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Assessing Community Health Center (CHC) Assets and Capabilities for Recruiting and Retaining Physicians: The CHC Community Apgar Questionnaire

David Schmitz
Boise State University

Ed Baker
Boise State University

Ayaka Nukui
Boise State University

Benjamin Tverdy
Boise State University

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Prepared for:

State Office of Rural Health and Primary Care
Idaho Department of Health and Welfare

Prepared by:

David Schmitz, MD, Family Medicine Residency of Idaho
Ed Baker, PhD, Boise State University
Ayaka Nukui, MHS, Boise State University
Benjamin Tverdy, Boise State University

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Executive Summary

Community factors play a key role in the recruitment and retention of physicians. While prior workforce studies often investigated characteristics of the candidate-physician, the initial Critical Access Hospital Community Apgar Questionnaire (CAH CAQ) study identified community factors at critical access hospitals which help determine the success of achieving and maintaining an adequate local physician workforce. The goals of the current study are to identify opportunities for improvement in physician retention and recruitment in Idaho's Community Health Center (CHC) systems and to develop a better understanding of the 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 Health Center Community Apgar Questionnaire (CHC CAQ) seeks to serve the same purpose for physician recruitment to communities. It should be noted that the Apgar score of a newborn is not necessarily prognostic of the longer-term outcome and similarly, the CHC CAQ is designed to function as a real-time measure. As in the construction of the initial CAH CAQ tool, this study for CHCs identified factors important in recruitment and retention by literature search, site visits during years of prior research and in discussions with physicians and administrators working at CHCs. Factors were categorized into one of the following five classes: geographic, economic, scope of practice, medical support, or facility and community support. With each class containing ten factors, a total of 50 factors were used to comprise the CHC CAQ (this mirrored the 50 factor, five class approach for the CAH CAQ). 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 CHC CAQ factors.

The CHC CAQ was administered in a structured interview to provide consistency of interpretation of the questions amongst the respondents. A total of eleven Idaho communities with CHCs 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 named administrator of the CHC and also the physician identified to have recruiting responsibilities participated individually in the interview. CHC CAQ 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 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 administrators participated in the survey. One community was unable to participate because of no physicians providing patient care other than supervision of physician assistants. A second community was eliminated due to this being the employer of a member of the primary research team. All other communities invited to participate did so and were included in the study. 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 50, 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. Notably, these discussions identified factors already contained within the CHC CAQ.

In these eleven communities results regarding self-perception of un-weighted advantages and challenges identified recreational opportunities and loan repayment as the highest community advantages

with mental health provision of services by the physician and televideo support identified as the greatest challenges. For all individual factors, there were no significant differences found between CHC administrator and physician responses demonstrating internal consistency in the identification of advantages and challenges for each factor. Significant differences in scores were seen between communities which correlated to the historical recruitment trends identified as alpha or beta. Spousal satisfaction levels, patient demographic characteristics, call and practice coverage, shopping, CME benefits, office GYN procedures, plans for capital investment, and efficient delegation of services were factors where alpha communities scored significantly higher than beta communities. Alpha communities also had significantly higher scores in economic, geographic, facility and community support and scope of practice classes as well as the overall score across classes.

Differences in importance ratings for individual factors occurred between alpha and beta communities and but not between administrators and physicians. Alpha communities rated allied mental health staffing and moonlighting opportunities as more important while beta communities rated recreational opportunities and the rendering of emergency care to be of greater importance. Beta communities had significantly higher importance ratings in the geographic class. No other within or across class differences were noted. Generally, the overall importance scores demonstrated no practical differences between either the alpha and beta communities or between the administrator and physician respondents although some significant differences were identifies in a few individual factors. This suggests that whether these parameters were seen as an advantage or disadvantage in recruitment to any particular community, their relative importance in recruitment was consistently recognized. Salary, call and practice coverage, spousal satisfaction and obstetrical deliveries/C-sections were rated as the highest areas of importance and were amongst the most frequently mentioned greatest barriers in the opened-ended responses as well.

The overall rank ordering of classes by mean Community Apgar scores in these Idaho communities was as follows: medical support; economic, geographic, facility and community support, scope of practice.

There are statistically significant differences within all classes and across classes with the exception of the medical support class where alpha communities consistently score higher on mean Community Apgar scores. These statistical differences are not found by respondent type within any class or across classes. Given these findings, the CHC CAQ appears to consistently quantify self-report of community assets and capabilities and furthermore correlates to historical experience in workforce trends for a particular community. Overall, the highest Community Apgar scores were seen for recreational opportunities and loan repayment. The overall lowest Community Apgar scores were seen for provision of mental health services by the physician, televideo support, and spousal satisfaction. Alpha communities had significantly higher scores in spousal satisfaction, demographic of patients, shopping and other services, CME benefit, retirement package, office GYN procedures, call/ practice coverage, delegated physician patient services and plans for capital improvement. Beta communities had significantly higher scores for mid-level supervision.

As in the case of the original critical access hospital tool, the CHC CAQ seems to discriminate between communities with greater assets and capabilities and those with lesser assets and capabilities and 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. The CHC CAQ may be used by a community 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 CHC 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 physicians in their Idaho community. Similar to the "Community Apgar Program" developed for critical access hospitals, this tool may likewise be used to share successful strategies that communities have used to overcome disadvantages which may be difficult or impossible to modify. These "Community Apgar Solutions" allow the sharing of developed best practices through further research and collaboration. The

CHC CAQ can 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.

Assessing Community Health Center (CHC) Assets and Capabilities for Recruiting and Retaining Physicians: The CHC Community Apgar Questionnaire

Introduction

Idaho has physician access and shortage issues. In 2007, Idaho had the second lowest total number of physicians among 50 other states. Approximately two physicians are available to provide services to 1,000 Idaho residents, which is 44% below the national average.[1] The American Medical Association reported that 17.4% of Idaho residents live in a designated primary care shortage area, among the nation's highest for any state.[2] Idaho also has the sixth oldest physician workforce in the country, and 40% of Idaho physicians registered with the AMA were age 55 or older.[1] The United States Census Bureau predicted that the United States population of age 65 years or older will grow by 60% between 2000 and 2030.[3] With a large projected population growth, especially of persons 65 years old or older, Idaho will experience a significant decrease in its physician workforce due to retirement and a substantial increase in the number of residents with greater medical needs.[4] The American Academy of Family Physicians identified Idaho as one of the five states that would face serious shortages of family medicine physicians by 2020.[5]

Recruitment and retention strategies are critical to address physician shortage problems in Idaho and communities are anxious to better understand the factors involved. In the setting of limited resources, appreciating their relative importance from the physician's perspective is crucial. The ability to recruit and retain physicians directly affects the ability to provide adequate medical services to the community.[6] The recruitment and retention of physicians in underserved areas is affected by many factors. These factors can be conceptualized into five classes which are geographic, financial, scope of practice, medical support and facility and community support.[7]

The number of published reports that documented successful case studies and/or strategies regarding community health center (CHC) physician recruitment is limited. As a result, many CHCs still rely on

expensive physician recruitment firms and/or their own experience-based recruitment strategies. Without having an opportunity to identify their community's assets and capabilities for physician recruitment and retention, CHCs with a historical challenge in recruitment and retention of physicians continue to experience physician shortage problems. Comparative analysis with peers can be difficult and addressing biases within the community or between physicians and administrator views can be unintentional barriers.

The purpose of this study was to develop an evaluation instrument useful to Idaho communities in their assessment of assets and capabilities related to physician recruitment and retention to CHCs which serve these communities. Just as the Apgar score is used to quantify resources and capabilities of the newborn that are indicative of current functioning, the Community Health Center Community Apgar Questionnaire (CHC CAQ) seeks to serve the same purpose for physician recruitment to underserved communities. The results of this study may help Idaho CHCs to find improvement opportunities for physician recruitment and retention strategies.

Methods

Human Subjects Review and Approval

The research methods described in this section as well as the Community Health Center Community Apgar Questionnaire (CHC CAQ) found in Appendix A were reviewed and approved by the Boise State University Human Subjects Institutional Review Board on July 13, 2009. 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 CHC CAQ was developed by the researchers based on (1) a review of the published literature, (2) statewide site visits to Idaho communities, (3) discussions with physicians and administrators of community health centers (CHCs) and (4) discussions with members of the Idaho Primary Care Association workforce committee. The CHC CAQ is constructed of 50 factors which represent specific elements related to physician recruitment and retention in Idaho CHCs. These factors were classified into five major classes based on their characteristics. The classes are labeled geographic, economic, scope of practice, medical support and facility and community support. Each class contains ten factors. In addition, there are three open-ended qualitative questions at the end of the instrument. The CHC CAQ is provided in Appendix A and Appendix B provides a glossary of terms for the 50 factors in the CHC CAQ.

The CHC CAQ was designed to produce an assessment comparable to the Apgar score which is used in clinical practice to assess an infant's 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 CHC CAQ, is similarly constructed from the sum of the scores of the five classes of factors in the CHC CAQ to create a repeatable measure of a community's assets and capabilities. This measure is intended to prognosticate the success of a CHC in recruiting and retaining physicians. In addition, the CHC CAQ is designed to be used to differentially diagnose a community's relative strengths and challenges in order to prioritize improvement

efforts. The CHC CAQ is modeled after an instrument developed for critical access hospitals (i.e., Critical Access Hospital Community Apgar Questionnaire or CAH CAQ).

Selection and Recruitment of Target Populations

The target communities for the CHC CAQ were all thirteen CHCs in Idaho. One site was chosen per CHC if the CHC had multiple service locations. The site within each system with the largest medical staff and patient population served was selected as this site would be the major service access point for the CHC. The degree of historical success in recruiting and retaining physicians in each community was identified by the researchers prior to the data analysis. CHCs with more success in recruiting and retaining 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 statewide site visits, input from Idaho Primary Care Association colleagues and by experience in placing physicians in Idaho communities by physician leaders at the Family Medicine Residency of Idaho. The final sample included seven alpha (A) and four beta (B) CHCs for a total of 11 CHCs. Two CHCs were excluded from the final sample due to potential conflict of interest issues in one case (one principle investigator was employed by the excluded CHC) and another cases was excluded as the CHC employed only physician assistants rendering patient care.

The target population for the CHC CAQ was (1) the CHC administrator and (2) physician leaders in these CHCs who had responsibilities for recruitment and retention activities. The physician leaders were selected in consultation with the CHC administrator. The recruitment of these individuals was done by phone and email by co-principal investigator David Schmitz, MD and was supported by the Idaho Primary Care Association. There were 11 CHC administrators and 11 CHC physicians in the final sample for a total of 22 respondents.

Survey Administration Process

The CHC administrators and physicians who agreed to participate in the study were mailed the CHC CAQ and a consent form after agreeing to participate in the study. One hour interviews were scheduled for each participant. CHC 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 CHC CAQ was completed during these structured interviews.

Data Processing, Analysis and Storage

The completed CHC 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 17.0) was used for the statistical analysis. Descriptive statistics were used to organize respondent ratings to factors on the CHC CAQ. Numerical scores were constructed to describe sections in the CHC 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.

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 principal investigators and qualified research staff.

Results

The results for this study are organized into six sections. First, general Community Health Center Community Apgar Questionnaire (CHC CAQ) findings are presented. The second section portrays CHC CAQ class and factor findings describing community health center (CHC) advantages and challenges. Third, CHC's assessment of the importance of CHC CAQ classes and factors are detailed. Fourth, the Community Apgar scores are presented by CHC CAQ classes and factors. Fifth, data describing the differential diagnosis capability of the CHC 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 CHC CAQ Findings

As noted in the Methods section, 11 CHC administrators and 11 CHC physicians who had leadership roles in recruitment and retention participated and completed a CHC CAQ in a structured interview format. The overall responses (N=22) for the CHC CAQ are found in Table 1 while Table 2 and Table 3 provide the CHC CAQ responses by hospital administrators (N=11) and physicians (N=11) respectively. Tables 1-3 provide responses for the 50 factors of the CHC CAQ within the five classes of the instrument.

CHC CAQ Advantages and Challenges Findings

The qualitative ratings of the CHC 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 CHC CAQ. The five classes are geographic, economic, scope of practice, medical support, and facility 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 CHC 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 schools and climate. Spousal satisfaction was identified as the greatest community challenge followed by perception of community and demographic: underserved/payor mix. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in shopping and other services ($p=0.02$), demographic: underserved/payor mix ($p=0.01$) and spousal satisfaction ($p=0.03$).

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. Loan repayment was identified as the highest community advantage followed by retirement package, perceived fiscal stability and CME benefit. Production incentive was identified as the greatest community challenge followed by salary and signing bonus/moving allowance. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in CME benefit ($p=0.03$).

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. Minor trauma (casting/suturing) was identified as the highest community advantage followed by teaching and mid-level supervision. Mental health was identified as the greatest community challenge followed by obstetrics: prenatal care, obstetrics: deliveries/C-section and administration. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in office GYN procedures ($p<0.001$).

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. Perception of quality was identified as the highest community advantage followed by mid-level provider workforce and ancillary staff workforce. Nursing workforce was identified as the greatest community challenge followed by specialist availability and pharmacy services. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in call/practice coverage ($p=0.01$).

Facility and Community Support

Table 8 and Figures 9 and 10 show the advantages and challenges mean scores for the ten factors in the facility 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 medical reference resources, CHC leadership and moonlighting opportunities. Televideo support was identified as the greatest community challenge followed by welcome

and recruitment program, physical plant and equipment and electronic medical records. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in plans for capital investment (p=0.001) and delegated physician patient services (p=0.003).

Advantages and Challenges Findings Across Classes

Table 9 and Figures 11-13 show the advantages and challenges mean scores for the five classes within the CHC 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 class scores in the CHC CAQ. Medical support was identified as the highest community advantage followed by economic**,** geographic, facility and community support and scope of practice. There were no significant differences between CHC administrator and physician scores within or across classes. Comparisons between community types showed that A communities had significantly higher scores within four of the five classes [economic (p=0.04), geographic (p=0.05), facility and community support (p<0.001), and scope of practice (p=0.05)] and across classes (p=0.001).

CHC CAQ Importance Findings

The qualitative ratings of the CHC 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 CHC CAQ. The five classes are geographic, economic, scope of practice, medical support and facility 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 CHC 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 communities followed by recreational opportunities and schools. Shopping/other services was identified as the lowest area of importance for the community followed by climate and perception of community. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that B communities had significantly higher importance ratings in recreational opportunities ($p=0.05$).

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 communities types. Salary was identified as the highest area of importance for the communities followed by loan repayment and competition. Production incentive was identified as the lowest area of importance for the communities followed by length of contract flexibility and part-time opportunities. There were no significant differences between CHC administrator and physician scores or 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: deliveries/C-section was identified as the highest area of importance for the

communities followed by obstetrics: prenatal care and mental health. Administration was identified as the lowest area of importance for the communities followed by mid-level supervision, teaching and minor trauma (casting/suturing). There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that B communities had significantly higher importance ratings for emergency/stabilization care (p=0.05).

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 communities followed by allied mental health workforce, stability of physician workforce and perception of quality. Language services support was identified as the lowest area of importance for the community followed by pharmacy services, ancillary staff workforce and mid-level provider workforce. There were no significant differences between CHC administrators and physician scores. Comparisons between community types showed that A communities had significantly higher scores for allied mental health workforce (p=0.02).

Facility and Community Support

Table 14 and Figures 22 and 23 show the importance mean scores for the ten factors in the facility and community support class. Each table/figure also contains p-values for the statistical tests across occupation and community types. Community need/support of physician was identified as the highest area of importance for the communities followed by medical reference resources and delegated physician patient services. Televideo support was identified as the lowest area of importance for the communities followed by moonlighting opportunities and plans for capital improvement. There were no significant differences

between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores for moonlighting opportunities (p=0.04).

Importance Findings Across Classes

Table 15 and Figures 24-26 show the importance mean scores for the five classes within the CHC 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 CHC CAQ. Geographic was identified as the highest area of importance for the communities followed by medical support, scope of practice, economic and facility and community support. There were no significant differences between CHC administrator and physician scores either within or across classes. Comparisons between community types showed that B communities had significantly higher scores for the geographic class (p=0.05). There was no across class significant difference in scores for A and B communities.

Community Apgar Scores

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

(Community advantage/challenge score)*(community importance score) = 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 CHC CAQ. The five classes are geographic, economic, scope of practice, medical support and facility 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 CHC 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 schools and access to larger communities. Spousal satisfaction was identified as the least developed community asset and capability followed by perception of community and demographic: underserved/payer mix. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in shopping and other services ($p=0.05$) demographic: underserved/payer mix ($p=0.04$) and spousal satisfaction ($p=0.03$).

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. Loan repayment was identified as the most significant community asset and capability followed by retirement package and CME benefit. Salary was identified as the least developed community asset and capability followed by production incentive and signing bonus/moving allowance. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in retirement package ($p=0.02$) and CME benefit ($p=0.02$).

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. Minor trauma (casting/suturing) was identified as the most significant community asset and capability followed by teaching and mid-level supervision. Mental health was identified as the least developed community asset and capability followed by administration and obstetrics: prenatal care. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that B communities had significantly higher scores in midlevel supervision ($p=0.04$) while A communities had significantly higher scores in office GYN procedures ($p<0.001$).

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. Perception of quality was identified as the most significant community asset and capability followed by mid-level provider workforce and call/practice coverage. Nursing workforce was identified as the least developed community asset and capability followed by specialist availability and pharmacy services. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in call/practice coverage ($p=0.02$).

Facility and Community Support

Table 20 and Figures 35 and 36 show the mean Community Apgar scores for the ten factors in the facility 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 medical reference resources and CHC leadership. Televideo support was identified as the least developed community asset and capability followed by welcome and recruitment program and electronic medical records. There were no significant differences between CHC administrator and physician scores. Comparisons between community types showed that A communities had significantly higher scores in plans for capital investment (p=0.007) and delegated physician patient services (p=0.003).

Community Apgar Scores Across Classes

Table 21 and Figures 37-39 show the mean Community Apgar scores for the five classes within the CHC 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 CHC CAQ. Medical support was identified as the most significant community asset and capability followed by economic, geographic, facility and community support and scope of practice. There were no significant differences between CHC administrator and physician scores either within or across classes. Comparisons between community types showed that A communities had significantly higher scores within four of five classes [economic (p=0.01), geographic (p=0.04), facility and community support (p=0.001) and scope of practice (p=0.05)] and across classes (p=0.001).

Community Apgar Scores Across CHCs

Table 22 and Figure 40 show the cumulative Community Apgar score for each of the participating CHCs. The cumulative Community Apgar score was derived by adding all Community Apgar scores for each of the 50 factors of the CHC CAQ for each CHC. The cumulative Community Apgar scores range from 389 to -44. Higher scores indicate greater community assets and capabilities.

Qualitative Results

The CHC 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 your greatest barriers to recruitment and retention of Family Medicine physicians?

   Small pool of candidate applicants. Direct competition from other recruiting entities. Offering a competitive salary. Spousal satisfaction. Mental health needs of patient population. Call and practice coverage demands. Physical plant adequacy.

2. What can be done to overcome these barriers?

   Resident rotations. Flexible contracting. Pay increase. Reduce intensity of call. Teambuilding and integration with community resources. Increase/improve patient care areas.

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)?

   Insufficient salary. Burn out. Spousal dissatisfaction. Too small or isolated community (took position in larger community).

Discussion

Research Limitations

The primary limitation of the research is the small number of communities (N=11) and Community Health Center Community Apgar Questionnaire (CHC 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 communities. A second limitation of the research is that small sample sizes 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 CHC CAQ factors were limited to 50, 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. Notably, these discussions identified factors already contained within the CAQ.

Community Advantages and Challenges Scores

In these 11 communities results regarding self-perception of advantages and challenges identified recreational opportunities and loan repayment as the highest community advantage with mental health provision of services by the physician and televideo support identified as the greatest challenges. For each factor, there were no significant differences between CHC administrator and physician responses, demonstrating internal consistency in the identification of advantages and challenges for each factor. Differences in scores were seen between communities identified as alpha or beta. These results suggest that the CHC CAQ consistently quantifies self-report of community assets and capabilities and additionally correlates to historical experience in workforce trends for a particular community.

Overall, spousal satisfaction levels, patient demographic characteristics, call and practice coverage were each seen as challenges to recruitment in beta communities while shopping, CME benefits, office GYN procedures, plans for capital investment, and efficient delegation of services were seen as advantageous in alpha communities. Respondents explained that spousal satisfaction was frequently a challenge because of isolation from desired community resources such as employment, ease of transportation (e.g., airports) and other cultural and service opportunities. Patient demographics were described as challenging due to high levels of mental health needs, economic poverty and geriatrics. In fact, 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. Call and practice coverage requirements varied widely and less strenuous requirements were seen as an advantage. The availability of office GYN procedures such as coloposcopy was seen as an advantage to provider recruitment. Efficient delegation of services from the physician to the care team was seen as a distinct advantage more often reported in alpha communities.

Community Importance Scores

Differences in importance ratings for individual factors occurred between alpha and beta communities but not between administrators and physicians. Alpha communities rated allied mental health staffing and moonlighting opportunities as more important while beta communities rated recreational opportunities and the rendering of emergency care to be of greater importance. It is of interest that provision of mental health services by the physician provider was the most challenging overall barrier to recruitment of physicians and also that the importance of allied mental health staffing was ranked as significantly higher by alpha communities than by beta communities. This was validated during the interviews where respondents identified allied mental health staff as a potential key solution to relieving the stress of provision of mental health services by the physicians alone to a population uniquely requiring those services. Beta communities'

ranking of recreational opportunities and the rendering of emergency care as more important may be due to those beta communities being located in more rural or isolated geography than their alpha counterparts.

Overall by category, beta communities gave greater importance scores to the geographic class. This again is likely a result of the beta communities being more rural or isolated geographically. Generally however, the overall importance scores demonstrated no practical difference between either the alpha and beta communities or between the administrator and physician respondents. This suggests that whether these parameters were seen as an advantage or disadvantage in recruitment to any particular community, their relative importance in recruitment was consistently recognized. Salary, call and practice coverage, spousal satisfaction and obstetrical deliveries/C-sections were rated as the highest areas of importance and were amongst the most frequently mentioned greatest barrier in the opened-ended responses as well.

Community Apgar Scores

The overall rank ordering of classes by mean Community Apgar scores in these Idaho communities was as follows: medical support; economic, geographic, facility and community support, scope of practice. This may reflect that the structure and financing of the community health center (CHC) entities is better supported for their provision of a more limited scope of services as compared to critical access hospitals while facing similar overall pressures for recruiting physicians as their other clinical facility counterparts.

There are statistically significant differences within all classes and across classes with the exception of medical support where alpha communities consistently score higher on mean Community Apgar scores. Again, the presence of less of a difference between alpha and beta CHC communities across the medical support class may be in part to the scope of services and their organization as CHCs. Caution should be exercised however given the limited sample size which makes further investigation of this point necessary. Statistical differences are not found by respondent type within any class or across classes.

The results suggest that the CHC 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 "Community 8" scored higher than two of its alpha counterparts, the trend clearly identifies a gradient effect between the higher scoring alpha communities and the lower scoring beta communities. The phenomenon of these findings can be explained by at least two observations. First, communities do not remain static within their historical categorization of alpha or beta but do in fact improve (or devolve) in their abilities and assets. Secondly, this pilot study enrolled all eligible CHCs with a gradient from alpha to beta that was defined in relative terms to one another. The prior study of critical access hospitals referenced earlier in this report was a sample of alpha and beta communities selecting eleven from a total of twenty-six with distinct histories designated as most alpha or beta.

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 and loan repayment. Similar to the critical access hospital study, recreational opportunities represent a key factor for recruiting to Idaho communities. Loan repayment is a characteristic of the CHC settings. The overall lowest Community Apgar scores were seen for provision of mental health services by the physician, televideo support, and spousal satisfaction. The issues of mental health provision of services by the physician are discussed above and are an area important for further study. Early investigation of Community Apgar Solutions as a part of the Community Apgar Program for critical access hospital communities is focused on mental health services and also physician contracting, each likely to play a critical role in the improvement of CHC recruitment as well. Televideo support was much more notable as a factor in the CHC study and may be both related to the location of televideo resources in hospital settings as opposed to CHC settings and/or a historical context if in fact this 2009 data is demonstrating a time bias from the 2008 critical access hospital study. This is also an area worthy of further study.

The responses to the open-ended questions validated the factors in the CHC CAQ and often provided historical examples in physician recruitment, retention, or loss. The most frequently mentioned factors in the

failure of recruitment or retention of family physicians was inadequate salary, inadequate call/practice relief, lack of spousal satisfaction and community isolation.

CAQ Utility as a Differential Diagnosis Tool

Similar to the critical access hospital CAQ study, the CHC 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 CHC CAQ may be used by communities to assess their relative strengths and weaknesses, the relative importance of CHC CAQ factors, and to gain a better understanding of which CHC CAQ factors are seen as most important from the physician point-of-view. The CHC CAQ may also have a role in a community's self-evaluation, prioritization of improvement plans, advertising considerations and negotiation strategy for successful recruitment and retention of physicians in their Idaho community. Following the work already underway in critical access hospital communities, this tool may also be used to share successful strategies communities have used to overcome disadvantages which may be difficult or impossible to modify. Specifically, the "Community Apgar Program" has piloted "Community Apgar Solutions", initially focusing on provision of mental health services and physician contracting to address the identified modifiable recruitment factors identified as importance issues by critical access hospitals.

The CHC 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. This is currently being studied with critical access hospitals and ongoing work with the critical access hospital CAQ tool in conjunction with the Community Apgar Program designed to provide facilitated assistance to aid in improving recruitment and retention efforts of physicians in a focused and most effective manner. The ongoing study of both community health

center and critical access hospital community settings in the framework of the Community Apgar Questionnaire and the associated Community Apgar Program will provide both cross-study data between these settings as well as ongoing temporal data for identification of longitudinal trends, aggregate analysis and targeted individual community benefit.

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Tables

Tables (Cont.)

