

Real-World Trends in Hospitalizations for Overt Hepatic Encephalopathy and Associated Costs Among Commercially Insured Adults in the United States

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BACKGROUND

- Cirrhosis is associated with significant morbidity and mortality, leading to increased clinical and economic burden, especially in inpatient care¹
- Understanding the trends in epidemiology, treatment, and burden of cirrhosis and overt hepatic encephalopathy (OHE) can help guide healthcare policy and resource allocation

OBJECTIVE

To describe prevalence trends of OHE in commercially insured adults with cirrhosis, OHE treatment, hospitalization rates, liver transplant rates, and associated costs in the United States (US) from 2006-2020

METHODS

- Data source: MarketScan® Commercial Claims Database (2006-2020)
- Adults (18-64 years) with cirrhosis were identified based on literature and medical expert inputs¹, which included the presence of ≥2 diagnoses of cirrhosis¹ or cirrhosis-related complications² (including varices, hepatorenal syndrome, OHE, spontaneous bacterial peritonitis)
- Year-over-year (YOY) change in cirrhosis prevalence from 2006 to 2020 was calculated
- Among patients with cirrhosis**, the YOY change in rates of OHE and rates of medication use (lactulose only, rifaximin 550mg BID [± lactulose]) were evaluated from 2006 to 2020
- Among patients with OHE**, the rates and costs of OHE hospitalizations (i.e., inpatient stay [IP] with OHE as primary diagnosis [PDx]) and rates of liver transplants were evaluated from 2006 to 2020
- Sensitivity analyses were performed for various definitions for OHE hospitalizations based on different presentations of the OHE diagnosis (Dx) in claims (i.e., any diagnosis position, primary or first diagnosis [Dx1], and any position)
- Costs (2020 USD) were adjusted for inflation using the medical consumer price index

¹ Cirrhosis was defined as ICD-9 571.2, 571.5, 571.6 or ICD-10 K70.3, K71.7, K74.3, K74.4, K74.5, K74.6; ² Varices was defined as ICD-9 456.0, 456.1, 456.2 or ICD-10 I85, I86.4; hepatorenal syndrome was defined as ICD-9 572.4 or ICD-10 K76.7, K91.83; OHE was defined as ICD-9 572.2 or ICD-10 K72.01, K72.11, K72.90, K72.91, K70.41, K71.11; spontaneous bacterial peritonitis was defined as ICD-9 567.23 or ICD-10 K65.2

RESULTS

Figure 1. Increase in diagnosed cirrhosis among commercially insured adults in the US over time

