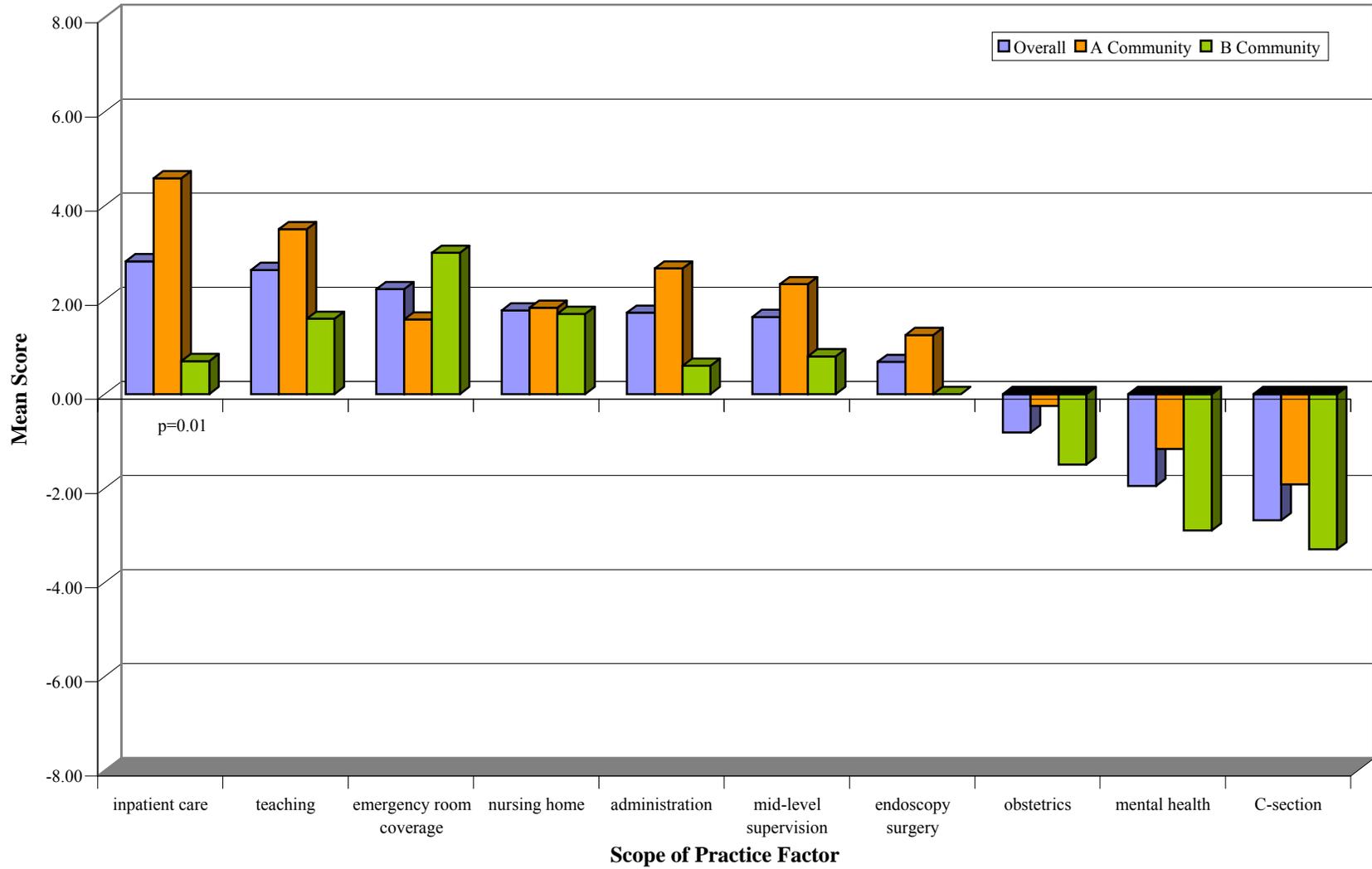
**Figure 30**  
**Economic Class Community Apgar Mean Score**  
**A Community vs. B Community**



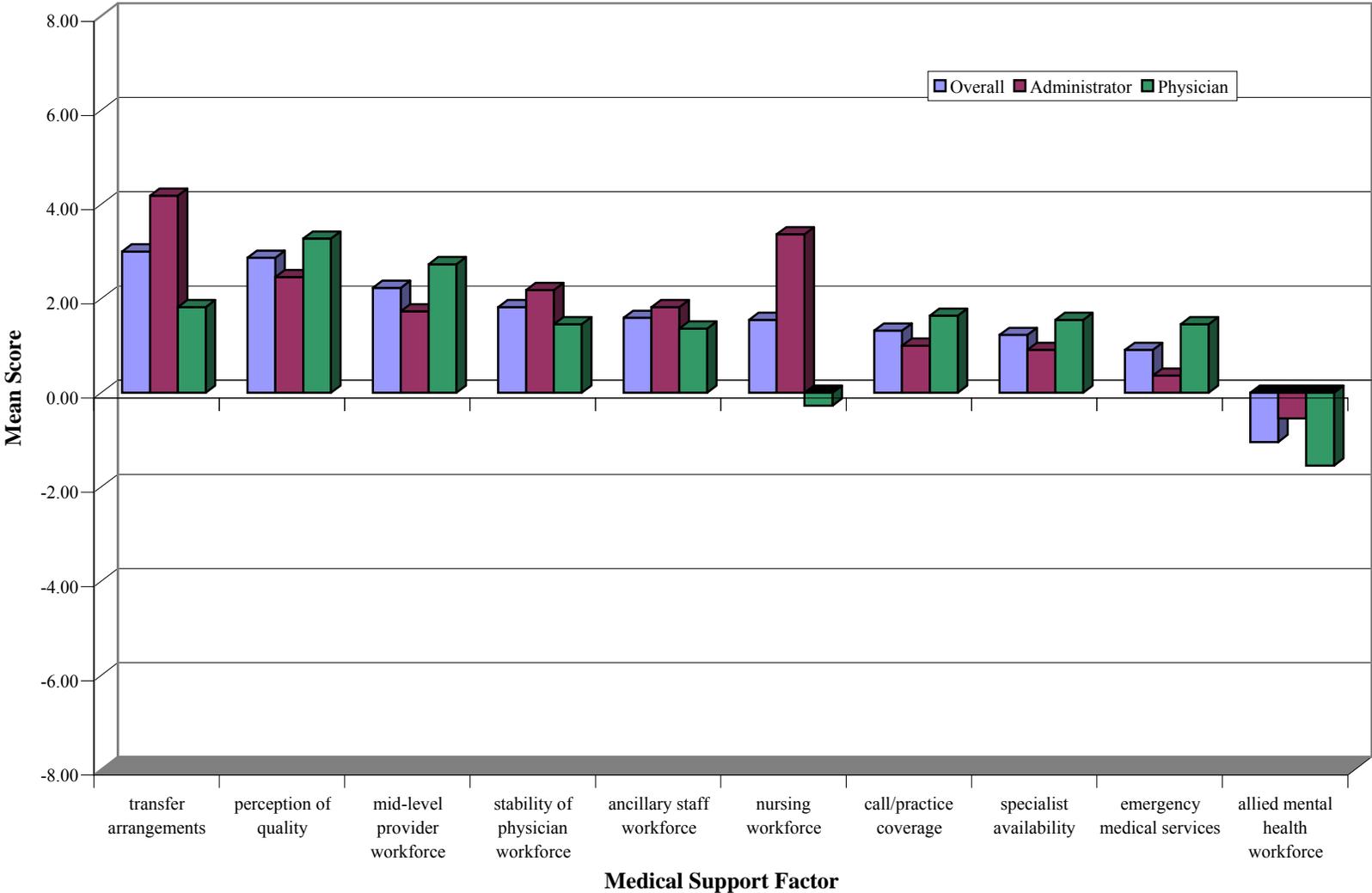
**Figure 31**  
**Scope of Practice Class Community Apgar Mean Score**  
**Administrator vs. Physician**



