

# Chicago PPLTT and ChatGPT Subscriptions

January 30, 2026

## 1 Background

Chicago's Personal Property Lease Transaction Tax (PPLTT) applies to AI subscription services including ChatGPT Plus. The tax rate increased from 9% (October 2023) to 11% (January 2025).

## 2 Price Pass-Through

Figure 1 shows the median transaction amount for ChatGPT subscriptions in Chicago (ZIP3 606). The base ChatGPT Plus price is \$20/month. Full pass-through would imply prices of \$21.80 at 9% and \$22.20 at 11%.

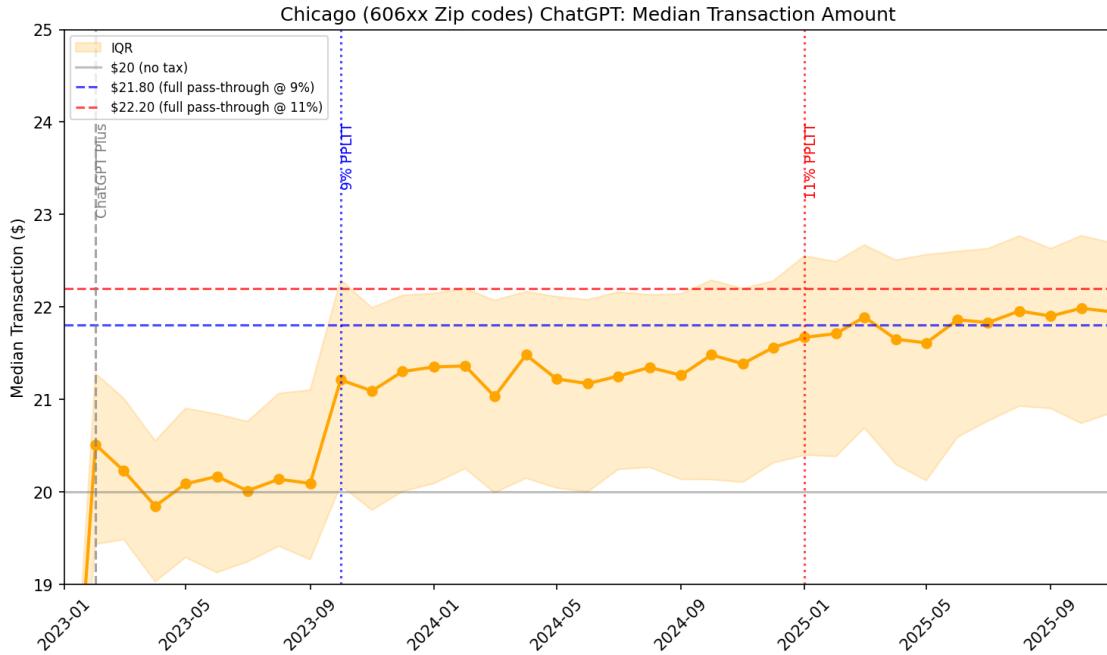


Figure 1: Median transaction amount for ChatGPT subscriptions in Chicago. Horizontal lines indicate expected prices under full pass-through. The IQR band shows the 25th–75th percentile range.

Observed median prices are slightly below full pass-through (\$21.36 vs \$21.80 during the 9% period), suggesting pass-through is high but not complete.

### 3 Synthetic Control

We estimate quantity effects using synthetic control methods, matching Chicago to a weighted combination of control ZIP3s based on demographics and pre-treatment outcomes.

#### 3.1 Matching Variables

- **Demographics:** % college, % HH income >\$100k, % ages 18–34, median age, median income, % STEM workers, % broadband
- **Pre-treatment outcomes:** mean log(users) Mar–Jun 2023, mean log(users) Jul–Sep 2023, mean median price Mar–Sep 2023

#### 3.2 Results

Table 1 reports the main synthetic control results.

Metric	Value
Pre-treatment RMSPE (Mar–Sep 2023)	0.027
Post-treatment RMSPE (Oct 2023–Nov 2024)	0.148
RMSPE ratio (post/pre)	5.56
Average post-treatment gap	-0.118
Implied effect	-11%

Table 1: Synthetic control results for Chicago (ZIP3 606).

