

CHILDHOOD ASTHMA AND RELATED SYMPTOMS AROUND THE SALTON SEA:

A Focus on Childhood Nose Symptoms



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Executive Summary

Introduction

This special report provides survey results about childhood nose symptoms from a symptom-based survey that documented breathing, nose, and skin symptoms of children living around the Salton Sea. This is one of three special reports that focus on specific questions from the survey; two other special reports provide survey results on breathing symptoms and skin symptoms. There are also more analyses of the survey results available in a report submitted to the Bureau of Reclamation (with findings from all survey questions) and a regional report (focused on specific geographies and advanced analyses).

The survey was conducted in the communities surrounding the Salton Sea: eastern Riverside County (i.e., that part comprising the Eastern Coachella Valley) and northern Imperial County (i.e., that part comprising the northern Imperial Valley). This project was funded by the Center for Health Disparities Research at UC Riverside (referred to as HDR@UCR) through a grant from the U.S. Bureau of Reclamation. HDR@UCR contracted with HARC, Inc., which conducted the survey, analyzed the data, and developed this report.

Methods

Results are from an address-based survey of households in eastern Riverside County and northern Imperial County. Households likely to have children were mailed a “survey package,” which included an invitation letter (in English and Spanish), a paper survey in English, a paper survey in Spanish, a pre-paid return envelope, and a \$2 bill as a pre-incentive that the recipient could keep regardless of whether they took the survey. Further, the invitation letter explained that the first 1,000 households to complete and submit the survey would receive a \$20 Visa card as compensation. In addition, a flyer with a URL link and QR code (to take the survey online) was mailed to an additional 18,000 households (regardless of whether they were likely to have children or not). These flyers likewise offered a \$20 Visa card.

The survey was launched on August 18, 2023, and the survey was closed on October 31, 2023. A total of 840 completed surveys were received.

Results

Demographics

A total of 93.8% of the children surveyed were Hispanic/Latino, a majority were boys (55.8%), and the average age was 12. Further, a majority (50.9%) of households were at or below the federal poverty level.

Nose Symptoms

A total of 45.1% of children have ever had a problem with sneezing or a runny or blocked nose (when the child did not have a cold or the flu). Among these, 90.2% have had these symptoms in the last 12 months. Among those who have had these symptoms in the last 12 months, 71.6% have had this nose problem accompanied by itchy-watery eyes. These symptoms (sneezing/runny/blocked nose and itchy-watery eyes) occur most frequently in the spring (March and April) and fall (September and October), and these symptoms also are reported to affect the child's daily activities "a moderate amount" among a quarter (25.0%) of children. In addition, 40.6% of survey participants report that the child has ever had hay fever (i.e., seasonal allergies). Further, 13.7% of surveyed children have less than one nosebleed (on average) per month, and 13.6% have one or more nosebleeds (on average per month).

Conclusion

Most children surveyed come from underserved communities, with over ninety percent identifying as Hispanic/Latino and over half living below the federal poverty level. About two-fifths of children have had a problem with sneezing or a runny or blocked nose in the last 12 months. Among those, almost three-quarters had these symptoms accompanied by itchy-water eyes. These symptoms occur most often twice per year (spring and fall) and, for the vast majority of children, interfere with the child's daily activities to some degree.

Introduction

This special report provides survey results about childhood nose (rhinitis and other) symptoms from a symptom-based survey that documented breathing, nose, and skin symptoms of children living around the Salton Sea. This is one of three special reports that focus on specific questions from the survey; two other special reports provide survey results on breathing symptoms and skin symptoms. There are also more analyses of the survey results available in a report submitted to the Bureau of Reclamation (with findings from all survey questions) and a regional report (focused on specific geographies and advanced analyses).

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History of the Salton Sea

The Salton Sea is a large inland body of water, largely fed by excess irrigation water from the surrounding farm fields of the Imperial Valley (Imperial County) and the Coachella Valley (Riverside County), as well as runoff from the Mexicali Valley (Municipality of Mexicali, Baja California, Mexico). In recent years (due at least in part to water policy changes in the Colorado River Basin), the water flowing into the Salton Sea has been decreasing, resulting in the continuing receding of the shoreline and the subsequent exposure of dried lakebed, known as playa. This playa threatens to expose fine particulate matter into the air, as well as airborne toxins and microorganisms. The primary concern for the Salton Sea is thus not water but air—the increase of air pollution in the region and subsequent impacts on public health.

Methods

HARC and HDR@UCR drafted a survey with 42 questions, which was modeled on a standardized questionnaire from the Global Asthma Network, originating from the International Study of Asthma and Allergies in Childhood (ISAAC) program.¹

Results are from an address-based survey of households in eastern Riverside County and northern Imperial County. HARC (via Ace Printing) mailed a “survey package,” which included an invitation letter (in English and Spanish), a paper survey in English, a paper survey in Spanish, a pre-paid return envelope, and a \$2 bill as a pre-incentive that the recipient could keep regardless of whether they took the survey. Further, the invitation letter explained that the first 1,000 households to complete and submit the survey would receive a \$20 Visa card as compensation. Ace Printing purchased a list of 6,941 households likely to have children and mailed the survey package to these households. In addition, a flyer with a URL link and QR code (to take the survey online) was mailed to an additional 18,000 households (regardless of whether they were likely to have children or not). These flyers likewise offered a \$20 Visa card.

