

Influence of the Introduction of Heated Tobacco Products on IHD and COPD Hospitalizations in Japan using Real-World Data

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Competing Financial Interest

The research described in this presentation was sponsored by Philip Morris International

February 24th, 2021

SRNT 2021, Virtual Event

Background and Rationale



Real-world data (RWD) can be useful to evaluate public health interventions –
Example: looking at the impacts of smoking bans at the population level¹



RWD can be used to look for early signals of the population health impact of introducing novel tobacco products (i.e., Heated Tobacco Products) before epidemiological data are available



AIM: use RWD to explore the temporal association between the introduction of Heated Tobacco Products (HTP) in Japan and acute hospitalization rates for smoking-related diseases



Compare rate of acute hospitalization (observed vs expected) for COPD and IHD before and after the introduction of HTPs in Japan

Methods



Design	Ecological study - comparing hospitalization rates for specific smoking-related diseases before and after the introduction of the HTP in Japan
Data Source	MDV (Medical Data Vision) database ¹
Data Selection	Hospitalizations due to selected ICD-10 codes in patients ≥ 20 years of age between Jan 2010 and Dec 2019 (7 years before and 3 years after introduction of the HTP)
Analysis	Interrupted time series model ² (linear and nonlinear) of COPD and IHD
Cut Point	Introduction of HTP with pre-post cutoff at Jan 2017 ³
Covariates	Sex and age (adjusted for in the modeling)

>20 Million Patients

>300 Acute-phase Hospitals

¹ Medical Data Vision webpage. <https://en.mdv.co.jp/> accessed on January 13th, 2021

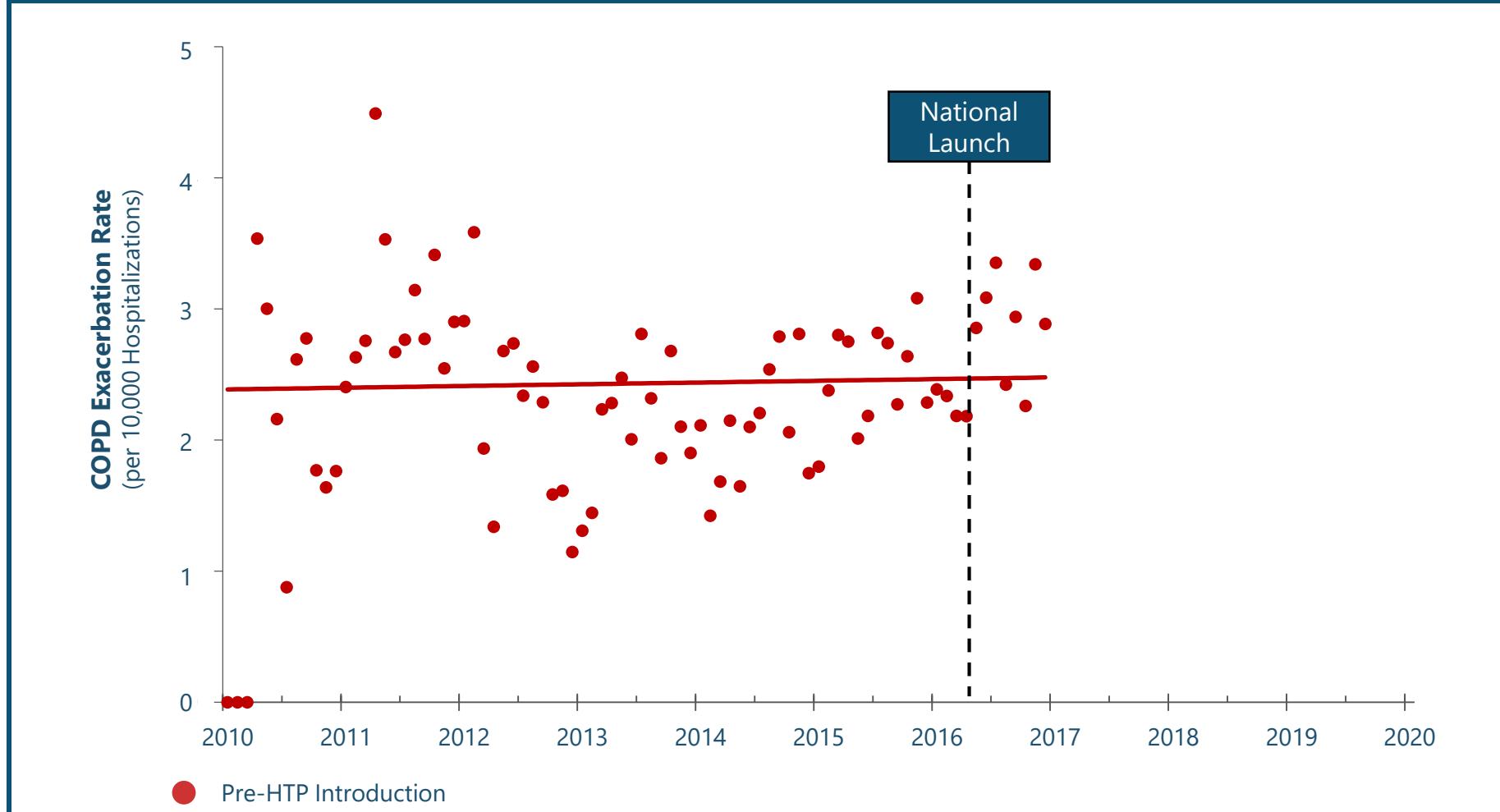
² Kontopantelis et al. (2015) Regression based quasi-experimental approach when randomisation is not an option: interrupted time series analysis. *BMJ* 2015; 350

