



Longitudinal Evaluation of Silver Diamine Fluoride Application in the Primary Dentition: A Claims Review

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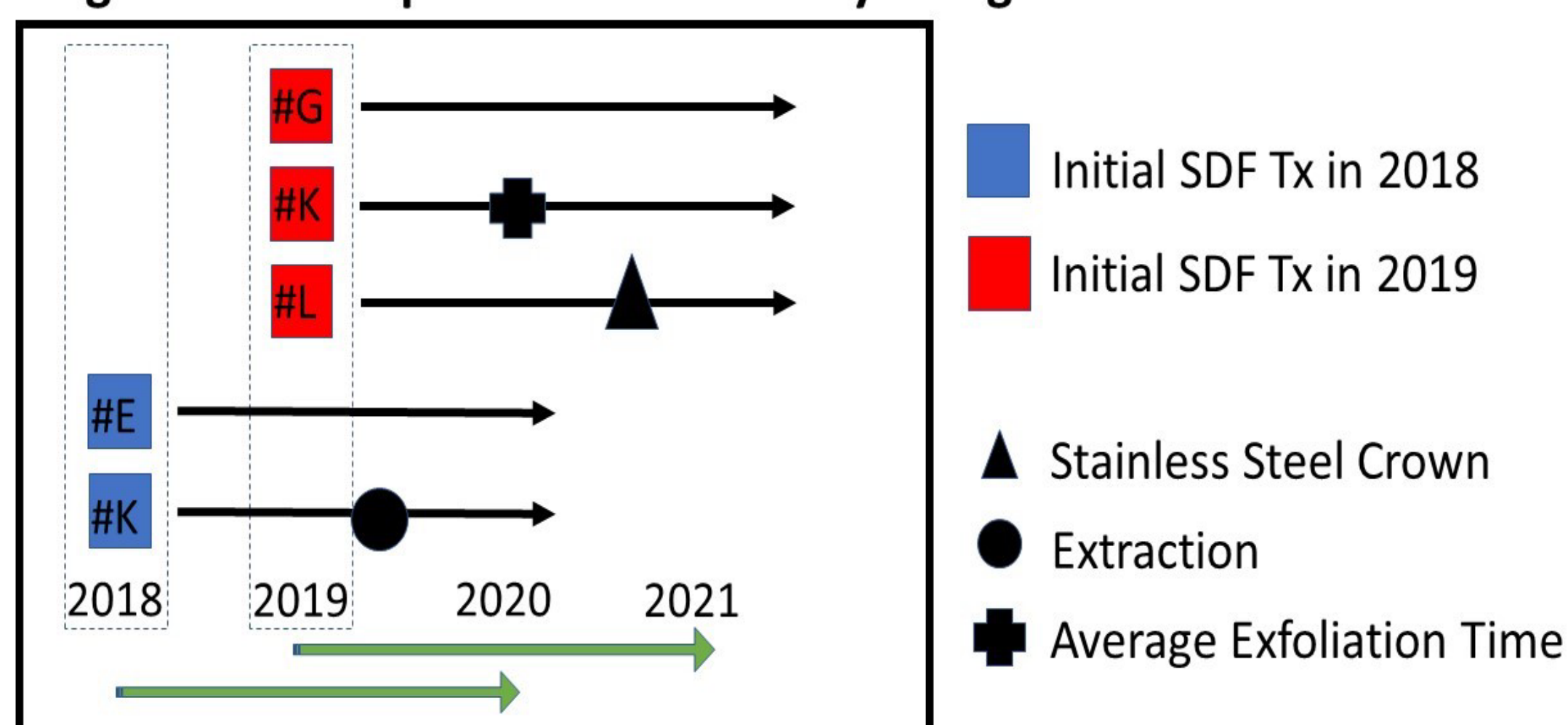
BACKGROUND/PURPOSE

- The American Academy of Pediatric Dentistry initially published guidelines on the use of silver diamine fluoride (SDF) in 2017.¹
- SDF is a minimally invasive therapy that is efficacious in arresting carious lesions in the primary and permanent dentition.²
- SDF does not restore form and function; however, it can be used prior to a definitive restoration as part of the caries control plan.³
- Purpose:** The aim of this study was to use dental claims to longitudinally evaluate treatment outcomes of primary teeth that initially receive application of 38% silver diamine fluoride (SDF).

METHODS

- Nationwide commercial insurance data.
- Retrospective cohort design** (Figure 1)
- Inclusion criteria:** Patients ≤ 12 years (y) old with primary tooth/teeth initially-treated with SDF (D1354) & periodic exam at ≥ 24 months (D0120).
 - All subsequent treatment (Tx) recorded.
- Claims data collected:** CDT codes, pt age, tooth number, Tx dates, provider type - pediatric dentists (PD) or general dentists (GD).
- Statistical analysis:** Generalized estimating equation (GEE) for logistical regression, two-sided 5% significance level.

