

Implications of Utilizing Survey Versus Administrative Claims Data to Evaluate the Cost of Diabetes Among Medicare Beneficiaries with Cancer: A Methods Study

Cassidi C. McDaniel, BS;¹ Tim C. Lai, BS;¹ Courtney P. McDonald, PharmD;² Devan Rockwell, PharmD;³ F. Ellen Loh, PhD, MBA;⁴ Chiahung Chou, PhD¹
¹Auburn University Harrison College of Pharmacy, ²Piedmont Columbus Regional, ³USA Health Family Medicine Center, ⁴Touro College of Pharmacy

Introduction

- Medicare beneficiaries (adults ≥65 years old) are at higher risk for diabetes and cancer than the general U.S. adult population¹
- Diabetes and cancer are both costly conditions for Medicare beneficiaries and the U.S. healthcare system^{2,3}
- Understanding the financial burden of Medicare beneficiaries with concurrent diabetes and cancer requires accurately measuring the cost of illness
- The Medicare Current Beneficiary Survey (MCBS) reports costs through two data sources⁴:
 - Cost and Use files (administrative claims data)
 - Access to Care files (survey data)

Objective

- To assess the congruency of the estimated cost of diabetes among Medicare beneficiaries with cancer from survey versus from administrative claims of the MCBS data

Methods

- Study design:** Serial cross-sectional
- Data source:** Medicare Current Beneficiary Survey (MCBS) from 2006-2012, which includes survey and administrative claims data among a nationally representative sample of Medicare beneficiaries⁴
- Study population:** Adults ≥65 years old, non-institutionalized, diagnosed with cancer, enrolled in Medicare Parts A, B, and D
- Diabetes and cancer diagnoses were identified through either survey self-reports or administrative claims for ICD-9 diagnosis codes following algorithms from the CMS Chronic Conditions Data Warehouse
- Primary outcome:** Total cost of diabetes (the difference in total annual direct costs among beneficiaries with cancer and diabetes compared to those with cancer only)
- Secondary outcomes:** Medical care and prescription drug costs annually for diabetes
- Statistical analysis:** The congruency of total annual direct cost estimates from survey versus claims data was compared using the Wilcoxon signed-rank test; costs were converted to 2012 U.S. dollars

Results

- Significant disagreements in the estimated total annual cost of diabetes from survey versus claims data were present
 - Beneficiaries with cancer and diabetes: 2006-2009 and 2012 ($p<0.001$ for all)
 - Beneficiaries with cancer (no diabetes): All years ($p<0.001$ for all)
- The mean total annual cost of diabetes from survey data was \$7,575 per capita in 2012 dollars (26% of cost attributed to prescription drugs)

Table. Characteristics of study population			
Characteristic	Cancer patients with diabetes N=1275 N (%)	Cancer patients without diabetes N=3643 N (%)	p-value*
Age			<0.01
65-74	530 (41.57)	1344 (36.89)	
75-84	567 (44.47)	1518 (41.67)	
85+	178 (13.96)	781 (21.44)	
Sex			0.03
Male	560 (43.92)	1474 (40.46)	
Female	715 (56.08)	2169 (59.54)	
Race/ethnicity			<0.01
White	1121 (87.92)	3383 (92.86)	
Black	83 (6.51)	145 (3.98)	
Hispanic	34 (2.67)	48 (1.32)	
Other	37 (2.90)	67 (1.84)	
Diabetes complications & comorbidities			
Hypertension	1091 (85.57)	441 (67.01)	<0.01
CHD	374 (29.33)	741 (20.34)	<0.01
Heart failure	201 (15.76)	290 (7.96)	<0.01
Hyperlipidemia	583 (70.07)	1195 (51.09)	<0.01
COPD	312 (24.47)	718 (19.71)	<0.01
Osteoarthritis	301 (23.61)	1062 (29.15)	<0.01
Income level			<0.01
<\$25,000	742 (58.20)	1767 (48.50)	
\$25,000+	533 (41.80)	1876 (51.50)	
Education level			<0.01
No high school	195 (15.37)	359 (9.89)	
Some high school	211 (16.63)	457 (12.59)	
High school grad.	343 (27.03)	1026 (28.26)	
> high school	520 (40.98)	1788 (49.26)	
Marital status			0.01
Single	214 (16.78)	491 (13.48)	
Married	626 (49.10)	1813 (49.77)	
Widowed	435 (34.12)	1339 (36.76)	
Census region			0.16
Northeast	189 (14.82)	560 (15.37)	
Midwest	290 (22.75)	869 (23.85)	
South	550 (43.14)	1504 (41.28)	
West	220 (17.25)	666 (18.28)	
Other/Missing	26 (2.04)	44 (1.21)	

