

BACKGROUND

Iron Deficiency is a Public Health Problem

- Iron deficiency (ID) is one of the most common and preventable micronutrient deficiencies worldwide¹
- ID can result from diverse etiologies such as insufficient iron intake, impaired absorption, and increased iron loss
- It carries numerous health consequences, including compromised cognitive development², impaired immune function³, fatigue⁴, and an increased risk of adverse maternal and child health outcomes^{5,6}
- Furthermore, it places a significant economic burden on the healthcare system due to increased healthcare utilization, hospitalizations, and productivity losses⁷
- In Canada, ID remains a significant health concern, with recent clinical observations at an Edmonton clinic suggesting an increase in its prevalence over the past decade
- Despite the recognition of ID as a prevalent health concern, there remains a lack of comprehensive and reliable longitudinal data on the trend of ID in Canada, specifically within the context of Alberta

HYPOTHESIS

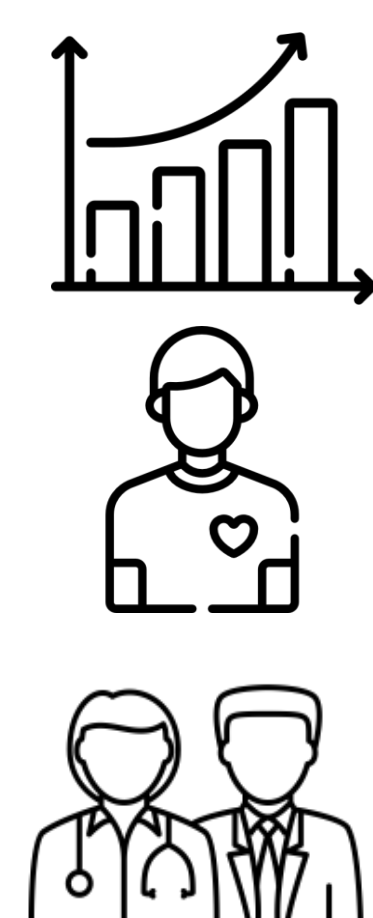
We hypothesized that there is an upwards trend in the iron deficiency prevalence in Alberta over the past decade based on clinical observation

METHODS

- We analyzed the electronic medical data obtained from the Southern Primary Care Research Networks (SAPCRn) to investigate the prevalence of ID in Alberta from 2010 to 2022
- ID was determined in accordance with the WHO guidelines which defines iron deficiency as a serum ferritin value below 15 µg/mL for individuals aged 6 and older
- Anemia was defined using WHO guidelines as hemoglobin values below 11.5 g/dL for 6-11 years of age, below 12 g/dL for 12-14 years of age, below 12 g/dL for women 15 years of age and older, and below 13 g/dL for men 15 years of age and older



Ferritin
(biomarker for iron deficiency)



Iron deficiency prevalence
From 2010-2022

Patient characteristics:
Age, Sex, Rural vs. Urban,
Material deprivation

Provider characteristics:
Sex, Rural vs. Urban,
Academic vs. Community

FINDINGS

Figure 1. Decreasing trend of ID prevalence with paradoxical increase in anemia prevalence in Alberta

