

Expanding Opportunities  
through Patient Care



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# Association of authorized generic marketing with prescription drug spending on antidepressants from 2000 to 2011

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# Disclosures

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- In the past 3 years, Richard Hansen has received consulting funds from Daiichi Sankyo and has provided expert testimony for Allergan and Boehringer Ingelheim. No other authors declare a potential conflict of interest.



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- Activity Type: [FOR APHA USE ONLY]

# Learning Objectives

- [INSERT LEARNING OBJECTIVES]

# Self Assessment Questions:

Marketing of authorized generics is associated with higher brand and generic prices

- A. true
- B. false



# Self Assessment Questions:

Which of the following is not a true statement about brand and authorized generic drugs?

- A. they are approved through bioequivalence studies
- B. they may be packaged in different ways
- C. they share the same NDA number
- D. they have the same active and inactive ingredients

# Self Assessment Questions:

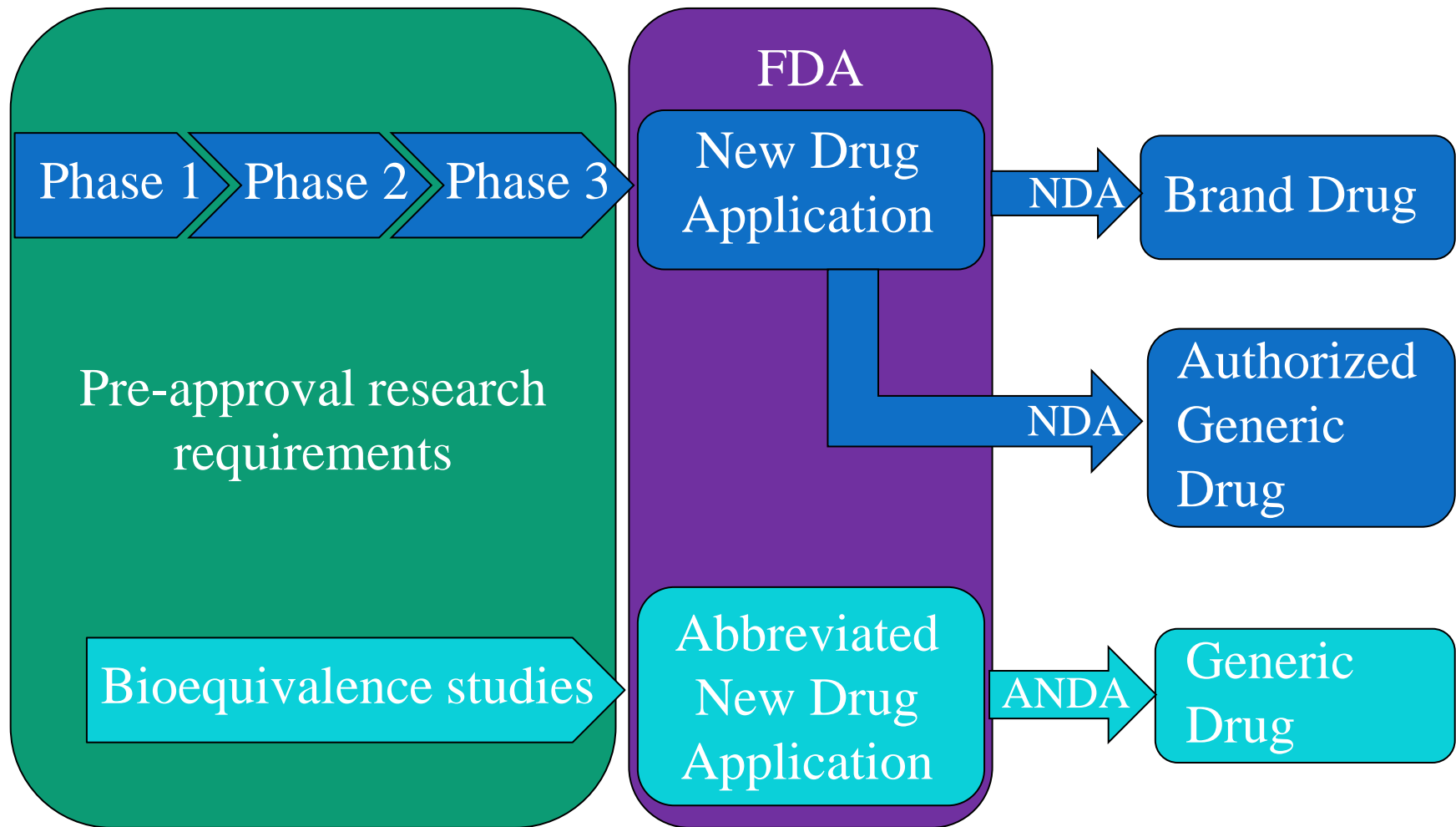
Authorized generics are marketed prior to the brand drugs patent expiration