Abbreviations: CHD=coronary heart disease; COPD=chronic obstructive pulmonary disease
*chi-square

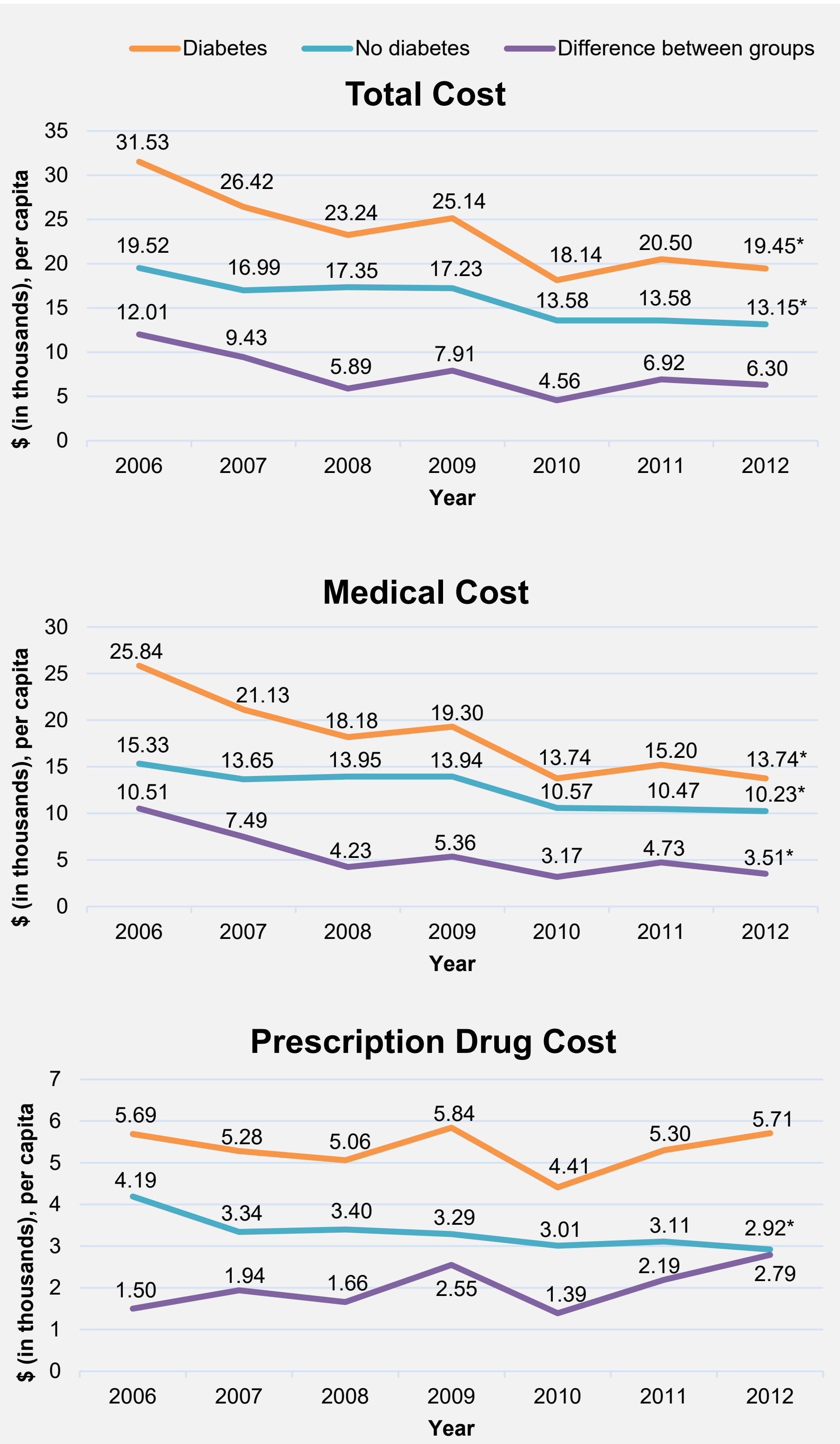


Figure 1. Trends of annual costs among Medicare beneficiaries with cancer from MCBS survey data, stratified by evidence of diabetes; simple linear regression models were used to analyze trends across multiple years to determine changes in the cost of diabetes over time
*Indicates significant change in cost trend across years ($p<0.05$)