The mailed instructions asked the adult in the household most familiar with the child to take the survey (the survey thus was often completed by the child’s parent or grandparent). If a household had more than one child, the survey questions concerned the oldest child under the age of 18 in the home.

The survey was launched on August 18, 2023, and the survey was closed on October 31, 2023. A total of 840 completed surveys were received. All paper survey results were entered into the online survey platform Sogolytics. The final results were downloaded, cleaned, and analyzed using SPSS (Statistical Package for the Social Sciences).

¹ Ellwood, P., Asher MI., and the Global Asthma Network Steering Group. August 2015. Global Asthma Network Phase I Manual. <http://www.globalasthmanetwork.org>

Results

Demographics

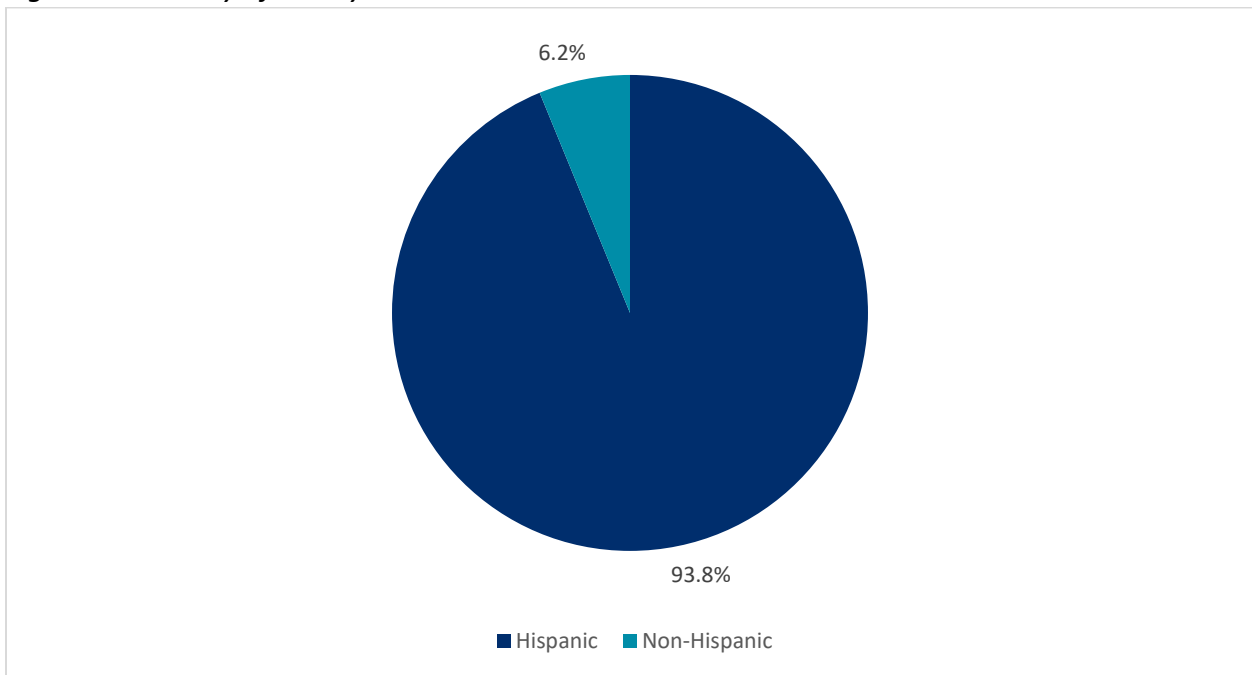
Age, Gender, Race, and Ethnicity

For the child for whom the survey was completed, ages ranged from less than one year old to 17 years old. The average age for surveyed children was 12 years old.

Survey participants were asked about the gender of the child. A total of 55.8% were boys, and 44.2% were girls.

Survey participants were asked about the race and ethnicity of the child. As illustrated below, 93.8% of the children surveyed were Hispanic/Latino.