- A. true
- B. false

# INTRODUCTION

- Generic medicines help control healthcare costs
  - Saved \$1.2 trillion in healthcare, 2003-2012<sup>1</sup>
  - Saved \$8 to \$10 billion/year for consumers<sup>2-4</sup>
  - Brand price 4 times higher than generic price, 2008<sup>3</sup>
  - More consumers choose generic drugs<sup>3</sup>

# INTRODUCTION



# INTRODUCTION

- Authorized generics decrease drug price?
  - Decrease whole sale price 15% (brand) <sup>7</sup>
  - Decrease whole sale price 16% (generics) <sup>8</sup>
- Gaps in existing research
  - Short term effects
  - Limited empirical research with single drug examples

# Objectives

- To empirically evaluate the association of authorized generic marketing with drug spending
- Our study
  - 2000 to 2011: products *with or without* authorized generics
  - Antidepressants: one of most commonly used (U.S. and worldwide)<sup>9</sup>
  - Antidepressants: clinical effects have been well studied and found to be similar among existing second-generation drugs<sup>10-11</sup>

# METHODS

- Data
  - Medical Expenditure Panel Survey (MEPS)
  - Prescription drug data
  - Years 2000 to 2011
- Payment sources and amount
  - Self-payment
  - Private insurance payment
  - Public payment

## Drugs WITH Authorized Generics

Name	Strength	Generic Year
Citalopram	10mg	2005
Citalopram	20mg	2005
Citalopram	40mg	2005
Bupropion SR	150mg	2004
Paroxetine	10mg	2003
Paroxetine	20mg	2003
Paroxetine	30mg	2003
Paroxetine	40mg	2003
Sertraline	25mg	2006
Sertraline	50mg	2006
Sertraline	100mg	2006

## Drugs WITHOUT Authorized Generics

Name	Strength	Generic Year
Bupropion SR	100mg	2004
Bupropion SR	200mg	2005
Bupropion XL	150mg	2007
Bupropion XL	300mg	2007
Paroxetine CR	12.5mg	2007
Paroxetine CR	25mg	2007
Mirtazapine	15mg	2003
Mirtazapine	30mg	2003
Mirtazapine	45mg	2003
Mirtazapine Soltab	15mg	2004
Mirtazapine Soltab	30mg	2004
Mirtazapine Soltab	45mg	2004