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

	Level of Advantages and Challenges				Level of Importance			
Class/Factors	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Geographic								
access to larger community	8 (36%)	7 (32%)	7 (32%)	0 (0%)	7 (32%)	15 (68%)	0 (0%)	0 (0%)
demographic: underserved/payor mix	0 (0%)	13 (59%)	8 (36%)	1 (5%)	3 (14%)	18 (82%)	1 (5%)	0 (0%)
housing (availability &/or affordability)	6 (27%)	9 (41%)	5 (23%)	2 (9%)	4 (18%)	18 (82%)	0 (0%)	0 (0%)
schools	4 (18%)	15 (68%)	3 (14%)	0 (0%)	8 (36%)	14 (64%)	0 (0%)	0 (0%)
social networking	4 (18%)	9 (41%)	9 (41%)	0 (0%)	6 (27%)	16 (73%)	0 (0%)	0 (0%)
recreational opportunities	19 (86%)	3 (14%)	0 (0%)	0 (0%)	13 (59%)	9 (41%)	0 (0%)	0 (0%)
spousal satisfaction	1 (5%)	8 (36%)	9 (41%)	4 (18%)	16 (73%)	5 (23%)	1 (5%)	0 (0%)
shopping and other services	2 (9%)	15 (68%)	5 (23%)	0 (0%)	0 (0%)	18 (82%)	4 (18%)	0 (0%)
climate	4 (18%)	14 (64%)	4 (18%)	0 (0%)	0 (0%)	20 (91%)	2 (9%)	0 (0%)
perception of community	3 (14%)	7 (32%)	12 (55%)	0 (0%)	2 (9%)	19 (86%)	1 (5%)	0 (0%)
Economic								
part-time opportunities	4 (18%)	10 (45%)	8 (36%)	0 (0%)	2 (9%)	14 (64%)	6 (27%)	0 (0%)
loan repayment	8 (36%)	13 (59%)	1 (5%)	0 (0%)	12 (55%)	10 (45%)	0 (0%)	0 (0%)
salary	1 (5%)	11 (50%)	8 (36%)	2 (9%)	18 (82%)	4 (18%)	0 (0%)	0 (0%)
signing bonus/moving allowance	0 (0%)	15 (68%)	6 (27%)	1 (5%)	2 (9%)	18 (82%)	2 (9%)	0 (0%)
length of contract flexibility	1 (5%)	14 (64%)	7 (32%)	0 (0%)	0 (0%)	14 (64%)	7 (32%)	1 (5%)
perceived fiscal stability	3 (14%)	17 (77%)	2 (9%)	0 (0%)	2 (9%)	17 (77%)	3 (14%)	0 (0%)
production incentive	0 (0%)	12 (55%)	8 (36%)	2 (9%)	1 (5%)	11 (50%)	10 (45%)	0 (0%)
retirement package	3 (14%)	18 (82%)	1 (5%)	0 (0%)	1 (5%)	20 (91%)	1 (5%)	0 (0%)
CME benefit	3 (14%)	17 (77%)	2 (9%)	0 (0%)	4 (18%)	17 (77%)	1 (5%)	0 (0%)
competition	2 (9%)	13 (59%)	6 (27%)	1 (5%)	9 (41%)	13 (59%)	0 (0%)	0 (0%)
Scope of Practice								
obstetrics: prenatal care	1 (5%)	11 (50%)	10 (45%)	0 (0%)	13 (59%)	9 (41%)	0 (0%)	0 (0%)
obstetrics: deliveries/C-section	1 (5%)	13 (59%)	5 (23%)	3 (14%)	15 (68%)	7 (32%)	0 (0%)	0 (0%)
inpatient care	1 (5%)	13 (59%)	8 (36%)	0 (0%)	4 (18%)	18 (82%)	0 (0%)	0 (0%)
emergency/stabilization care	0 (0%)	17 (77%)	4 (18%)	1 (5%)	2 (9%)	19 (86%)	1 (5%)	0 (0%)
minor trauma (casting/suturing)	1 (5%)	20 (91%)	1 (5%)	0 (0%)	1 (5%)	20 (91%)	1 (5%)	0 (0%)
office GYN procedures	1 (5%)	14 (64%)	7 (32%)	0 (0%)	1 (5%)	21 (96%)	0 (0%)	0 (0%)
mental health	0 (0%)	8 (36%)	8 (36%)	6 (27%)	6 (27%)	15 (68%)	1 (5%)	0 (0%)
mid-level supervision	2 (9%)	14 (64%)	6 (27%)	0 (0%)	0 (0%)	20 (91%)	2 (9%)	0 (0%)
teaching	4 (18%)	15 (68%)	3 (14%)	0 (0%)	1 (5%)	20 (91%)	1 (5%)	0 (0%)
administration	0 (0%)	13 (59%)	9 (41%)	0 (0%)	0 (0%)	19 (86%)	3 (14%)	0 (0%)

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

	Level of Advantages and Challenges				Level of Importance			
Class/Factors	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Medical Support								
perception of quality	1 (5%)	21 (96%)	0 (0%)	0 (0%)	9 (41%)	12 (55%)	1 (5%)	0 (0%)
stability of physician workforce	1 (5%)	17 (77%)	2 (9%)	2 (9%)	8 (36%)	14 (64%)	0 (0%)	0 (0%)
specialist availability	3 (14%)	9 (41%)	8 (36%)	2 (9%)	3 (14%)	19 (86%)	0 (0%)	0 (0%)
nursing workforce	0 (0%)	12 (55%)	10 (45%)	0 (0%)	5 (23%)	17 (77%)	0 (0%)	0 (0%)
mid-level provider workforce	2 (9%)	19 (86%)	1 (5%)	0 (0%)	1 (5%)	20 (91%)	1 (5%)	0 (0%)
ancillary staff workforce	2 (9%)	18 (82%)	2 (9%)	0 (0%)	1 (5%)	20 (91%)	1 (5%)	0 (0%)
pharmacy services	2 (9%)	10 (45%)	10 (45%)	0 (0%)	1 (5%)	17 (77%)	4 (18%)	0 (0%)
allied mental health workforce	3 (14%)	14 (64%)	4 (18%)	1 (5%)	10 (45%)	11 (50%)	1 (5%)	0 (0%)
language services support	4 (18%)	14 (64%)	4 (18%)	0 (0%)	2 (9%)	14 (64%)	6 (27%)	0 (0%)
call/practice coverage	11 (50%)	5 (23%)	2 (9%)	4 (18%)	19 (86%)	3 (14%)	0 (0%)	0 (0%)
Facility and Community Support								
physical plant and equipment	3 (14%)	9 (41%)	10 (45%)	0 (0%)	3 (14%)	17 (77%)	2 (9%)	0 (0%)
plans for capital investment	1 (5%)	16 (73%)	5 (23%)	0 (0%)	1 (5%)	17 (77%)	4 (18%)	0 (0%)
electronic medical records	4 (18%)	8 (36%)	9 (41%)	1 (5%)	0 (0%)	22 (100%)	0 (0%)	0 (0%)
CHC leadership	2 (9%)	15 (68%)	5 (23%)	0 (0%)	2 (9%)	18 (82%)	2 (9%)	0 (0%)
televideo support	0 (0%)	5 (23%)	14 (64%)	3 (14%)	0 (0%)	5 (23%)	15 (68%)	2 (9%)
community need/support of physician	5 (23%)	14 (64%)	3 (14%)	0 (0%)	6 (27%)	16 (73%)	0 (0%)	0 (0%)
welcome and recruitment program	0 (0%)	13 (59%)	9 (41%)	0 (0%)	0 (0%)	21 (96%)	1 (5%)	0 (0%)
medical reference resources	1 (5%)	17 (77%)	4 (18%)	0 (0%)	2 (9%)	20 (91%)	0 (0%)	0 (0%)
delegated physician patient services	5 (23%)	8 (36%)	7 (32%)	2 (9%)	2 (9%)	20 (91%)	0 (0%)	0 (0%)
moonlighting opportunities	1 (5%)	17 (77%)	3 (14%)	1 (5%)	0 (0%)	12 (55%)	10 (45%)	0 (0%)

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

	Level of Advantages/Challenges				Level of Importance			
Class/Factors	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Geographic								
access to larger community	4 (36%)	3 (27%)	4 (36%)	0 (0%)	4 (36%)	7 (64%)	0 (0%)	0 (0%)
demographic: underserved/payor mix	0 (0%)	7 (64%)	4 (36%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
housing (availability &/or affordability)	3 (27%)	4 (36%)	3 (27%)	1 (9%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
schools	2 (18%)	7 (64%)	2 (18%)	0 (0%)	2 (18%)	9 (82%)	0 (0%)	0 (0%)
social networking	2 (18%)	6 (55%)	3 (27%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
recreational opportunities	10 (91%)	1 (9%)	0 (0%)	0 (0%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
spousal satisfaction	1 (9%)	5 (45%)	2 (18%)	3 (27%)	8 (73%)	2 (18%)	1 (9%)	0 (0%)
shopping and other services	1 (9%)	7 (64%)	3 (27%)	0 (0%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)
climate	2 (18%)	7 (64%)	2 (18%)	0 (0%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)
perception of community	1 (9%)	4 (36%)	6 (55%)	0 (0%)	1 (9%)	9 (82%)	1 (9%)	0 (0%)
Economic								
part-time opportunities	3 (27%)	5 (45%)	3 (27%)	0 (0%)	1 (9%)	7 (64%)	3 (27%)	0 (0%)
loan repayment	5 (45%)	6 (55%)	0 (0%)	0 (0%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
salary	0 (0%)	8 (73%)	3 (27%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)	0 (0%)
signing bonus/moving allowance	0 (0%)	9 (82%)	2 (18%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
length of contract flexibility	1 (9%)	6 (55%)	4 (36%)	0 (0%)	0 (0%)	7 (64%)	3 (27%)	1 (9%)
perceived fiscal stability	2 (18%)	7 (64%)	2 (18%)	0 (0%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)
production incentive	0 (0%)	7 (64%)	3 (27%)	1 (9%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)
retirement package	2 (18%)	8 (73%)	1 (9%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
CME benefit	1 (9%)	9 (82%)	1 (9%)	0 (0%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
competition	0 (0%)	9 (82%)	1 (9%)	1 (9%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
Scope of Practice								
obstetrics: prenatal care	0 (0%)	6 (55%)	5 (45%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)
obstetrics: deliveries/C-section	0 (0%)	7 (64%)	3 (27%)	1 (9%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
inpatient care	0 (0%)	7 (64%)	4 (36%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
emergency/stabilization care	0 (0%)	8 (73%)	3 (27%)	0 (0%)	1 (9%)	9 (82%)	1 (9%)	0 (0%)
minor trauma (casting/suturing)	0 (0%)	10 (91%)	1 (9%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
office GYN procedures	0 (0%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)	11 (100%)	0 (0%)	0 (0%)
mental health	0 (0%)	6 (55%)	3 (27%)	2 (18%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
mid-level supervision	0 (0%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
teaching	2 (18%)	9 (82%)	0 (0%)	0 (0%)	0 (0%)	11 (100%)	0 (0%)	0 (0%)
administration	0 (0%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)

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

	Level of Advantages/Challenges				Level of Importance			
Class/Factors	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Medical Support								
perception of quality	0 (0%)	11 (100%)	0 (0%)	0 (0%)	3 (27%)	7 (64%)	1 (9%)	0 (0%)
stability of physician workforce	1 (9%)	9 (82%)	0 (0%)	1 (9%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
specialist availability	2 (18%)	3 (27%)	6 (55%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
nursing workforce	0 (0%)	6 (55%)	5 (45%)	0 (0%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
mid-level provider workforce	1 (9%)	10 (91%)	0 (0%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
ancillary staff workforce	1 (9%)	10 (91%)	0 (0%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
pharmacy services	1 (9%)	5 (45%)	5 (45%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
allied mental health workforce	1 (9%)	8 (73%)	1 (9%)	1 (9%)	5 (45%)	5 (45%)	1 (9%)	0 (0%)
language services support	3 (27%)	5 (45%)	3 (27%)	0 (0%)	2 (18%)	6 (55%)	3 (27%)	0 (0%)
call/practice coverage	5 (45%)	4 (36%)	0 (0%)	2 (18%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
Facility and Community Support								
physical plant and equipment	2 (18%)	4 (36%)	5 (45%)	0 (0%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)
plans for capital investment	1 (9%)	8 (73%)	2 (18%)	0 (0%)	1 (9%)	8 (73%)	2 (18%)	0 (0%)
electronic medical records	2 (18%)	5 (45%)	4 (36%)	0 (0%)	0 (0%)	11 (100%)	0 (0%)	0 (0%)
CHC leadership	1 (9%)	9 (82%)	1 (9%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
televideo support	0 (0%)	2 (18%)	7 (64%)	2 (18%)	0 (0%)	3 (27%)	7 (64%)	1 (9%)
community need/support of physician	3 (27%)	6 (55%)	2 (18%)	0 (0%)	2 (18%)	9 (82%)	0 (0%)	0 (0%)
welcome and recruitment program	0 (0%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
medical reference resources	0 (0%)	9 (82%)	2 (18%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
delegated physician patient services	2 (18%)	5 (45%)	4 (36%)	0 (0%)	0 (0%)	11 (100%)	0 (0%)	0 (0%)
moonlighting opportunities	1 (9%)	9 (82%)	1 (9%)	0 (0%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)

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

	Level of Advantages/Challenges				Level of Importance			
Class/Factors	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Geographic								
access to larger community	4 (36%)	4 (36%)	3 (27%)	0 (0%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
demographic: underserved/payor mix	0 (0%)	6 (55%)	4 (36%)	1 (9%)	2 (18%)	8 (73%)	1 (9%)	0 (0%)
housing (availability &/or affordability)	3 (27%)	5 (45%)	2 (18%)	1 (9%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
schools	2 (18%)	8 (73%)	1 (9%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)
social networking	2 (18%)	3 (27%)	6 (55%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
recreational opportunities	9 (82%)	2 (18%)	0 (0%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
spousal satisfaction	0 (0%)	3 (27%)	7 (64%)	1 (9%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
shopping and other services	1 (9%)	8 (73%)	2 (18%)	0 (0%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)
climate	2 (18%)	7 (64%)	2 (18%)	0 (0%)	0 (0%)	11 (100%)	0 (0%)	0 (0%)
perception of community	2 (18%)	3 (27%)	6 (55%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
Economic								
part-time opportunities	1 (9%)	5 (45%)	5 (45%)	0 (0%)	1 (9%)	7 (64%)	3 (27%)	0 (0%)
loan repayment	3 (27%)	7 (64%)	1 (9%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
salary	1 (9%)	3 (27%)	5 (45%)	2 (18%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
signing bonus/moving allowance	0 (0%)	6 (55%)	4 (36%)	1 (9%)	1 (9%)	8 (73%)	2 (18%)	0 (0%)
length of contract flexibility	0 (0%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)	7 (64%)	4 (36%)	0 (0%)
perceived fiscal stability	1 (9%)	10 (91%)	0 (0%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
production incentive	0 (0%)	5 (45%)	5 (45%)	1 (9%)	1 (9%)	5 (45%)	5 (45%)	0 (0%)
retirement package	1 (9%)	10 (91%)	0 (0%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
CME benefit	2 (18%)	8 (73%)	1 (9%)	0 (0%)	1 (9%)	9 (82%)	1 (9%)	0 (0%)
competition	2 (18%)	4 (36%)	5 (45%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)
Scope of Practice								
obstetrics: prenatal care	1 (9%)	5 (45%)	5 (45%)	0 (0%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)
obstetrics: deliveries/C-section	1 (9%)	6 (55%)	2 (18%)	2 (18%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
inpatient care	1 (9%)	6 (55%)	4 (36%)	0 (0%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
emergency/stabilization care	0 (0%)	9 (82%)	1 (9%)	1 (9%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
minor trauma (casting/suturing)	1 (9%)	10 (91%)	0 (0%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
office GYN procedures	1 (9%)	6 (55%)	4 (36%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
mental health	0 (0%)	2 (18%)	5 (45%)	4 (36%)	3 (27%)	7 (64%)	1 (9%)	0 (0%)
mid-level supervision	2 (18%)	6 (55%)	3 (27%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
teaching	2 (18%)	6 (55%)	3 (27%)	0 (0%)	1 (9%)	9 (82%)	1 (9%)	0 (0%)
administration	0 (0%)	7 (64%)	4 (36%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)

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

	Level of Advantages/Challenges				Level of Importance			
Class/Factors	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Medical Support								
perception of quality	1 (9%)	10 (91%)	0 (0%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)
stability of physician workforce	0 (0%)	8 (73%)	2 (18%)	1 (9%)	3 (27%)	8 (73%)	0 (0%)	0 (0%)
specialist availability	1 (9%)	6 (55%)	2 (18%)	2 (18%)	2 (18%)	9 (82%)	0 (0%)	0 (0%)
nursing workforce	0 (0%)	6 (55%)	5 (45%)	0 (0%)	2 (18%)	9 (82%)	0 (0%)	0 (0%)
mid-level provider workforce	1 (9%)	9 (82%)	1 (9%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
ancillary staff workforce	1 (9%)	8 (73%)	2 (18%)	0 (0%)	0 (0%)	10 (91%)	1 (9%)	0 (0%)
pharmacy services	1 (9%)	5 (45%)	5 (45%)	0 (0%)	1 (9%)	7 (64%)	3 (27%)	0 (0%)
allied mental health workforce	2 (18%)	6 (55%)	3 (27%)	0 (0%)	5 (45%)	6 (55%)	0 (0%)	0 (0%)
language services support	1 (9%)	9 (82%)	1 (9%)	0 (0%)	0 (0%)	8 (73%)	3 (27%)	0 (0%)
call/practice coverage	6 (55%)	1 (9%)	2 (18%)	2 (18%)	11 (100%)	0 (0%)	0 (0%)	0 (0%)
Facility and Community Support								
physical plant and equipment	1 (9%)	5 (45%)	5 (45%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
plans for capital investment	0 (0%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)	9 (82%)	2 (18%)	0 (0%)
electronic medical records	2 (18%)	3 (27%)	5 (45%)	1 (9%)	0 (0%)	11 (100%)	0 (0%)	0 (0%)
CHC leadership	1 (9%)	6 (55%)	4 (36%)	0 (0%)	2 (18%)	8 (73%)	1 (9%)	0 (0%)
televideo support	0 (0%)	3 (27%)	7 (64%)	1 (9%)	0 (0%)	2 (18%)	8 (73%)	1 (9%)
community need/support of physician	2 (18%)	8 (73%)	1 (9%)	0 (0%)	4 (36%)	7 (64%)	0 (0%)	0 (0%)
welcome and recruitment program	0 (0%)	6 (55%)	5 (45%)	0 (0%)	0 (0%)	11 (100%)	0 (0%)	0 (0%)
medical reference resources	1 (9%)	8 (73%)	2 (18%)	0 (0%)	1 (9%)	10 (91%)	0 (0%)	0 (0%)
delegated physician patient services	3 (27%)	3 (27%)	3 (27%)	2 (18%)	2 (18%)	9 (82%)	0 (0%)	0 (0%)
moonlighting opportunities	0 (0%)	8 (73%)	2 (18%)	1 (9%)	0 (0%)	6 (55%)	5 (45%)	0 (0%)

Table 4
Geographic Class CHC 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=14]	B Community Score [N=8]	p-value (3)
recreational opportunities	1.86	1.91	1.82	0.54	1.93	1.75	0.25
schools	0.91	0.82	1.00	0.72	1.00	0.75	0.28
climate	0.82	0.82	0.82	1.00	0.86	0.75	0.47
access to larger community	0.73	0.64	0.82	0.81	0.93	0.38	0.49
shopping and other services	0.64	0.55	0.73	0.69	1.00	0.00	0.02*
housing (availability &/or affordability)	0.55	0.45	0.64	0.81	0.93	-0.13	0.09
social networking	0.36	0.64	0.09	0.34	0.64	-0.13	0.17
demographic: underserved/payor mix	0.14	0.27	0.00	0.57	0.57	-0.63	0.01**
perception of community	0.05	0.00	0.09	0.85	-0.07	0.25	0.54
spousal satisfaction	-0.32	-0.09	-0.55	0.55	0.07	-1.00	0.03*

(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 CHC 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=14]	B Community Score [N=8]	p-value (3)
loan repayment	1.27	1.45	1.09	0.29	1.29	1.25	0.58
retirement package	1.05	1.00	1.09	0.96	1.21	0.75	0.08
perceived fiscal stability	0.95	0.82	1.09	0.69	1.07	0.75	0.21
CME benefit	0.95	0.91	1.00	0.65	1.21	0.50	0.03*
part-time opportunities	0.45	0.73	0.18	0.26	0.64	0.13	0.34
length of contract flexibility	0.41	0.36	0.45	0.91	0.50	0.25	0.54
competition	0.41	0.55	0.27	0.71	0.57	0.13	0.35
signing bonus/moving allowance	0.32	0.64	0.00	0.16	0.57	-0.13	0.14
salary	0.05	0.45	-0.36	0.13	0.21	-0.25	0.39
production incentive	0.00	0.18	-0.18	0.46	-0.07	0.13	0.70

(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 CHC Community Advantages and Challenges Mean Scores
Rank Ordered by Overall Score

Scope of Practice Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=14]	B Community Score [N=8]	p-value (3)
minor trauma (casting/suturing)	0.95	0.82	1.09	0.17	1.07	0.75	0.15
teaching	0.91	1.18	0.64	0.28	1.07	0.63	0.30
mid-level supervision	0.55	0.45	0.64	0.54	0.29	1.00	0.08
emergency/stabilization care	0.50	0.45	0.55	0.72	0.71	0.13	0.19
office GYN procedures	0.41	0.45	0.36	0.91	1.07	-0.75	< 0.001**
inpatient care	0.32	0.27	0.36	0.79	0.50	0.00	0.27
administration	0.18	0.09	0.27	0.67	0.14	0.25	0.81
obstetrics: deliveries/C-section	0.18	0.18	0.18	0.91	0.43	-0.25	0.22
obstetrics: prenatal care	0.14	0.09	0.18	0.82	0.21	0.00	0.64
mental health	-0.55	-0.09	-1.00	0.11	-0.36	-0.88	0.35

(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 CHC 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=14]	B Community Score [N=8]	p-value (3)
perception of quality	1.05	1.00	1.09	0.32	1.07	1.00	0.45
mid-level provider workforce	1.00	1.09	0.91	0.58	1.00	1.00	0.65
ancillary staff workforce	0.91	1.09	0.73	0.33	1.00	0.75	0.31
language services support	0.82	0.73	0.91	1.00	0.93	0.63	0.47
call/practice coverage	0.77	0.91	0.64	0.97	1.50	-0.50	0.01**
allied mental health workforce	0.64	0.64	0.64	0.94	0.57	0.75	0.94
stability of physician workforce	0.59	0.82	0.36	0.21	0.79	0.25	0.31
pharmacy services	0.18	0.18	0.18	1.00	0.29	0.00	0.54
specialist availability	0.14	0.09	0.18	0.97	0.36	-0.25	0.33
nursing workforce	0.09	0.09	0.09	1.00	0.14	0.00	0.75

(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
Facility and Community Support Class CHC Community Advantages and Challenges Mean Scores
Rank Ordered by Overall Score

Facility and Community Support Factors	Overall Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=14]	B Community Score [N=8]	p-value (3)
community need/support of physician	0.95	0.91	1.00	0.97	1.14	0.63	0.22
medical reference resources	0.68	0.64	0.73	0.69	0.93	0.25	0.07
CHC leadership	0.64	0.91	0.36	0.23	0.86	0.25	0.13
moonlighting opportunities	0.64	0.91	0.36	0.16	0.57	0.75	0.85
plans for capital investment	0.59	0.73	0.45	0.42	1.07	-0.25	0.001**
delegated physician patient services	0.32	0.45	0.18	0.73	1.00	-0.88	0.003**
electronic medical records	0.23	0.45	0.00	0.44	0.43	-0.13	0.27
physical plant and equipment	0.23	0.27	0.18	0.83	0.50	-0.25	0.20
welcome and recruitment program	0.18	0.27	0.09	0.67	0.29	0.00	0.52
televideo support	-0.68	-0.82	-0.55	0.49	-0.50	-1.00	0.52

(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 CHC Community Advantages and Challenges Mean Scores
Rank Ordered by Summary Score

Survey Classes	Overall Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=14]	B Community Score [N=8]	p-value (3)
Medical Support	6.18	6.64	5.73	0.29	7.64	3.63	0.10
Economic	5.86	7.09	4.64	0.09	7.21	3.50	0.04*
Geographic	5.73	6.00	5.45	0.64	7.86	2.00	0.05*
Facility and Community Support	3.77	4.73	2.82	0.34	6.29	-0.63	<0.001**
Scope of Practice	3.59	3.91	3.27	0.72	5.14	0.88	0.05*
Sum of Mean Scores Across Classes	25.14	28.36	21.91	0.37	34.14	9.38	0.001**

(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 CHC Community Importance 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=14]	B Community Score [N=8]	p-value (3)
spousal satisfaction	3.68	3.64	3.73	0.90	3.57	3.88	0.24
recreational opportunities	3.59	3.73	3.45	0.20	3.43	3.88	0.05*
schools	3.36	3.18	3.55	0.08	3.43	3.25	0.41
access to larger community	3.32	3.36	3.27	0.65	3.29	3.38	0.67
social networking	3.27	3.45	3.09	0.06	3.14	3.50	0.08
housing (availability &/or affordability)	3.18	3.09	3.27	0.28	3.07	3.38	0.08
demographic: underserved/payor mix	3.09	3.09	3.09	0.96	3.21	2.88	0.08
perception of community	3.05	3.00	3.09	0.58	3.07	3.00	0.65
climate	2.91	2.82	3.00	0.15	2.93	2.88	0.68
shopping and other services	2.82	2.82	2.82	1.00	2.71	3.00	0.10

(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 CHC 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=14]	B Community Score [N=8]	p-value (3)
salary	3.82	3.91	3.73	0.28	3.79	3.88	0.61
loan repayment	3.55	3.64	3.45	0.40	3.64	3.38	0.24
competition	3.41	3.27	3.55	0.20	3.36	3.50	0.52
CME benefit	3.14	3.27	3.00	0.18	3.21	3.00	0.33
signing bonus/moving allowance	3.00	3.09	2.91	0.33	3.07	2.88	0.31
retirement package	3.00	3.09	2.91	0.17	3.07	2.88	0.15
perceived fiscal stability	2.95	3.00	2.91	0.69	2.86	3.13	0.23
part-time opportunities	2.82	2.82	2.82	1.00	2.79	2.88	0.75
length of contract flexibility	2.59	2.55	2.64	0.88	2.43	2.88	0.08
production incentive	2.59	2.55	2.64	0.82	2.43	2.88	0.11

(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 CHC Community Importance Mean Scores
Rank Ordered by Overall Score

Scope of Practice Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=14]	B Community Score [N=8]	p-value (3)
obstetrics: deliveries/C-section	3.68	3.64	3.73	0.65	3.79	3.50	0.18
obstetrics: prenatal care	3.59	3.55	3.64	0.67	3.71	3.38	0.13
mental health	3.23	3.27	3.18	0.75	3.29	3.13	0.43
inpatient care	3.18	3.09	3.27	0.28	3.21	3.13	0.61
emergency/stabilization care	3.05	3.00	3.09	0.58	2.93	3.25	0.05*
office GYN procedures	3.05	3.00	3.09	0.32	3.07	3.00	0.45
minor trauma (casting/suturing)	3.00	2.91	3.09	0.17	3.00	3.00	1.00
teaching	3.00	3.00	3.00	1.00	3.00	3.00	1.00
mid-level supervision	2.91	2.91	2.91	1.00	2.93	2.88	0.68
administration	2.86	2.82	2.91	0.54	2.86	2.88	0.91

(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 CHC 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=14]	B Community Score [N=8]	p-value (3)
call/practice coverage	3.86	3.73	4.00	0.07	3.79	4.00	0.17
allied mental health workforce	3.41	3.36	3.45	0.82	3.64	3.00	0.02*
stability of physician workforce	3.36	3.45	3.27	0.39	3.36	3.38	0.93
perception of quality	3.36	3.18	3.55	0.16	3.36	3.38	0.97
nursing workforce	3.23	3.27	3.18	0.62	3.29	3.13	0.40
specialist availability	3.14	3.09	3.18	0.54	3.14	3.13	0.91
mid-level provider workforce	3.00	3.09	2.91	0.17	3.00	3.00	1.00
ancillary staff workforce	3.00	3.09	2.91	0.17	3.00	3.00	1.00
pharmacy services	2.86	2.91	2.82	0.59	2.86	2.88	0.89
language services support	2.82	2.91	2.73	0.54	2.86	2.75	0.75

(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
Facility and Community Support Class CHC Community Importance Mean Scores
Rank Ordered by Overall Score

Facility and Community Support Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=14]	B Community Score [N=8]	p-value (3)
community need/support of physician	3.27	3.18	3.36	0.35	3.14	3.50	0.08
medical reference resources	3.09	3.09	3.09	1.00	3.07	3.13	0.68
delegated physician patient services	3.09	3.00	3.18	0.15	3.14	3.00	0.27
physical plant and equipment	3.05	3.00	3.09	0.69	3.07	3.00	0.74
electronic medical records	3.00	3.00	3.00	1.00	3.00	3.00	1.00
CHC leadership	3.00	2.91	3.09	0.33	2.93	3.13	0.31
welcome and recruitment program	2.95	2.91	3.00	0.32	2.93	3.00	0.45
plans for capital investment	2.86	2.91	2.82	0.69	2.86	2.88	0.89
moonlighting opportunities	2.55	2.55	2.55	1.00	2.71	2.25	0.04*
televideo support	2.14	2.18	2.09	0.69	2.07	2.25	0.43

