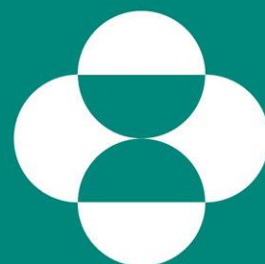


Impact of the COVID-19 Pandemic on Adult HPV, Pneumococcal, and Zoster Vaccinations

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Data Sources



IBM Truven Early View:

- Near real-time data (~3-month lag)
- Data contributed by large employers, EMR providers, Medicare and Medicaid
- Over 245 million unique U.S. patients

TriNetX Dataworks:

- Near real-time longitudinal EMR data
- 26 Healthcare Organizations, 38 million U.S. patients
- Data refreshed monthly to quarterly (denominator issues)
- Denominator limited to individuals with a medical encounter

Methods – IBM Truven Early View



Population

- Individuals ≥ 19 -45 years for HPV vaccines
- Individuals ≥ 50 years of age for zoster vaccines (Shingrix and Zostavax)
- **Does not** cover individuals ≥ 65 years for pneumococcal vaccines
- No continuous enrollment eligibility
- Single date enrollment in corresponding month

Metrics by Month

Percent Change:

- 2018 vs. 2019: $(\# \text{ vaccines in 2018} - \# \text{ vaccines in 2019}) / \# \text{ vaccines in 2019}$
- 2020 vs. 2019: $(\# \text{ vaccines in 2020} - \# \text{ vaccines in 2019}) / \# \text{ vaccines in 2019}$
- 2020 vs. Mean 2018/2019: $(\# \text{ vaccines in 2020} - \# \text{ mean vaccines in 2018/2019}) / \# \text{ mean vaccines in 2018/2019}$
- 2021 data excluded

Population

- HPV - ≥19-45 years
- Zoster - (Shingrix and Zostavax) - ≥50 years of age
- Pneumococcal (Pneumovax 23 and Prevnar 13) - ≥65 for pneumococcal vaccines
- Individuals with a vaccine visit claim

Metrics by month

Percent Change:

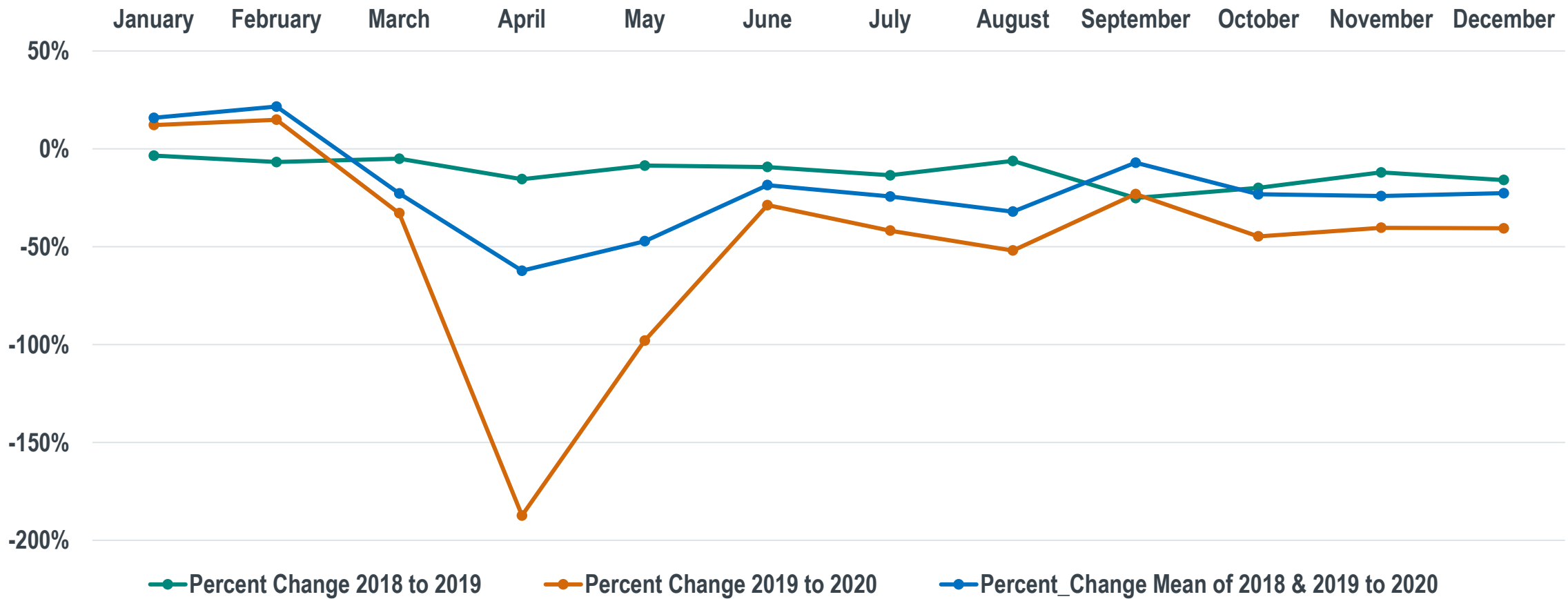
- 2018 vs. 2019: $(\# \text{ vaccines in 2018} - \# \text{ vaccines in 2019}) / \# \text{ vaccines in 2019}$
- 2020 vs. 2019: $(\# \text{ vaccines in 2020} - \# \text{ vaccines in 2019}) / \# \text{ vaccines in 2019}$
- 2020 vs. Mean 2018/2019: $(\# \text{ vaccines in 2020} - \# \text{ mean vaccines in 2018/2019}) / \# \text{ mean vaccines in 2018/2019}$
- 2021 data excluded

