Contemporary Appraisal of Factors Influencing Pediatric Dental Program Director's Selection of Residents

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ABSTRACT

Purpose: With the increasing number of applicants and changes to information available in applications, pediatric dentistry program directors must adapt the resident selection process. The evaluation approach was significantly impacted when the NBDE changed to a pass/fail grading system. It is the purpose of this study to examine what criteria pediatric dentistry program directors now use to select residents and evaluate current criteria against those used in the past.

Methods: A 30-item survey was structured similar to a previous questionnaire used in 2005. An invitation to participate was sent via email to all pediatric dentistry program directors for the 82 CODA-accredited programs located in the United States and Canada. Anonymous responses were analyzed.

Results: There were 58 responses (70.7% response rate). The overall most important factors were clinical grades, dental school class rank, dental school GPA, and applicant's essay. The least important factors were the applicant being a graduate of the program's dental school, Advanced Dental Admission Test (ADAT) score, and applicant's fluency in a second language. The factor that had the most significant increase in importance from 2005 is the applicant's essay, followed by dental school reputation and the dental school's pediatric program reputation.

Conclusions: The most important factors to program directors are clinical grades, dental school class rank, dental school GPA, and applicant's essay. The applicant's essay has increased in importance from 2005.

Keywords:

Pediatric Dentistry, Graduate Dental Education, Dental Residency

INTRODUCTION

Pediatric dentistry has become one of the more competitive dental specialties in the United States, with increasing numbers of applicants and positions offered since 2010. Statistics from the Postdoctoral Dental Matching Program for the 2018-2019 year have shown that among post-graduate dental programs, pediatric dentistry had the highest number of applicants, followed by advanced education in general dentistry, orthodontics, and oral and maxillofacial surgery.¹

Program directors play a critical role in determining the most qualified applicants from the increasingly competitive applicant pool. Therefore, it is important to evaluate the factors that influence pediatrie dental program director's selection of residents. Applications, which may vary by program, typically involve a standardized set of questions (demographic information, licensure, relevant experience); academic achievement (class rank, grade point average, transcripts), a personal essay, a curriculum vitae, and letters of recommendation. Determining which components of an application are most important has been previously studied in the specialty of pediatric dentistry in 2005 for the graduating class of 2007. It was found that the four highest-rated selection criteria, in decreasing importance, were National Board Dental Examination (NBDE) scores, clinical grades, dental school class rank, and dental school grade point average (GPA).²

Although objective measures are an important aspect of resident selection, many previously preferred criteria have been eliminated or are decreasingly available, significantly impacting the resident selection process. In 2012 the NBDE changed from being numerically graded to a pass/fail grading system. Many dental schools use a pass/fail grading system and submit transcripts without academic grades or class rank. Furthermore, the pass/fail grading system is increasing in popularity. The increasing use of pass/fail academic grades and elimination of class rank makes it difficult for the program directors to differentiate between applicants since several stated preferred selection criteria

have been lost.^{2,5} Therefore, advanced dental education program directors must modify their methods for evaluating candidates.

Prior to the elimination of the numerical score for the NBDE, advanced dental education program directors across disciplines found the following factors to be the most important parts of a resident's application, in descending order, grade point average, class rank, and NBDE Part I score. Once the NBDE became pass/fail, the rank of factors remained the same but all other parts of the application increased in importance and that program directors preferred a standardized, numerically scored exam to assist in the evaluations of applicants. This is consistent with applicants who would also prefer an objective, standardized examination.

In response to the need for a graded test to replace the use of NBDE numerical scores for advanced dental education admissions, the American Dental Association (ADA) developed the Advanced Dental Admissions Test (ADAT). The purpose of the ADAT is to provide advanced dental education programs with insight into applicants' potential for success in their program.⁹

It is not clear how recent changes in several objective metrics, including numerical scores for NBDE, GPA, and class rank, affect how pediatric dentistry program directors select residents. It is important to understand what factors program directors currently consider to propose improvements and help guide applicants considering specialty training. The purpose of this study is to (1) examine what criteria pediatric dentistry program directors currently use to select residents and (2) compare these criteria to those previous identified in 2005.