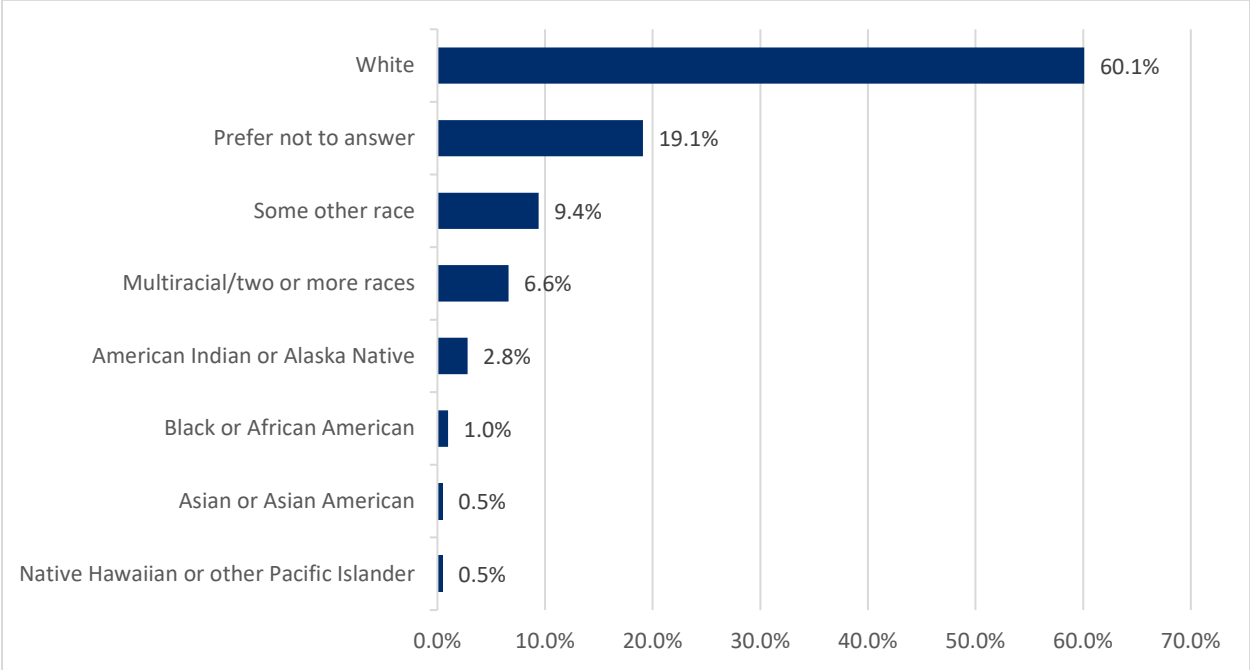
Figure 1. Ethnicity of Surveyed Children



Note: $n = 808$.

Survey participants were also asked about the race of the child and were told that “for the purposes of this survey, Hispanic is not a race.” As illustrated below, 60.1% identified as White, followed by 19.1% who “preferred not to answer,” 9.4% who identified as “some other race” and 6.6% who identified as multiracial/two or more races.

Figure 2. Race of Surveyed Children

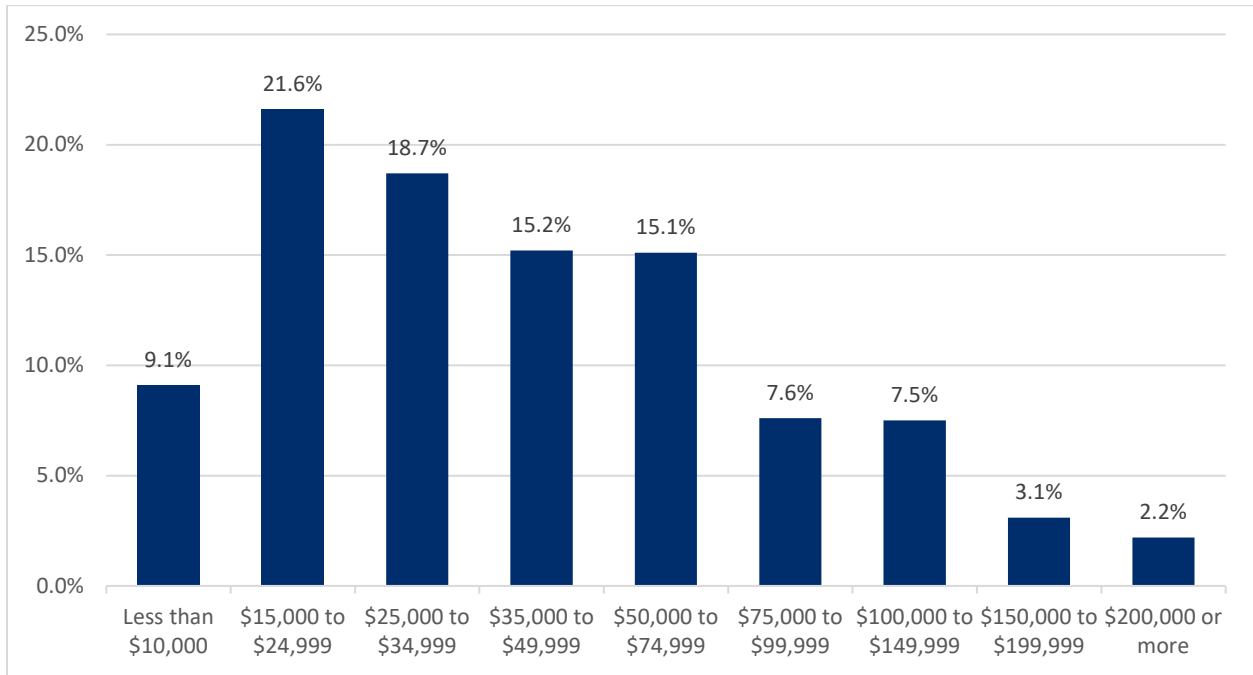


Note: n = 787.

Income and Poverty Level

Survey participants were asked what their household income was last year. As illustrated below, 21.6% of households made between \$15,000 and \$24,999, and 18.7% of households made between \$25,000 and \$34,999 last year. Nearly half (49.4%) of households made less than \$35,000 last year.

