

The Ontario Wait Time Strategy: No Evidence of an Adverse Impact on Other Surgeries



ICES Investigative Report

May 2007

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Authors

J. Michael Paterson, MSc

Janet E. Hux, MD, MSc, SM, FRCPC

Jack V. Tu, MD, PhD, FRCPC

Andreas Laupacis, MD, MSc, FRCPC

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Institute for Clinical Evaluative Sciences (ICES)
G1 06, 2075 Bayview Avenue
Toronto, ON M4N 3M5
Telephone: 416-480-4055
www.ices.on.ca

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Authors' Affiliations

J. Michael Paterson, MSc

Epidemiologist, Institute for Clinical Evaluative Sciences

Assistant Professor (part-time), Department of Family Medicine, McMaster University

Janet E. Hux, MD, MSc, SM, FRCPC

President & Chief Executive Officer (I), Institute for Clinical Evaluative Sciences

Associate Professor, Departments of Medicine and Health Policy, Management and Evaluation, University of Toronto

Jack V. Tu, MD, PhD, FRCPC

Senior Scientist and Canada Research Chair in Health Services Research, Institute for Clinical Evaluative Sciences

General Internist and Scientist, Sunnybrook Health Sciences Centre

Professor, Departments of Medicine, Public Health Sciences and Health Policy, Management and Evaluation, University of Toronto

Andreas Laupacis, MD, MSc, FRCPC

Director, Li Ka Shing Knowledge Institute of St. Michael's Hospital, Toronto

Adjunct Scientist, Institute for Clinical Evaluative Sciences

Professor, Departments of Medicine and Health Policy, Management and Evaluation, University of Toronto

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Knowledge Transfer, Institute for Clinical Evaluative Sciences

Paula McColgan, *Vice-President, Strategy and External Relations*

Camille Marajh, *Manager*

Susan Shiller, *Editor and Publications Coordinator*

Laura Benben, *Senior Web and Graphic Designer*

Randy Samaroo, *Graphic Designer*

Paulina Carrión, *Knowledge Transfer Coordinator*

About ICES

Ontario's resource for informed health care decision-making

The Institute for Clinical Evaluative Sciences (ICES) is an independent, non-profit organization that conducts research on a broad range of topical issues to enhance the effectiveness of health care for Ontarians. Internationally recognized for its innovative use of population-based health information, ICES knowledge provides evidence to support health policy development and changes to the organization and delivery of health care services.

Unbiased ICES evidence provides fact-based measures of health system performance; a clearer understanding of the shifting health care needs of Ontarians; and a stimulus for discussion of practical solutions to optimize scarce resources.

Key to ICES' research is our ability to link anonymous population-based health information on an individual patient basis, using unique encrypted identifiers that ensure privacy and confidentiality. This allows scientists to obtain a more comprehensive view of specific health care issues than would otherwise be possible. Linked databases reflecting 12 million of 30 million Canadians allow researchers to follow patient populations through diagnosis and treatment, and to evaluate outcomes.

ICES brings together the best and the brightest talent under one roof. Many of our faculty are not only internationally recognized leaders in their fields, but are also practicing clinicians who understand the grassroots of health care delivery, making ICES knowledge clinically-focused and useful in changing practice. Other team members have statistical training, epidemiological backgrounds, project management or communications expertise. The variety of skill sets and educational backgrounds ensures a multi-disciplinary approach to issues management and creates a real-world mosaic of perspectives that is vital to shaping Ontario's future health care.

ICES collaborates with experts from a diverse network of institutions, government agencies, professional organizations and patient groups to ensure research and policy relevance.

Executive Summary

Introduction

The purpose of this study was to evaluate the impact of the Ontario Wait Time Strategy (WTS) upon surgical procedures that were not a priority of the WTS.

Study

Physician service claims paid by the Ontario Health Insurance Plan (OHIP) were analyzed between January 1, 1992 and June 30, 2006. A set of 30 indicator procedures were pre-specified based on access concerns and methodologic factors. To assess the impact of the WTS upon procedure volumes, each year was divided into quarters. The number of procedures performed each quarter was counted and then expressed as a fraction of Ontario's population. Time series models were used to forecast post-policy procedure rates (with 95% confidence intervals [CIs]), and the predicted and actual procedure rates were compared for the seven quarters following the announcement of the WTS. Where actual rates consistently fell outside the 95% CI of forecasted rates, procedure volumes were considered to have been influenced by the WTS.

Key Findings

- Rates of total hip and total knee replacement showed clear evidence of an impact of the WTS. Evidence of an impact on cataract extraction was less pronounced.
- When compared with pre-policy trends, the procedure rate did not significantly decrease after introduction of the WTS in any of the other 27 non-WTS procedures.
- Among the 10 orthopedic procedures that did not receive specific WTS funding, the post-policy rates of four procedures—total shoulder arthroplasty, ganglion excision, meniscectomy, and claw and hammer toe surgery—sometimes exceeded the 95% CIs for the predicted rates.

Implications

- There was no evidence of an adverse impact of Ontario's WTS on the rate of non-priority surgeries.
- In fact, these findings suggest that the rate of a small number of non-funded orthopedic procedures may have increased since the start of the WTS.
- Future research should evaluate access on a regional and an institutional basis, and assess effects of the WTS on surgical waits—particularly for urgent procedures where evidence suggests that delay may compromise outcomes.

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- Exhibit 1.26** Ontario Health Insurance Plan (OHIP) claims per 100,000 males for transurethral resection of the prostate, by quarter-year, in Ontario, 1992–2006
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Background

Reducing wait times for surgery and other health services is a priority for governments in most developed countries. In the fall of 2004, Canada's First Ministers announced plans to implement a national Wait Times Strategy (WTS)—a concerted effort to better manage and reduce surgical waiting times. The initial targeted procedures were for cancer, ischemic heart disease, arthritis of the hip and knee, and cataracts. As of May 18, 2006, which closely coincides with the time period examined in this report, the Ontario Ministry of Health and Long-Term Care had invested \$410 million in additional procedures, including: 43,850 cataract surgeries, 18,210 hip and knee replacements, 16,650 cardiac procedures, 11,260 cancer surgeries and 182,700 MRI scans.¹ As a result, there has been a clear increase in the rate of WTS procedures.^{2,3} However, at the same time there have also been anecdotal reports of decreased numbers of, and increased waits for, non-priority services.^{4,5}

Introduction

To begin to explore this issue empirically on a provincial basis, the current study assessed trends in physician billings for a range of potential 'sentinel' procedures both within and beyond the WTS priority areas. Physician service claims paid by the Ontario Health Insurance Plan (OHIP) between January 1, 1992 and June 30, 2006 were analyzed retrospectively. A set of 30 indicator procedures were selected based on access concerns and methodologic factors. The procedures fell into two broad categories: i) those typically performed by surgeons who also perform WTS procedures (to assess impact upon surgical case mix within specialties); and ii) those typically performed by general surgeons or specialists not directly involved in the WTS. The analyses were restricted to high volume procedures for which there had not been changes to the OHIP fee schedule during the study period.

To assess the impact of the WTS upon procedure volumes, surgical rates were calculated per quarter year, and then time series models were used to forecast post-policy rates. The predicted and actual procedure rates were then compared for the seven quarters following announcement of the WTS. Where actual rates consistently fell outside the 95% confidence intervals of forecasted rates, procedure volumes were considered to have been influenced by the WTS.

Findings

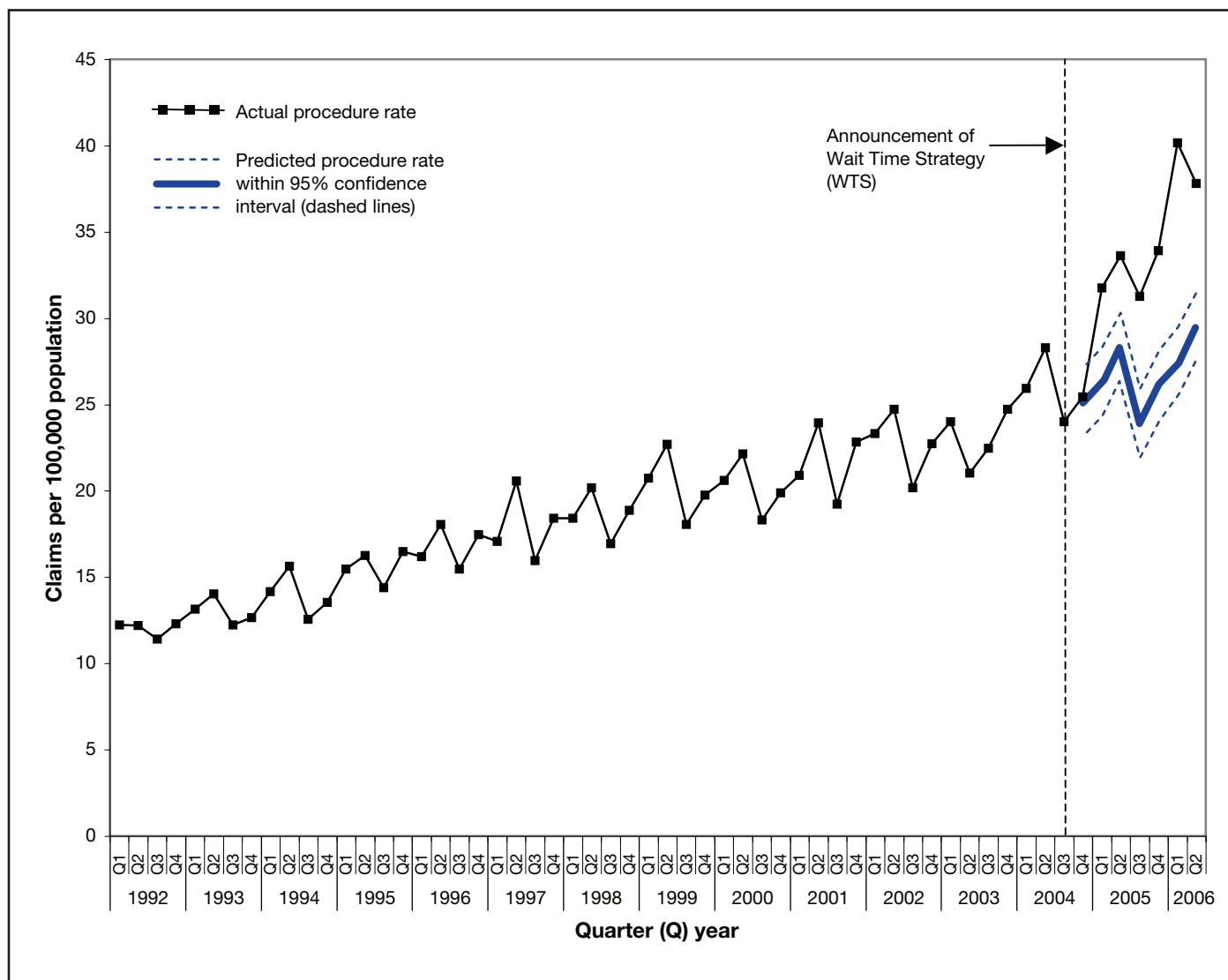
Quarterly procedure rates for 30 surgical procedures are presented from 1992 to 2006 in order to assess the impact of the implementation of the Ontario Wait Time Strategy (WTS) on these procedures. The findings are presented in three sections as follows:

- Orthopedic surgical procedures;
- Ophthalmology surgical procedures; and,
- Other surgical procedures.

Because orthopedic and ophthalmology services figured prominently in physician reports on problems with access,^{4,5} these specialties were specifically targeted and advice was sought from an orthopedic surgeon and an ophthalmologist regarding procedure coding. In the case of orthopedics, a list of 'sentinel' procedures compiled by the National Standards Committee of the Canadian Orthopedic Association was also consulted.⁶

Orthopedic surgical procedures

Exhibit 1.1 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for total knee arthroplasty*, by quarter-year, in Ontario, 1992–2006