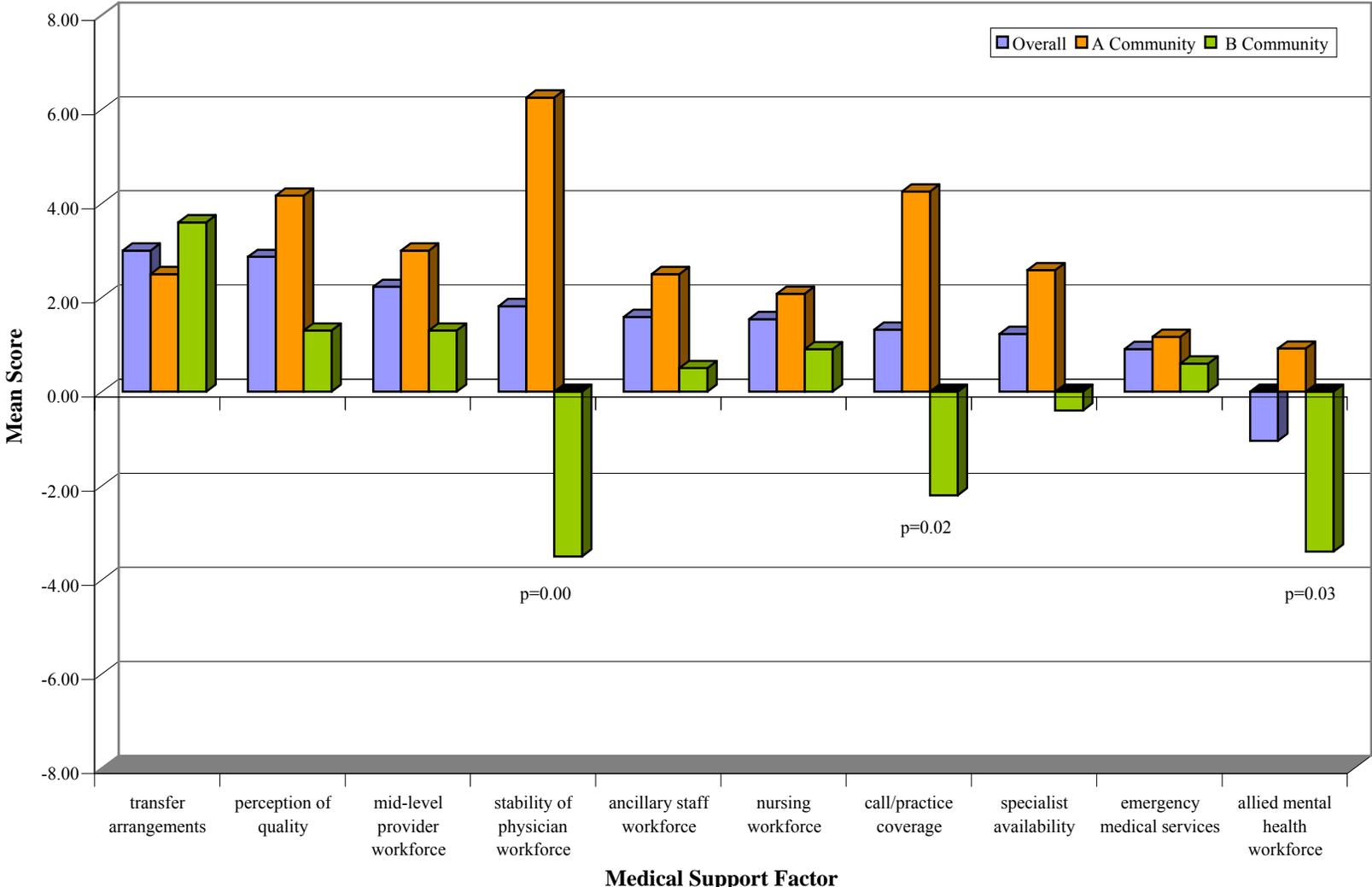
**Figure 32**  
**Scope of Practice Class Community Apgar Mean Scores**  
**A Community vs. B Community**