³ Stoklosa et al. (2019) Effect of IQOS introduction on cigarette sales: evidence of decline and replacement. *Tob Control*. 2020 Jul;29(4):381-387.

Results – COPD Exacerbations



Hospitalization Rate for COPD Exacerbations Over Time - Japan



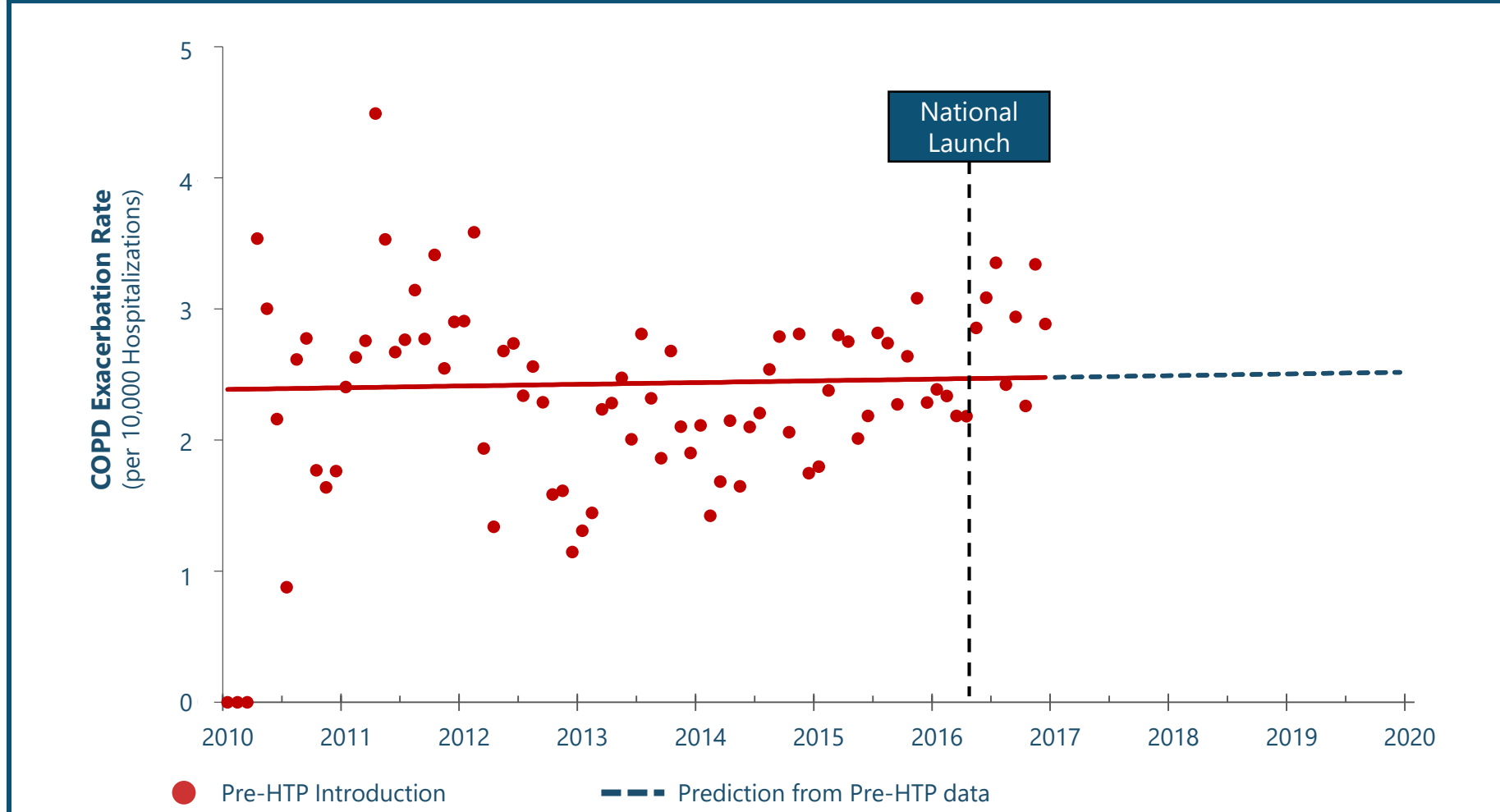
Model adjusting for age and sex.

Source: MDV Diagnosis Procedure Combination Data. <https://en.mdv.co.jp/> (January 13th, 2021)