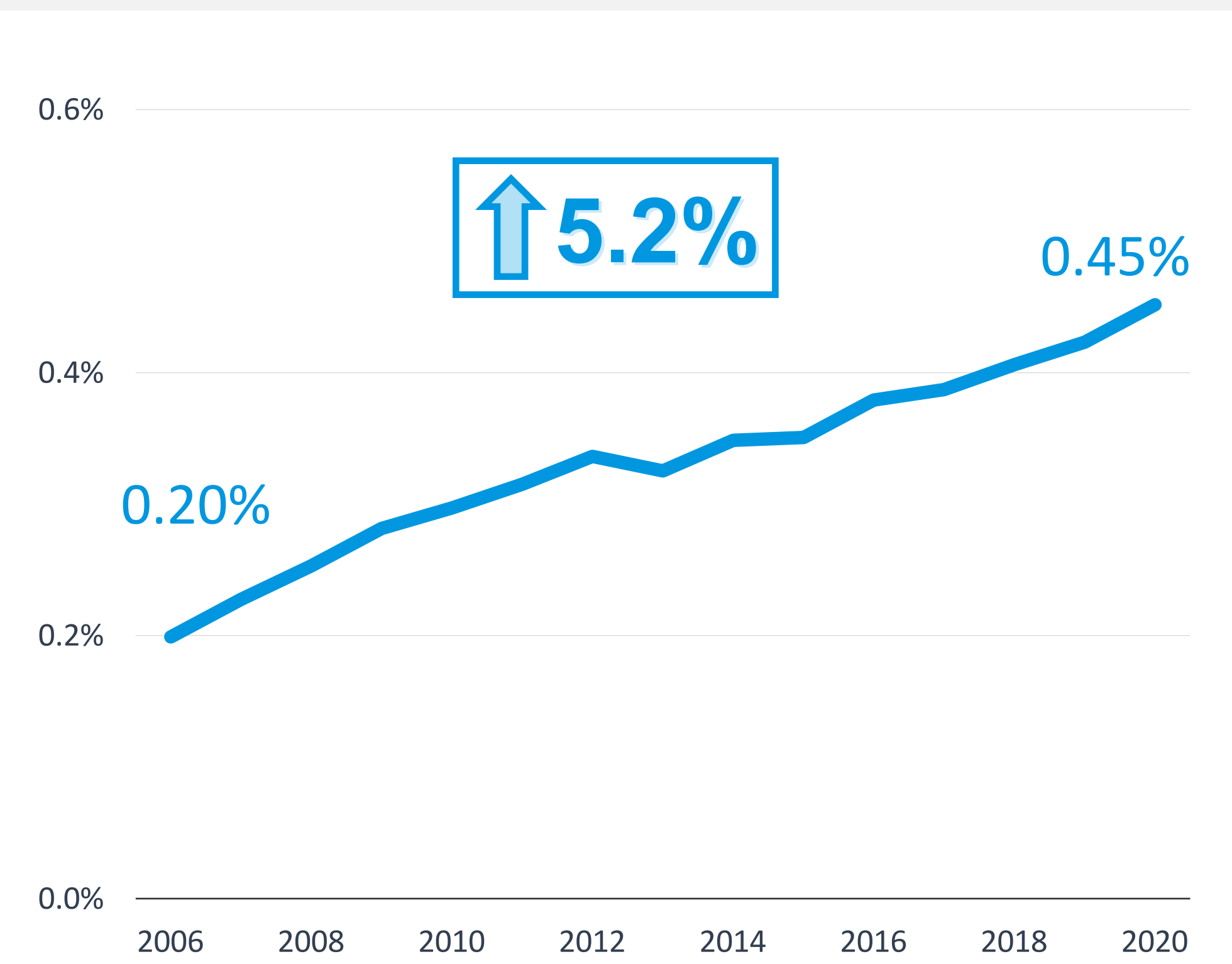


Figure 2. Increase in rates of OHE among commercially insured adults with cirrhosis in the US over time