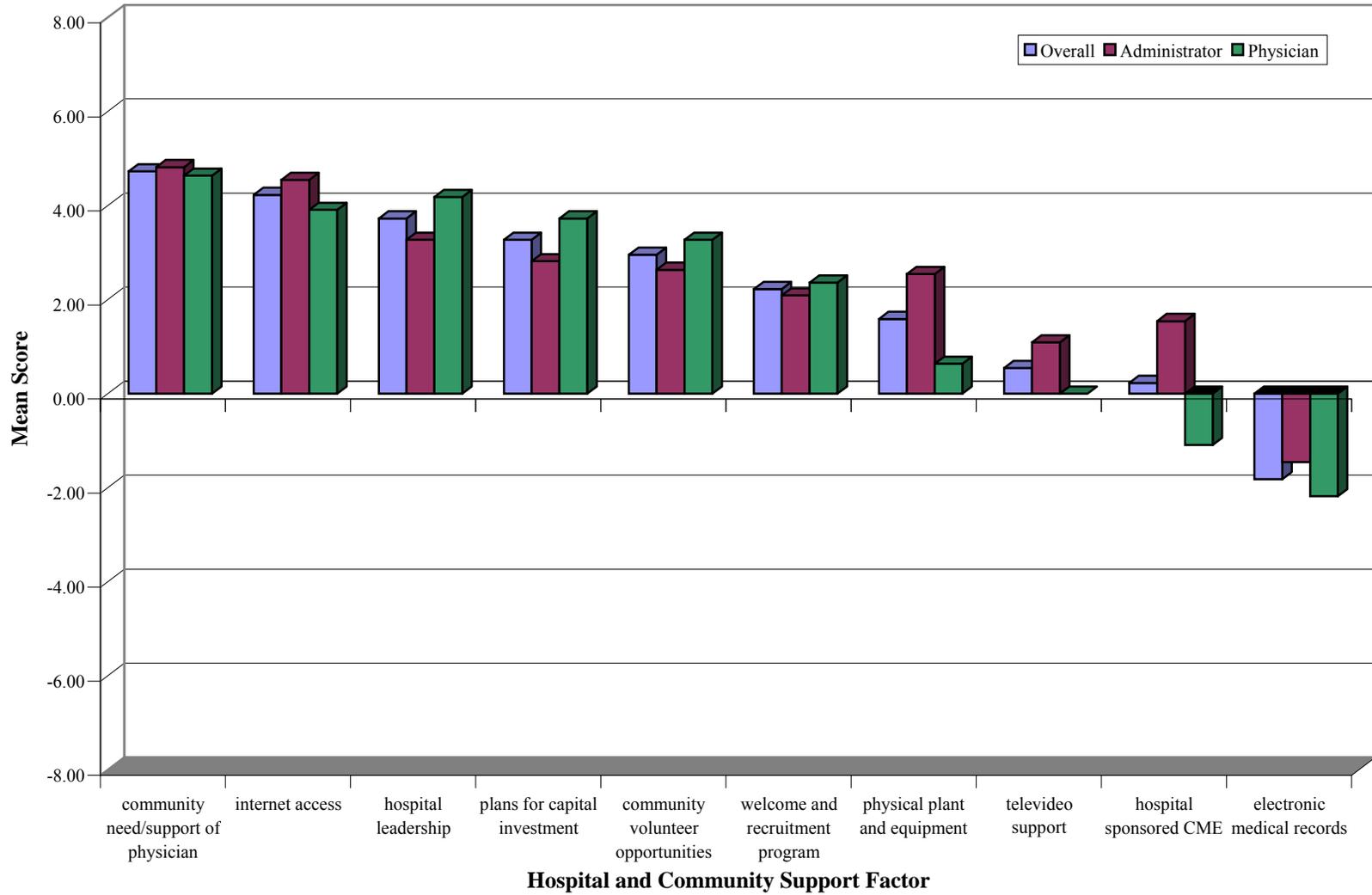
**Figure 33**  
**Medical Support Class Community Apgar Mean Score**  
**Administrator vs. Physician**



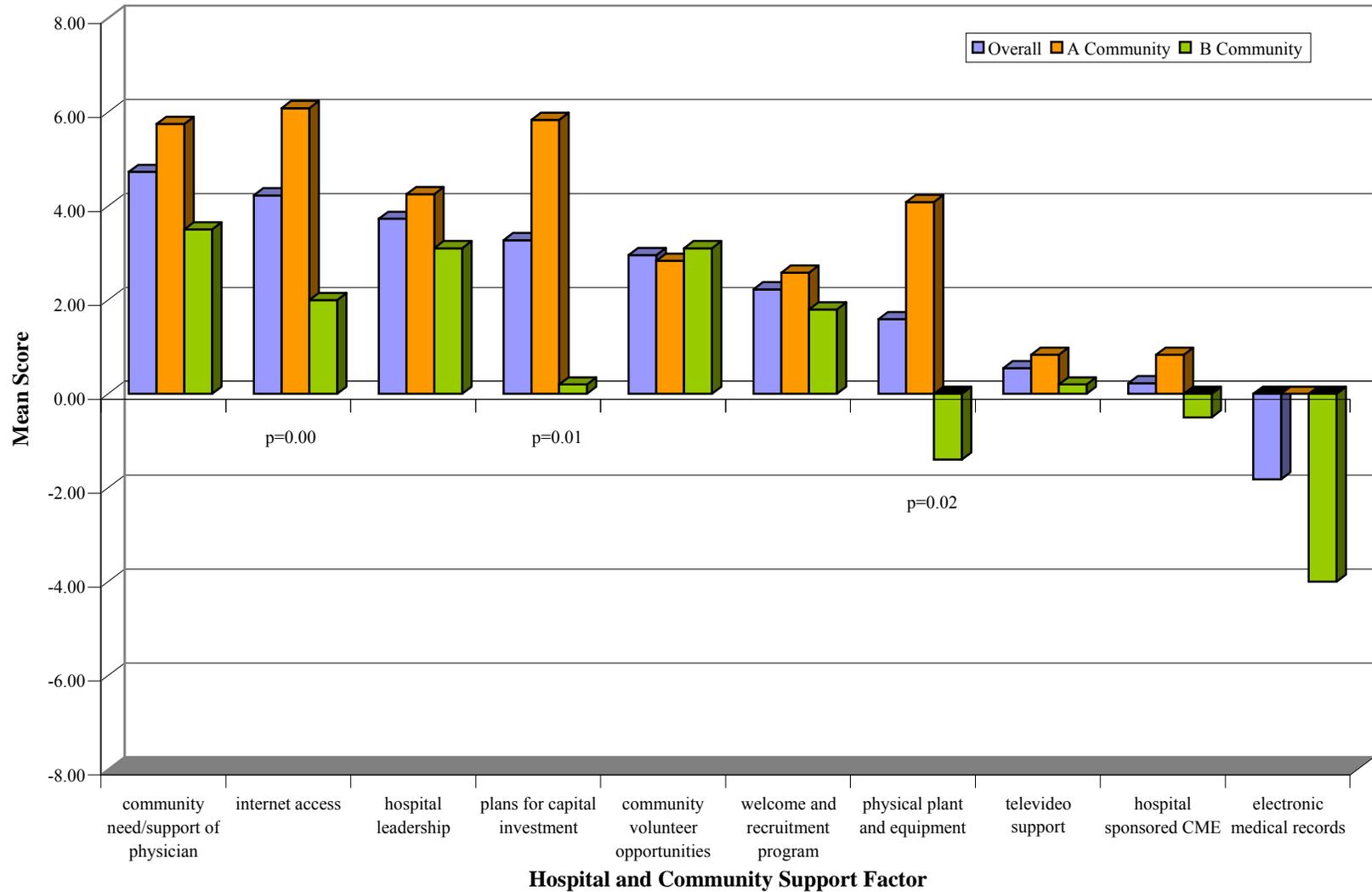
**Figure 34**  
**Medical Support Class Community Apgar Mean Score**  
**A Community vs. B Community**