(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=14]	B Community Score [N=8]	p-value (3)
Geographic	32.27	32.18	32.36	0.89	31.86	33.00	0.05*
Medical Support	32.05	32.09	32.00	0.79	32.29	31.63	0.53
Scope of Practice	31.55	31.18	31.91	0.44	31.79	31.13	0.40
Economic	30.86	31.18	30.55	0.56	30.64	31.25	0.34
Facility and Community Support	29.00	28.73	29.27	0.44	28.93	29.13	0.60
Sum of Mean Scores Across Classes	155.73	155.36	156.09	0.37	155.50	156.13	0.78

(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 CHC Community Apgar 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=14]	B Community Score [N=8]	p-value (3)
recreational opportunities	6.73	7.09	6.36	0.34	6.64	6.88	0.38
schools	3.18	2.73	3.64	0.22	3.57	2.50	0.17
access to larger community	2.64	2.55	2.73	0.87	3.36	1.38	0.42
climate	2.36	2.27	2.45	0.61	2.50	2.13	0.50
shopping and other services	1.77	1.64	1.91	0.77	2.79	0.00	0.05*
housing (availability &/or affordability)	1.64	1.18	2.09	0.66	2.93	-0.63	0.12
social networking	1.23	2.00	0.45	0.70	2.21	-0.50	0.09
demographic: underserved/payor mix	0.41	0.73	0.09	0.86	1.64	-1.75	0.04*
perception of community	0.18	0.00	0.36	0.75	-0.14	0.75	0.61
spousal satisfaction	-1.45	-0.64	-2.27	0.36	0.07	-4.13	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 17
Economic Class CHC 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=14]	B Community Score [N=8]	p-value (3)
loan repayment	4.50	5.27	3.73	0.14	4.71	4.13	0.46
retirement package	3.14	3.09	3.18	0.45	3.71	2.13	0.02*
CME benefit	3.09	2.91	3.27	0.93	4.00	1.50	0.02*
perceived fiscal stability	2.64	2.18	3.09	0.78	2.93	2.13	0.28
part-time opportunities	1.73	2.45	1.00	0.37	2.21	0.88	0.37
competition	1.27	1.64	0.91	0.92	1.86	0.25	0.52
length of contract flexibility	1.27	1.18	1.36	0.81	1.50	0.88	0.97
signing bonus/moving allowance	1.05	2.00	0.09	0.14	1.79	-0.25	0.14
production incentive	0.23	0.73	-0.27	0.44	0.00	0.63	0.62
salary	0.23	1.73	-1.27	0.13	1.00	-1.13	0.24

(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 CHC Community Apgar Mean Scores
Rank Ordered by Overall Score

Scope of Practice Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=14]	B Community Score [N=8]	p-value (3)
minor trauma (casting/suturing)	2.91	2.36	3.45	0.09	3.29	2.25	0.42
teaching	2.86	3.55	2.18	0.32	3.43	1.88	0.25
mid-level supervision	1.64	1.45	1.82	0.85	0.79	3.13	0.04*
emergency/stabilization care	1.32	1.18	1.45	0.45	2.07	0.00	0.28
office GYN procedures	1.32	1.36	1.27	0.91	3.36	-2.25	<0.001**
inpatient care	1.00	0.91	1.09	0.80	1.64	-0.13	0.23
obstetrics: deliveries/C-section	0.68	0.55	0.82	0.54	1.64	-1.00	0.18
obstetrics: prenatal care	0.59	0.27	0.91	0.50	0.86	0.13	0.78
administration	0.59	0.45	0.73	0.91	0.43	0.88	0.59
mental health	-1.68	-0.27	-3.09	0.16	-1.21	-2.50	0.53

(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 CHC 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=14]	B Community Score [N=8]	p-value (3)
perception of quality	3.55	3.18	3.91	0.13	3.64	3.38	0.88
mid-level provider workforce	3.00	3.36	2.64	0.21	3.00	3.00	0.71
call/practice coverage	2.91	3.27	2.55	0.76	5.71	-2.00	0.02*
ancillary staff workforce	2.86	3.45	2.27	0.31	3.21	2.25	0.29
language services support	2.55	2.45	2.64	0.78	2.93	1.88	0.61
allied mental health workforce	2.23	2.27	2.18	0.70	2.07	2.50	0.64
stability of physician workforce	2.05	2.73	1.36	0.39	2.79	0.75	0.38
pharmacy services	0.82	0.64	1.00	0.70	1.21	0.13	0.42
specialist availability	0.59	0.45	0.73	0.84	1.29	-0.63	0.41
nursing workforce	0.23	0.18	0.27	0.86	0.43	-0.13	0.61

(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
Facility and Community Support Class CHC Community Apgar Mean Scores
Rank Ordered by Overall Score

Facility and Community Support Factors	Overall (1) Score [N=22]	Administrator Score [N=11]	Physician Score [N=11]	p-value (2)	A Community Score [N=14]	B Community Score [N=8]	p-value (3)
community need/support of physician	3.09	3.00	3.18	0.86	3.57	2.25	0.47
medical reference resources	2.14	2.00	2.27	0.69	2.86	0.88	0.18
CHC leadership	1.95	2.82	1.09	0.11	2.71	0.63	0.17
moonlighting opportunities	1.73	2.45	1.00	0.36	1.71	1.75	0.24
plans for capital investment	1.68	2.00	1.36	0.37	3.00	-0.63	0.007**
delegated physician patient services	1.14	1.36	0.91	0.84	3.29	-2.63	0.003**
physical plant and equipment	1.00	1.36	0.64	0.63	1.79	-0.38	0.18
electronic medical records	0.68	1.36	0.00	0.44	1.29	-0.38	0.27
welcome and recruitment program	0.59	0.91	0.27	0.54	0.93	0.00	0.43
televideo support	-1.50	-1.82	-1.18	0.37	-1.07	-2.25	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 21
Class CHC 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=14]	B Community Score [N=8]	p-value (3)
Medical Support	20.77	22.00	19.55	0.34	26.29	11.13	0.09
Economic	19.14	23.18	15.09	0.11	23.71	11.13	0.01**
Geographic	18.68	19.55	17.82	0.69	25.57	6.63	0.04*
Facility and Community Support	12.50	15.45	9.55	0.32	20.07	-0.75	0.001**
Scope of Practice	11.23	11.82	10.64	0.77	16.29	2.38	0.05*
Sum of Mean Scores Across Classes	82.32	92.00	72.64	0.45	111.93	30.50	0.001**

(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 CHC Community Apgar Score by Community Health Center
Rank Order by Overall Cumulative Apgar Score

			Survey Classes				
CHC Code	CHC Category	Overall Apgar (1) Score [N=22]	Geographic	Economic	Scope of Practice	Medical Support	Facility and Community Support
1	A	389	87	69	64	113	56
6	A	256	44	43	62	53	54
7	A	241	48	46	44	44	59
5	A	199	57	56	40	34	12
11	A	189	39	35	30	25	60
8	B	176	78	31	20	54	-7
10	A	149	25	39	17	48	20
2	A	144	58	44	-29	51	20
9	B	112	8	41	27	32	4
3	B	0	-26	0	2	19	5
4	B	-44	-7	17	-30	-16	-8

(1) Higher scores indicate greater community assets and capabilities

Figures

Figures (Cont.)

Figures (Cont.)

Figure 1
Geographic Class CHC Community Advantages/Challenges Mean Score
Administrator vs. Physician

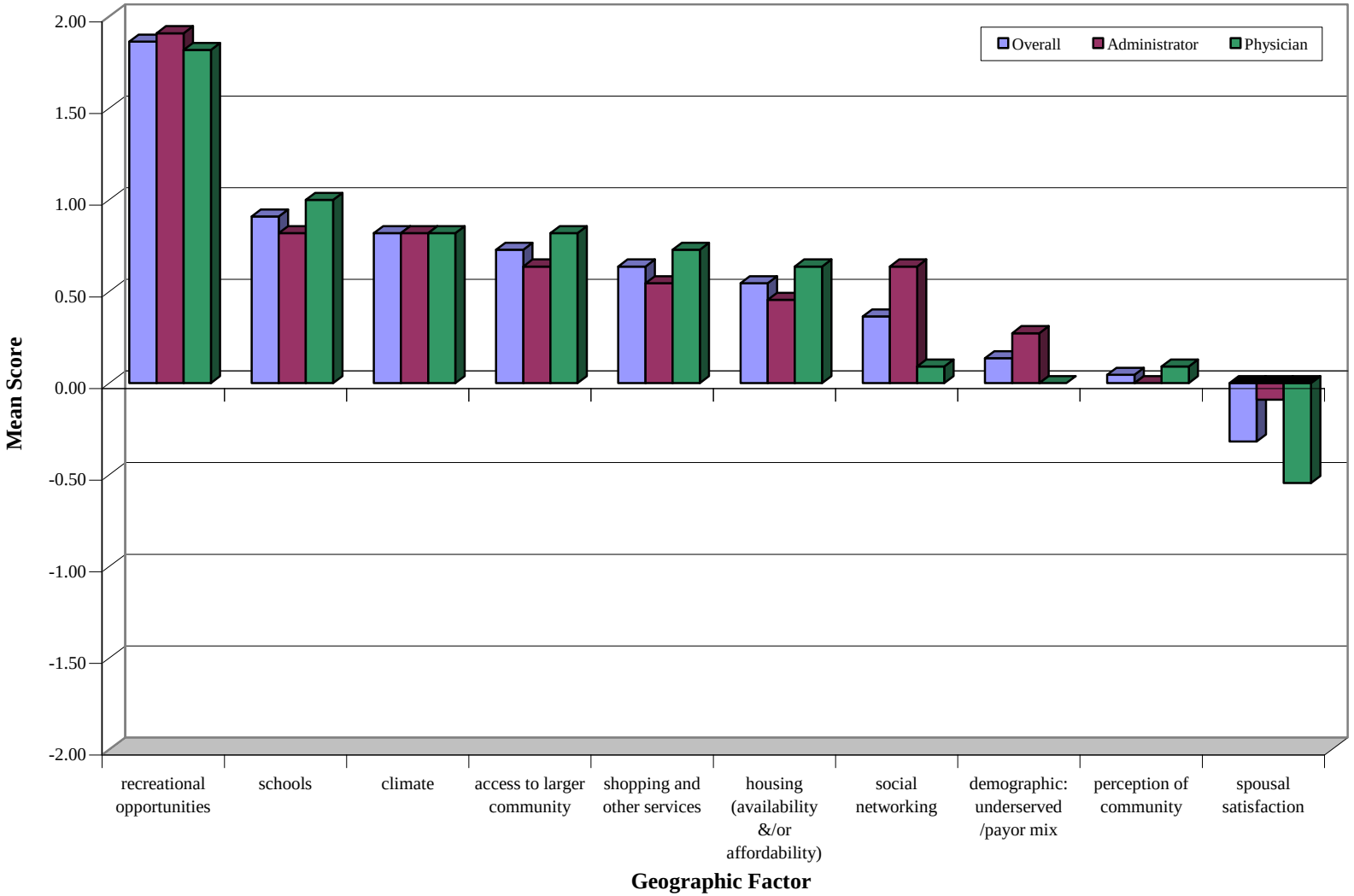


Figure 2
Geographic Class CHC Community Advantages/Challenges Mean Score
A Community vs. B Community

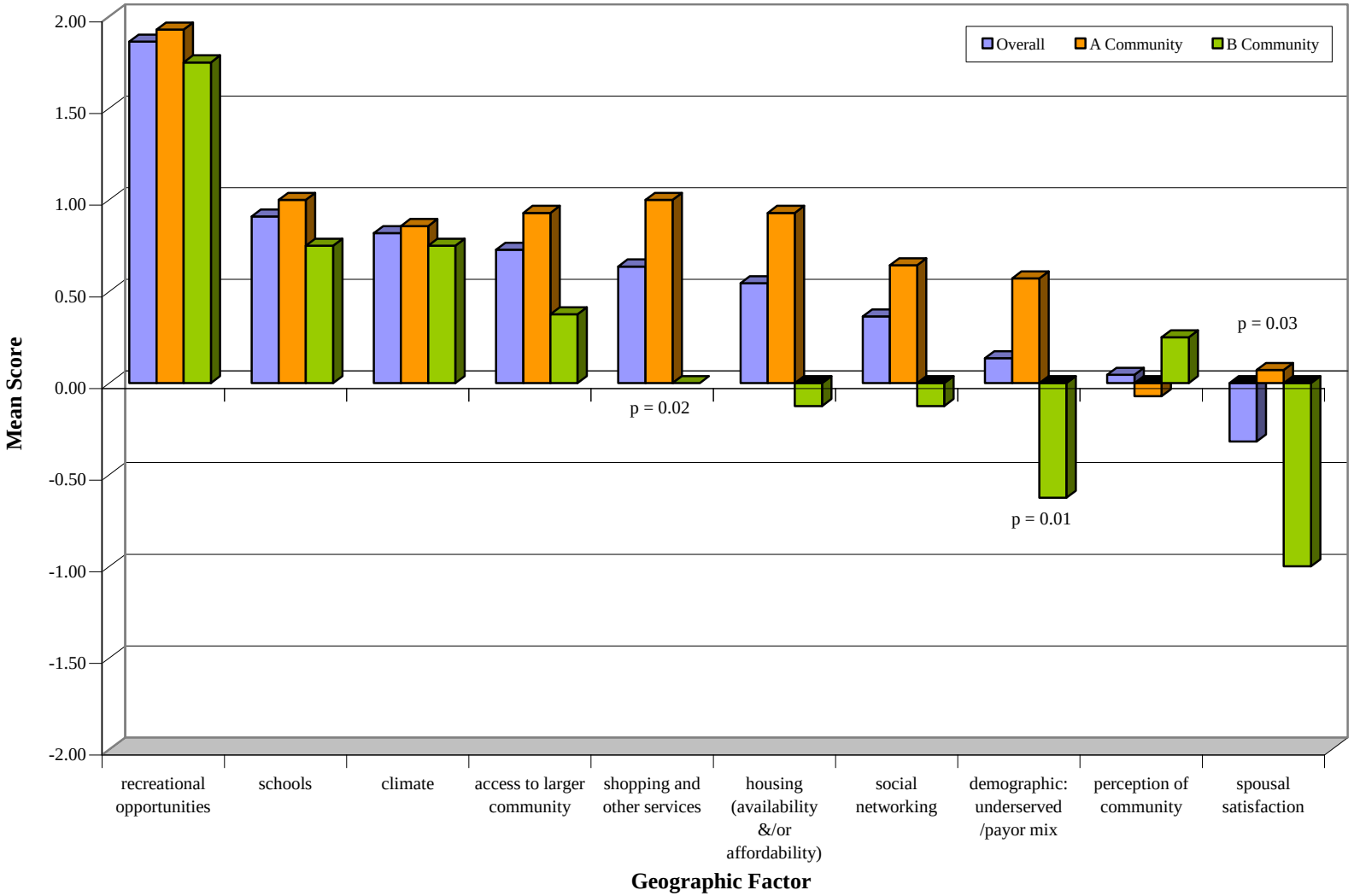


Figure 3
Economic Class CHC Community Advantages and Challenges Mean Score
Administrator vs. Physician

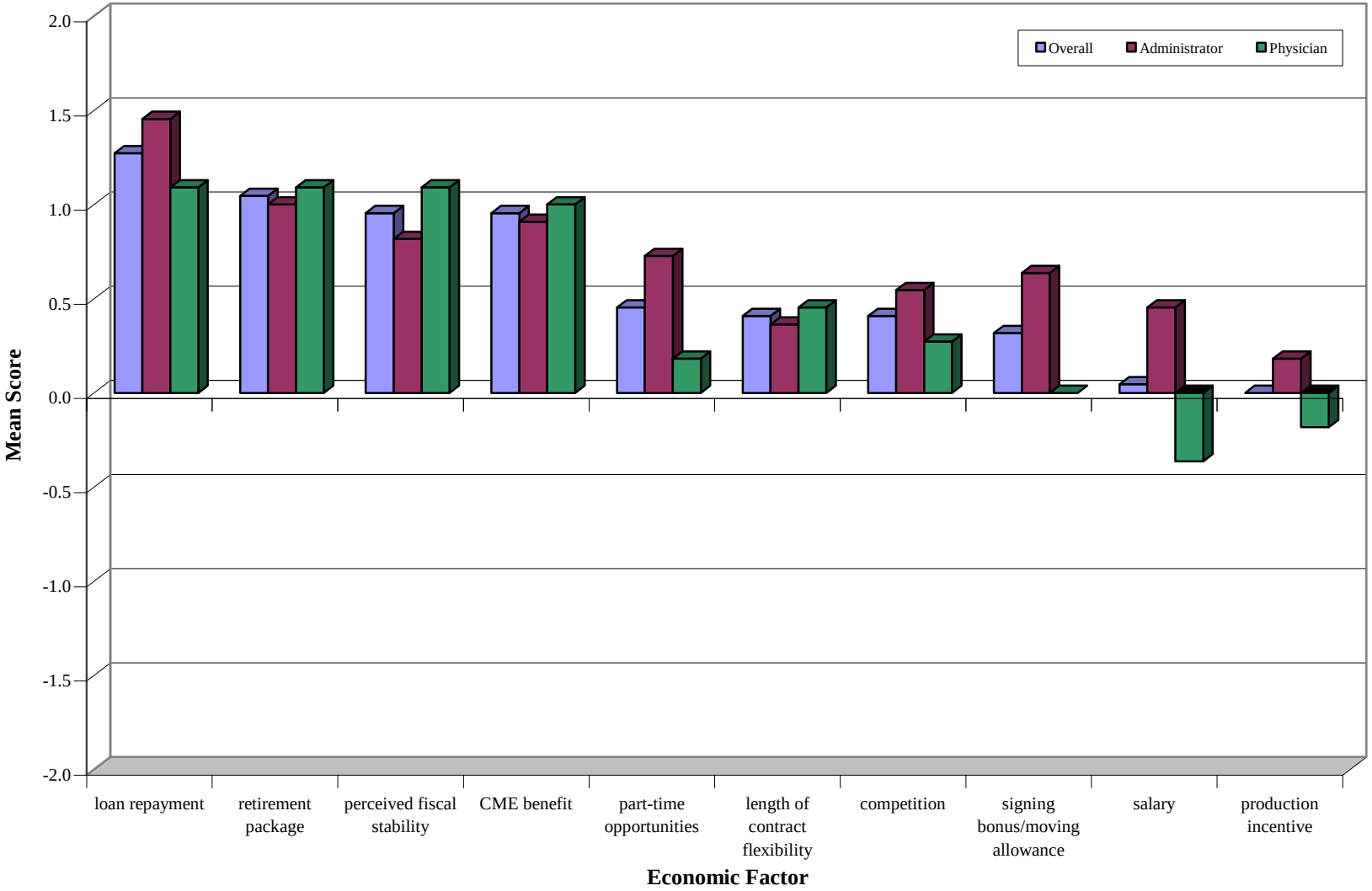


Figure 4
Economic Class CHC Community Advantages and Challenges Mean Score
A Community vs. B Community

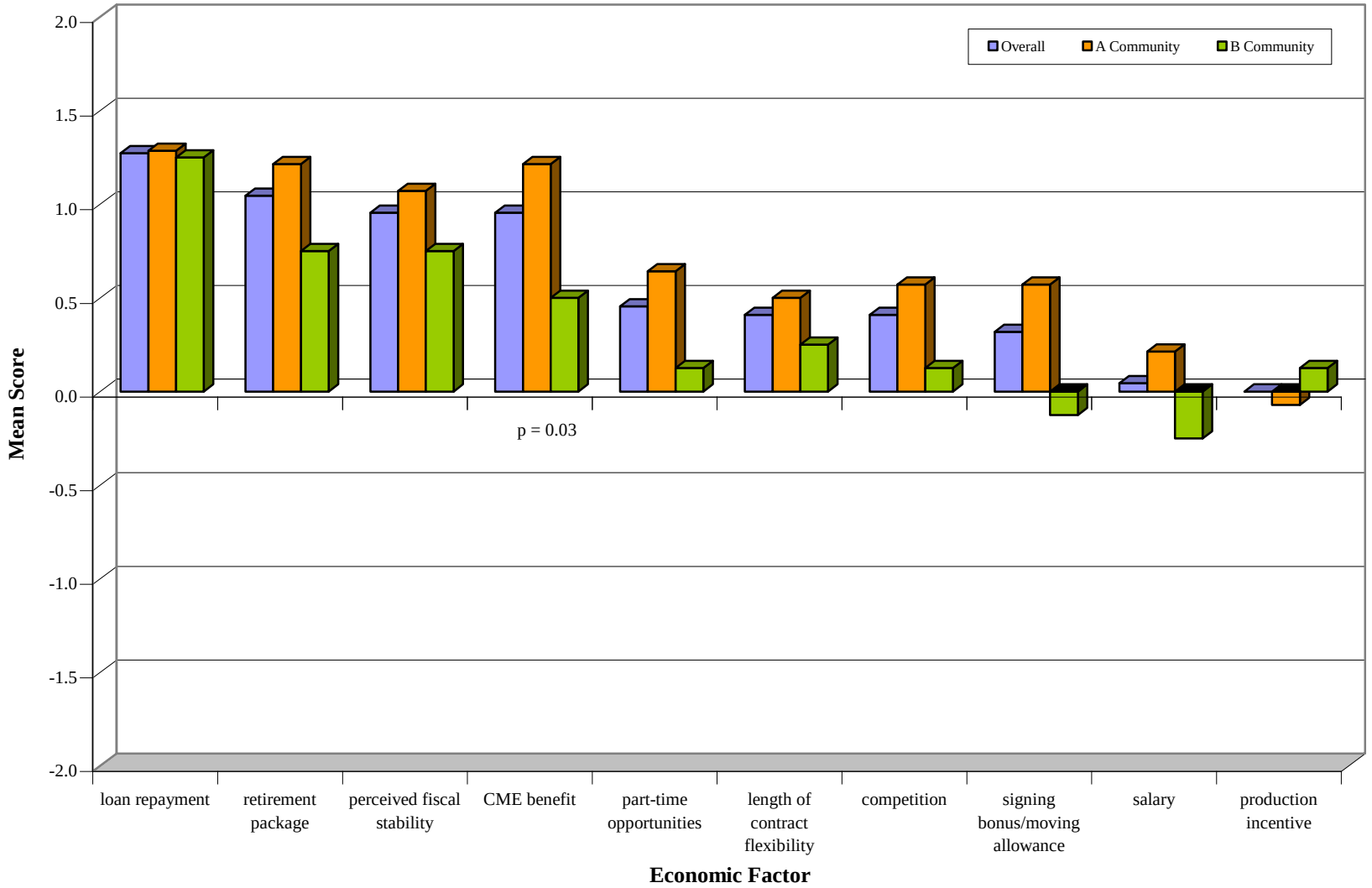


Figure 5
Scope of Practice Class CHC Community Advantages and Challenges Mean Score
Administrator vs. Physician

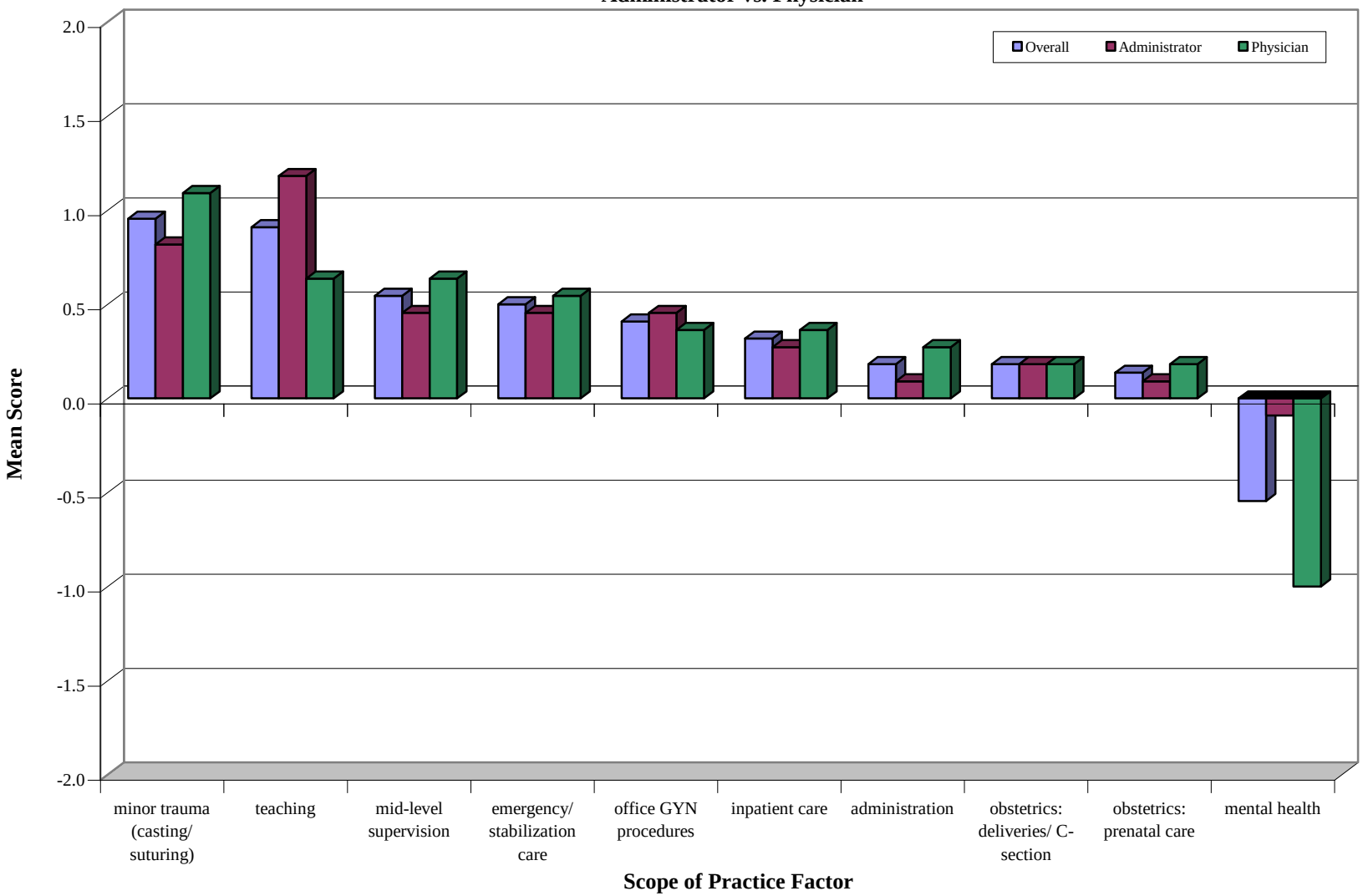


Figure 6
Scope of Practice Class CHC Community Advantages and Challenges Mean Score
A Community vs. B Community

