



Adherence to Anti-tubercular Medications in the United States: Insights from MarketScan Data: 2016 to 2021

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Background:

- **Tuberculosis (TB)** is a widespread infectious disease and remains a major global public health concern [1].
- Ensuring adherence to TB treatment is critical to reducing disease transmission and preventing the emergence of multidrug-resistant TB strains [2].

Aim:

- To evaluate adherence to anti-tubercular medications among individuals in the United States.

Methods:

Research Design:

Retrospective cohort study

Data Source:

Merative MarketScan® Databases (Commercial and Medicaid)

Study Period:

2016–2021

Anti-Tubercular Medications Assessed:

Isoniazid, Rifampin, Ethambutol, and Pyrazinamide

Adherence Measurement:

Adherence to anti-tubercular medications was defined as a Proportion of Days Covered (PDC) $\geq 80\%$.

Statistical Analysis:

Logistic regression models were used to examine associations between adherence and key predictors, including age, sex, race, insurance type, and geographic region.

Patients with ICD codes for pulmonary TB (A15.x)



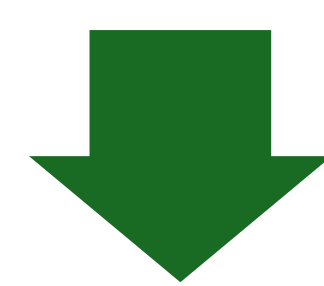
Exclude patients ≤ 18 years, and those with ICD codes for HIV, Meningococcal meningitis, Leprosy, and Pregnancy



Retain patients with NDC codes for Isoniazid, Rifampin, Ethambutol, and Pyrazinamide



Exclude patients without continuous enrollment for 12 months before and 6 months after the index date (date of first claim for the anti-tubercular drugs)



Calculate adherence based on (PDC)

$$\text{PDC} = \frac{\text{Total Number of Days Covered by Medication}}{\text{Total Number of Days}} \times 100$$