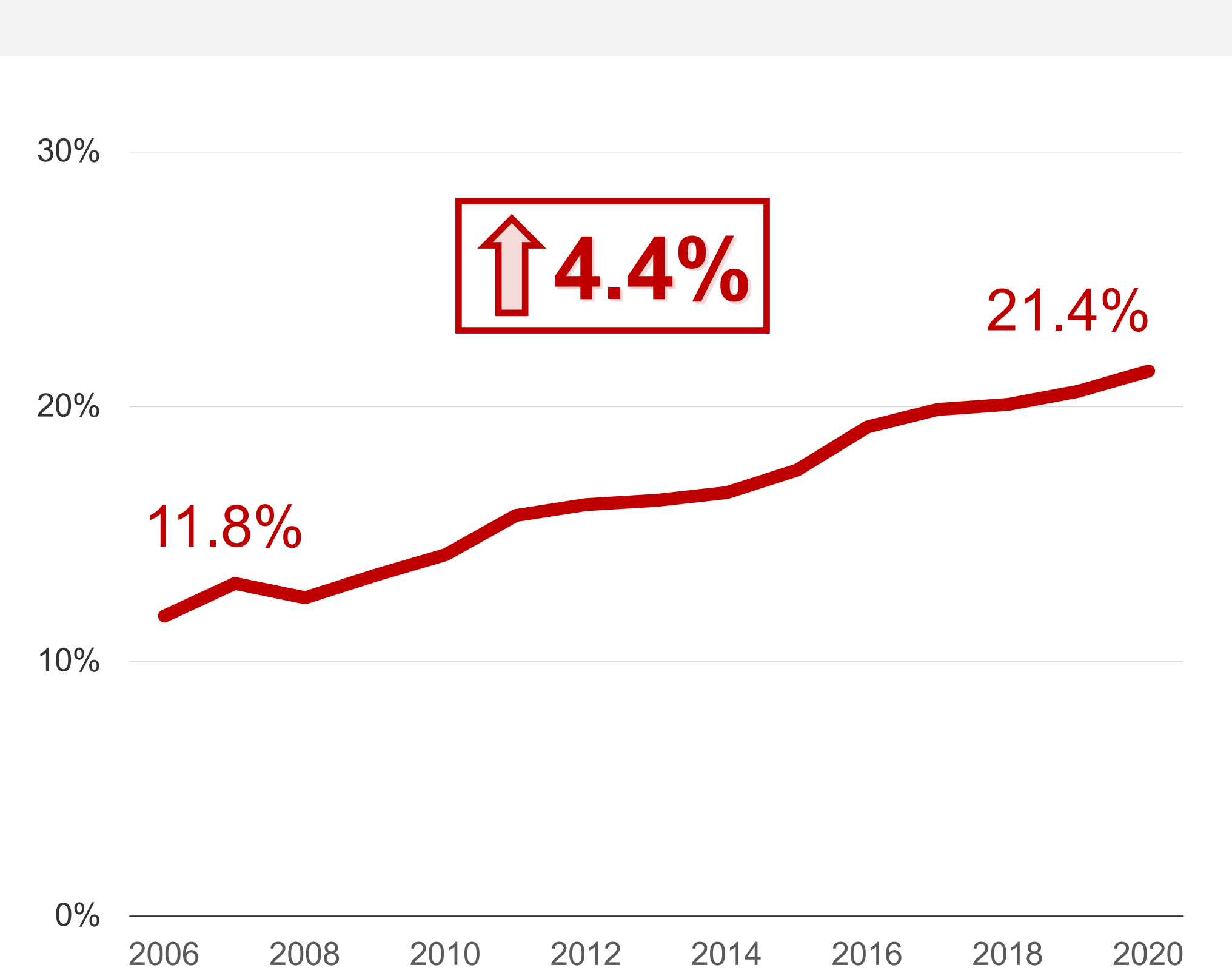
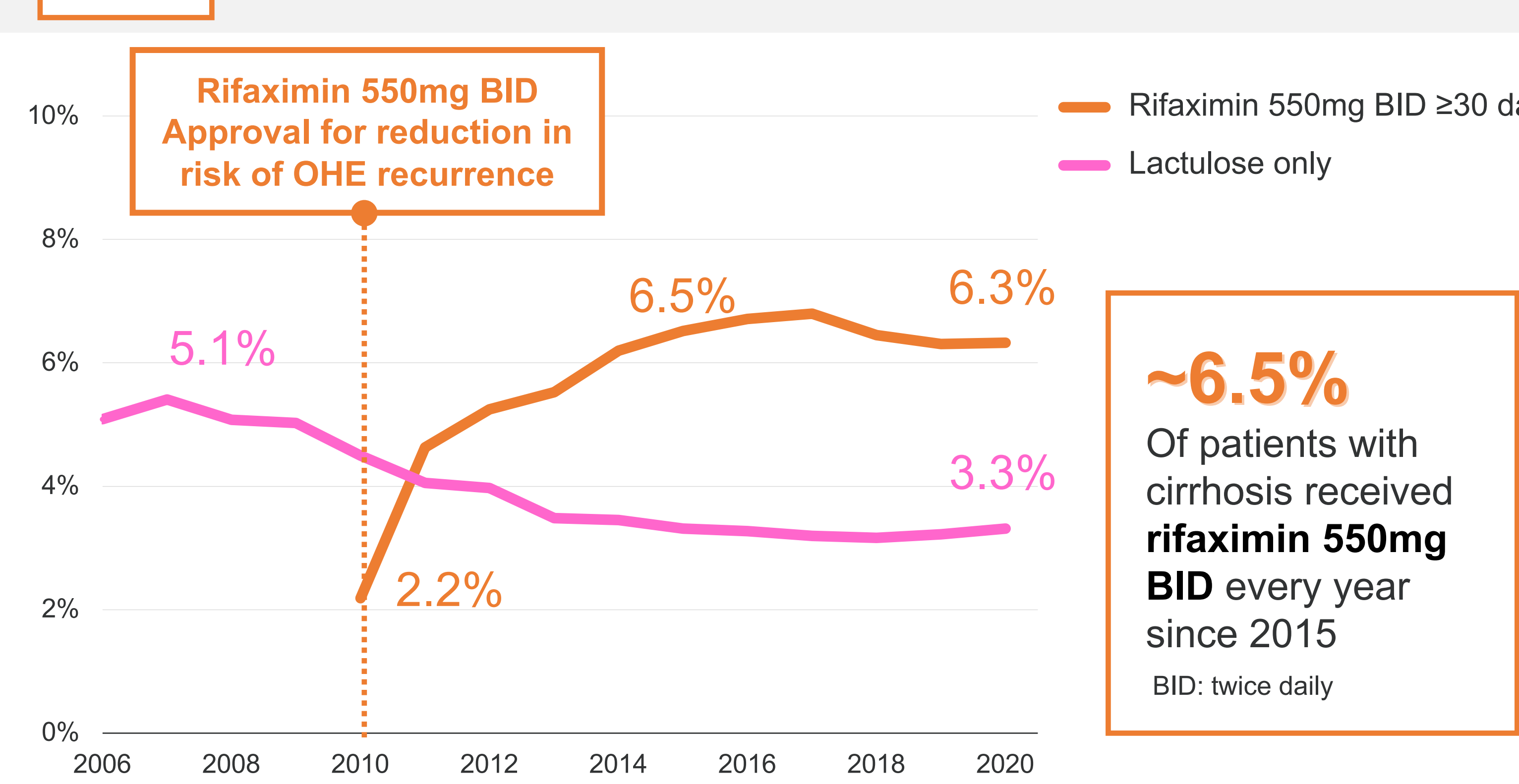