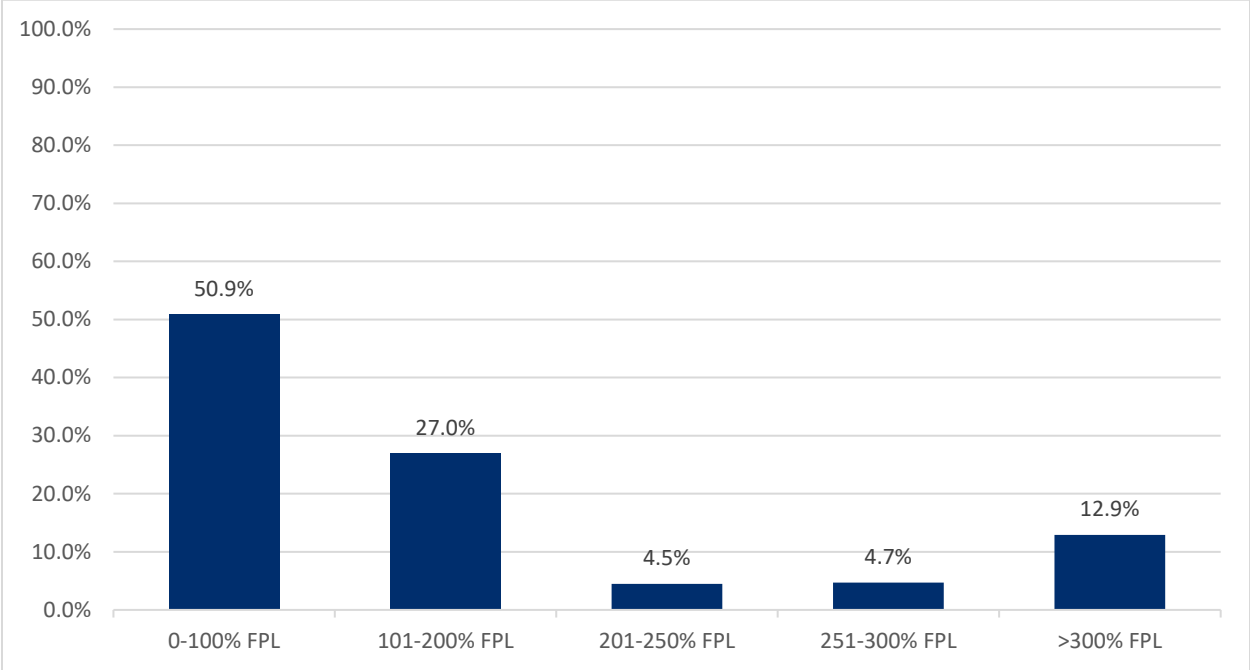
Figure 3. Household Income



Note: $n = 684$.

Household income was compared with household size to calculate the federal poverty level (FPL). As illustrated below, a majority (50.9%) of households were at or below the FPL (0-100% FPL), and 27.0% were 101-200% FPL.

Figure 4. Federal Poverty Level



Note: n = 684.

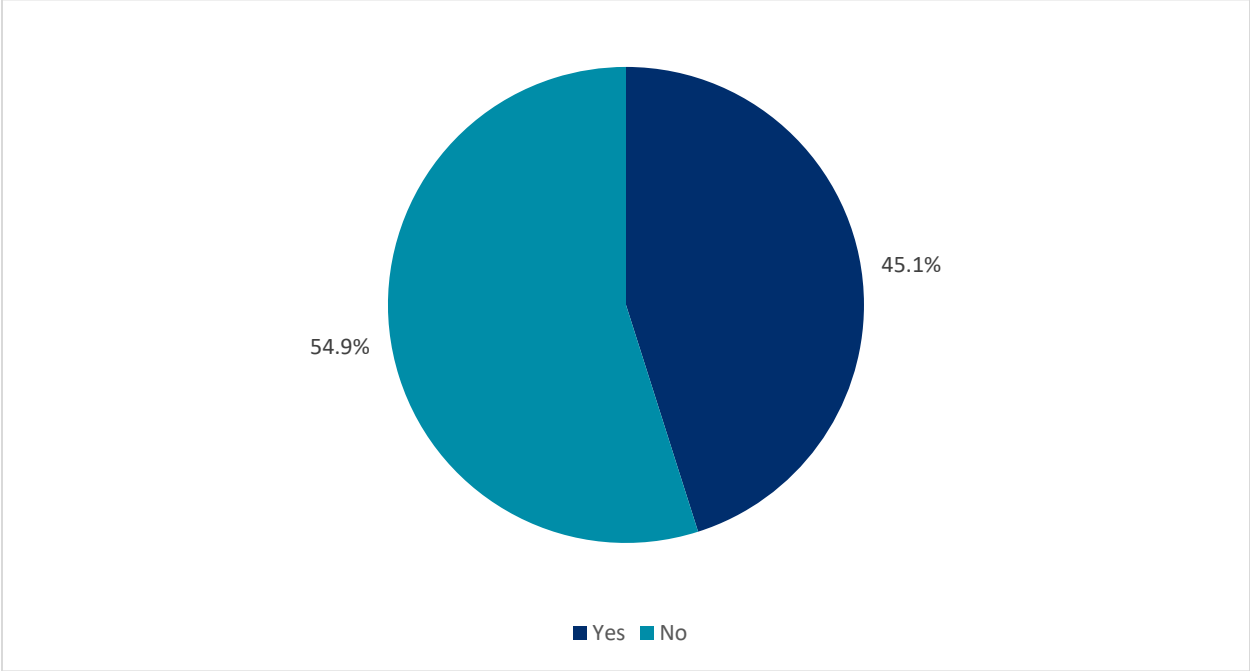
Nose Symptoms

Survey participants were asked about their child’s rhinitis symptoms (or “nose issues”). The survey specified that “all questions are about problems that occur normally” when the child does not have a cold or the flu.