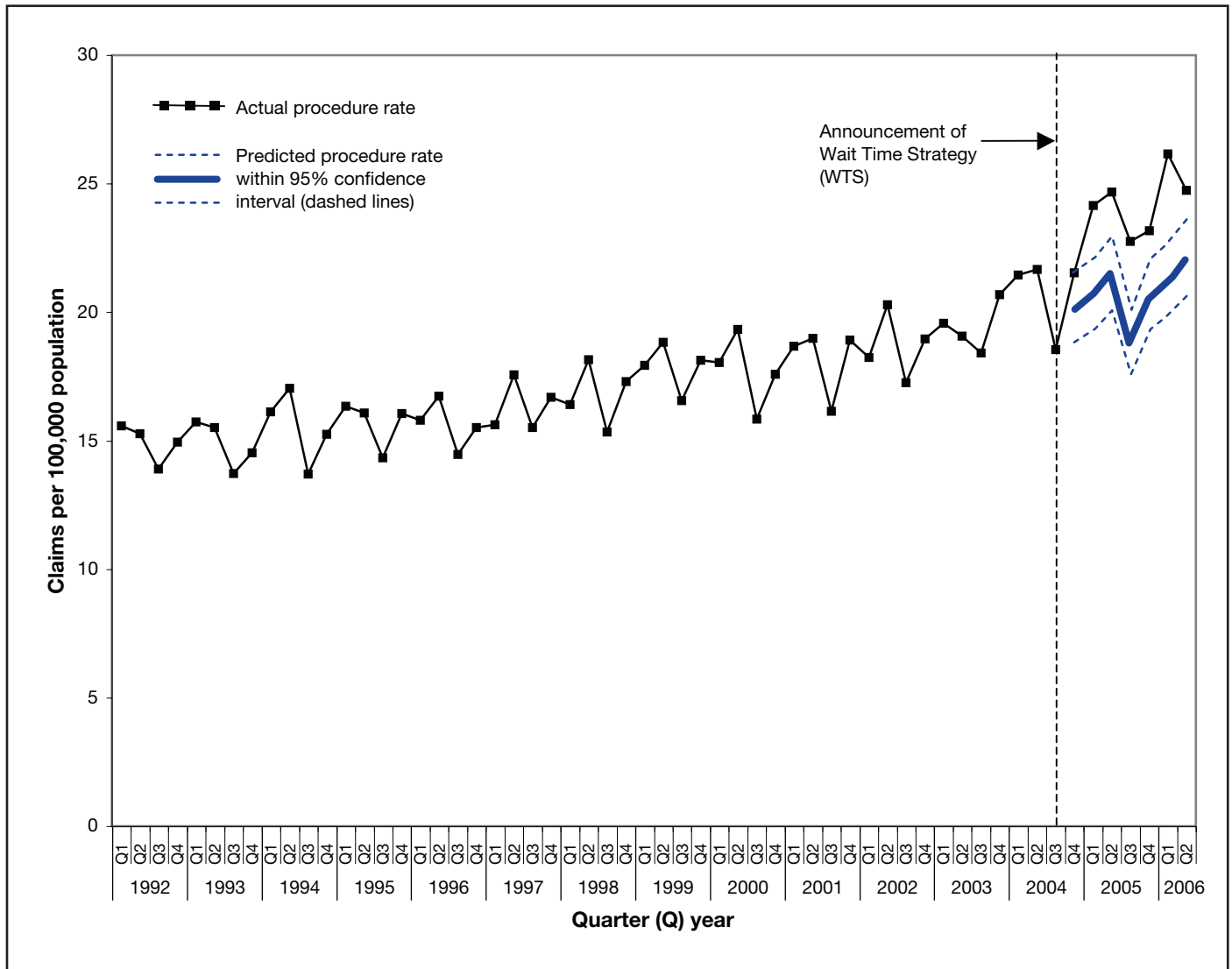


* A WTS surgical procedure

For Exhibits 1.1–1.12

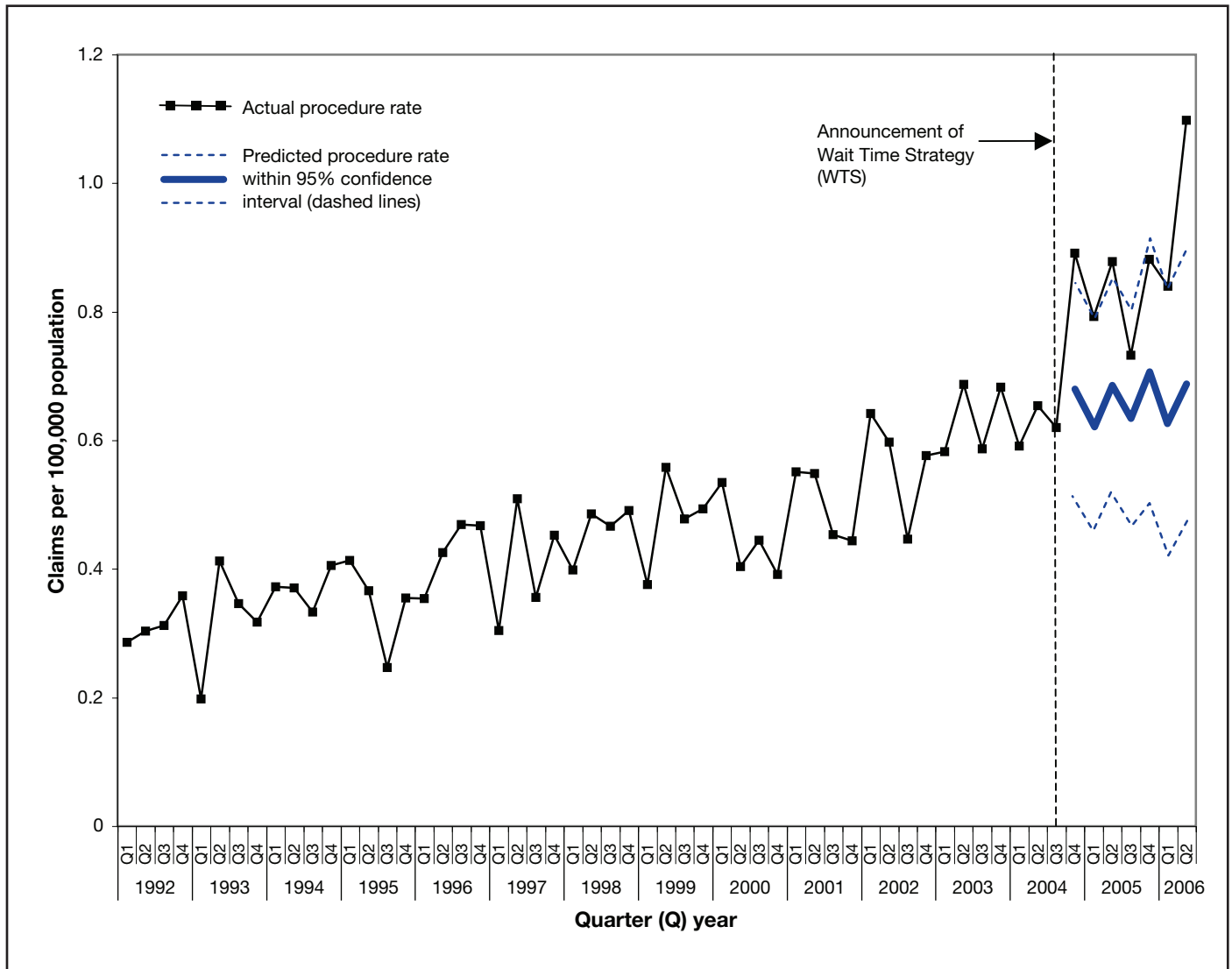
- Of these procedures, only total knee and total hip arthroplasty were priorities of the WTS—the other orthopedic services are non-WTS procedures.
- Rates of total hip and total knee replacement showed clear evidence of an impact of the WTS.
- Among the 10 orthopedic procedures that did not receive specific WTS funding, the post-policy rates of four procedures (total shoulder arthroplasty, ganglion excision, meniscectomy, and claw and hammer toe surgery) sometimes exceeded the 95% confidence interval for the predicted rates.

Exhibit 1.2 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for total hip arthroplasty*, by quarter-year, in Ontario, 1992–2006



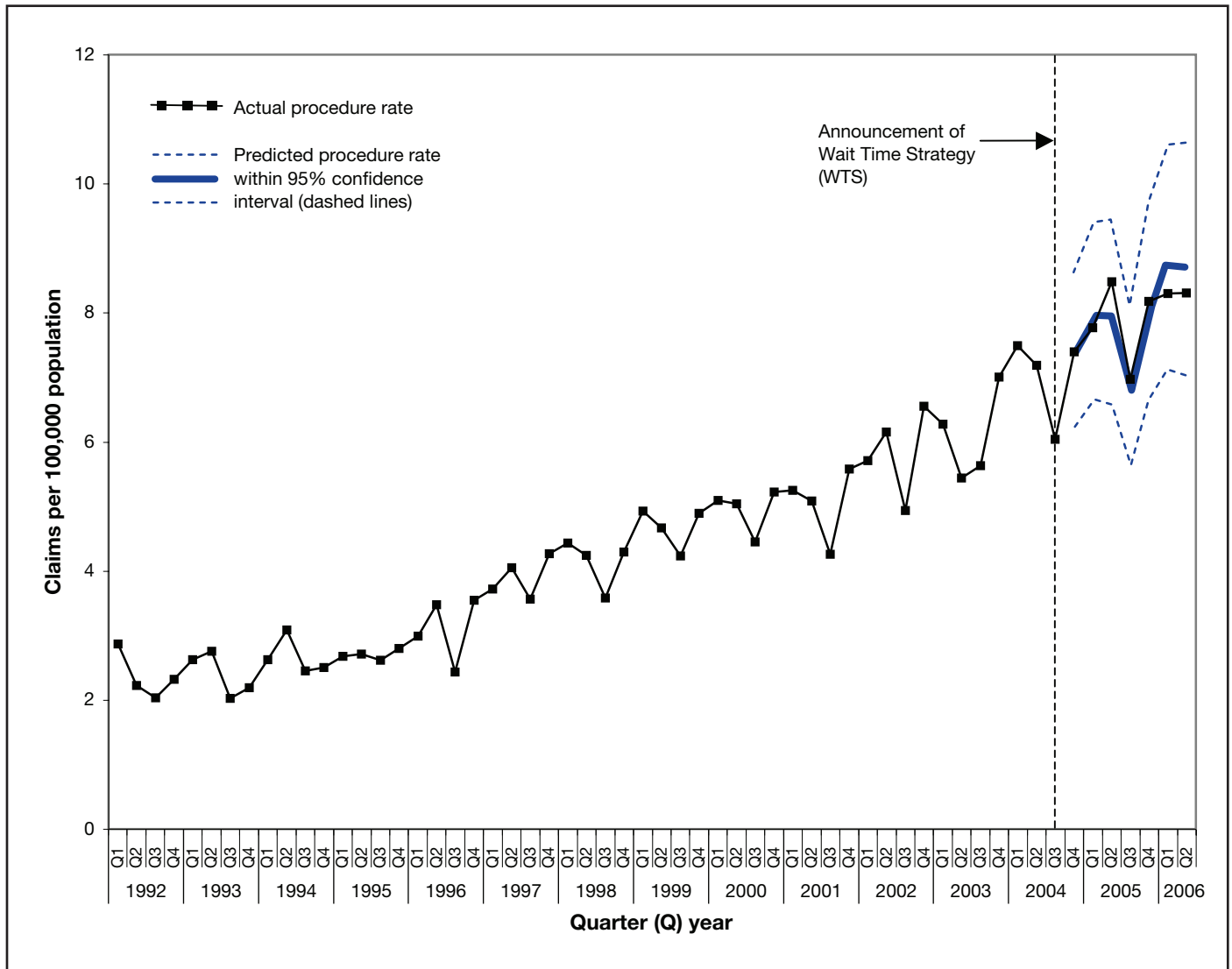
* A WTS surgical procedure

Exhibit 1.3 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for total shoulder arthroplasty*, by quarter-year, in Ontario, 1992–2006



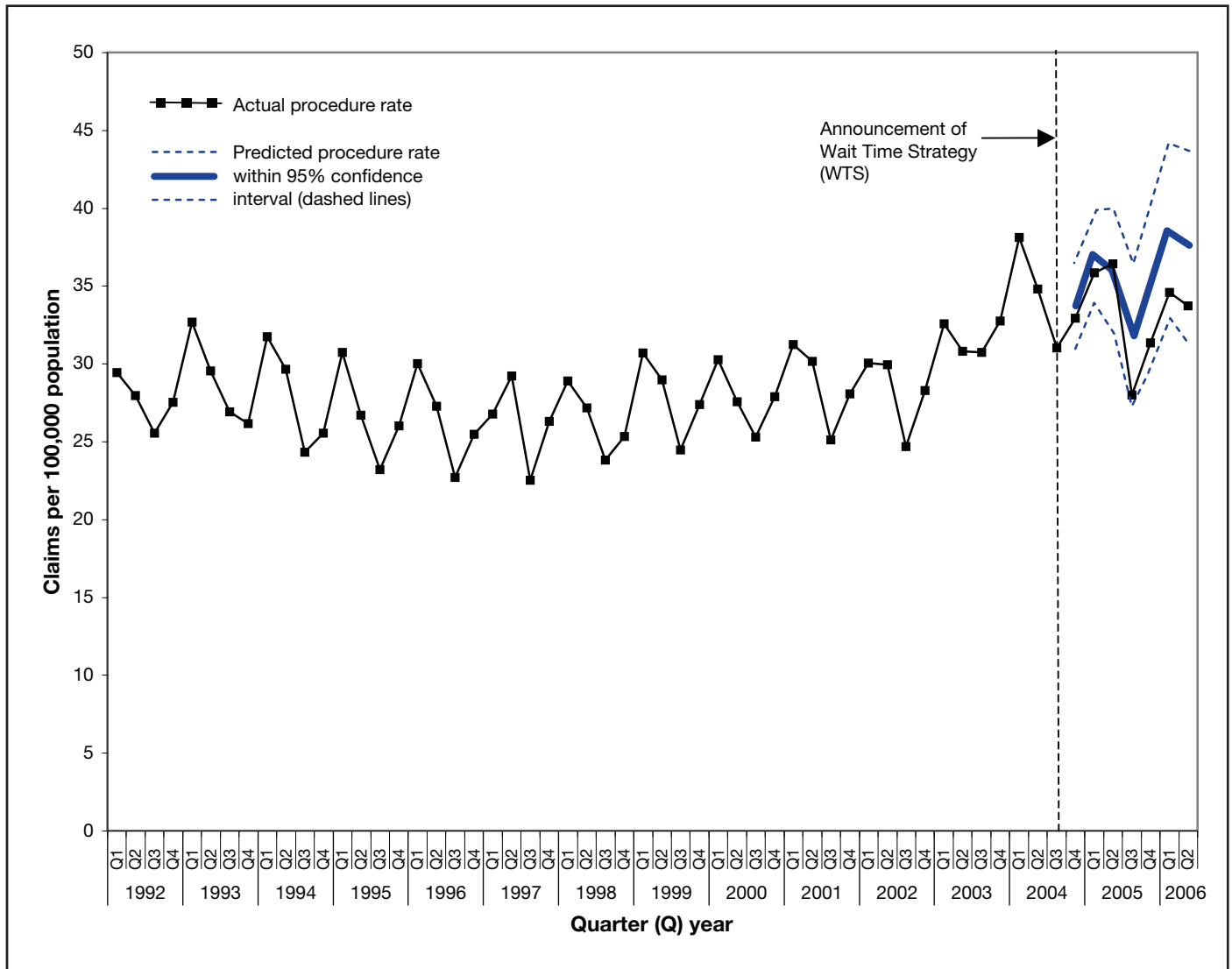
* A non-WTS surgical procedure

Exhibit 1.4 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for rotator cuff repair*, by quarter-year, in Ontario, 1992–2006