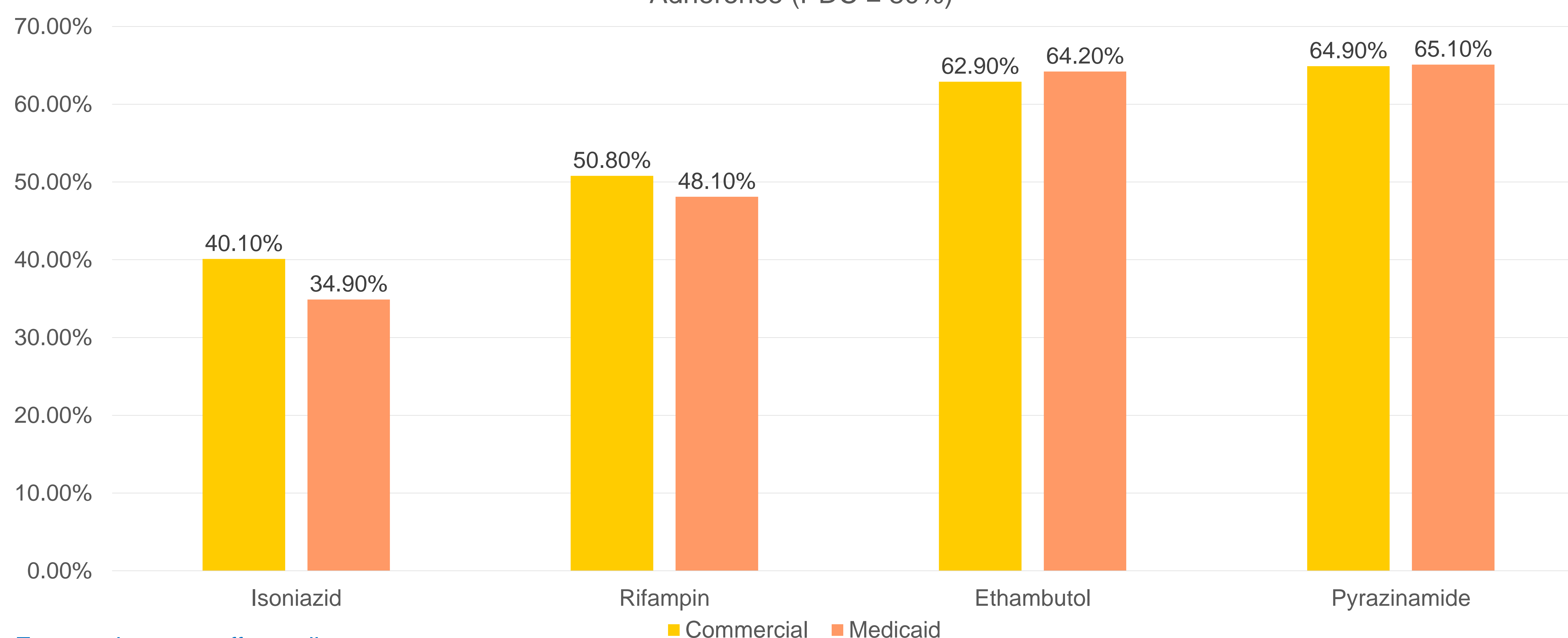
Results

- Commercial database: 197 patients
- Medicaid database: 106 patients

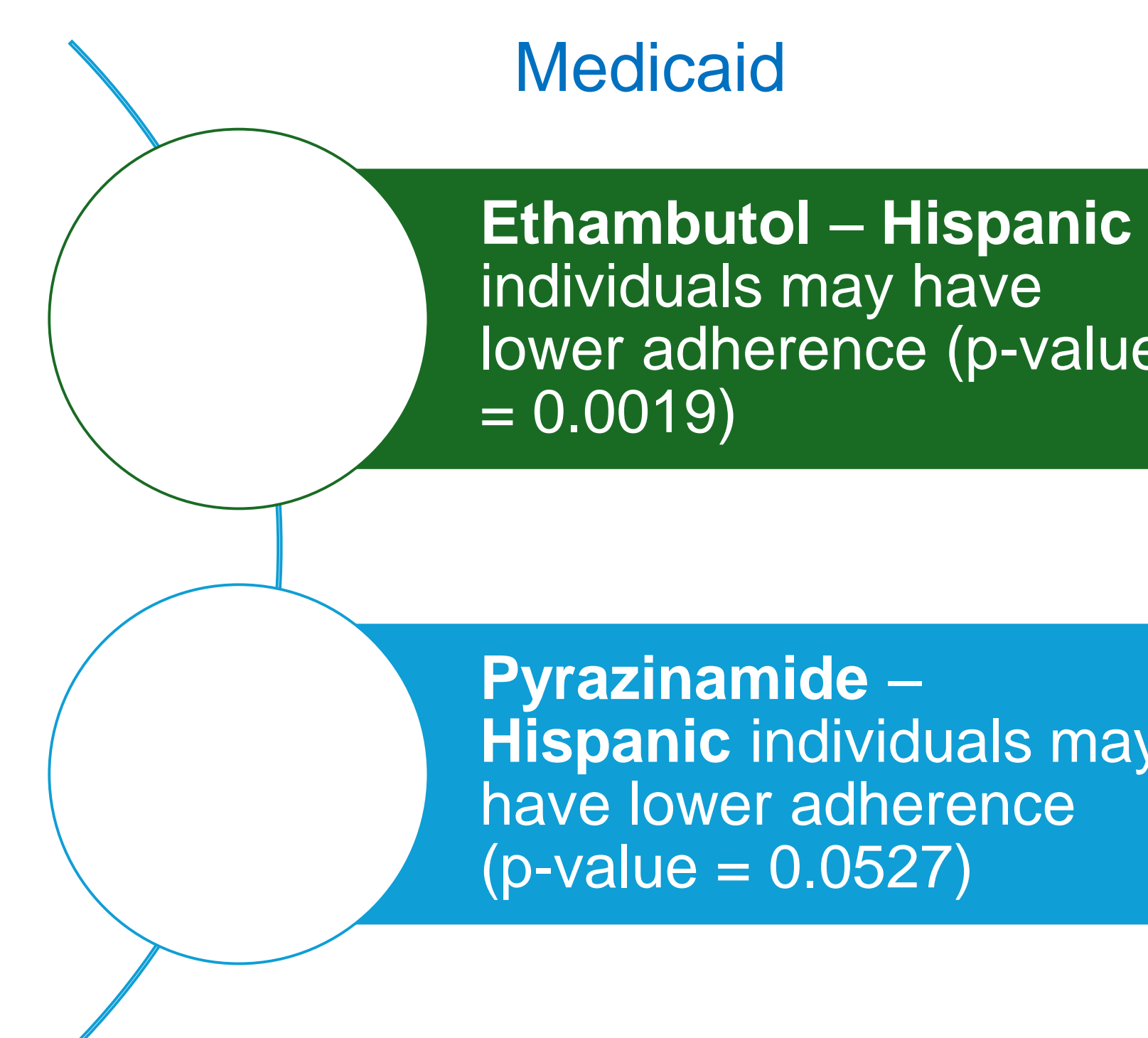
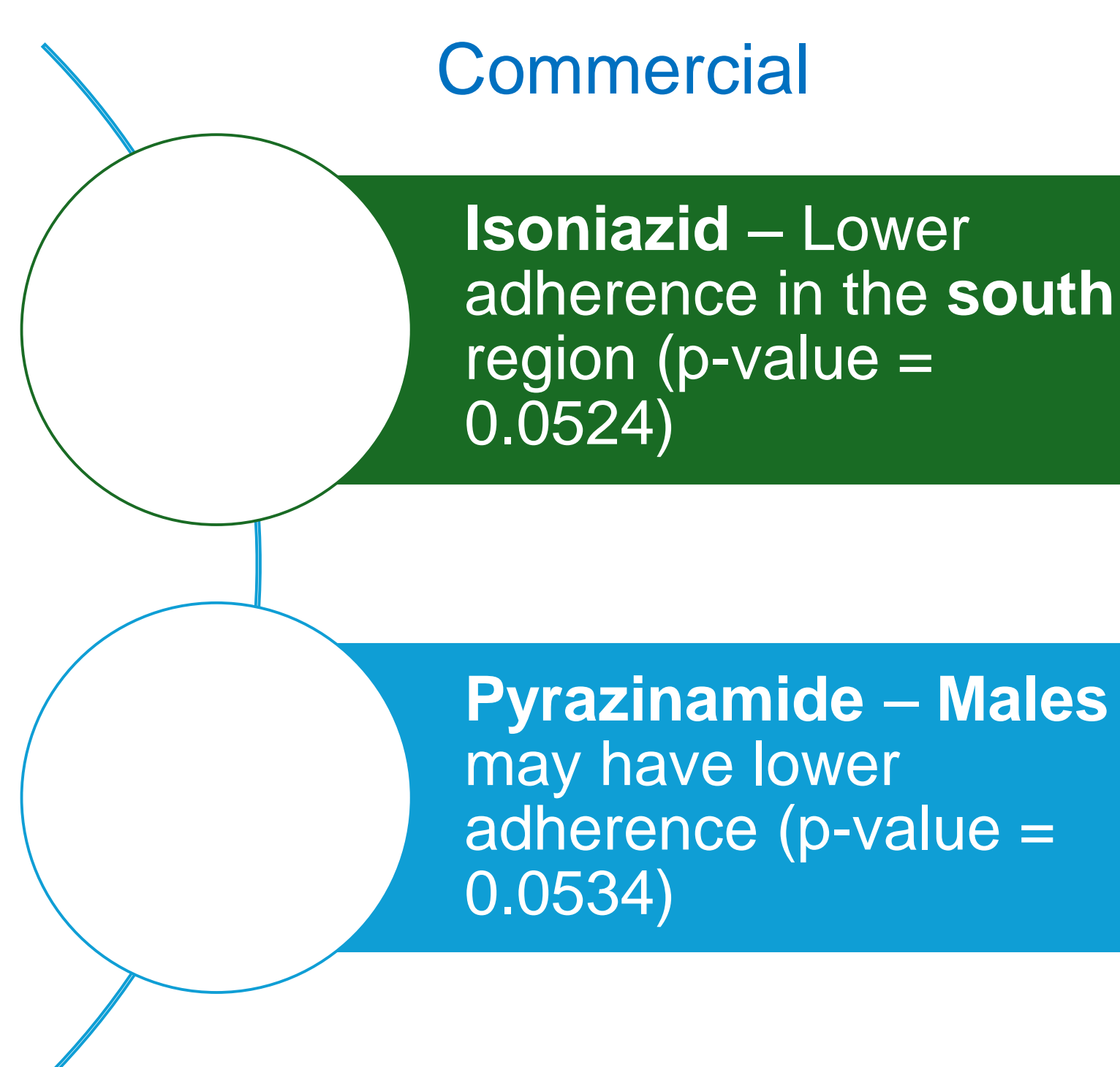
- Age
Commercial - 42.85 ± 12.17
Medicaid - 53.37 ± 19.33