Sneezing and Runny Nose

Survey participants were asked, “Has your child ever had a problem with sneezing or a runny or blocked nose when he/she DID NOT have a cold or the flu?” As illustrated below, 45.1% said “yes,” their child has had a problem with sneezing or a runny or blocked nose (when the child did not have a cold or the flu), and 54.9% said “no,” their child has not had such a problem with sneezing or a runny or blocked nose (when the child did not have a cold or the flu).

Figure 5. Child Ever Had a Problem with Sneezing/Runny/Blocked Nose (Without a Cold/Flu)?

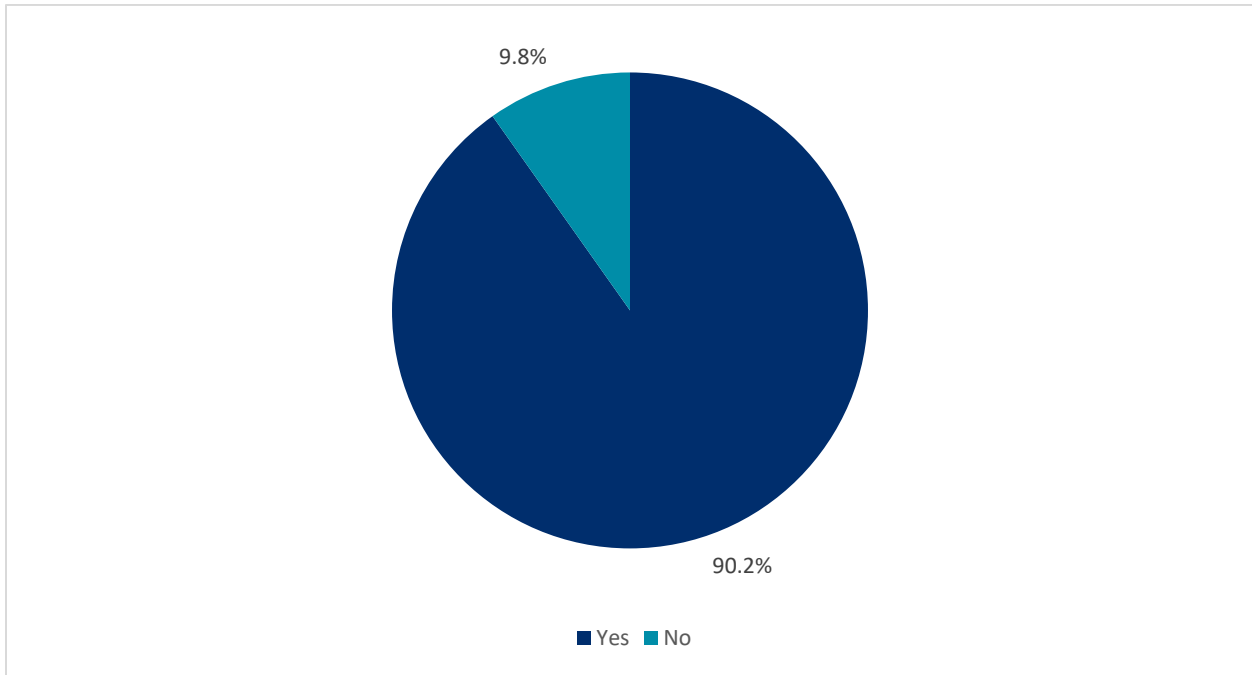


Note: n = 822.

Sneezing and Runny Nose in the Last 12 Months

Survey participants who said that their child has ever had a problem with sneezing or a runny or blocked nose were then asked, “In the last 12 months, has your child had a problem with sneezing or a runny or blocked nose when he/she DID NOT have a cold or the flu?” As illustrated below, among children who have ever had a problem with (non-cold/flu) sneezing or a runny or blocked nose, 90.2% have had this problem in the last 12 months.

Figure 6. Child Had a Problem with Sneezing/Runny/Blocked Nose (Without a Cold/Flu) in the Last 12 Months?