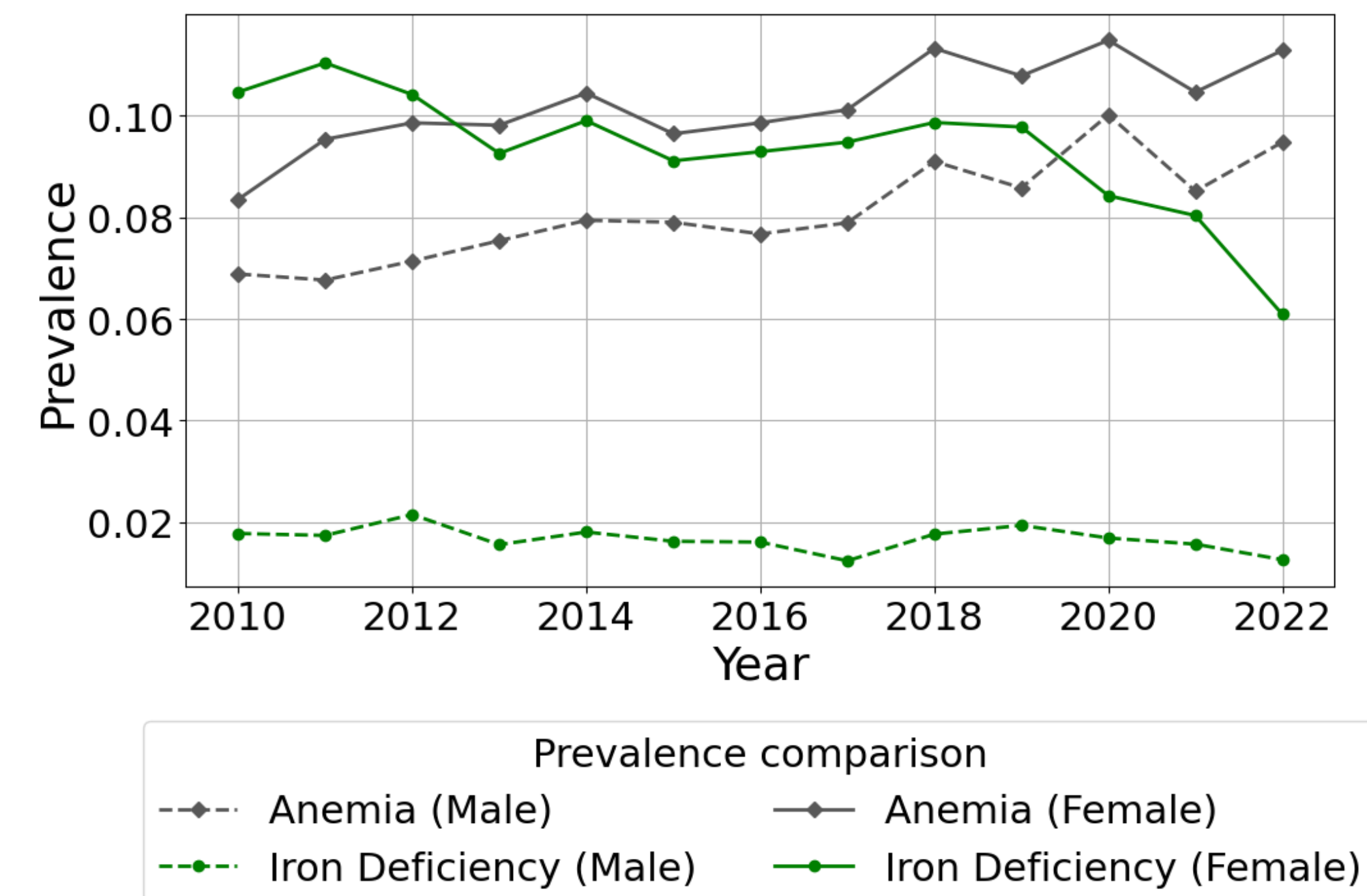


Figure 3. ID prevalence is increased in individuals with a higher estimated material deprivation