Figure 3. Rates of medication use among commercially insured adults with cirrhosis in the US over time



CONCLUSIONS

After its approval in 2010, the rate of rifaximin 550mg BID use increased

The rate of OHE hospitalizations declined while associated costs remained stable from 2006-2015 and more than doubled since 2015, resulting in an estimated total cost of OHE hospitalizations of ~\$800 million (2020)

One potential factor of increased costs of OHE hospitalizations is the increase in rates of liver transplants during OHE hospitalizations since 2015

The observed decline in OHE hospitalizations may be associated with changes in guidelines, increased disease awareness, and introduction of treatments targeting OHE recurrence

- The prevalence of cirrhosis increased by **5.2% YOY** from 2006-2020 (p<0.001)

- The rate of OHE among patients with cirrhosis increased by **4.4% YOY** from 2006-2020 (p<0.001)

- From 2006, the rate of lactulose use only (i.e., without rifaximin of any dosage) steadily decreased among patients with cirrhosis

Figure 4. Rates of OHE hospitalizations among patients with OHE in the US over time

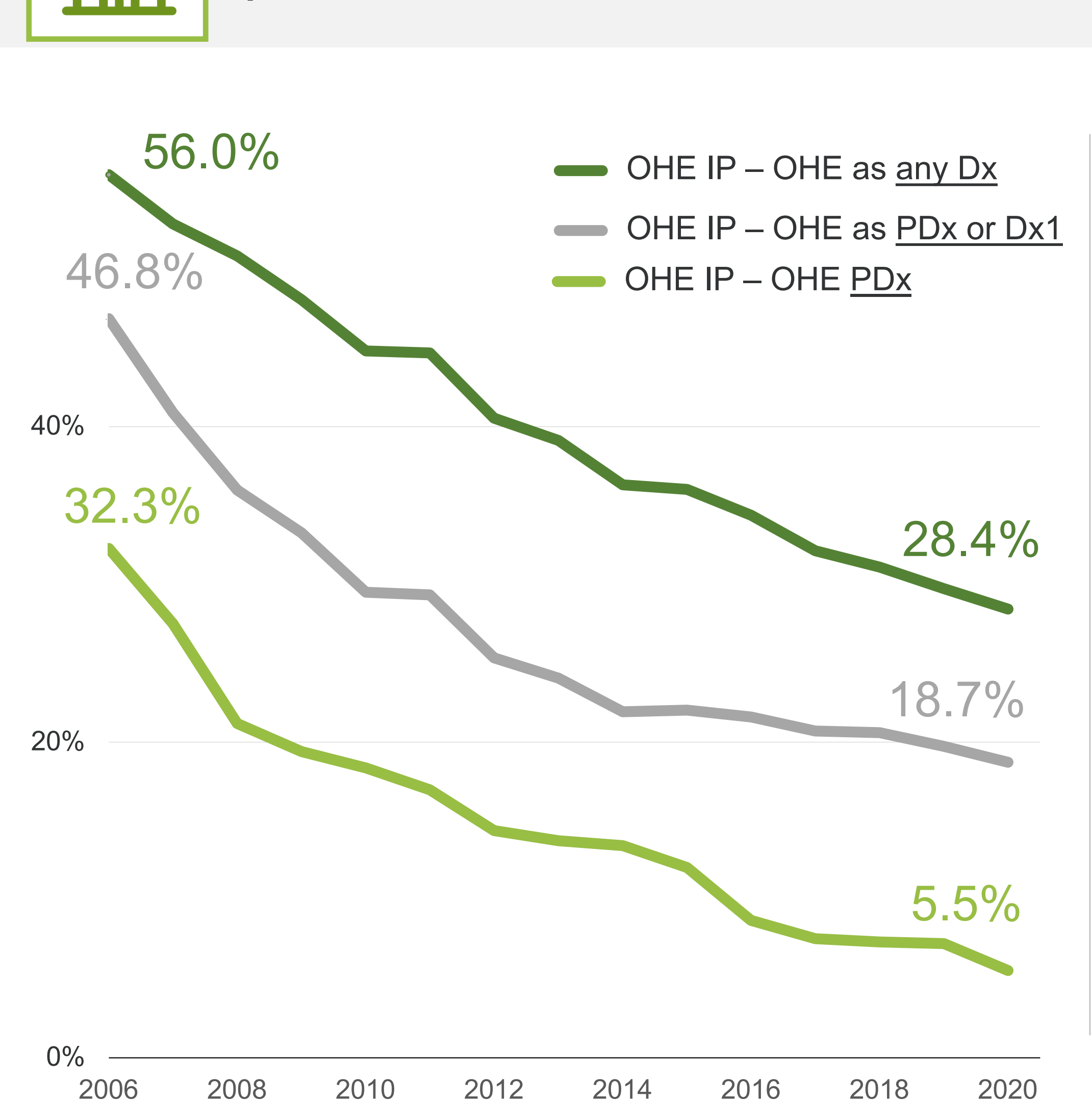


Figure 5. Costs of OHE hospitalizations among patients with OHE in the US over time