Figure 2 shows the synthetic control plot.

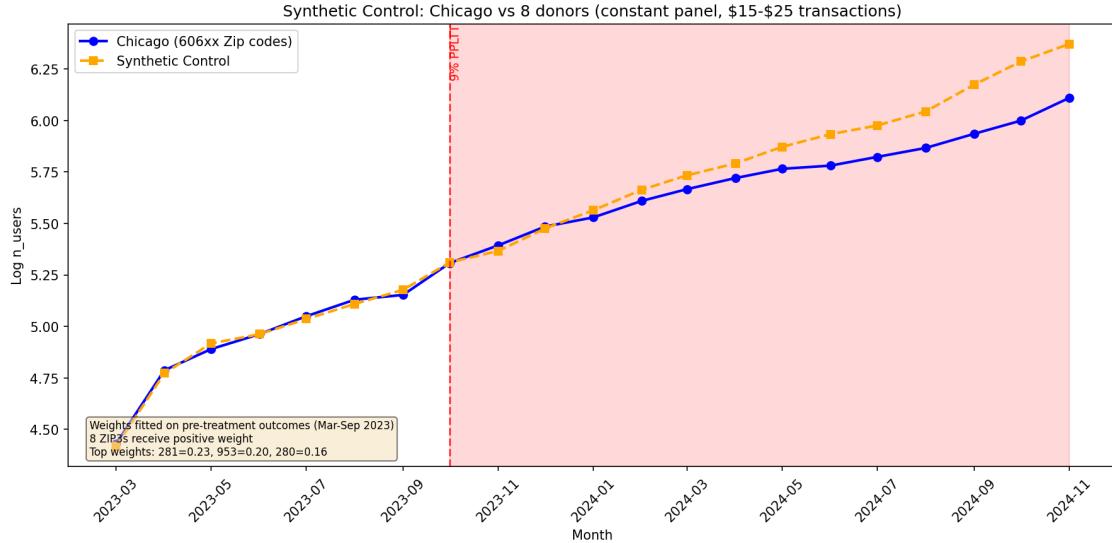


Figure 2: Log unique users: Chicago vs. synthetic Chicago. Vertical line marks October 2023 (tax implementation).

### 3.3 Donor Weights

Table 2 shows the ZIP3s receiving positive weight in the synthetic control.

ZIP3	Area	Weight
900	46.2%	Los Angeles, CA
277	17.1%	Raleigh, NC
830	10.7%	Wyoming
303	10.6%	Atlanta, GA
387	5.3%	Columbus, GA
865	4.7%	Flagstaff, AZ
803	2.1%	Columbia, SC
588	2.0%	Rapid City, SD
711	1.0%	Shreveport, LA

Table 2: Donor weights for synthetic Chicago.

Figure 3 compares Chicago to the top donors.