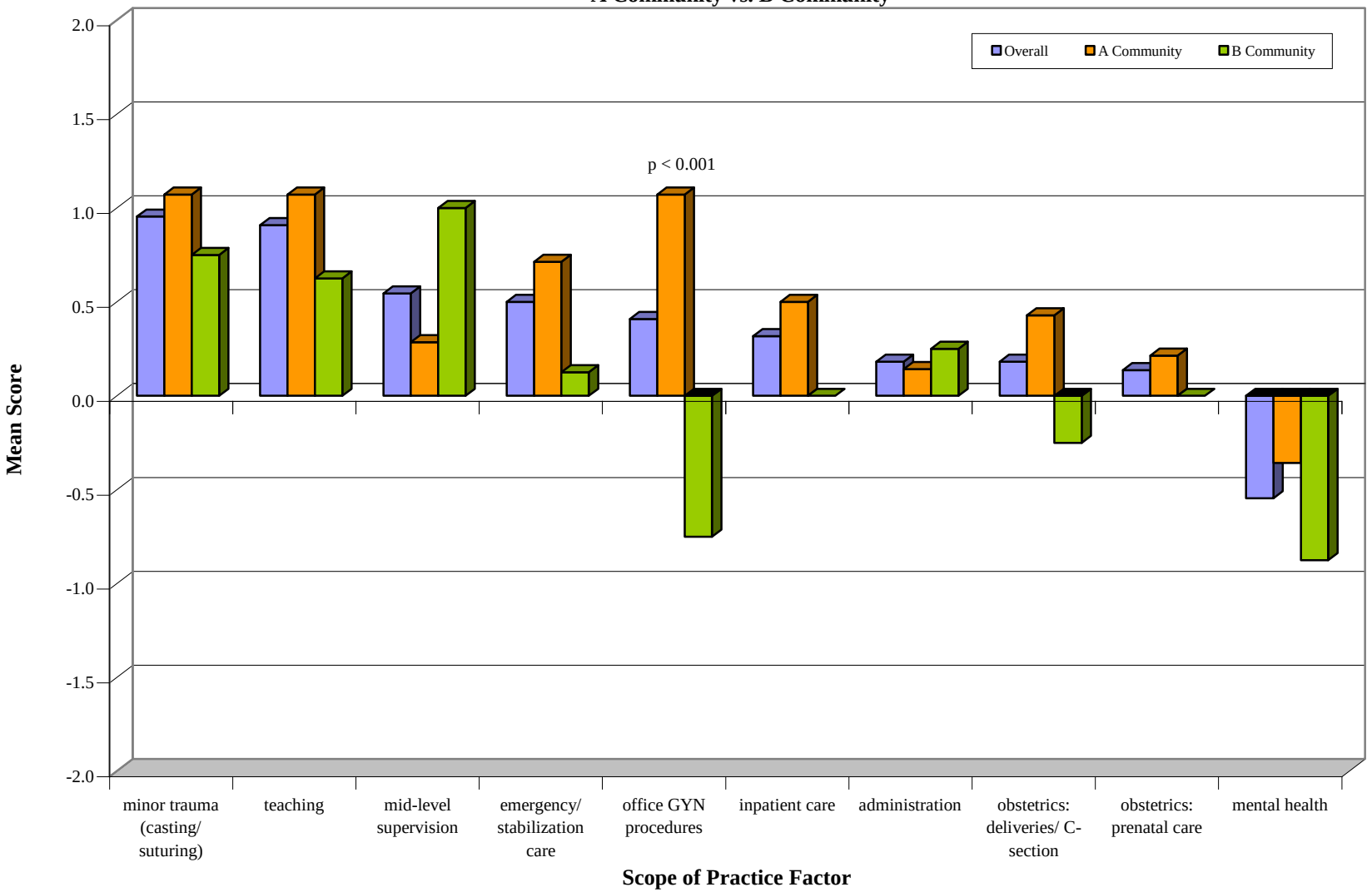


Figure 7
Medical Support Class CHC Community Advantages and Challenges Mean Score
Administrator vs. Physician

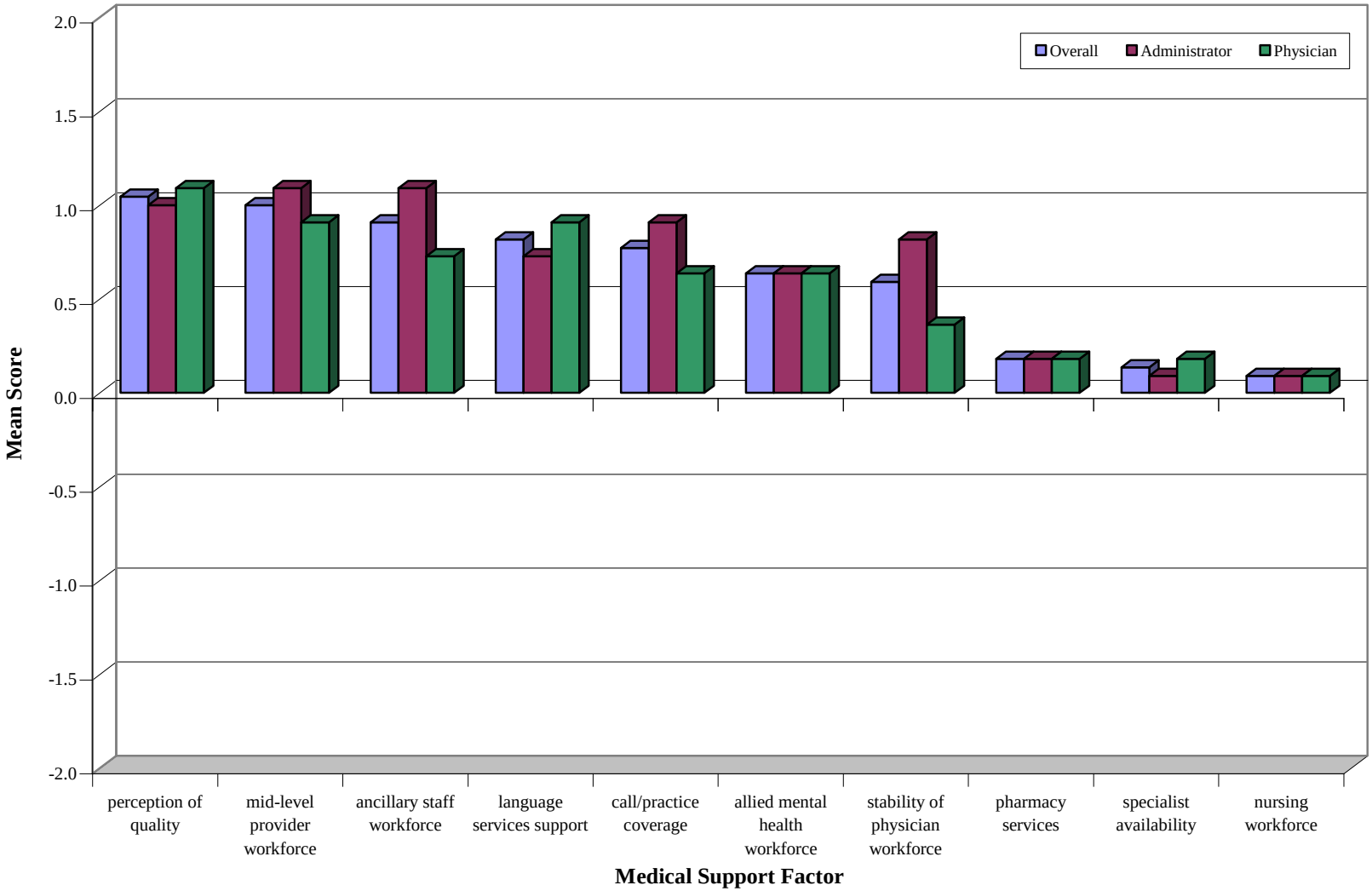


Figure 8
Medical Support Class CHC Community Advantages and Challenges Mean Score
A Community vs. B Community

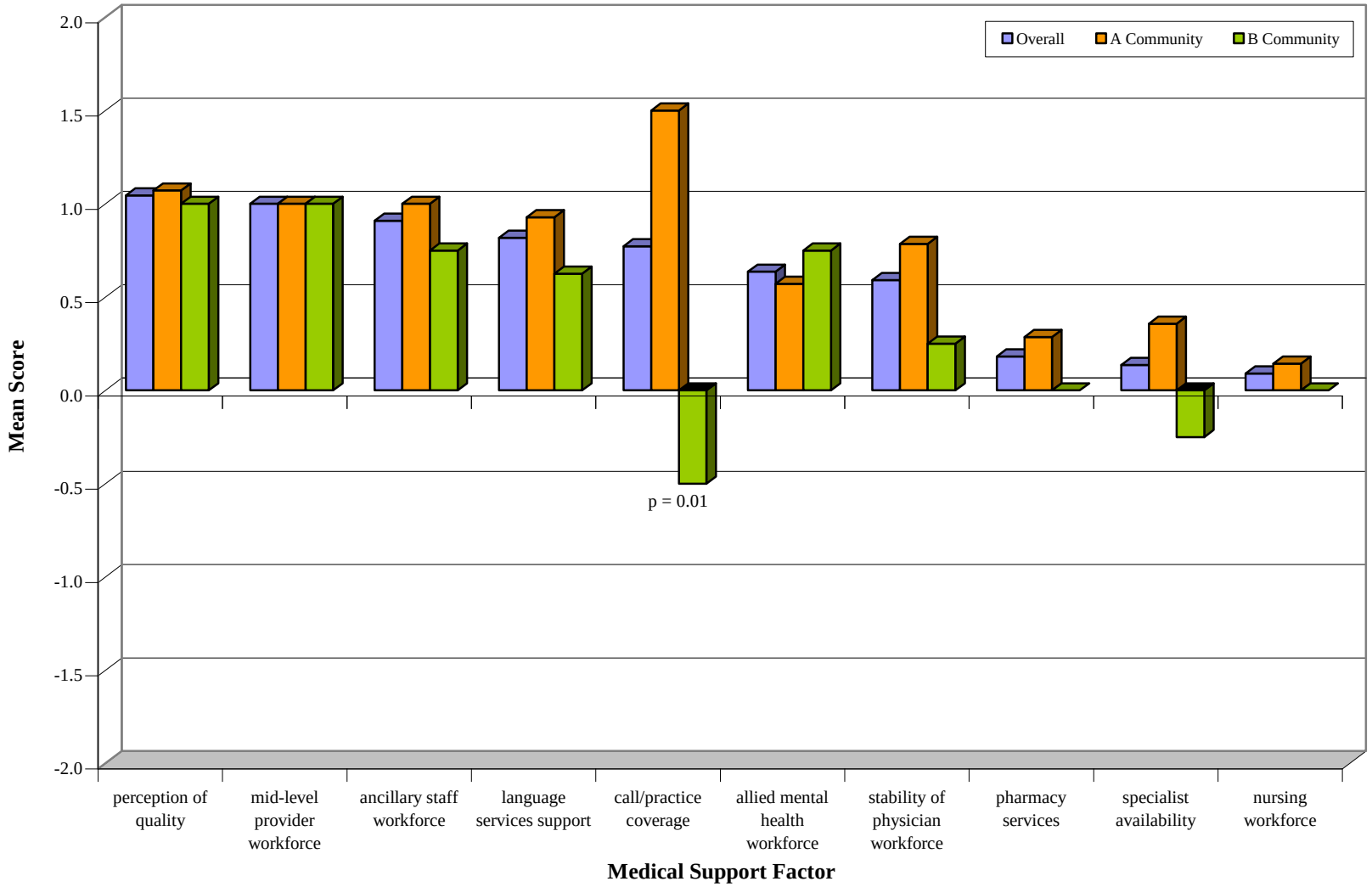


Figure 9
Facility and Community Support Class CHC Community Advantages and Challenges Mean Score
Administrator vs. Physician

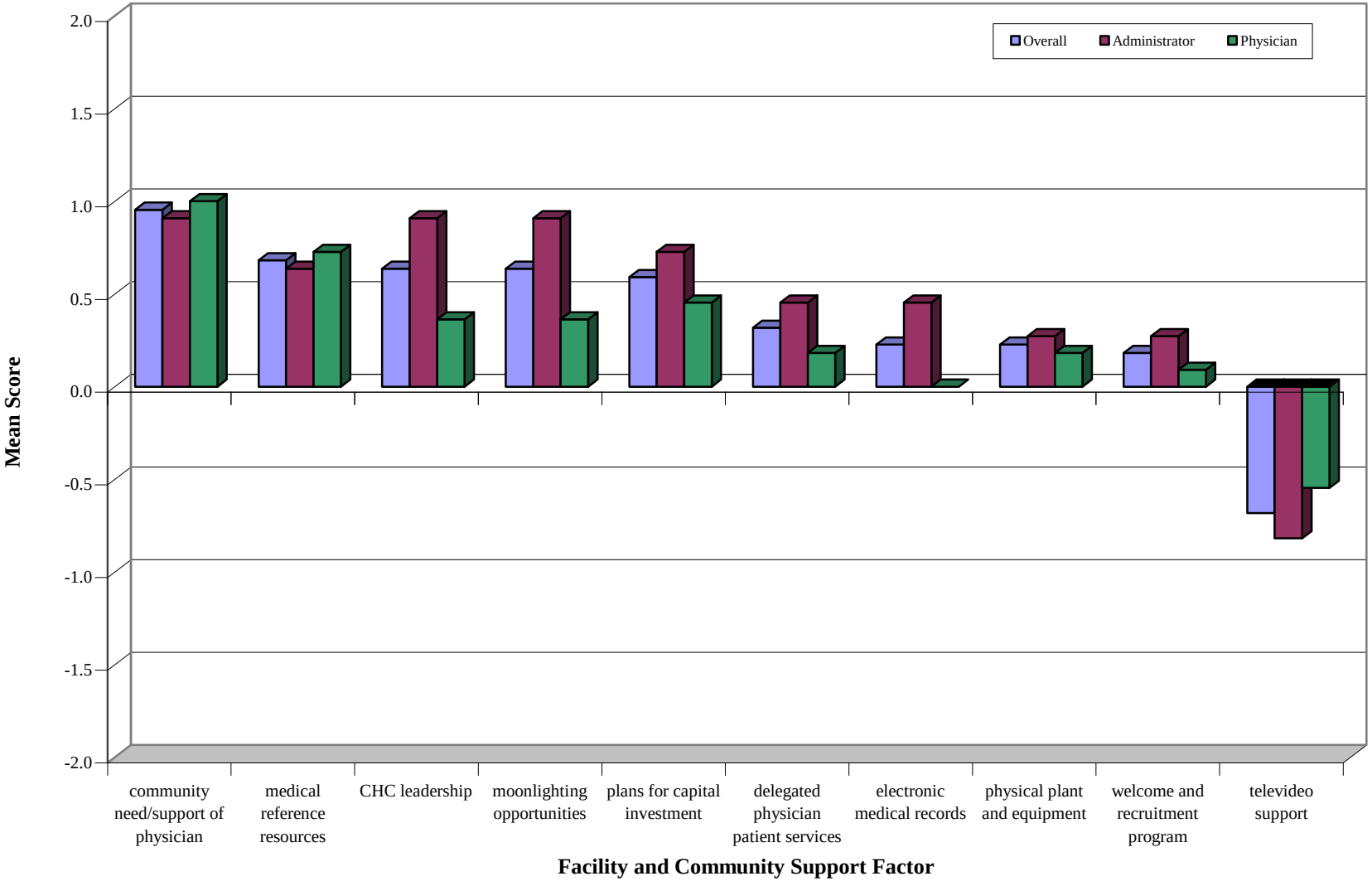


Figure 10
Facility and Community Support Class CHC Community Advantages and Challenges Mean Score
A Community vs. B Community

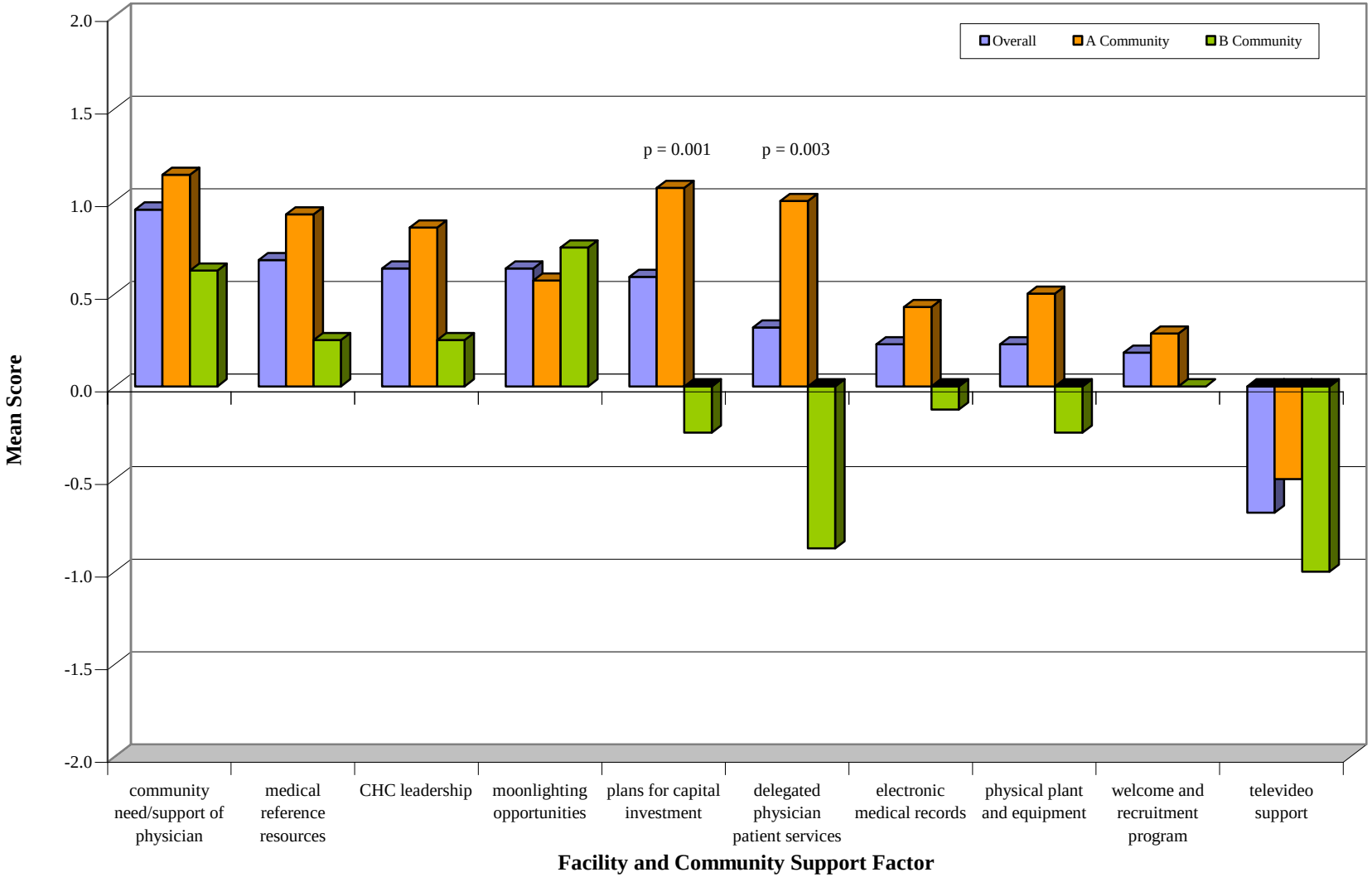


Figure 11
Class CHC Community Advantages and Challenges Mean Score
Administrator vs. Physician

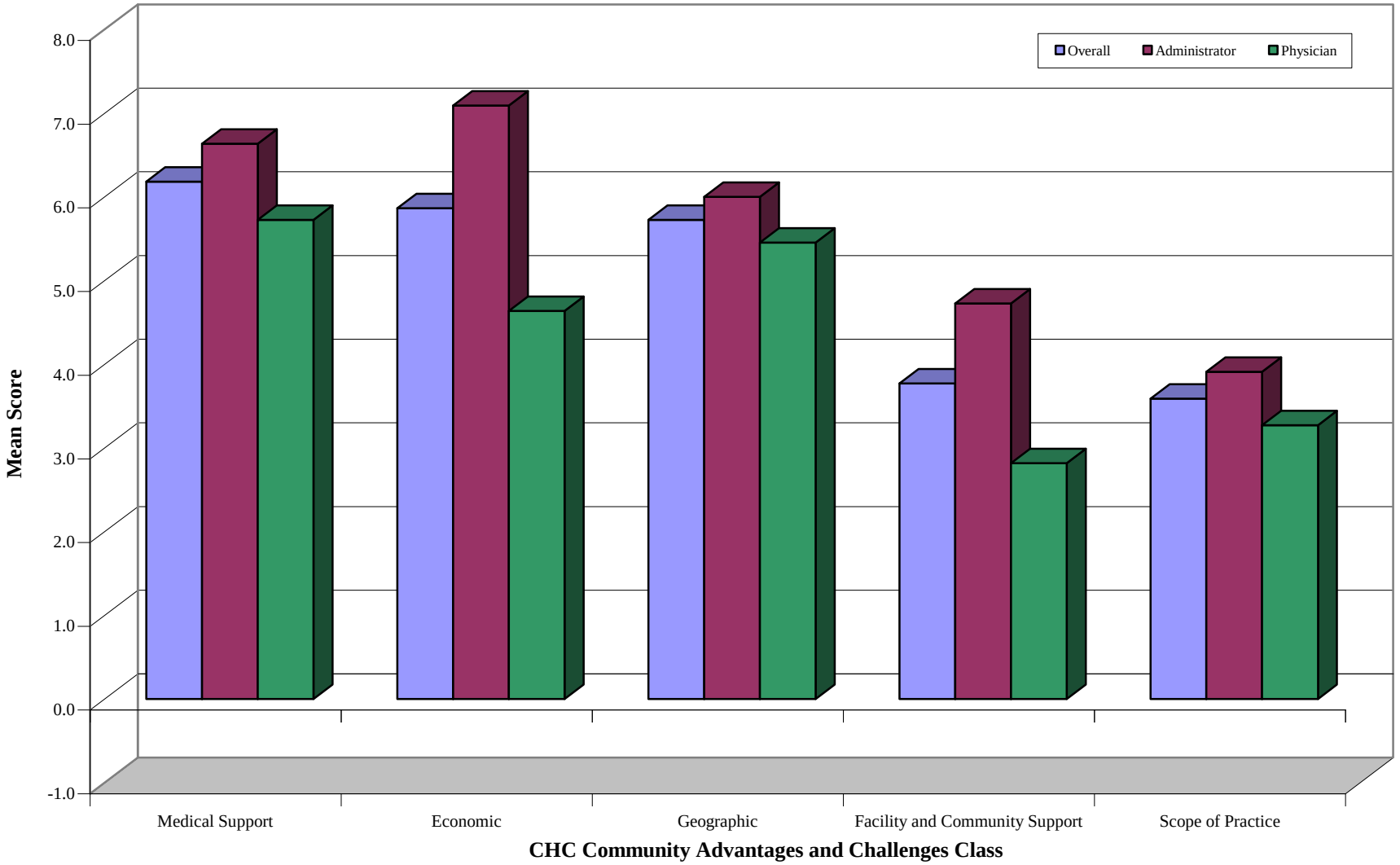


Figure 12
Class CHC Community Advantages and Challenges Mean Score
A Community vs. B Community

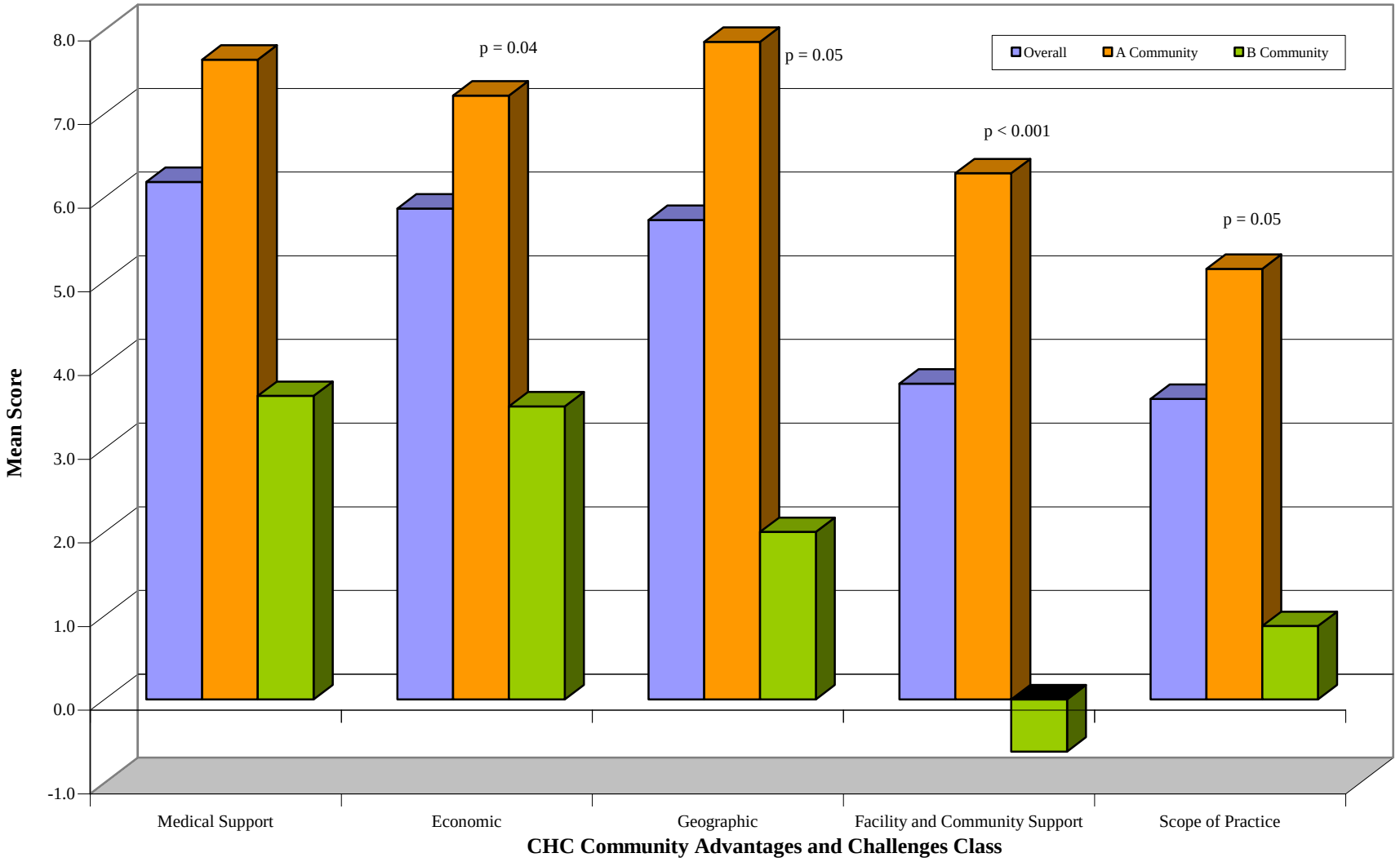


Figure 13
Summary Class CHC Community Advantages and Challenges Mean Score
Overall by Respondent and Community Type