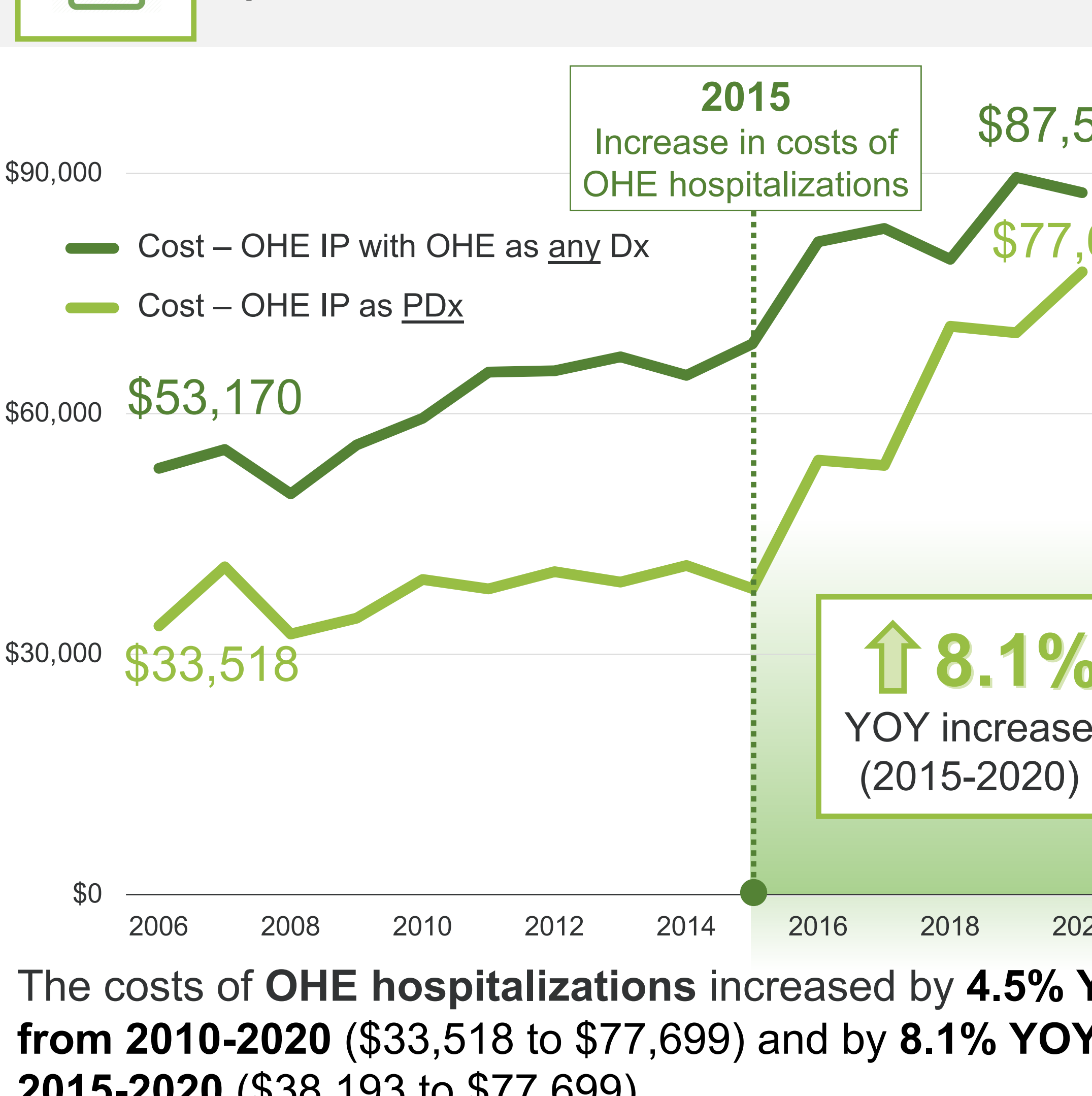
