



Results Summary Phase 2 Education Outreach Project

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Background & Significance

With a grant received from the New York State Developmental Disabilities Planning Council (NYS DDPC) in 2020, a pilot study, entitled "Smiles United" was created. The purpose of the study was to improve oral health education to caregivers (who provide care to individuals with intellectual and developmental disabilities (IDD)) by providing a virtual model of oral health education for caregivers. The significance of this pilot study was due to the fact that individuals with IDD have poor preventative oral health care and the COVID-19 pandemic had limited the ability of patients in group homes to be transported to dental facilities for oral health care. This virtual model of oral health education was designed to assist caregivers in caring for other individuals' oral care as well as to recognize when an individual may need to be seen by an oral health professional.

The NYS OPWDD Deputy Commissioner of statewide services identified group home sites for Smiles United to work with on this pilot study.

An anonymous pre-survey was designed by oral health professionals, reviewed by a biostatistician and tested first for reliability and validity. This anonymous pre-survey with knowledge-based questions and attitude questions was appropriately coded and sent out to caregivers at group homes via Qualtrics. The anonymous pre-surveys were completed by the caregivers and responses reviewed by the biostatistician.

Oral health education training videos were created by oral health professionals and professionally filmed and placed on a web-based platform. The same caregivers who took the pre-survey were provided the oral health training videos on the web-based platform for their review and the caregivers were given time to implement what they learned from training. Oral hygiene kits were sent to each group home for the caregivers to utilize with their residents during oral health care.

After allowing time for implementation, an anonymous post survey was sent to the same caregivers to determine if their attitudes and knowledge had changed. The biostatistician reviewed the data and determined that participants had a higher positive attitude toward many of the items. The attitude questions showed significance and spoke highly to the fact the intervention did have an effect to improve participants' opinion. The intervention either provided assurance that they were doing a good job at brushing their residents' teeth, or it provided techniques to help the caregiver do a better job. The data showed that it was most certain that the success of this program and intervention was to provide assurance of the caregiver's ability to provide proper oral health care to another individual.

Summary of Background & Significance

The Smiles United project was created to address the significant impact of the COVID-19 pandemic on individuals with intellectual and developmental disabilities (IDD), exacerbating their limited access to proper medical and dental care. This initiative, developed by the Touro College of Dental Medicine (TCDM), aims to bridge the gap by virtually connecting group homes and caregivers with a compassionate team of oral health care providers. The Smiles United project offers educational resources and oral hygiene supplies, effectively addressing the barriers to oral health treatment faced by individuals with IDD and ensuring they receive the necessary care despite the challenges illuminated by the pandemic.

Phase 2 Specific Aim

The same protocol from Phase 1 was used for this Phase 2, including DSP participants from schools and group home settings in NYS and, thus, a larger participant number. This current Phase 2 with additional funds granted by DDPC aims to test the hypothesis:

Providing virtual oral health education to Direct Support Providers (DSPs) of individuals with intellectual, developmental and/or acquired disabilities promotes confidence in the DSP's ability to provide oral home care to individuals under their care.

Phase 2 Overview

The Smiles United project is in its second round of evaluating the effectiveness of its educational resources. This assessment aims to gauge the impact of providing virtual oral health education to Direct Support Providers (DSPs) of individuals with intellectual, developmental and/or acquired disabilities, with the goal of promoting confidence in the DSP's ability to provide oral home care to the individuals under their care.

Research Subject Population

TCDM worked with several NYS group homes as well as schools who chose to opt in to the study.

Inclusion criteria: DSPs who provide direct care to individuals with intellectual, developmental and related disabilities in group home and school settings

Exclusion criteria: DSPs who do not provide direct care to individuals with IDD

Informed Consent requesting waiver of obtaining written Informed Consent and HIPAA, data was de-identified by using an anonymous survey through Qualtrics.

Study Design Including Research Procedures

Anonymous pre- and post- surveys

Pre-survey provided to DSPs in NYS group home and school settings through Qualtrics link

Share link to Smiles United with TCDM training videos on YouTube platform, detailing the importance of oral health, education on IDD and related disabilities, and oral home care instruction

Post-survey delivered to the same DSPs through Qualtrics

The study team at TCDM coordinated with a point-person at each facility to oversee delivery of Qualtrics and YouTube links via email to DSPs

Dates and Timeline

June 2023: Pre-training survey was made available to participants.

August 21, 2023: Educational videos were made available, the pre-training survey closed.

September 8, 2023: Post-training survey was made available to participants.

November 6, 2023: Post-training survey closed

There was no specified time requirement between pre- and post- surveys however it was limited by the above timeline of availability, with the shortest interval being 2 weeks 5 days, and the longest, approximately 5 months.

Phase 2 Survey Questions

The surveys were created by doctors and educators at TCDM. Both pre- & post- training surveys consisted of the same questions with the exception of the addition of 4 satisfaction/outcome questions added to the post-training survey, as required by DDPC. These additional questions were not applicable to participants prior to watching the training videos, so were therefore not included in the pre-training survey. In addition to these 4, 1 question was added to gain information about the participants location site. A complete list of questions can be found in Appendix A : Survey Questions, pg 14.

The pre- training questions are composed of the below subcategories.

Demographics: This category comprises 17 questions, of which 5 are mandatory to meet the requirements of The Developmental Disabilities Planning Council (DDPC). These questions aim to gather information about the participants utilizing the educational resources and their experiences in providing oral home care.

Knowledge: These 6 questions are intended to gauge the respondents' knowledge related to overall oral health.

Attitude: 6 of these 10 questions are the primary target of the intervention as they assess the comfort level of the respondents/DSPs when providing home oral care. The remaining 4 provide insights into the respondents' desired access to training resources and their perceptions of barriers associated with receiving training or providing oral home care.

Determining Reliability

To determine reliability of the 6 Knowledge and 6 Attitude questions, 50 pre-training surveys were chosen at random. These 50 data points were not reused in the statistical significance testing. Reliability coefficients evaluated using the below methods:

Cronbach's Alpha was applied to the Likert-scaled questions. These questions represent the most direct measure of the proposed hypothesis and offer insights into the DSP's comfort level (Attitude) with providing oral home-care to individuals with intellectual, developmental, and/or acquired disabilities. Calculations were done using the pingouin package in Python (see [pingouin.cronbach_alpha](#) documentation).

The response values were converted to the following:

- 'Strongly Agree': 1
- 'Agree': 2
- 'Neutral': 3
- 'Disagree': 4
- 'Strongly Disagree': 5

RESULTS: The obtained coefficient of 0.7324 (confidence interval: [0.599, 0.833]) affirms the reliability and validity of the attitude section of the survey.

The Kuder-Richardson Formula (KR-20) was applied to dichotomous questions. These questions were assessed as a whole unit, divided into True/False and Frequency sections, and examined in all other possible combinations of 2 to 5 questions. In all evaluations, the coefficients were found to be below 0.70, indicating insufficient internal consistency. Consequently, all Knowledge questions will be excluded from any significance evaluations.

RESULTS:

- The KR-20 coefficient for the entire set of questions was -0.1205.
- The True/False section yielded a slightly higher value of 0.1301.
- The Frequency section resulted in a coefficient of 0.2160.
- The best combination of questions produced a KR-20 coefficient of 0.3150.
- Although this is an improvement over the previous evaluations, it remains below the threshold for sufficient internal validity.

Summary of Determining Reliability

The reliability of the survey questions was assessed using two methods. Cronbach's Alpha confirmed the reliability and validity of the Attitude section, with a coefficient of 0.7324. However, the Knowledge section did not meet internal consistency standards, with KR-20 coefficients below 0.70, resulting in the exclusion from significance analysis.

Significance Testing

Because the data is ordinal, and the pre- and post- training surveys are unpaired, a one sided Mann Whitney U Test was conducted to determine if there is a statistically significant increase in the post-training attitude statements. A significant level of .05 was used. P value calculations were done in Python using the SciPy Stats Mann Whitney U function (see documentation: [scipy.stats.mannwhitneyu](#)).

Significance Testing Tables

For each individual attitude statement, the table provides essential statistical information, including the number of samples, sum of ranks, and test statistics for both pre- and post-training data. The final p-value is also presented. The p-value is a measure that helps determine the statistical significance of the

observed results. In general, a p-value less than 0.05 is considered statistically significant, indicating a meaningful difference between the pre- and post-training data. For more details on the pre- and post-significance testing data, see Appendix B : Side by Side Frequency Plots of Significance Testing Data, pg 21.

The converted values/scores are as follows:

Strongly Agree: 5

Agree: 4

Neutral: 3

Disagree: 2

Strongly Disagree: 1

Table 1. Label 1: Effectiveness in terms of three scores in domain my care .

Group	Number of Samples	Sum of Ranks	Test Statistic	P value
Pre	$n_1 = 115$	$R_1 = 9692.5$	$U_1 = 4222.5$	0.02522718
Post	$n_2 = 63$	$R_2 = 6238.5$	$U_2 = 3022.5$	

Comments: Decrease in N,D,SD %'s and increase in SA,A %'s. Reject null hypothesis. There is a statistically significant increase in the post training scores.

Table 2. Label 2: Improvement by gender in terms of overall social communication skills in domain my care .

Group	Number of Samples	Sum of Ranks	Test Statistic	P value
Pre	$n_1 = 115$	$R_1 = 9497.0$	$U_1 = 4418.0$	0.00495681
Post	$n_2 = 63$	$R_2 = 6434.0$	$U_2 = 2827.0$	

Comments: SA% x2, A% increase, N% & D% decrease. Reject null hypothesis. There is a statistically significant increase in the post training scores.

Table 3. Label 3: Improvement in terms of social interaction (such as I understand past tense)

Group	Number of Samples	Sum of Ranks	Test Statistic	P value
Pre	$n_1 = 115$	$R_1 = 9990.0$	$U_1 = 3925.0$	0.16038096
Post	$n_2 = 63$	$R_2 = 5941.0$	$U_2 = 3320.0$	

Comments: SA% increase. D, SD Increase %'s drives down overall improvement Do not reject null hypothesis

Table 4. Label 4: Confidence in graphs and measures in domain my care

Group	Number of Samples	Sum of Ranks	Test Statistic	P value

	Samples			
Pre	$n_1 = 115$	$R_1 = 10028.0$	$U_1 = 3887.0$	
Post	$n_2 = 63$	$R_2 = 5903.0$	$U_2 = 3358.0$	0.18412921
Comments: SA% increase. D, SD Increase %'ages drives down overall improvement. Do not reject null hypothesis				

Table 5. If effective techniques which I use to brush the teeth of residents under my care improve patient experience.				
Group	Number of Samples	Sum of Ranks	Test Statistic	P value
Pre	$n_1 = 115$	$R_1 = 10333.5$	$U_1 = 3581.5$	
Post	$n_2 = 63$	$R_2 = 5597.5$	$U_2 = 3663.5$	0.5553247
Comments: Distributions very similar, no notable change in post score, do not reject null hypothesis				

Table 6. I believe I have previously received adequate training to help provide the best oral care possible to residents under my care.				
Group	Number of Samples	Sum of Ranks	Test Statistic	P value
Pre	$n_1 = 115$	$R_1 = 9778.0$	$U_1 = 4137.0$	
Post	$n_2 = 63$	$R_2 = 6153.0$	$U_2 = 3108.0$	0.04806159
Comments: Distributions fairly similar, roughly 10% increase in proportion of SA responses. Reject null hypothesis. There is a statistically significant increase in the post training scores.				

Summary of Results of Significance Testing

Of the 6 attitude statements, 3 did show a statistically significant increase. The largest change coming from, "I believe I have previously received adequate training to help provide the best oral care possible to residents under my care." See next section for further exploration of changes.

Comparing, Pre- and Post- Training, Attitude and Knowledge Responses

Attitude

Questions follow the same order at the above significance tables. Questions 1-6 show the average scores of the individual question. Avg takes each respondents score for the entire attitude section, then averages those over the entire group (pre or post).

Question Key

Q1	I believe I have effective techniques which I use to brush the teeth of residents under my care.
Q2	I believe I have previously received adequate training to help provide the best oral care possible to residents under my care.

Q3	I feel comfortable assisting residents in the safe use of fluoridated dental products (such as fluoridated toothpaste)
Q4	I am able to confidently recognize non-verbal signs of pain in residents under my care.
Q5	I feel confident that I have the knowledge to identify when residents under my care experience oral pain.
Q6	I believe residents under my care have oral health care needs which require further training to adequately understand and help manage.

The converted values/scores are as follows:

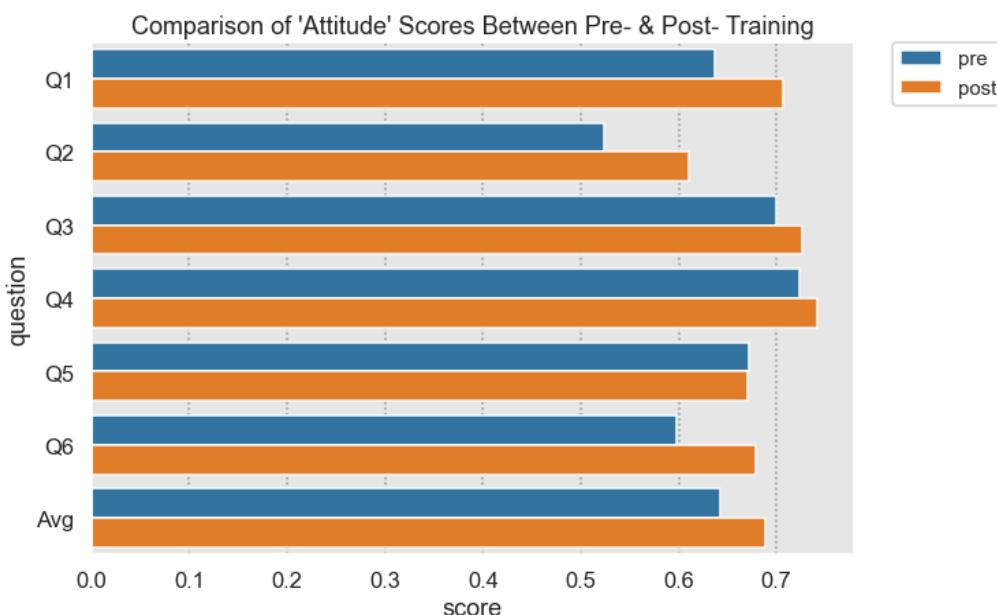
Strongly Agree: 1

Agree: .75

Neutral: .5

Disagree: .25

Strongly Disagree: 0



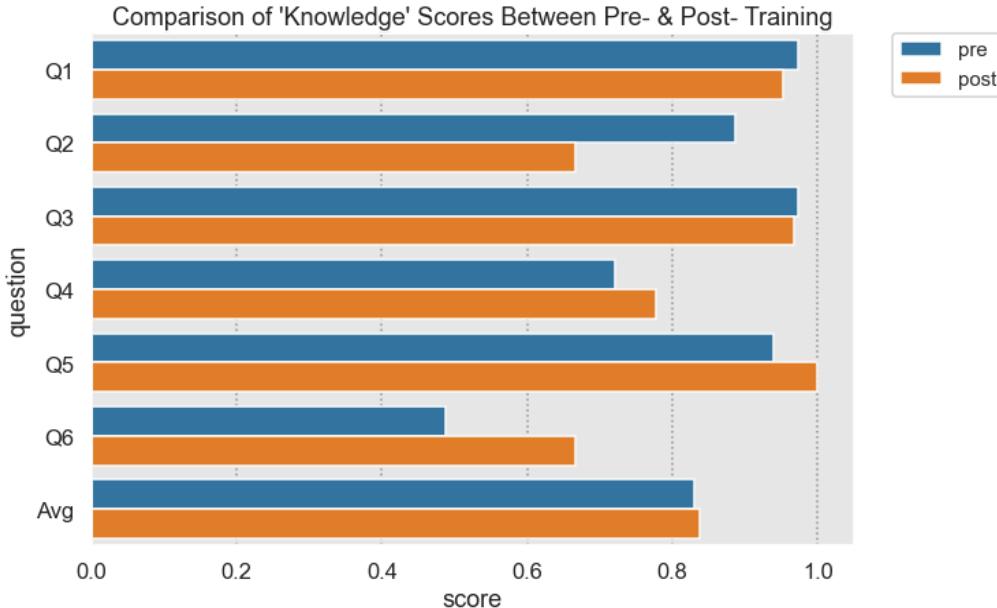
Knowledge

A visual comparison of the percentages of correctly answered knowledge questions, between the pre- and post- survey responses. This visualization includes the proportion of correct responses split by individual questions, and also the overall average score of each group.

Question Key (with correct answers)

Q1	Fluoridated products, such as fluoridated toothpaste and fluoridated water, can help improve the oral health of residents. (True)
Q2	It is normal for healthy gums to bleed when brushing teeth. (False)
Q3	Dry mouth can have a negative effect on overall oral health. (True)
Q4	Snacking throughout the day can have a negative impact on oral health. (True)
Q5	How often should residents brush their teeth each day? (2 to 3 times each day)

Q6	How often should residents floss their teeth each day? (2 to 3 times each day)
----	--



Summary of Comparison of, Pre- and Post- Training, Attitude and Knowledge Responses

All but one statement in the Attitude section demonstrated an increase in scores, with the remaining statement remaining relatively unchanged. This widespread upward trend resulted in an overall increase in attitudes in the post-training results.

In the Knowledge section, improvements were observed in scores for half of the questions, while the other half showed a decrease in correct answers. This division in performance balances out, contributing to an overall outcome that remains essentially the same.

Limitations

Having explored the differences between pre- and post- attitude and knowledge data, it is imperative to acknowledge the limitations. A comprehensive understanding requires consideration of the study's constraints and potential areas for improvement.

Constraints

Ambiguous Wording

There is some ambiguous wording in a couple of the questions, which may lead to inconsistent responses. For example, consider the question: 'I believe I have previously received adequate training to help provide the best oral care possible to residents under my care.' In this case, the word 'previously' could be interpreted in various ways. A similarly ambiguously phrased question, "Before today, I have received training on how to provide direct oral health care for individuals with special health care needs." If "before today" was meant to be interpreted as "before this exact moment" I would expect all the post-training responses to say "Yes" considering these participants should have watched the training videos and therefore "received training." However, based on the post-training responses, it appears "before today" is interpreted as "before the Smiles United training videos." Or perhaps "received training" is the ambiguous part of this question, do the Smiles United videos meet the standard of "received training" to all those who read this question? In the first question, "previously received" strikes the same inadequacies as "before today" in the latter example.

Contradictions

I found at least one example of the two below questions/statements that allow room to contradict each other.

1. The responses to the below questions
 - a. What is the biggest obstacle to receiving proper oral health care training in your facility?
 - i. Contradictory response: "There are no obstacles to receiving proper oral health care training in my facility"
 - b. What is the biggest obstacle to providing excellent oral care to residents?
 - i. Contradictory response: "Inadequate access to oral health care training"
2. The way these two questions are phrased can be interpreted as contradictory
 - a. "I believe I have previously received adequate training to help provide the best oral care possible to residents under my care."
 - i. Contradiction: The word "best" may be interpreted as "no room for improvement"
 - b. "I believe residents under my care have oral health care needs which require further training to adequately understand and help manage."
 - i. Contradiction: This statement acknowledges there is room for improvement

Inability to pair pre- and post- training surveys

The two factors I believe contributed to the inability to pair pre- and post- survey.

1. Inconsistent instructions
2. No preventative measures to ensure identification were not used more than once

In the pre-training survey, each participant received a unique identification number. They were also asked to input their own personal identification number. The intention was to facilitate participants' ability to recall their identification number, thereby promoting the pairing of pre- and post-surveys. However, due to slight variations in the instructions, inconsistent personal identification inputs occurred, resulting in only four surveys being successfully paired. Pre-training personal identification responses varied in length from 4 to 8 digits; in the post-training, all responses were 8 digits. This discrepancy highlights the difference in the effectiveness of the two delivery methods of instructions. In the post-training surveys not all personal identification numbers were unique; some surveys shared the same identification number. To ensure accuracy, responses with identical identification numbers were checked to confirm they were not duplicates. Each displayed enough deviation in responses to suggest they came from different participants. The duplicated post-training identification number surveys were not eligible to be paired due to the inability of selecting the appropriate paired response.

Pre-training instructions:

Please make a note of this random ID number assigned to you:

Your ID number is

[RandomID]

At the end of the survey, you will have the opportunity to save your response as a pdf. The pdf will include your 5-digit ID number. Please save the random ID number as it will be required for the follow-up survey.

In the box below, please enter the last 4 digits of your phone number along with the 4 digits of your birth year (ie. the Last four digits of your ph.no. is 1234 and your birth year is 1994, then the response would look like this: 12341994). All answers will be kept confidential and will NOT be shared with your employer. Once you finish entering the 4 digits of your phone number along with the 4 digits of your birth year, click the right arrow at the bottom of the screen to continue with the survey.