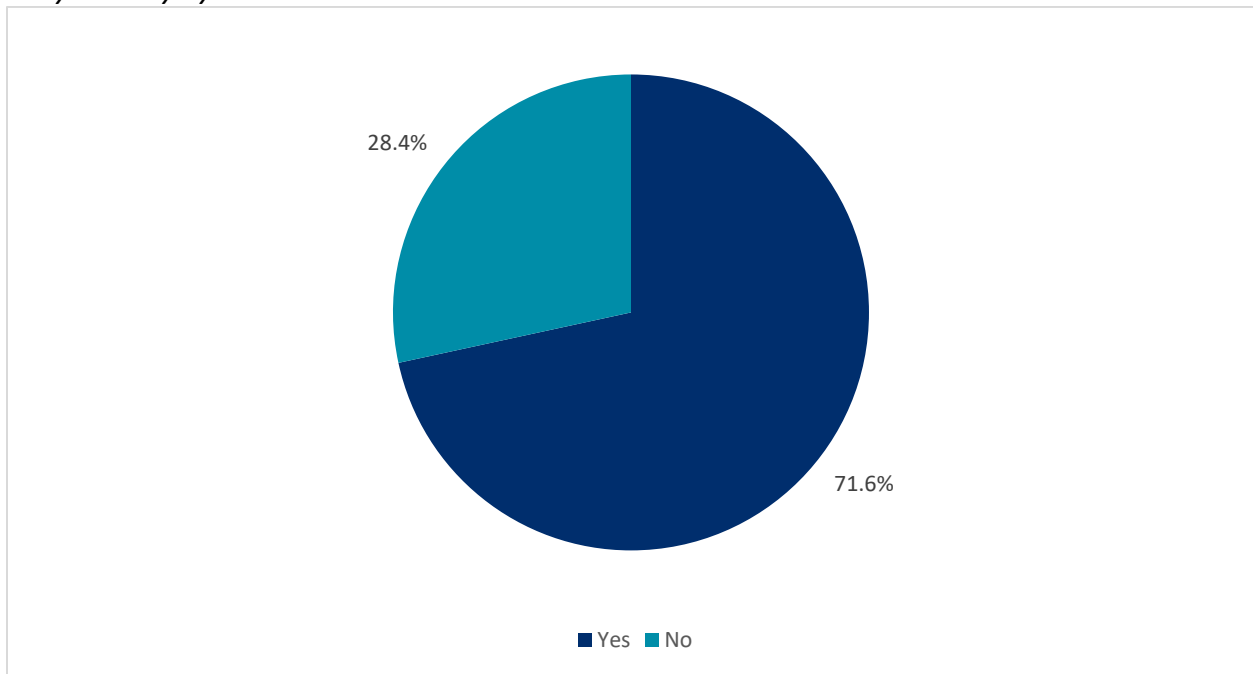


Note: $n = 369$.

Itchy-Watery Eyes in the Last 12 Months

Survey participants who said that their child has had a (non-cold/flu) problem with sneezing or a runny or blocked nose in the last 12 months were asked, “In the last 12 months, has this nose problem been accompanied by itchy-watery eyes?” As illustrated below, 71.6% of children with this nose problem have had this problem accompanied by itchy-water eyes in the last 12 months.

Figure 7. In the Last 12 Months, Problem with Sneezing/Runny/Blocked Nose Accompanied by Itchy-Watery Eyes?

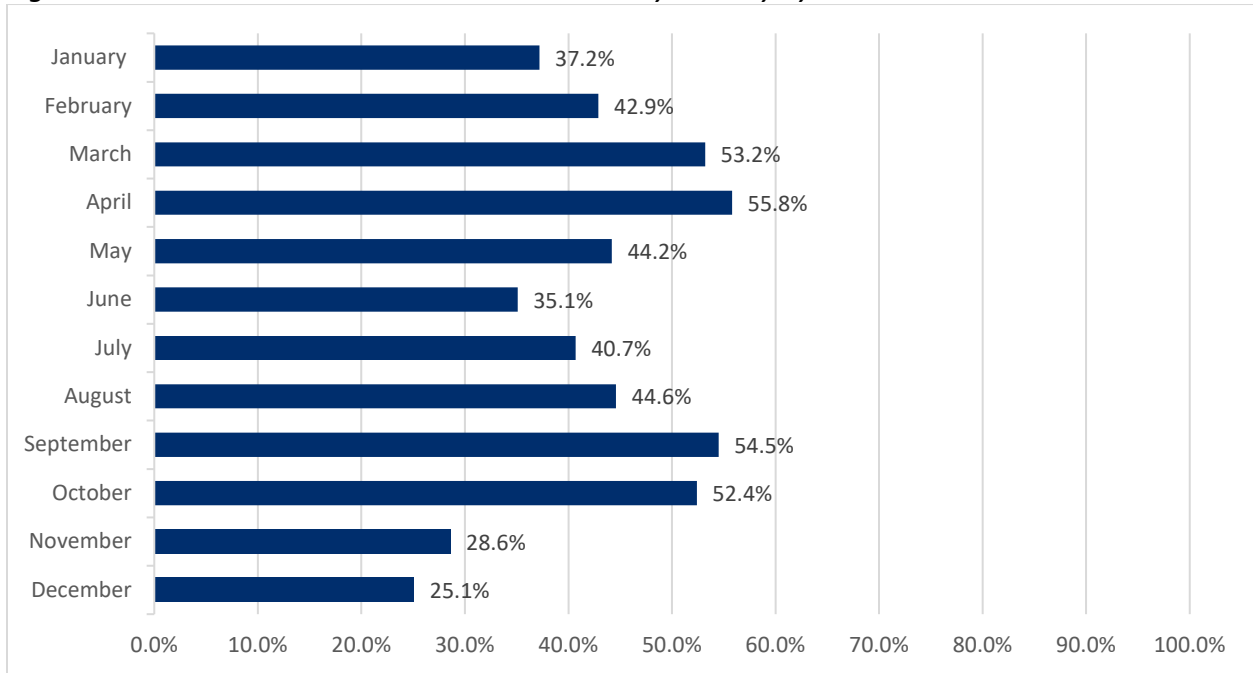


Note: $n = 324$.

Seasonal Occurrence of Symptoms

Survey participants who said that their child has had the nose problem accompanied by itchy-watery eyes in the last 12 months were then asked, “In which of the past 12 months did this nose problem occur?” They were presented with a list of months and instructed to “select all that apply.” As illustrated below, most children experience this nose problem during the months of March (53.2%) and April (55.8%) and during the months of September (54.5%) and October (52.4%).