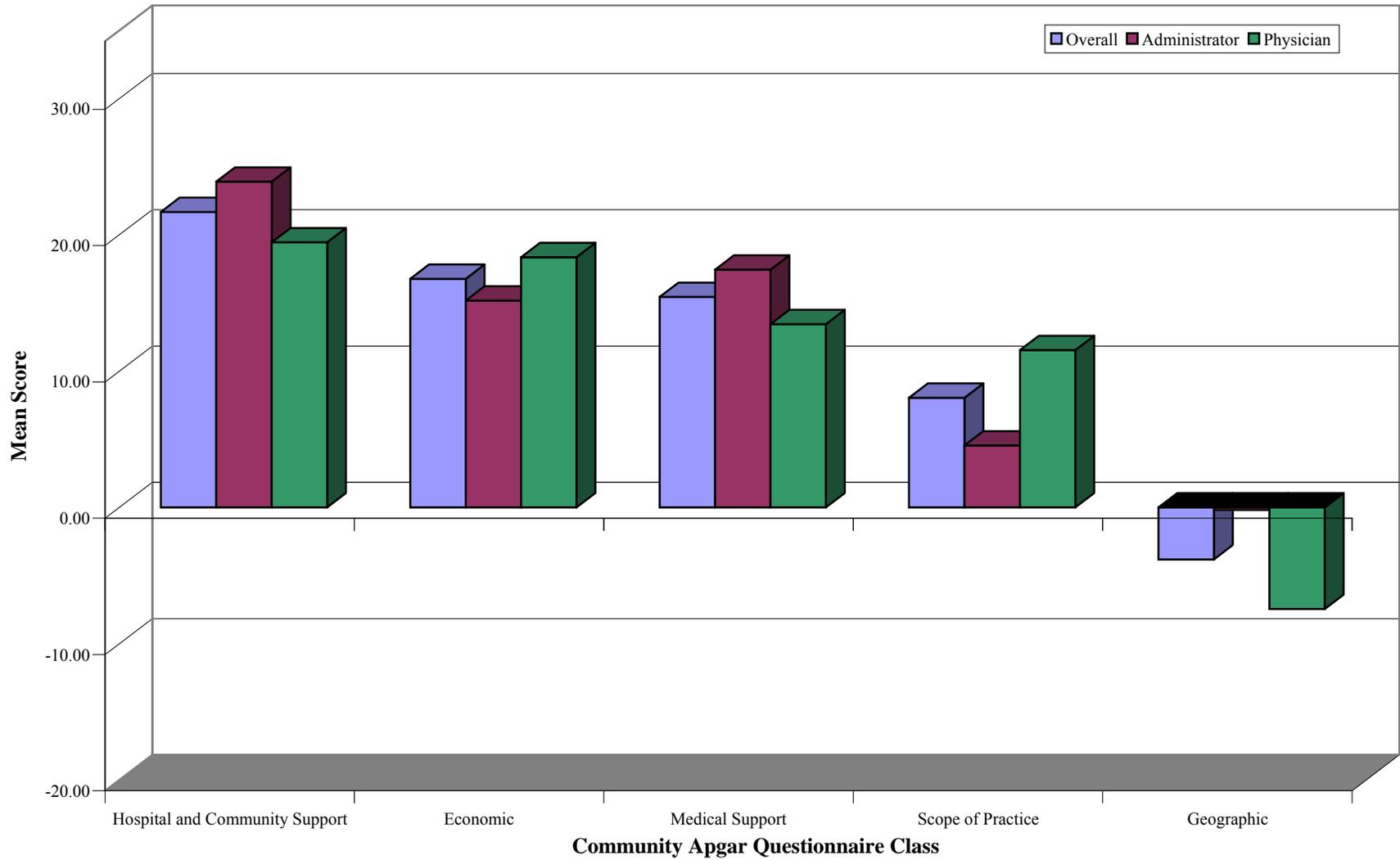
**Figure 35**  
**Hospital and Community Support Class Community Apgar Mean Score**  
**Administrator vs. Physician**



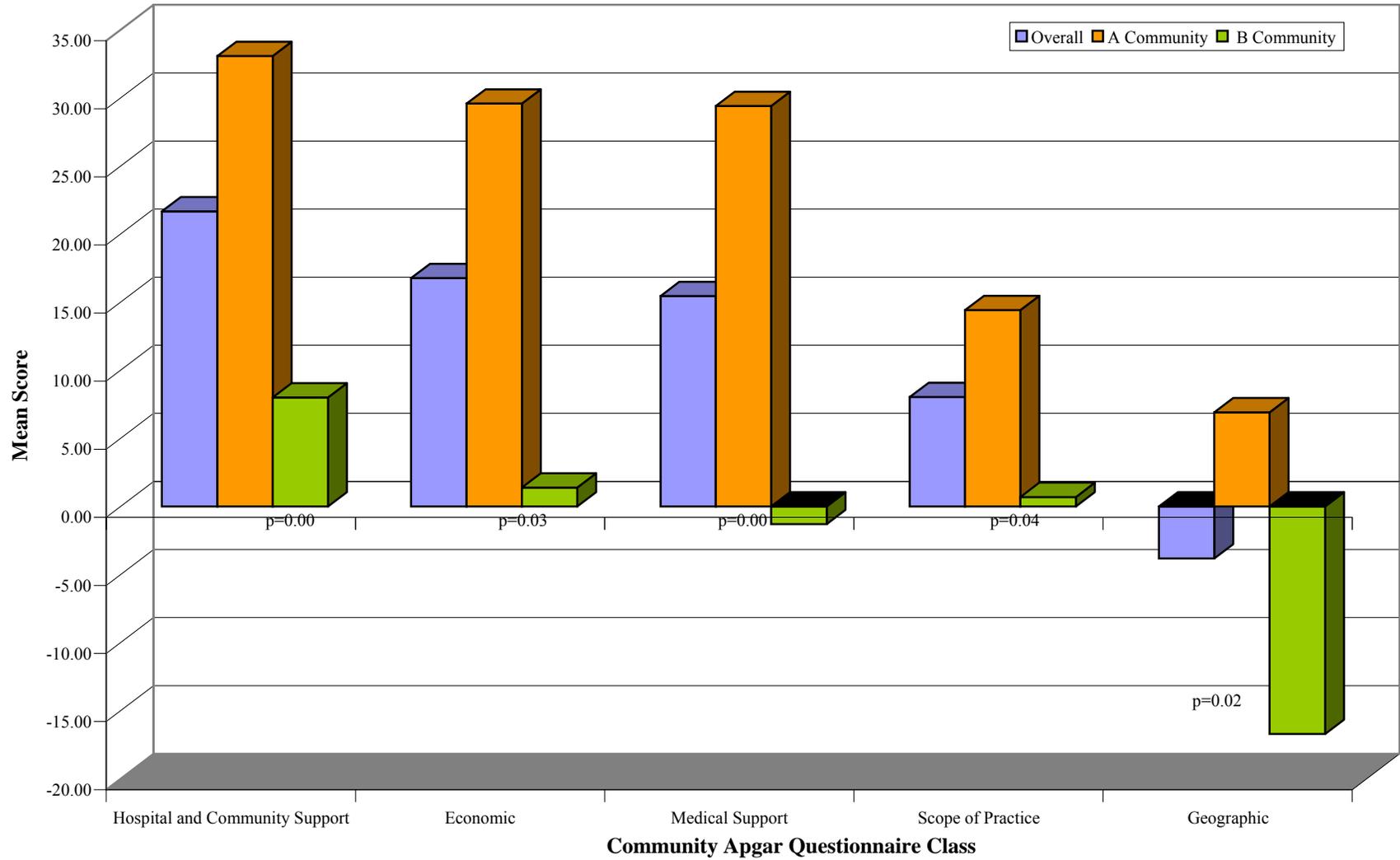
**Figure 36**  
**Hospital and Community Support Class Community Apgar Mean Score**  
**A Community vs. B Community**