MATERIALS AND METHODS

This study was reviewed and determined to be exempt by the University of Michigan IRB-Health Sciences. The target population for the study included program directors of all American Dental Association Commission on Dental Accreditation (CODA)-accredited pediatric dentistry programs in the United States and Canada. A list of directors was obtained from the American Academy of Pediatric Dentistry (AAPD). The survey was structured similar to a previous questionnaire that was completed in 2005 by Majewski et al., which evaluated pediatric dentistry program directors' resident selection criteria and preferences. These results formed the baseline for the current study. The questionnaire, which included demographic questions of the program director, was comprised of thirty questions with a mixture of question types including multiple choice, open-ended text entry, and Likert scale questions. The survey was placed on-line, hosted by Qualtrics (Qualtrics, Provo, UT, USA).

Each program director was asked to rank the importance of several aspects of an applicant's application including: applicant's essay, basic science grades, clinical grades, dental school grade point average, dental school class rank, National Board scores, Advanced Dental Admissions Test (ADAT) scores. GPR/AEGD/other specialty completed, externship or extra-curricular experiences in pediatric dentistry, research experience, private practice experience, publication or presentation in professional meetings, applicant is a graduate of dental school at which program is located, applicant's dental school has a good reputation, applicant's dental school's pediatric program has a good reputation, and applicant's fluency in a foreign language. Each category was ranked by the program director using a 5-point Likert scale: extremely important/critical (5), very important (4), moderately/fairly important (3), slightly/somewhat important (2), and not important (1). The average of each category was determined and ranked.

Survey emails with an anonymous link to complete the on-line survey were sent to program directors with a message explaining the survey's intent. The surveys could be completed with the option to leave any question unanswered and percentages were calculated based on the total number of respondents to each question. Direct comparisons were made to survey responses from the previous study.² Data were collected via Qualtrics Survey Software and were entered into Microsoft Excel. Descriptive statistics were analyzed using Microsoft Excel for Mac 2011 version 14.7.3 (Microsoft, Redmond, WA, USA), Statistical Package for Social Sciences Version 25 (IBM, Armonk, NY, USA), and R version 3.5.1 with RStudio version 1.1.463.

RESULTS

The questionnaire was sent by the American Academy of Pediatric Dentistry Educational Affairs Manager to 82 pediatric dentistry program directors in April 2018. There were 58 responses, which was a 70.7% response rate. From the responses, 42% (n=21) were hybrid programs, 40% (n=20) were hospital-based programs, and 18% (n=9) were university-based programs. The majority of respondents were female 58% (n=30). The majority of program directors are of white, not Hispanic ethnic origin (61%, n=31) followed by Asian/Pacific Islander (27%, n=14), Hispanic (4%, n=2), African American (4%, n=2), and Other (4%, n=2). Responding program directors have become more diverse since 2005 when 82% (n=40) were of Caucasian ethnicity (data not tabulated).

Overall, the most important factors in descending order were clinical grades, dental school class rank, and dental school GPA. The least important factors in descending order were the applicant being a graduate of the program's dental school, followed by Advanced Dental Admission Test (ADAT) scores and applicant's fluency in a second language. In 2005, the most important factors were clinical grades, dental school GPA, dental school class rank, and national board scores. The least important factors in 2005 were private practice experience and applicant is a graduate of the dental school at which the program is located. The factor that had the largest increase in importance from 2005 is the

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applicant's essay, followed by dental school reputation, then dental school's pediatric program reputation. Other factors that slightly increased in importance are clinical grades, dental school class rank, dental school GPA, and GPR/AEGD experience. The factors that had the largest decrease in importance since 2005 are NBDE scores, followed by research experience, then publication/presentation at professional meetings (Table 1, Figure 1).

Letters of recommendation from pediatric dentistry faculty members were valued most highly (81% very important or critical) followed by letters from the pediatric dentistry program director or chair (69% very important or critical). In 2005, program directors considered letters from a pediatric dentistry program director or chair (65%) and those from a pediatric dentistry faculty member (71%) to be very important or critical. More program directors consider letters of recommendation from pediatric dentistry faculty and directors to be critical than in 2005. The least important in both 2005 and 2018 were letters of recommendation from general dentists in private practice (Table 2).