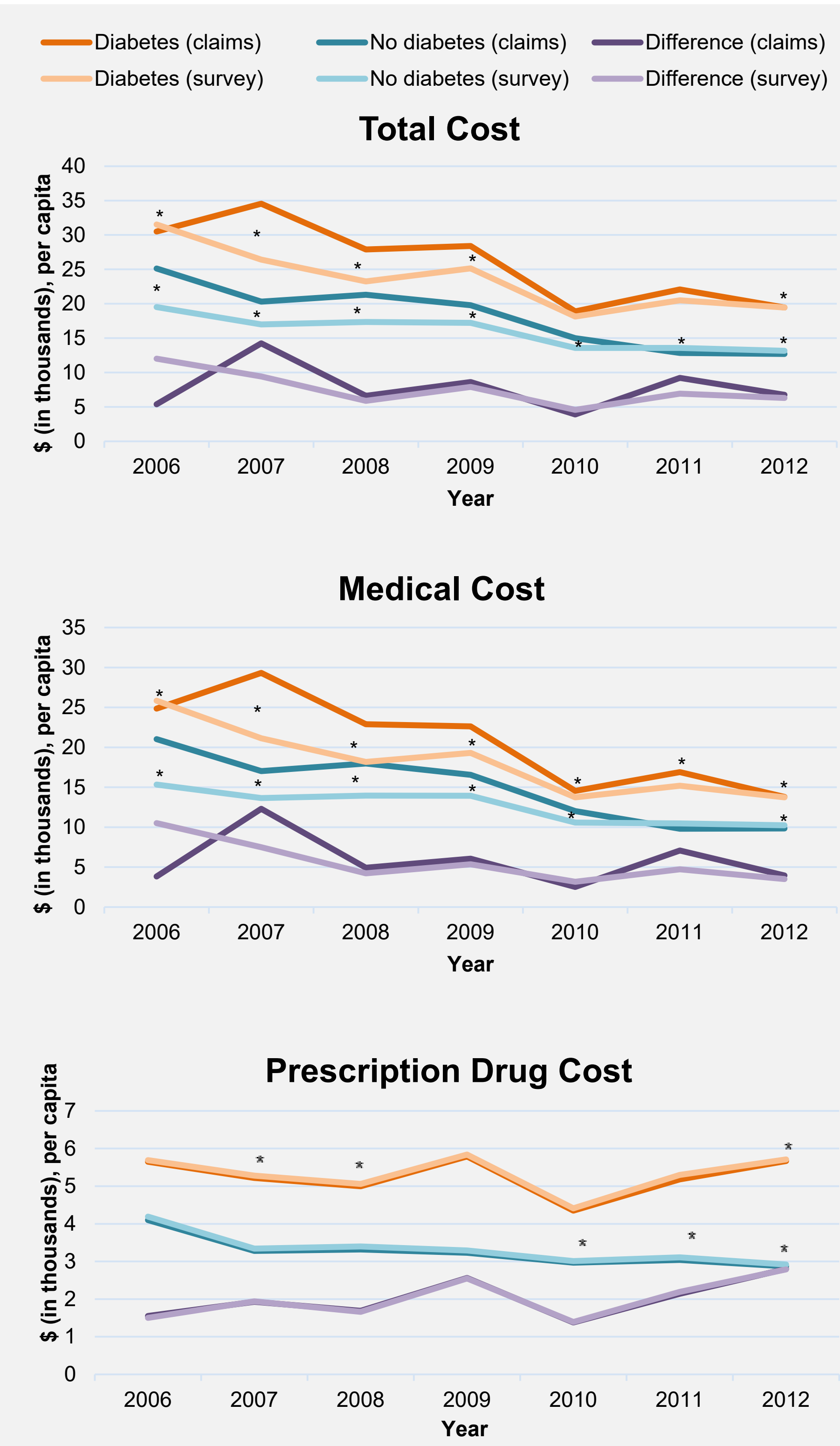


Figure 2. Trends of annual costs among Medicare beneficiaries with cancer, stratified by evidence of diabetes and data source
*Indicates a significant disagreement in cost estimates between survey and administrative claims data ($p<0.05$)

SIGNIFICANT DISAGREEMENTS IN COST ESTIMATES FROM MCBS SURVEY AND ADMINISTRATIVE CLAIMS DATA WERE PRESENT FOR TOTAL AND MEDICAL COSTS, WHILE PRESCRIPTION DRUG COSTS HAD HIGHER CONSISTENCY

Conclusions and Implications

- Medicare beneficiaries with cancer faced a financial burden of diabetes, which equates to \$9,589 in 2021 dollars
- Our findings seek to increase the awareness of these discrepancies in cost estimations
- Being mindful of the potential existence of discrepancies could be useful when generalized to other data sources and methods for data linkage
- The decision to use the MCBS survey or administrative claims component for economic evaluations will likely have implications on research findings, and caution is recommended when using either component alone

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