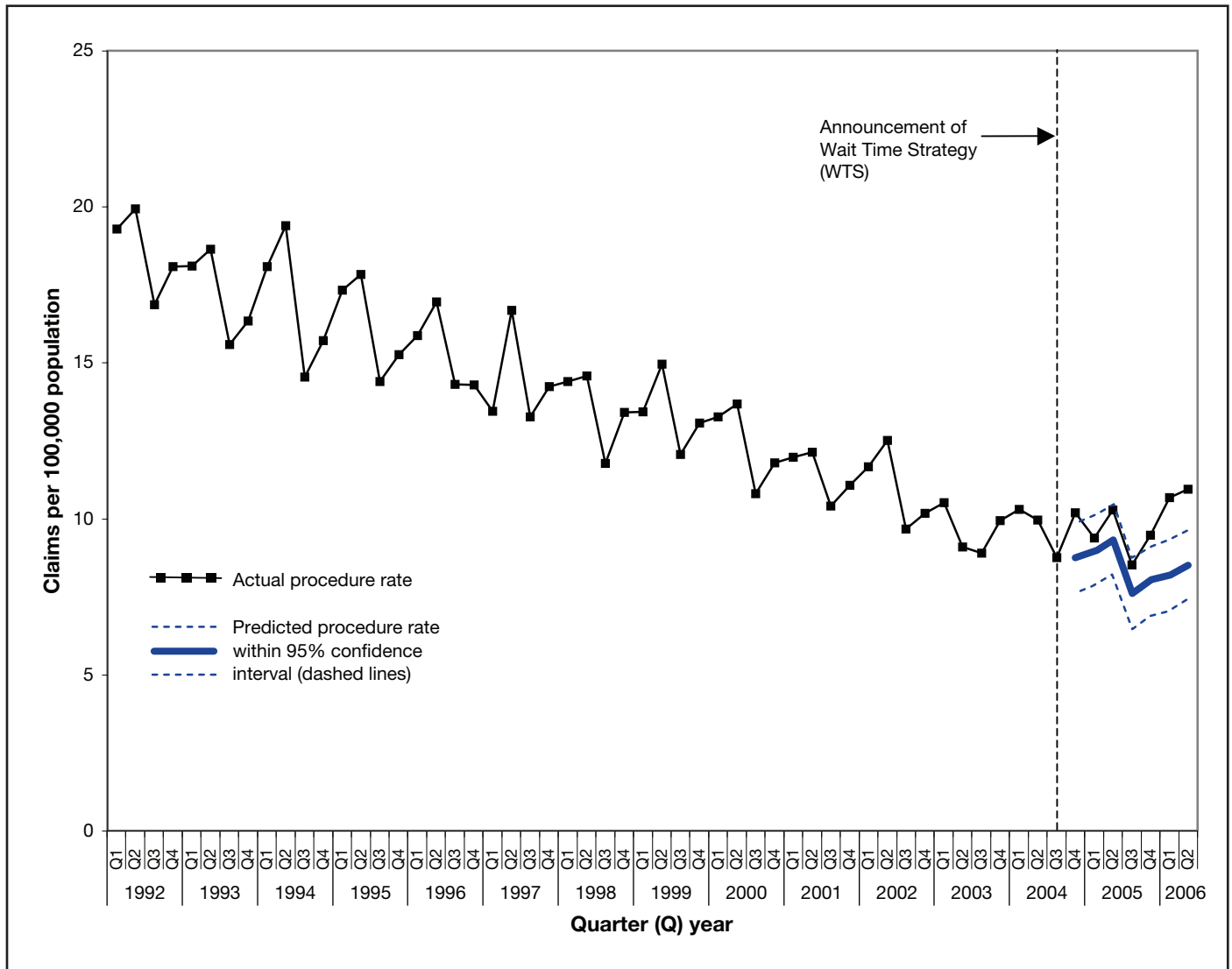
* A non-WTS surgical procedure

Exhibit 1.5 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for carpal tunnel release*, by quarter-year, in Ontario, 1992–2006



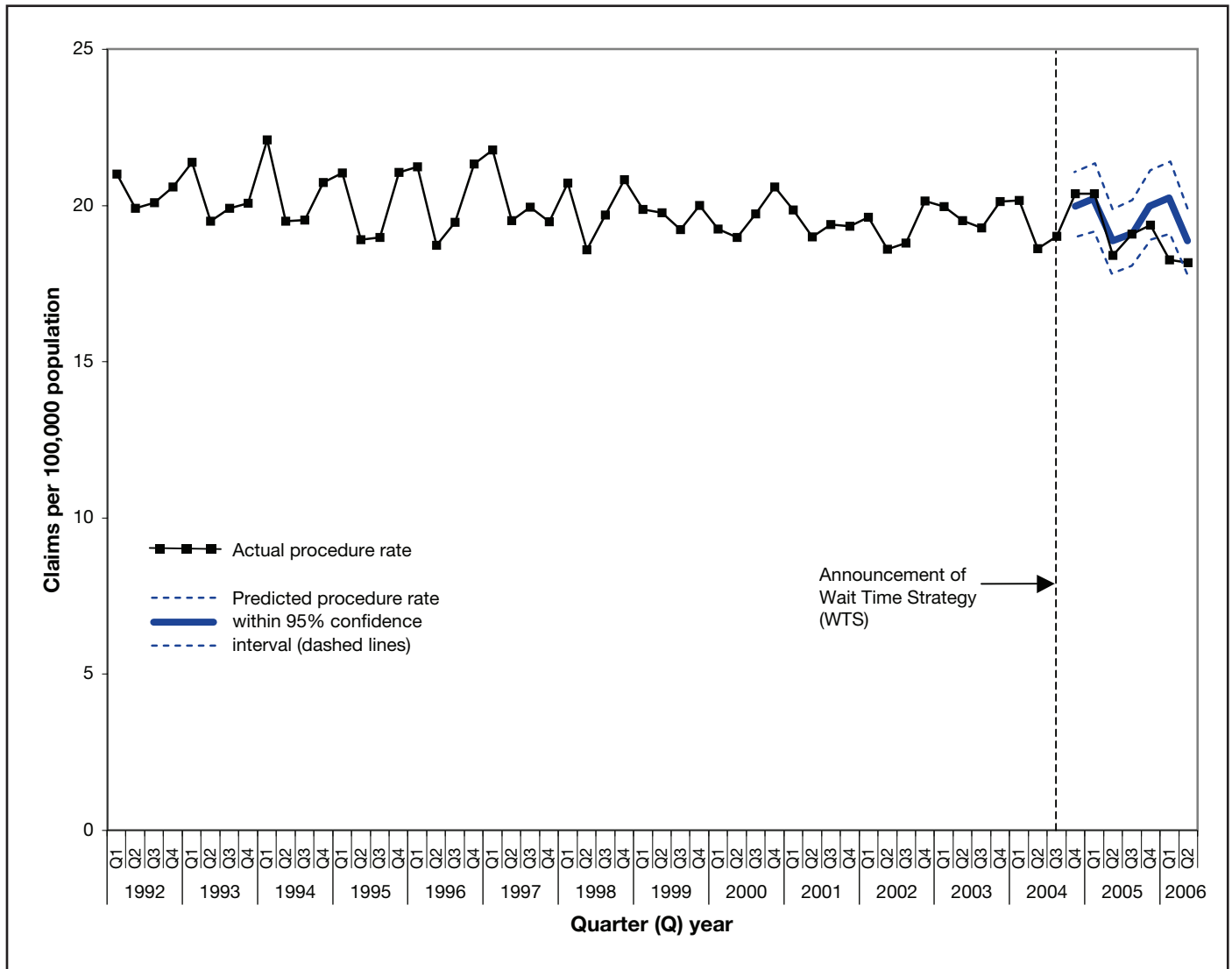
* A non-WTS surgical procedure

Exhibit 1.6 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for hand/wrist ganglion excision*, by quarter-year, in Ontario, 1992–2006



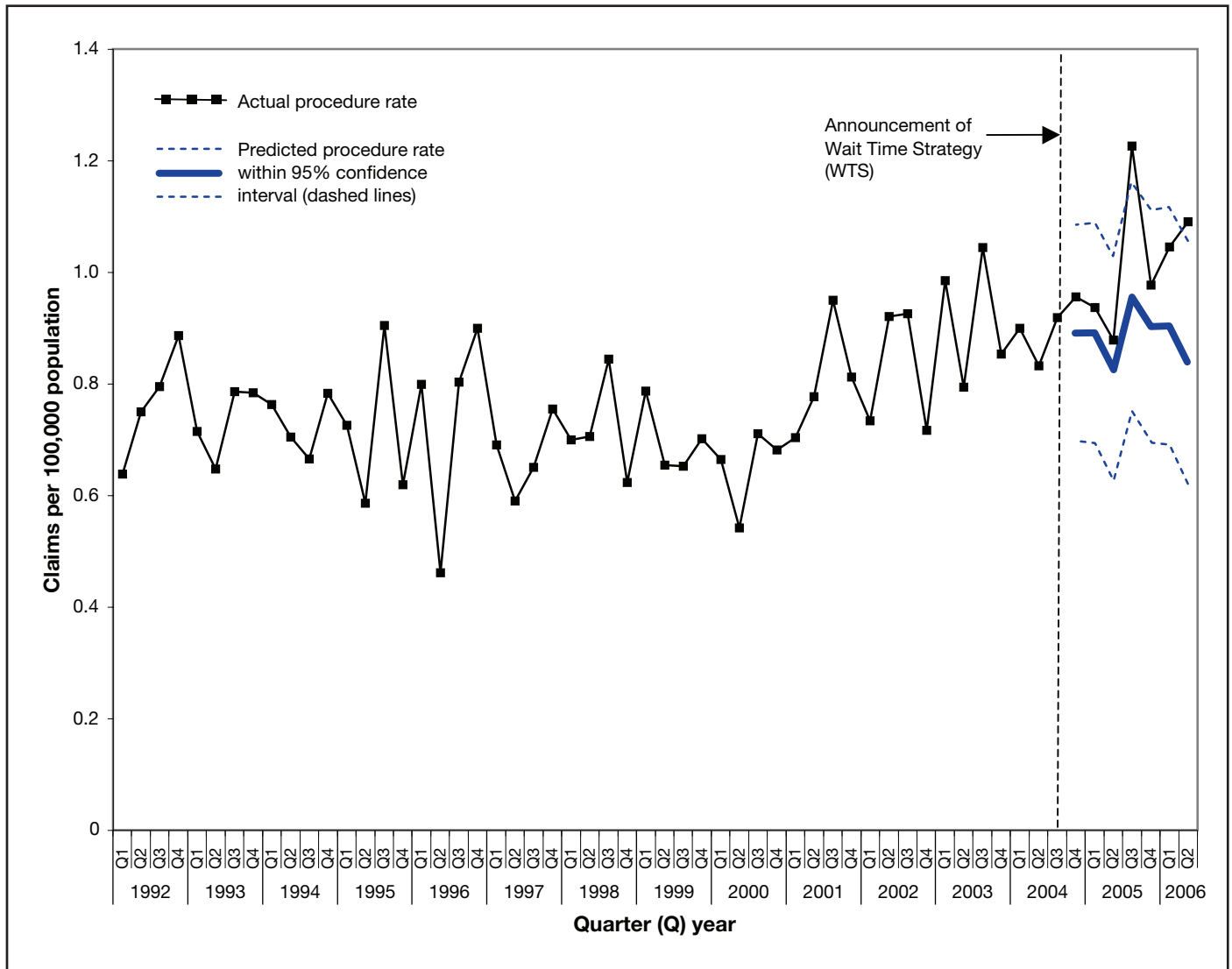
* A non-WTS surgical procedure

Exhibit 1.7 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for hip fracture surgery*, by quarter-year, in Ontario, 1992–2006



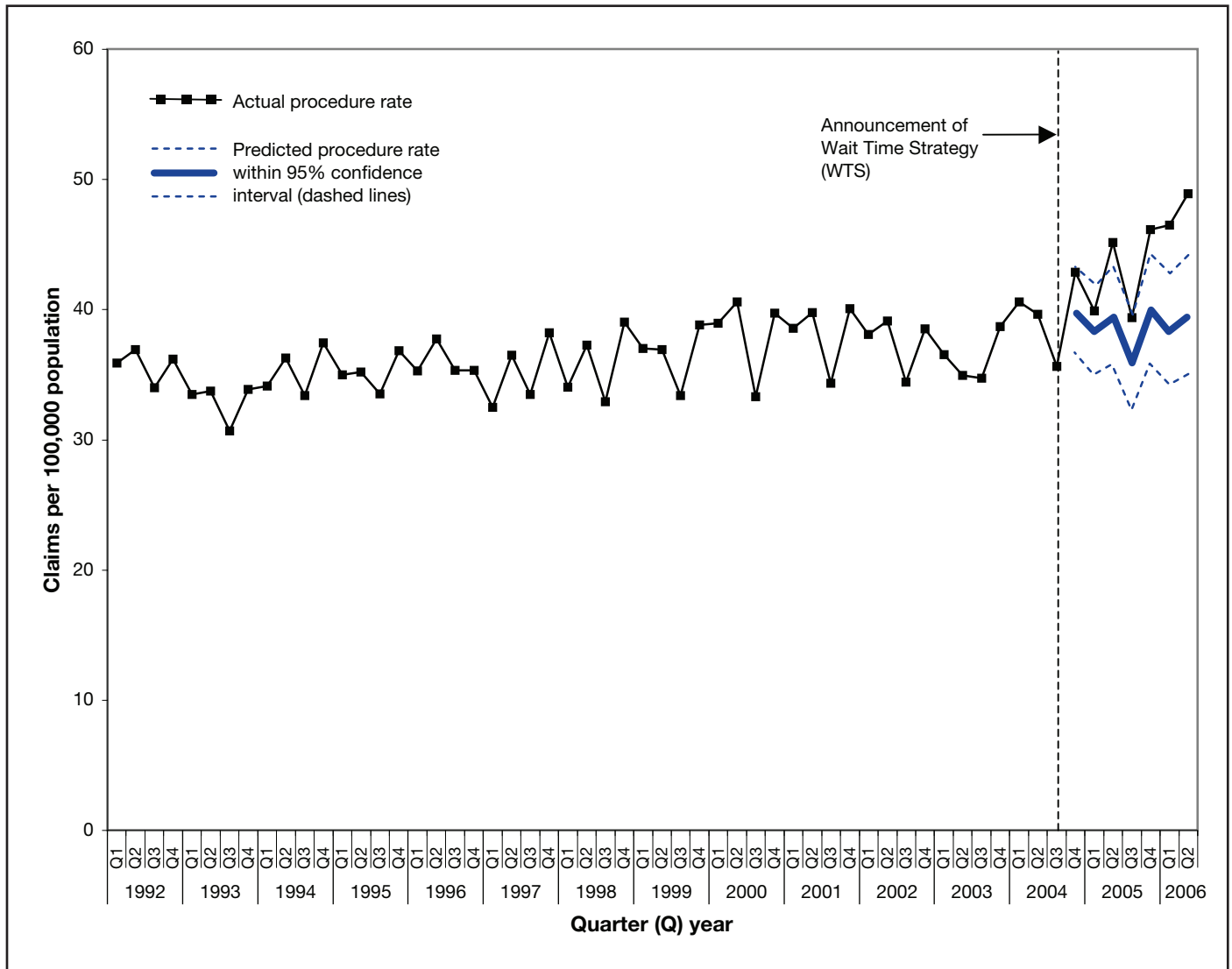
* A non-WTS surgical procedure

Exhibit 1.8 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for pelvic and acetabular fracture surgery*, by quarter-year, in Ontario, 1992–2006