Results – COPD Exacerbations



Hospitalization Rate for COPD Exacerbations Over Time - Japan



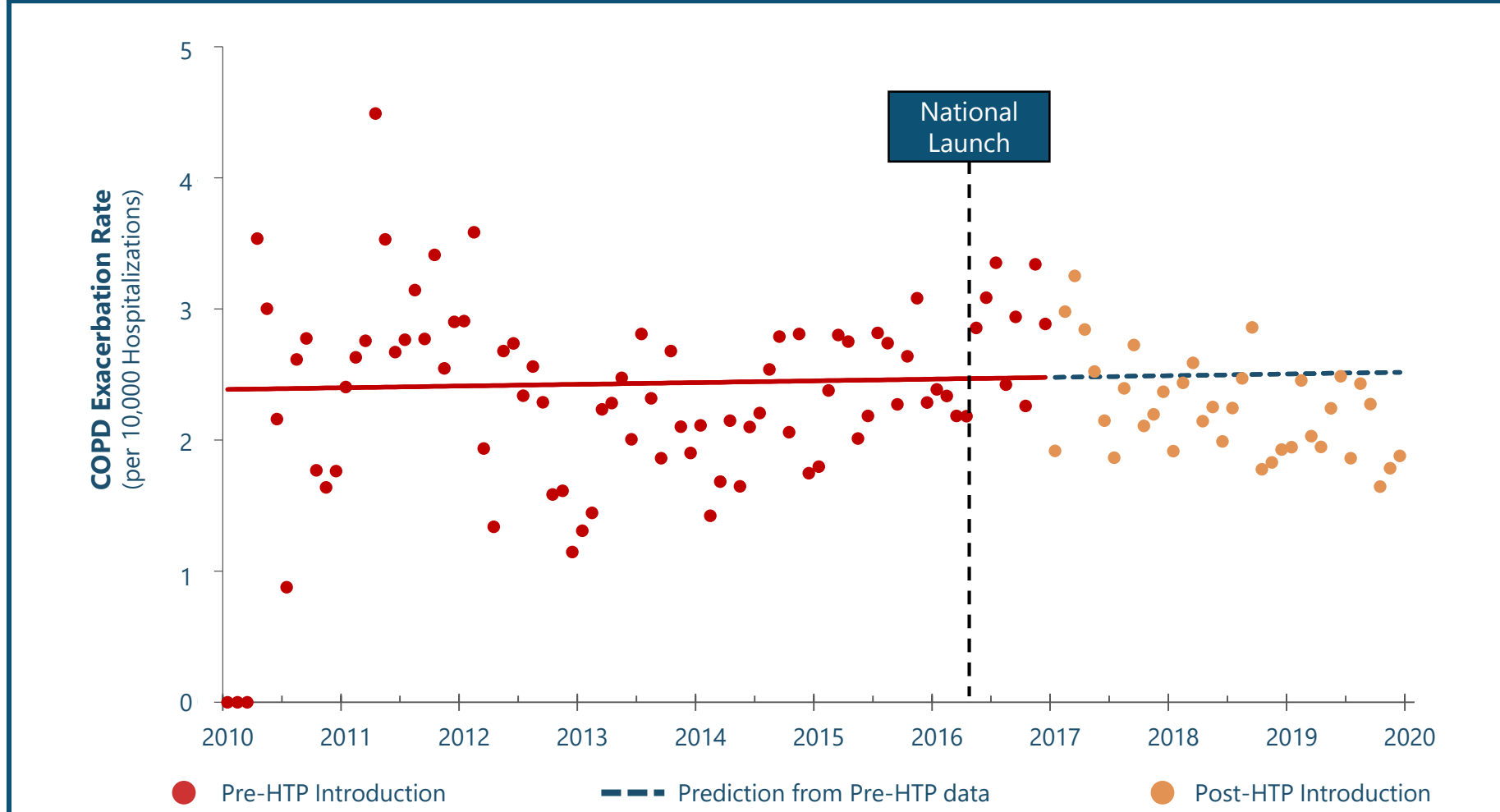
Model adjusting for age and sex.

Source: MDV Diagnosis Procedure Combination Data. <https://en.mdv.co.jp/> (January 13th, 2021)