Post-training instructions:

In the box below, please enter the last 4 digits of your phone number along with the 4 digits of your birth year (ie. the Last four digits of your ph.no. is 1234 and your birth year is 1994, then the response will look like this: 12341994). All answers will be kept confidential and will NOT be shared with your employer. Once you finish entering the 4 digits of your phone number along with the 4 digits of your birth year, click the right arrow at the bottom of the screen to continue with the survey.

Lengthiness

An additional concern is that this survey is lengthy and appears to tackle two objectives simultaneously.

1. Gathering information about the target audience's population and needs.
2. Assess the effectiveness of training in increasing knowledge and confidence.

The hypothesis only addresses confidence. It may be more effective to split these questions into two separate surveys. For example, several of the demographics questions are unlikely to exhibit significant changes from pre- to post- training. Any potential changes may be influenced by the revolving nature of the population DSPs report on, resulting in varying responses that may not necessarily reflect the effectiveness of the training program. Separating these questions out could lead to a more streamlined post-training survey, which could potentially increase the completion rate of the post-training survey. Working toward clarifying the root purpose or intended information acquired, may eliminate some questions.

Consider the following two questions:

1. "I am able to confidently recognize non-verbal signs of pain in residents under my care."
2. "I feel confident that I have the knowledge to identify when residents under my care experience oral pain."

These 2 questions share a common theme of confidence in recognizing pain. The first is broader and theoretically encompasses the second. Does the additional depth of information justify the longer survey? Or conversely, if the more focused question is more valuable, then is the first question required?

Low post-training surveys

There was an almost 62% decrease in responses from pre-training to post-training survey completion. This significant reduction poses a noteworthy limitation, warranting careful consideration in the interpretation of the study results.

Summary of Constraints

- Ambiguous Wording
- Contradictions
- Inability to pair pre- and post- training surveys
- Lengthiness
- Low post-training surveys

Potential Areas for Improvements

Improve clarity of wording

A few examples of suggested revisions:

1. ORIGINAL: You are a:
 - a. REVISION: Do you provide home oral care to someone other than yourself who has either an intellectual, developmental, and/or acquired disability?
 - i. This simplifies the response to a simple yes or no and answers your inclusion criteria.
2. ORIGINAL: I believe I have previously received adequate training to help provide the best oral care possible to residents under my care
 - a. REVISION: I have received adequate training to provide home oral care to residents under my care.

- i. This eliminates potential misinterpretation associated with the term "previously" in the context of post-training surveys, while remaining applicable pre- and post-training. It also eliminates the contradictions associated with the word "best"
3. ORIGINAL: I believe residents under my care have oral health care needs which require further training to adequately understand and help manage.
- a. REVISION: I believe, in cases where behavioral or medical conditions compound difficulty to manage the oral health of the residents under my care, further training would promote increased confidence when providing home oral care.
 - i. I propose removing this question as it appears to better highlight the need for further training rather than assess the confidence of a DSP. If participants strongly agree that they require more training, it implies a lack of confidence in their ability to provide care. If this question is deemed necessary, the revision clarifies that the belief applies specifically to situations where behavioral or medical conditions add complexity. It emphasizes the importance of additional training to boost confidence and associates improvement directly with addressing challenges posed by these conditions, while avoiding framing it as individual deficiencies, which could potentially be linked to a lack of confidence.

Switch to skip logic surveys

Qualtrics provides skip logic functionality in surveys. Skip logic, also known as branching or conditional logic, allows you to customize the survey experience based on respondents' answers to previous questions. With skip logic, you can direct respondents to specific questions or sections based on their earlier responses, creating a more tailored and efficient survey flow. This feature is valuable for enhancing respondent engagement by ensuring that participants only encounter relevant questions, removing the potential for contradictory responses.

Change instructions for personal identification input

Consider relocating or omitting instructions related to printing. It is recommended to place this information at the conclusion of the survey or immediately following the personal identification input prompt. Additionally, ensure that the printout includes both the randomly generated identification number and the personal identification number.

Only allow one response per identification number

Not sure if this is an option on the Qualtrics platform but I would recommend looking into this. Note: with the above change of instructions to personal identification input this may not be as important

Reduce length

To streamline the survey and enhance respondent experience, consider implementing skip logic for personalized question paths. Additionally, separate the survey into distinct sections: one focusing on gathering information about the target audience and another on assessing the effectiveness of training. Further reduction can be achieved by selecting key themes or areas of interest and crafting questions that address the root of each theme. Focus on a single question per theme to extract essential information efficiently. Or rather, select the one theme you want to test, in this case the confidence level of DSP when providing oral home care, and only ask questions relating to proving an increase in confidence. And finally, if demographic information has been previously collected in the initial pre-training survey and remains unchanged, there is no need to re-ask these questions in the follow-up post-training survey. This can further reduce redundancy and improve the overall participant experience.

Assess Unimproved Training Areas

A thorough review of the training content related to the attitude and knowledge questions that did not show improvement after the training. Identifying the specific topics associated with these questions and revising the training content accordingly could lead to enhanced comprehension and positive shifts in attitudes. Addressing these areas of limited growth has the potential to significantly increase the overall impact and effectiveness of the training program.

Summary of Potential Areas for Improvements

The following suggestions aim to enhance post-training turnout and facilitate the pairing of pre and post-training data. These changes are designed to provide more specific insights into how the training influenced participants' confidence when delivering home oral care.

- Improve clarity of wording
- Switch to skip logic surveys
- Change instructions for personal identification input
- Only allow one response per identification number
- Reduce length
- Assess Unimproved Training Areas

While the aforementioned limitations cannot be addressed within the scope of this current project, they present important opportunities for improvement in future work.

Conclusion of Results

Following the statistical analysis of the attitude statements, and noting the collective improvement evident in both individual and overall post-training attitude statement scores, it has been concluded, these results support the assertion that providing virtual oral health education to Direct Support Providers (DSPs) enhances their confidence in delivering oral home care to individuals under their care.

Next Steps

Below are suggested next steps that could further your mission by building upon the current analysis in a meaningful way.

Do a more in-depth analysis of which demographic and knowledge factors correlate most strongly with low attitude assessments.

Examine whether there are any discernible trends among participants who did not complete either the pre-training survey, and/or those who did not follow up with the post-training survey.

The current analysis may be skewed due to the lack of representation from these subgroups.

The above insights would not only guide research efforts in targeting specific knowledge areas or demographic groups but could also shed light on populations that might have lower comfort levels in providing oral home care; this would be instrumental in directing additional resources and tailored interventions to uplift attitudes and bridge any potential gaps in training or intervention strategies.

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Appendix A: Survey Questions

Attitude (including knowledge) | **Use of oral products** | **Demographics**
Knowledge | **Project - total** | **No item** | **Used**

1) I believe I have previously received adequate training to help provide the best oral care possible to residents under my care (Attitude)

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

2) I believe residents under my care have oral health care needs which require further training to adequately understand and help manage (Attitude)

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

3) I believe I have effective techniques which I use to brush the teeth of residents under my care (Attitude)

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

4) I believe I have effective techniques which I use to floss the teeth of residents under my care (Attitude)

*This question somehow did not make it to the survey

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

5) What is the biggest obstacle to providing excellent oral care to residents? (Attitude)

- a. Residents' specific behavioral needs
- b. Residents' specific oral health care needs
- c. Inadequate access to oral health care training
- d. Financial restrictions which limit access to proper oral health care
- e. Other: Please describe

6) I feel comfortable assisting residents in the safe use of fluoridated dental products (such as fluoridated toothpaste) (Attitude)

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

7) Fluoridated products, such as fluoridated toothpaste and fluoridated water, can help improve the oral health of residents (Knowledge)

- a. True

b. False

8) It is normal for healthy gums to bleed when brushing teeth (Knowledge)

- a. True
- b. False

9) Approximately, what percentage of residents under your care require assistance brushing or flossing their teeth? (Demographics)

- a. Less than 25%
- b. 25% to 50%
- c. 50% to 75%
- d. Greater than 75%
- e. None of the residents under my care require assistance brushing or flossing their teeth

10) Approximately, what percentage of residents under your care experience bleeding when brushing their teeth? (Demographics)

- a. Less than 25%
- b. 25% to 50%
- c. 50% to 75%
- d. Greater than 75%
- e. None of the residents under my care experience bleeding when flossing their teeth

11) Approximately, what percentage of residents under your care experience bleeding when flossing their teeth? (Demographics)

- a. Less than 25%
- b. 25% to 50%
- c. 50% to 75%
- d. Greater than 75%
- e. None of the residents under my care experience bleeding when flossing their teeth

12) Dry mouth can have a negative effect on overall oral health (Knowledge)

- a. True
- b. False

13) Residents under my care have snacks throughout the day between brushing and flossing their teeth (Demographics)

- a. Very often
- b. Somewhat often
- c. Not often
- d. Never

14) Snacking throughout the day can have a negative impact on oral health (Knowledge)

- a. True
- b. False

15) Approximately, what percentage of residents under your care express that they experience pain when brushing their teeth? (Demographics)

- a. Less than 25%
- b. 25% to 50%
- c. 50% to 75%
- d. Greater than 75%
- e. None of the residents under my care complain of pain when flossing their teeth

16) Approximately, what percentage of residents under your care experience pain when flossing their

teeth? (Demographics)

- a. Less than 25%
- b. 25% to 50%
- c. 50% to 75%
- d. Greater than 75%
- e. None of the residents under my care experience bleeding when flossing their teeth

17) Approximately, what percentage of residents under your care express that they experience dental pain throughout the day when they are not brushing or flossing their teeth? (Demographics)

- a. Less than 25%
- b. 25% to 50%
- c. 50% to 75%
- d. Greater than 75%
- e. None of the residents under my care experience dental pain throughout the day

18) I am able to confidently recognize non-verbal signs of pain in residents under my care (Attitude)

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

19) What is your primary source of dental related information? (Demographics)

- a. Television
- b. Internet and social media sites such as Google, YouTube, Twitter, Facebook etc.
- c. Family and friends
- d. Academic sources such as research papers and research journal articles
- e. Dental professionals such as dentist, dental hygienist, dental assistants
- f. Other: Please describe

20) I would be interested in receiving additional training to help maintain the oral health of residents under my care (Attitude)

- a. Strongly agree
- b. Strongly disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

21) What is the biggest obstacle to receiving proper oral health care training in your facility? (Attitude)

- a. Lack of resources for teaching proper oral health care training
- b. Available resources teaching oral health care training are difficult to understand
- c. Lack of time available to receive proper oral health care training
- d. There are no obstacles to receiving proper oral health care training in my facility
- e. Other: Please describe

22) Approximately, how often do residents under your care go to the dentist? (Demographics)

- a. Once every 3 months
- b. Once every 6 months
- c. Once every 12 months
- d. Less than once every 12 months
- e. Only when they have pain
- f. Other: Please describe

23) Which resource would be most useful to help improve your confidence in delivering excellent oral

homecare to residents under your care? (Attitude)

- a. Training resources teaching behavior guidance techniques
- b. Training resources teaching oral hygiene techniques
- c. Training resources translated into a language other than English
- d. Training resources teaching underlying causes of dental diseases
- e. Other: Please explain

24) On average, how often do most residents under your care brush their teeth? (Demographics)

- a. 1 time each day
- b. 2 to 3 times each day
- c. 1 time each week
- d. 2 to 3 times each week
- e. 1 time each month
- f. Less than 1 time each month

25) On average, how often do most residents under your care floss their teeth? (Demographics)

- a. 1 time each day
- b. 2 to 3 times each day
- c. 1 time each week
- d. 2 to 3 times each week
- e. 1 time each month
- f. Less than 1 time each month

26) How often should residents brush their teeth each day? (Knowledge)

- a. 1 time each day
- b. 2 to 3 times each day
- c. 1 time each week
- d. 2 to 3 times each week
- e. 1 time each month
- f. Less than 1 time each month

27). How often should residents floss their teeth each day? (Knowledge)

- a. 1 time each day
- b. 2 to 3 times each day
- c. 1 time each week
- d. 2 to 3 times each week
- e. 1 time each month
- f. Less than 1 time each month

28) I feel confident that I have the knowledge to identify when residents under my care experience oral pain (Attitude)

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

29) What is your primary language? (Demographics)

- a. English
- b. Spanish
- c. Chinese
- d. Arabic
- e. Korean
- f. Russian

- g. Italian
- h. French
- i. French Creole
- j. Tagalog
- k. Bengali
- l. Polish
- m. Urdu
- n. Greek
- o. Albanian
- p. Yiddish
- q. Other: Please specify

Demographics Information as required by DDPC

30) Are you a: (Select one) (Demographics)

- a) Person with a disability
- b) Family member/caregiver of a person with a disability
- c) Support staff of a person with a disability
- d) Other (please specify)

31) Which of the following best describes your Race/Ethnicity? (Demographics)

- a) White
- b) Black or African American
- c) Two or more Races
- d) American Indian/Alaska Native
- e) Hispanic/Latino
- f) Asian
- g) Hawaiian/Pacific Islander
- h) Two or more Races
- i) Race Unknown
- j) Other
- k) Prefer not to Answer

32) Do you identify as: (Demographics)

- a) Male
- b) Female
- c) Nonbinary or third gender
- d) Prefer to self-identify
- e) Other
- f) Prefer not to Answer

33) Which of the following best describes the area you live in? (Demographics)

- a) Rural
- b) Urban
- c) Suburban

34) Before today, I have received training on how to provide direct oral health care for individuals with special health care needs. (Demographics)

- a) Yes
- b) No

a. If you answered YES to a previous training, please describe here:

b. No, I have not received any training.

Post survey questions to be added in addition to above:

1) Training videos created by Smiles United are easy to understand

- a) Strongly disagree
- b) Disagree
- c) Neutral
- d) Agree
- e) Strongly agree

2) Training videos created by Smiles United are easily accessible

- a) Strongly disagree
- b) Disagree
- c) Neutral
- d) Agree
- e) Strongly agree

3) I would recommend Smiles United training videos to other direct support providers.

- a) Strongly disagree
- b) Disagree
- c) Neutral
- d) Agree
- e) Strongly agree

4) Please, indicate what additional topics you would like to see in future trainings from Smiles United

Free response

5) Please click the arrow on the drop-down list to select your program site

Satisfaction/Outcomes survey, as required by DDPC

1. I am satisfied with the Smiles United training videos.

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

2. I have increased my advocacy following the Smiles United training.

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

3. I am participating in advocacy activities as a direct result of the Smiles United program.

*This question somehow did not make it to the post-training survey

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

4. I am better able to say what I want

- a. Strongly disagree
- b. Disagree
- c. Neutral

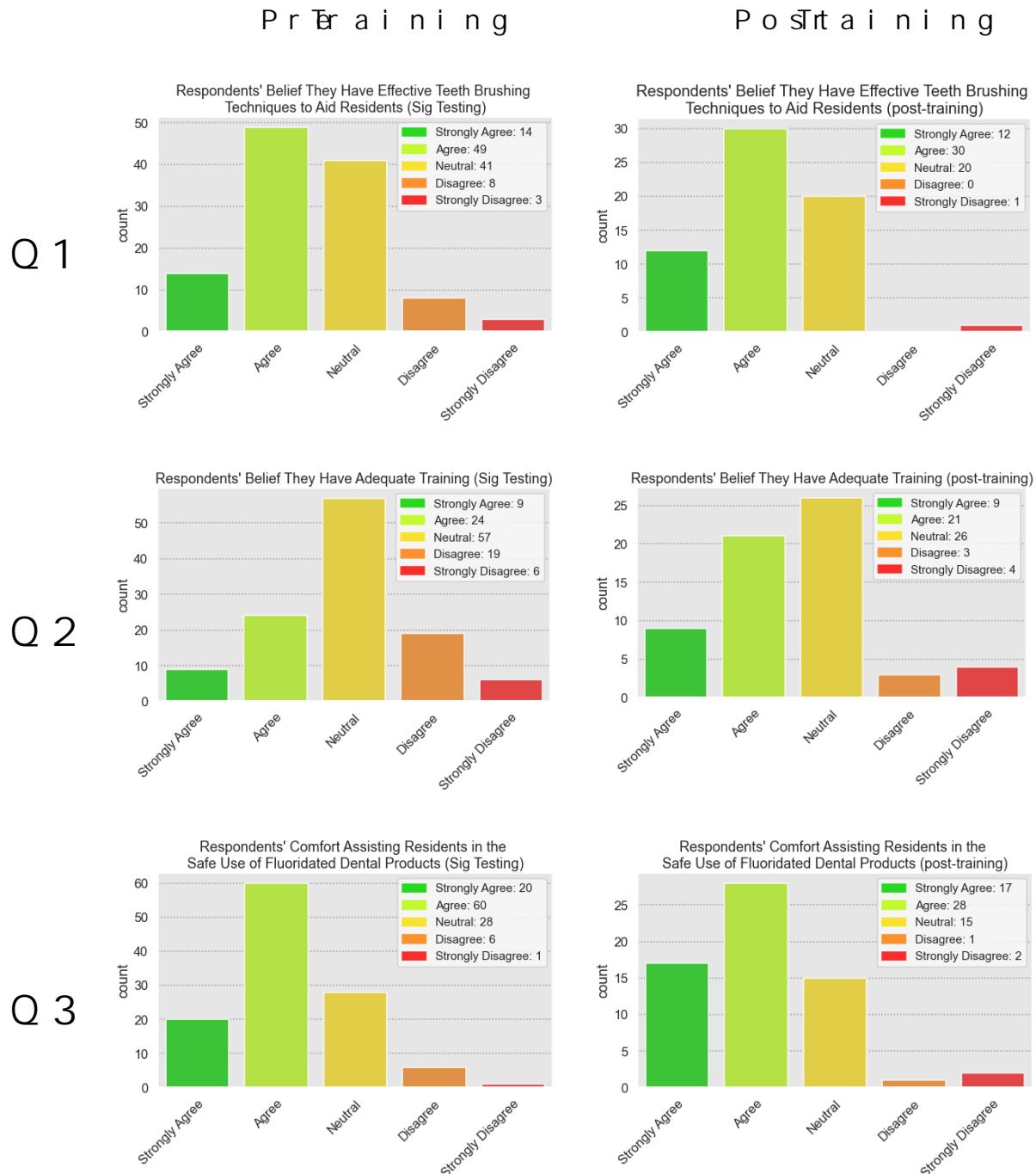
- d. Agree
- e. Strongly agree

5. I am serving in leadership or advocacy positions (ex. Coalitions, policy boards, advisory boards)

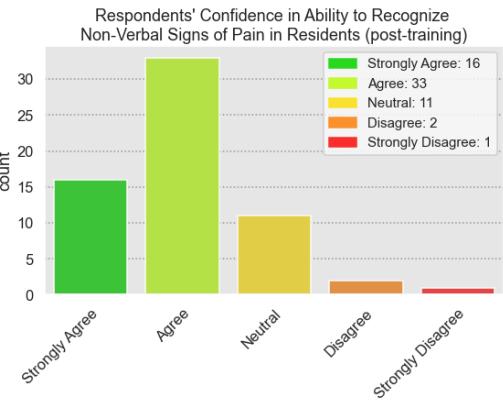
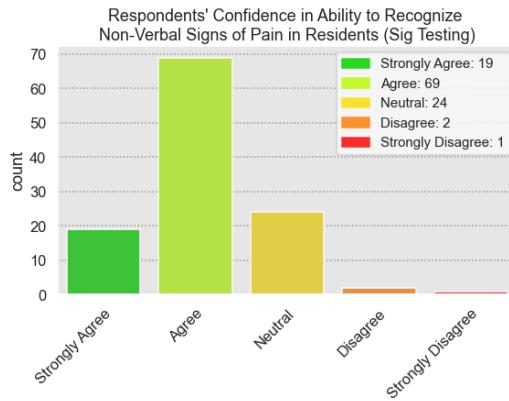
- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

Appendix B: Side by Side Frequency Plots of Significance Testing Data

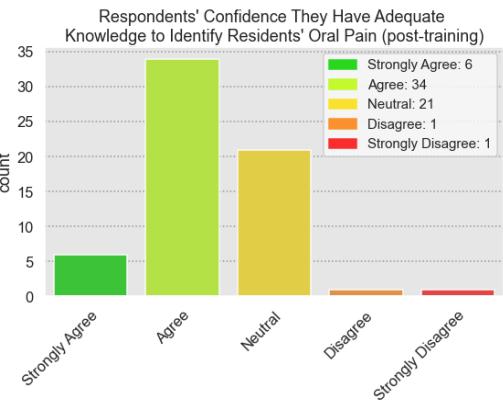
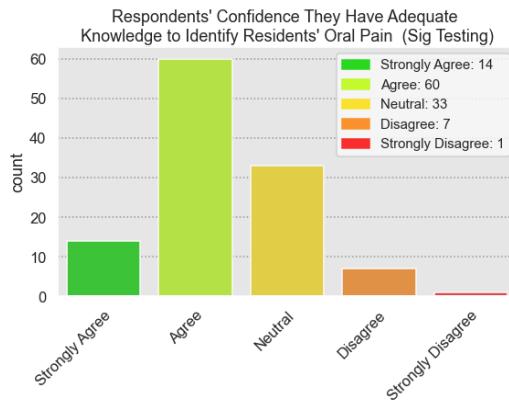
Below, you'll find frequency distributions of the data used in Significance Evaluations. For a comprehensive view of all pre- and post-training data, refer to Appendices C - E. (Note: the data used in these pre-training significance tests differs from the pre-training data in Appendix C & D. Specifically, the significance evaluations data (and therefore the below plots) exclude the 50 randomly selected surveys used for Reliability Testing.)