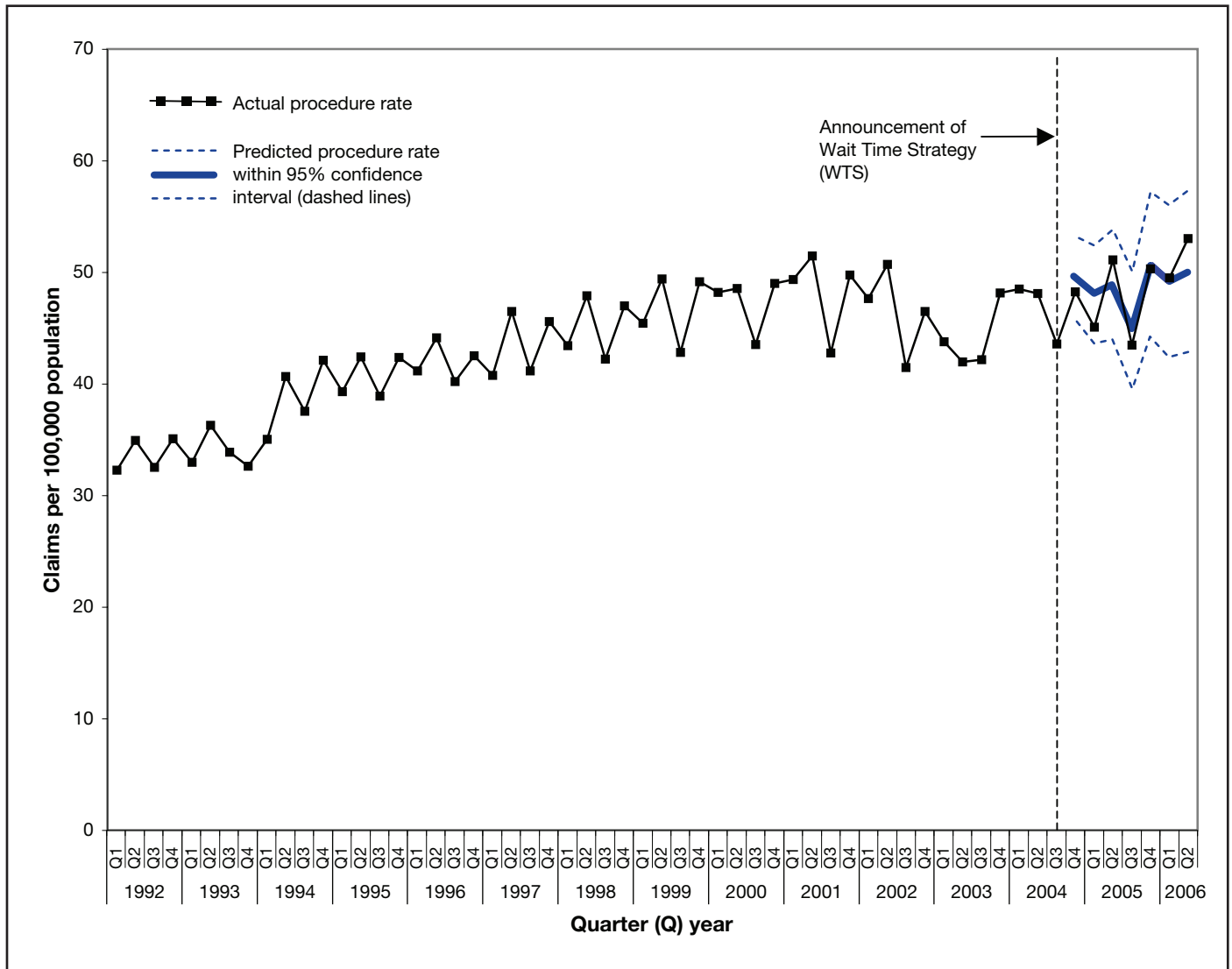
* A non-WTS surgical procedure

Exhibit 1.9 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for menisectomy*, by quarter-year, in Ontario, 1992–2006



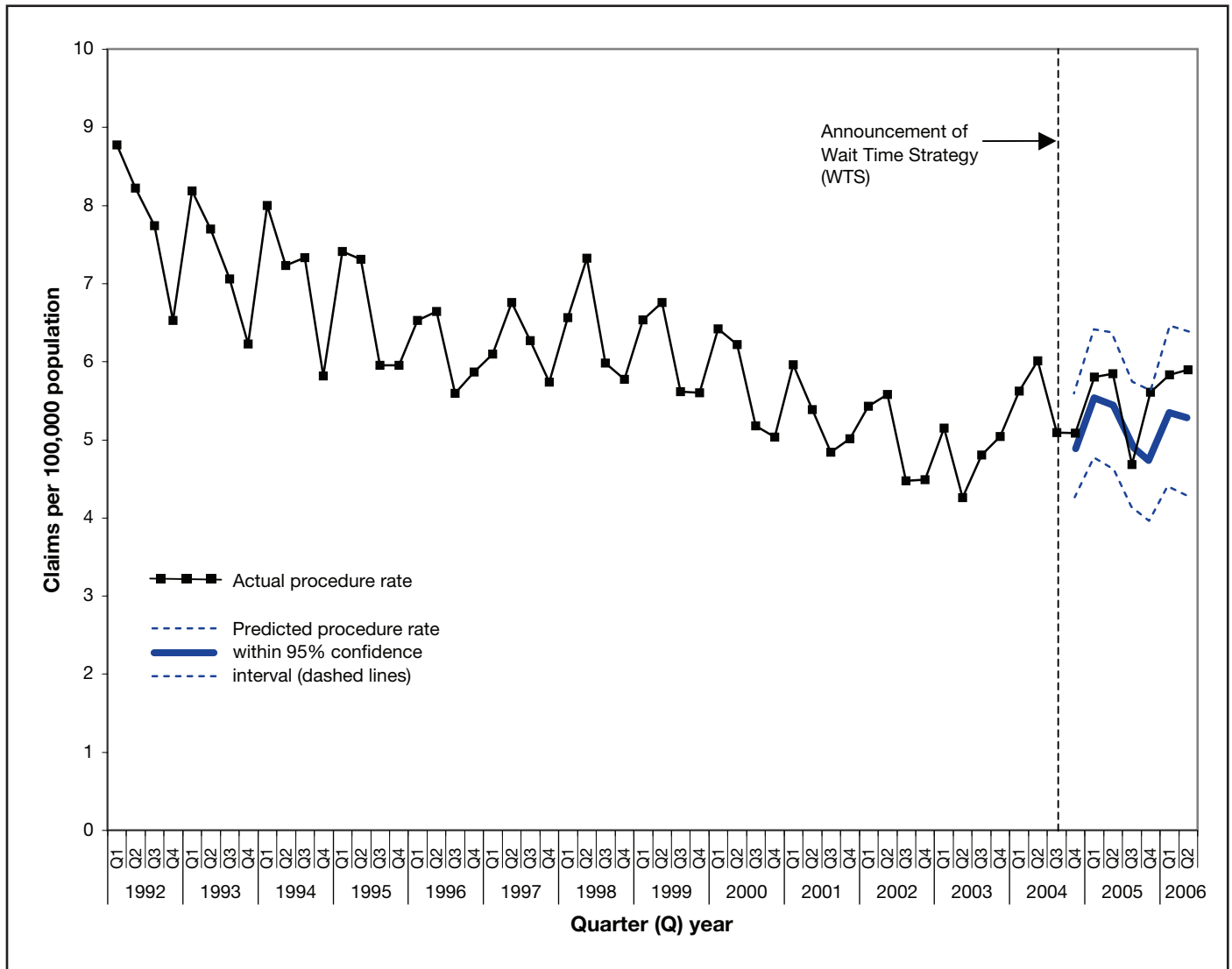
* A non-WTS surgical procedure

Exhibit 1.10 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for knee debridement*, by quarter-year, in Ontario, 1992–2006



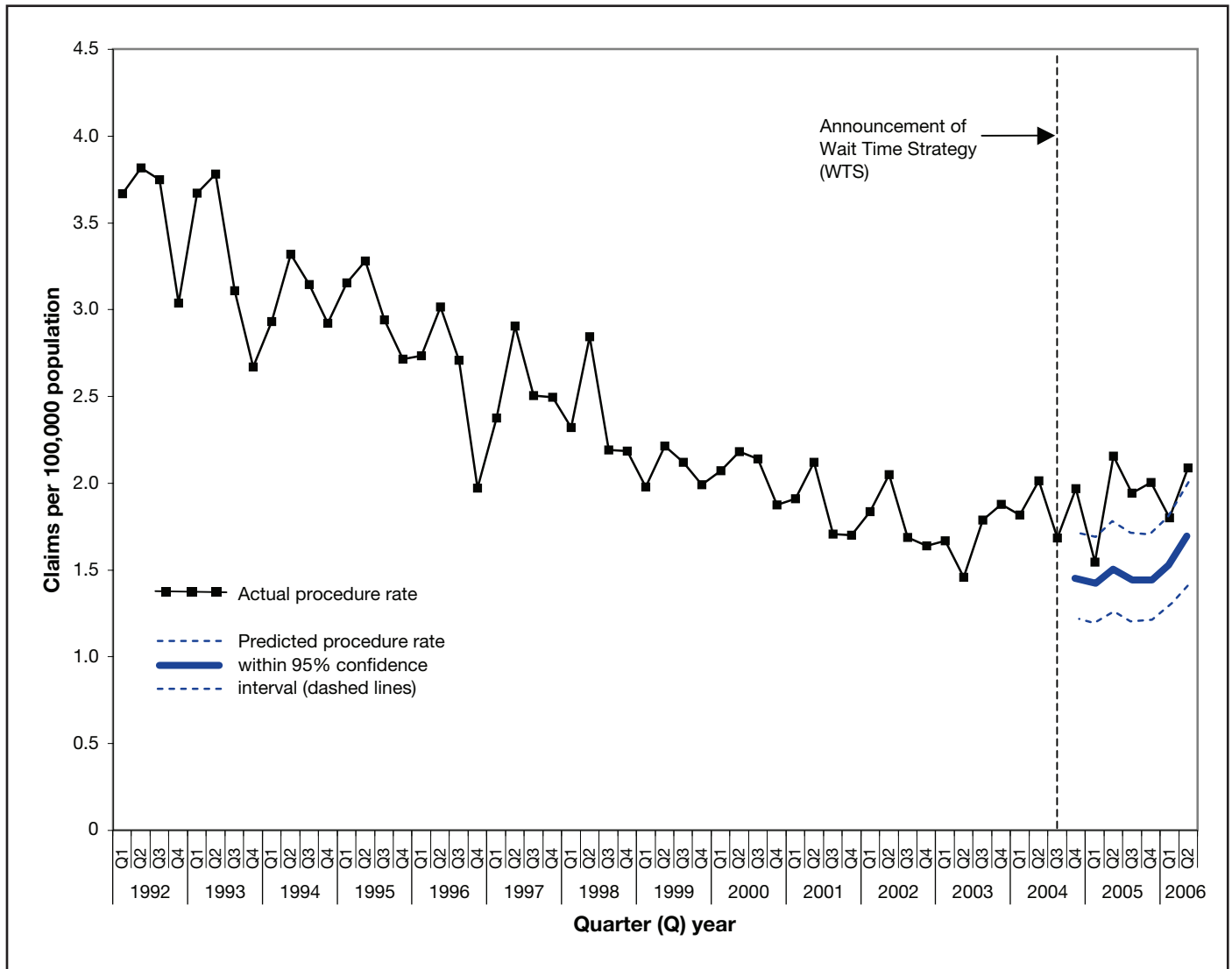
* A non-WTS surgical procedure

Exhibit 1.11 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for hallux valgus (bunion) repair*, by quarter-year, in Ontario, 1992–2006



* A non-WTS surgical procedure

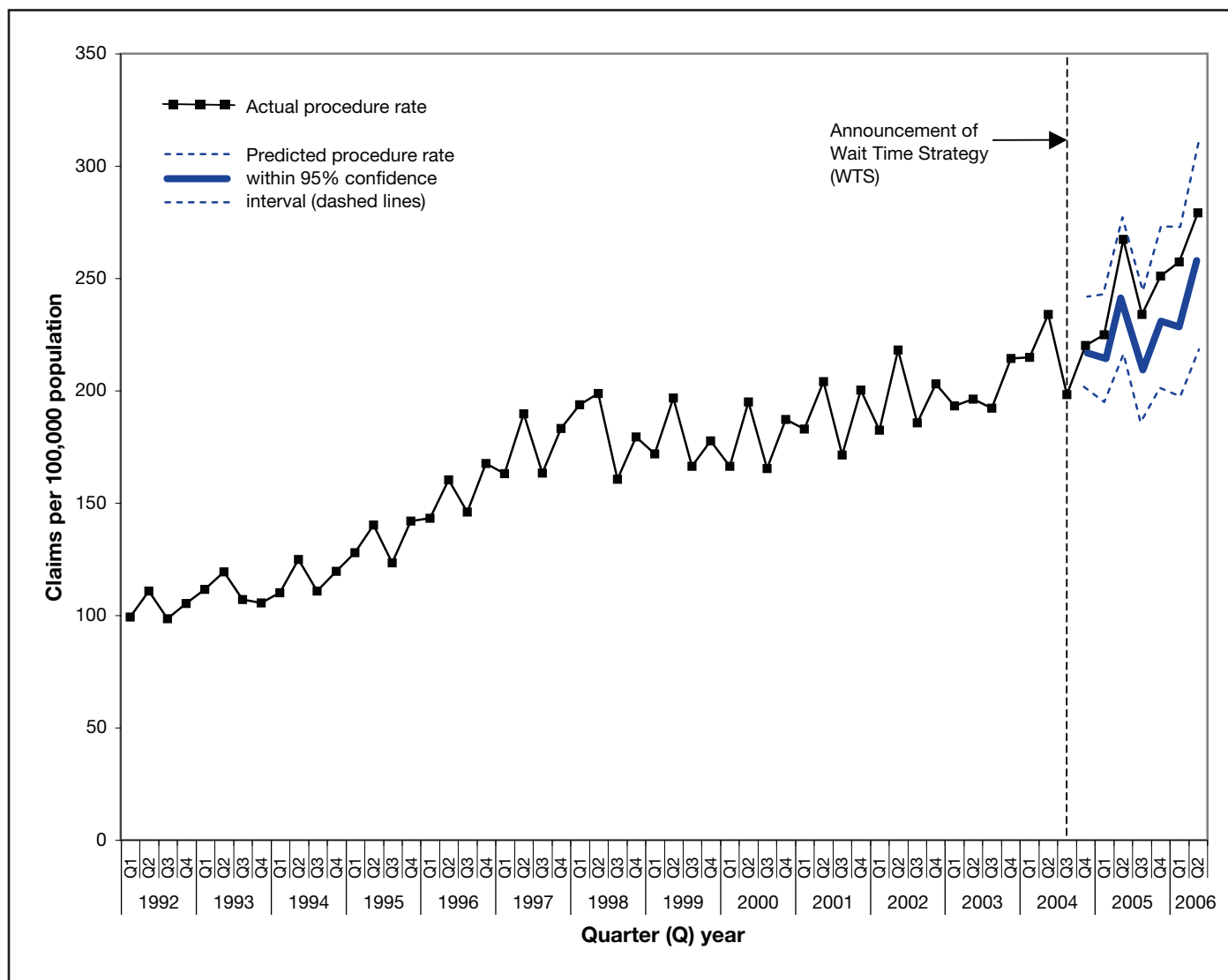
Exhibit 1.12 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for claw and hammer toe surgery*, by quarter-year, in Ontario, 1992–2006



* A non-WTS surgical procedure

Ophthalmology surgical procedures

Exhibit 1.13 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for cataract surgery*, by quarter-year, in Ontario, 1992–2006