Figure 1. Retrospective Cohort Study Design



RESULTS

- 46,884 patients** with **119,910 SDF-treated teeth** (Age: 5.7 y (SD=2.3); Mean of 2.6 SDF-treated lesions).
- 40%** of initial SDF-treated lesions **received additional Tx.**
- Avg age receiving additional Tx was **4.9 y** (SD=1.9)
- Avg age NOT receiving additional Tx was **6.0 y** (SD=2.3).
 - Additional Tx decreased with patient age** ($P < 0.001$) (Figure 2).
- GD are more likely than PD to provide additional Tx** ($P < 0.001$).
 - PD initially treated teeth w/ SDF more often (2:1).
- Posterior teeth are more likely than anterior teeth to receive additional Tx** ($P < 0.001$) (Figure 3).
 - Posterior initially received SDF more often ($> 5:1$).
- Teeth expected to exfoliate in > 2 y are more likely than teeth with < 2 y to receive additional Tx** ($P < 0.001$) (Figure 4).

Figure 2. Odds of Additional Treatment Varies by Age

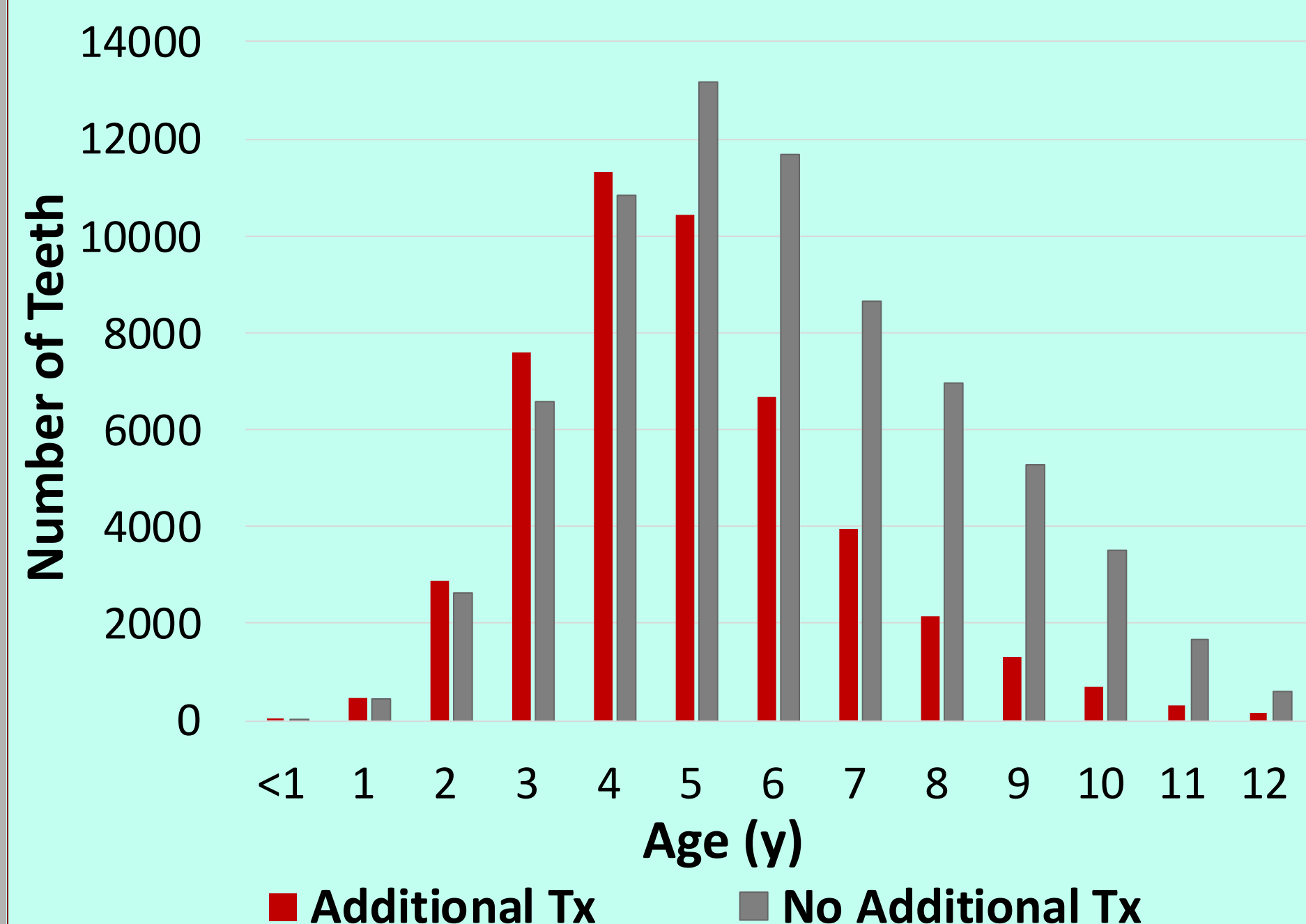


Figure 3. Odds of Additional Tx Based on Location

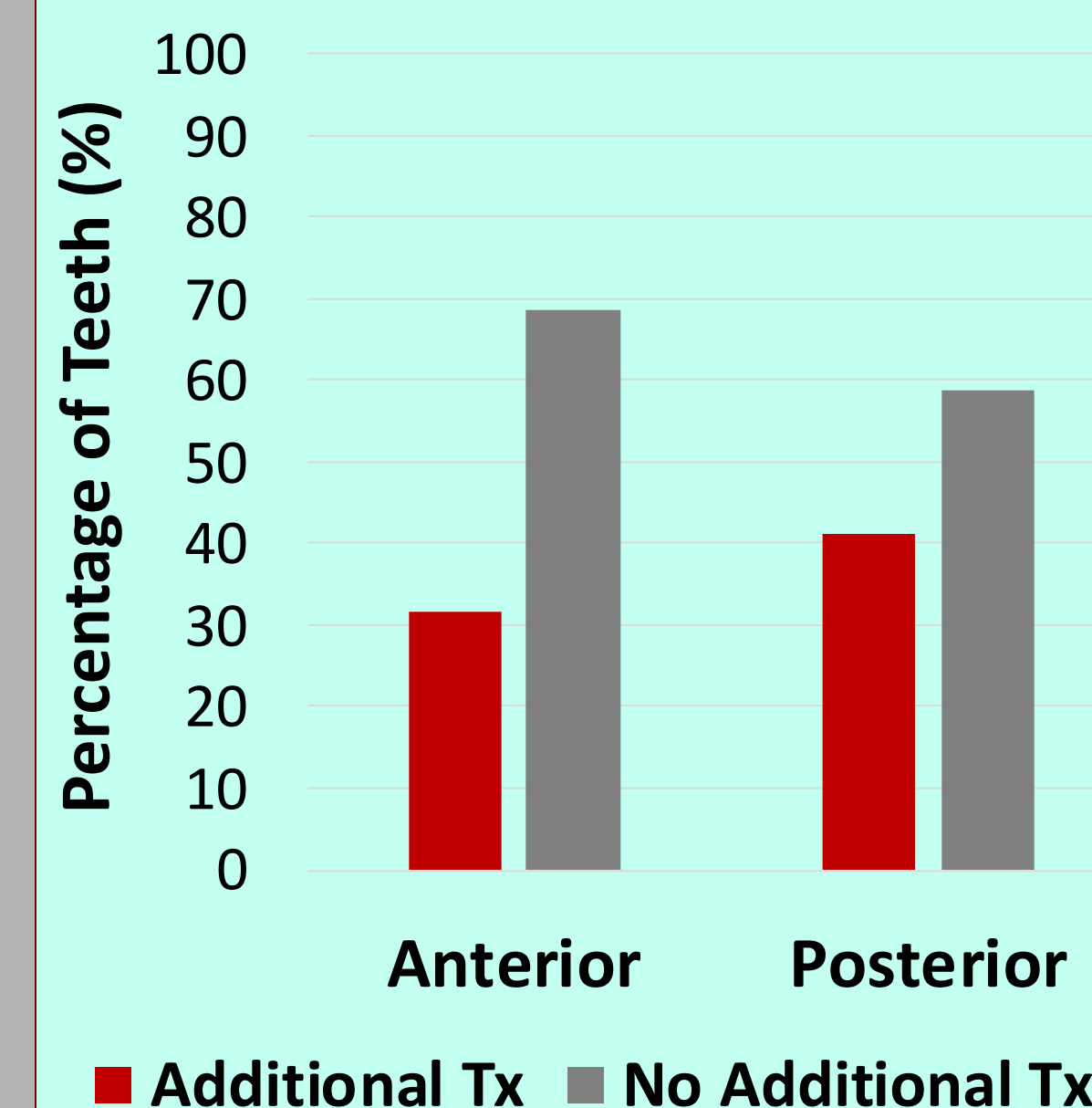
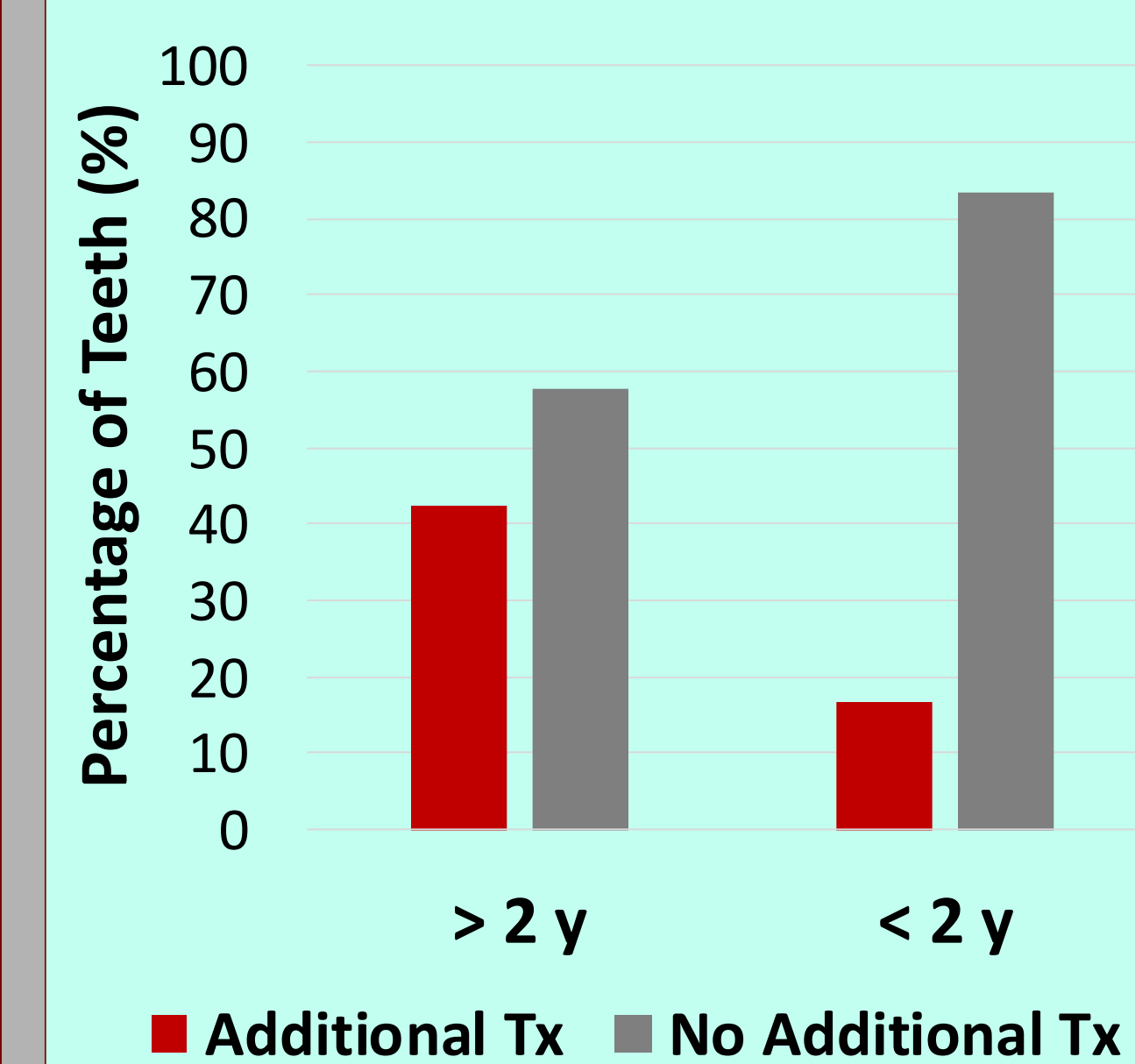


Figure 4. Odds of Additional Tx Based on Expected Exfoliation Times



DISCUSSION/CONCLUSIONS

- From 2018 to 2019, **the cohort size increased $> 60\%$.**
 - SDF is increasing by both PD & GD in populations w/ private insurance plans.⁴
- Over 24+ months, **40%** of initial SDF treated primary teeth **received future Tx.**
 - The advantage of caries arrest may outweigh not restoring form & function.²
- PD initially treated teeth with SDF more often but were less likely to provide additional Tx.**
 - General dentists see majority of children in the United States and only 3.3% of all dentists are pediatric dentists.^{5,6}
- Posterior teeth initially received SDF more often and were more likely to receive additional Tx.**
 - Parents are more accepting of SDF treatment in the posterior of the mouth and on primary teeth. Anterior teeth have higher rates of caries arrest.^{7,8,9}
- Teeth with < 2 y until expected exfoliation were less likely to receive additional Tx.**
- Odds of future Tx decreased as age increased.**
 - Age of caries occurrence affects tooth survival. Caries later in life are associated with higher tooth survival until exfoliation.¹⁰