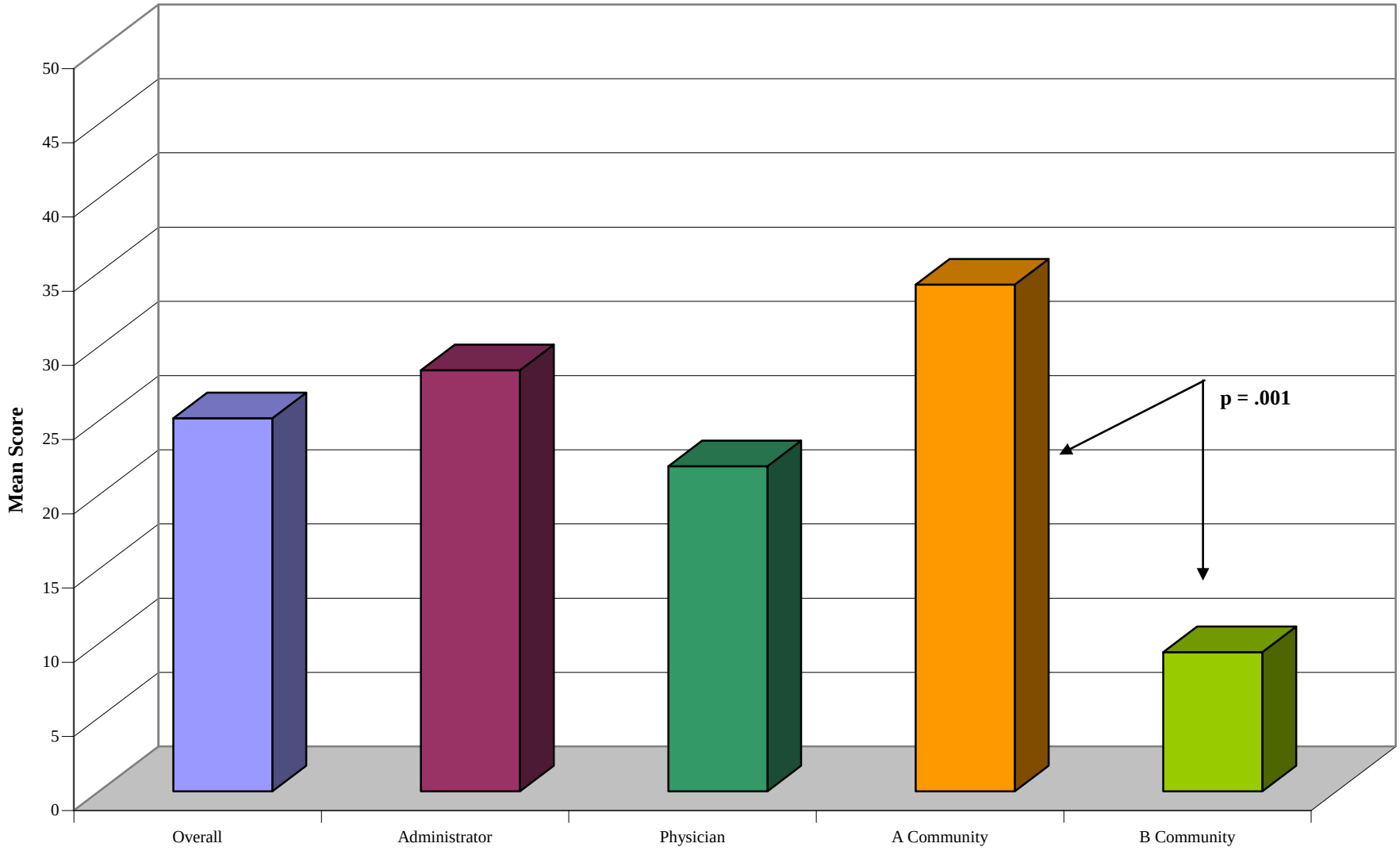


Figure 14
Geographic Class CHC Community Importance Mean Score
Administrator vs. Physician

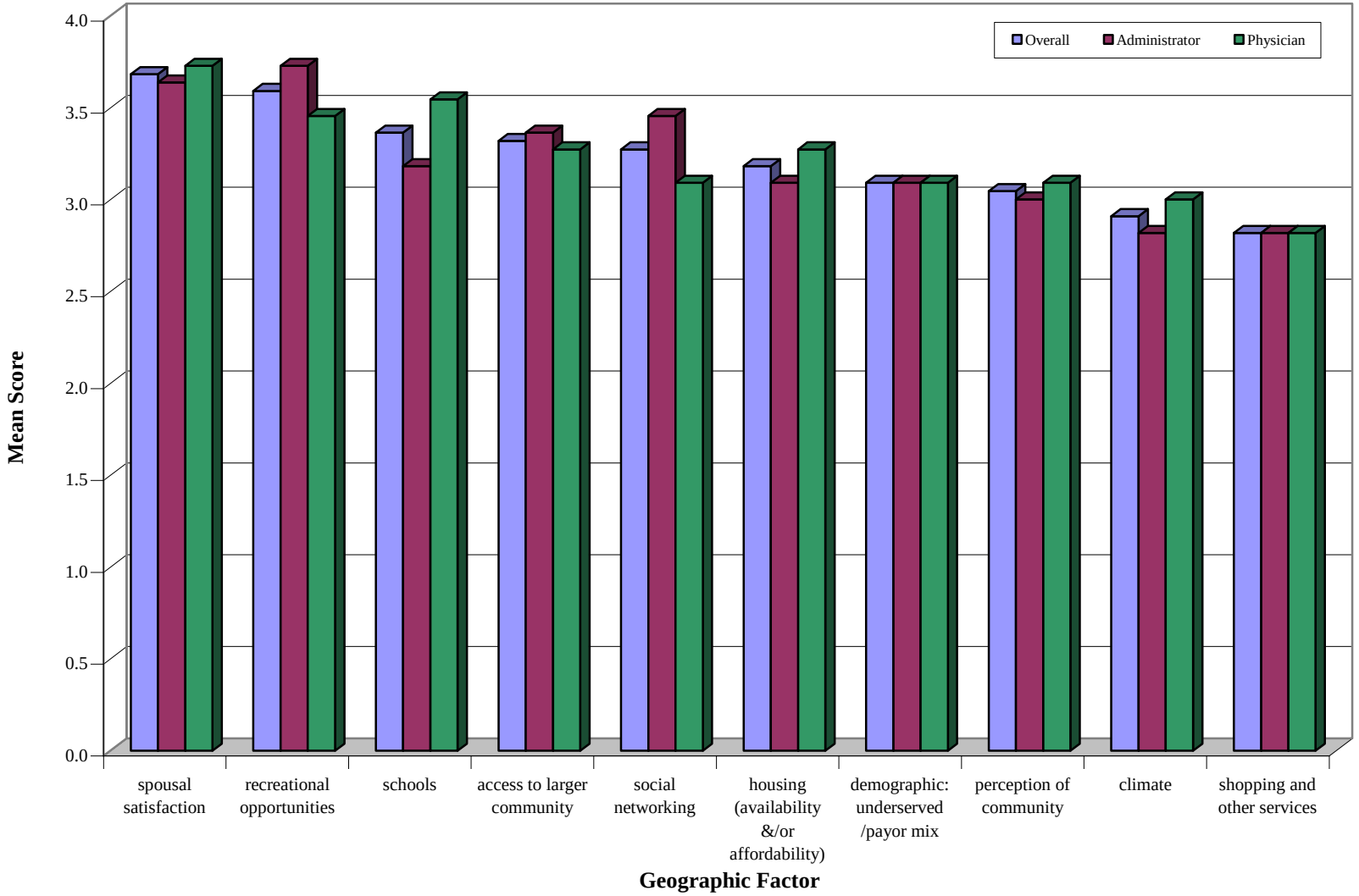


Figure 15
Geographic Class CHC Community Importance Mean Score
A Community vs. B Community

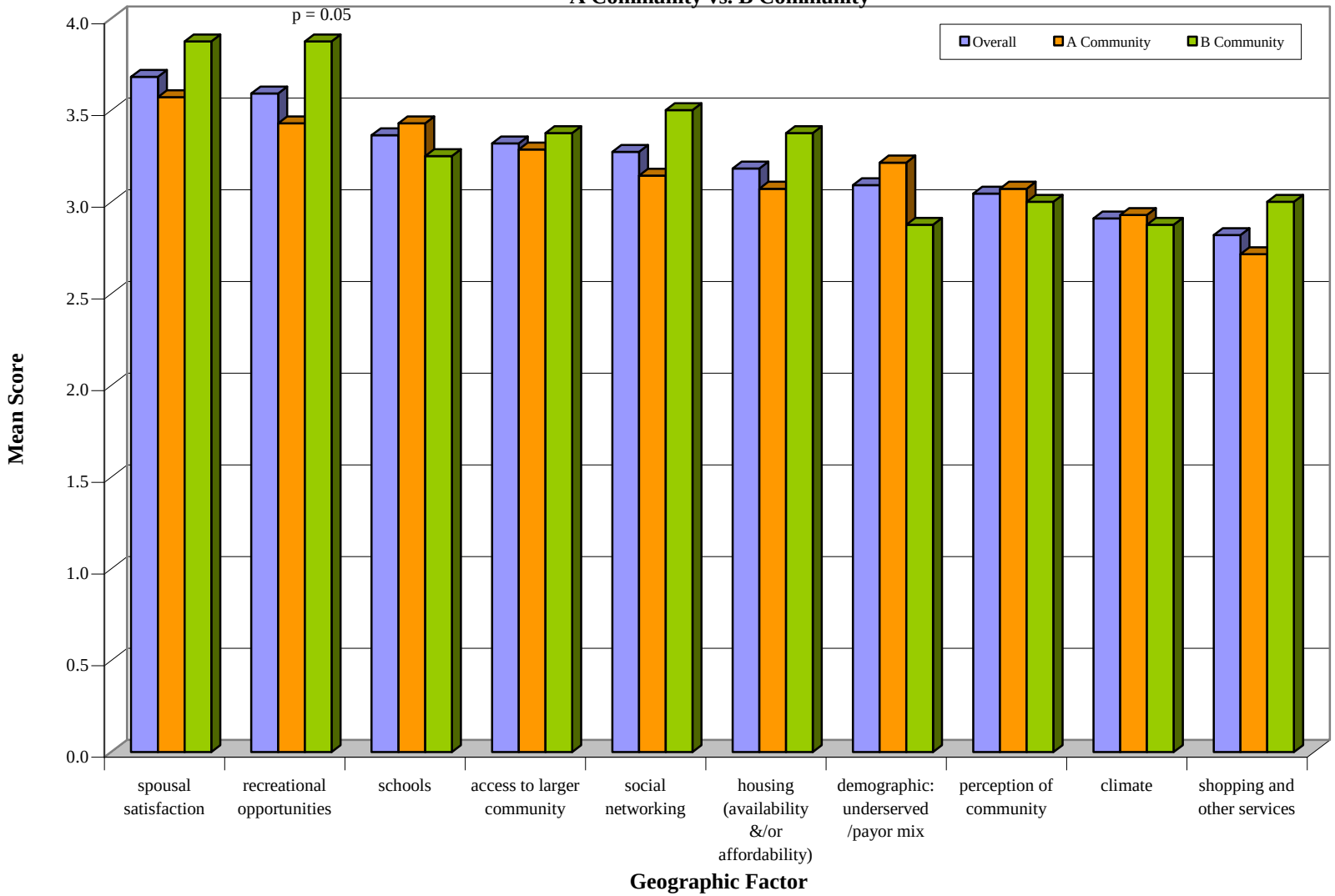


Figure 16
Economic Class CHC Community Importance Mean Score
Administrator vs. Physician

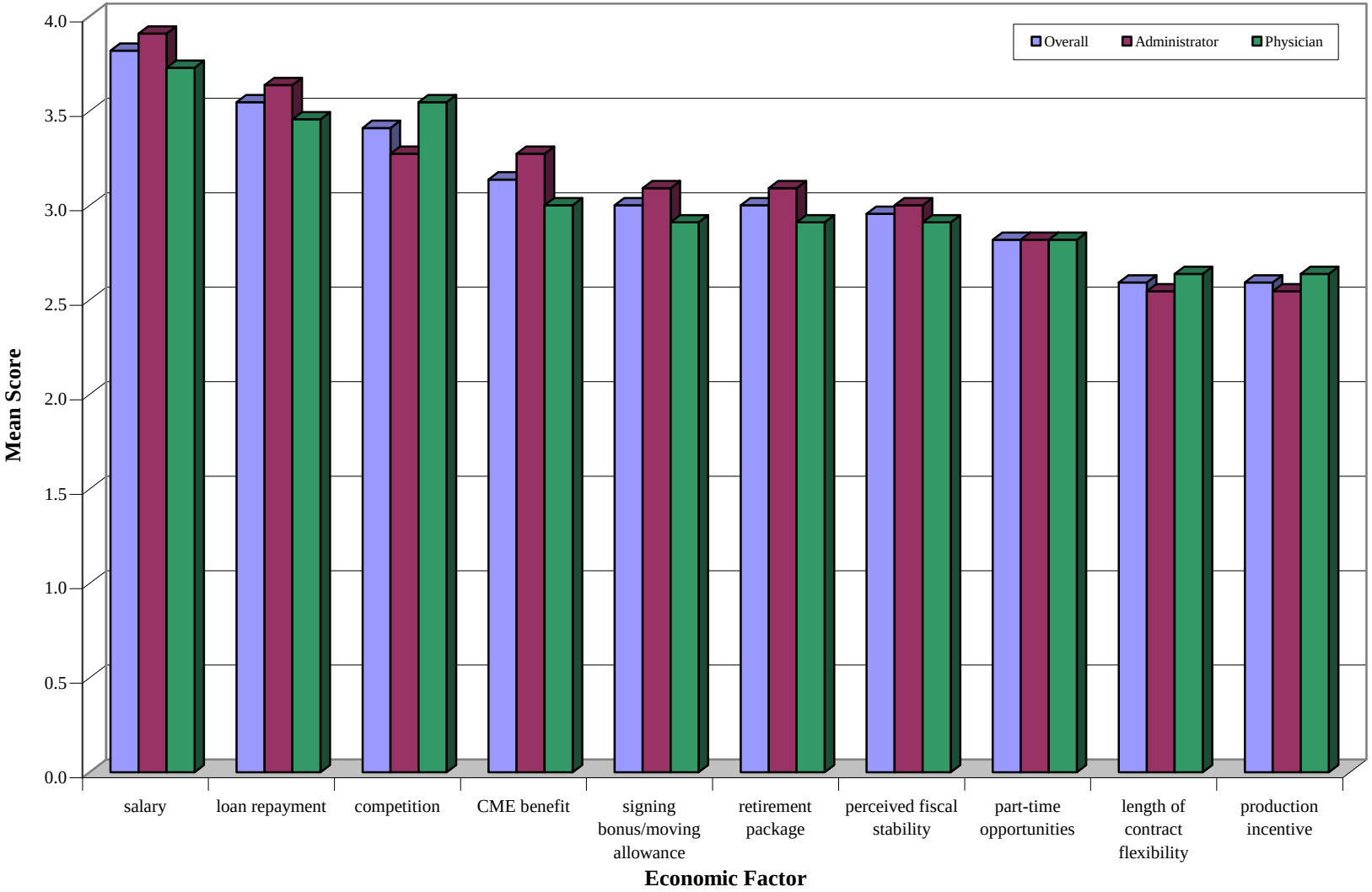


Figure 17
Economic Class CHC Community Importance Mean Score
A Community vs. B Community

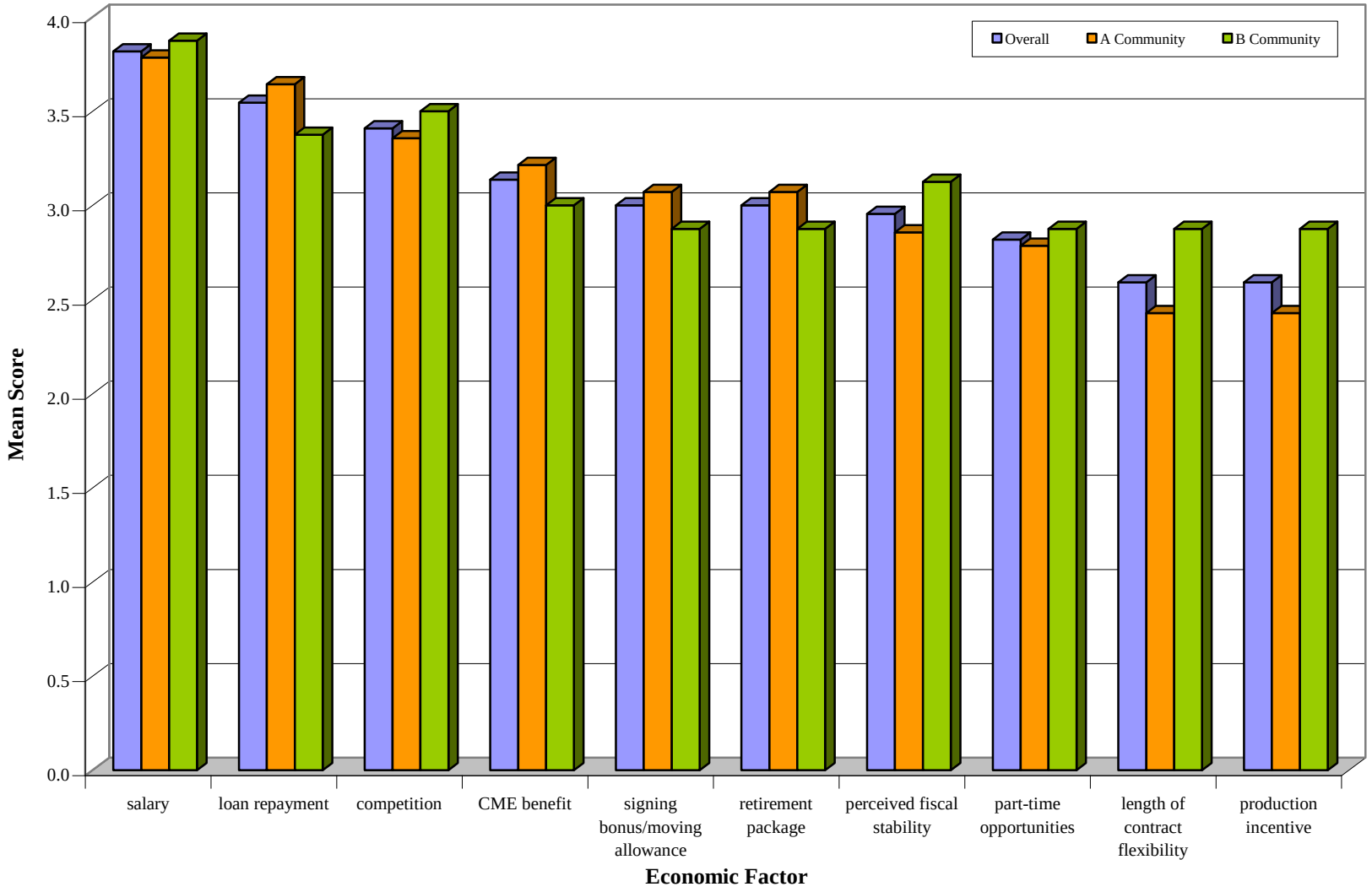


Figure18
Scope of Practice Class CHC Community Importance Mean Score
Administrator vs. Physician

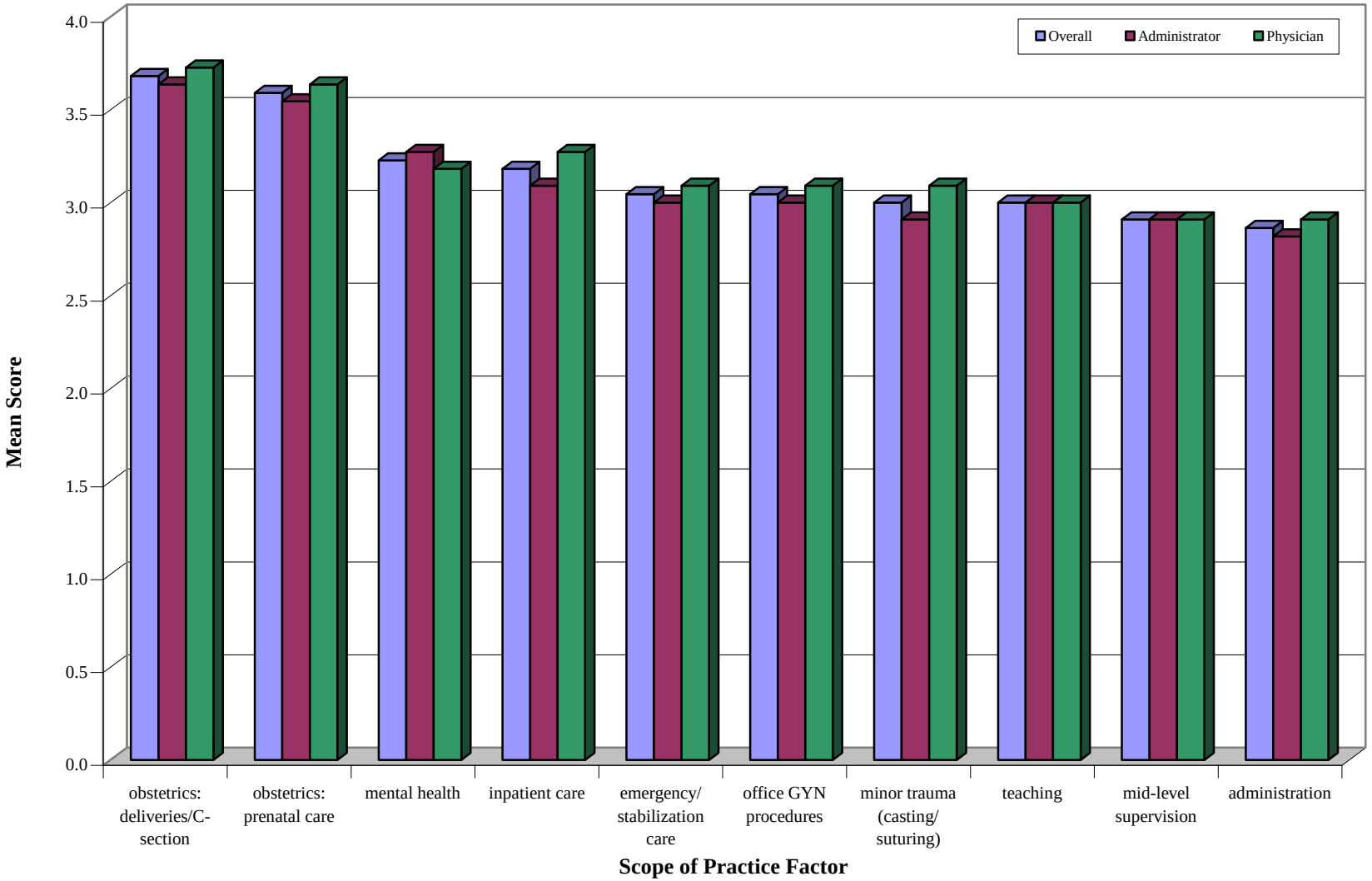


Figure 19
Scope of Practice Class CHC Community Importance Mean Score
A Community vs. B Community

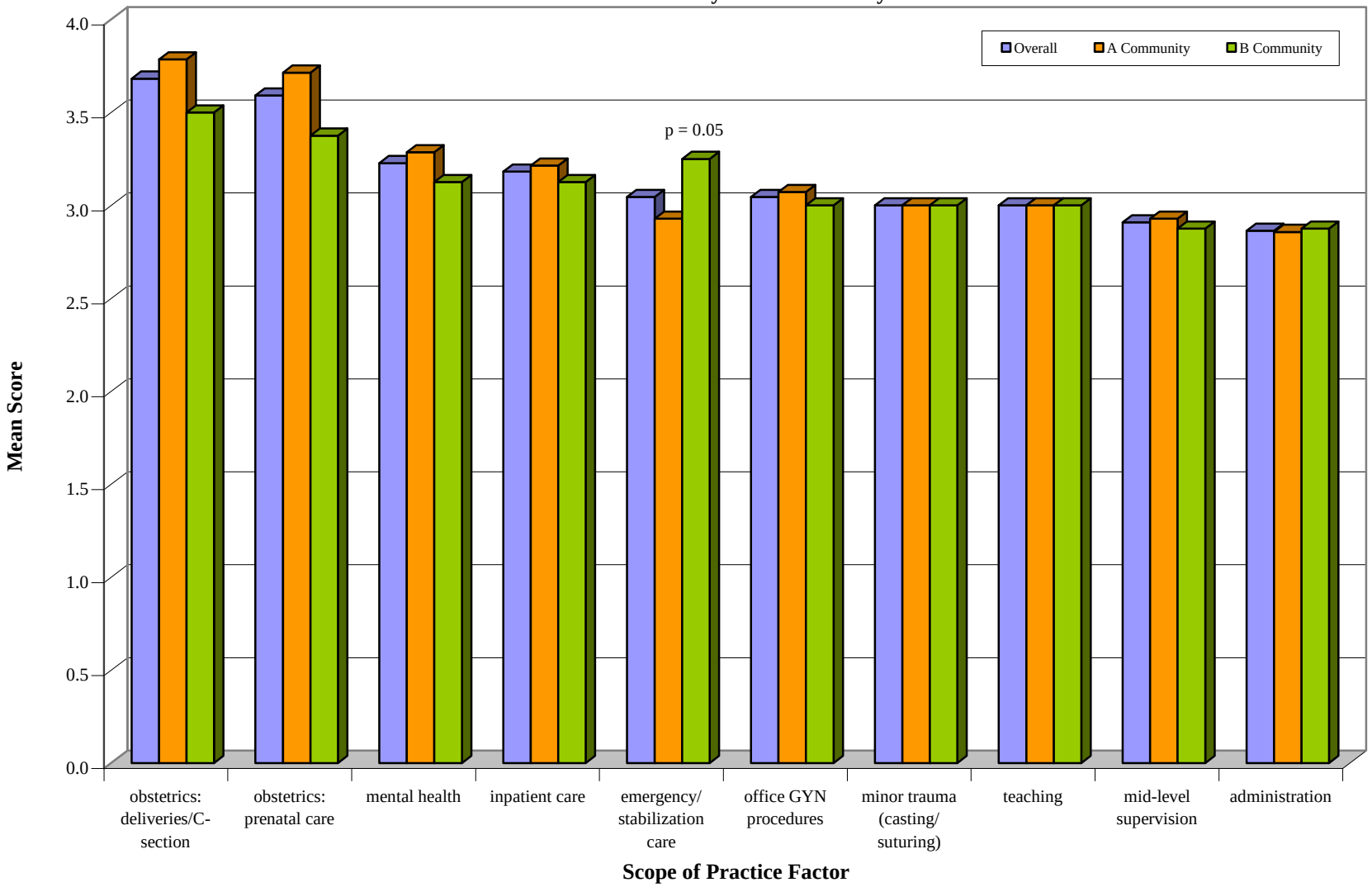


Figure 20
Medical Support Class CHC Community Importance Mean Score
Administrator vs. Physician