Figure 8. Months in Which Nose Problem with Itchy-Watery Eyes Occurs

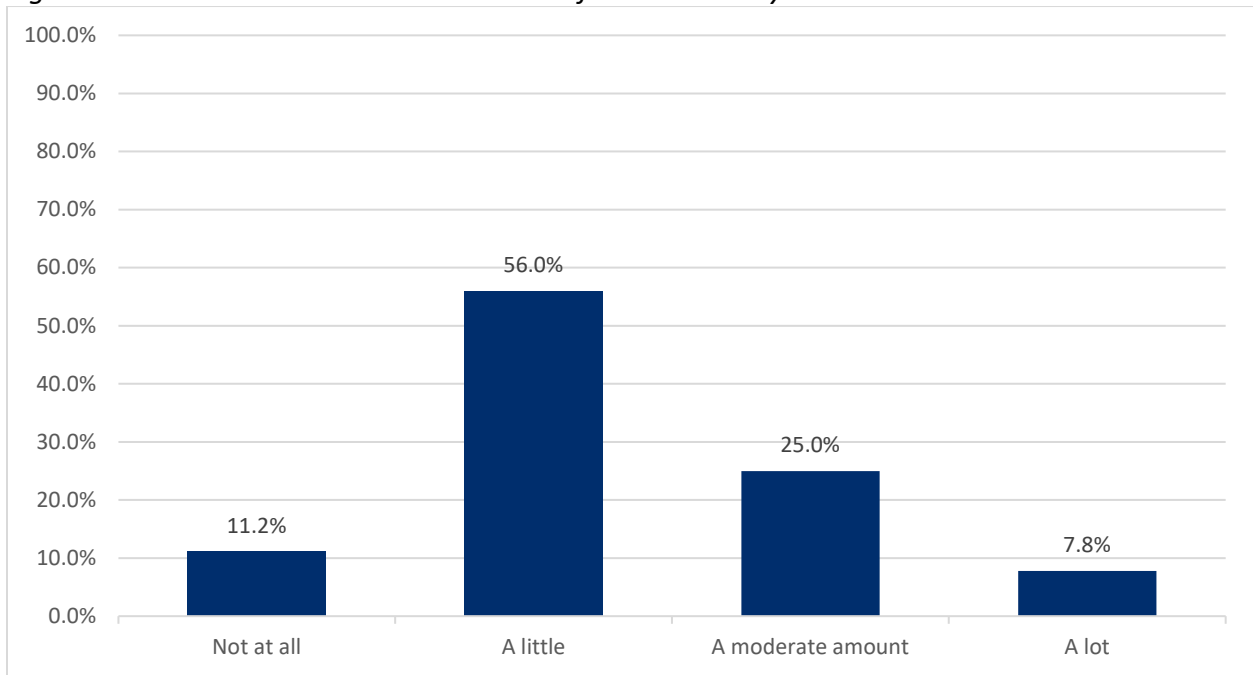


Note: $n = 231$.

Nose Problem Interfering with Daily Activities

Survey participants were asked “In the last 12 months, how much did this nose problem [with itchy-watery eyes] interfere with your child's daily activities?” As illustrated below, 11.2% said that the child’s nose problem does not interfere at all with their daily activities, 56.0% said the nose problem interferes “a little” with daily activities, 25.0% said the nose problem interferes “a moderate amount” with daily activities, and 7.8% said the nose problem interferes “a lot” with daily activities.

Figure 9. How Much Nose Problem Has Interfered with Daily Activities in the Last 12 Months