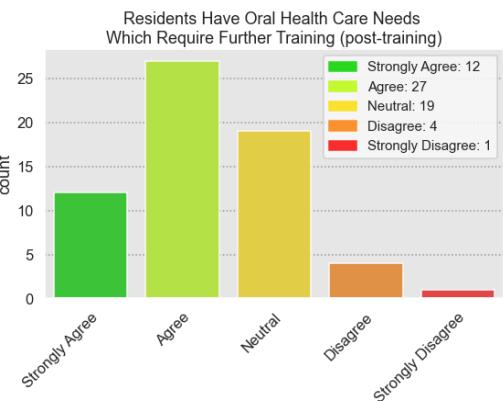
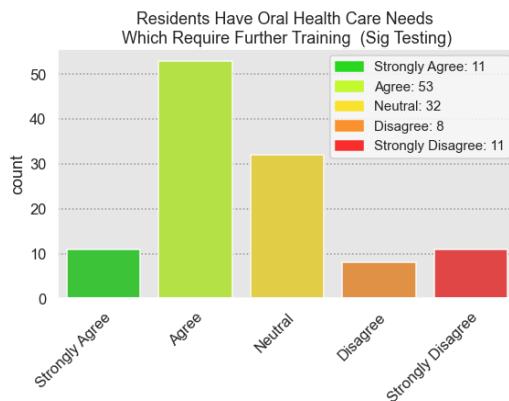
Q 4



Q 5



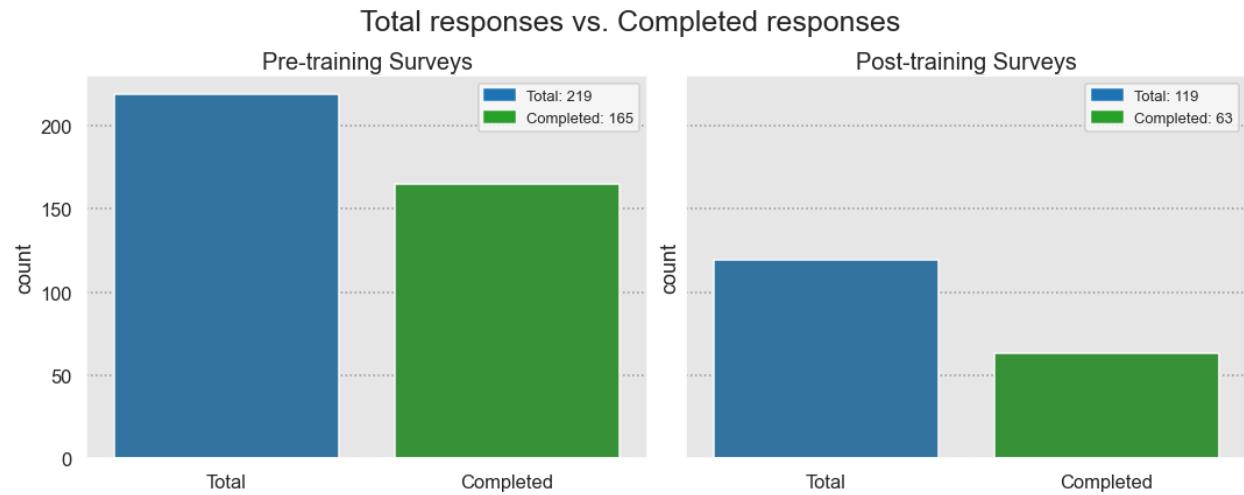
Q 6



Appendix C: Summary of Completed Surveys

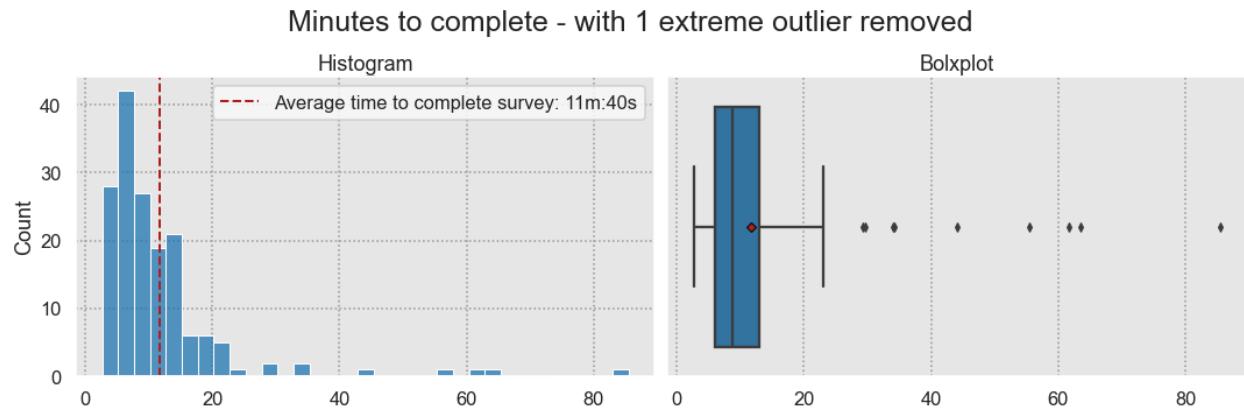
Total vs Completed

Total data points vs the number of completed surveys

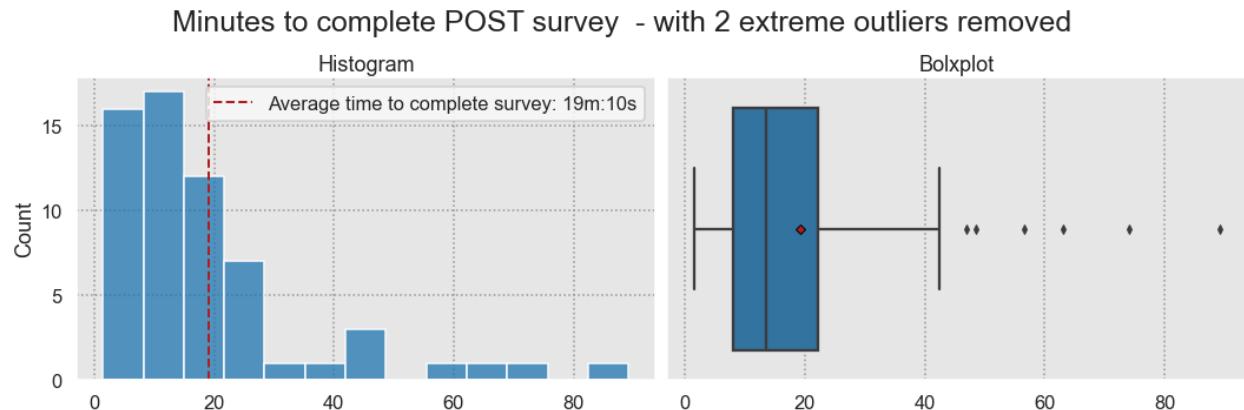


Average time to complete

The average time to complete the pre-training survey was 11 minutes and 40 seconds. One extreme outlier was removed; you can see that with additional outliers removed, that average would drop to around 8 - 10 mins.



The average time to complete the post-training survey was 19 minutes and 10 seconds. Two extreme outliers were removed.



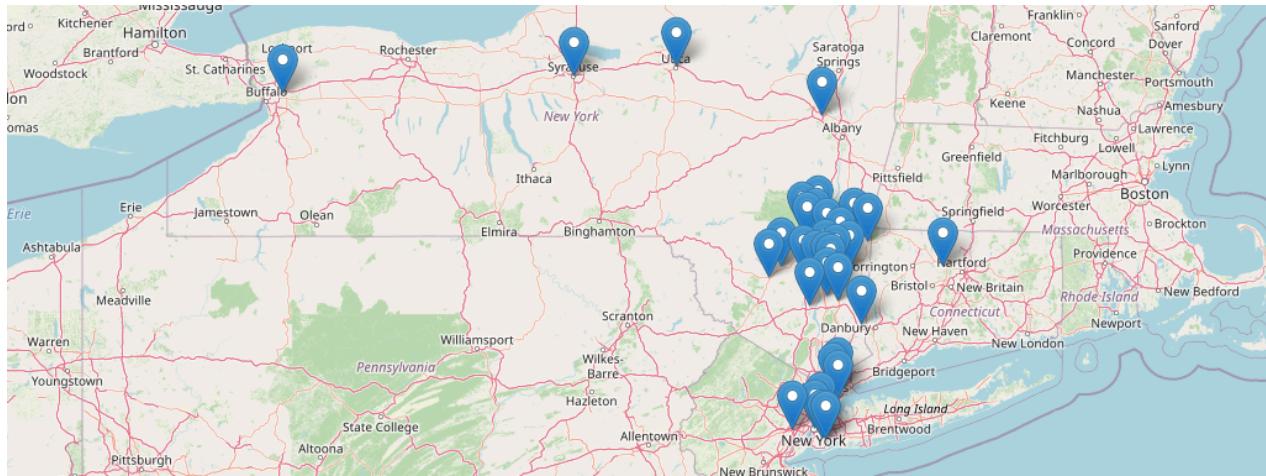
Appendix D: Pre Training Data - Additional Visualizations

Below you will find visualizations of all completed pre-training surveys. (Some people who ended it did so because they are not working in "teachable" positions.)

Pre Training Demographics

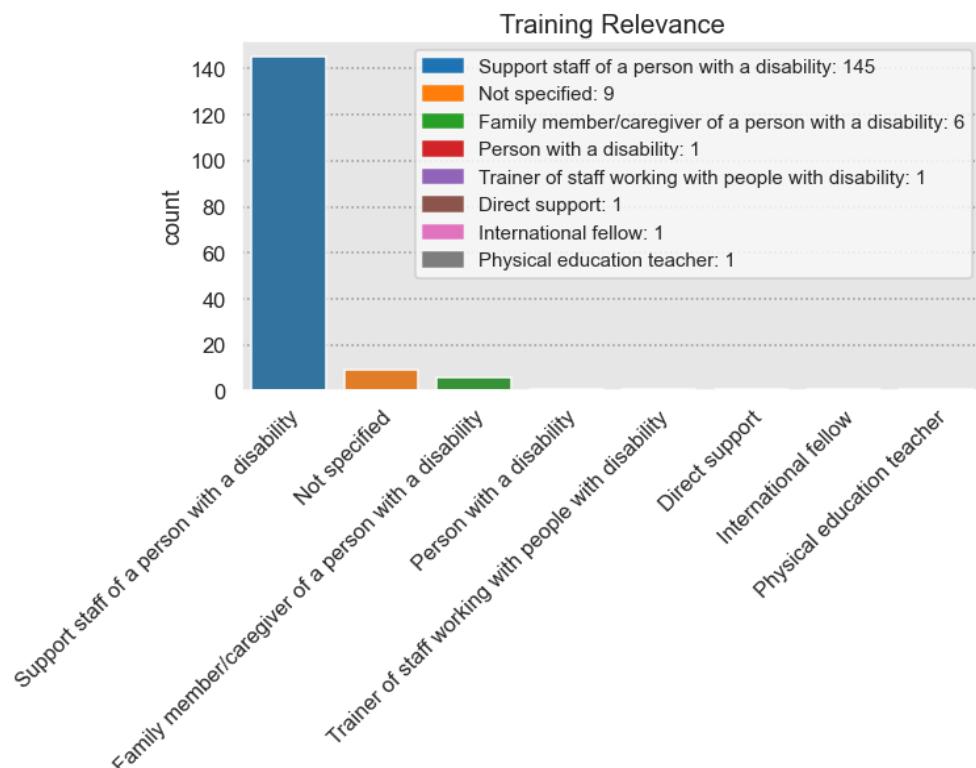
Interactive Map

Number of Respondents by Location (click link to explore)



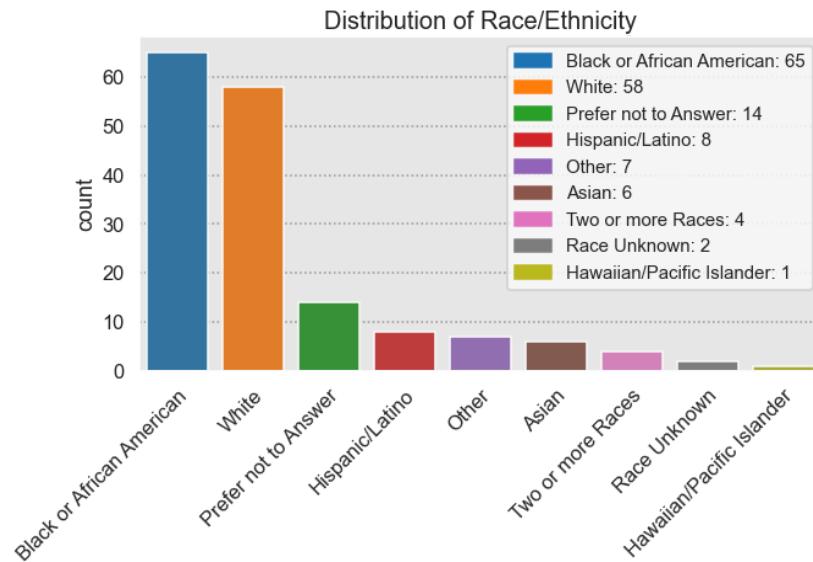
Demographics Question 1

Are you a: (Select one) (1 of 5 required by DDPC)



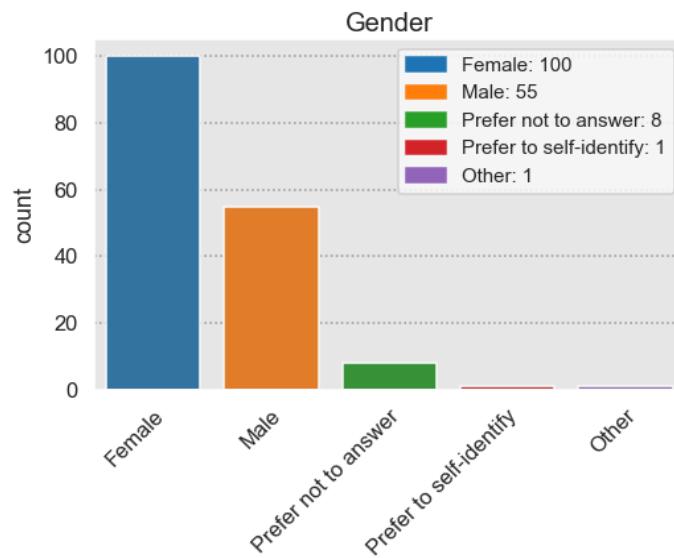
Demographics Question 2

Which of the following best describes your Race/Ethnicity? (2 of 5 required by DDPC)



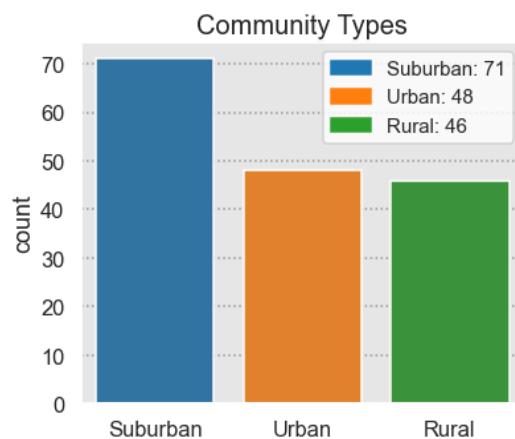
Demographics Question 3

Do you identify as: (3 of 5 required by DDPC)



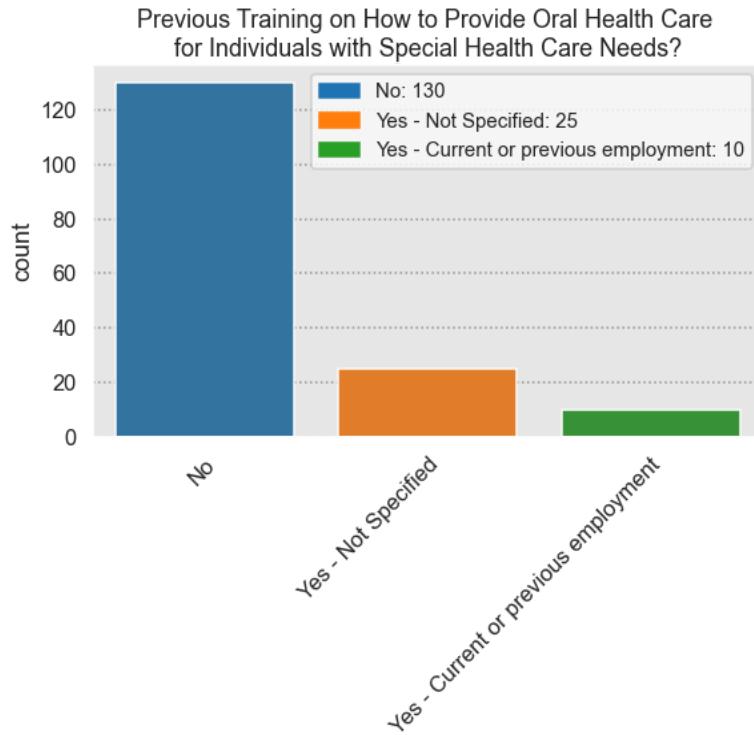
Demographics Question 4

Which of the following best describes the area you live in? (4 of 5 required by DDPC)



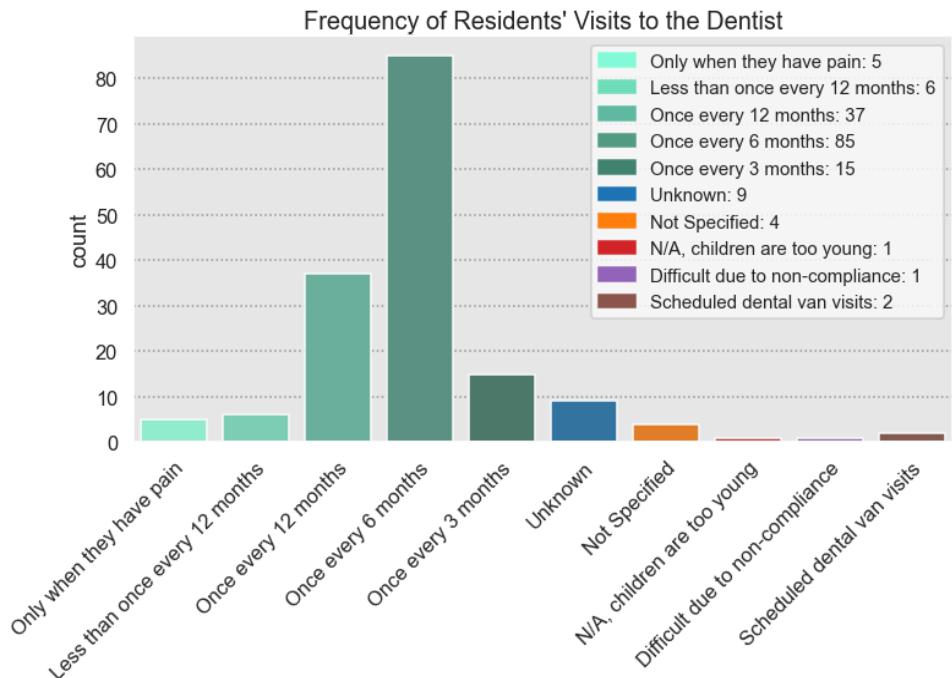
Demographics Question 5

Before today, I have received training on how to provide direct oral health care for individuals with special health care needs. (5 of 5 required by DDPC)



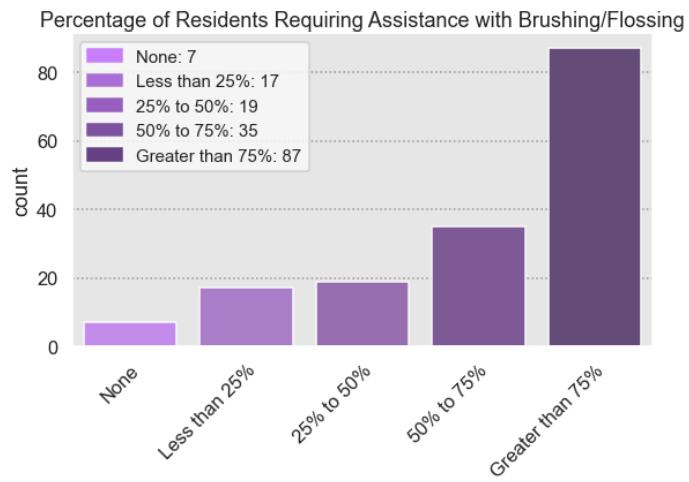
Demographics Question 6

Approximately, how often do residents under your care go to the dentist?