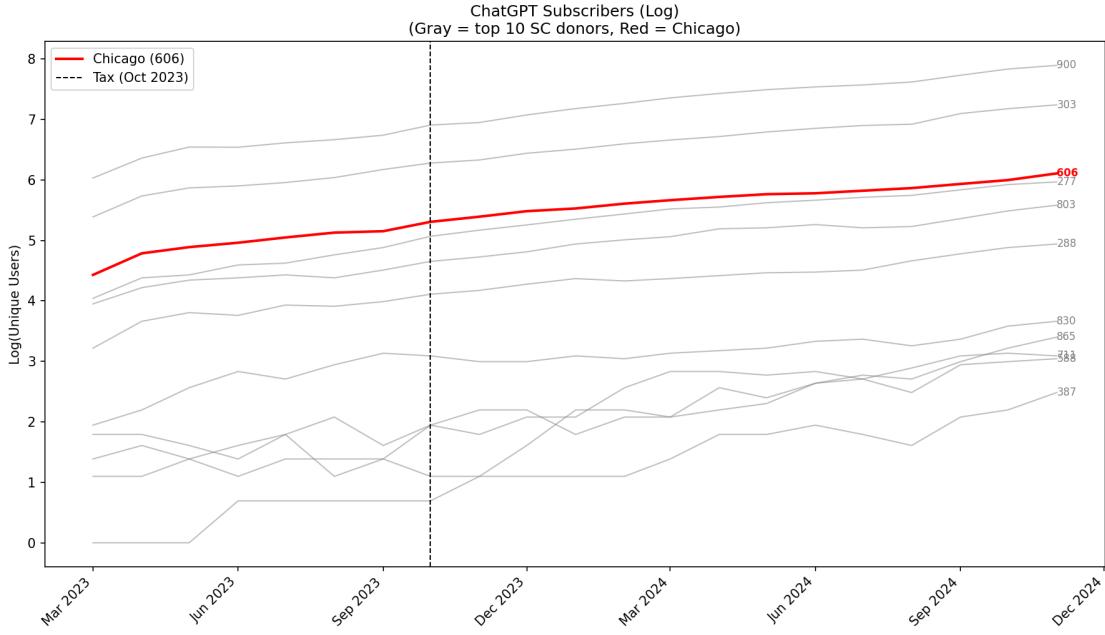


Figure 3: Log unique users: Chicago vs. top donor ZIP3s.

## 4 Event Study

Figure 4 presents event study estimates from a difference-in-differences specification:

$$\log(\text{users}_{zt}) = \sum_{\tau \neq \text{Sep 2023}} \beta_\tau \cdot \mathbf{1}[\text{Chicago}] \cdot \mathbf{1}[\text{month} = \tau] + \alpha_z + \gamma_t + \varepsilon_{zt}$$

Standard errors are clustered at the ZIP3 level.

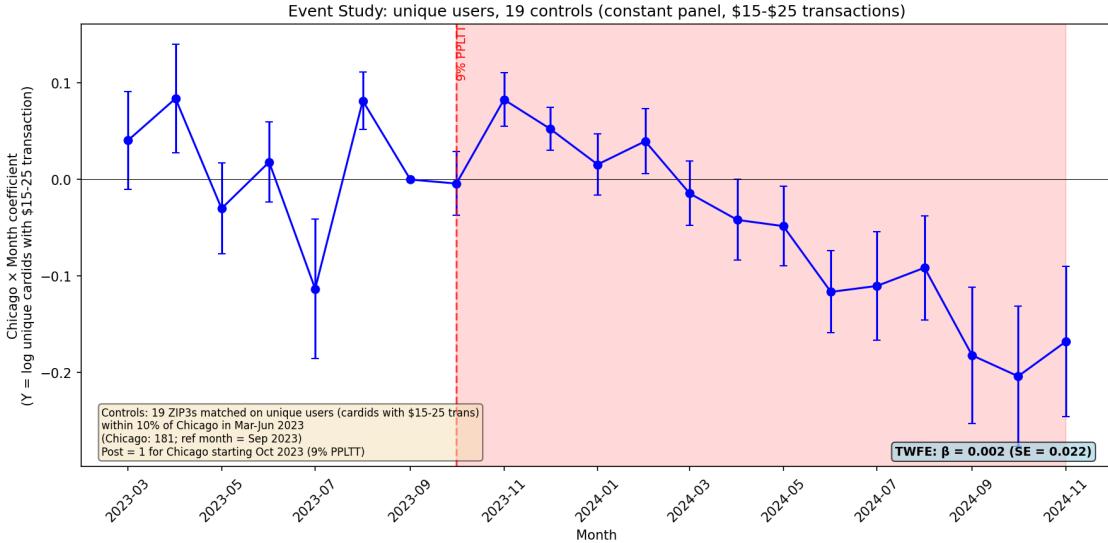


Figure 4: Event study coefficients for Chicago relative to size-matched control ZIP3s. Reference period is September 2023. Error bars show 95% confidence intervals.

## 5 Discussion

The evidence suggests:

1. Price pass-through is high but slightly incomplete
2. Quantity declined relative to synthetic control by approximately 11%
3. Implied elasticity is around  $-1$  if we believe these estimates

**Potential confound: employer-paid subscriptions.** ChatGPT Enterprise launched in August 2023 (\$60/user/month, 150-seat minimum). ChatGPT Team launched in January 2024 (\$25–30/user/month). If Chicago employers adopted enterprise licenses in late 2023 or early 2024, affected users would disappear from personal credit card data. This would produce a Chicago-specific decline unrelated to the tax.