The Advanced Dental Admissions Test (ADAT) was not required by any of the responding pediatric dentistry programs. 84% (n=36) programs accept but do not require the ADAT and 16% (n=7) do not participate with the ADAT. The majority of program directors who accept the ADAT found it to be somewhat valuable (48%, n=12) followed by not valuable (44%, n=11). Two respondents thought it was fairly valuable (8%, n-2), and none find it very valuable/critical. Most of the program directors (50%, n=11) plan to accept but not require the ADAT in the next 5 years while 32% (n=7) expect to require the ADAT and 18% (n=4) are planning not to participate (data not tabulated).

All of the pediatric dentistry programs that responded (n=43) require an interview for an applicant to be a candidate. The interview process has increased in importance since 2005. The interview is extremely important/critical for 37 programs (86%) and very important for 6 programs (14%). In

2005, the interview was extremely important/critical for 25 programs (51%) and very important for 24 programs (49%) (data not tablulated).

The applicant ranking process includes different members such as department chair/program director, full-time faculty, part-time faculty, residents, and others. In 2018, the most important members in the selection committee in descending order are department chair/program director, full-time faculty then part-time faculty, residents, and others. In 2005, most directors (89.8%) stated that they were at least very important in the selection of residents followed by full-time faculty (83.7%) (Table 3).

DISCUSSION

With an increased interest in the pediatric dentistry specialty, ¹⁰⁻¹² it is imperative for program directors to have the critical information within an application to help efficiently and effectively review and differentiate each candidate.

Majewski et al. previously found that pediatric dentistry program directors valued National Board scores, dental school clinical grades, class rank, and grade point average during the application process.² However, the Joint Commission on National Dental Examinations began to report National Board Dental Examination scores as pass/fail after January 1, 2012.¹³⁻¹⁵ Therefore, the previously most important factor is not available. The most important factors for pediatric dentistry resident selection according to the present study are clinical grades, dental school class rank, dental school grade point average, applicant's essay, basic science grades, and externship or extra-curricular experience in pediatric dentistry. This is similar to those from Fagin et al. (2015) who found that when the NBDE became pass/fail, the rank of factors remained the same but all other parts of the application increased in importance.⁷ Dental school class rank and dental school clinical grades have been important in resident selection for several different advanced dental education programs

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including oral and maxillofacial surgery, prosthodontics, orthodontics, endodontics, and periodontics.^{6,16-19} Many programs valued dental school grades in the specified specialty.^{18,19}

This study's results demonstrated that the other parts of application increased in importance and in similar rank order as compared to 2005.² However, the applicant's essay is higher in the rank order in 2018 than in 2005. This is important to note since it is a non-objective measure that has increased in importance. Ricker et al., describe many non-cognitive and difficult to measure qualities which program directors find important, such as teachability and self-motivation.¹² The emphasis on the applicant's essay may reflect program directors' search for information on these non-objective qualities. Khan et al. determined that program directors valued the applicant's essay because it allowed applicants to stress their areas of strength and share any information that wasn't covered during the interview.¹⁸ Faraz et al. also found the essay to be an important factor in pediatric dentistry resident selection.

The least important factors were that the applicant is a graduate of the dental school where the program is located; ADAT scores; applicant's fluency in a second language; private practice experience; and publication or presentation in professional meetings. Faraz et al. 2018 differs from this study in opinion regarding externships—this study's results show that externships are closer to the top of the list to be valuable in selection of residents, while Faraz et al. found externships less important in resident selection. The value of externships seems to also be questionable throughout other advanced dental education specialties. He in et al. found that 95% of pediatric dentistry program directors found externships to be beneficial especially with the loss of NBDE scores and class ranking—however, applicants that completed an externship were just as likely to be accepted into their first choice program as those who did not complete an externship. This may be explained in the fact that externships allow the program director to develop a personal impression of the extern, either positive or negative.

The factors that have most decreased in importance since 2005 are NBDE scores, research experience, and publications or presentations at professional meetings. Presentations at pediatric meetings were also among the least important factors in the study by Faraz et al.²⁰ It is very much expected that the NBDE scores would decrease in importance with the change to pass/fail grading in 2012, but it is interesting to note the decrease in importance of research experience and publications/presentations. This may be due to an increase in number of hospital-based programs since 2005, which may place a comparably lower priority on research than University-based programs.