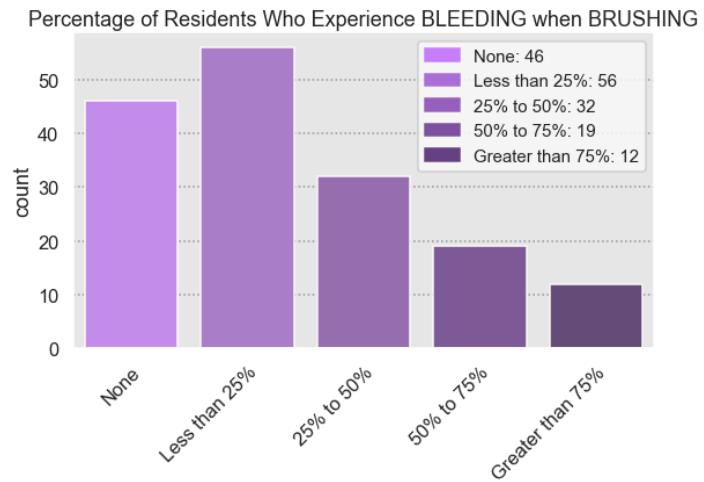
Demographics Question 7

Approximately, what percentage of residents under your care require assistance brushing or flossing their teeth?



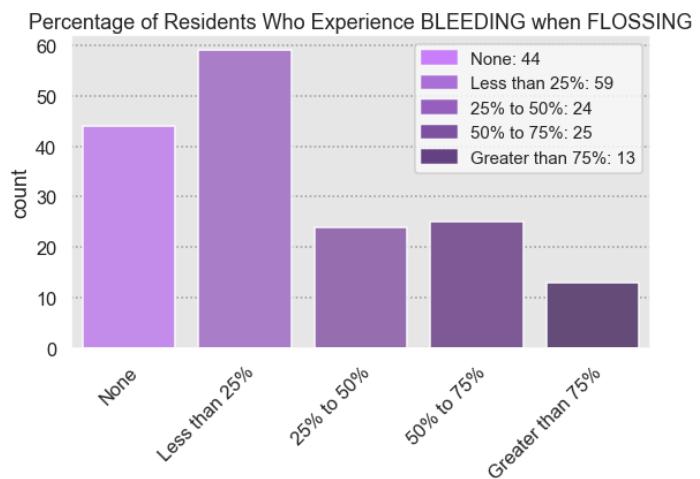
Demographics Question 8

Approximately, what percentage of residents under your care experience bleeding when brushing their teeth?



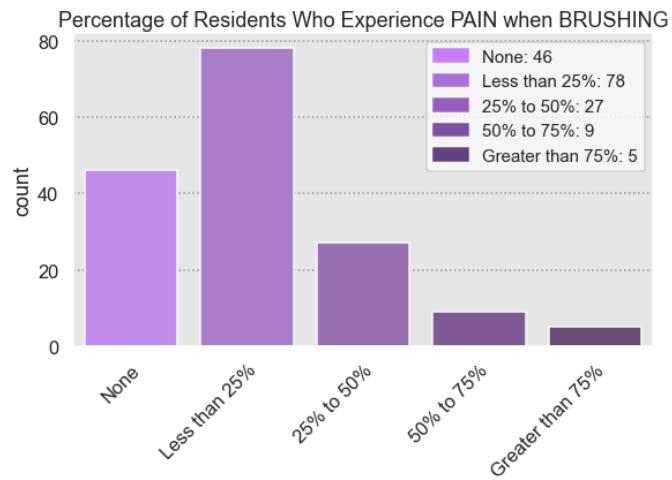
Demographics Question 9

Approximately, what percentage of residents under your care experience bleeding when flossing their teeth?



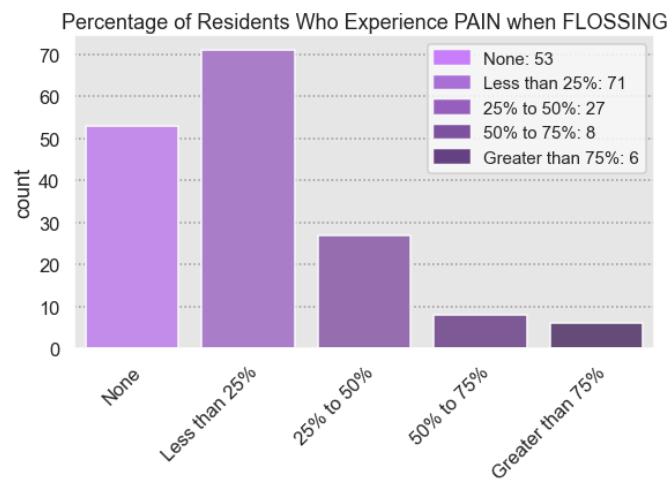
Demographics Question 10

Approximately, what percentage of residents under your care express that they experience pain when brushing their teeth?



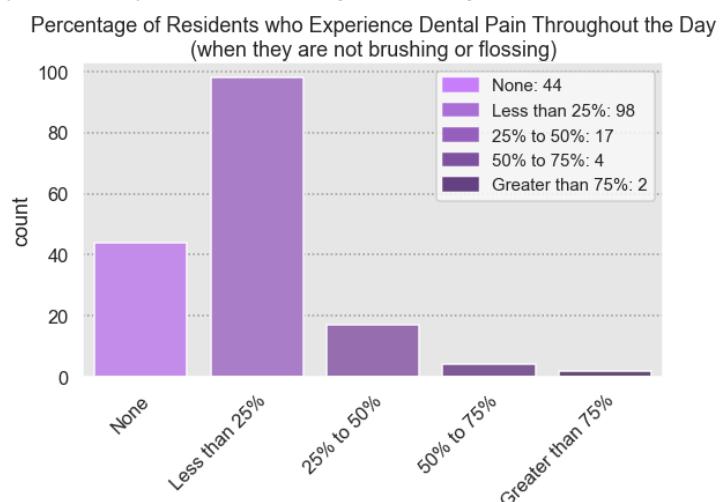
Demographics Question 11

Approximately, what percentage of residents under your care experience pain when flossing their teeth?



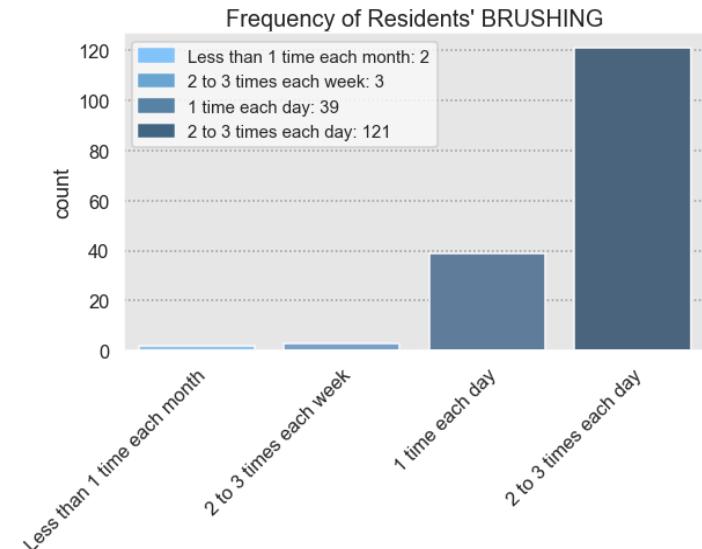
Demographics Question 12

Approximately, what percentage of residents under your care express that they experience dental pain throughout the day when they are not brushing or flossing their teeth?



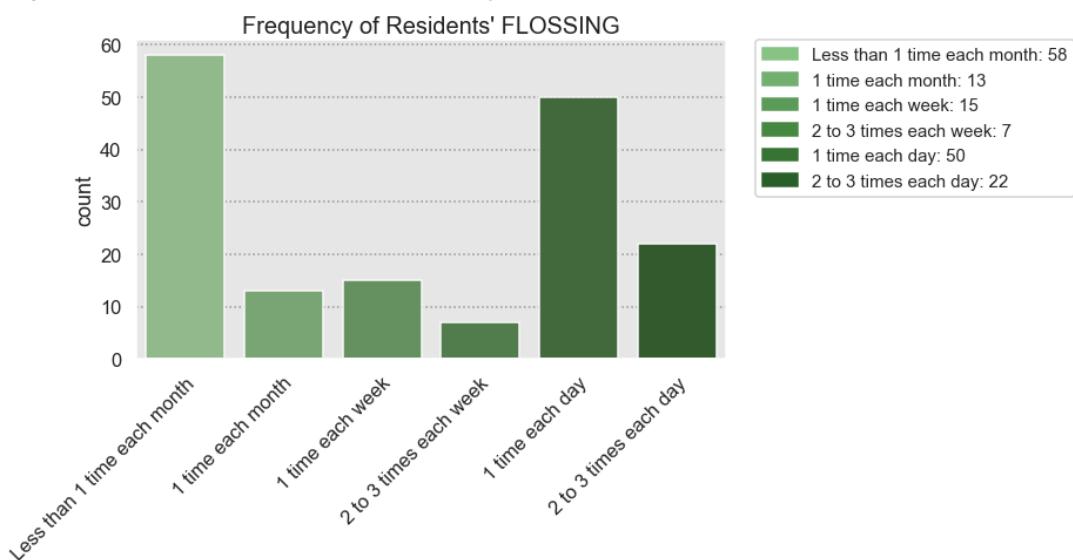
Demographics Question 13

On average, how often do most residents under your care brush their teeth?



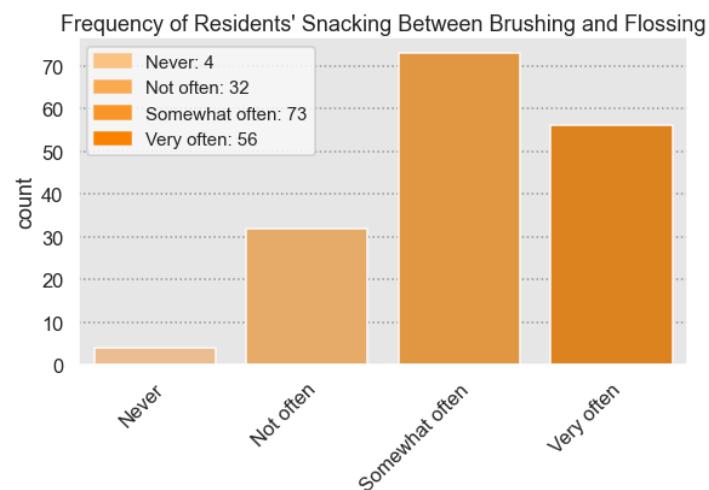
Demographics Question 14

On average, how often do most residents under your care floss their teeth?

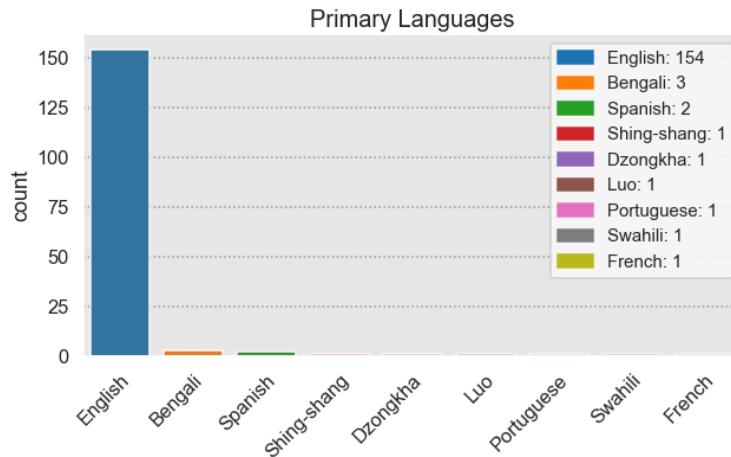


Demographics Question 15

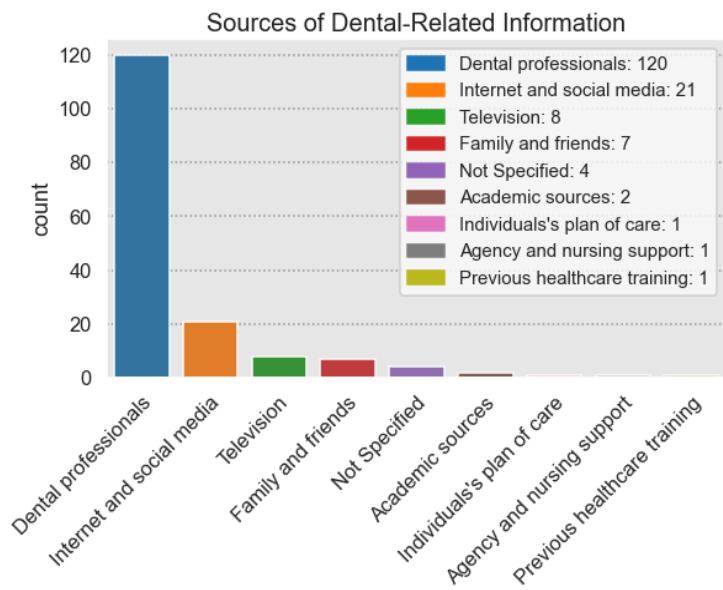
Residents under my care have snacks throughout the day between brushing and flossing their teeth



Demographics Question 16
What is your primary language?

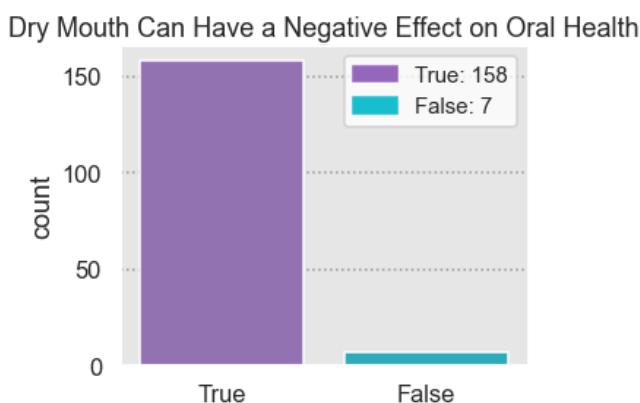


Demographics Question 17
What is your primary source of dental related information?



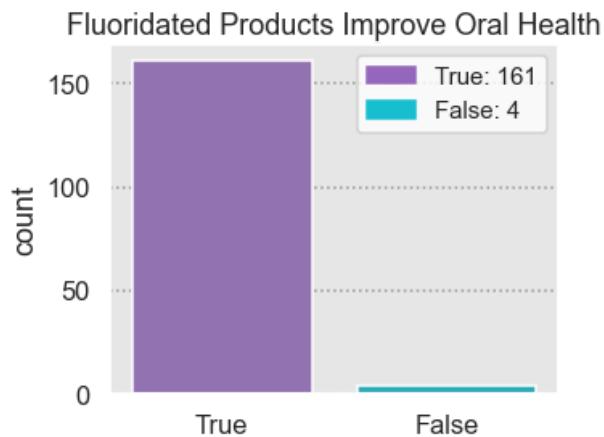
Pre Training Knowledge

Knowledge Question 1
Dry mouth can have a negative effect on overall oral health



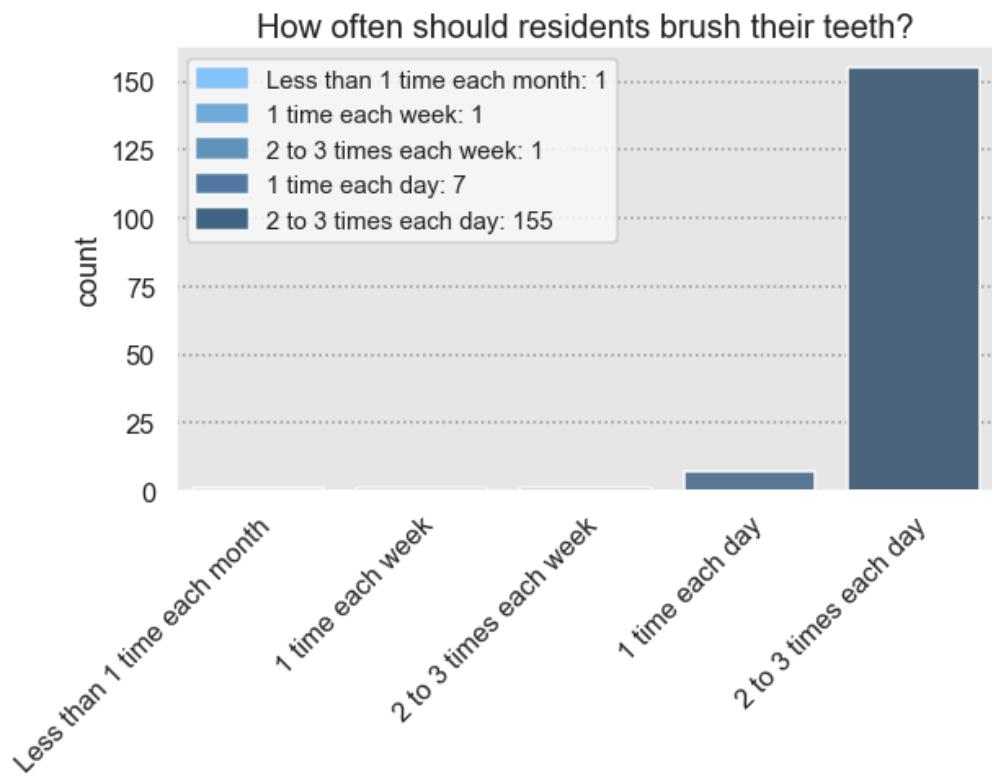
Knowledge Question 2

Fluoridated products, such as fluoridated toothpaste and fluoridated water, can help improve the oral health of residents



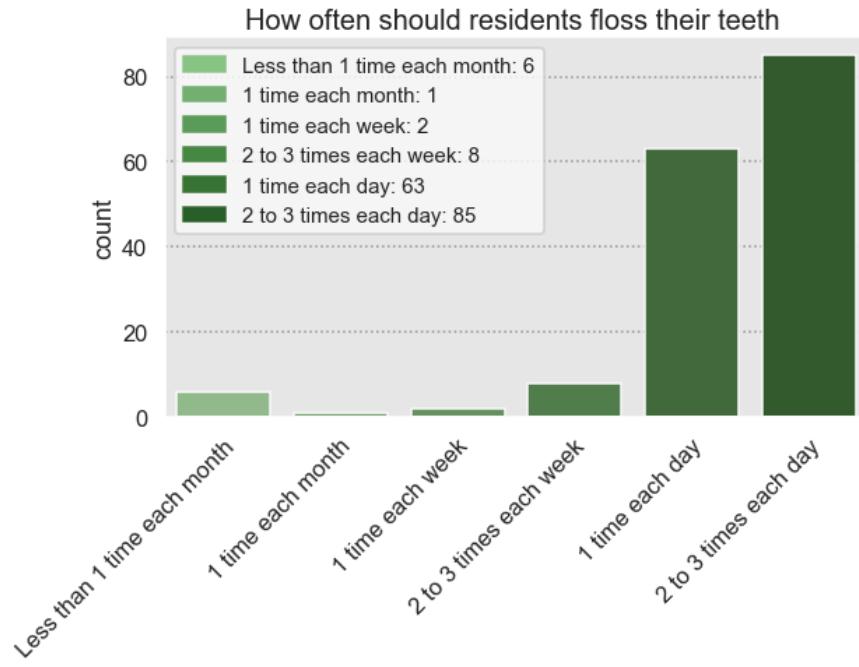
Knowledge Question 3

How often should residents brush their teeth each day?



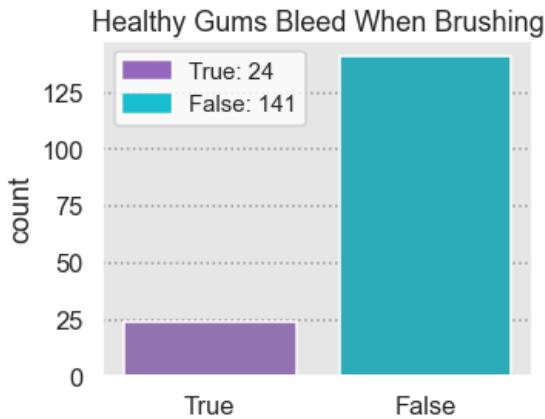
Knowledge Question 4

How often should residents floss their teeth each day?