HPV VACCINATIONS

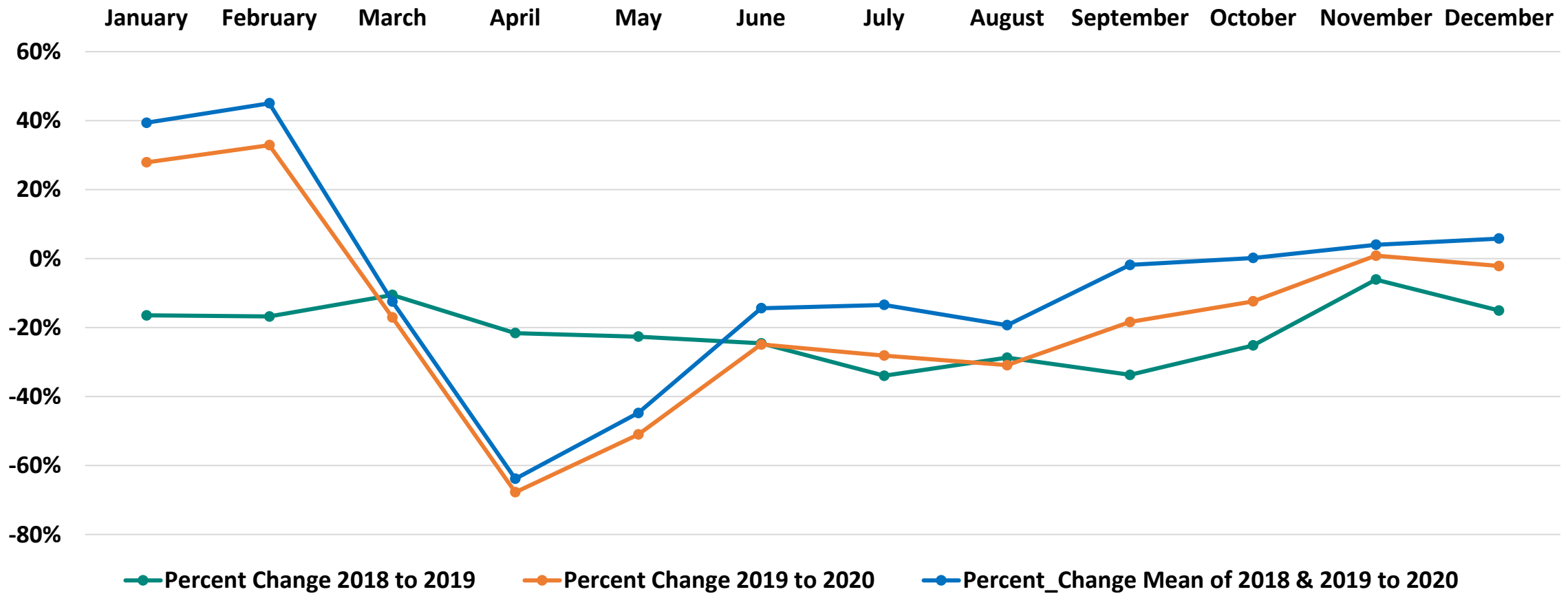
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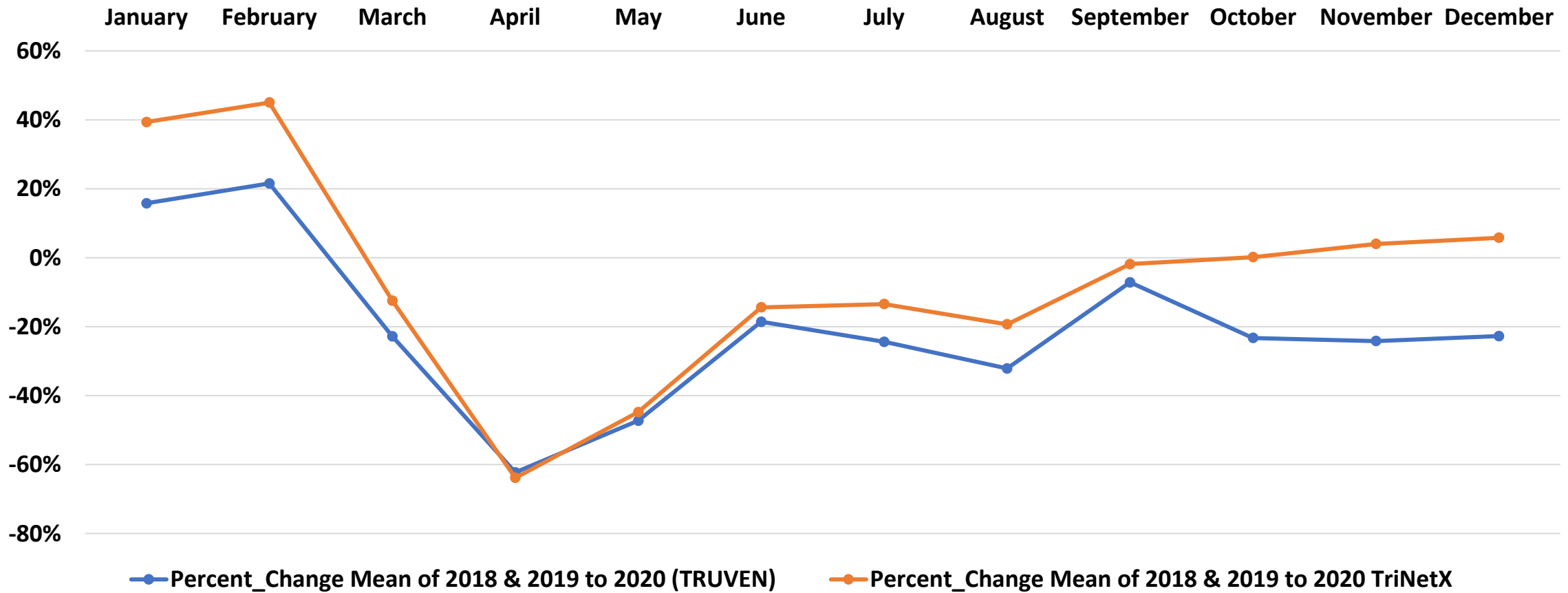
Percent Change in HPV Vaccinations – IBM Truven Early View, January 2018 – December 2020



Percent Change in HPV Vaccinations – TriNetX Dataworks (January 2018 – December 2020)



Percent Change in HPV Vaccinations – IBM Truven Early View & TriNetX Dataworks (January 2018 – December 2020)