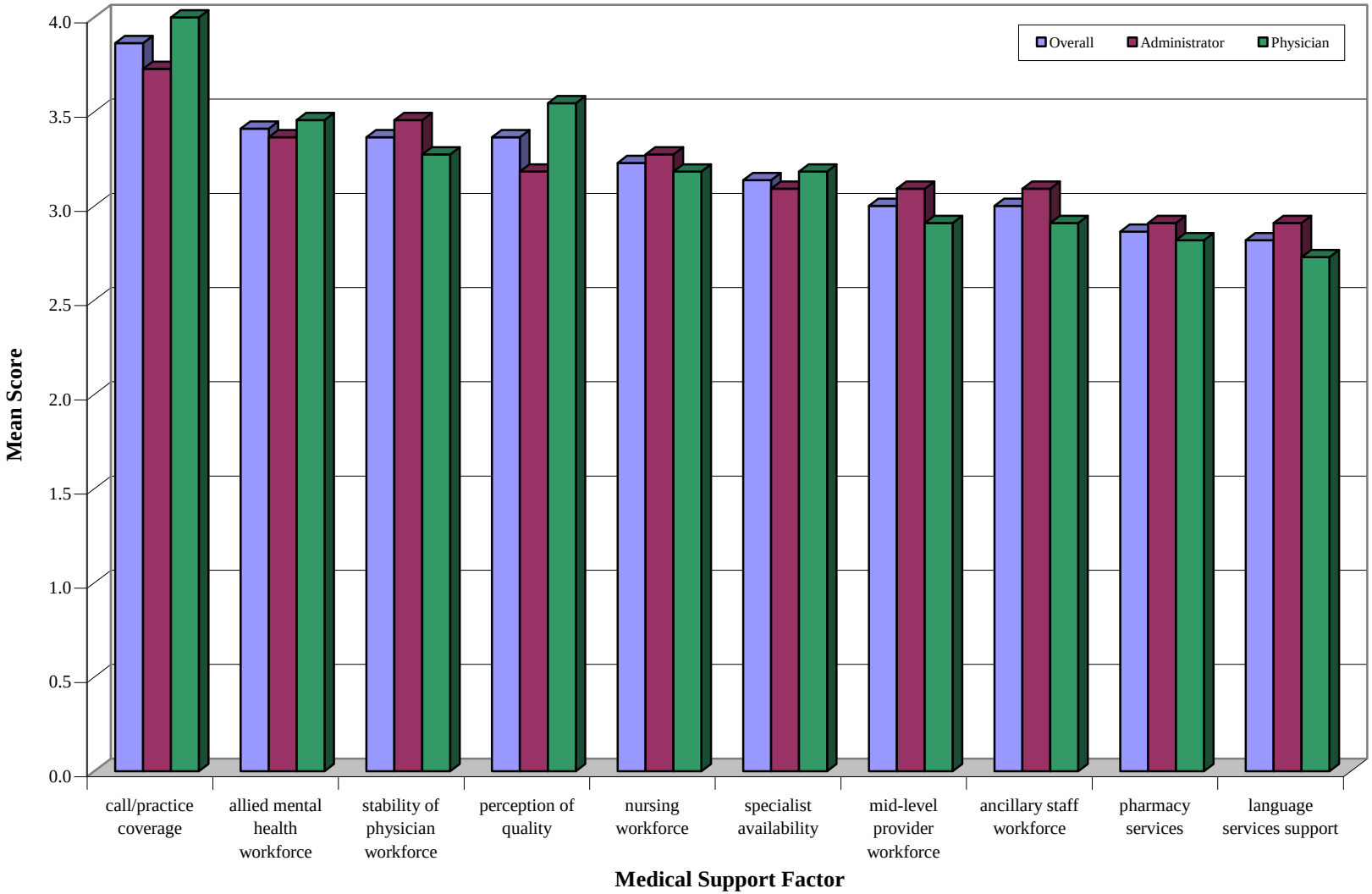


Figure 21
Medical Support Class CHC Community Importance Mean Score
A Community vs. B Community

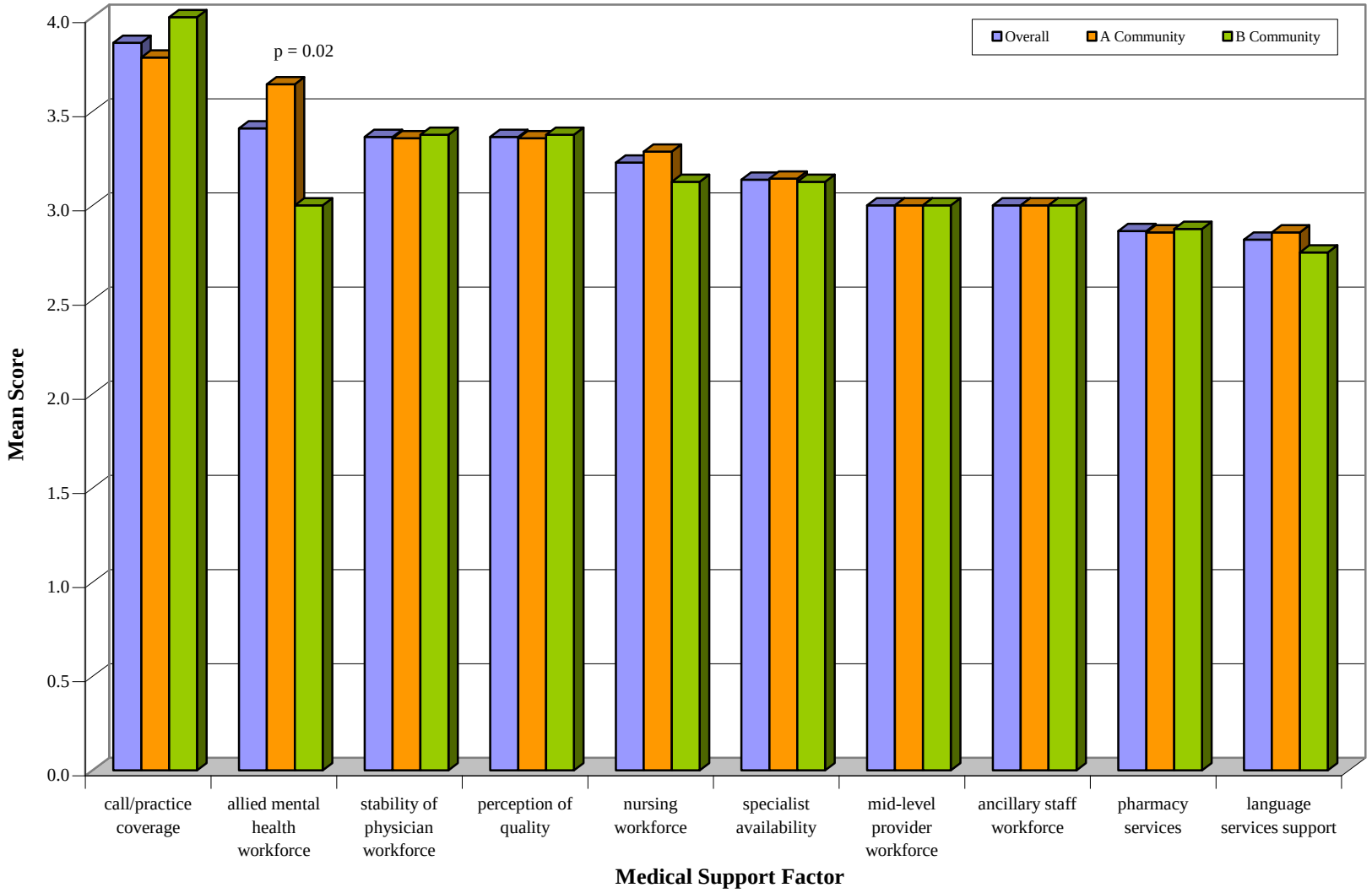


Figure 22
Facility and Community Support Class CHC Community Importance Mean Score
Administrator vs. Physician

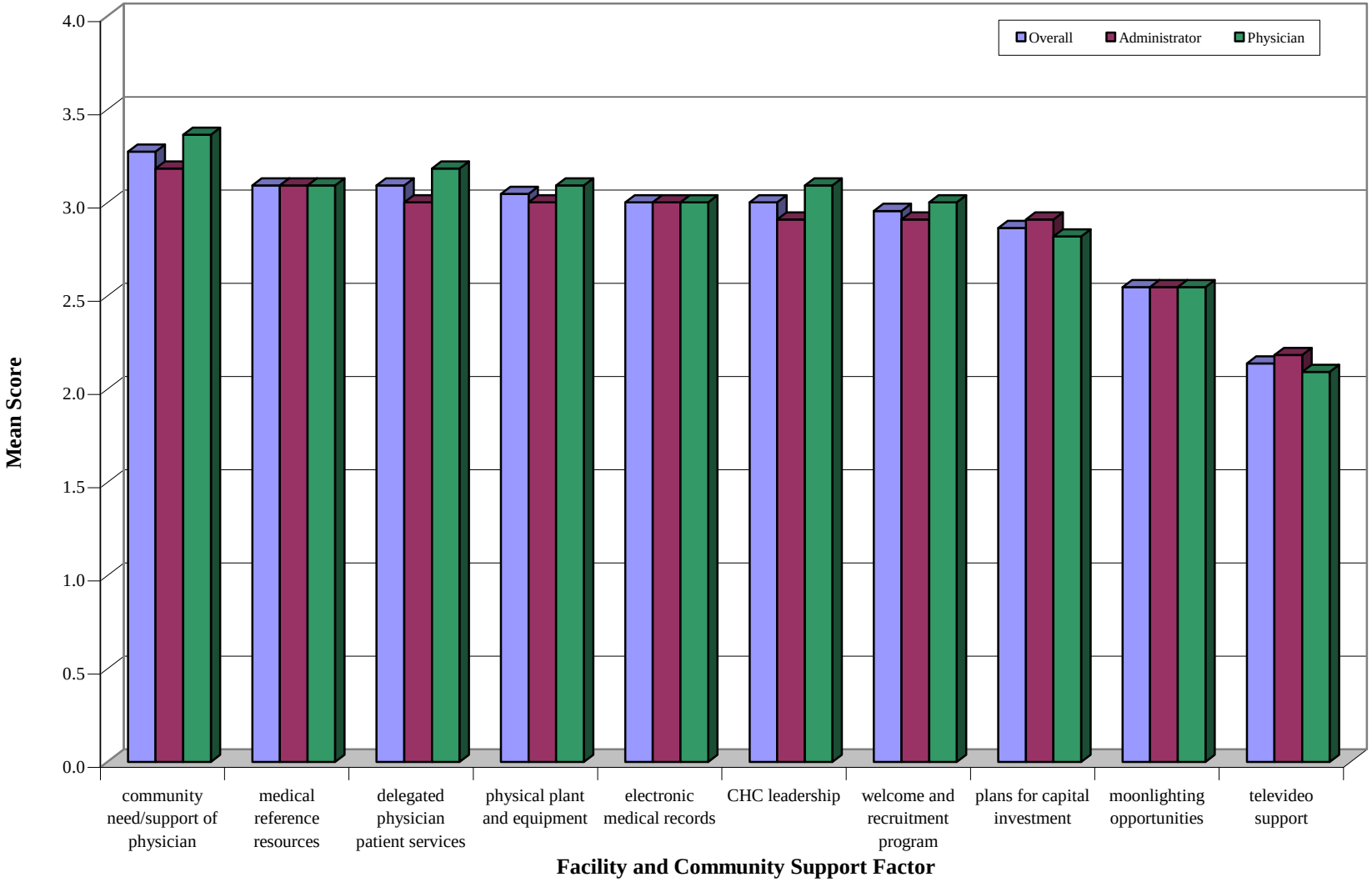


Figure 23
Facility and Community Support Class CHC Community Importance Mean Score
A Community vs. B Community

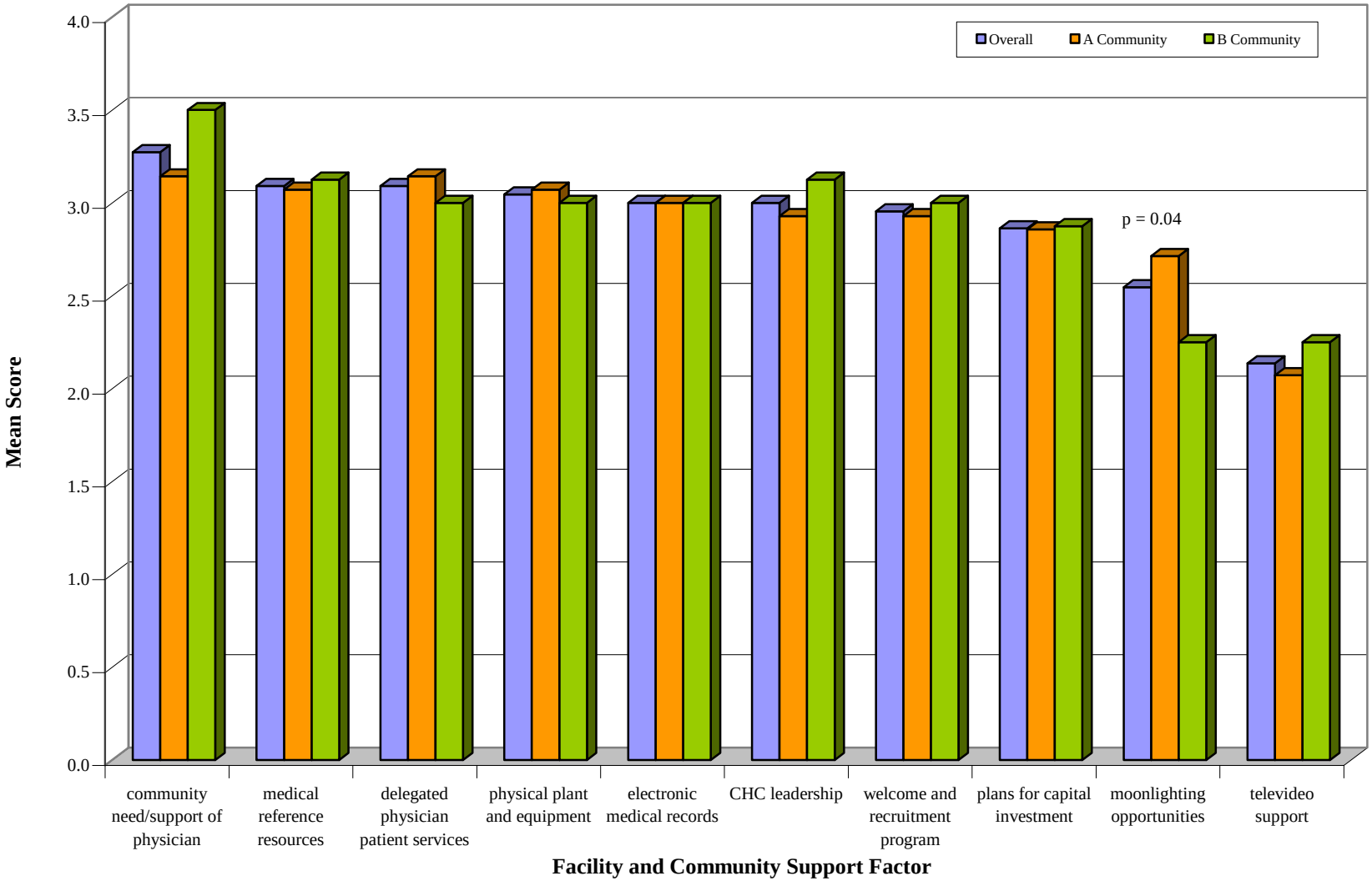


Figure 24
Class CHC Community Importance Mean Score
Administrator vs. Physician

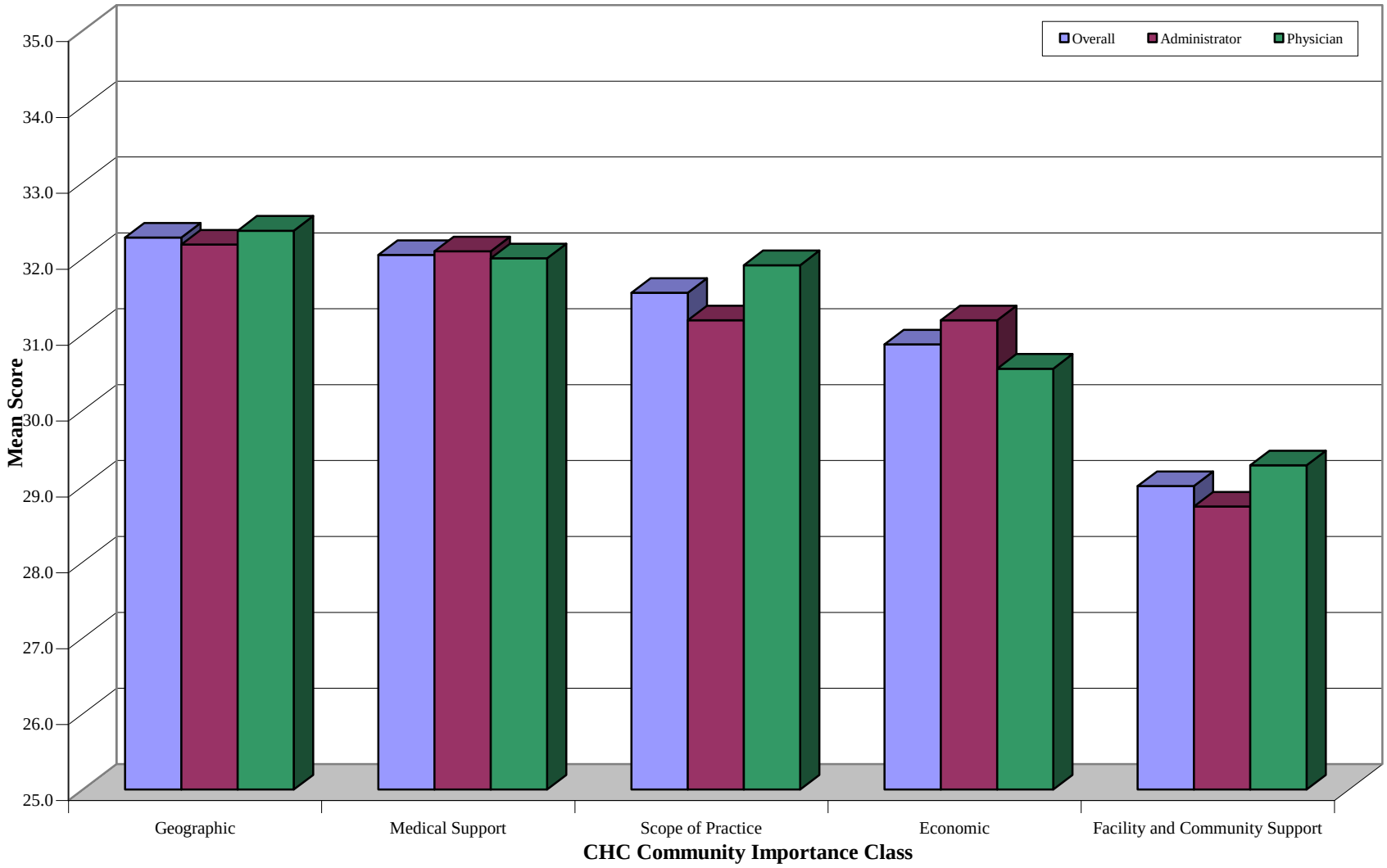


Figure 25
Class CHC Community Importance Mean Score
A Community vs. B Community

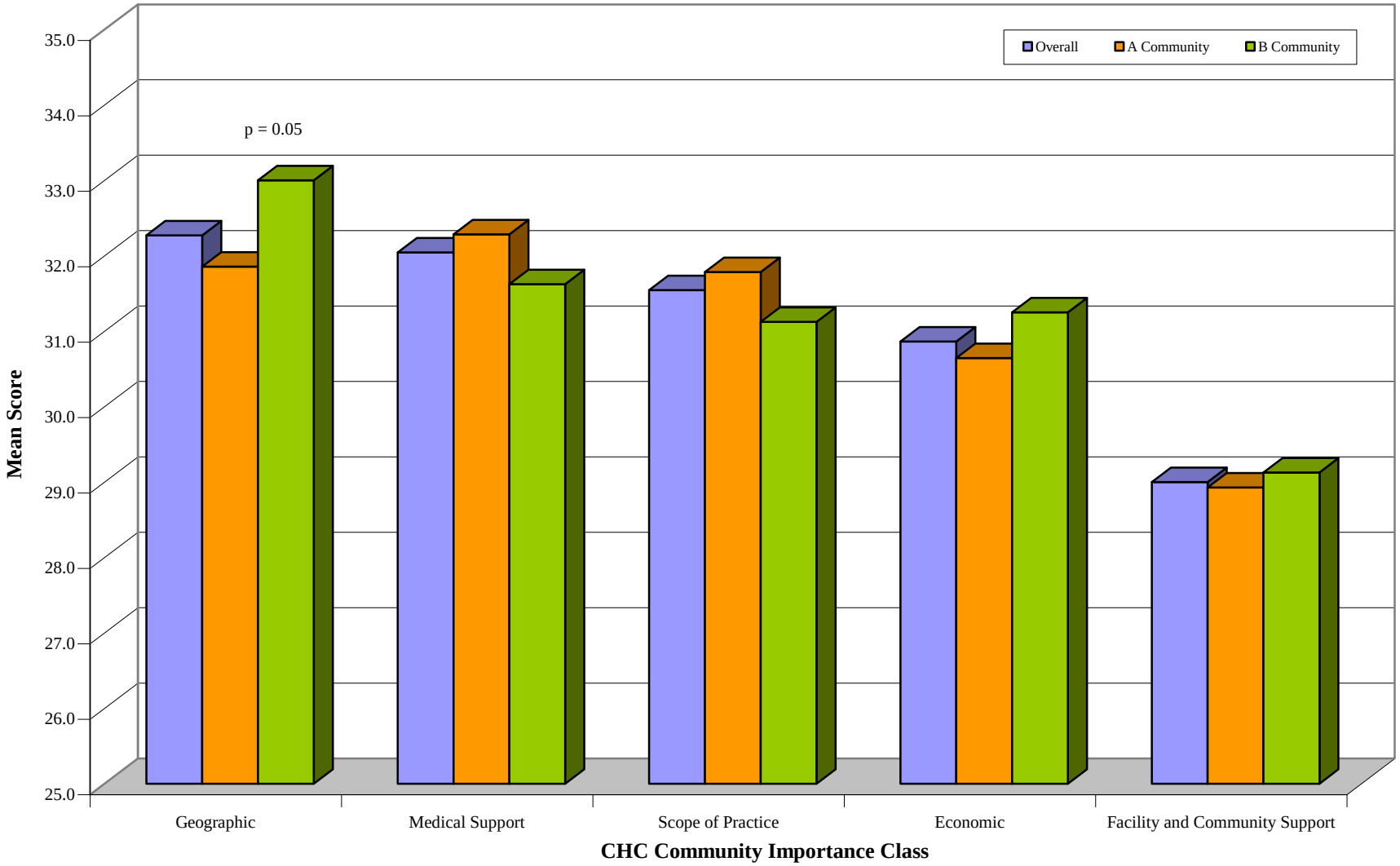


Figure 26
Summary Class CHC Community Importance Mean Score
Overall by Respondent and Community Type

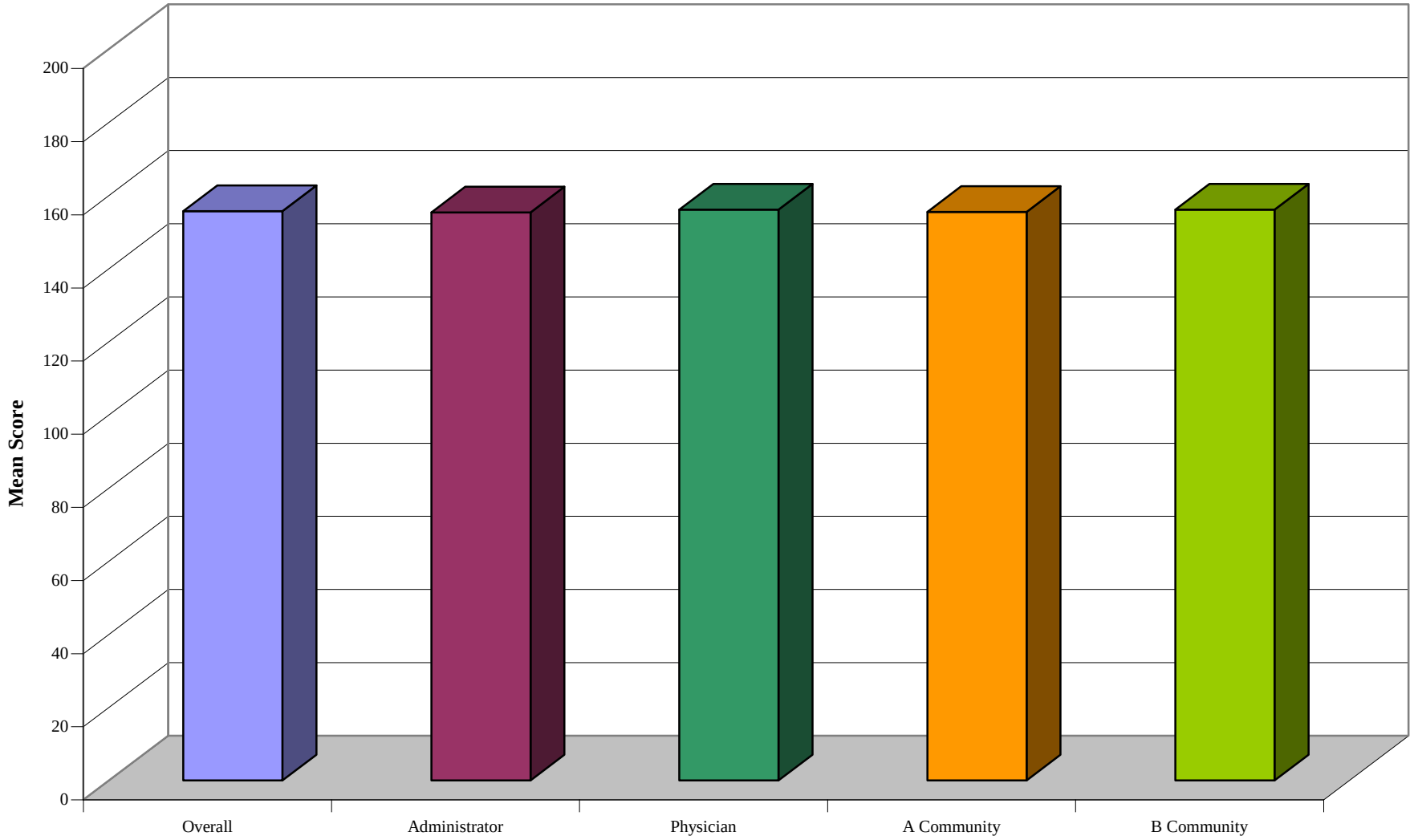


Figure 27
Geographic Class CHC Community Apgar Mean Score
Administrator vs. Physician

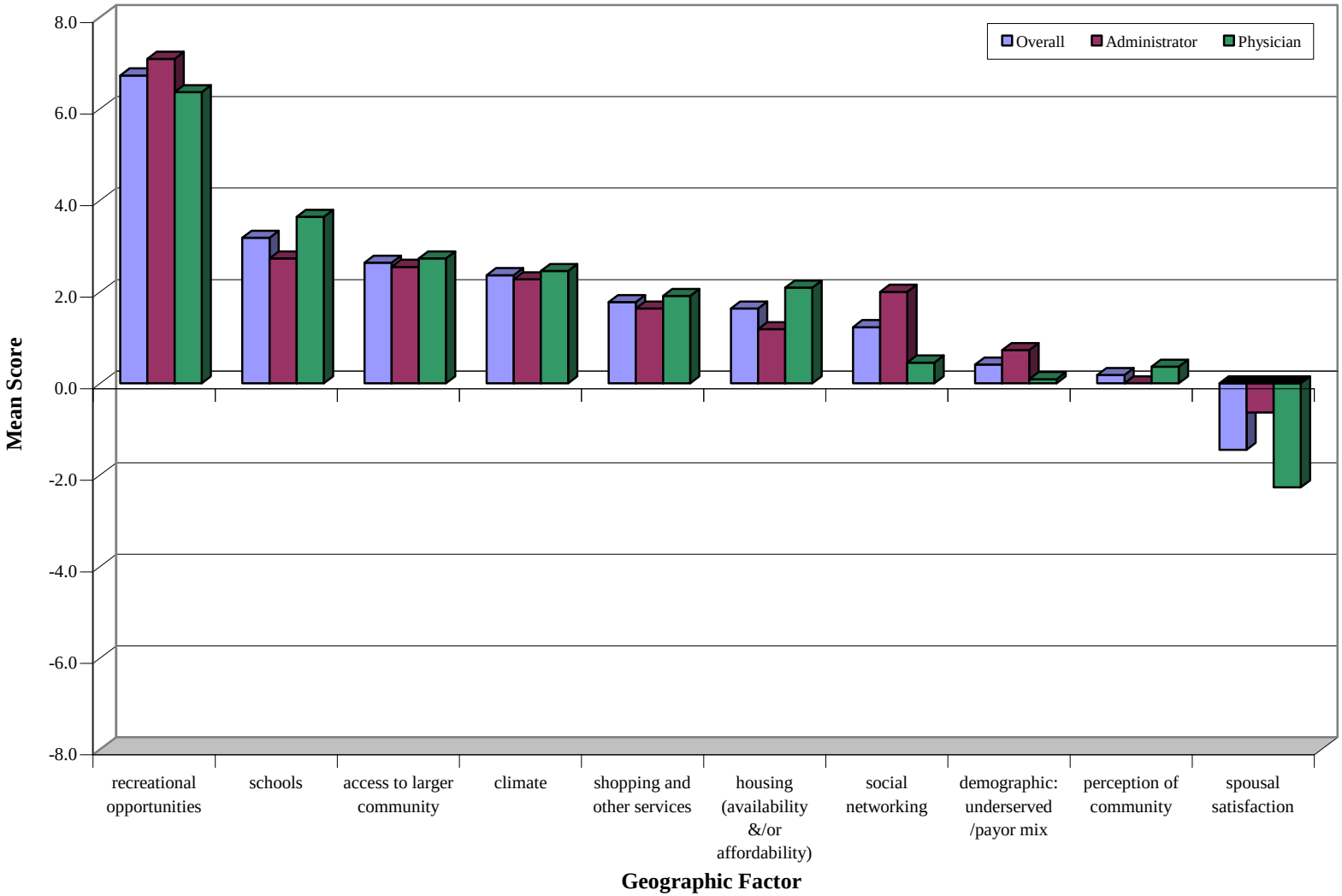


Figure 28
Geographic Class CHC Community Apgar Mean Score
A Community vs. B Community