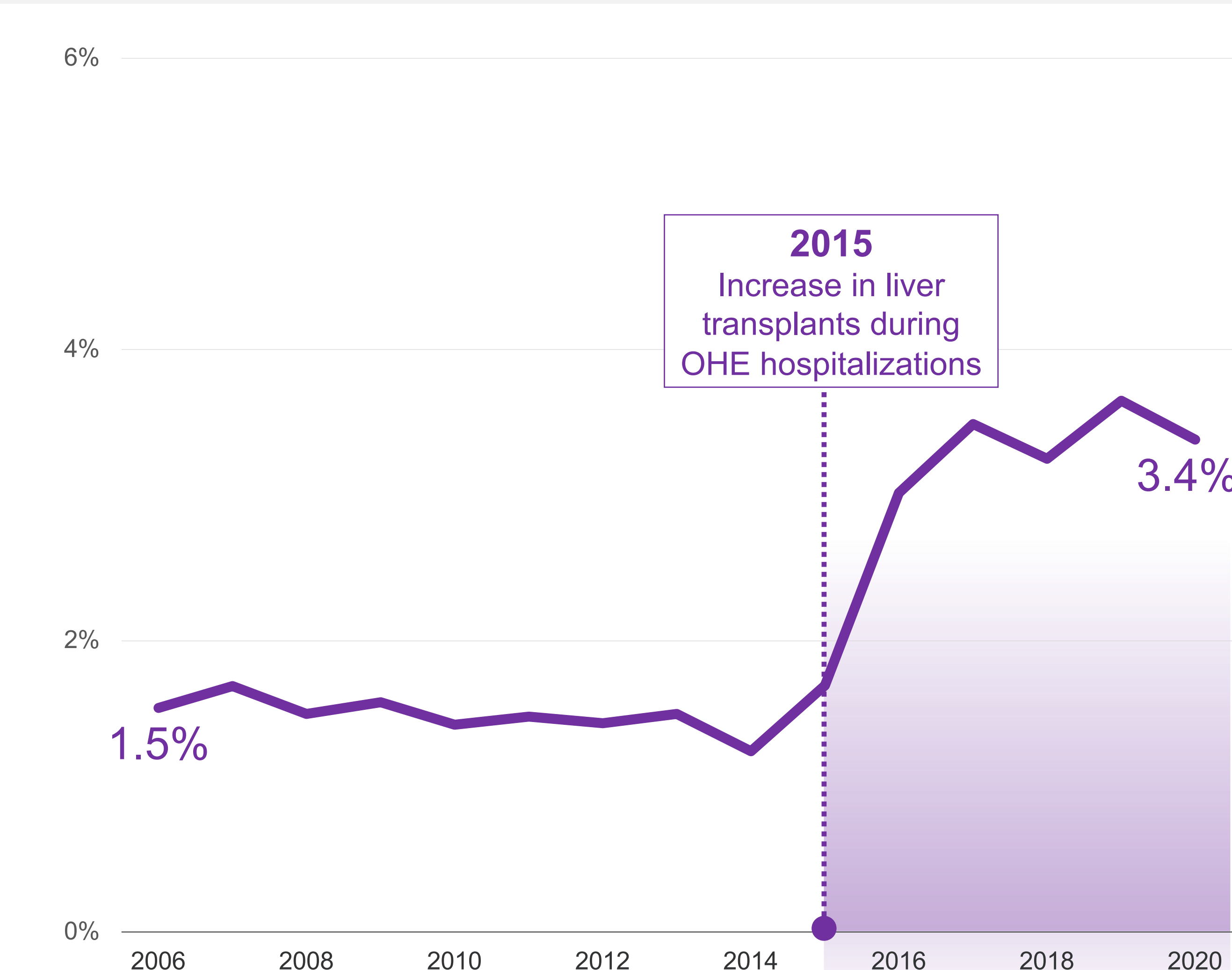