Results – COPD Exacerbations



Hospitalization Rate for COPD Exacerbations Over Time - Japan



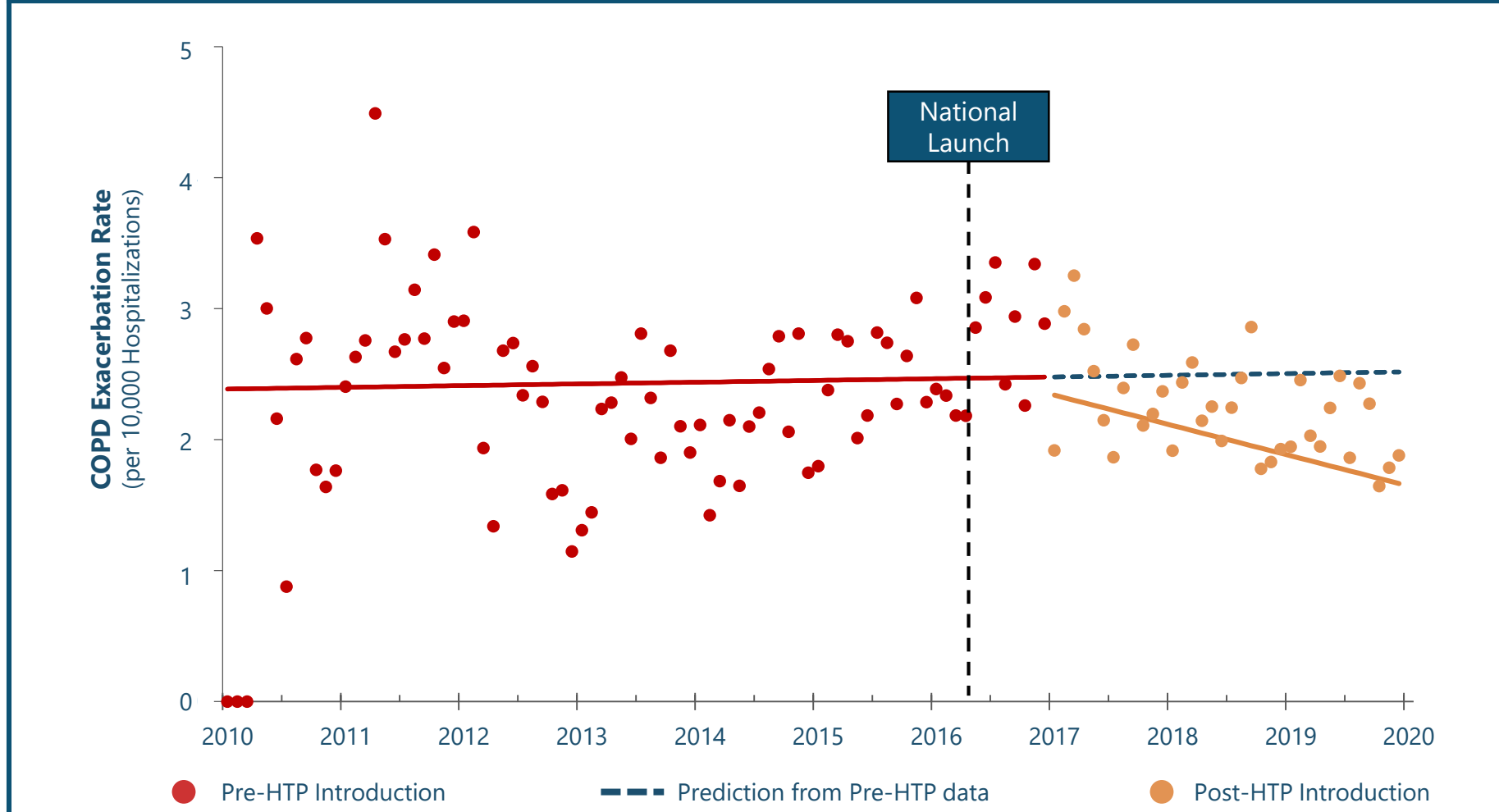
Model adjusting for age and sex.

Source: MDV Diagnosis Procedure Combination Data. <https://en.mdv.co.jp/> (January 13th, 2021)