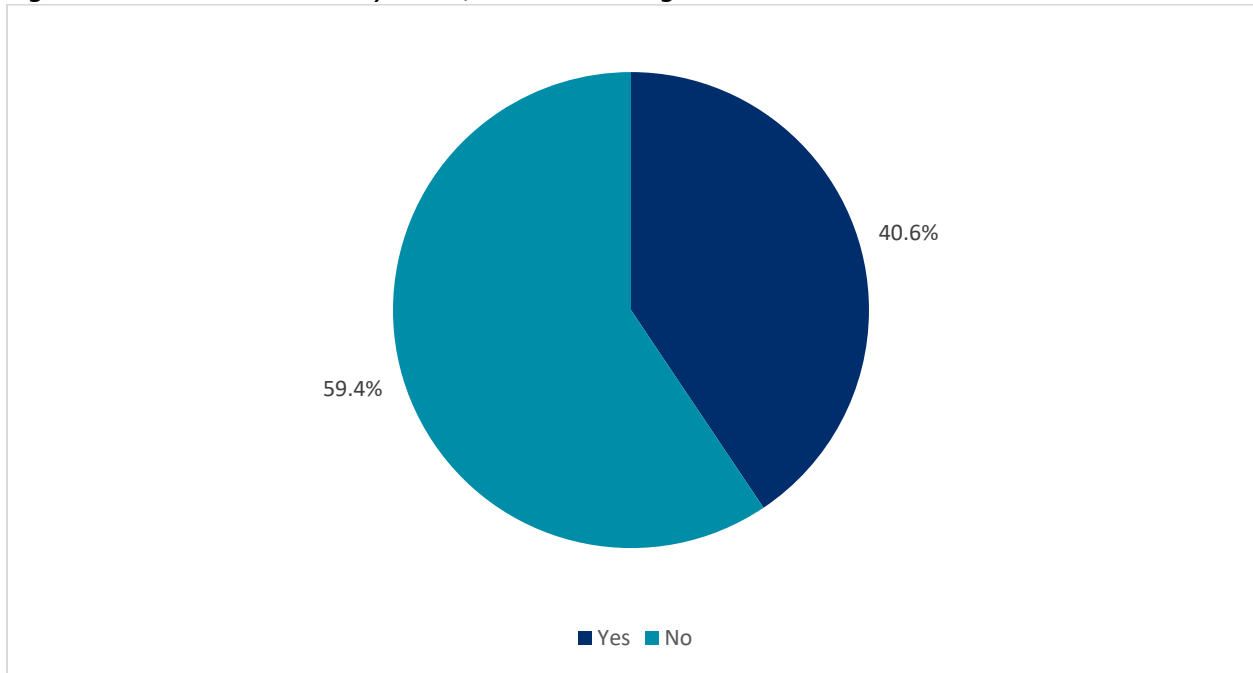


Note: $n = 606$.

Hay Fever

All survey participants were asked, “Has your child ever had hay fever (that is, seasonal allergies)?” As illustrated below, 40.6% have had hay fever/seasonal allergies, and 59.4% have not had hay fever/seasonal allergies.

Figure 10. Child Ever Had Hay Fever/Seasonal Allergies?

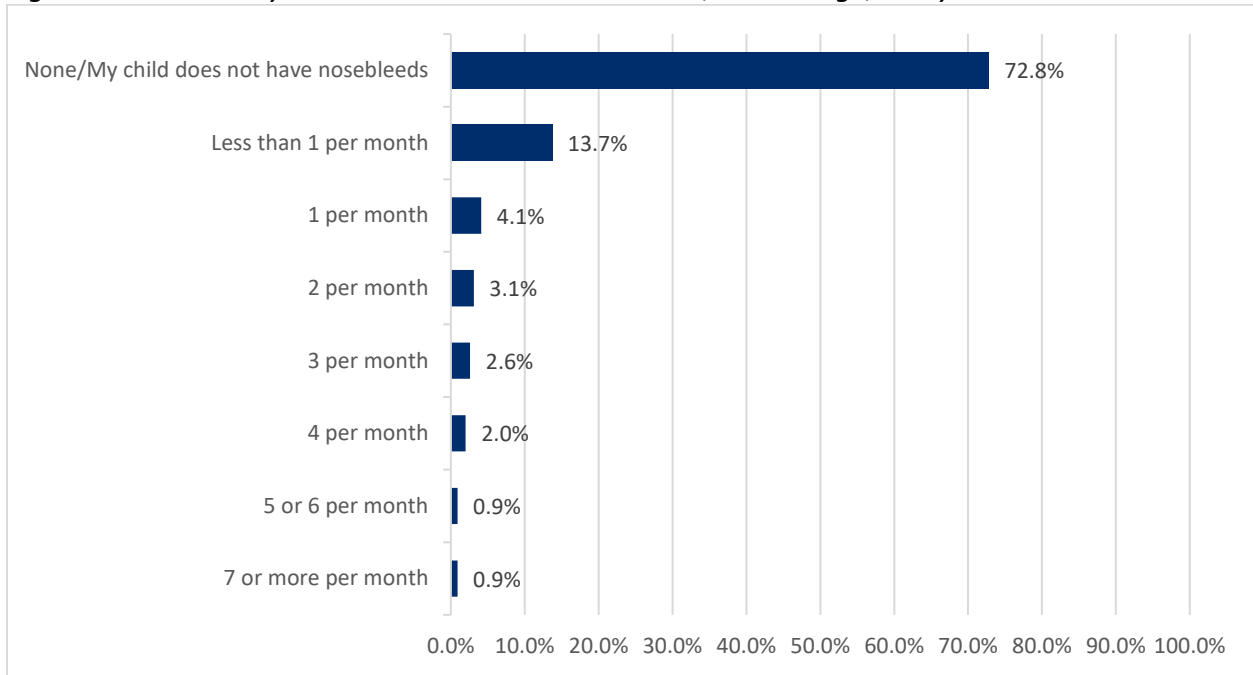


Note: $n = 802$.

Nosebleeds

All survey participants were asked, “How many nosebleeds does your child have, on average, every month?” As illustrated below, 72.8% of children do not have nosebleeds, and 27.3% do have nosebleeds. Further, 13.7% of children have less than one nosebleed per month, and 13.6% have one or more nosebleeds per month.

Figure 11. How Many Nosebleeds Does the Child Have, on Average, Every Month?



Note: $n = 805$.

Conclusion

This survey of nose and related symptoms has aimed to capture the prevalence of regional rhinitis and other symptoms. The vast majority of children surveyed come from underserved communities, with over ninety percent identifying as Hispanic/Latino and over half living below the federal poverty level.

About two-fifths of children have had a problem with sneezing or a runny or blocked nose in the last 12 months. Among those, almost three-quarters had these symptoms accompanied by itchy-water eyes. These symptoms occur most often twice per year (spring and fall) and, for the vast majority of children, interfere with the child's daily activities to some degree. In addition, over a quarter of children report having nosebleeds.