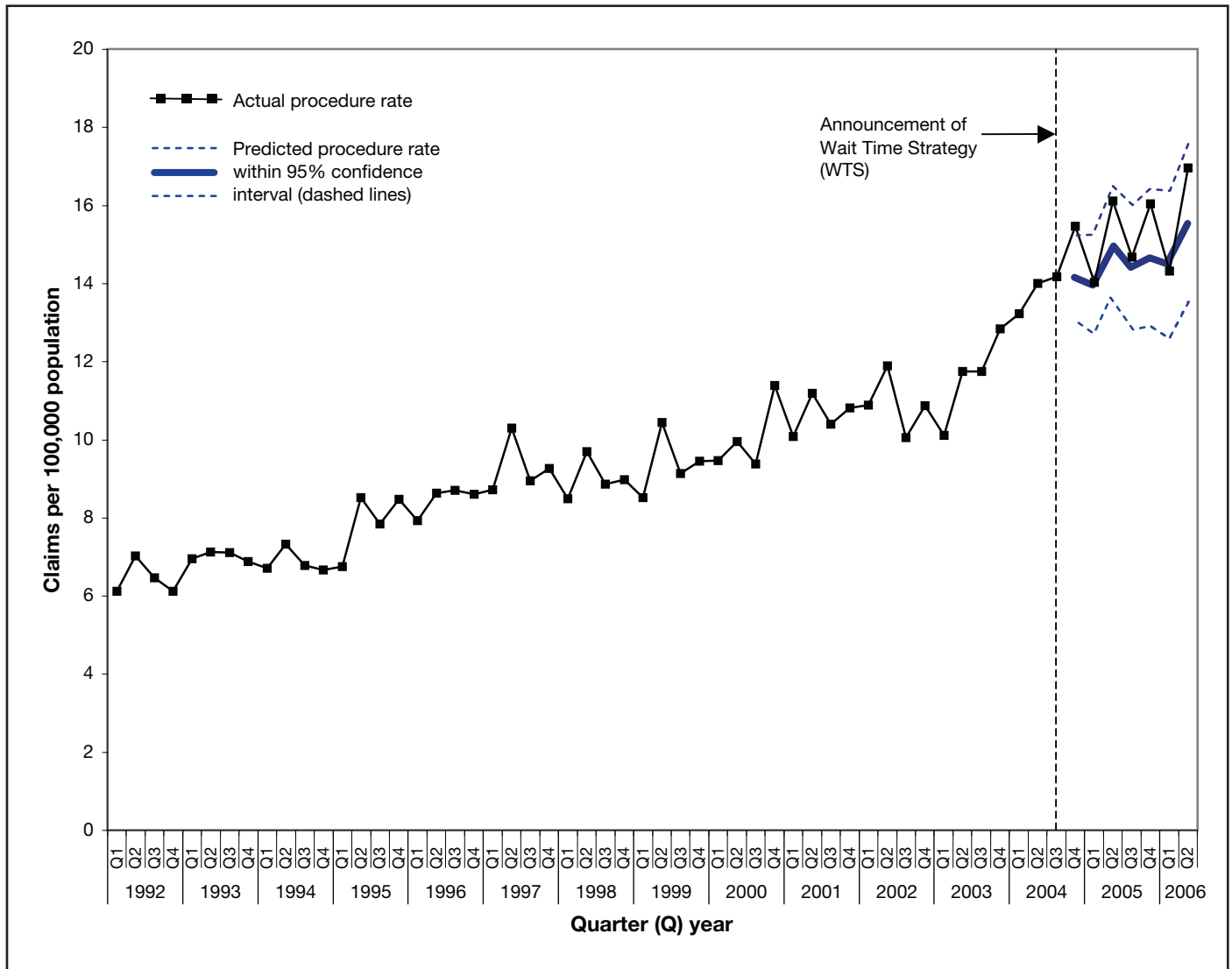


* A WTS procedure

For Exhibits 1.13–1.17

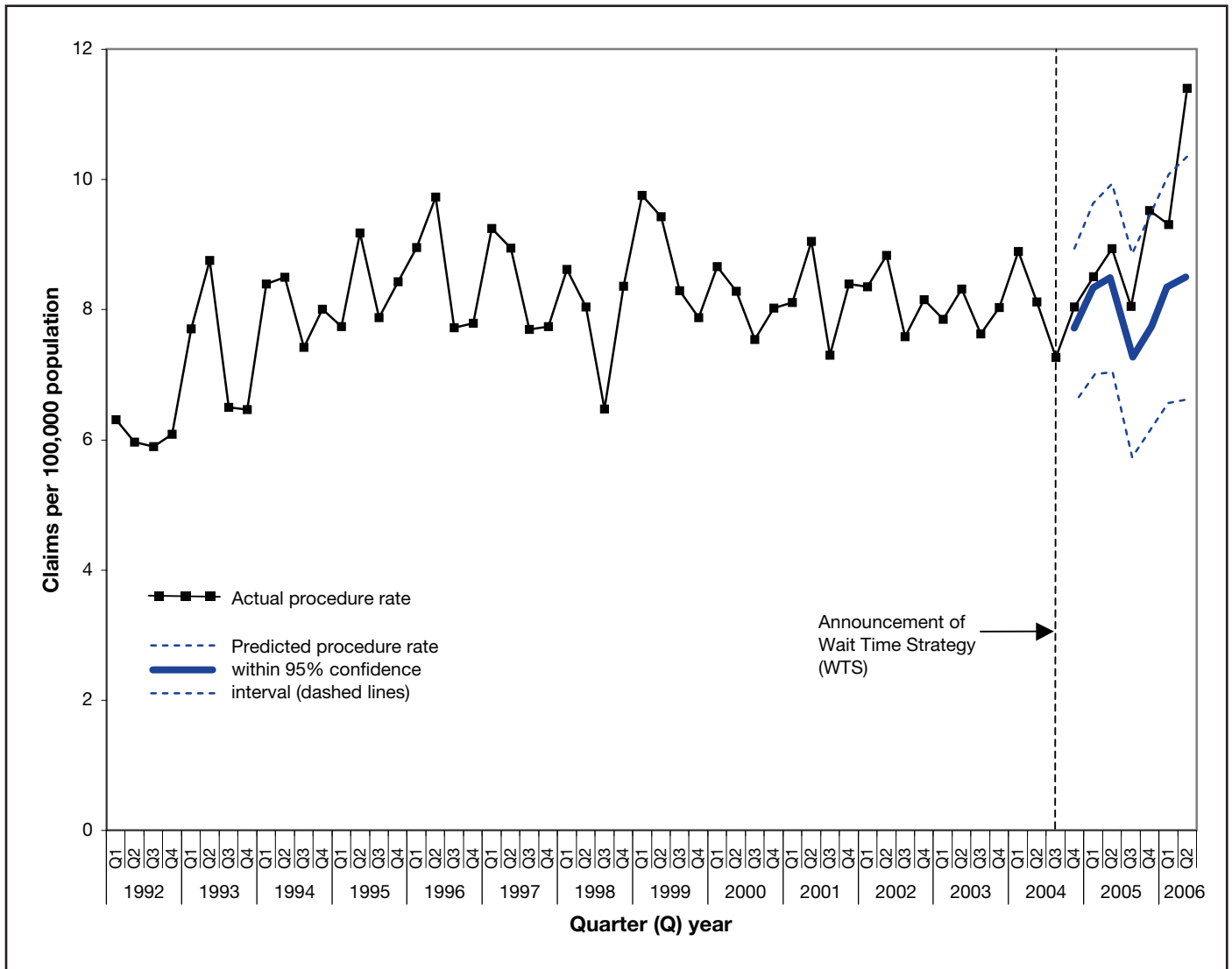
- Of these procedures, only cataract extraction was a priority of the WTS—the other ophthalmology services are non-WTS procedures.
- Rate of cataract extraction showed evidence of an impact of the WTS; however, the rate increase was not as pronounced as it was for total hip and total knee replacement.
- In none of the other non-WTS ophthalmology procedures did the rate significantly decrease after introduction of the WTS, when compared with pre-policy trends.

Exhibit 1.14 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for retina surgery*, by quarter-year, in Ontario, 1992–2006



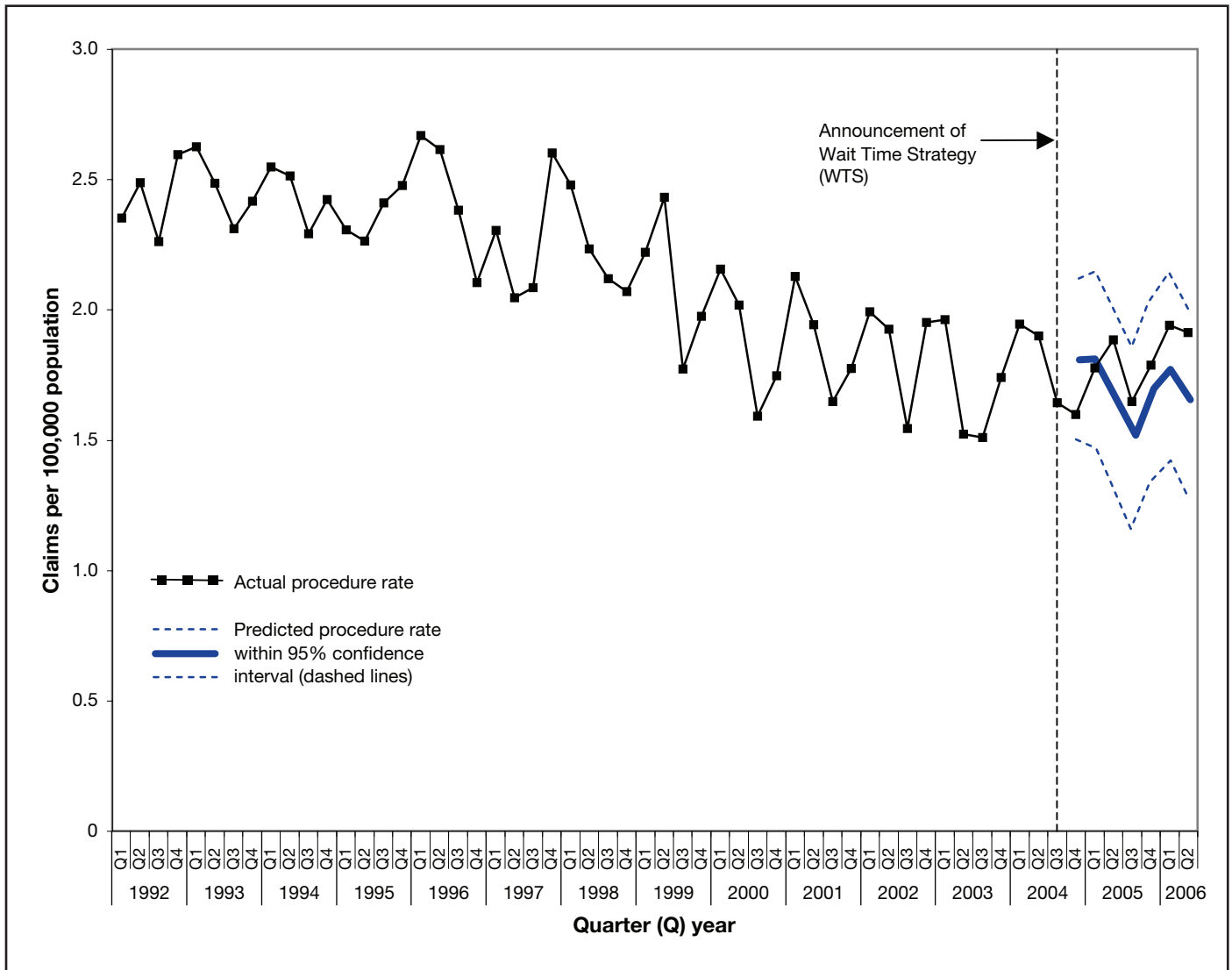
* A non-WTS surgical procedure

Exhibit 1.15 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for glaucoma filtering procedures*, by quarter-year, in Ontario, 1992–2006



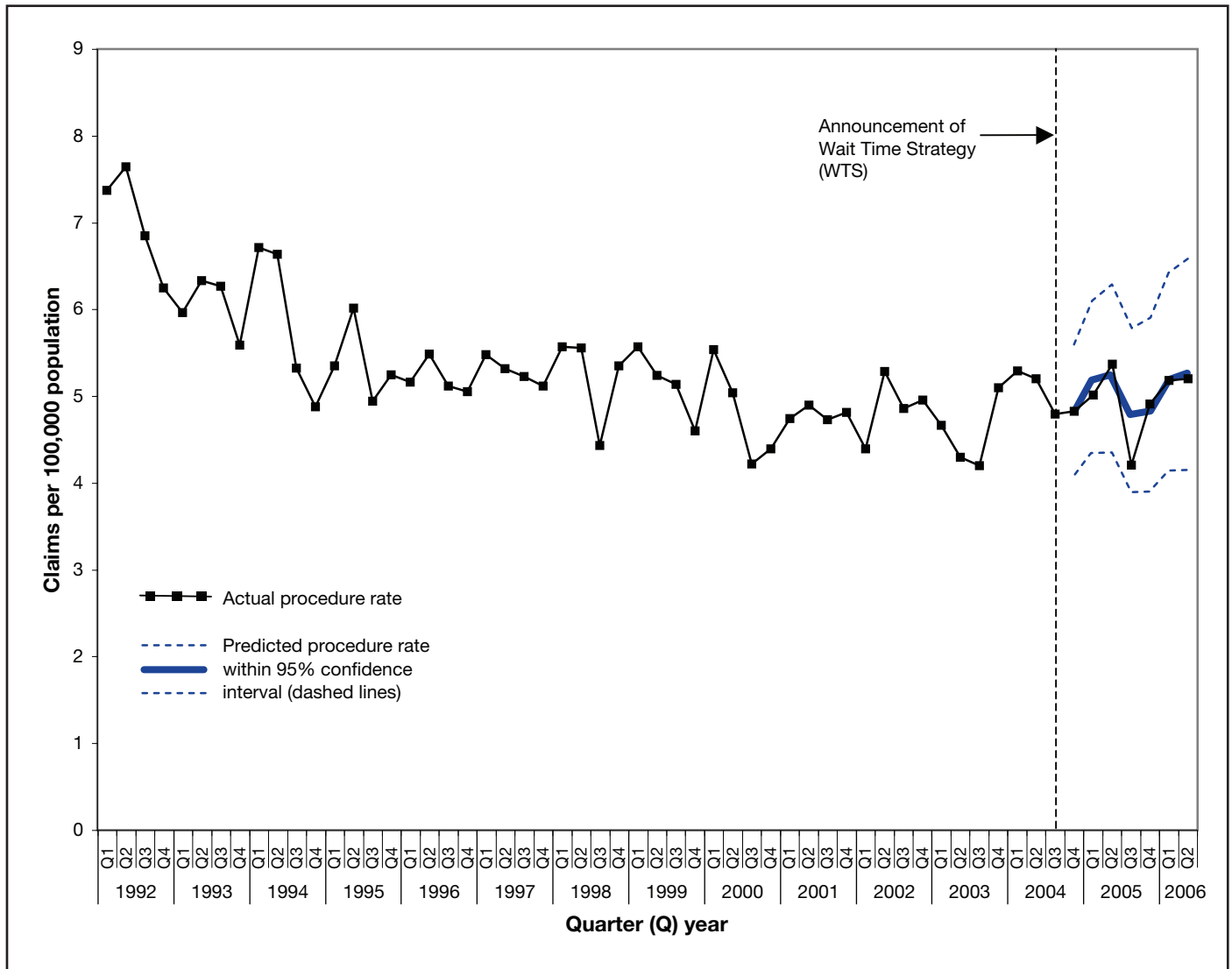
* A non-WTS surgical procedure

Exhibit 1.16 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for cornea transplants*, by quarter-year, in Ontario, 1992–2006