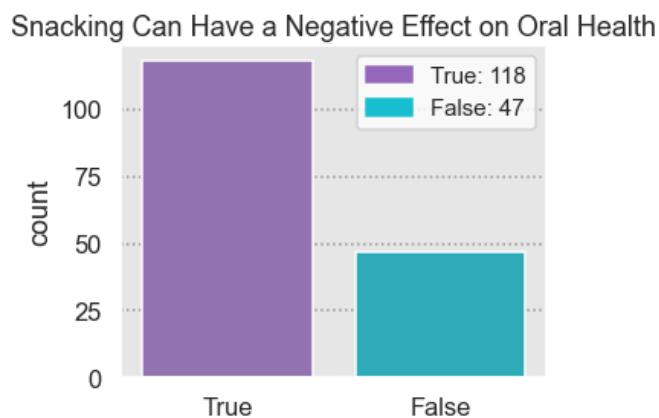
Knowledge Question 5

It is normal for healthy gums to bleed when brushing teeth



Knowledge Question 6

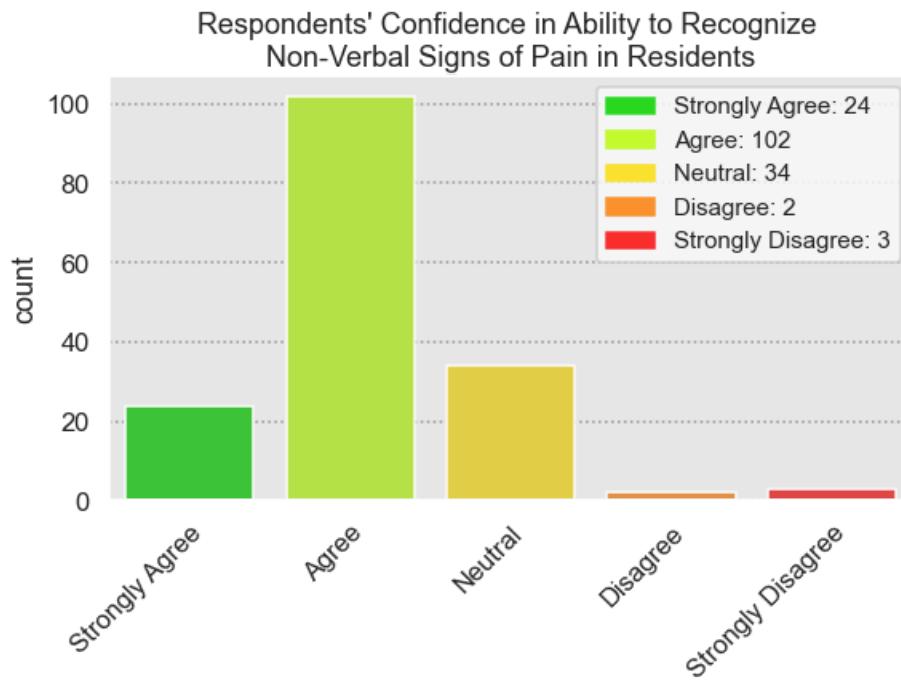
Snacking throughout the day can have a negative impact on oral health



Pre Training Attitude

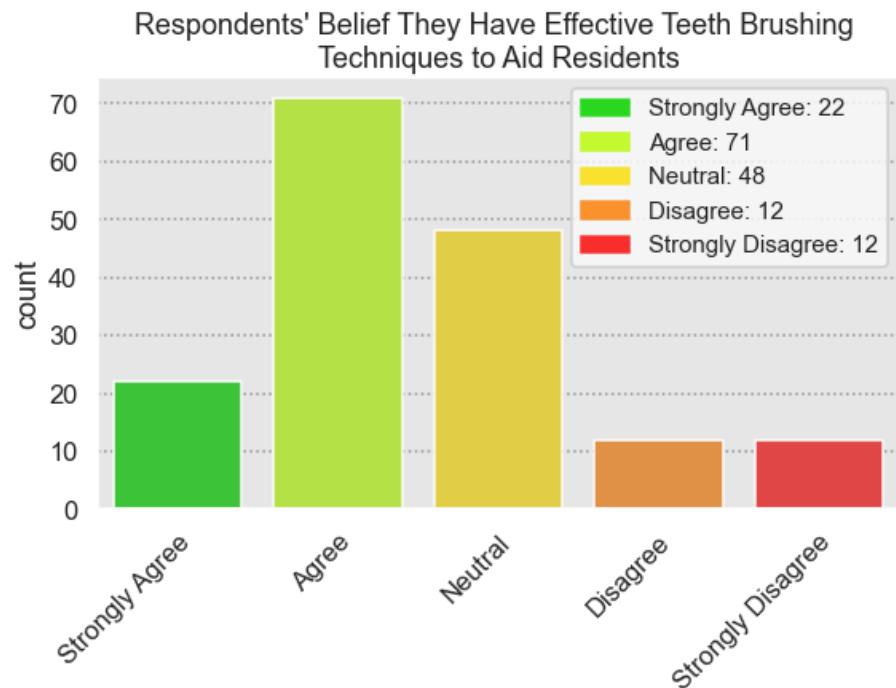
Attitude Question/Statement 1

I am able to confidently recognize non-verbal signs of pain in residents under my care (1 of 6 used in hypothesis evaluation significance testing)



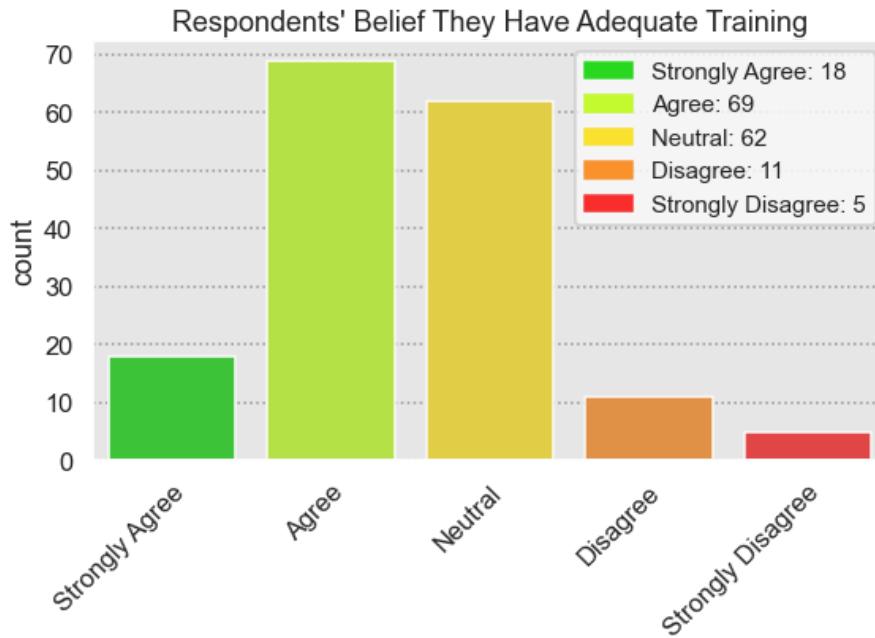
Attitude Question/Statement 2

I believe I have effective techniques which I use to brush the teeth of residents under my care (2 of 6 used in hypothesis evaluation significance testing)



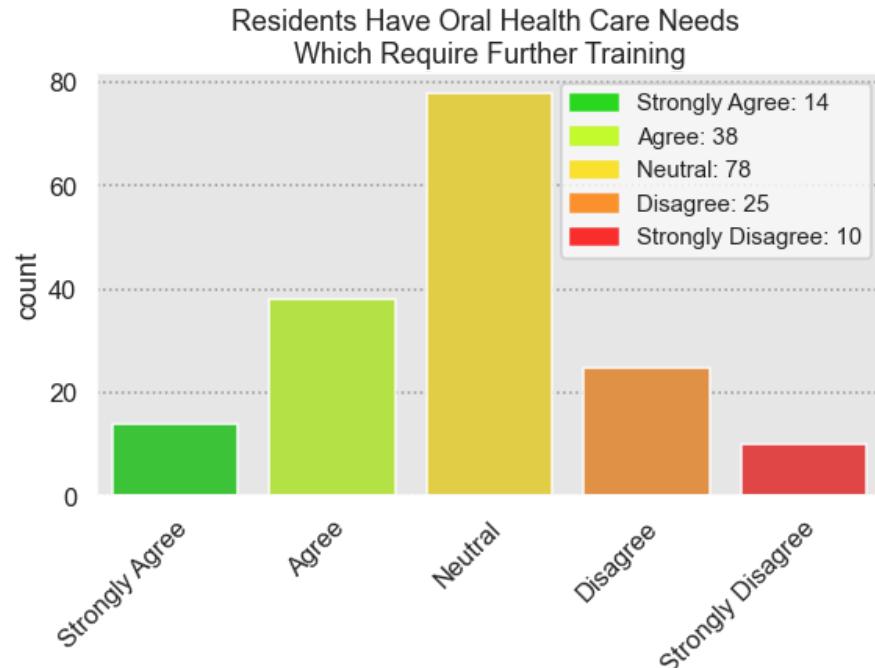
Attitude Question/Statement 3

I believe I have previously received adequate training to help provide the best oral care possible to residents under my care (3 of 6 used in hypothesis evaluation significance testing)



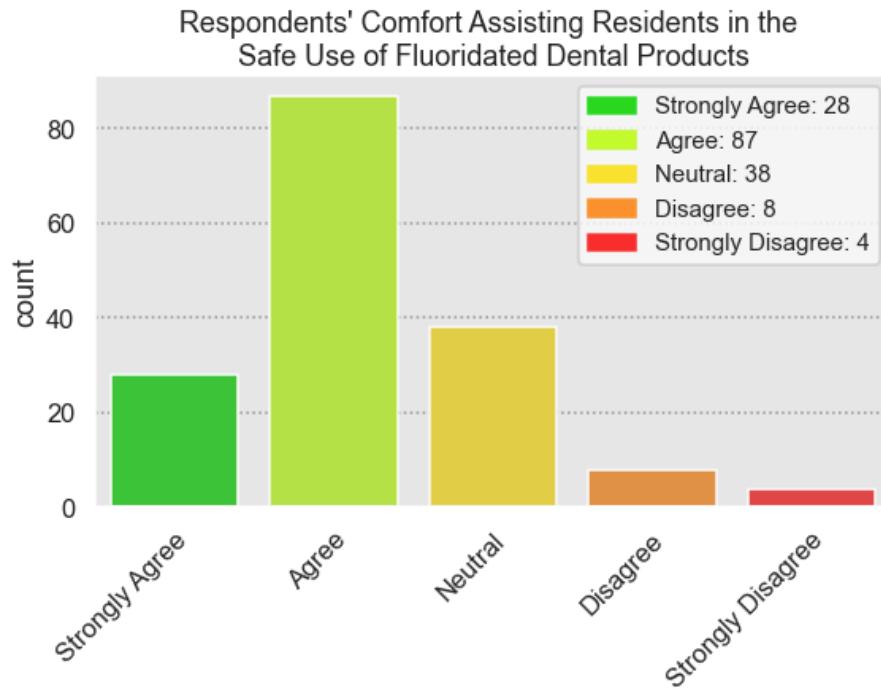
Attitude Question/Statement 4

I believe residents under my care have oral health care needs which require further training to adequately understand and help manage (4 of 6 used in hypothesis evaluation significance testing)



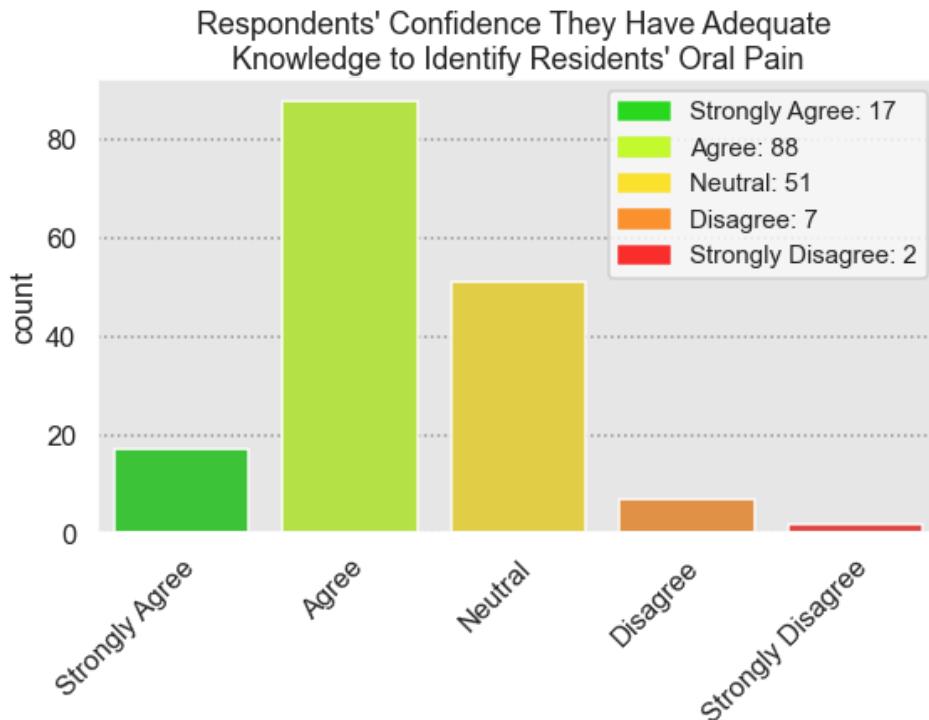
Attitude Question/Statement 5

I feel comfortable assisting residents in the safe use of fluoridated dental products (such as fluoridated toothpaste) (5 of 6 used in hypothesis evaluation significance testing)



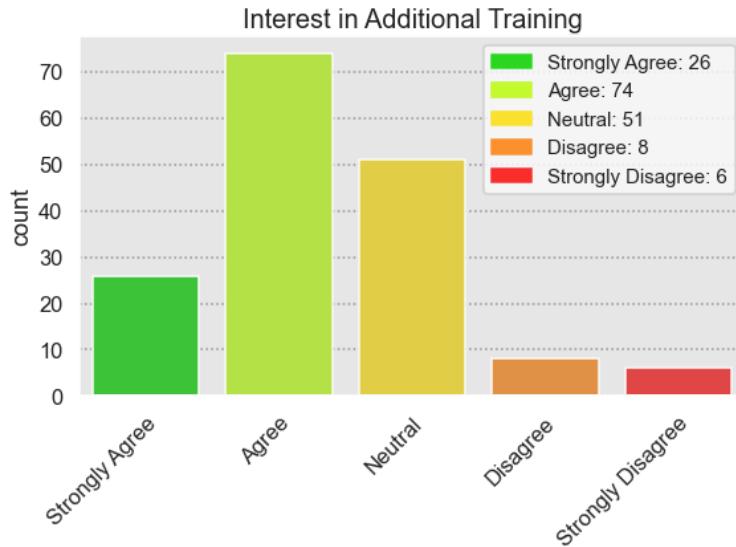
Attitude Question/Statement 6

I feel confident that I have the knowledge to identify when residents under my care experience oral pain (6 of 6 used in hypothesis evaluation significance testing)



Attitude Question/S statement 7

I would be interested in receiving additional training to help maintain the oral health of residents under my care



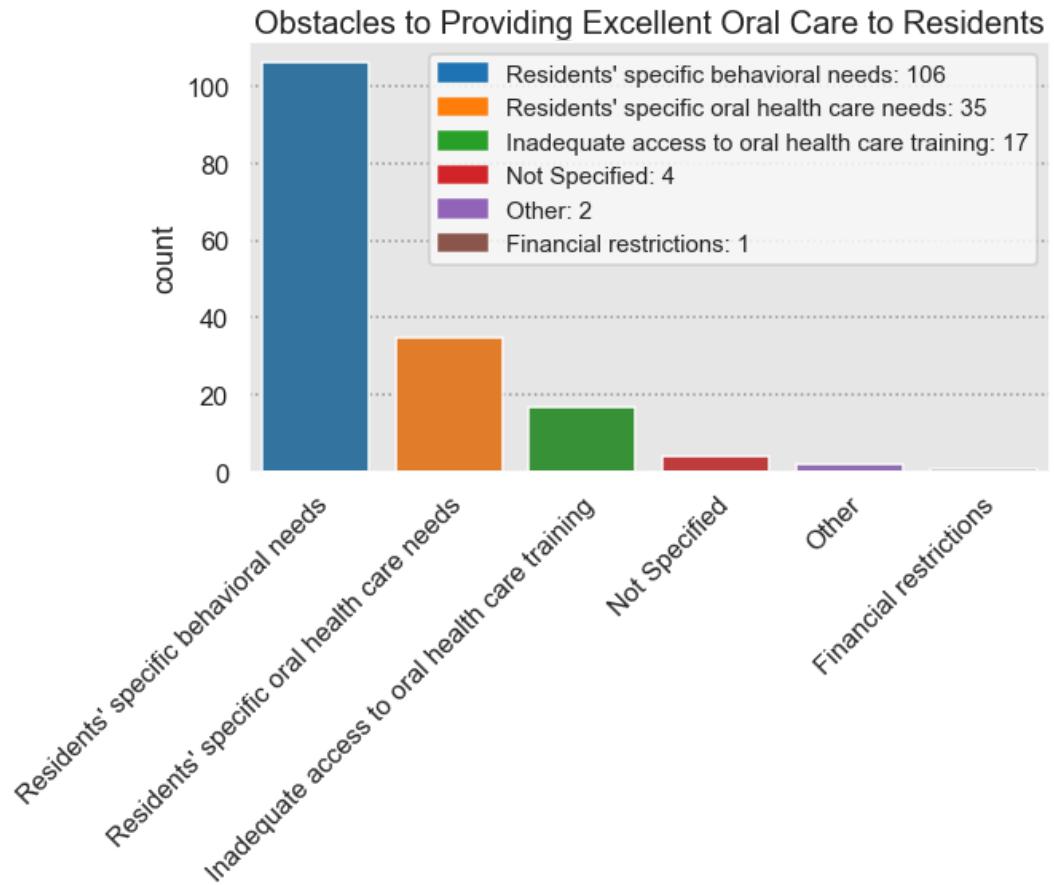
Attitude Question/S statement 8

What is the biggest obstacle to providing excellent oral care to residents?

2 "Other" responses

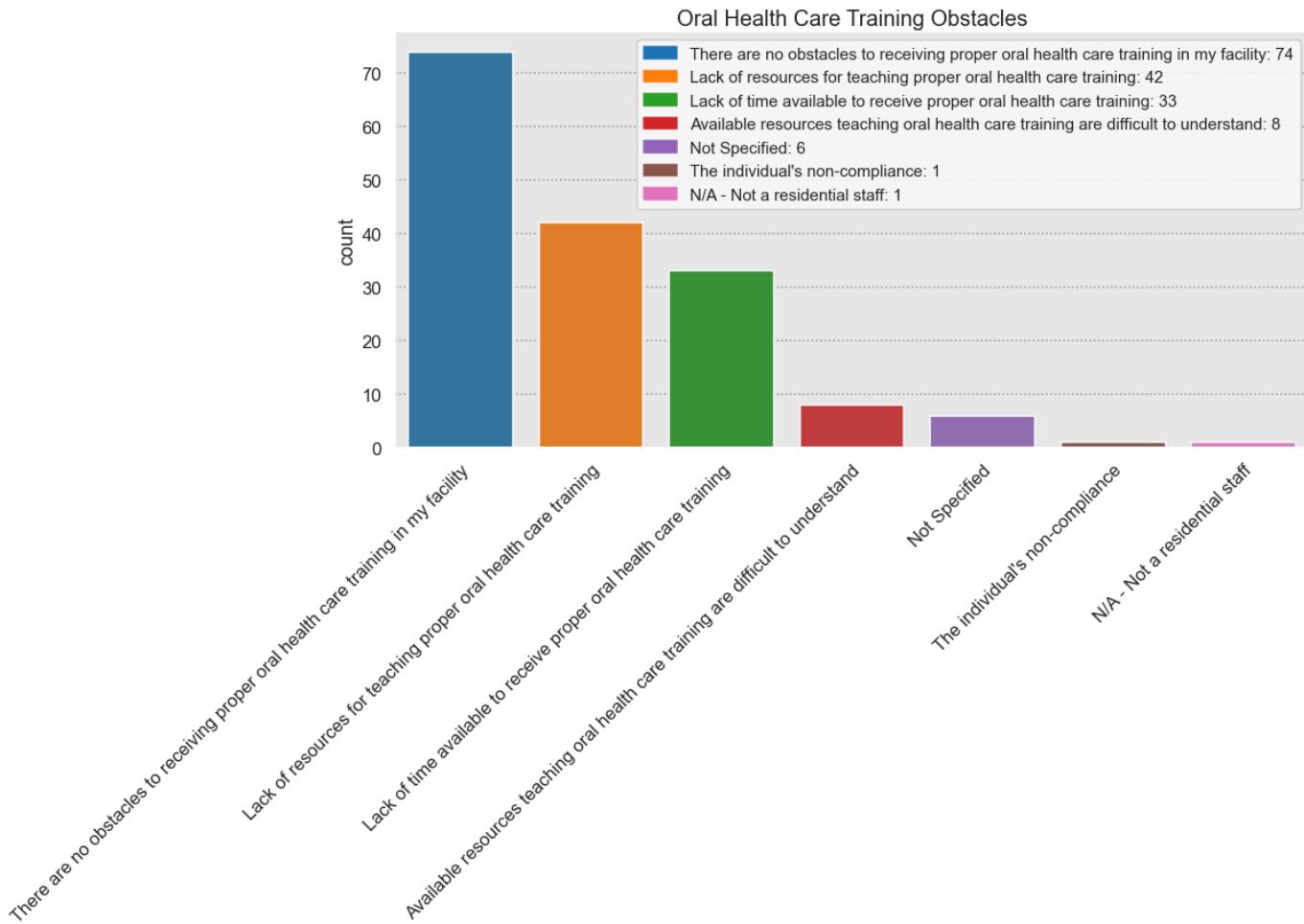
"Students not wanting to brush their teeth. Sometimes you can and sometimes you can't
Also, the student not knowing how to spit out the toothpaste.",

"Some staff are just lazy and dirty. If they don't brush their own teeth, do you think they are going to brush our individuals' teeth?"



