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**Project:** SARS-CoV-2 Research

**Title:** Analysis of SARS-CoV-2 Infection Rates in Families within the Finger Lakes Region of New York.

**Background:**

SARS-CoV-2 is the virus that causes COVID-19. In 2019, this virus caused a global pandemic with infections varying from no symptoms to very severe symptoms. Early in the pandemic, data suggested that children were infected with SARS-CoV-2 less frequently than adults, however, this was during a period of relative isolation when children were tested less frequently<sup>4</sup>. This period of low-frequency testing among children may have been the result of children experiencing much milder symptoms than adults<sup>2</sup>. However, more recent studies have shown children are infected at a similar rate as adults<sup>1</sup>. Furthermore, studies have noted that children's viral levels are just as high as adults<sup>3</sup>. In addition, viral load was not found to be correlated with symptom severity which means children who may experience more mild symptoms are just as likely to spread the disease as a child with minor symptoms<sup>5</sup>. We conducted an infection analysis evaluating rates of COVID-19 within families in the Finger Lakes region of New York to further investigate the COVID-19 infection rate among children and adults, as well as differences associated with sex, income, race, etc.

**Objective:**

- Conduct an infection analysis evaluating rates of COVID-19 infection in families within the Finger Lakes Region.
- Determine if COVID-19 infection occurs at the same frequency in children and adults.
- Determine the role of various socioeconomic factors on infection rates.

**Results:**

- Children were infected with COVID-19 at a rate of 31.75%. Similarly, adults were infected at a rate of 34.83%.
- The group with the lowest infection rate was 16-18 year-olds at a rate of 22.22%. While 2-4 year-olds had the highest infection rate at 39.53%.
- Blacks and Whites had the highest infection rate at 33%.
- Families where every member in the household was vaccinated, had only an 18.75% chance of every member becoming infected with COVID-19. In households where only some members were vaccinated, this rate was

much higher at 50%.

### **Conclusion:**

- Children and adults have similar COVID-19 infection rates at 31.75% and 34.83% respectively.
- The 2-4-year-old age group had the highest infection rate at 39.53%. This may be due to this age group not having the opportunity to be vaccinated, while also having more social interactions than 0-1-year-olds.
- Race and socioeconomic status appear to be risk factors for infection, with Whites, Blacks, and those of lower socioeconomic status having higher infection rates. Data on race is likely biased due to lower enrollment of minority populations to date.
- Only 18.75% of vaccinated families had every member in their household infected with COVID-19 while this rate was much higher at 50% for families where an index case was infected but not all members were vaccinated. This suggests vaccination may protect against household spread.
- Future serologic data will allow examination of immunologic correlates for infection and transmission of COVID-19.

### **References:**

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