- Sex
Commercial – Male (52.1%), Female (47.9%)
Medicaid – Male (58.6%), Female (41.4%)

Adherence (PDC $\geq 80\%$)



Factors that may affect adherence



Conclusion

- **Overall adherence** to anti-tubercular medications is **not optimal**.
- Adherence is slightly **higher in the commercially insured population** compared to the Medicaid-insured population.
- Adherence to ethambutol and pyrazinamide is higher, suggesting that **adherence in the intensive phase may be higher** and decreases in the continuation phase, as time wears on.
- Adherence may be influenced by region and sex in the commercially insured population.
- Adherence to ethambutol and pyrazinamide is lower in Medicaid-insured Hispanic individuals.

Limitations

- **Lack of prescription information** necessitates assumptions regarding prescribed therapy, which may lead to uncertainty.

References

- [1] Alsayed SSR, Gunosewoyo H. Tuberculosis: Pathogenesis, Current Treatment Regimens and New Drug Targets. Int J Mol Sci. 2023;24(6). Epub 20230308. doi: 10.3390/ijms24065202. PubMed PMID: 36982277; PubMed Central PMCID: PMC10049048.
- [2] TB 101 For Healthcare Workers. Available from: <https://www.cdc.gov/tb/webcourses/TB101/page16487.html#:~:text=In%20order%20to%20cure%20TB,to%20continue%20taking%20several%20medications>