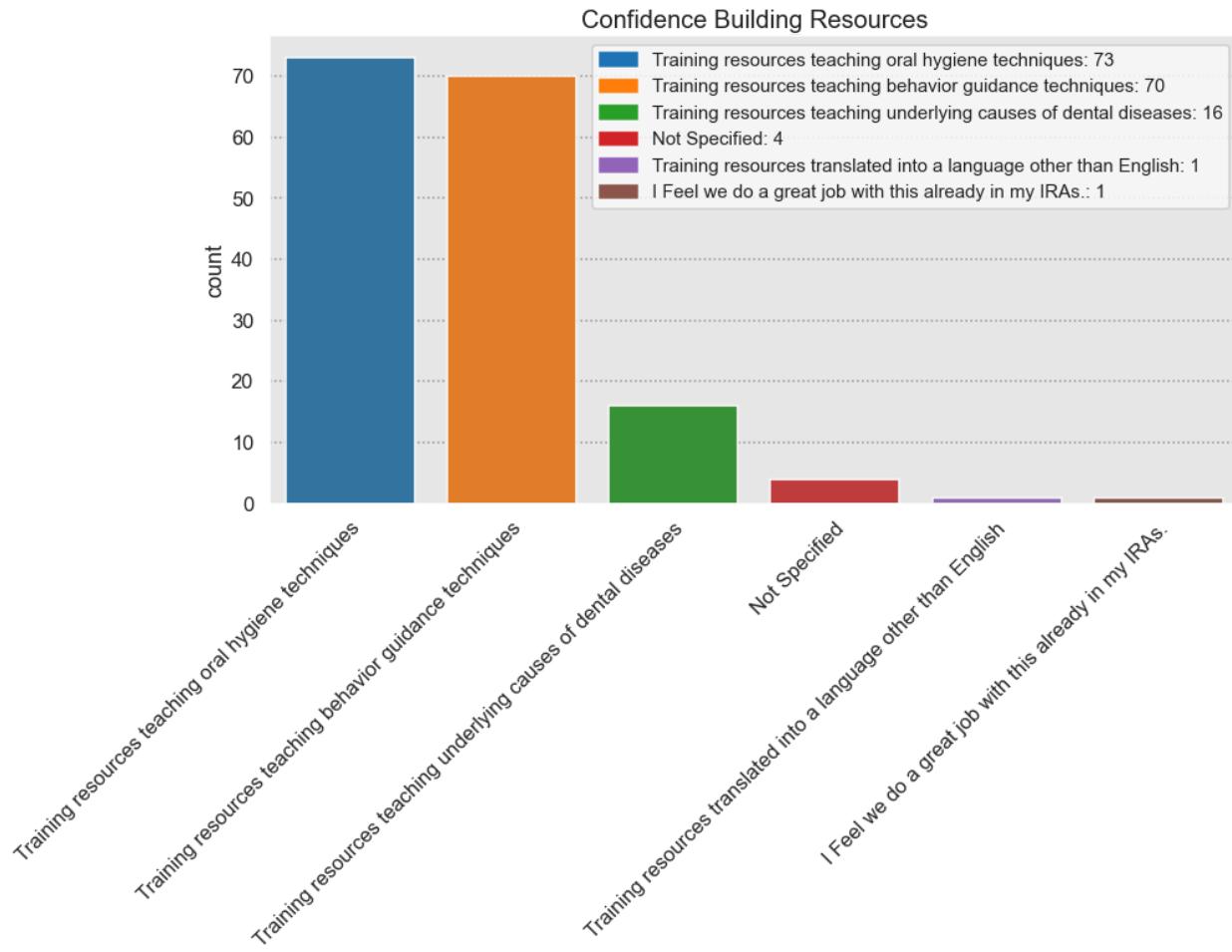
Attitude Question/S statement 9

What is the biggest obstacle to receiving proper oral health care training in your facility?



Attitude Question/Statement 10

Which resource would be most useful to help improve your confidence in delivering excellent oral homecare to residents under your care?



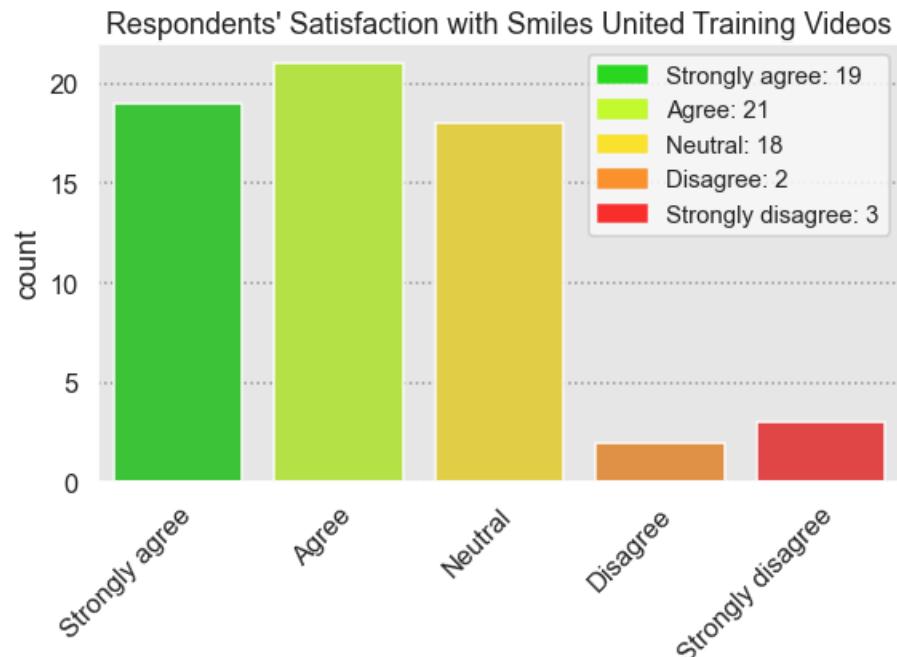
Appendix E: Post Training Data - Additional Visualizations

Below you will find visualizations of all completed post-training surveys. (Some people were ended instead: to better reflect the group in "DataHeads" post-survey and predictions.)

Added Satisfaction Statements (as required by DDPC)

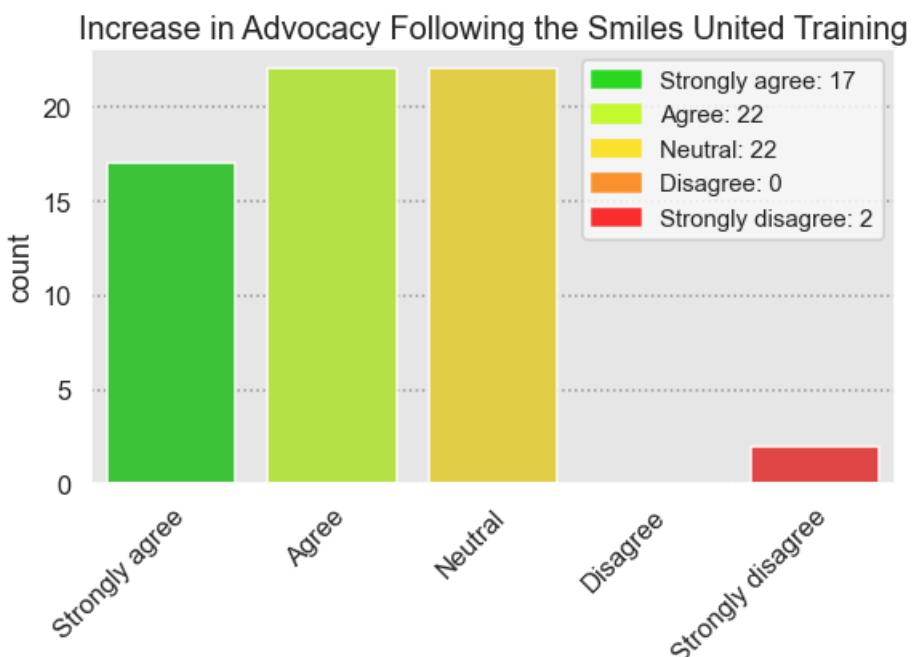
Satisfaction Statement 1

I am satisfied with the Smiles United training videos.

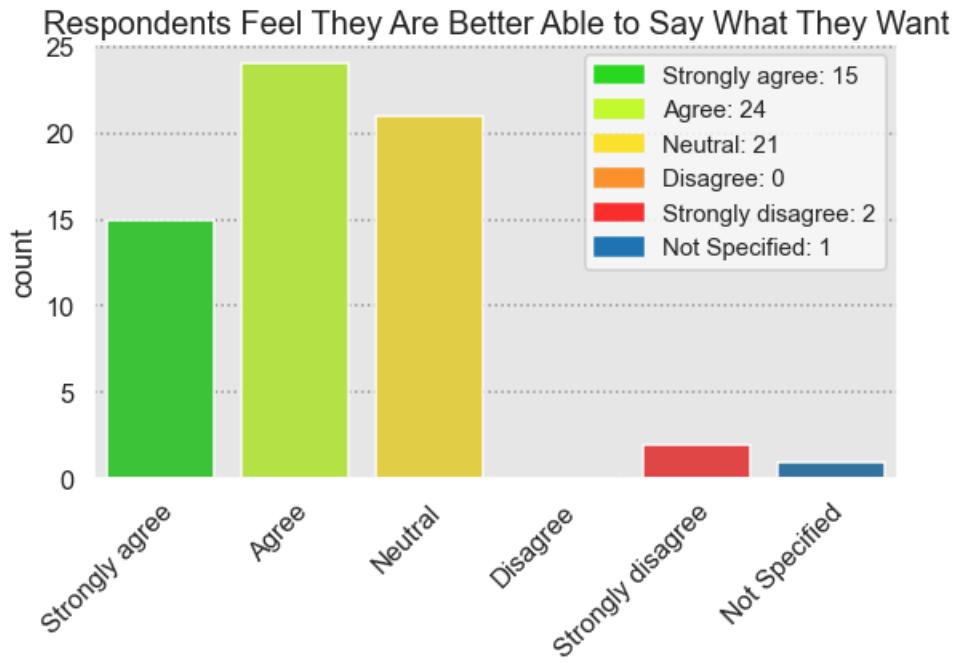


Satisfaction Statement 2

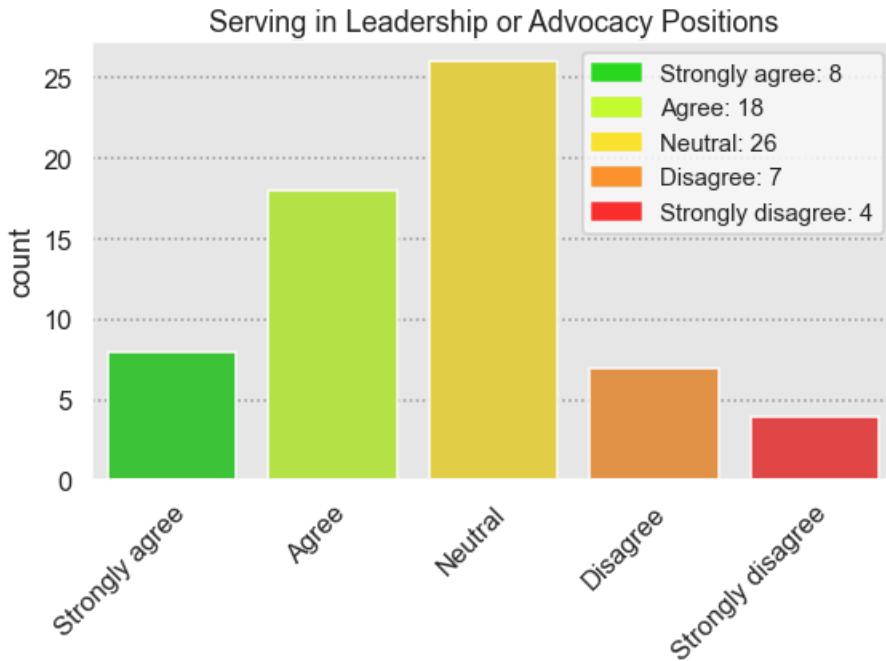
I have increased my advocacy following the Smiles United training.



Satisfaction Statement 3
I am better able to say what I want

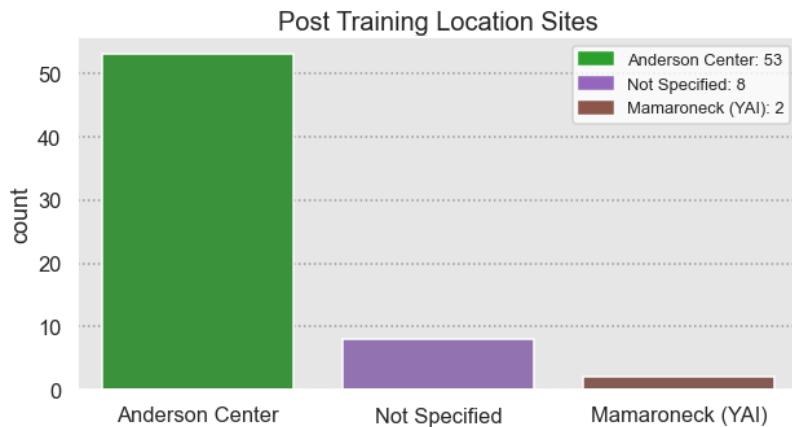


Satisfaction Statement 4
I am serving in leadership or advocacy positions (ex. Coalitions, policy boards, advisory boards)



Added Location Site Question

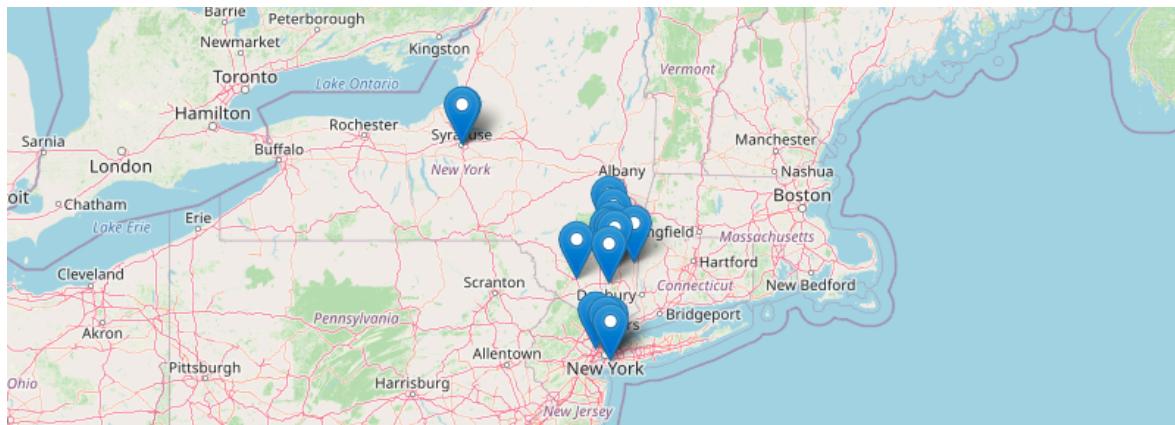
Please click the arrow on the drop-down list to select your program site



Post Training Demographics

Interactive Map

Number of Respondents by Location (click link to explore)



Demographics

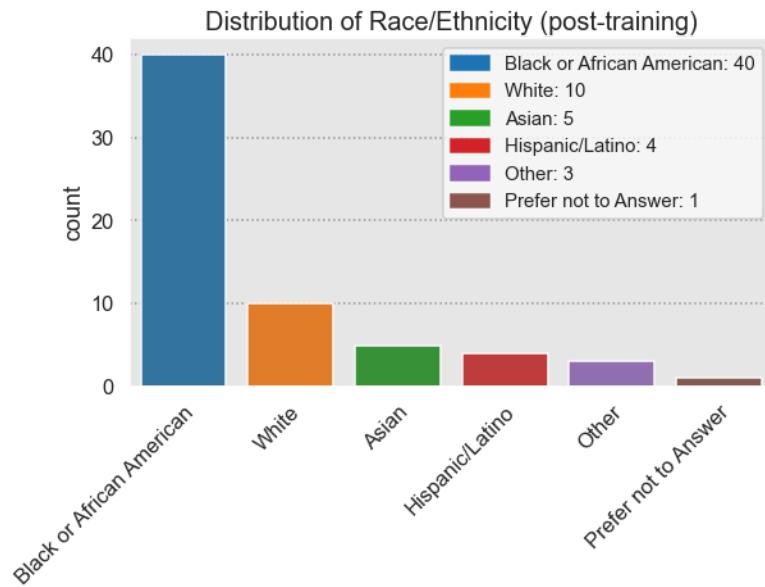
Question 1

Are you a: (Select one)
(1 of 5 required by DDPC)



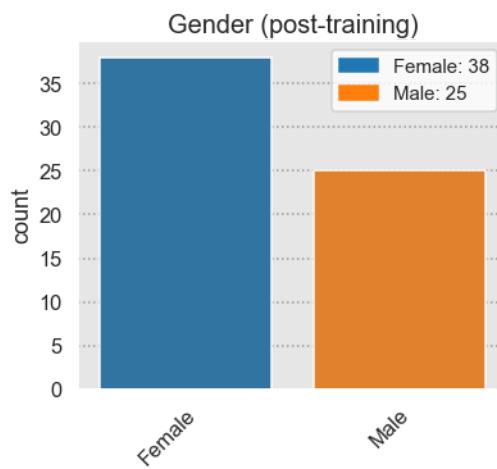
Demographics Question 2

Which of the following best describes your Race/Ethnicity? (2 of 5 required by DDPC)



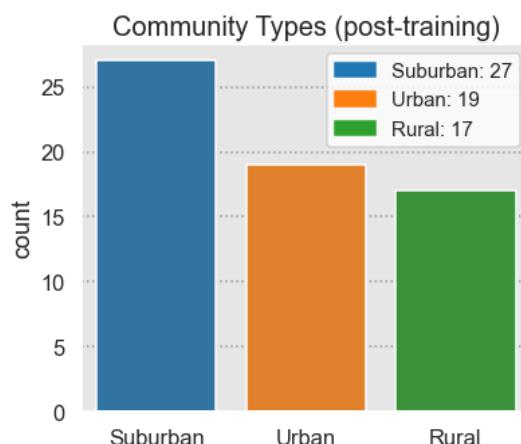
Demographics Question 3

Do you identify as: (3 of 5 required by DDPC)



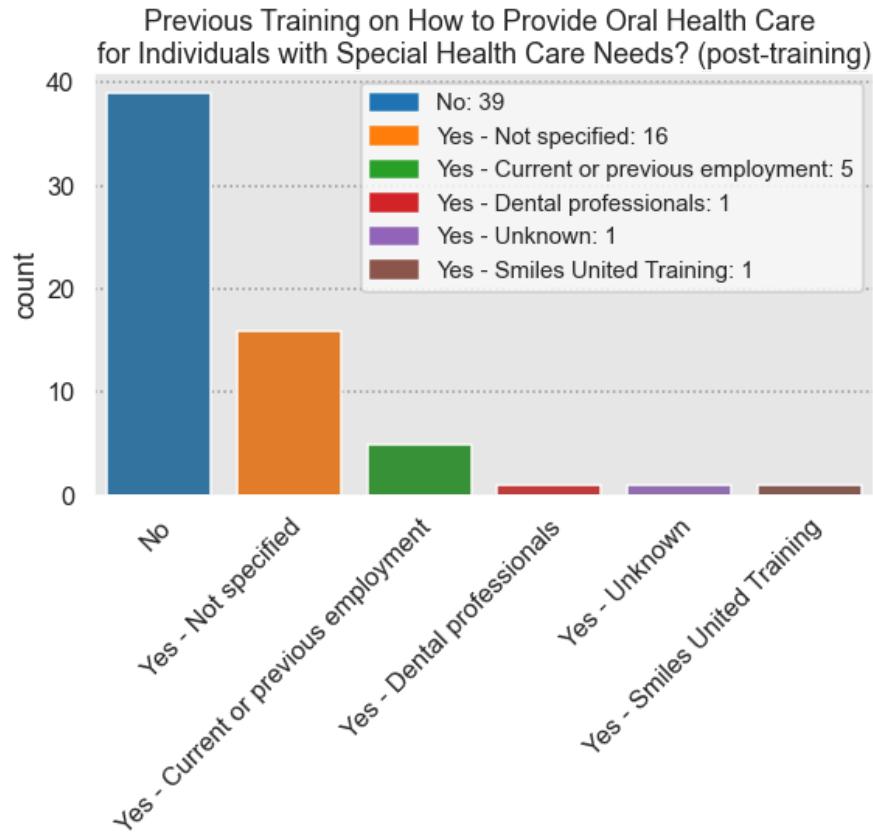
Demographics Question 4

Which of the following best describes the area you live in? (4 of 5 required by DDPC)