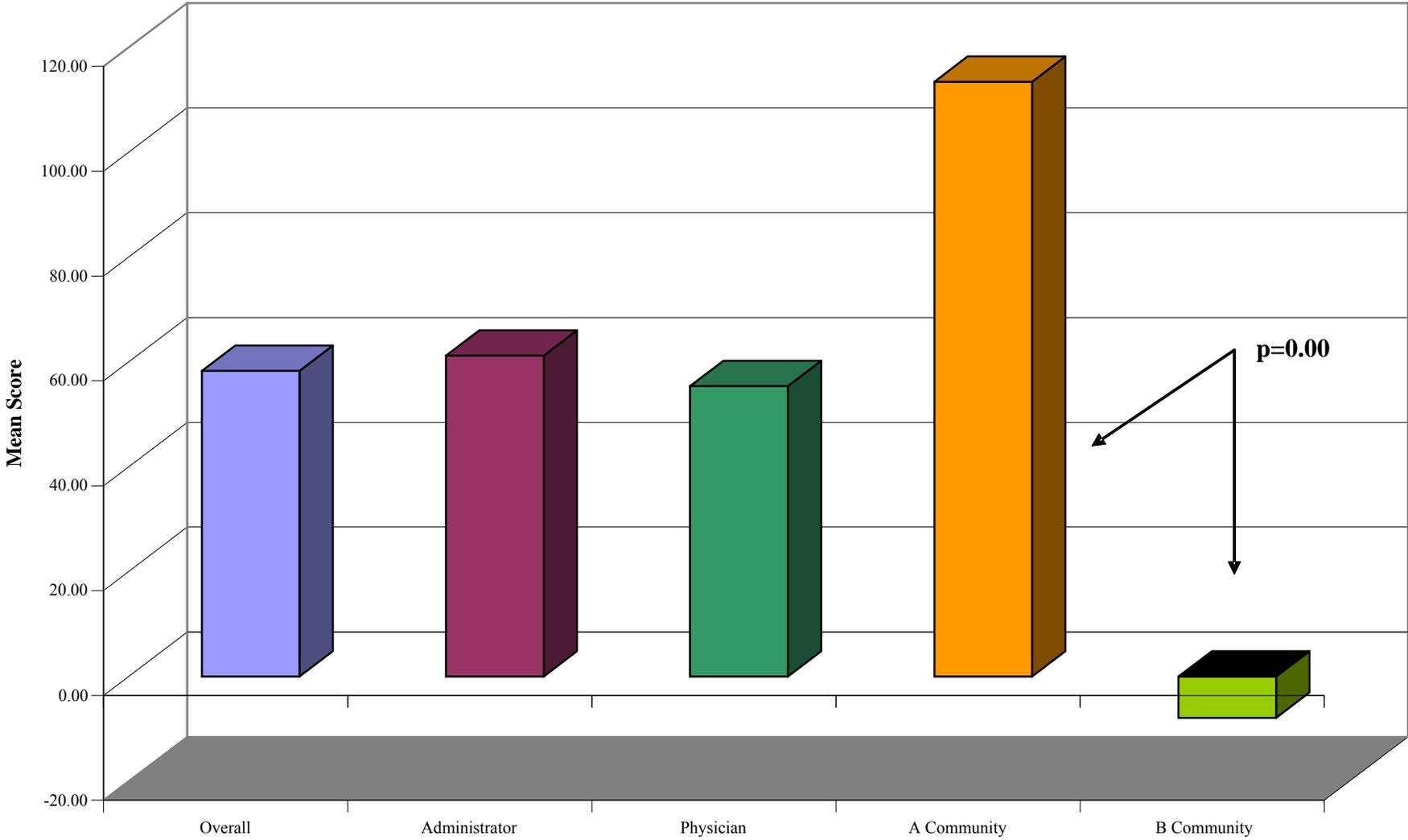
**Figure 37**  
**Class Community Apgar Mean Score**  
**Administrator vs. Physician**



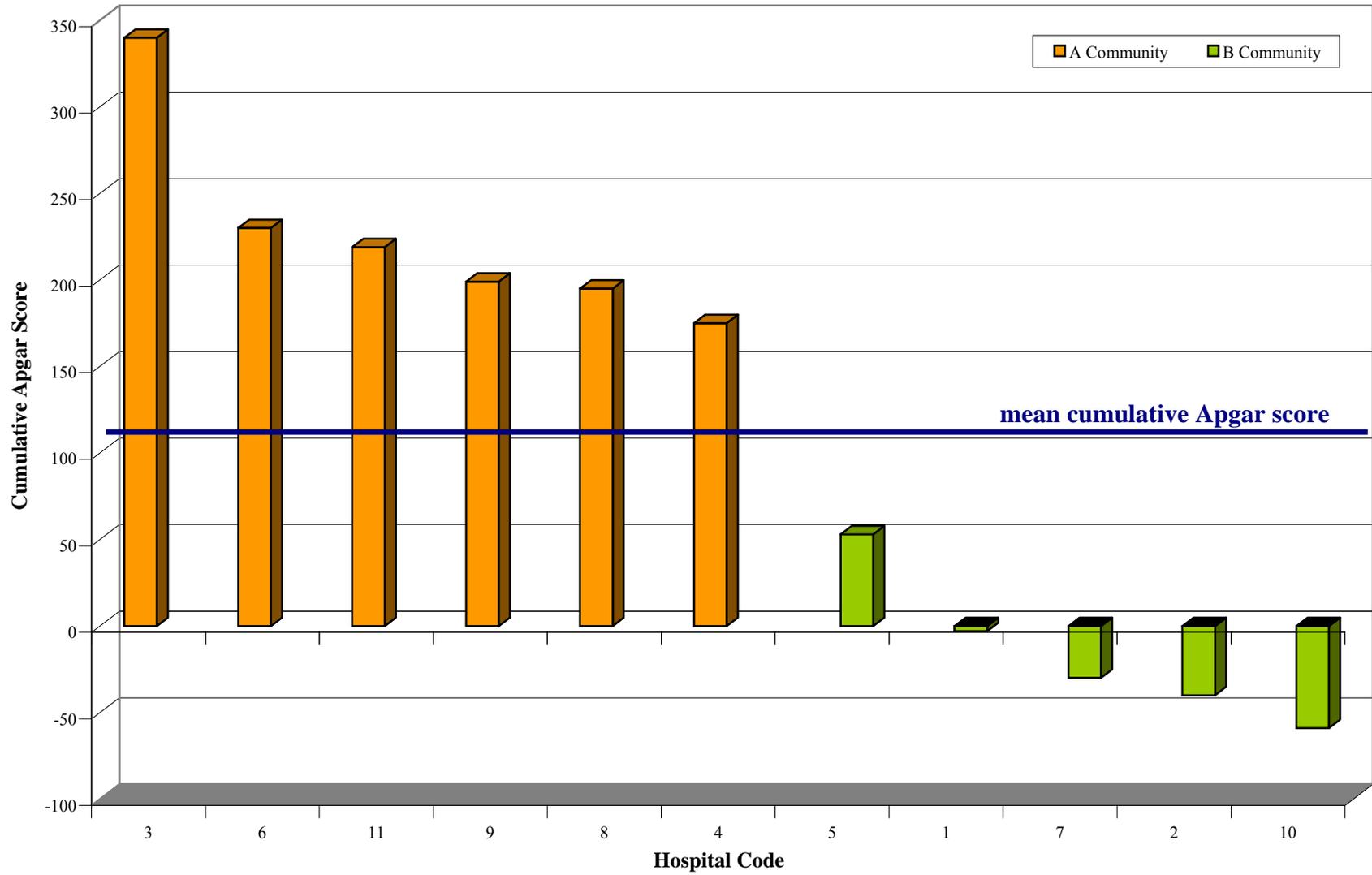
**Figure 38**  
**Class Community Apgar Mean Score**  
**A Community vs. B Community**