It is also interesting to note that ADAT scores were considered one of the least important factors. This may be since the test was recently implemented in 2017 and has not been consistently used as a metric for evaluation. In this study, seventy-three percent (n=27) of respondents would consider a standardized test, such as the ADAT, as part of their program admissions requirements. Both pediatric dentistry program directors and dental residents expressed interest in a standardized test as part of their admissions requirements. 8,20 Other advanced dental education programs have yet to evaluate their program directors viewpoints on the ADAT. Eidelman and Whitmer 2017 discuss the concern that the ADAT will not be a universally accepted measure. 22 Many programs are unlikely to unilaterally mandate ADAT scores from applicants due to potential negative impact on the number of applicants to their program. Although the study's results showed that the 73% of program directors would consider a standardized test such as the ADAT, none of the pediatric dentistry programs currently require the ADAT for admission. Eighty-four percent (n=36) of programs accept but do not require the ADAT and 16 % (n=7) do not participate with the ADAT. The American Dental Association report that 75% of pediatric dentistry programs either require or accept ADAT results, which was observed to be the highest percentage for any specialty. None of the participating program directors found the ADAT to be critical or very valuable. Therefore, although the ADAT was initially viewed to have potential to help aid program directors of advanced dental education

programs with their resident selection, it has yet to be considered an important factor in the application.

Letters of recommendations are beneficial to evaluate applicants for advanced dental education. 17-19

Letters of recommendation are even more beneficial when written by faculty from the specific specialty. 6-16-17-19

Faraz et al. found that pediatric dentistry program directors consider letters of recommendation to be one of the most important factors in the application process and they were most valuable when they were from dental school pediatric faculty, pediatric department director/chairman, post-graduate residency attending, and pediatric program alumni. 20 This study's results showed a similar order of importance of letters of recommendation in descending order from pediatric dentistry faculty member, pediatric dentistry program director or chair, non-pediatric dentistry faculty member, dean, associate dean, pediatric dentist in private practice, and general dentist in private practice. However, Ricker et al. reported that pediatric dentistry program directors express concerns regarding the subjective nature of letters of recommendation. 12

All responding program directors have a mandatory interview for an applicant to be a candidate. A recent study of pediatric dentistry residents determined that interview evaluations were the most important factor during the application process.²⁰ This is consistent with other dental specialties including oral surgery, prosthodontics, orthodontics, endodontics, and periodontics that also have a mandatory interview prior to accepting applicants.^{16-20,23} In addition to program directors valuing the interview, applicants also benefit from the interview process since candidates often choose programs based on subjective impressions from the interview day, along with their perceptions of an optimal work environment.²⁴ The interview is a critical component of the admissions process for pediatric dentistry residency programs. Although not directly studied, it may be that some programs use the application to determine who to invite for interviews, and then largely rely on the interview for

admissions decisions. The interview may offer an opportunity to assess non-cognitive qualities desired by programs more so than the application itself.

The study's main limitation is non-respondent bias, although the response rate was 70% (n=58). Therefore, results may not be generalized to all program directors. The application evaluation process should be reevaluated in several years to determine the implication of the Advanced Dental Admissions Test (ADAT).

CONCLUSIONS: The most important factors for pediatric dentistry program directors to evaluate candidates are clinical grades, dental school class rank, dental school GPA, applicant's essay, basic science grades, and externship or extra-curricular experiences in pediatric dentistry. More program directors consider letters of recommendation from pediatric dentistry faculty to be critical than in 2005. The importance of the applicant's essay has increased since 2005.

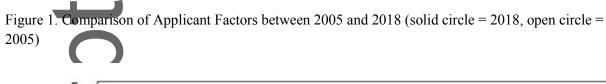
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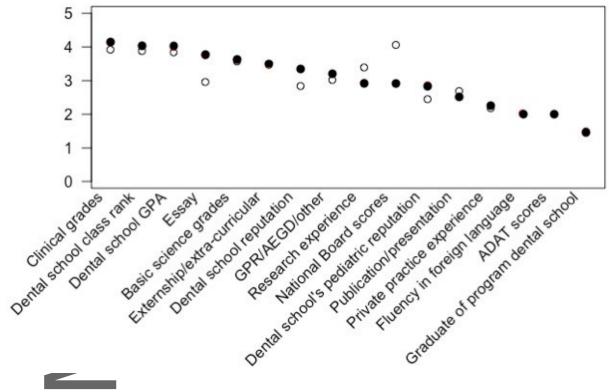
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Table 1. Evaluation of Applicant Factors Considered by Program Directors in 2018 and 2005