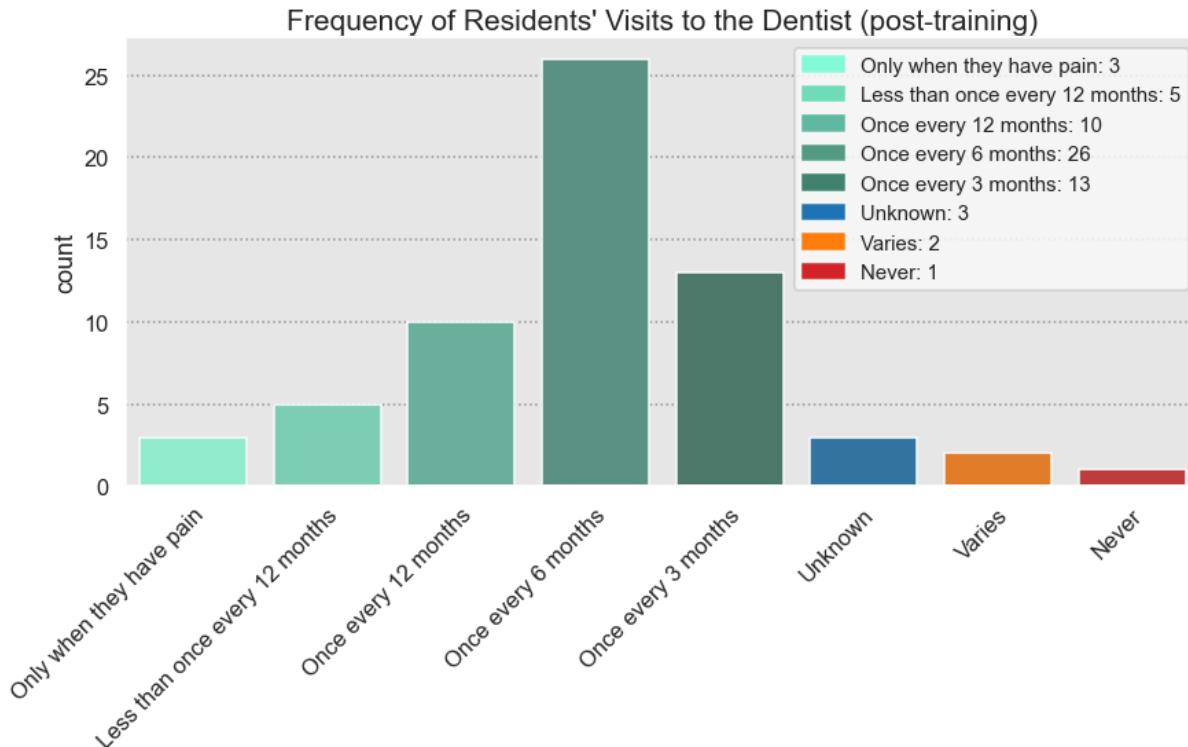
Demographics Question 5

Before today, I have received training on how to provide direct oral health care for individuals with special health care needs. (5 of 5 required by DDPC)



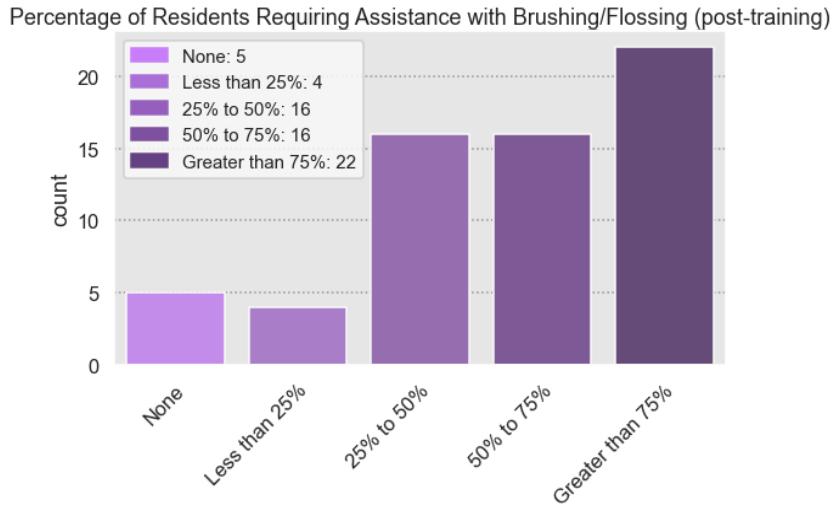
Demographics Question 6

Approximately, how often do residents under your care go to the dentist?



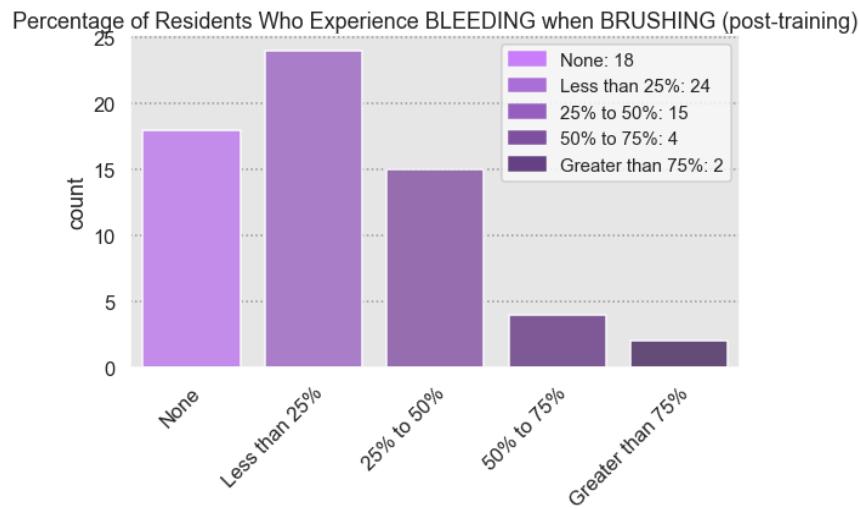
Demographics Question 7

Approximately, what percentage of residents under your care require assistance brushing or flossing their teeth?



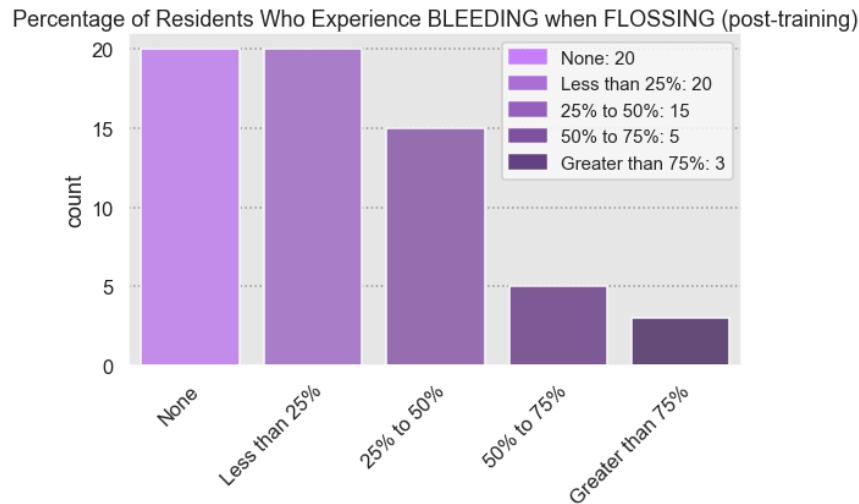
Demographics Question 8

Approximately, what percentage of residents under your care experience bleeding when brushing their teeth?



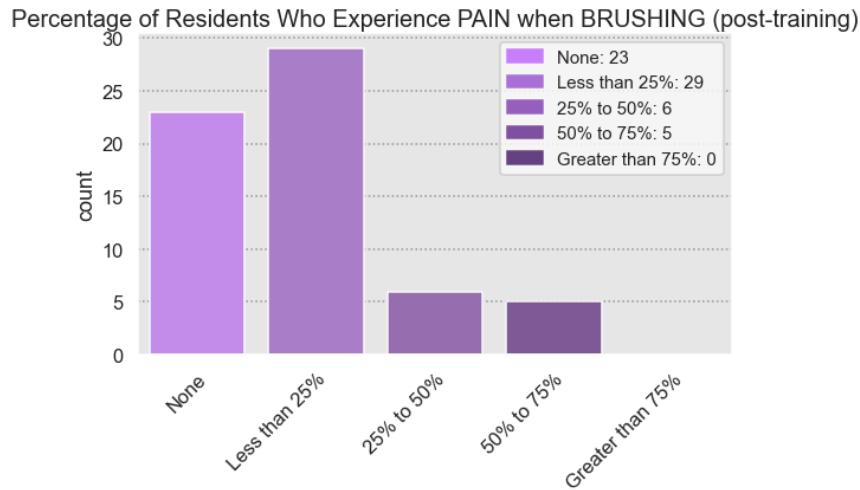
Demographics Question 9

Approximately, what percentage of residents under your care experience bleeding when flossing their teeth?



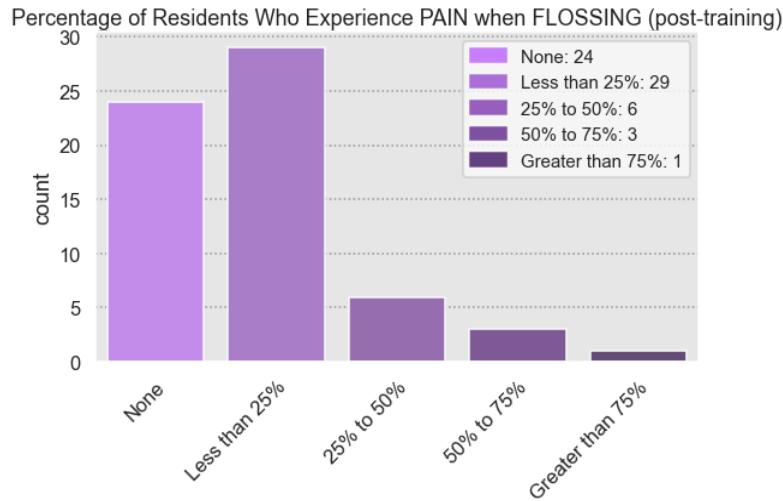
Demographics Question 10

Approximately, what percentage of residents under your care express that they experience pain when brushing their teeth?



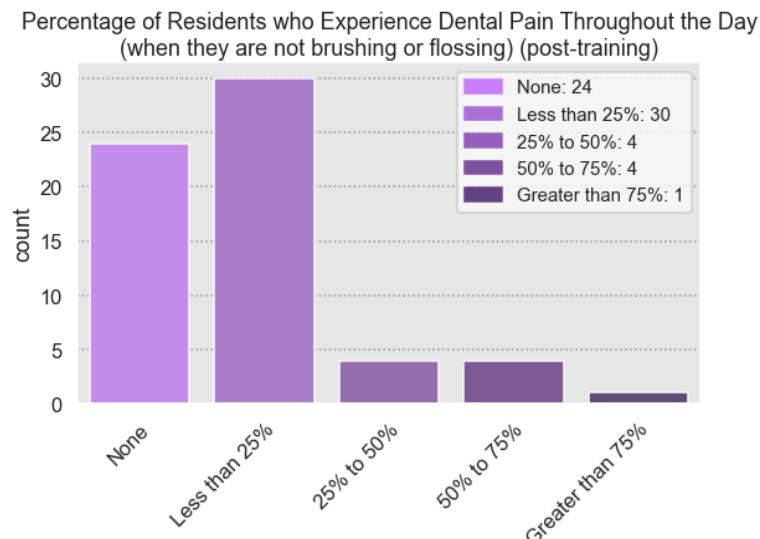
Demographics Question 11

Approximately, what percentage of residents under your care experience pain when flossing their teeth?



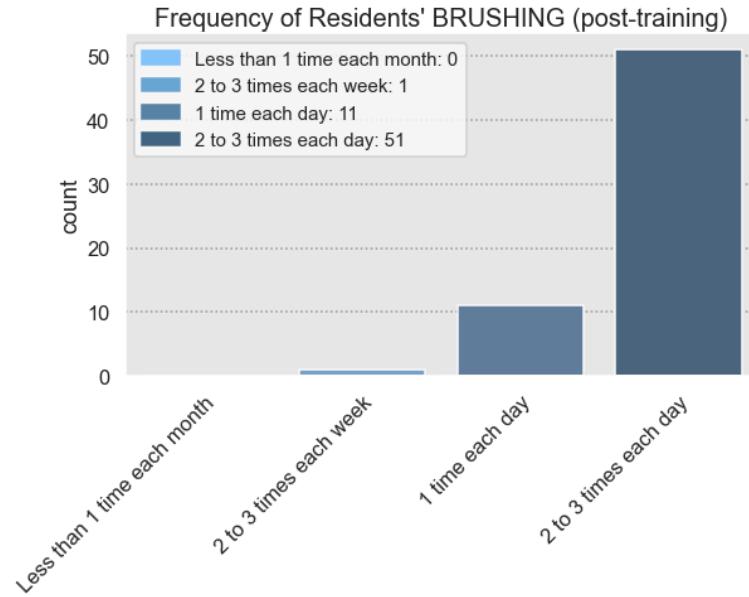
Demographics Question 12

Approximately, what percentage of residents under your care express that they experience dental pain throughout the day when they are not brushing or flossing their teeth?



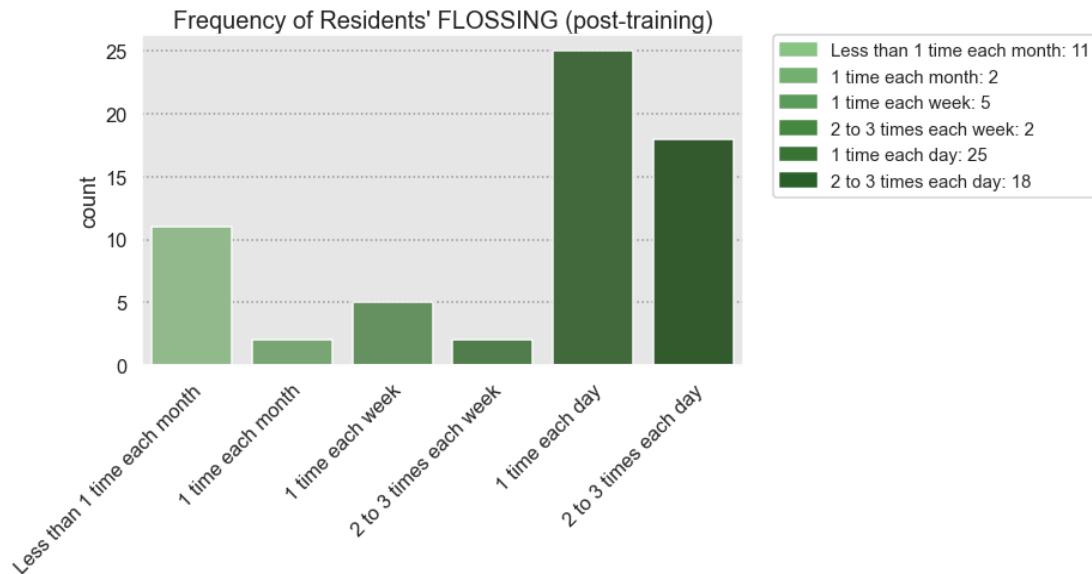
Demographics Question 13

On average, how often do most residents under your care brush their teeth?



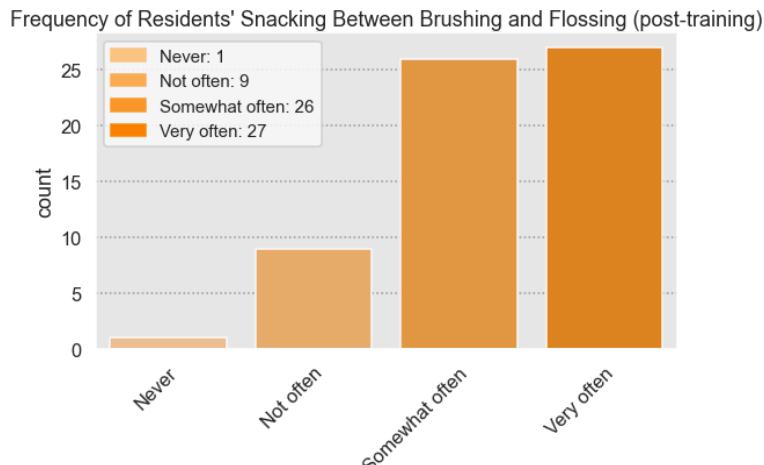
Demographics Question 14

On average, how often do most residents under your care floss their teeth?



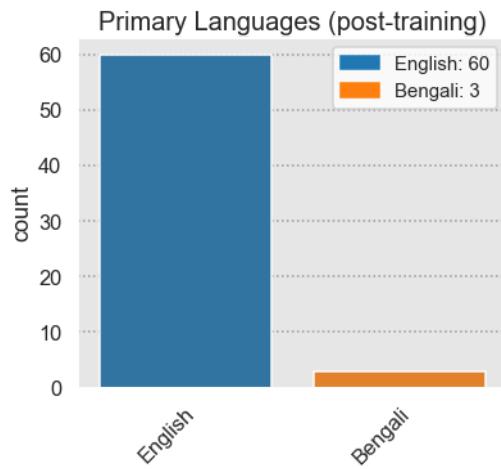
Demographics Question 15

Residents under my care have snacks throughout the day between brushing and flossing their teeth



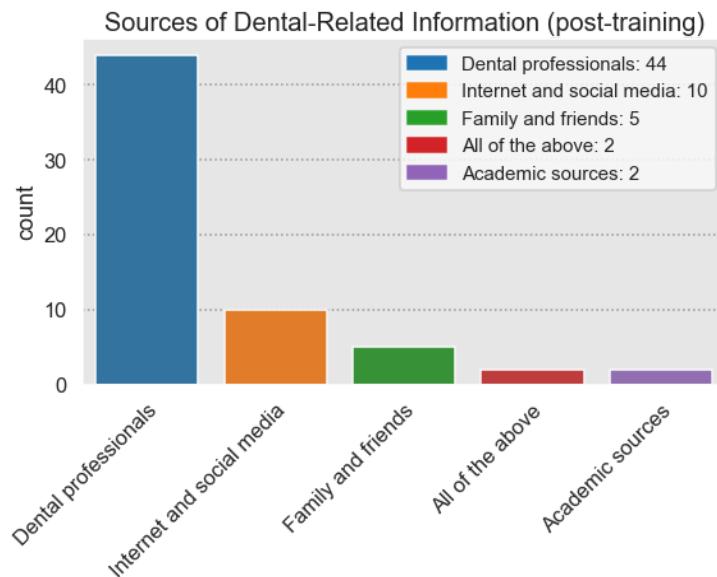
Demographics Question 16

What is your primary language?



Demographics Question 17

What is your primary source of dental related information?