* A non-WTS surgical procedure

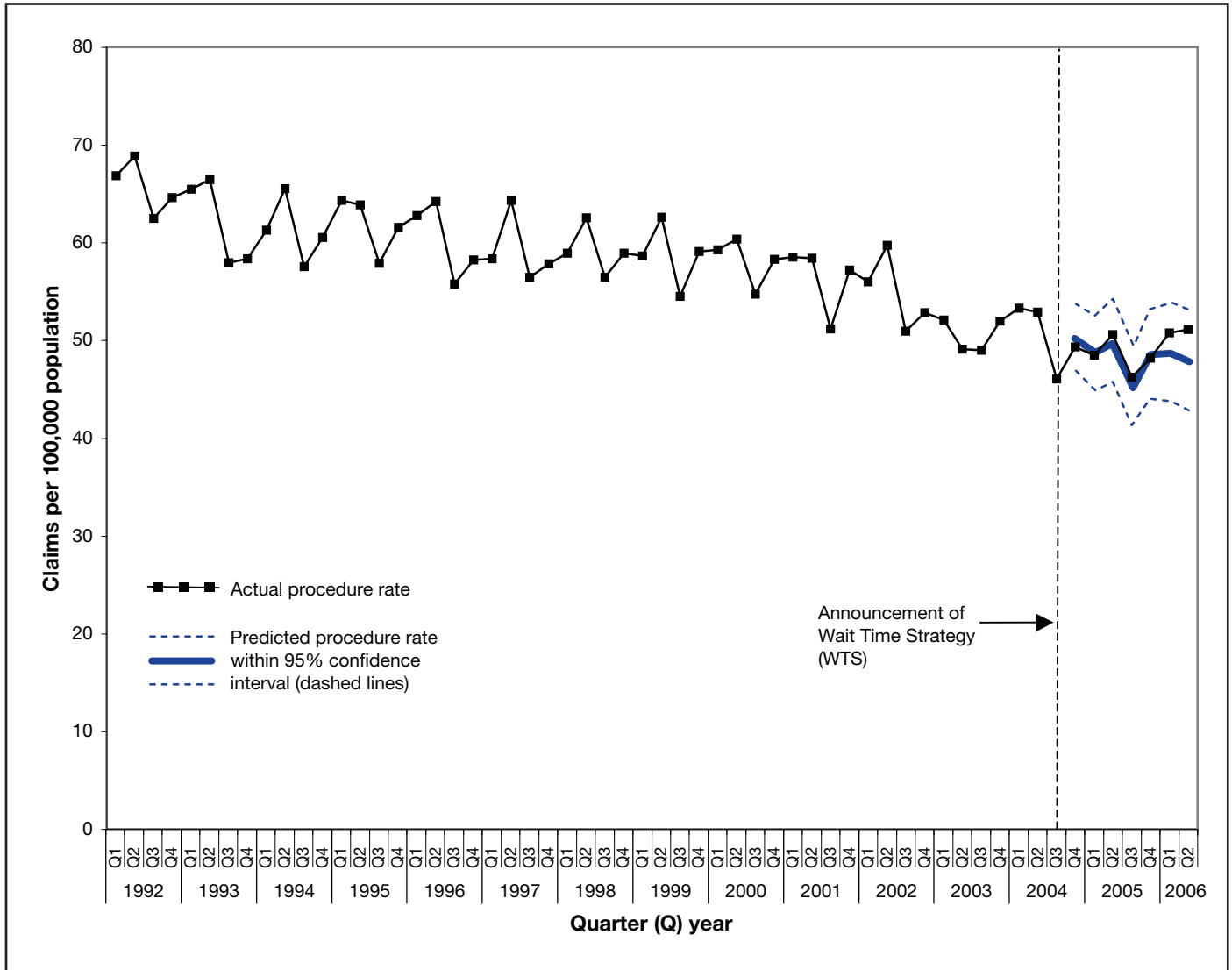
Exhibit 1.17 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for extra-ocular muscle surgery*, by quarter-year, in Ontario, 1992–2006



* A non-WTS surgical procedure

Other surgical procedures

Exhibit 1.18 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for cholecystectomy*, by quarter-year, in Ontario, 1992–2006

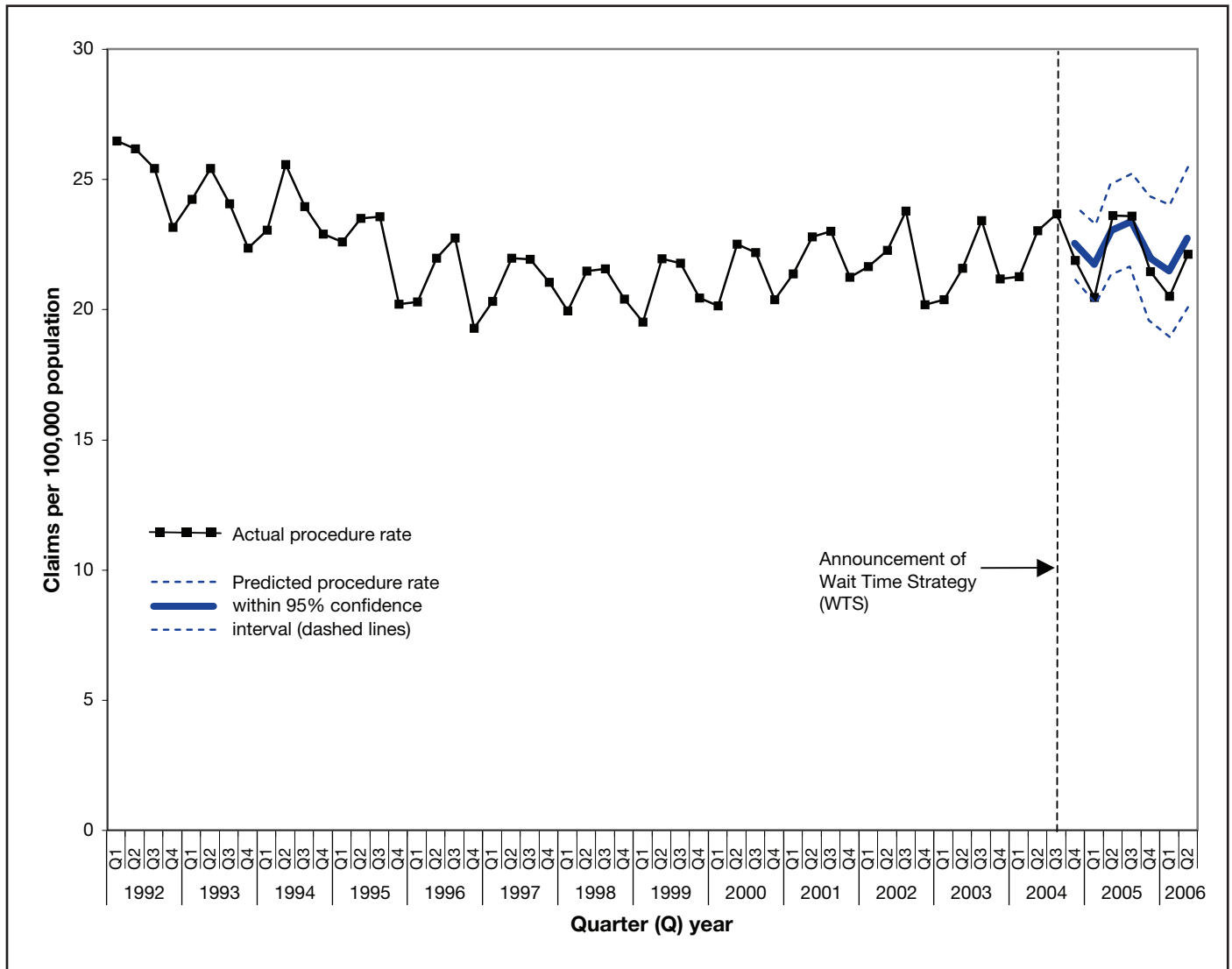


* A non-WTS surgical procedure

For Exhibits 1.18–1.30

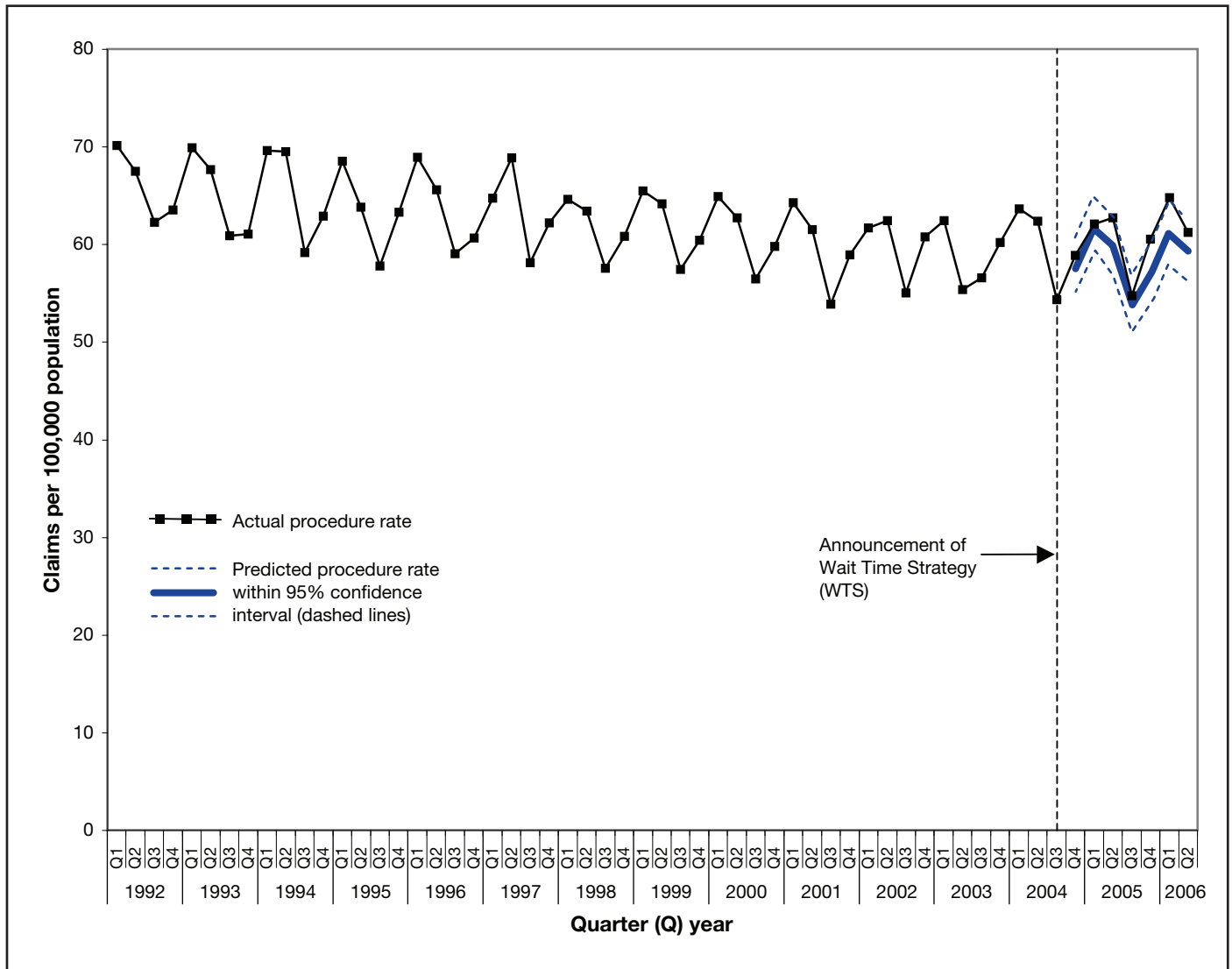
- None of these procedures were priorities of the WTS, thus are referred to as non-WTS procedures.
- The procedure rate did not significantly decrease after introduction of the WTS for any of these non-WTS procedures, when compared with pre-policy trends.