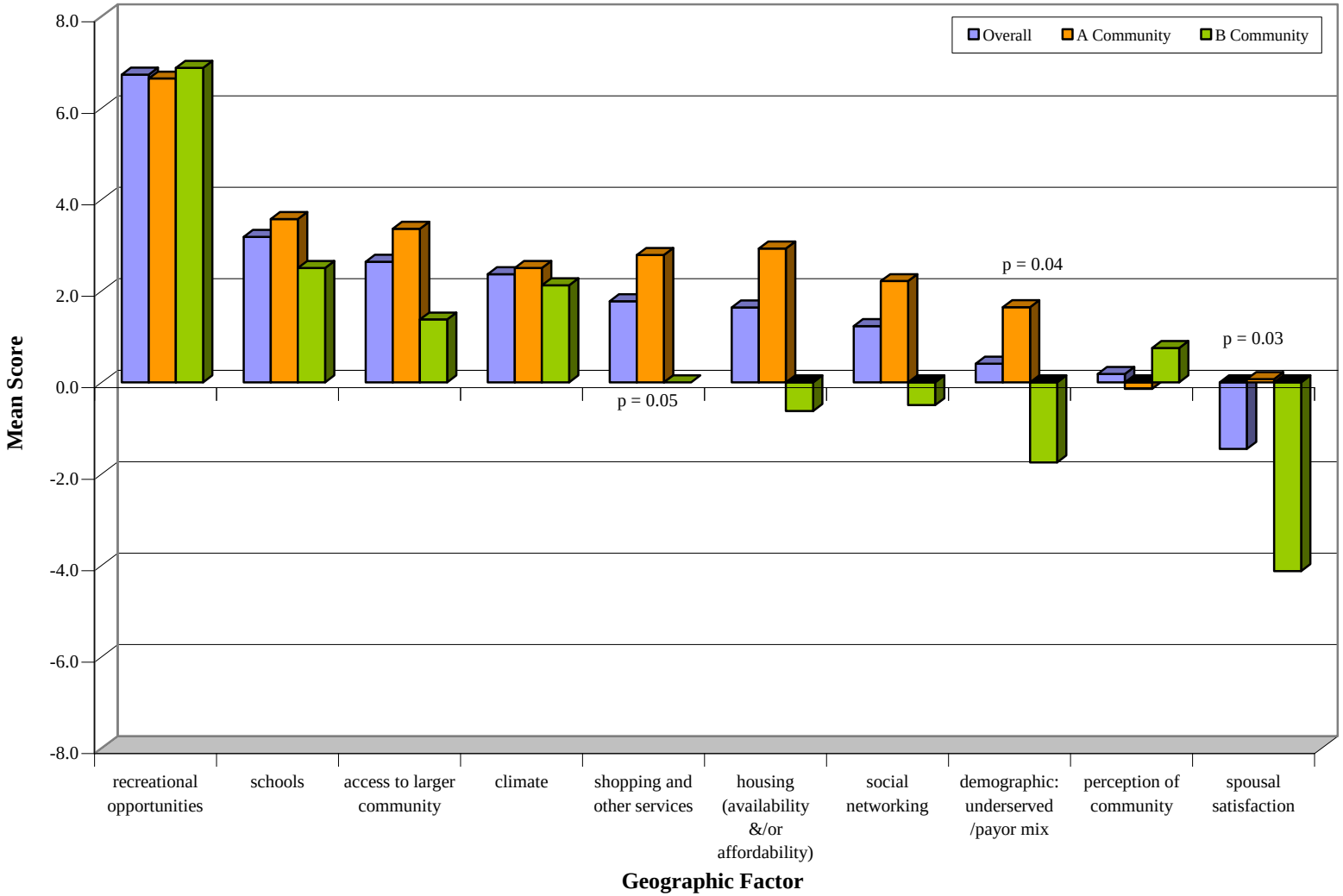


Figure 29
Economic Class CHC Community Apgar Mean Score
Administrator vs. Physician

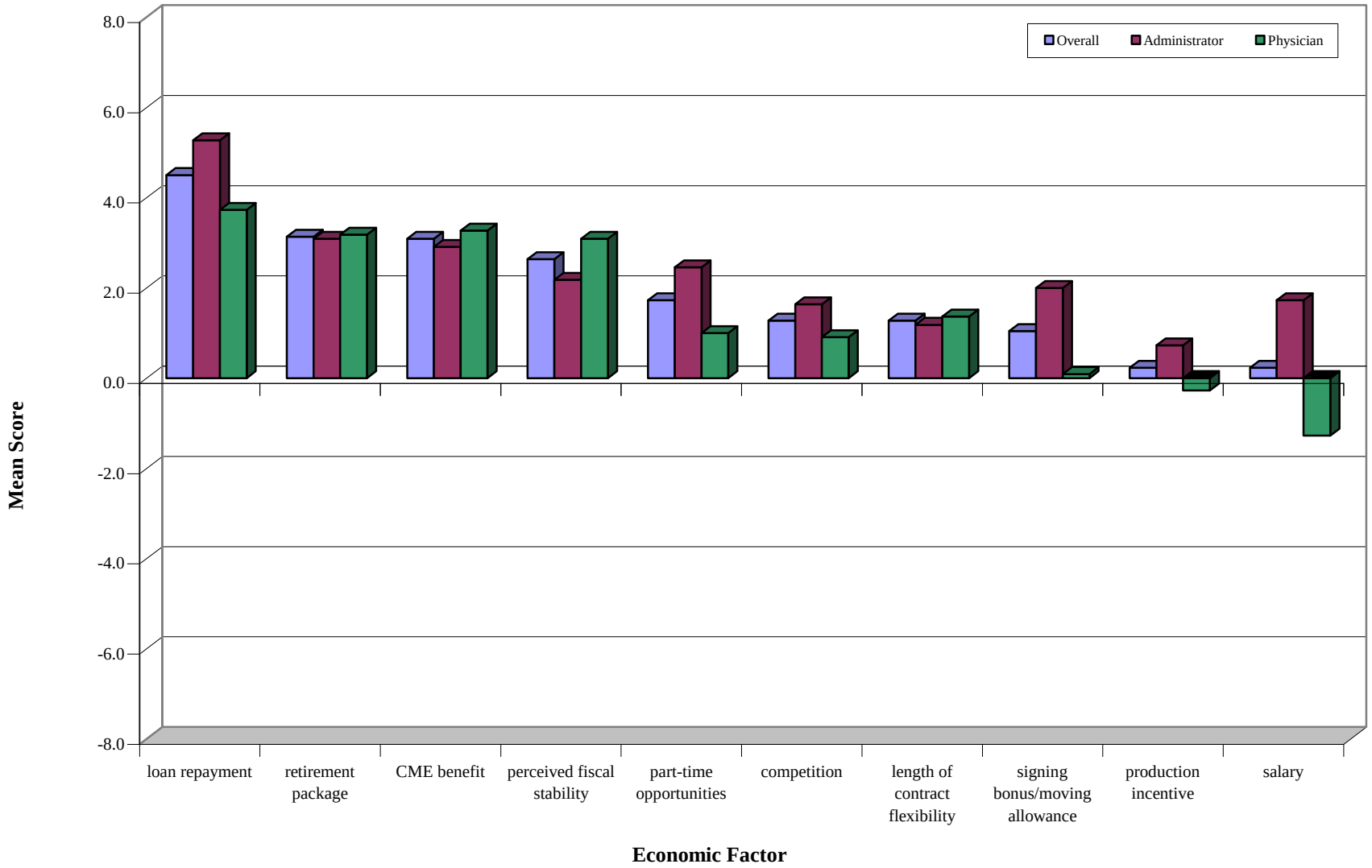


Figure 30
Economic Class CHC Community Apgar Mean Score
A Community vs. B Community

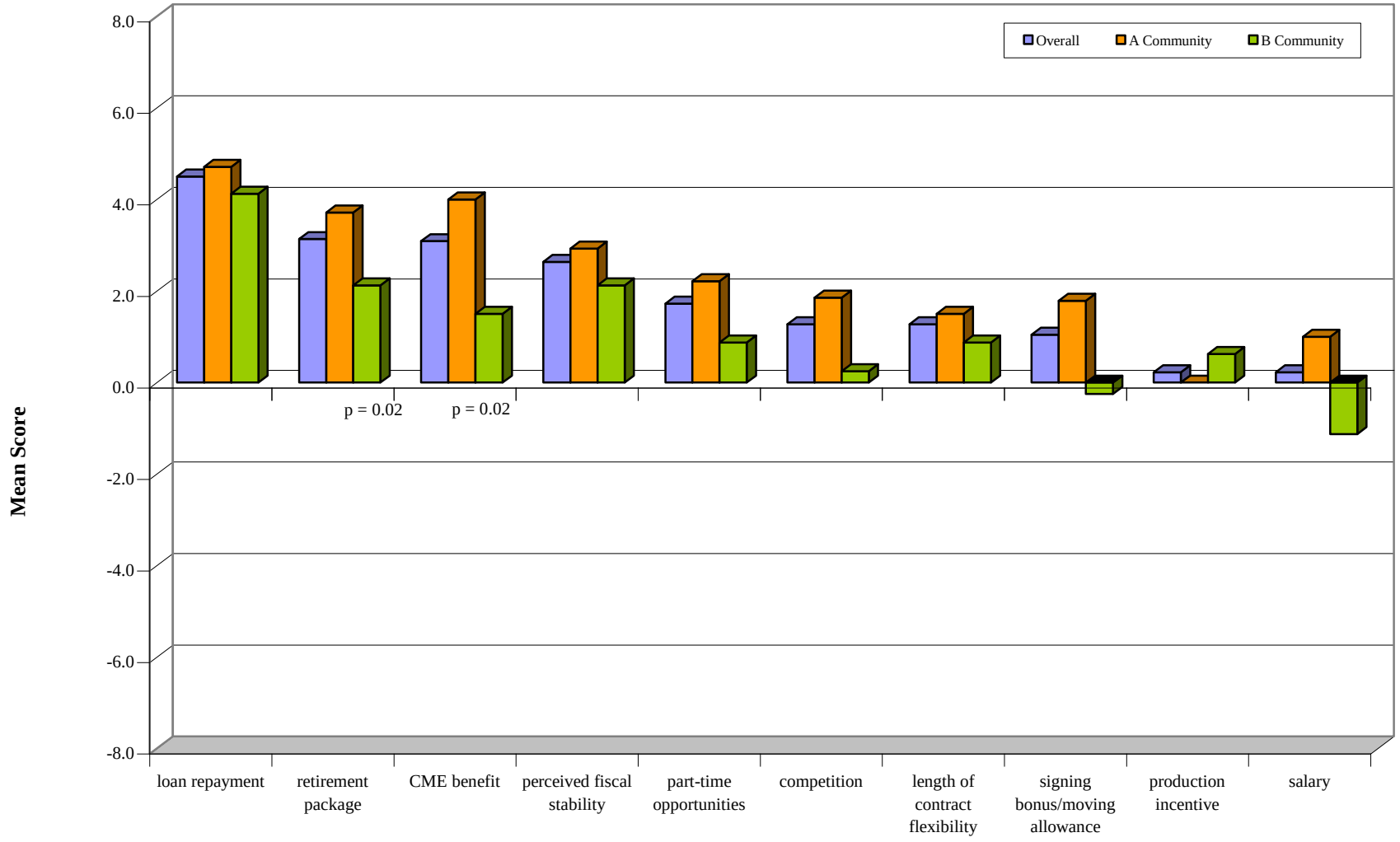


Figure 31
Scope of Practice Class CHC Community Apgar Mean Score
Administrator vs. Physician

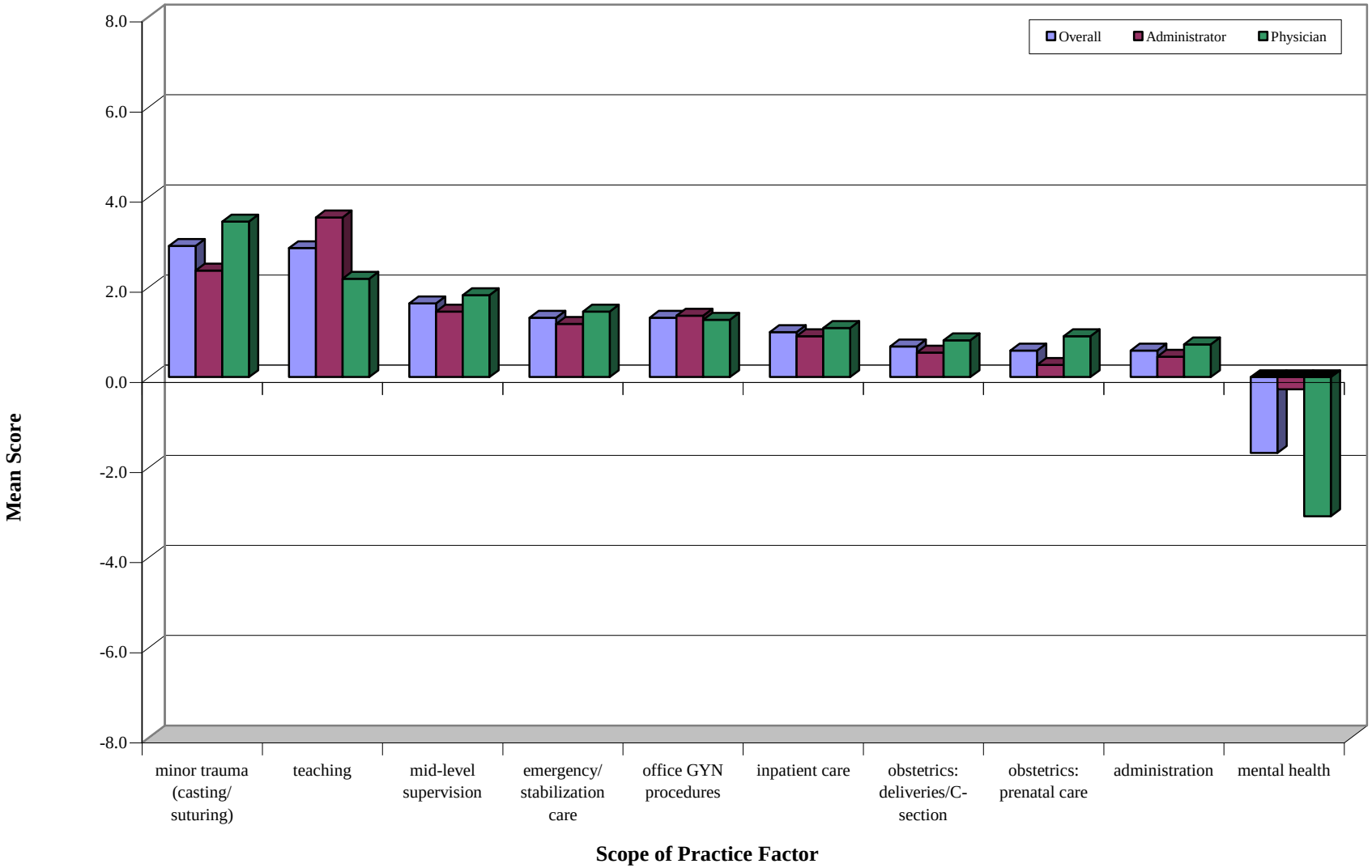


Figure 32
Scope of Practice Class CHC Community Apgar Mean Scores
A Community vs. B Community

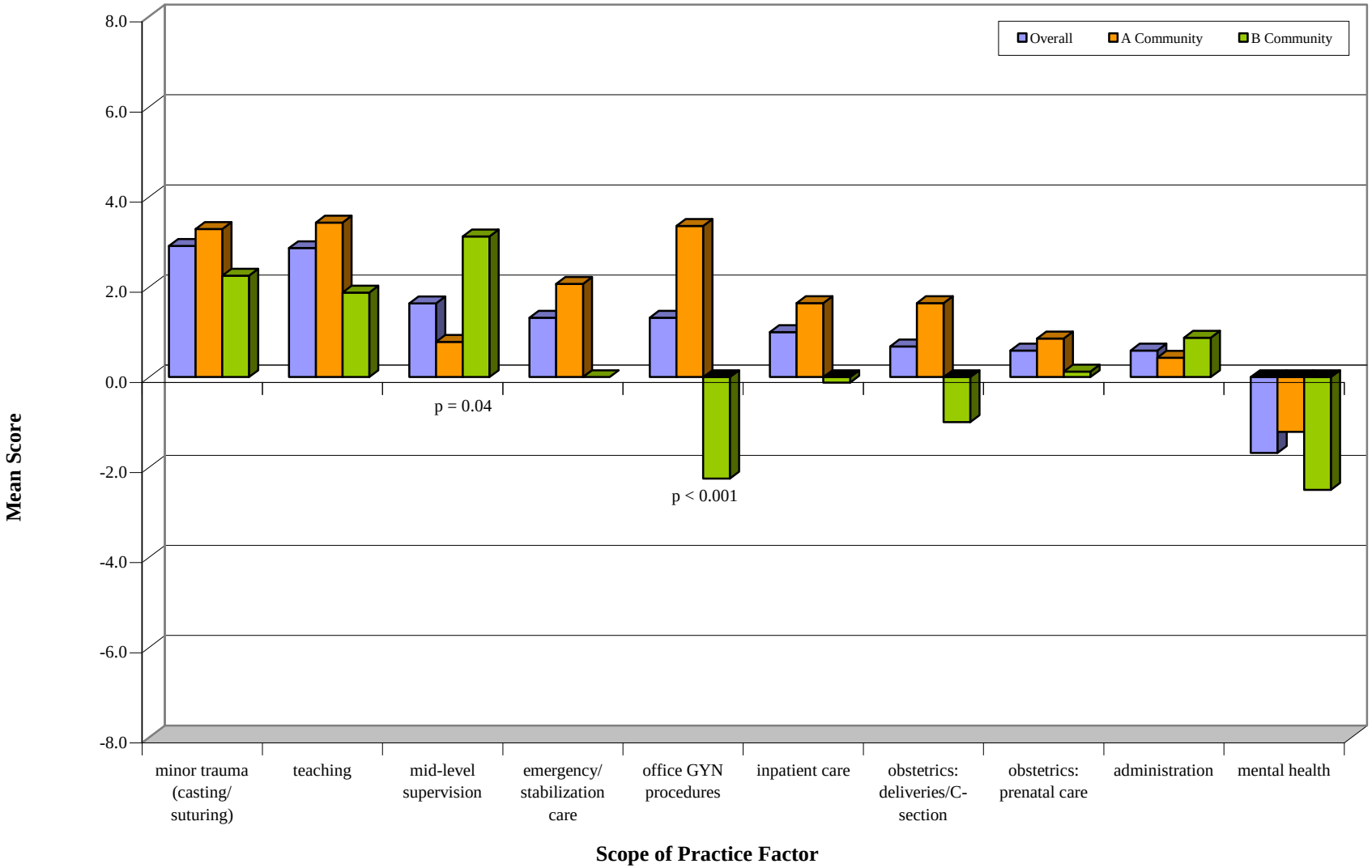


Figure 33
Medical Support Class CHC Community Apgar Mean Score
Administrator vs. Physician

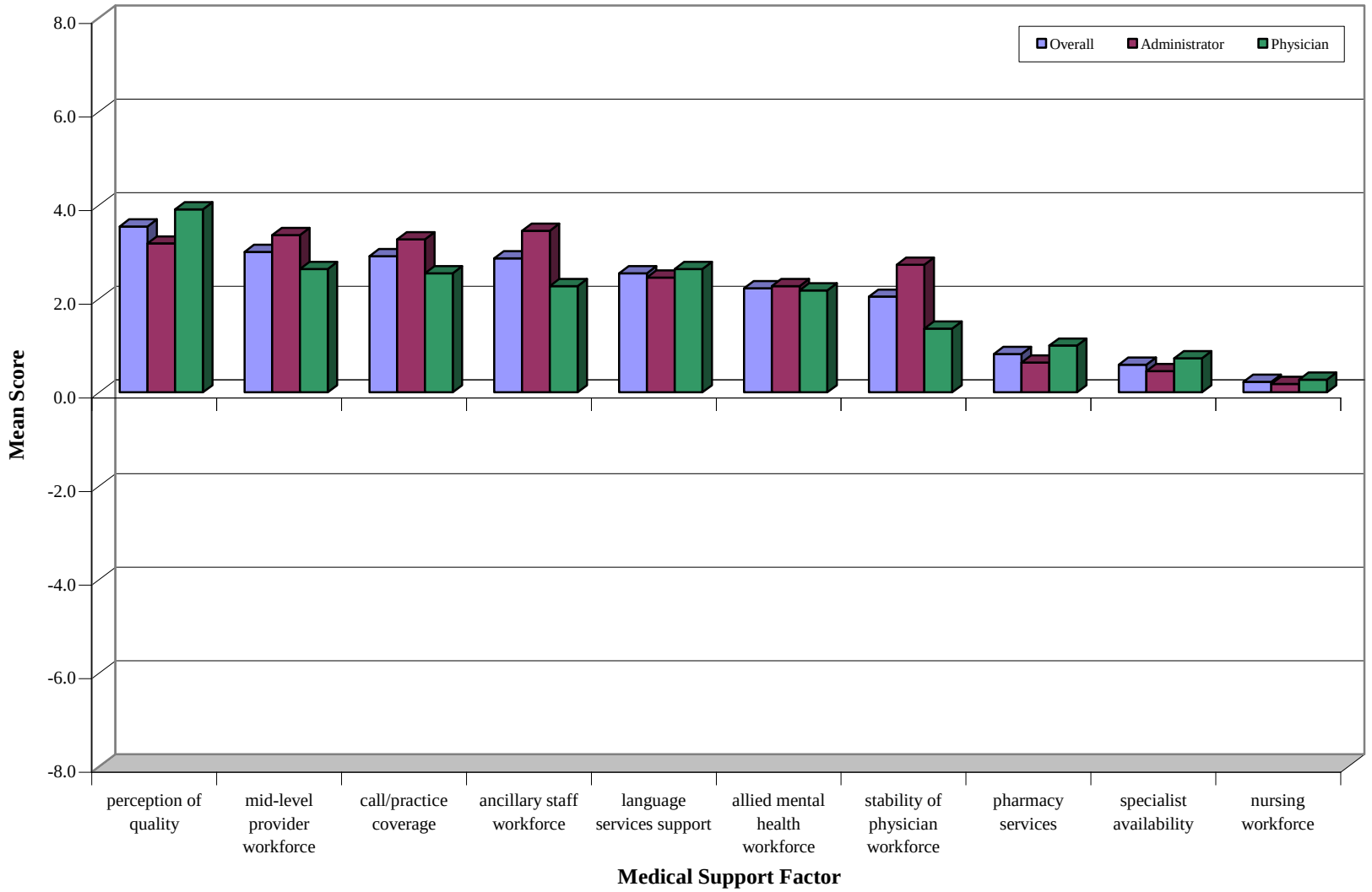


Figure 34
Medical Support Class CHC Community Apgar Mean Score
A Community vs. B Community

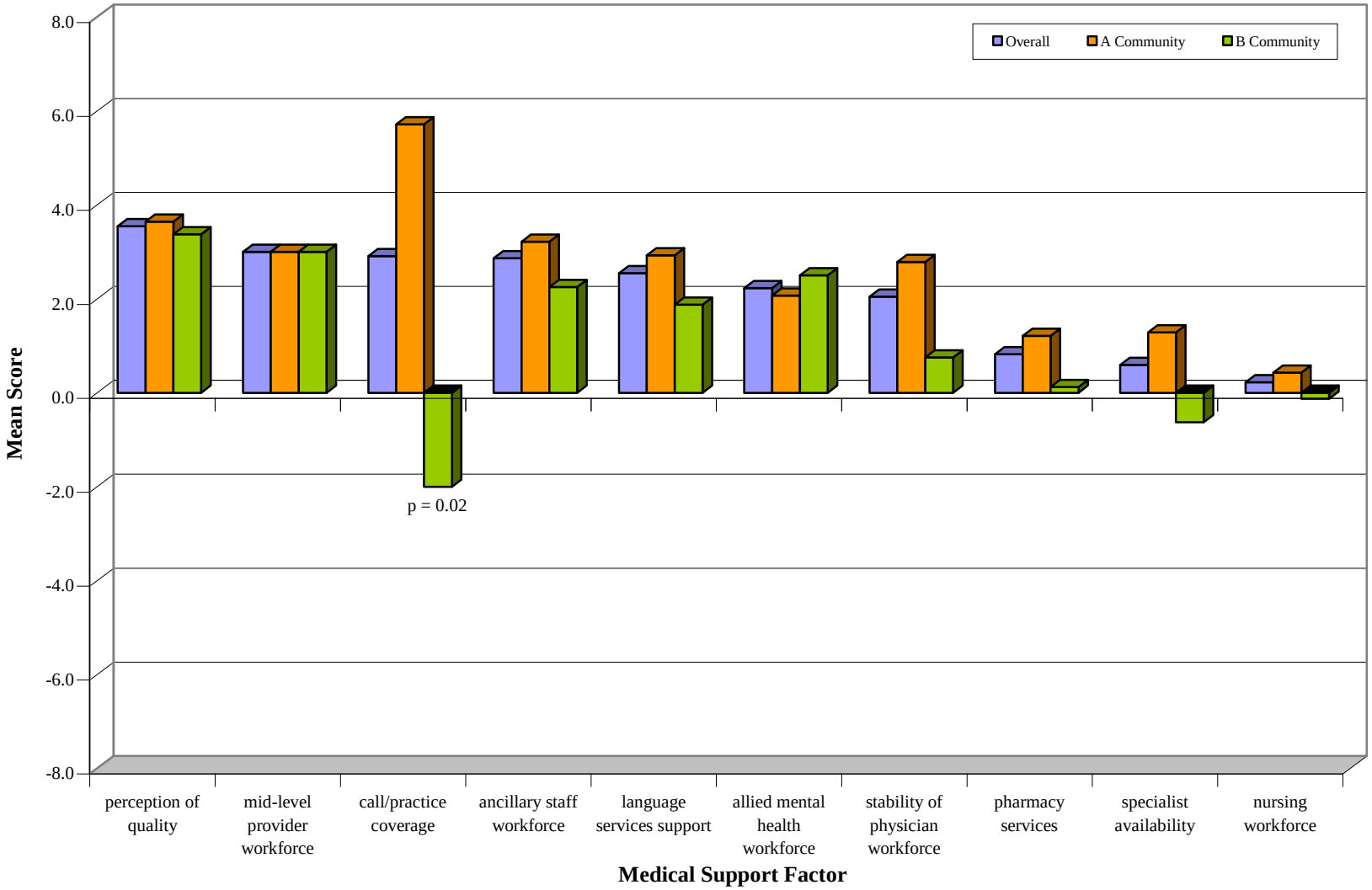


Figure 35
Facility and Community Support Class CHC Community Apgar Mean Score
Administrator vs. Physician