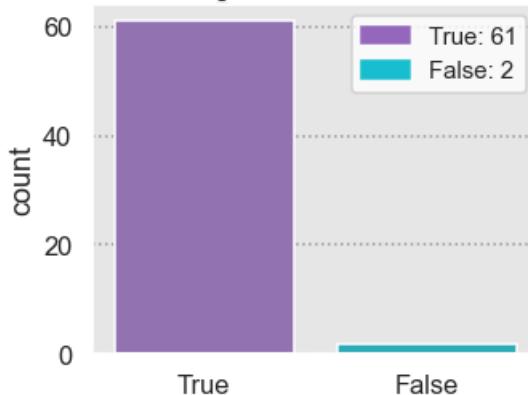


Post Training Knowledge

Knowledge Question 1

Dry mouth can have a negative effect on overall oral health

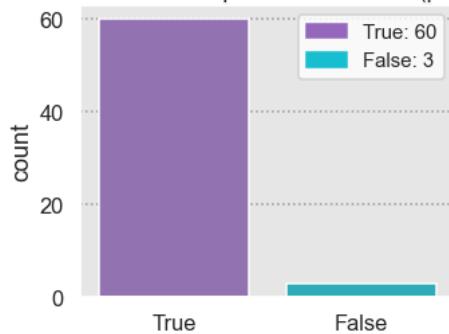
Dry Mouth Can Have a Negative Effect on Oral Health (post-training)



Knowledge Question 2

Fluoridated products, such as fluoridated toothpaste and fluoridated water, can help improve the oral health of residents

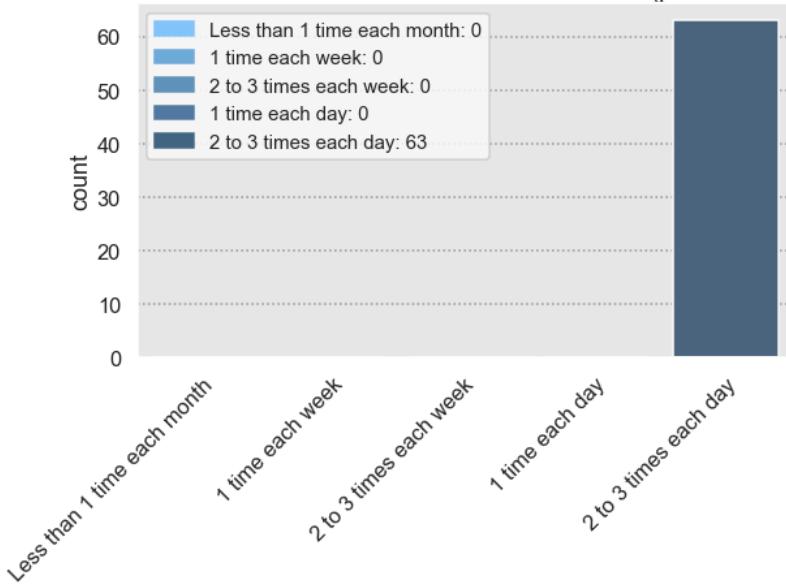
Fluoridated Products Improve Oral Health (post-training)



Knowledge Question 3

How often should residents brush their teeth each day?

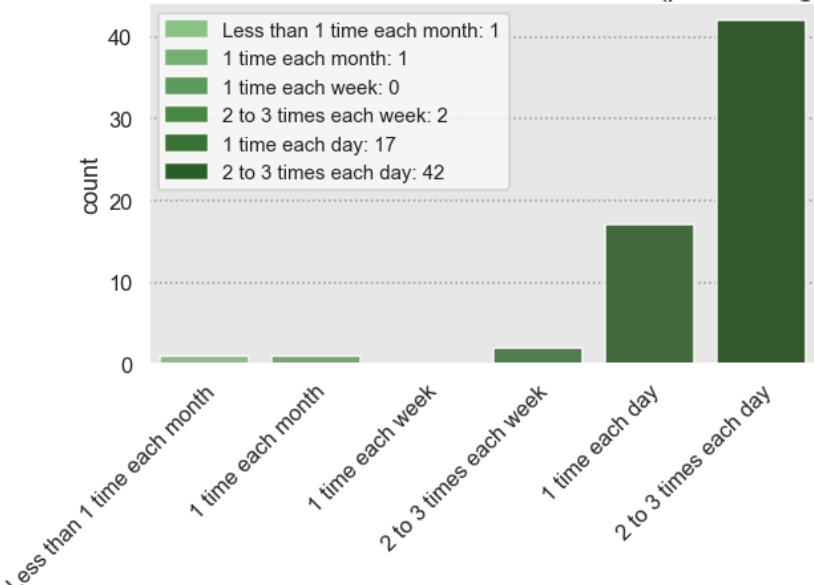
How often should residents brush their teeth? (post-training)



Knowledge Question 4

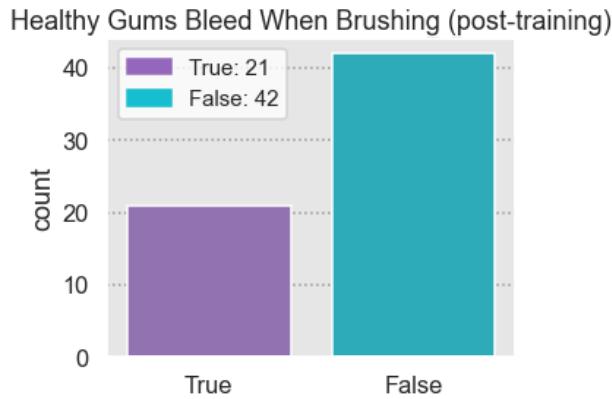
How often should residents floss their teeth each day?

How often should residents floss their teeth (post-training)



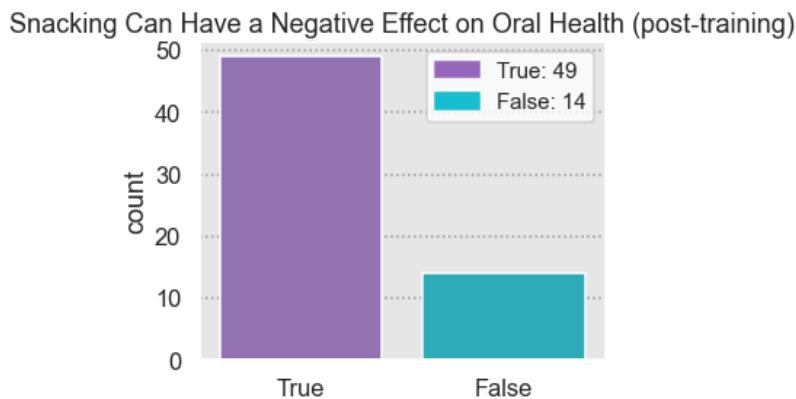
Knowledge Question 5

It is normal for healthy gums to bleed when brushing teeth



Knowledge Question 6

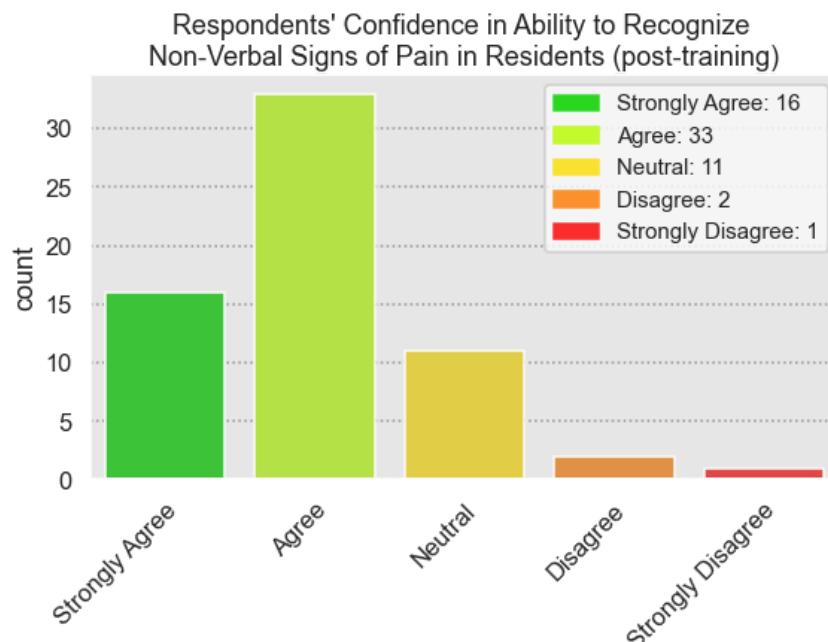
Snacking throughout the day can have a negative impact on oral health



Post Training Attitude

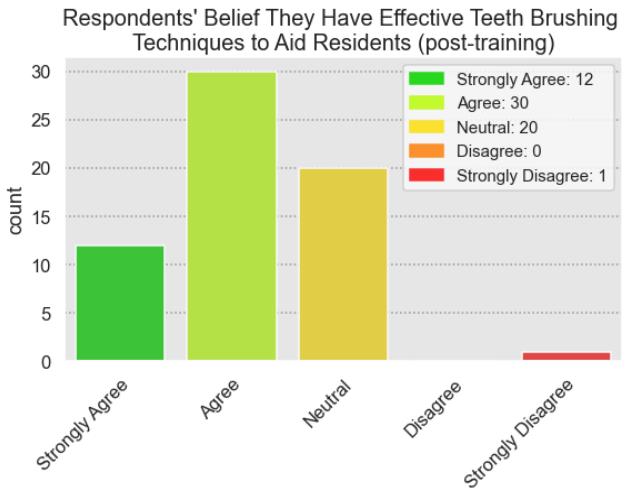
Attitude Question/Statement 1

I am able to confidently recognize non-verbal signs of pain in residents under my care (1 of 6 used in hypothesis evaluation significance testing)



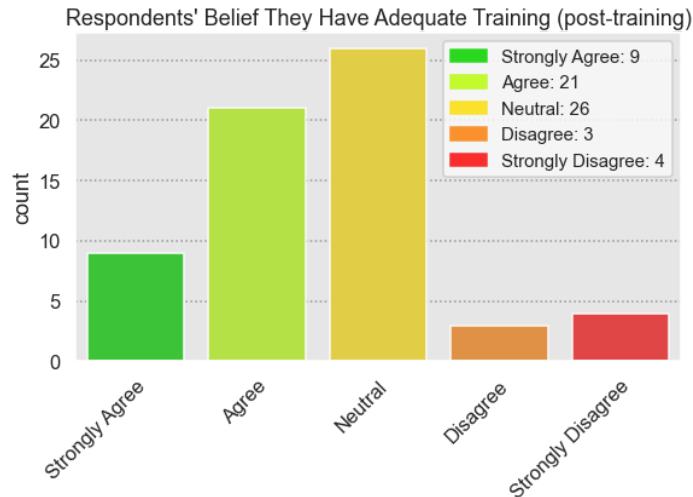
Attitude Question/Statement 2

I believe I have effective techniques which I use to brush the teeth of residents under my care (2 of 6 used in hypothesis evaluation significance testing)



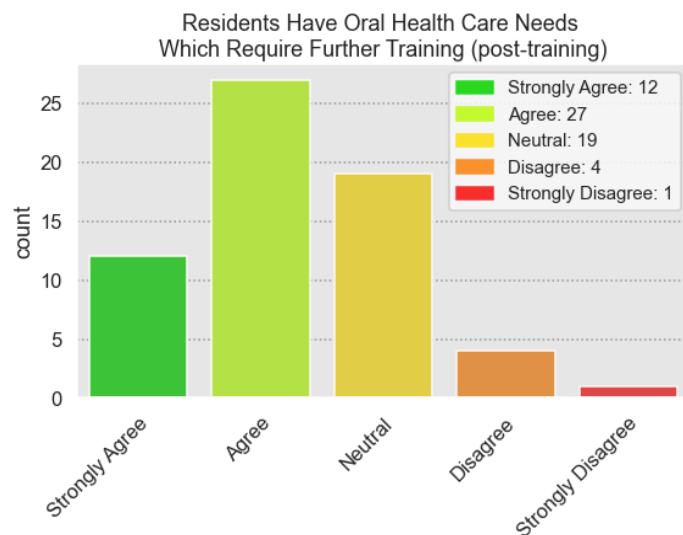
Attitude Question/Statement 3

I believe I have previously received adequate training to help provide the best oral care possible to residents under my care (3 of 6 used in hypothesis evaluation significance testing)



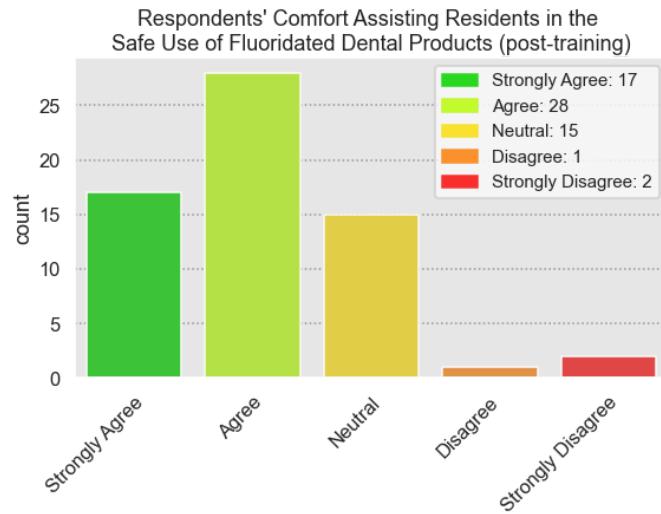
Attitude Question/Statement 4

I believe residents under my care have oral health care needs which require further training to adequately understand and help manage (4 of 6 used in hypothesis evaluation significance testing)



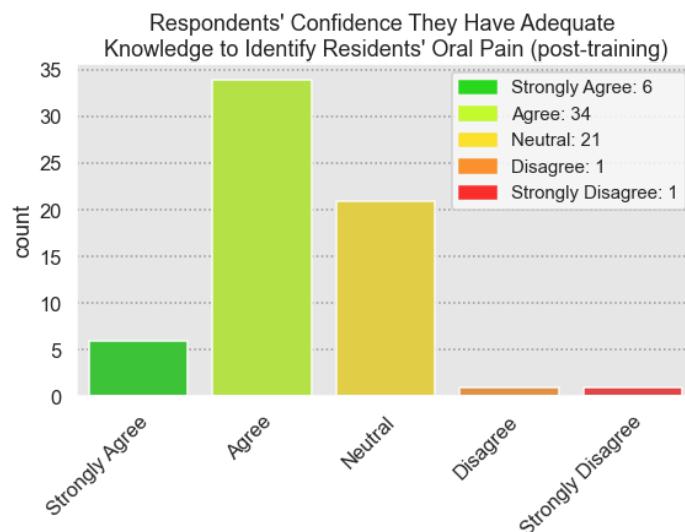
Attitude Question/Statement 5

I feel comfortable assisting residents in the safe use of fluoridated dental products (such as fluoridated toothpaste) (5 of 6 used in hypothesis evaluation significance testing)



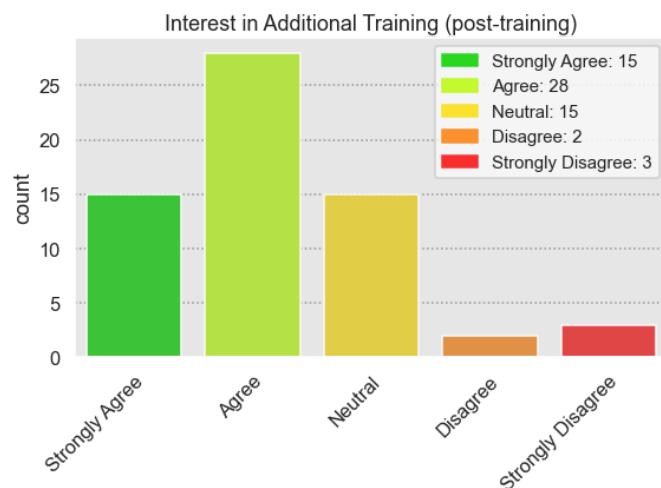
Attitude Question/Statement 6

I feel confident that I have the knowledge to identify when residents under my care experience oral pain (6 of 6 used in hypothesis evaluation significance testing)



Attitude Question/Statement 7

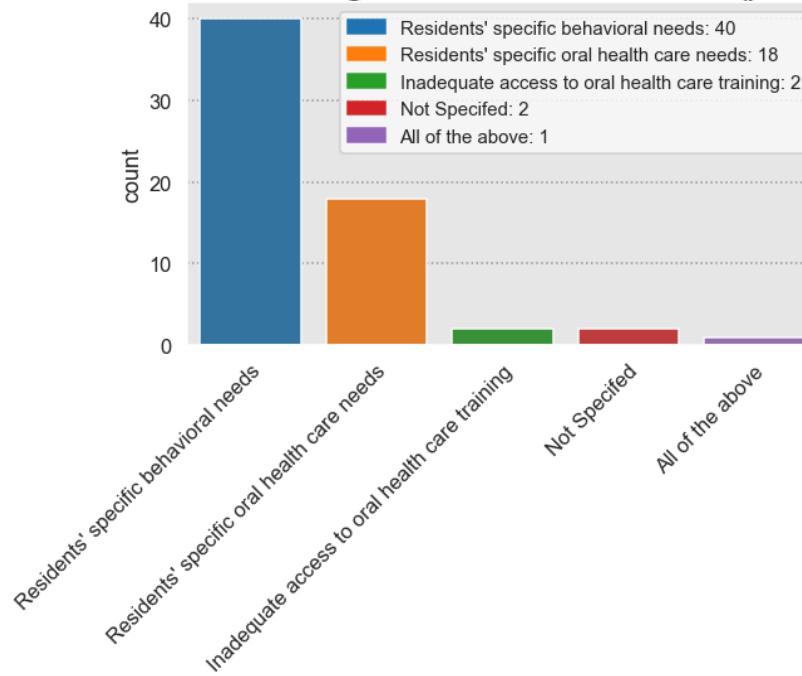
I would be interested in receiving additional training to help maintain the oral health of residents under my care



Attitude Question/S statement 8

What is the biggest obstacle to providing excellent oral care to residents?

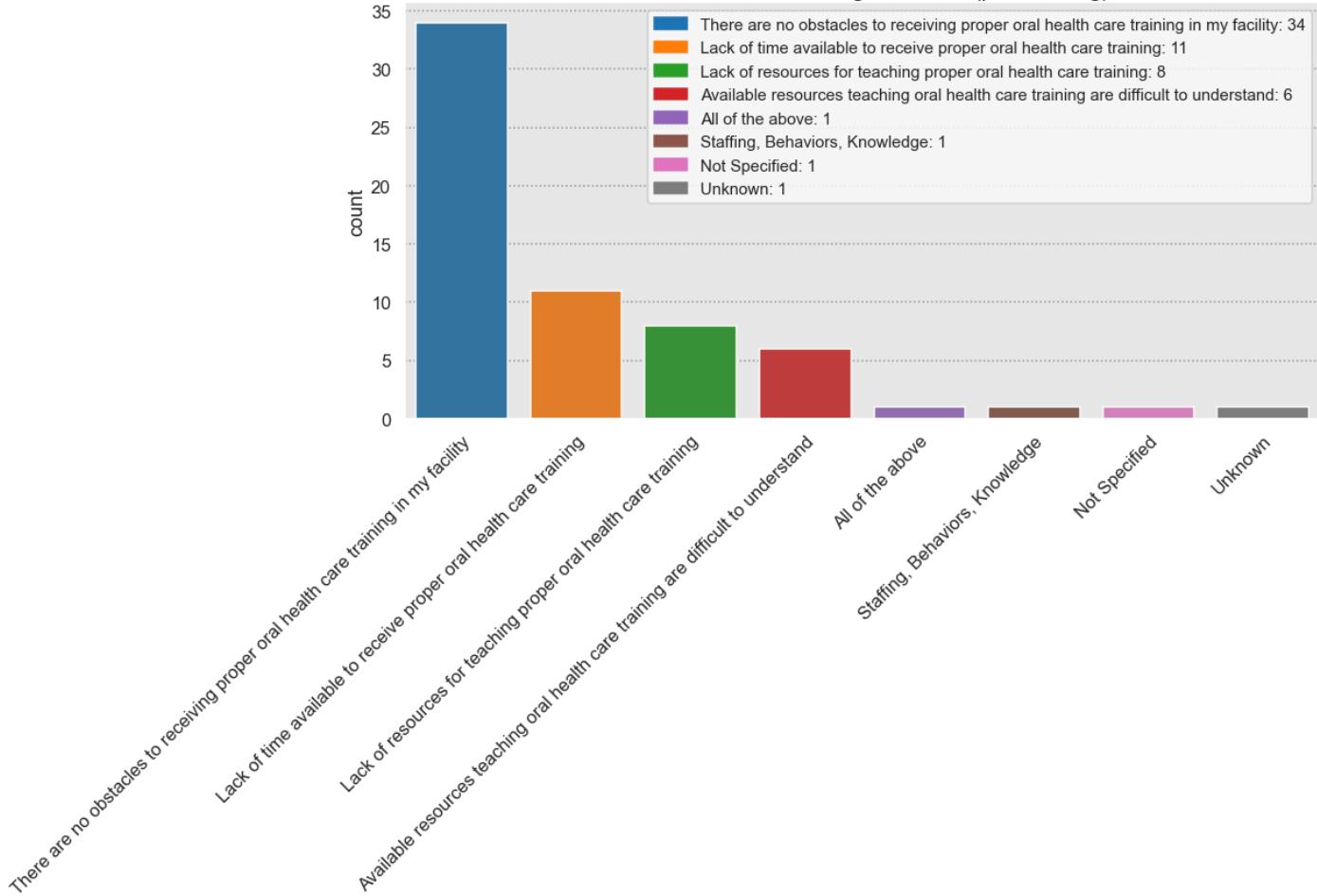
Obstacles to Providing Excellent Oral Care to Residents (post-training)



Attitude Question/S statement 9

What is the biggest obstacle to receiving proper oral health care training in your facility?

Oral Health Care Training Obstacles (post-training)



Attitude Question/S statement 10

Which resource would be most useful to help improve your confidence in delivering excellent oral homecare to residents under your care?