Exhibit 1.19 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for appendectomy*, by quarter-year, in Ontario, 1992–2006



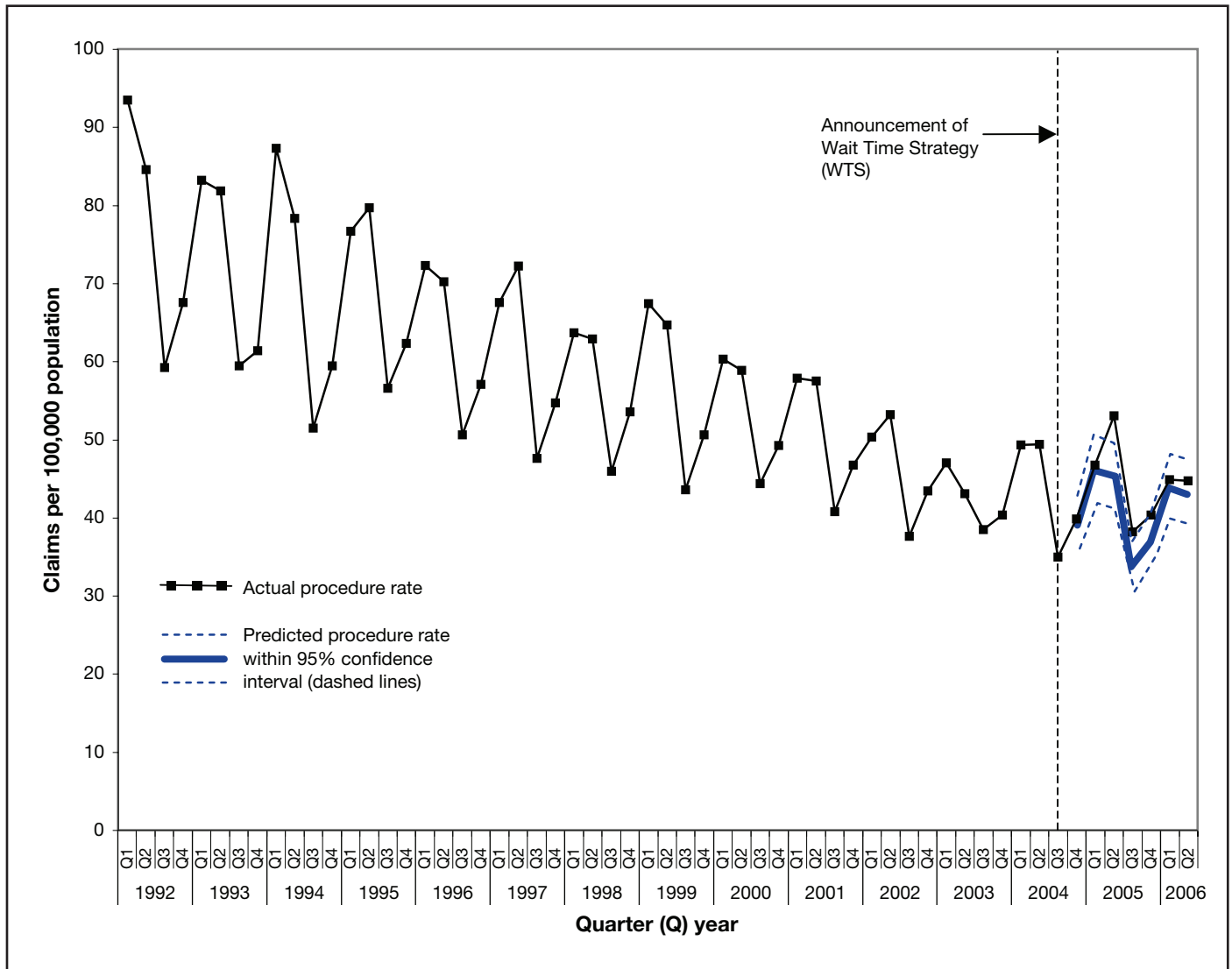
* A non-WTS surgical procedure

Exhibit 1.20 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for herniotomy*, by quarter-year, in Ontario, 1992–2006



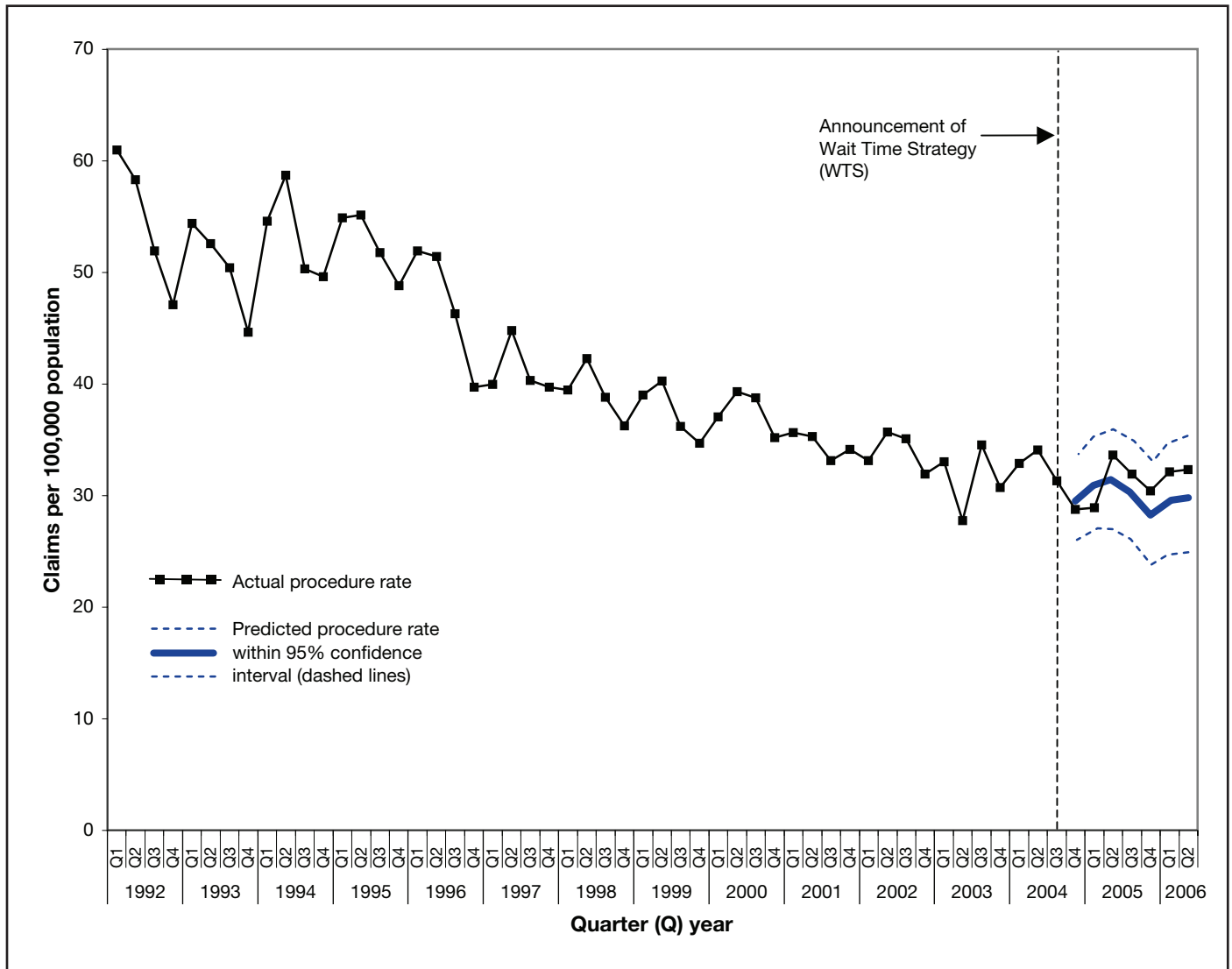
* A non-WTS surgical procedure

Exhibit 1.21 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for myringotomy*, by quarter-year, in Ontario, 1992–2006



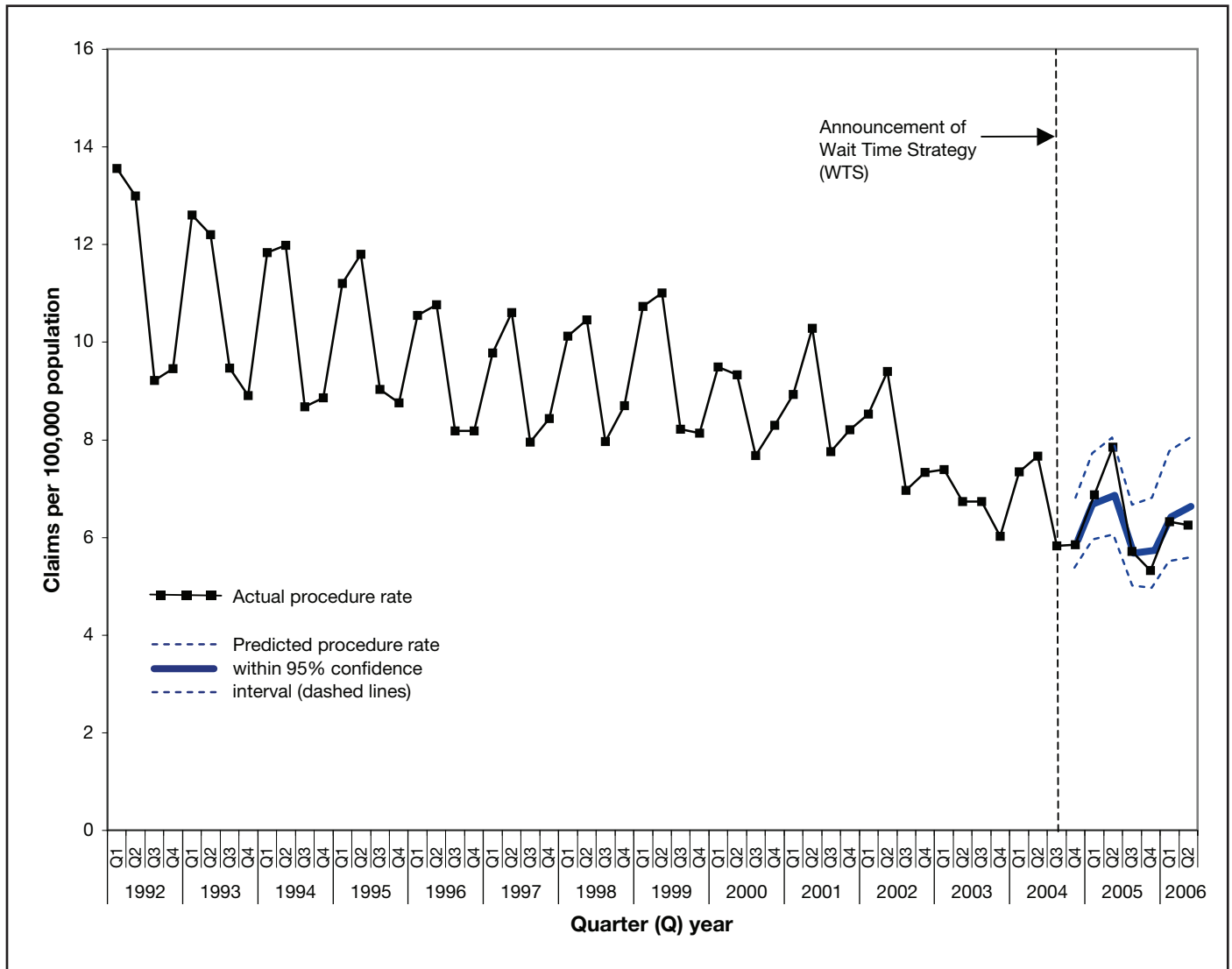
* A non-WTS surgical procedure

Exhibit 1.22 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for tonsillectomy*, by quarter-year, in Ontario, 1992–2006



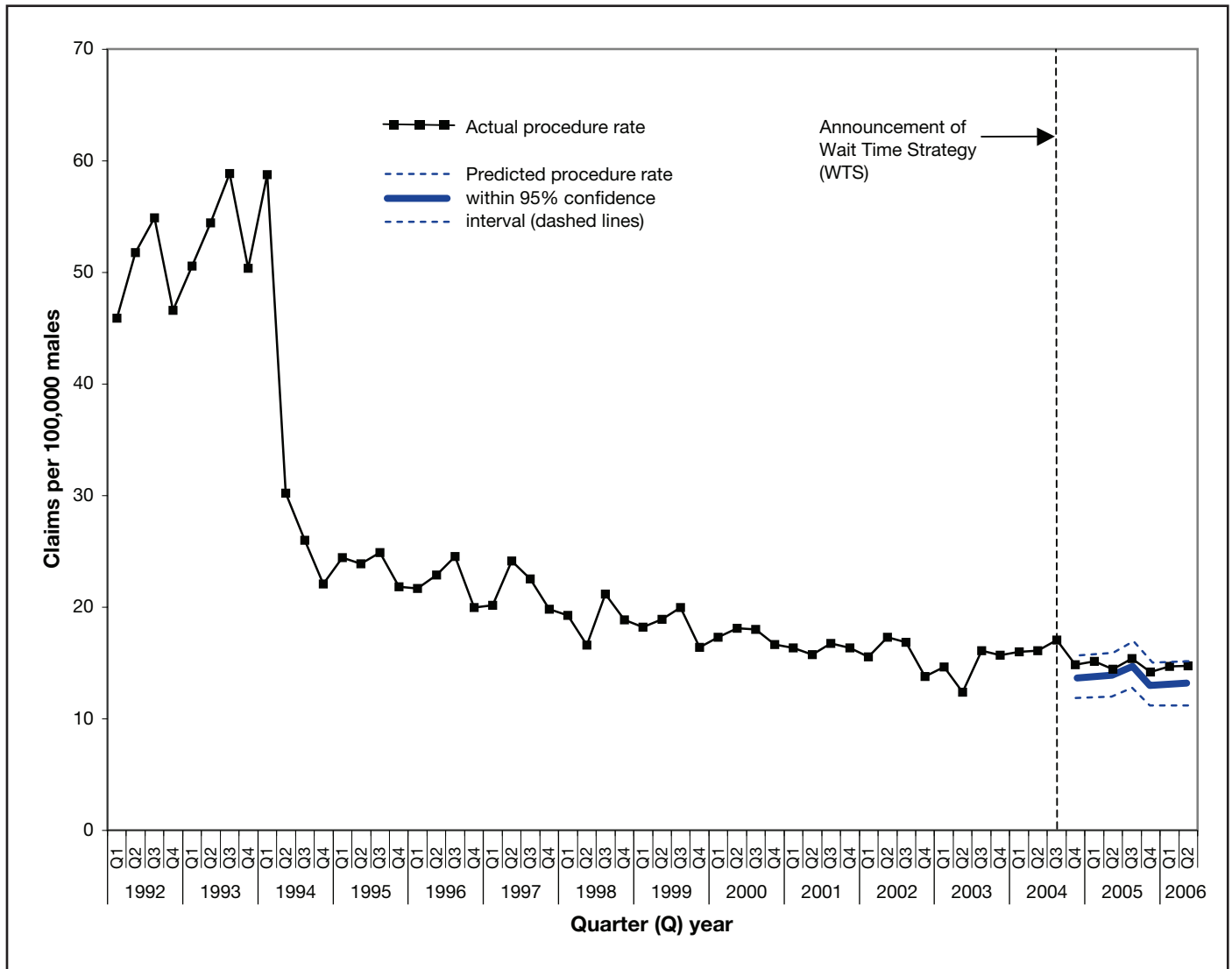
* A non-WTS surgical procedure

Exhibit 1.23 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for adenoidectomy*, by quarter-year, in Ontario, 1992–2006



