Overview
Utilizing data from the RI-APCD, we analyzed whether neighborhood-level indices like the Social Vulnerability Index and Area Deprivation Index were significantly related with screening rates for breast, cervical, and colorectal cancers by ZIP code in Rhode Island.

Background
- Access to effective, routine cancer screening for breast, cervical, and colorectal cancer is critical in reducing the burden of disease.1
- The disparities in breast, cervical, and colorectal cancer mortality between communities can be partly explained by lack of access to screening.2,3,4
- Significant disparities in cancer screening exist due to individual socioeconomic factors, but we must also consider them at the interpersonal, community, and societal levels.5
- The Area Deprivation Index (ADI) and Social Vulnerability Index (SVI) are effective tools that rank socioeconomic disadvantage at the neighborhood-level.5,7

Methods
- The Rhode Island All-Payer Claims Database was used to calculate screening rates for breast, cervical, and colorectal cancers from 2016 to 2019 for each ZIP-code tabulation area in Rhode Island.8
- The ADI and SVI percentile scores were calculated at the ZIP code level using 2020 American Community Survey data through R-studio.
- ArcGIS was used to map the screening rates for breast, cervical, and colorectal cancer as well as the ADI and SVI percentile scores for each year.
- A tobit regression was used to study the association between SVI and ADI and cancer screening rates.

Results

![2019 Cancer Screening Rate Maps](image)

<table>
<thead>
<tr>
<th></th>
<th>Breast Cancer Screening Rate 2019</th>
<th>Cervical Cancer Screening Rate 2019</th>
<th>Colorectal Cancer Screening Rate 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall ADI</td>
<td>-0.000714 (95% CI [-0.001085, -0.000342])</td>
<td>0.000541 (95% CI [0.0000953, 0.000129])</td>
<td>-0.000807 (95% CI [-0.00117, -0.000443])</td>
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<tr>
<td>Overall SVI</td>
<td>-0.0015 (95% CI [-0.009744, -0.013311])</td>
<td>0.001682 (95% CI [0.005678, 0.051605])</td>
<td>-0.0015 (95% CI [-0.0110, -0.0133])</td>
</tr>
<tr>
<td>Per $100,000 Increase in Capita Income</td>
<td>0.127 (95% CI [0.0397, 0.214])</td>
<td>0.219 (95% CI [0.141, 0.297])</td>
<td>0.179 (95% CI [0.0966, 0.262])</td>
</tr>
<tr>
<td>% No High School Diploma</td>
<td>-0.212 (95% CI [-0.381, -0.0433])</td>
<td>-0.101 (95% CI [-0.285, 0.0827])</td>
<td>-0.272 (95% CI [-0.436, -0.108])</td>
</tr>
</tbody>
</table>

- Breast and colorectal cancer screening rates were significantly associated with both ADI and SVI as well as most variables of the SVI.
- Cervical cancer screening rates were only significantly associated with the ADI, so further studies are needed to identify effective predictors of screening rates at the neighborhood level.

Conclusion
- Screening rates for breast, cervical, and colorectal cancers are influenced by various sociodemographic factors that affect individuals' ability to seek care.
- Significant negative associations between screening rates and ADI and SVI suggest the importance of utilizing neighborhood-level indices to effectively target interventions for the most disadvantaged communities.

References