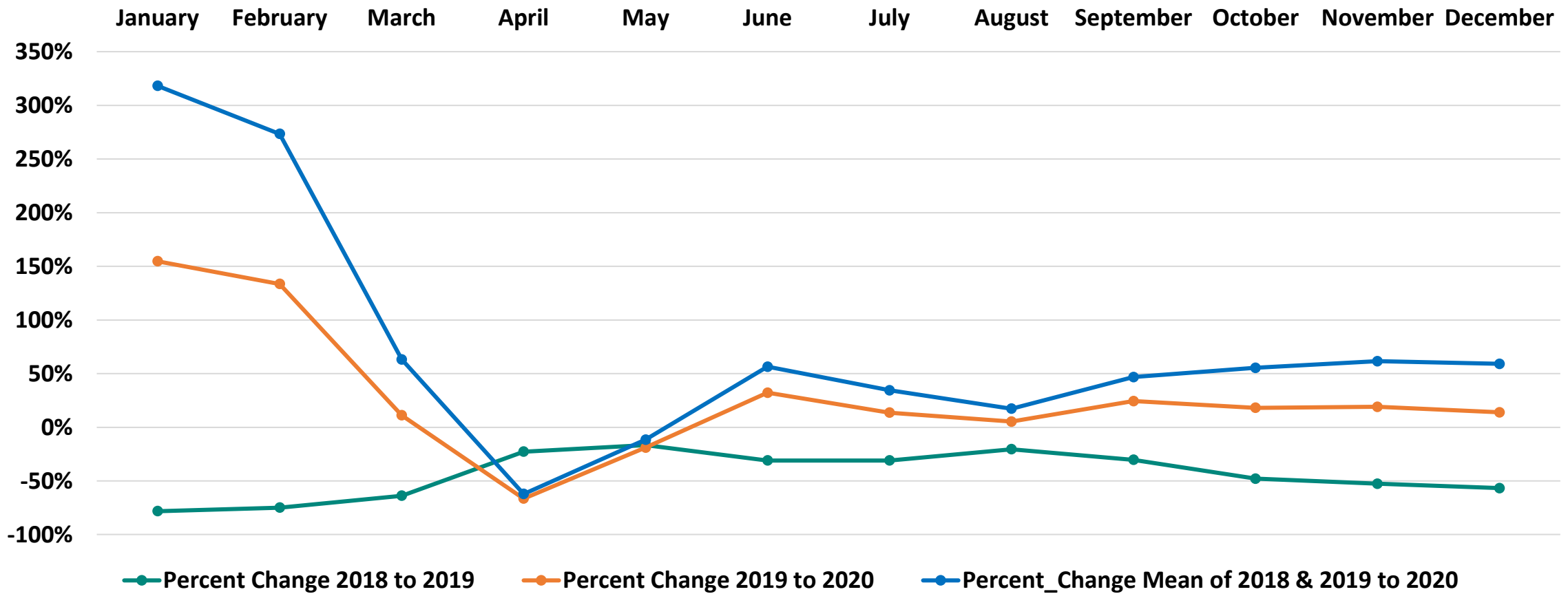
ZOSTER VACCINATIONS

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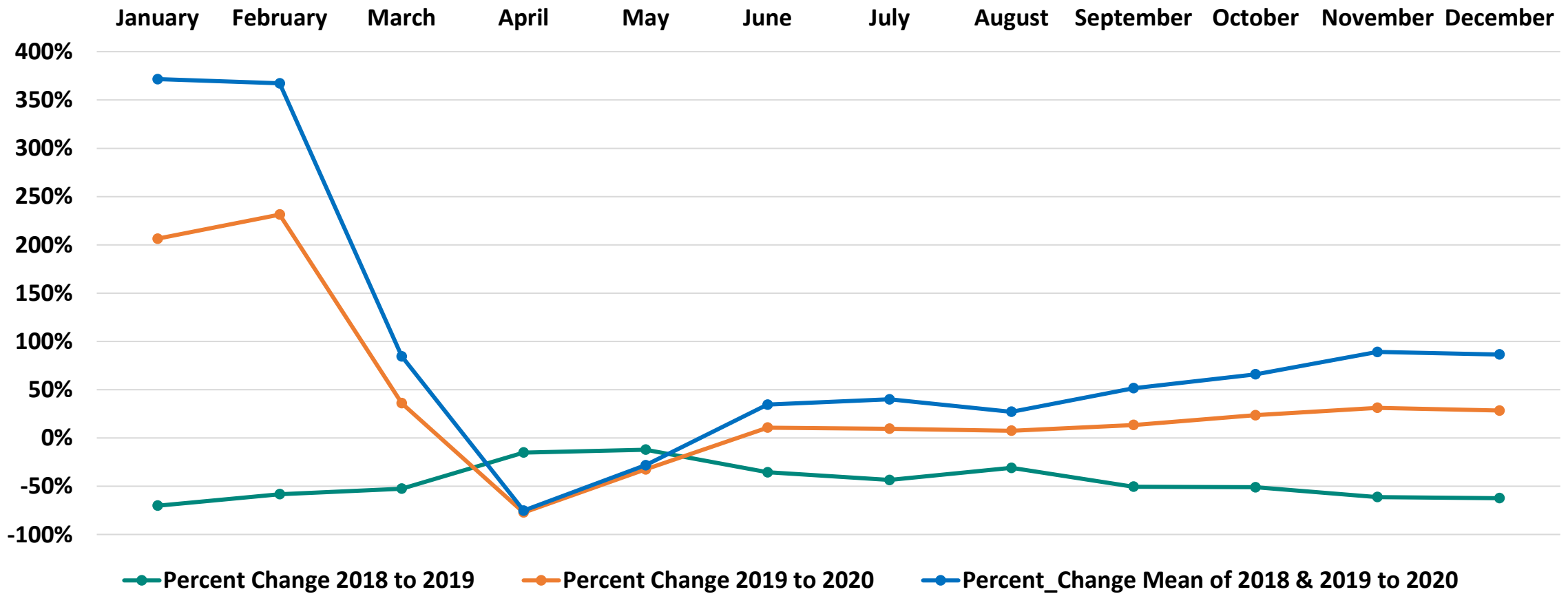