Figure 6. Rates of liver transplants during OHE hospitalizations among patients with OHE in the US over time



- Regardless of definition, the rate of OHE hospitalizations decreased from 2006 to 2020

- The costs of OHE hospitalizations increased by **4.5% YOY** from 2010-2020 (\$33,518 to \$77,699) and by **8.1% YOY** from 2015-2020 (\$38,193 to \$77,699)
- The average monthly costs of rifaximin 550mg BID increased by **5.9% YOY** from 2010-2020 (\$1,398 to \$2,389) and by **4.5% YOY** from 2015-2020 (\$1,811 to \$2,389; data not shown)

- The rate of OHE hospitalizations with a liver transplant increased since 2015

LIMITATIONS

- This claim-based study is subject to common limitations including billing inaccuracies and missing data
- Definition of OHE was based on literature and clinical input, but no unanimous consensus on ICD code exists from 2015 through the analysis period
- Results pertain to a commercially insured population and may not be representative of the US adults with public or no health insurance

REFERENCES

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DISCLOSURE

RW has received consulting fees from Bausch Health Companies, Inc. PGS, JM, WQ, MLL, and AG are employees of Analysis Group, Inc., a consulting company that has provided paid consulting services to Bausch Health Companies, Inc., which funded the development and conduct of this study. AAD, BB, and GJ are employees of Bausch Health Companies, Inc. ZH is an employee of Salix Pharmaceuticals. OO and DB are postdoctoral fellows with Rutgers Pharmaceutical Industry Fellowship Program.