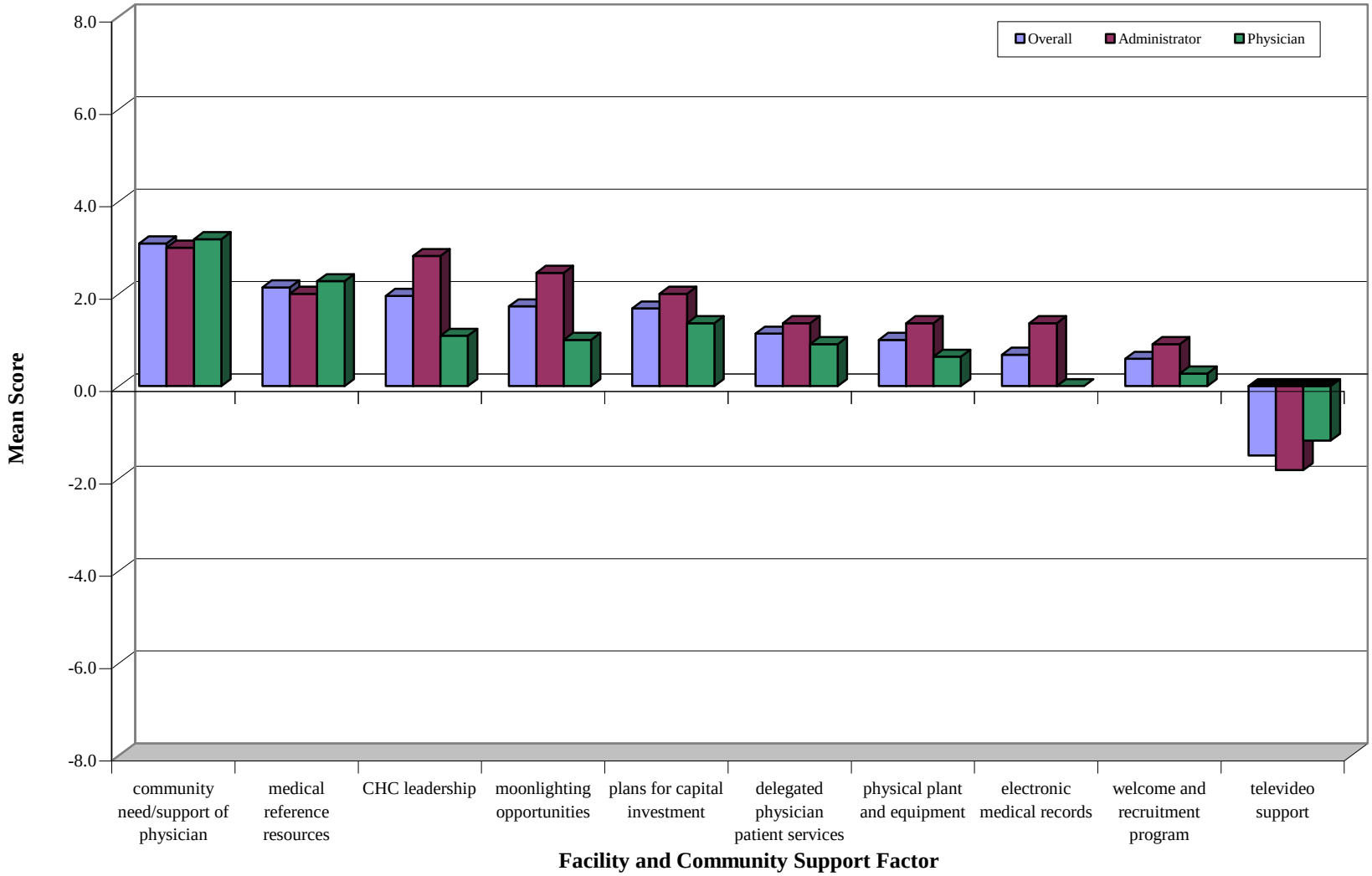


Figure 36
Facility and Community Support Class CHC Community Apgar Mean Score
A Community vs. B Community

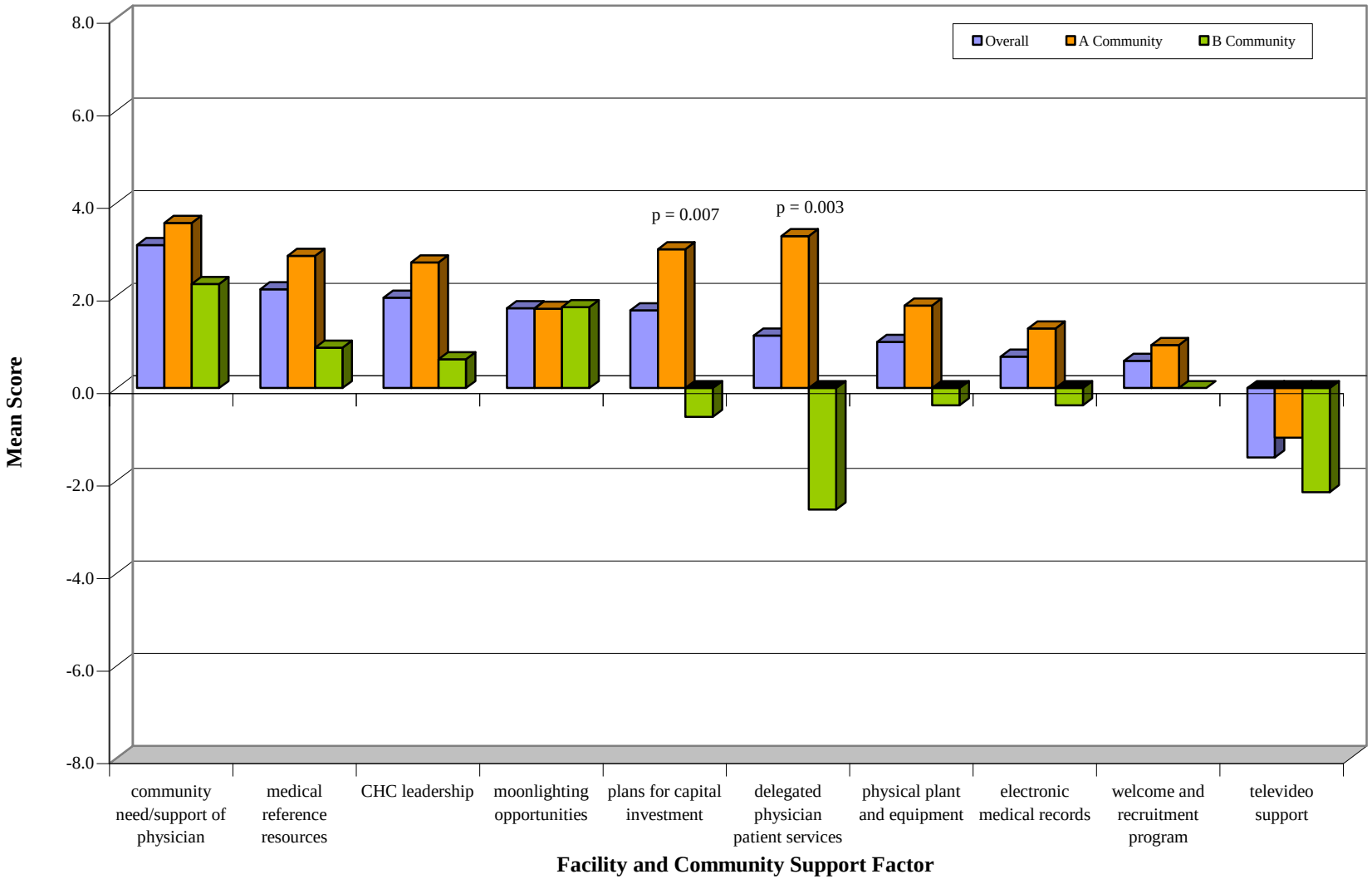


Figure 37
Class CHC Community Apgar Mean Score
Administrator vs. Physician

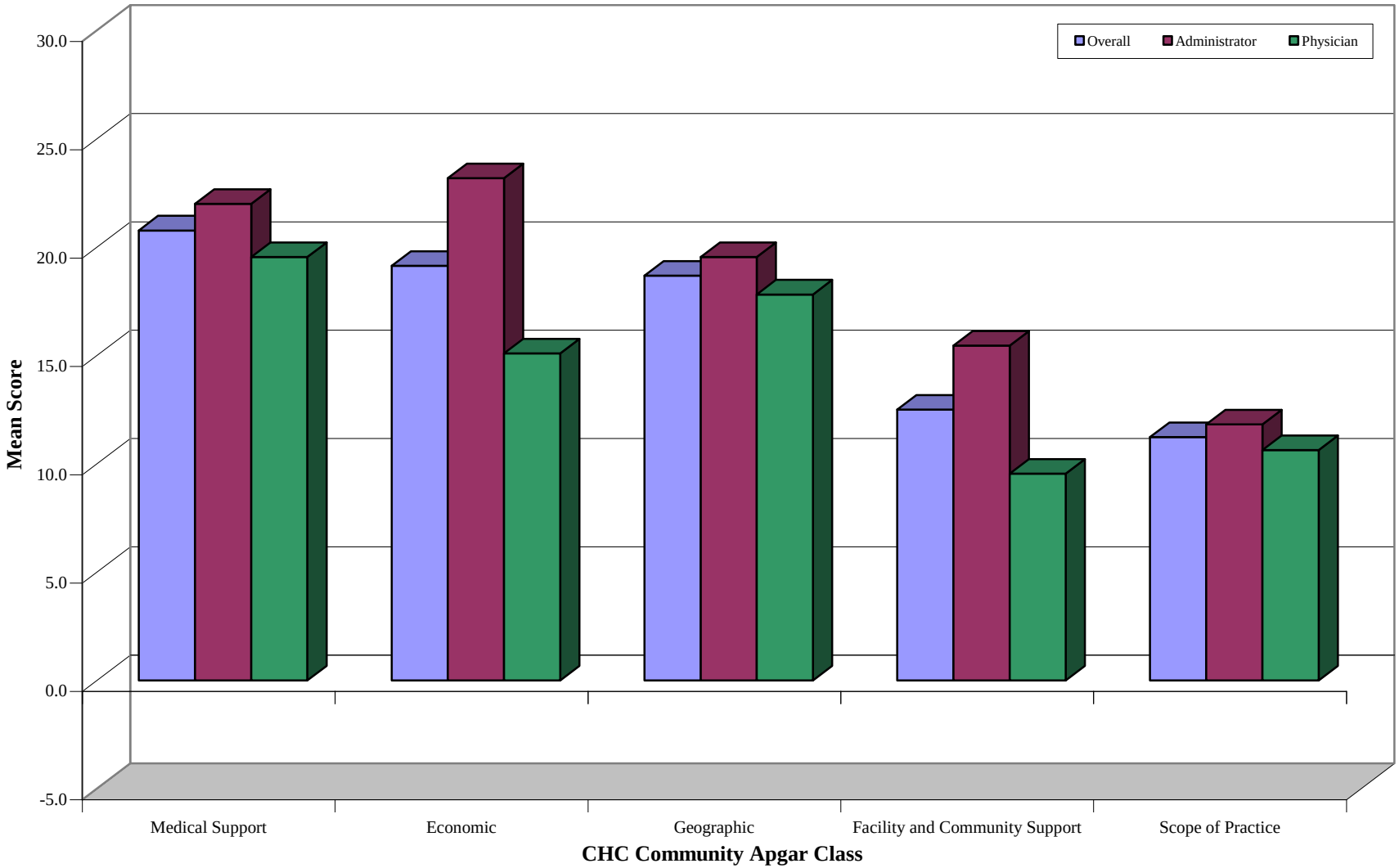


Figure 38
Class CHC Community Apgar Mean Score
A Community vs. B Community

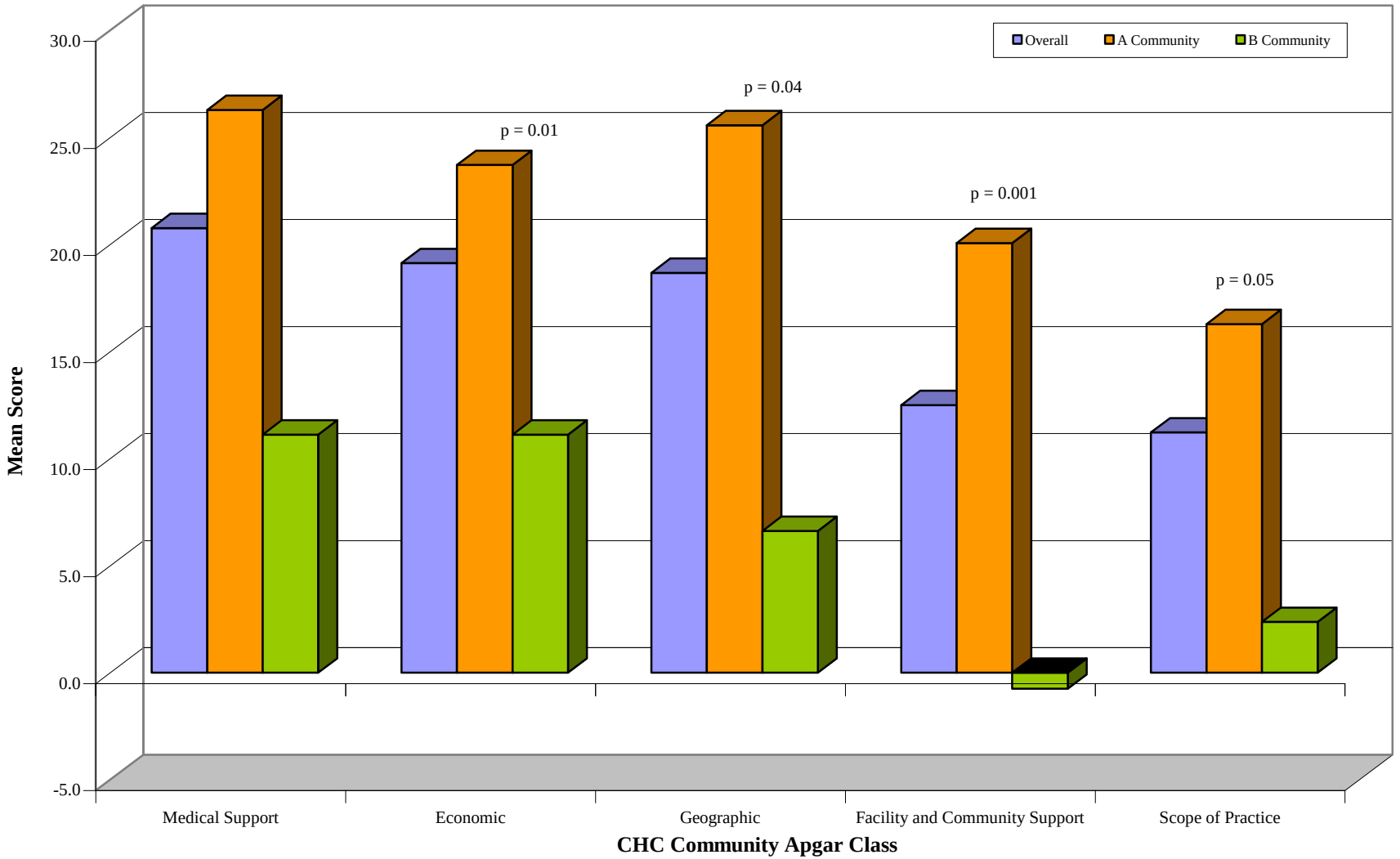


Figure 39
Summary Class CHC Community Apgar Mean Score
Overall by Respondent and Community Type

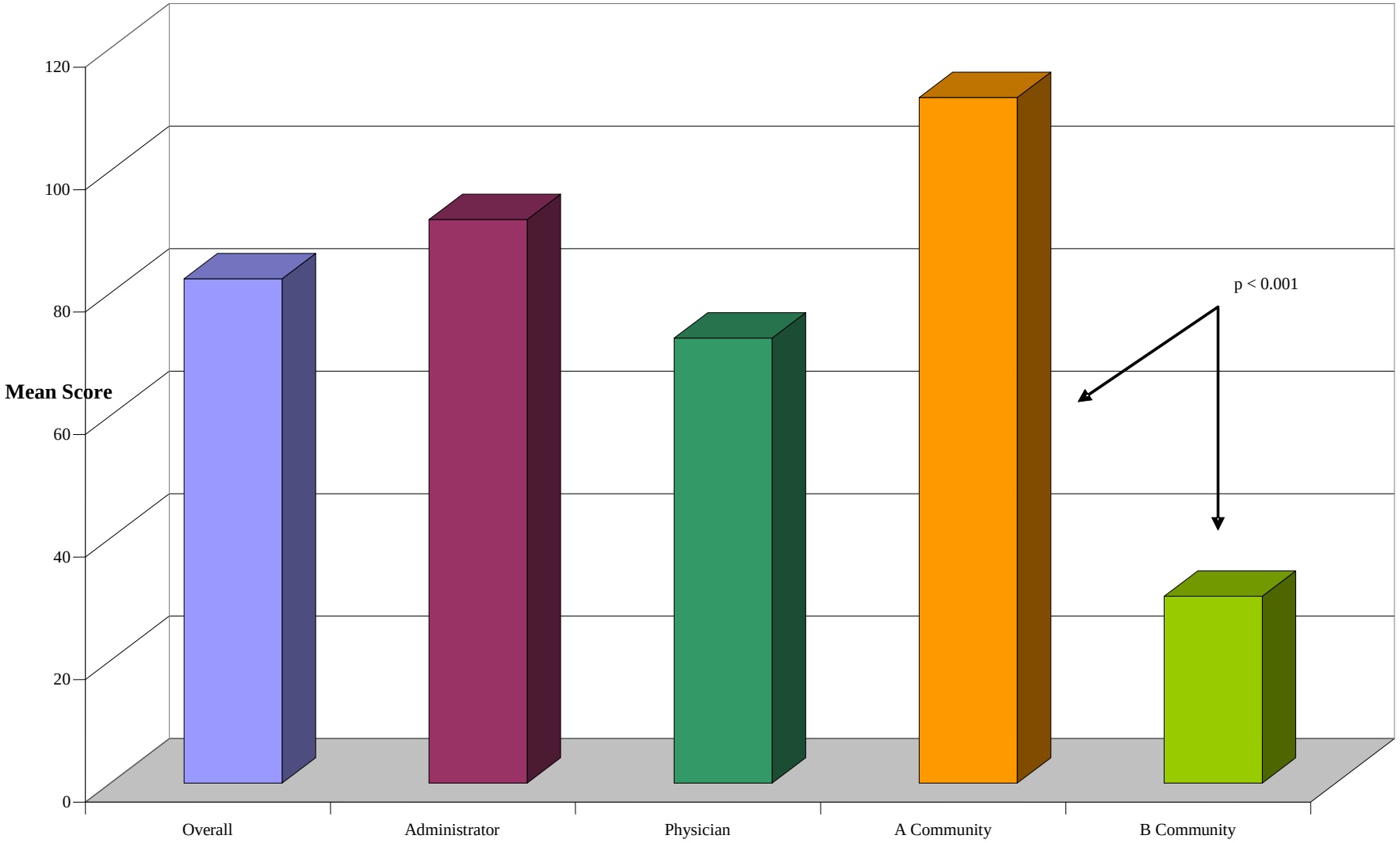
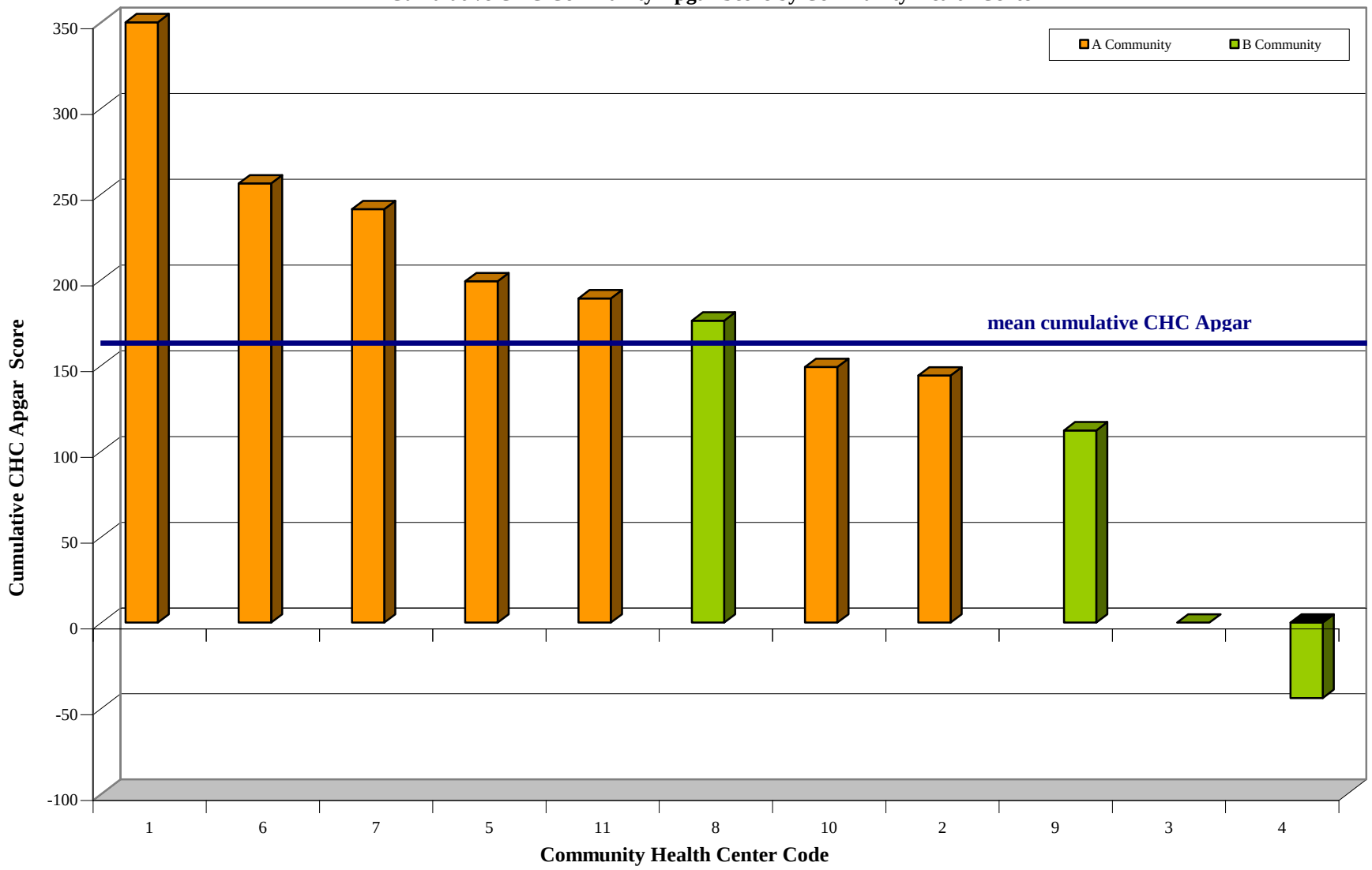


Figure 40
Cumulative CHC Community Apgar Score by Community Health Center



Appendix A

Community Health Center (CHC)

Community Apgar Questionnaire

CHC 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 health center. 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
Geographic								
Access to larger community								
Demographics: Underserved/ Payor mix								
Housing (availability &/or affordability)								
Schools								
Social networking								
Recreational opportunities								
Spousal satisfaction (education, work, general)								
Shopping and other services								
Climate								
Perception of community								
Economic								
Part-time opportunities								
Loan repayment								
Salary (amount)								
Signing bonus/ moving allowance								
Length of contract flexibility								
Perceived fiscal stability								
Production incentive								
Retirement package								
CME benefit								
Competition								

Class/Factor	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Scope of Practice								
Obstetrics: parental care								
Obstetrics: deliveries/C-section								
Inpatient care								
Emergency/ stabilization care								
Minor trauma (casting/suturing)								
Office GYN procedures								
Mental health								
Mid-level supervision								
Teaching								
Administration								
Medical Support								
Perception of quality								
Stability of physician workforce								
Specialist availability								
Nursing workforce								
Mid-level provider workforce								
Ancillary staff workforce								
Pharmacy services								
Allied mental health workforce								
Language services support								
Call/practice coverage								

Class/Factor	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Facility and Community Support								
Physical plant and equipment								
Plans for capital investment								
Electronic medical records (EMR)								
CHC leadership								
Televideo support								
Community need/support of physician								
Welcome and recruitment program								
Medical reference resources								
Delegated physician patient services								
Moonlighting opportunities								

Open-ended questions

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

2. What can be done to overcome these barriers?

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)?

Appendix B

Glossary of Terms

Community Health Center
Community Apgar Questionnaire
Glossary of Terms

Geographic Class Factors

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

Demographics: Underserved / Payor mix
The demographics of patients in the community including ability to access recommended or rendered care, age, gender, race or other

Housing (availability &/or affordability)
The availability and affordability of desirable housing as viewed by physicians

Schools
Adequacy of schools for the physician's children

Social networking
Opportunities or ease of socializing for the physician and family

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

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

Climate
Weather

Perception of community
Perception of the community overall by someone not from the community

Economic Class Factors

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

Salary (amount)

The competitiveness of the overall end-of-year physician earnings

Signing bonus / Moving allowance

Whether or not a signing bonus is available for new physician and whether or not a moving allowance is available for new physician

Length of contract flexibility

Whether or not a physician can expect flexibility with regard to the length in term of a working agreement or contract

Perceived fiscal stability

The degree of perceived financial stability of the hiring CHC institution

Production incentive

The existence and favorability of a production incentive for physician work and income

Retirement package

The existence and favorability of a physician retirement package or program

CME benefit

The existence and favorability of a Continuing Medical Education benefit and/or program

Competition

The sense of competition amongst primary care providers for patients and resultant environment for sharing care between physicians

Scope of Practice Class Factors

Obstetrics: Prenatal care

The impact of whether or not prenatal care obstetrics is an option, not an option, or mandatory.

Obstetrics: Deliveries / C-section

The impact of whether or not vaginal deliveries and/or C-Sections 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.

Emergency / Stabilization care

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

Minor trauma (casting/suturing)

The impact of whether or not minor trauma care such as casting or suturing is an option, not an option, or mandatory.

Office GYN procedures

The impact of whether or not office GYN procedures such as colposcopy and/or LEEP 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

Nursing workforce

The adequacy of nursing 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

Pharmacy services

The availability and adequacy of pharmacy services for CHC patients

Allied mental health workforce

The adequacy of allied mental health workforce for both quantity and quality

Language services support

The availability and adequacy of language support services for CHC patients

Call / Practice coverage

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

Facility and Community Support Class Factors

Physical plant and equipment

The current adequacy of the facilty physical plant and equipment

Plans for capital investment

The adequacy of the CHC institutional plans for capital investment in the facility

Electronic medical records (EMR)

The existence and adequacy of electronic medical records in the facility environments

CHC leadership

The adequacy of CHC leadership including the administrators and CHC board functions

Televideo support

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

Community need / Support of physician

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

Welcome and recruitment program

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

Medical reference resources

The adequacy and quality of medical reference resources for physician use in patient care

Delegated physician patient services

The adequacy and quality of task performance when physicians appropriately delegate an aspect of patient service

Moonlighting opportunities

The availability and quality of local physician work opportunities outside of the routine CHC provision of care