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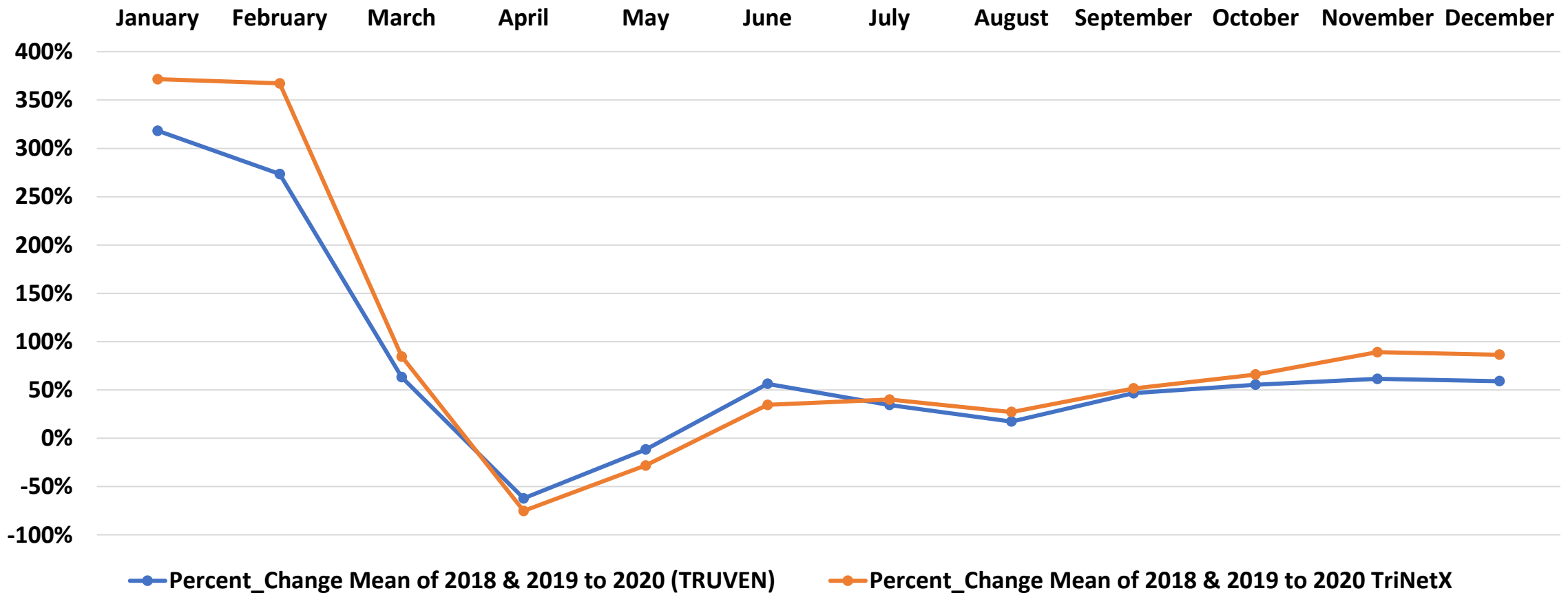
Percent Change in Zoster Vaccinations – IBM Truven Early View (January 2018 – December 2020)