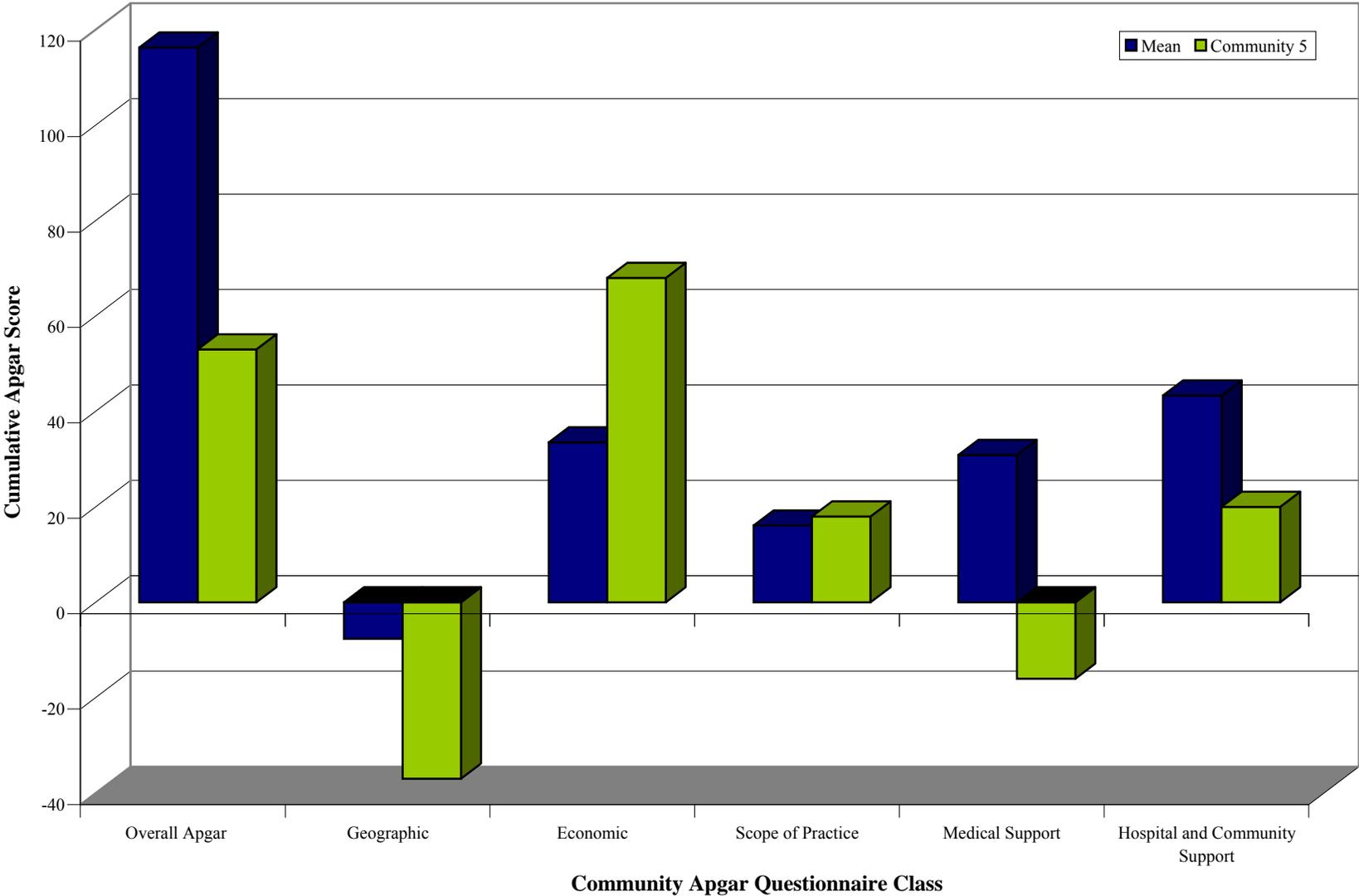
**Figure 39**  
**Summary Class Community Apgar Mean Score**  
**by Overall Respondent and Community Type**