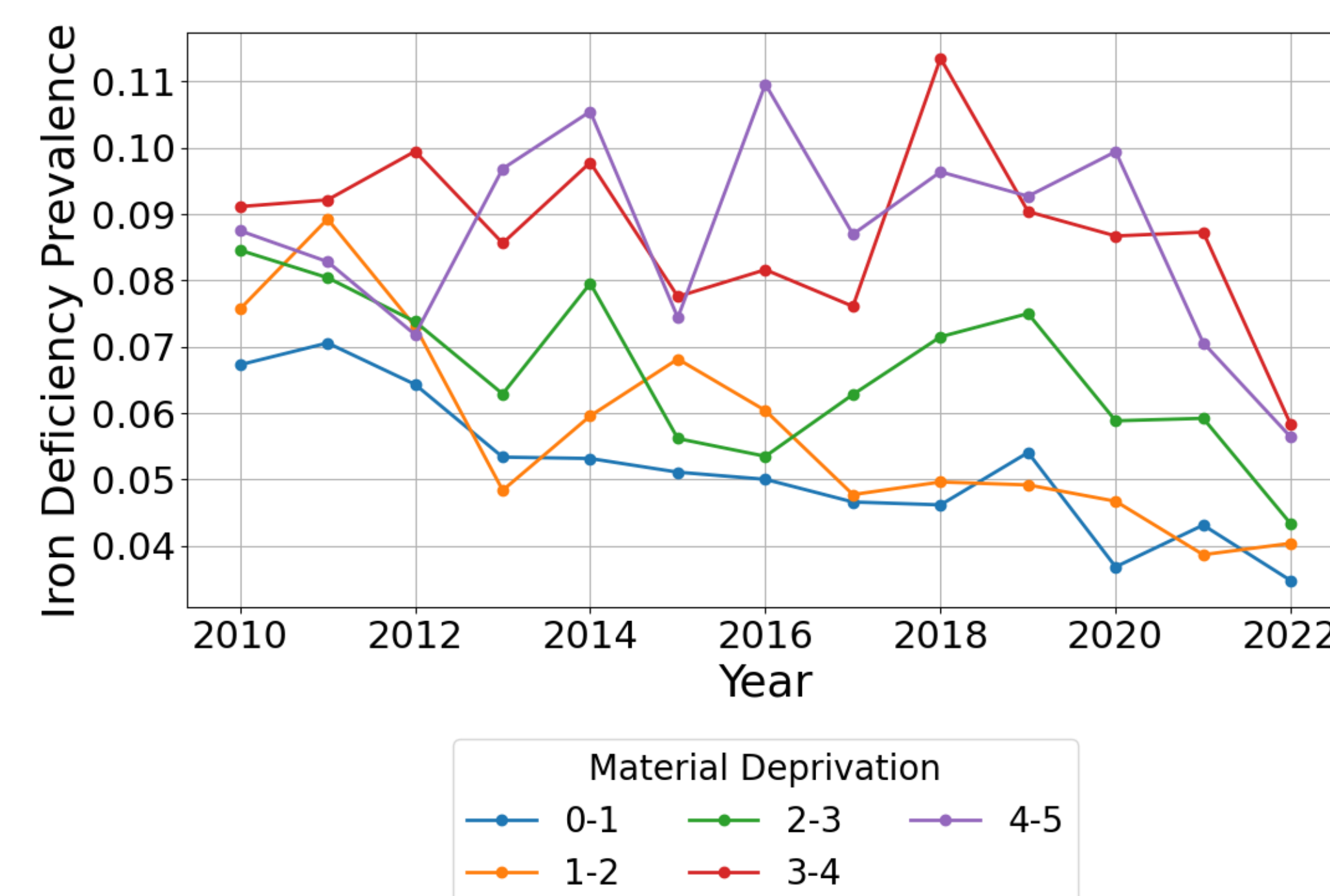
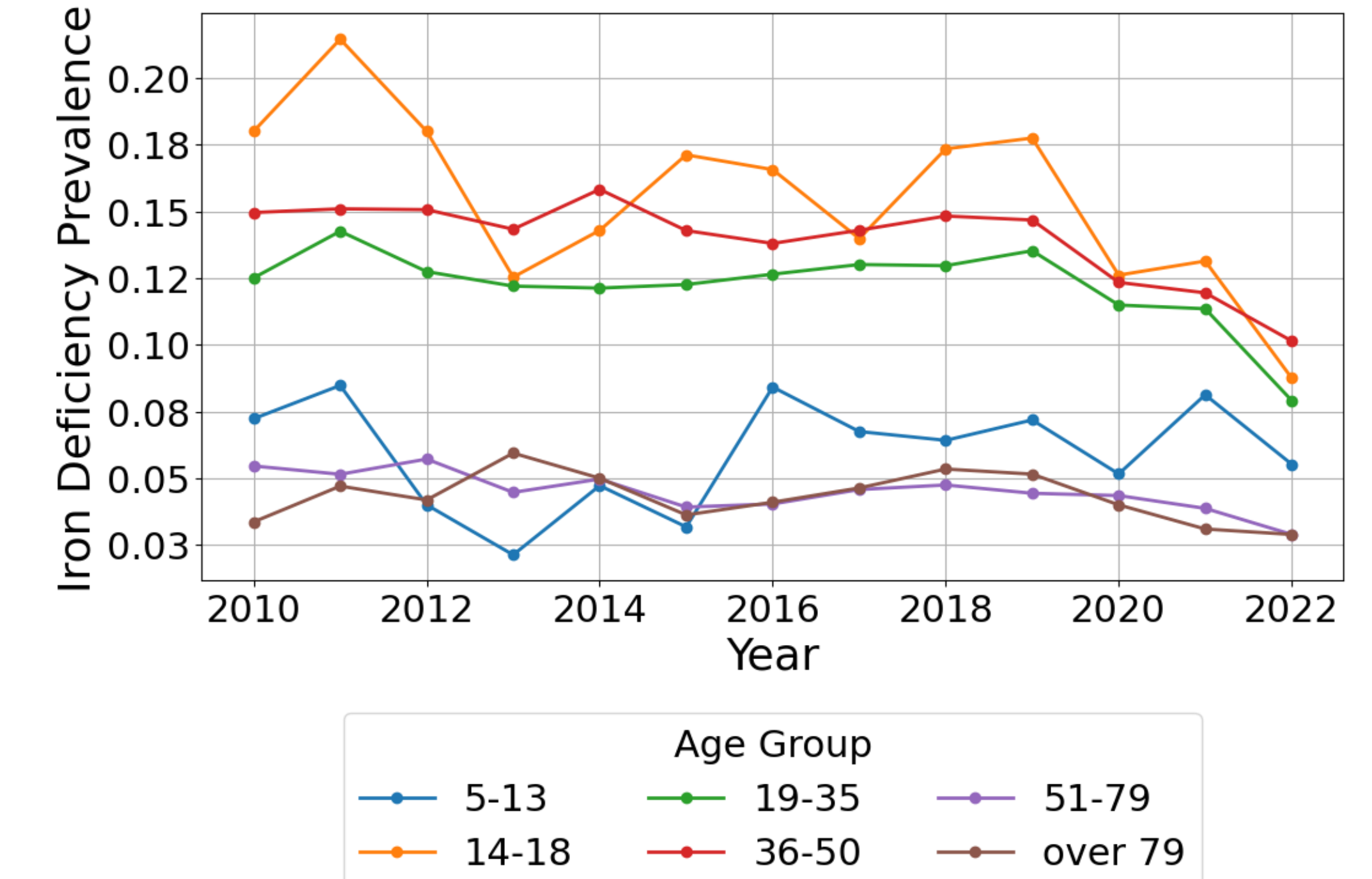
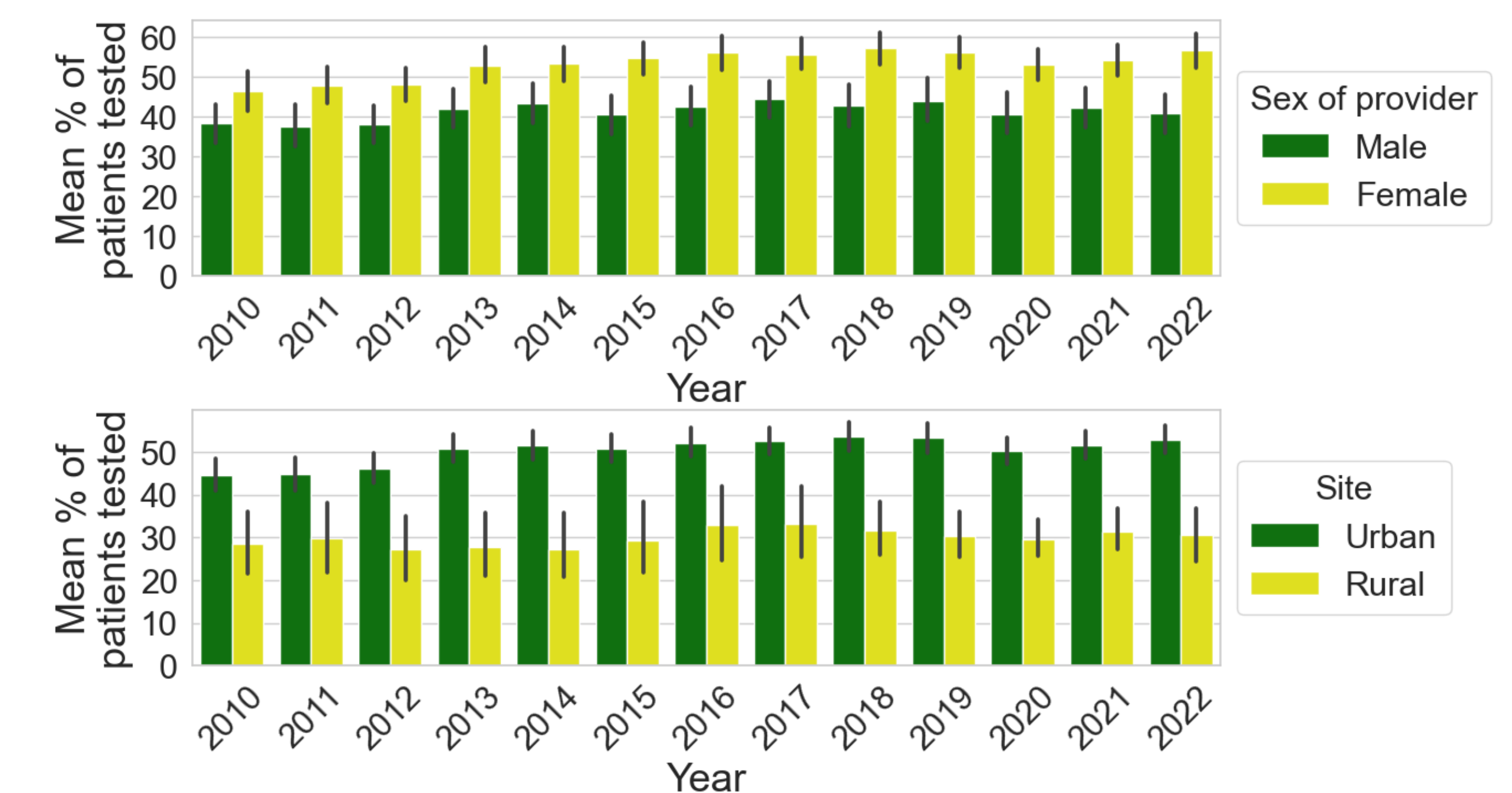


Figure 2. Women of reproductive age (14-50) have a higher ID prevalence compared to other age groups



Patterns of Ferritin Testing: Provider Practices in Focus
Figure 4 and 5. Provider's female sex and urban location are associated with a higher % of ferritin testing



DISCUSSION

- Contrary to our initial hypothesis, our findings revealed a trend of decreasing ID prevalence, particularly during the years affected by the pandemic (2020-2022)
- We observed a paradoxical increase in the prevalence of anemia
 - This divergence raises critical questions about the underlying causes of anemia, suggesting that factors other than ID, such as changes in dietary patterns, healthcare access, or other micronutrient deficiencies, may have played a role in the increase
- Despite this decline, the burden of ID remains substantial, especially among specific groups. Notably, our findings highlight the higher prevalence of ID among women of reproductive age and individuals with high estimated material deprivation, suggesting a need for targeted interventions for these vulnerable populations
- The likelihood of ferritin testing is higher among providers who are female and located in urban sites, which may be due to the patient demographic they serve or testing practices