Percent Change in Zoster Vaccinations – TriNetX Dataworks (January 2018 – December 2020)



Percent Change in Zoster Vaccinations – IBM Truven Early View & TriNetX Datasets (January 2018 – December 2020)

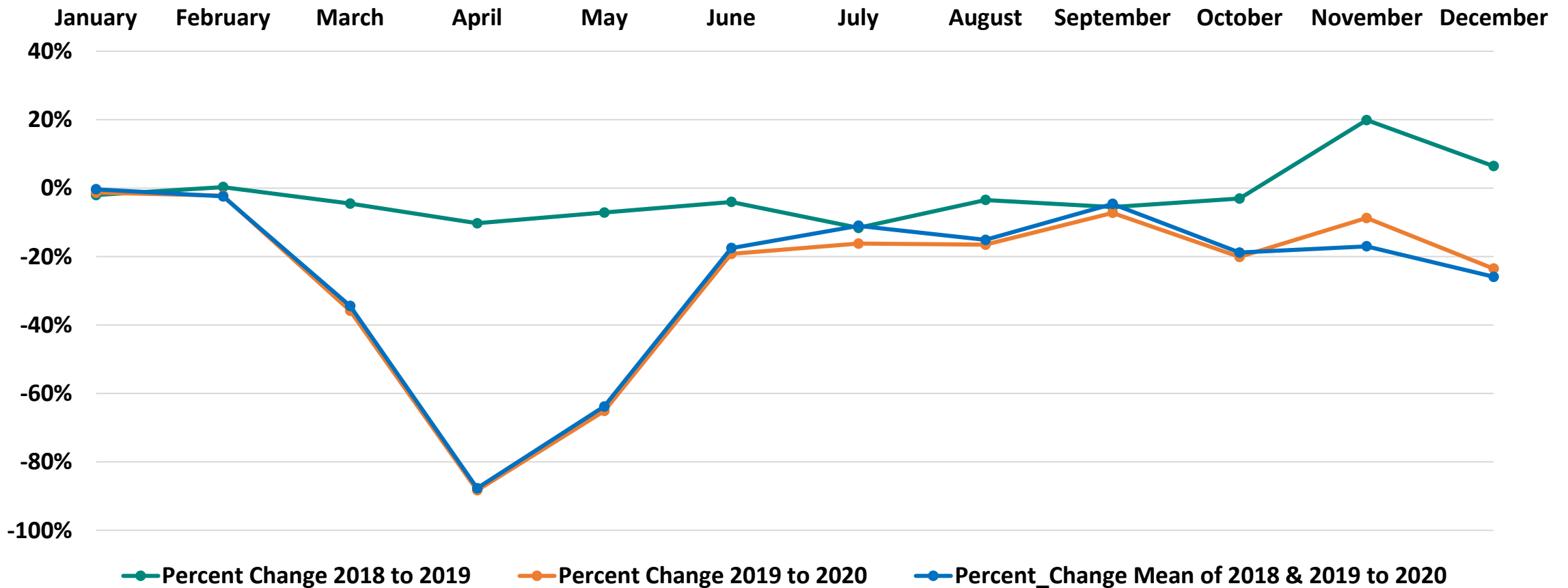


PNEUMOCOCCAL VACCINATIONS

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Percent Change in Pneumococcal Vaccinations – TriNetX Dataworks (January 2018 – December 2020)



Conclusions



- Significant drop-offs in 2020 for adult HPV, pneumococcal, and zoster vaccinations
- Vaccine uptake of adult HPV, pneumococcal, and zoster vaccinations trending towards pre-pandemic levels
- Significant cumulative deficit of missed doses especially during 2020 implies that current vaccination uptake trends will have to significantly surpass pre-pandemic levels to make up for the losses

THANK YOU

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