| Factors Evaluated | Critic al (5.0) | | Very Importa nt (4.0) | | Fairly Importa nt (3.0) | | Somewha t Importan t (2.0) | | Not Import ant (1.0) | | Mean Score (Scale 1- 5) | |
|--|-------------------|-------------------|-----------------------------|---------------|-------------------------------|-----------|-------------------------------------|-----------|-------------------------------|---------------|----------------------------------|----------|
| | 2 0 1 8 | 2 0 0 5 | 20 18 | 20 05 | 20 18 | 20 05 | 201 | 200 5 | 20 18 | 20 05 | 20 18 | 20 05 |
| Clinical grades | 2 5. 0 % | 1 4. 3 % | 63. 6 % | 65. 3 % | 11. 4% | 18. 4% | 0% | 2.0 % | 0. 0 % | 0 % | 4.1 | 3.9 |
| Dental school class rank | 3 4. 1 % | 2 6. 5 % | 40. 9 % | 42. 9 % | 22. 7% | 22. 4% | 0% | 8.2 | 2. 3 % | 0 % | 4.0 5 | 3.8 |
| Dental school GPA | 2 0. 5 % | 1 8. 4 % | 59. 1 % | 53. 1 % | 20. 5% | 22. 4% | 0% | 6.1 | 0. 0 % | 0 % | 4 | 3.8 |
| Applicant's Essay | 1 8. 2 % | 6. 1 % | 45. 5 % | 24. 5 % | 29. 6% | 30. 6% | 6.8 | 36. 7% | 0. 0 % | 2. 0 % | 3.7 5 | 2.9 |
| Basic science grades | 1 1. 4 % | 2. 0 % | 43. 2 % | 55. 1 % | 40. 9% | 34. 7% | 4.6 % | 8.2 | 0. 0 % | 0 % | 3.6 | 3.5 |
| Externship | 9. 1 % | 1 0. 2 % | 50. 0 % | 42. 9 % | 25. 0% | 30. 6% | 13. 6% | 16. 3% | 2. 3 % | 0 % | 3.5 | 3.4 |
| Applicant's dental school has a good reputation. | 9. 5 % | 8. 2 % | 42. 9 % | 26. 5 % | 31. 0% | 22. 4% | 11. 9% | 26. 5% | 4. 8 % | 16 .3 % | 3.3 | 2.8 |
| GPR/AEGD | 6. 8 | 1 0. 2 | 36. 4 | 22. 4 | 36. 4% | 32. 7% | 11. 4% | 28. 6% | 9. 1 | 6. 1 | 3.2 | 3.0 |

| | % | % | % | % | | | | | % | % | | |
|---|--------------|-------------------|---------------|---------------|-----------|-----------|-----------|-----------|---------------|---------------|-------|---------|
| Research experience | 2. 3 % | 8. 2 % | 18. 2 % | 34. 7 % | 52. 3% | 44. 9% | 25. 0% | 12. 2% | 2. 3 % | 0 % | 2.9 | 3.3 |
| National Board scores | 2. 3 % | 2 6. 5 % | 30. 2 % | 53. 1 % | 41. 9% | 20. 4% | 7.0 | 0% | 18 .6 % | 0 % | 2.9 | 4.0 |
| Applicant's dental school's pediatric dental program has a good reputation. | 4. 8 % | 4. 1 % | 26. 2 % | 22. 4 % | 35. 7% | 20. 4% | 23. 8% | 20. 4% | 9. 5 % | 32 .7 % | 2.8 | 2.4 |
| Publication/presentation | 2. 3 % | 2. 0 % | 11. 4 % | 18. 4 % | 40. 9% | 36. 7% | 27. 3% | 32. 7% | 18 .2 % | 10 .2 % | 2.5 | 2.6 |
| Private Practice | 2. 3 % | 2. 0 % | 6.8 | 12. 2 % | 38. 6% | 22. 4% | 18. 2% | 28. 6% | 34 .1 % | 34 .7 % | 2.2 5 | 2.1 |
| Applicant's fluency in foreign language | 2. 3 % | N / A | 4.6 % | N/ A | 27. 3% | N/ A | 25. 0% | N/ A | 40 .9 % | N/ A. | 2.0 | N/ A |
| ADAT scores | 0 % | N / A | 9.1 % | N/ A | 22. 7% | N/ A | 27. 3% | N/ A | 40 .9 % | N/ A | 2 | N/ A |
| Applicant is a graduate of the dental school at which the program is located. | 0 % | 0 % | 0 % | 6.1 | 14. 3% | 6.1 | 21. 4% | 18. 4% | 62 .3 % | 69 .4 % | 1.4 | 1.4 |