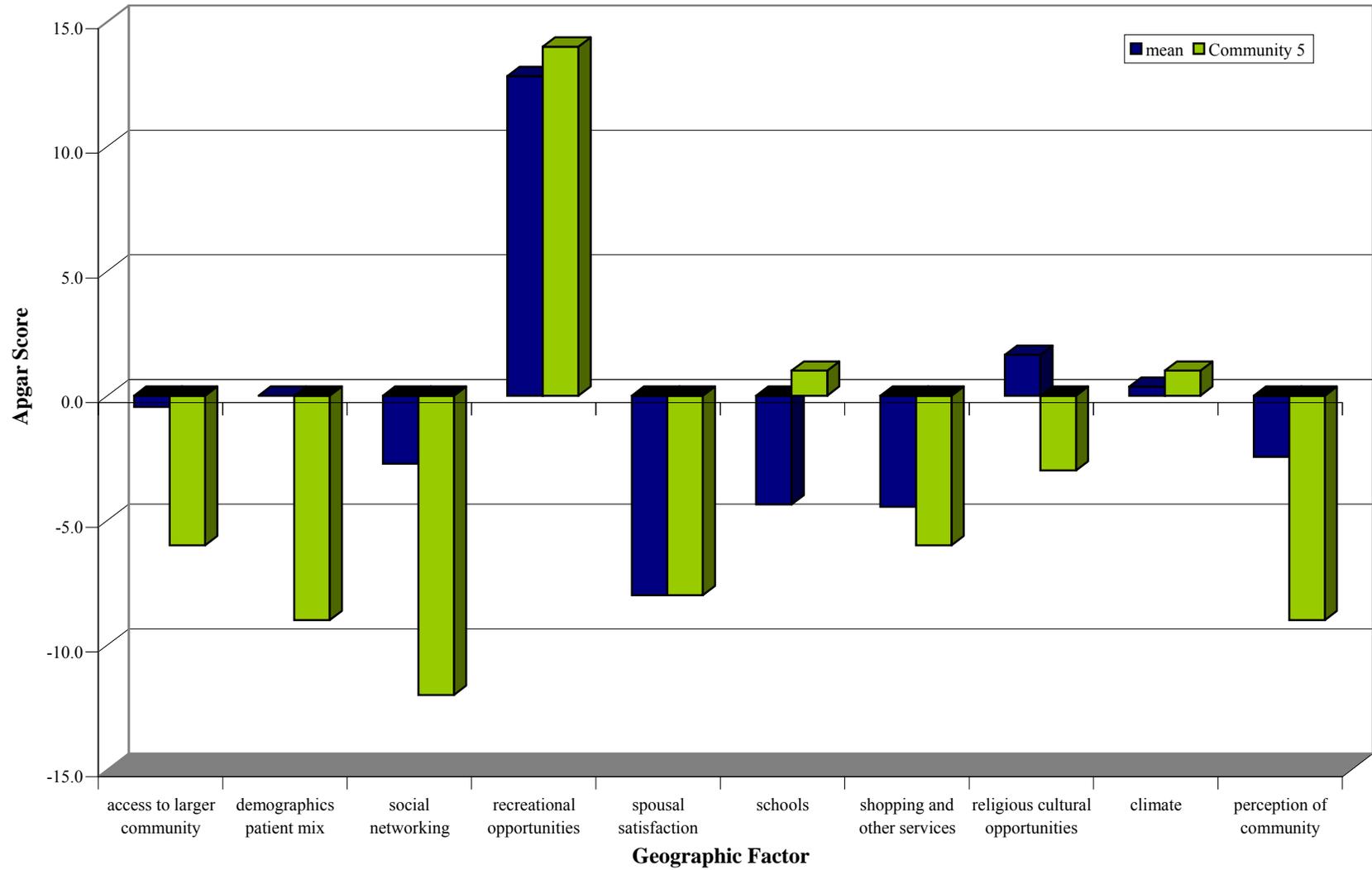
**Figure 40**  
**Cumulative Community Apgar Score by Hospital**



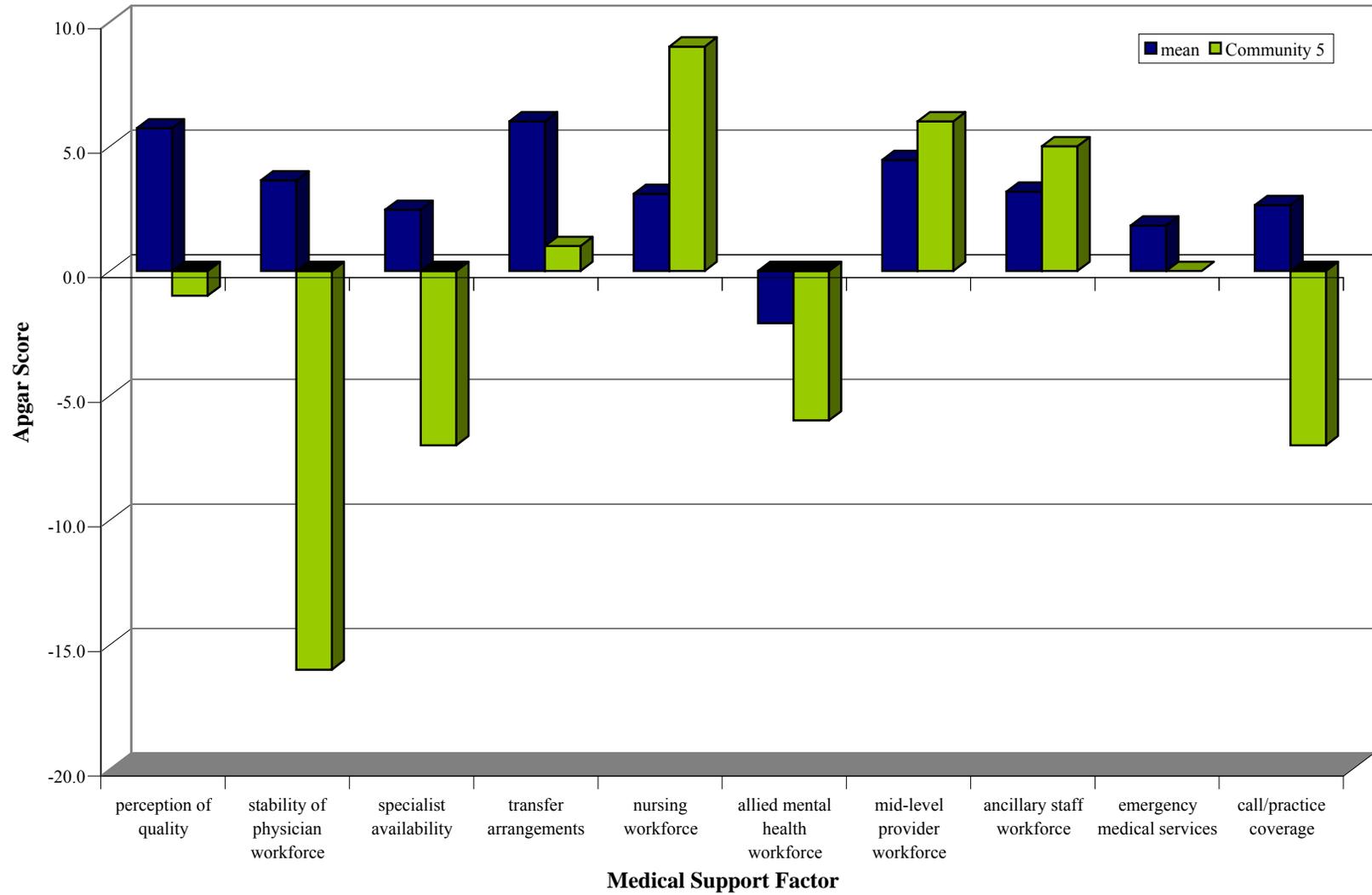
**Figure 41**  
**Comparative Apgar Score for Community Five**



**Figure 42**  
**Comparative Apgar Score for Geographic Class**  
**for Community Five**



**Figure 43**  
**Comparative Apgar Score for Medical Support Class**  
**for Community Five**



## **Appendix A**

### **Community Apgar Questionnaire**

## Community Apgar Questionnaire

Site Code: \_\_\_\_\_

Subject Code: \_\_\_\_\_

Instructions: The interviewer will ask the subject to assess how each of the following factors, organized into five classes, impacts recruitment and retention of Family Medicine physicians in their community. Each factor will be rated on two dimensions: relative advantage or challenge for their community and relative importance to recruiting Family Medicine physicians to the community.