# METHODS

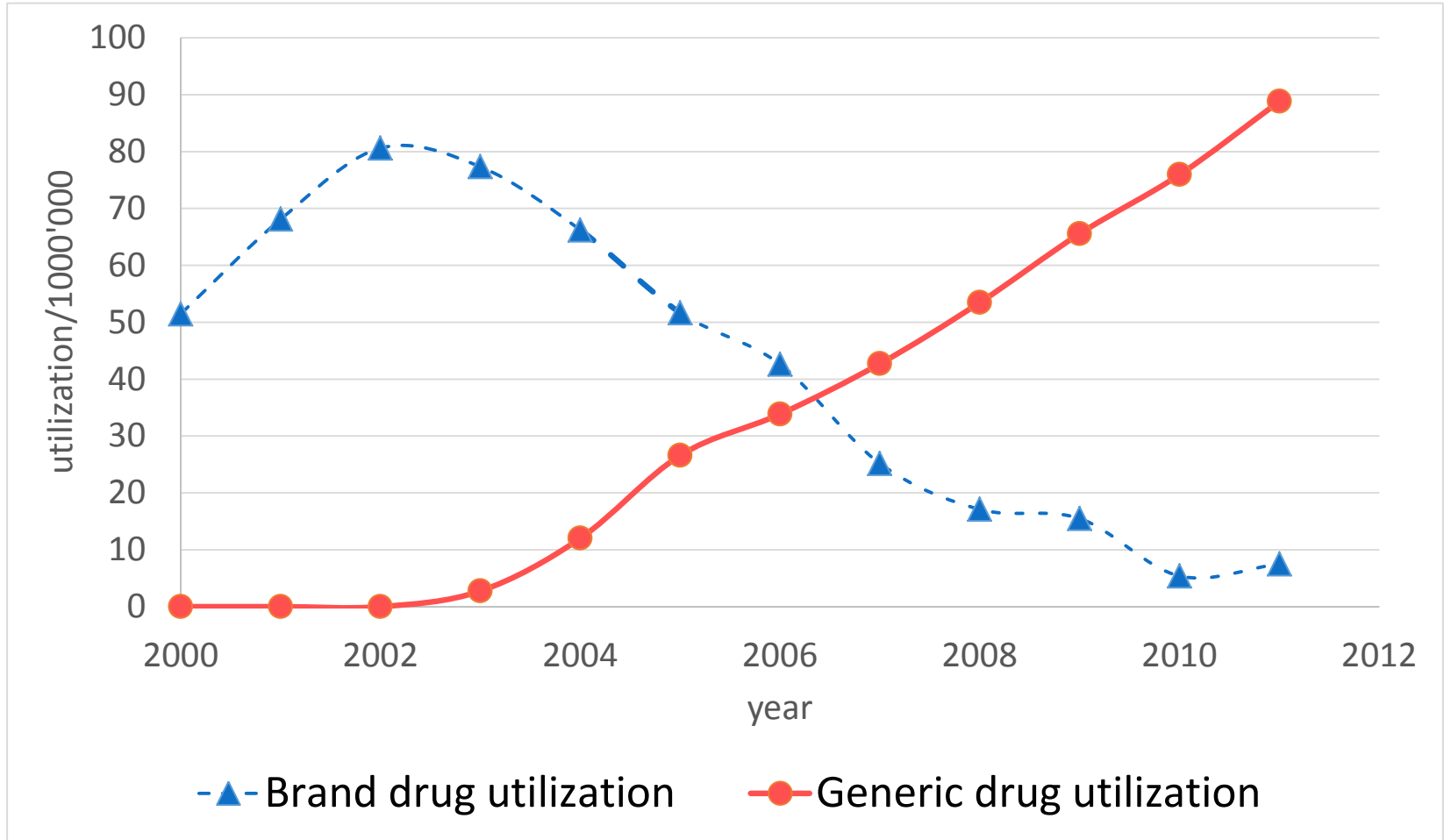
- Analysis
  - Sample weights, variance estimations, payment adjusted to 2009 dollars
  - Multiple linear regression

$$\begin{aligned} \textit{Payment} = & \textit{intercept} + \alpha_1 * \textit{generic type} + \alpha_2 * \textit{time} + \alpha_3 * \textit{selfpay} \\ & + \alpha_4 * \textit{publicpay} + \alpha_5 * \textit{privatepay} + \textit{time dummies} \\ & + \textit{drug dummies} + \varepsilon \end{aligned}$$