Table 2. Recommendation Letter Authorship Importance



| Individual Writing Letter | Cri | tical | Very important | | Fairly important | | Somewhat important | | Not importan t | | Sco (Sc | ean ore cale -5) |
|--|-----------|-----------|-------------------|-----------|---------------------|----------|-----------------------|-----------|----------------------|-----------|------------|---------------------------|
| | 201 8 | 200 5 | 201 8 | 200 5 | 201 8 | 200 5 | 2018 | 2005 | 201 8 | 200 5 | 20 18 | 20 05 |
| Pediatric dentistry director | 33. 3% | 10. 2% | 35.7 % | 55.1 % | 26.2 | 18.4 | 2.4% | 16.3 | 2.4 % | 0% | 4 | 3. 59 |
| Pediatric dentistry faculty | 38. 1% | 4.2 % | 42.9 % | 67.3 | 16.7 | 14.3 | 2.4% | 14.3 | 0% | 0% | 4. 18 | 3. 61 |
| Non-pediatric dentistry faculty | 4.8 % | 0% | 26.2 | 12.2 | 47.6 % | 40.8 | 21.4 | 38.8 | 0% | 8.2 % | 3. 16 | 2. 57 |
| Dean | 0% | 2.0 % | 14.3 | 8.2 | 45.2 % | 20.4 | 33.3 | 42.9 % | 7.1 % | 26. 5% | 2. 68 | 2. 16 |
| Associate dean | 0% | 0% | 9.5 % | 6.1 | 38.1 | 20.4 | 42.9 % | 44.9 % | 9.5 % | 28. 6% | 2. 48 | 2. 04 |
| Pediatric dentist- private practice | 0% | 0% | 9.5 | 6.1 | 33.3 | 26.5 | 45.2 % | 46.9 % | 11. 9% | 20. 4% | 2. 36 | 2. 18 |
| General dentist- private practice | 0% | 0% | 2.4 | 0% | 19.1 | 14.3 | 52.4 % | 51.0 % | 26. 2% | 34. 7% | 1. 95 | 1. 80 |
| Other | 25 % | 0% | 50 % | 8.2 | 0% | 4.1 % | 0% | 2.0% | 25 % | 83. 7% | 3. 5 | 1. 35 |



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Table 3. Resident Selection Committee Membership and Importance

| Selection Committee Participant | Critical | | Very important | | Fairly important | | Somewhat important | | Not importan t | | Mean Score (Scale 1-5) | |
|---------------------------------------|-----------|-----------|-------------------|-----------|---------------------|----------|-----------------------|------|----------------------|-----------|---------------------------------|----------|
| | 201 | 200 5 | 201 8 | 200 | 201 8 | 200 5 | 2018 | 2005 | 20 18 | 200 5 | 20 18 | 20 05 |
| Program director | 95. 2% | 71. 4% | 4.8 % | 18. 4% | 0% | 6.2 % | 0% | 2.0% | 0% | 0% | 4. 95 | 4. 63 |
| Full-time faculty member | 78. 1% | 53. 1% | 22. 0% | 30. 6% | 0% | 10.2 | 0% | 0% | 0% | 4.1 % | 4. 79 | 4. 31 |
| Part-time faculty member | 35. 9% | 18. 4% | 28. 2% | 38. 8% | 20.5 | 12.2 | 7.7% | 0% | 7.7 % | 28. 6% | 3. 8 | 3. 19 |
| Residents | 23. 8% | 20. 4% | 31. 0% | 24. 5% | 28.6 | 24.5 | 16.7 % | 16.3 | 0% | 12. 3% | 3. 65 | 3. 25 |