Class/Factor	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Geographic</b>								
Access to larger community								
Demographics/patient mix								
Social networking								
Recreational opportunities								
Spousal satisfaction (education, work, general)								
Schools								
Shopping and other services								
Religious/cultural opportunities								
Climate								
Perception of community								
<b>Economic</b>								
Employment status								
Part-time opportunities								
Loan repayment								
Income guarantee								
Signing bonus								
Moving allowance								
Start-up/marketing costs								
Revenue flow								
Payor mix								
Competition								

Class/Factor	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Scope of Practice</b>								
Obstetrics								
C-section								
Emergency room coverage								
Endoscopy / surgery								
Nursing home								
Inpatient care								
Mental health								
Mid-level supervision								
Teaching								
Administration								
<b>Medical Support</b>								
Perception of quality								
Stability of physician workforce								
Specialist availability								
Transfer arrangements								
Nursing workforce								
Allied mental health workforce								
Mid-level provider workforce								
Ancillary staff workforce								
Emergency medical services								
Call/practice coverage								

Class/Factor	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
<b>Hospital and community support</b>								
Physical plant and equipment								
Plans for capital investment								
Electronic medical records (EMR)								
Hospital leadership								
Internet access								
Televideo support								
Hospital sponsored CME								
Community need/support of physician								
Community volunteer opportunities								
Welcome and recruitment program								

**Open-ended questions**

1. What are your greatest barriers to recruitment and retention of Family Medicine physicians?

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2. What can be done to overcome these barriers?

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3. What reasons has a successful physician candidate given for not accepting a position in the community? What did that person ultimately do instead (if you know)?

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## **Appendix B**

### **Glossary of Terms**

## Glossary of Terms

### Geographic Class Factors

*Access to larger community*

The ability to access or ease of access to a larger community

*Demographics/patient mix*

The demographics of patients in the community including age, race, gender or other

*Social networking*

Opportunities or ease of socializing for the physician

*Recreational opportunities*

Opportunities for local, enjoyable non-work time activities

*Spousal satisfaction (education, work, general)*

Overall satisfaction of the spouse in regard to local community living such as education, work, and in general

*School*

Adequacy of schools for the physician's children

*Shopping and other services*

Adequacy of local access to shopping or services for physician and family

*Religious/cultural opportunities*

Adequacy of local access for religious or cultural participation for physician and family

*Climate*

Weather

*Perception of community*

Perception of the community overall by someone not from the community

### Economic Class Factors

*Employment status*

Whether or not a desire for employee status is available or encouraged or required

*Part-time opportunities*

Whether or not a desire for part-time work status is available or supported

*Loan repayment*

Whether or not loan repayment is available for qualifying physician

*Income guarantee*

Whether or not an income guarantee is available for new physician

*Signing bonus*

Whether or not a signing bonus is available for new physician

*Moving allowance*

Whether or not a moving allowance is available for new physician

*Start-up/marketing costs*

Whether or not start-up or marketing cost support is available for new physician

*Revenue flow*

No matter by what specific means, the amount of revenue earned by the physician

*Payer mix*

Independent of physician earnings, the payer mix of the patients seen

*Competition*

The sense of competition amongst primary care providers for patients

**Scope of Practice Class Factors**

*Obstetrics*

The impact of whether or not Obstetrics is an option, not an option, or mandatory.

*C-section*

The impact of whether or not C-Sections is an option, not an option, or mandatory.

*Emergency room coverage*

The impact of whether or not ER coverage is an option, not an option, or mandatory.

*Endoscopy/surgery*

The impact of whether or not EGD and/or colonoscopy is an option, not an option, or mandatory.

*Nursing home*

The impact of whether or not nursing home care is an option, not an option, or mandatory.

*Inpatient care*

The impact of whether or not inpatient hospital care is an option, not an option, or mandatory.

*Mental health*

The impact of whether or not mental health care by the physician is an option, not an option, or mandatory.

*Mid-level supervision*

The impact of whether or not mid-level supervision by the physician is an option, not an option, or mandatory.

*Teaching*

The impact of whether or not teaching residents or medical students by physicians is an option, not an option, or mandatory.

*Administration*

The impact of whether or not administrative duties for the physician is an option, not an option, or mandatory.

**Medical Support Class Factors**

*Perception of quality*

The overall reputation for quality of medical care for this community as seen by someone not from this community

*Stability of physician workforce*

The stability of the physician workforce and longevity of the retained physicians

*Specialist availability*

The availability of specialists and sub-specialist for patient care; either on site or by other means

*Transfer arrangements*

The existence and adequacy of transfer arrangements for patients to referral hospital(s)

*Nursing workforce*

The adequacy of nursing workforce for both quantity and quality

*Allied mental health workforce*

The adequacy allied mental health workforce for both quantity and quality

*Mid-level provider workforce*

The adequacy of mid-level provider for both quantity and quality

*Ancillary staff workforce*

The adequacy of ancillary staff (such as laboratory, x-ray technician, respiratory therapy, physical therapy, occupational therapy) workforce for both quantity and quality

*Emergency medical services*

The adequacy of pre-hospital emergency medical services for both quantity and quality

*Call/practice coverage*

The adequacy of call coverage and practice coverage for physician leave, holidays and vacation for both quantity and quality

**Hospital and Community Support Class Factors**

*Physical plant and equipment*

The current adequacy of the hospital and clinic physical plant and equipment

*Plans for capital investment*

The adequacy of the hospital plans for capital investment in the hospital and/or clinic

*Electronic medical records (EMR)*

The existence and adequacy of electronic medical records in the hospital and clinic environments

*Hospital leadership*

The adequacy of hospital leadership including the CEO, CFO and hospital board functions

*Internet access*

The existence and adequacy of internet access in the hospital and clinic

*Televideo support*

The existence and adequacy of televideo capability in the community for patient care or other communications

*Hospital sponsored CME*

The existence and adequacy of local hospital-sponsored continuing medical education

*Community need/support of physician*

The perceived sense of need for and/or community support of a new physician

*Community volunteer opportunities*

The existence and adequacy for local opportunities for physician volunteering, either medical or nonmedical

*Welcome and recruitment program*

The existence and adequacy of any recruitment plan and/or welcome for an interviewing or newly recruited physician