- SAS version 9.3

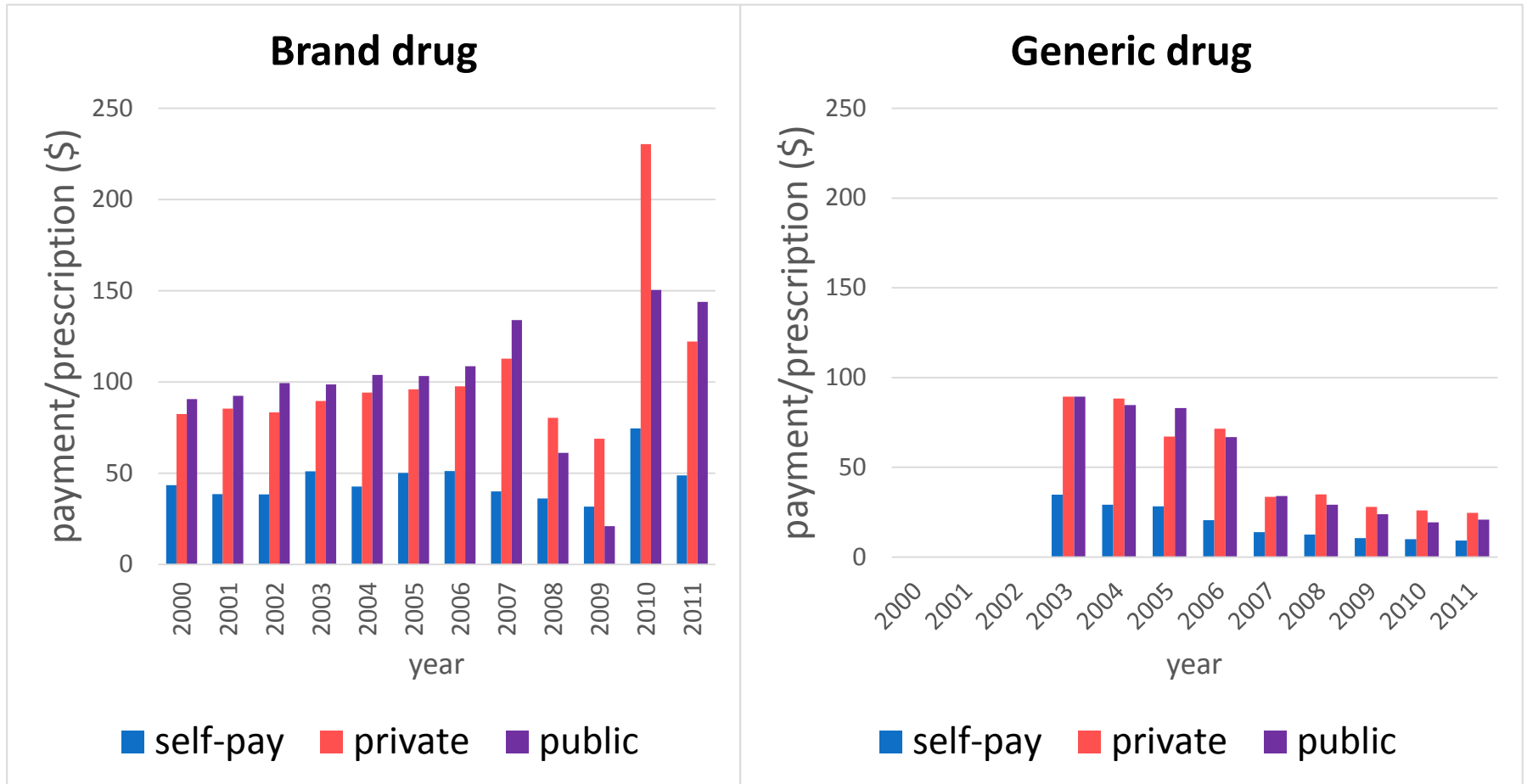
# RESULTS

## Antidepressant utilization patterns



# RESULTS

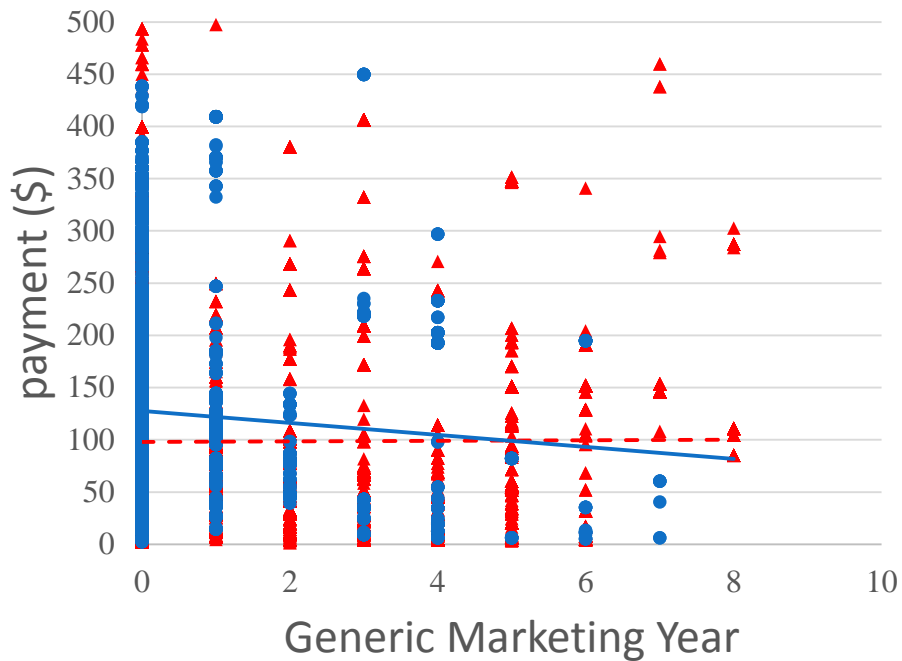
## Antidepressants payment details



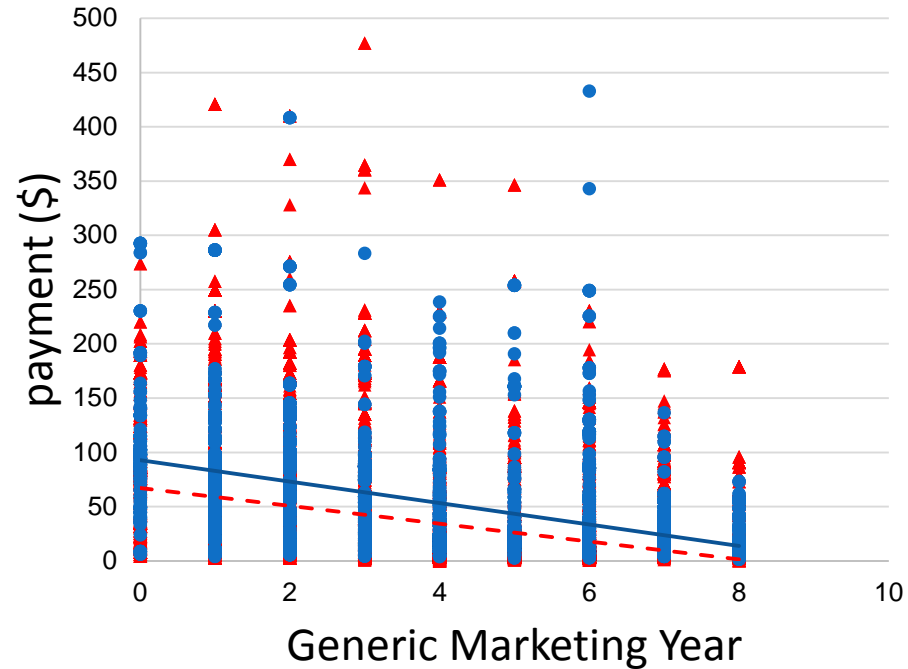
# RESULTS

Price change during generic marketing year

### Brand drug



### Generic drug



- ▲ Payment With Authorized Generics
- Payment Without Authorized Generics

- Linear Trend With Authorized Generics
- Linear Trend Without Authorized Generics

# RESULTS

## Multiple Linear Regression Model

Variable	Parameter Estimate	Pr >  t	Variable	Parameter Estimate	Pr >  t
<i>Brand drugs</i>			<i>Generic drugs</i>		
Intercept	119.17*	<.0001	Intercept	64.51*	<.0001
selfpay	1.95***	0.0617	selfpay	7.97*	<.0001
public	12.34*	<.0001	public	12.76*	<.0001
private	19.43*	<.0001	private	15.60*	<.0001
time	-3.13*	<.0001	time	-11.27*	<.0001
Authorized generic	-9.49*	<.0001	Authorized generic	-4.49*	0.0034
Year dummies	Yes*	<.0001	Year dummies	Yes*	<.0001
drug dummies	Yes*	<.0001	drug dummies	Yes*	<.0001

\* 99% significant level, \*\* 95% significant level, \*\*\*90% significant level.

$$\text{sumpay} = \text{intercept} + a_1 * \text{AuthorizedGeneric} + a_2 * \text{time} + a_3 * \text{selfpay} + a_4 * \text{public} + a_5 * \text{private} + \text{time dummies} + \text{drug dummies} + \varepsilon$$

# DISCUSSION

## Our Finding

- Authorized generics decrease drug price
  - brand (-\$9.49), generic (-\$4.49)
- Authorized generics have lasting effect
  - 180 days and longer
- Multiple linear regression models tell a slightly different story than the unadjusted data

# DISCUSSION

## Research Limitations

- MEPS data:
  - Yearly time points
  - Not directly distinguish authorized generics from independent generics
  - Inherent limitations in the sampling strategy and data collection approaches
- Our research:
  - Only for antidepressant market
  - Over a fixed period of historical time

# CONCLUSIONS

- Authorized generics associated with lower total payments
  - for both brand and generic drugs
- Price reduction
  - generic price decrease two-fold greater than brand drugs
- Authorized generics are a welcome addition to the market
  - for both payers and patients



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# Key Points

- Authorized generics are associated with lower total payments for both brand and generic drugs

# [Repeat Self-Assessment Questions]

- [Repeat the self-assessment questions that are at the beginning of the presentation here so that participants can assess their learning. Reveal the answer only after they have an opportunity to consider the question again.]

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