Results – COPD Exacerbations



Hospitalization Rate for COPD Exacerbations Over Time - Japan



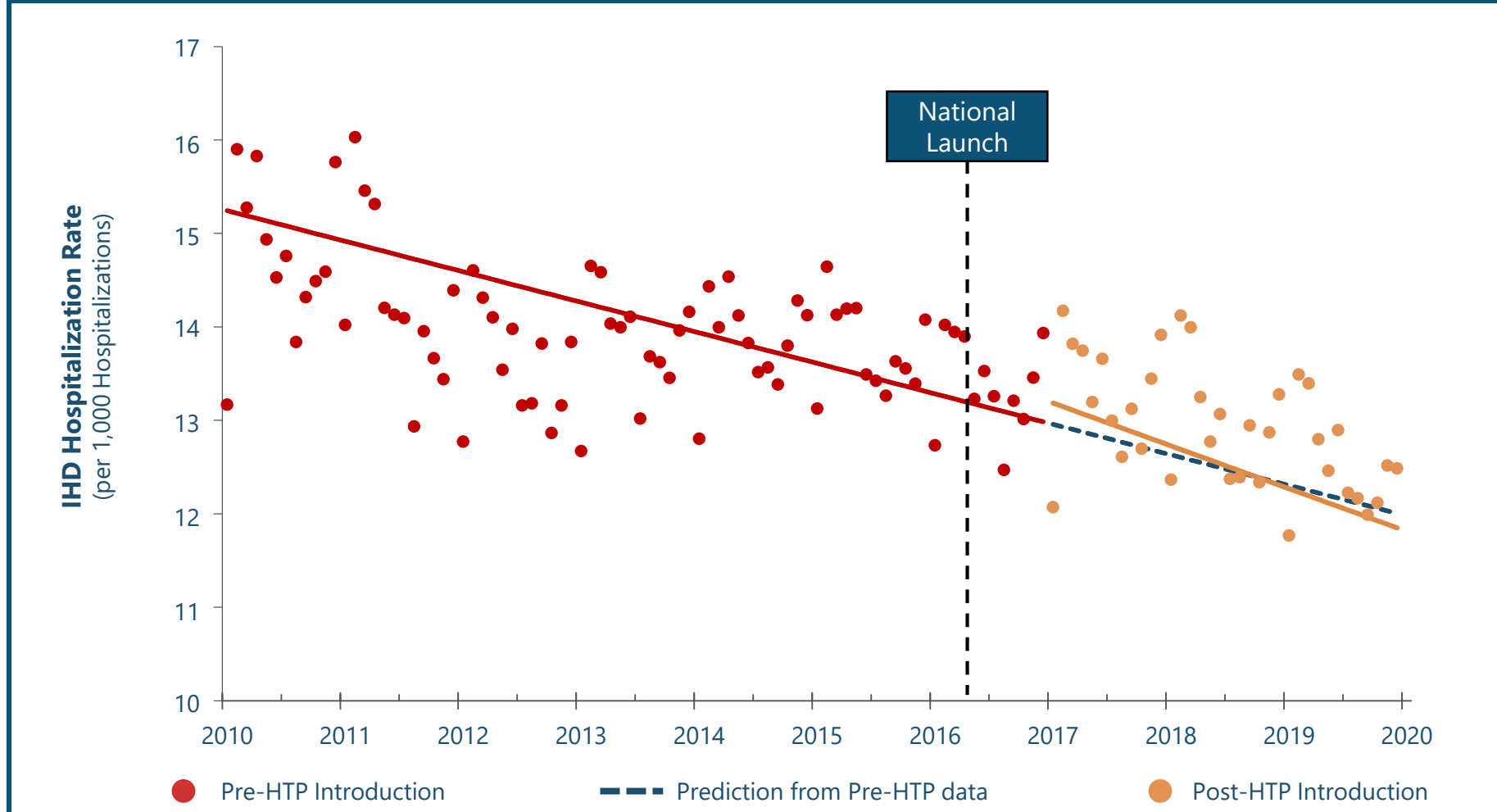
Model adjusting for age and sex.

Source: MDV Diagnosis Procedure Combination Data. <https://en.mdv.co.jp/> (January 13th, 2021)

Results – IHD Hospitalizations



Hospitalization Rate for IHD Over Time - Japan



Model adjusting for age and sex.

Source: MDV Diagnosis Procedure Combination Data. <https://en.mdv.co.jp/> (January 13th, 2021)

Conclusions



Although the frequency of COPD exacerbations is low in Japan – there was significant reduction ($p < 0.01$) in the rate of hospitalization for COPD exacerbations after introduction of the HTP in Japan

We also observed small declines in the hospitalization rate for other smoking-related diseases (e.g., IHD), although the declines were not significant. For these, a longer follow up post introduction of HTP might be needed to see an effect

Ecological studies are focused on population level differences, but can be a useful early detection tool to identify potential associations between HTP use and smoking-related diseases

Although smoking status is not well captured in hospital records, this ecological study has detected some encouraging trends in smoking-related disease hospitalizations in Japan – which should be further researched

There are many limitations to this type of research, and it is important to remember that the results do not indicate a causal relationship

Disclaimer

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