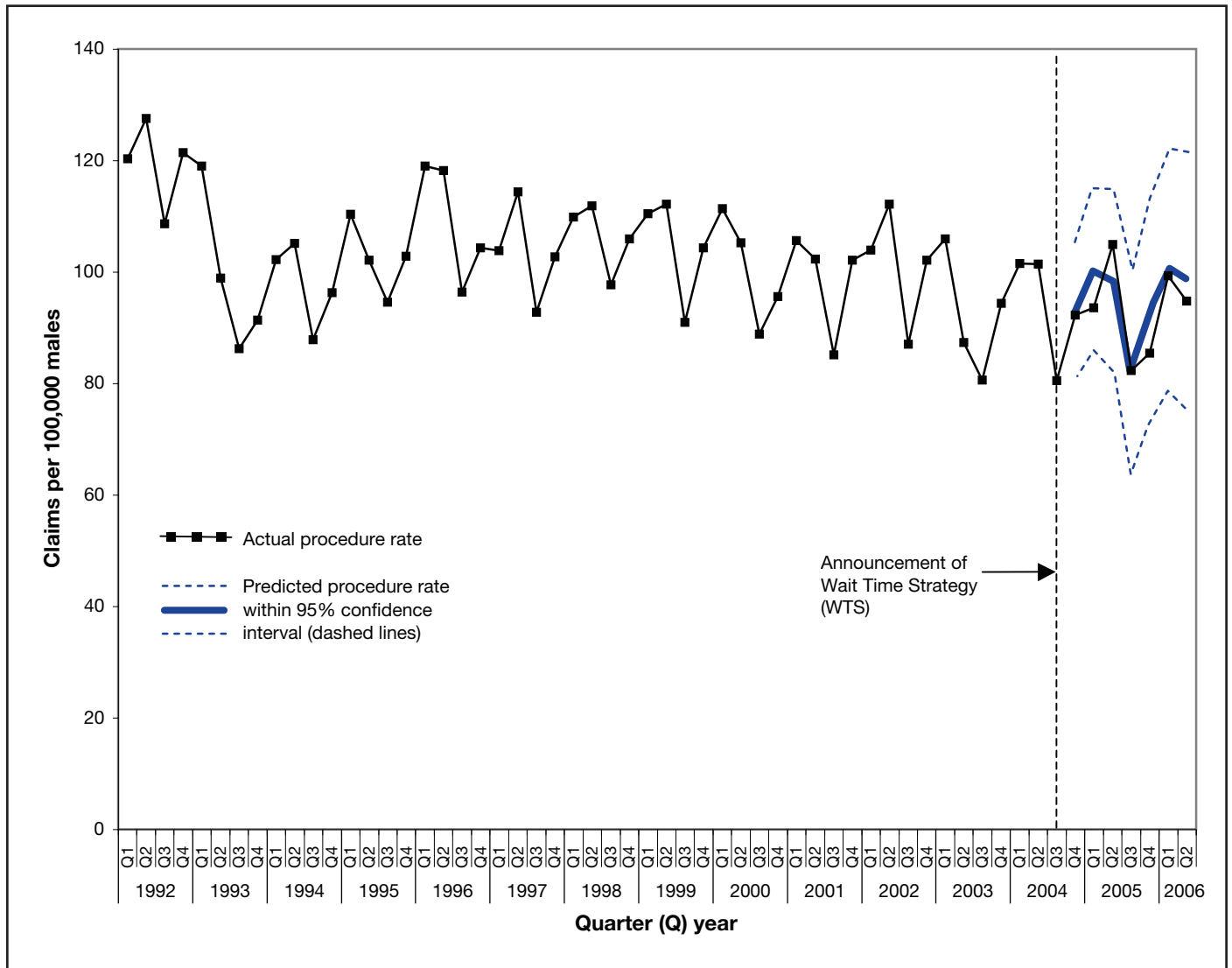
* A non-WTS surgical procedure

Exhibit 1.24 Ontario Health Insurance Plan (OHIP) claims per 100,000 males for circumcision* (for physical symptomatology), by quarter-year, in Ontario, 1992–2006



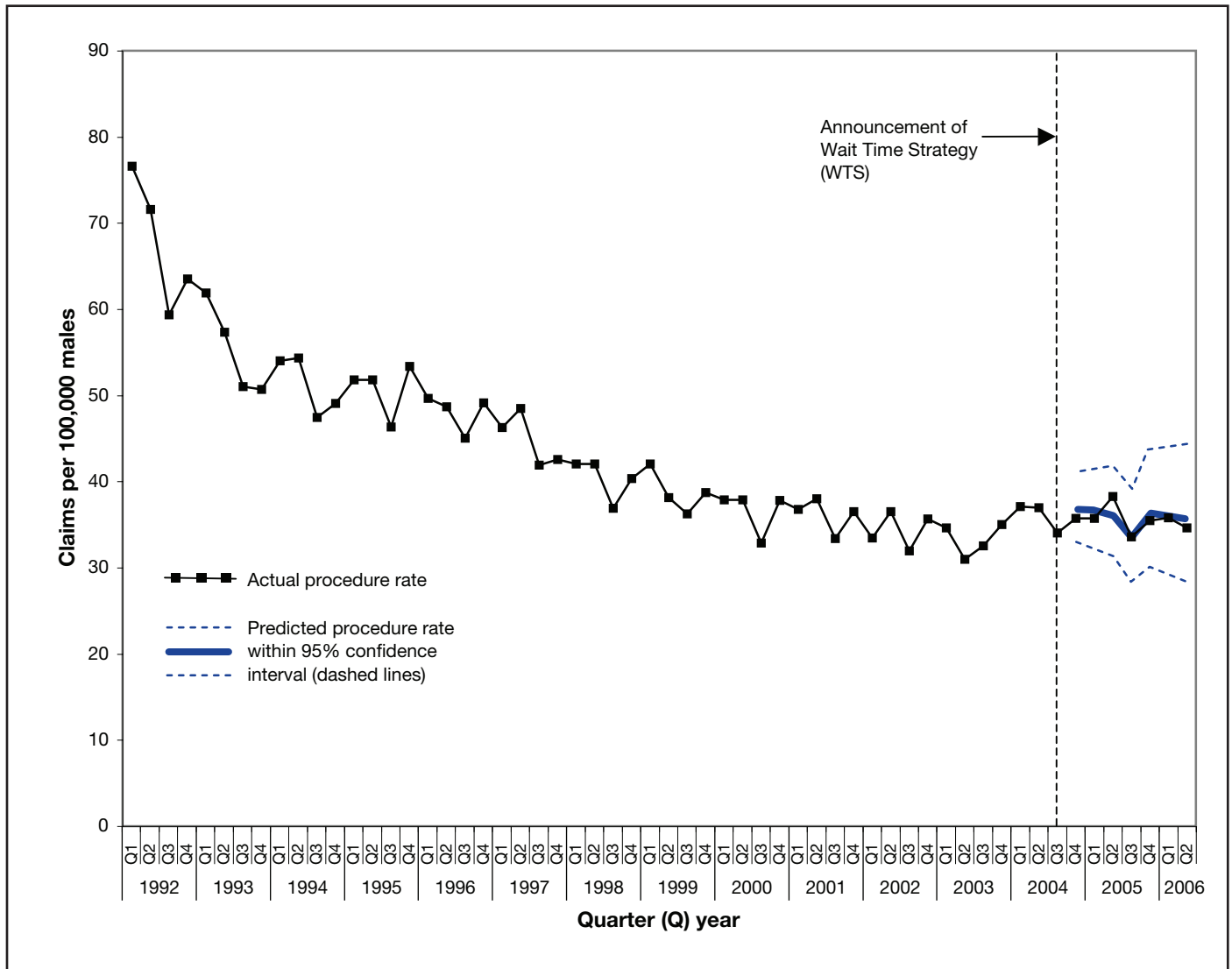
* A non-WTS surgical procedure

Exhibit 1.25 Ontario Health Insurance Plan (OHIP) claims per 100,000 males for vasectomy*, by quarter-year, in Ontario, 1992–2006



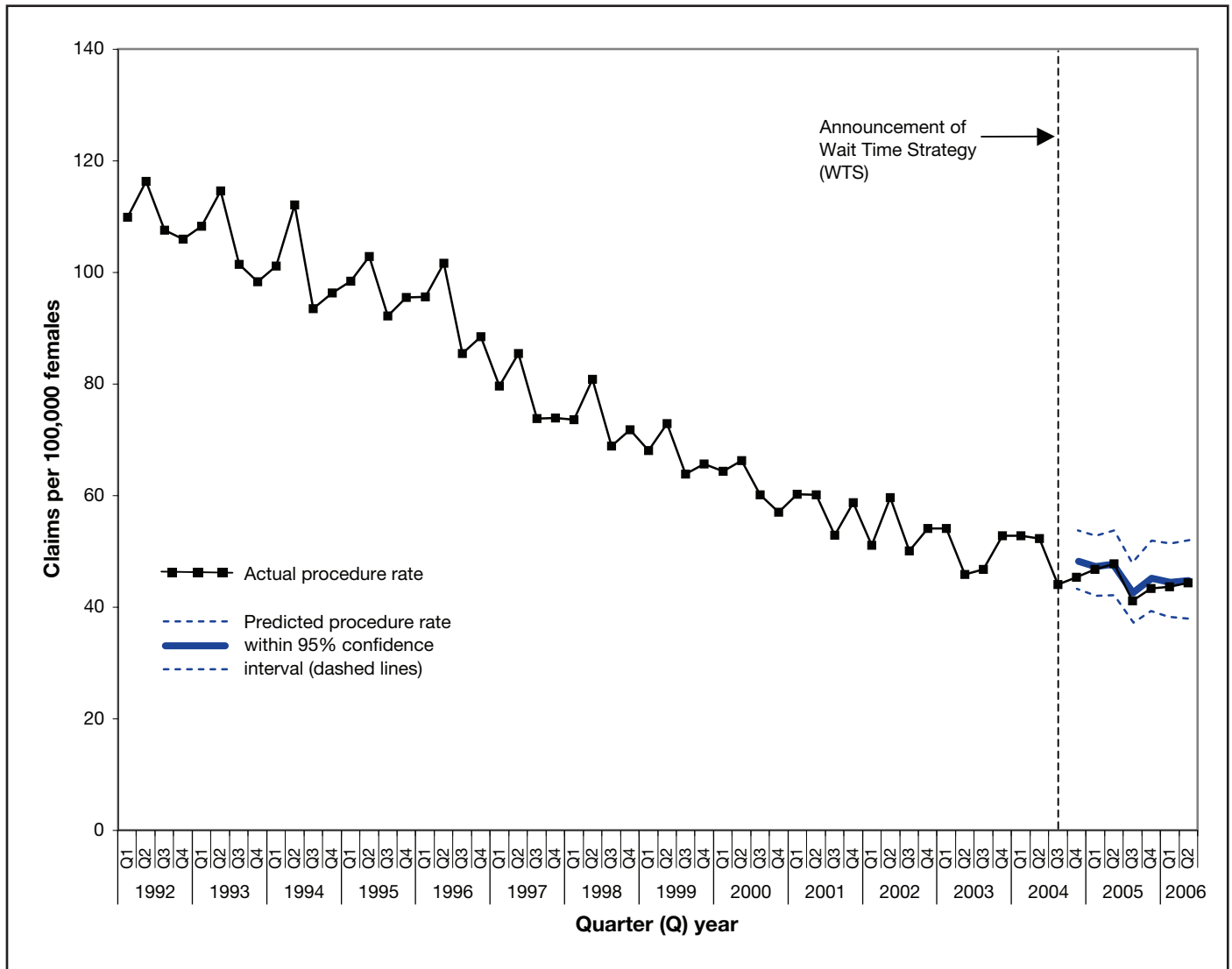
* A non-WTS surgical procedure

Exhibit 1.26 Ontario Health Insurance Plan (OHIP) claims per 100,000 males for transurethral resection of the prostate*, by quarter-year, in Ontario, 1992–2006



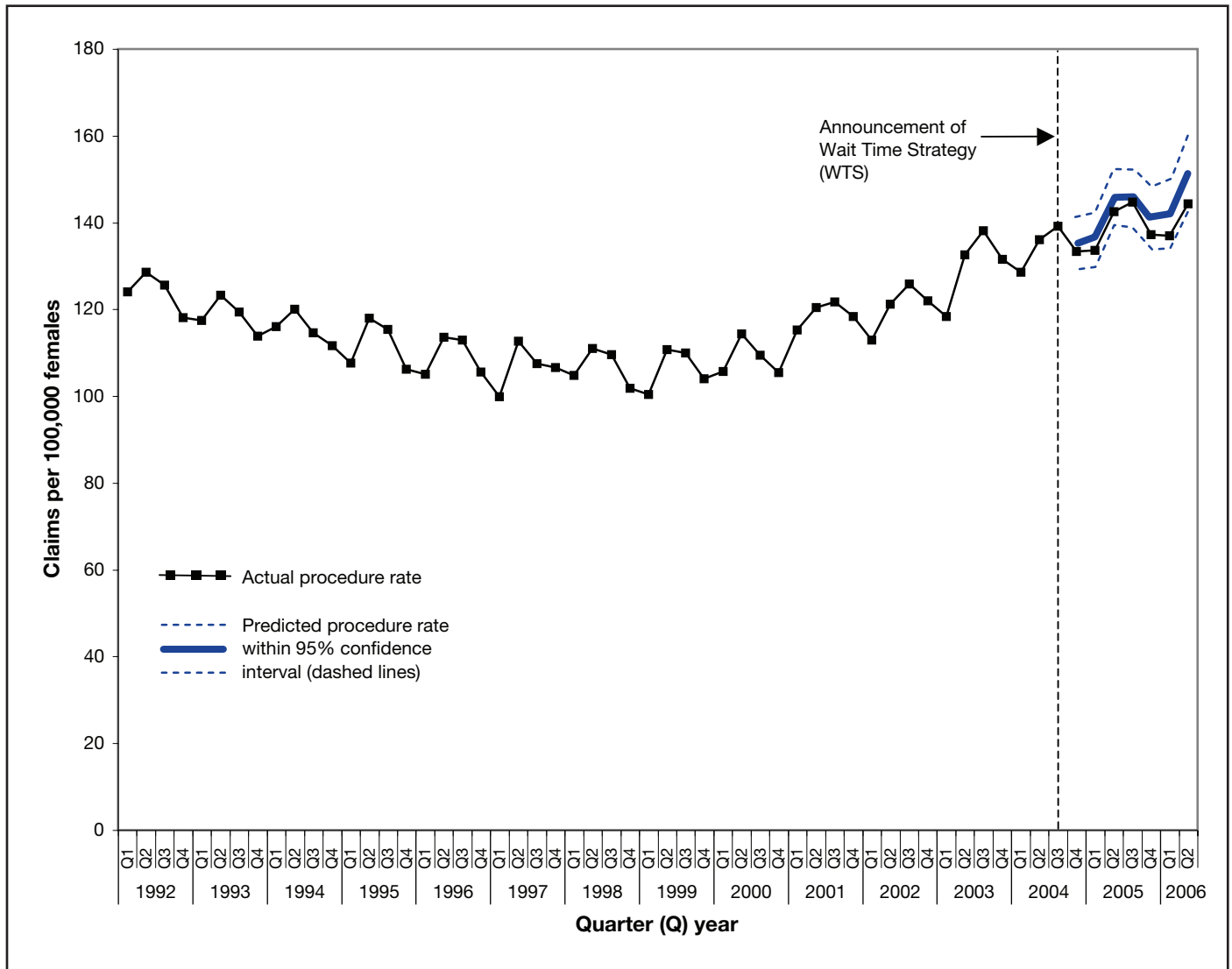
* A non-WTS surgical procedure

Exhibit 1.27 Ontario Health Insurance Plan (OHIP) claims per 100,000 females for tubal ligation*, by quarter-year, in Ontario, 1992–2006



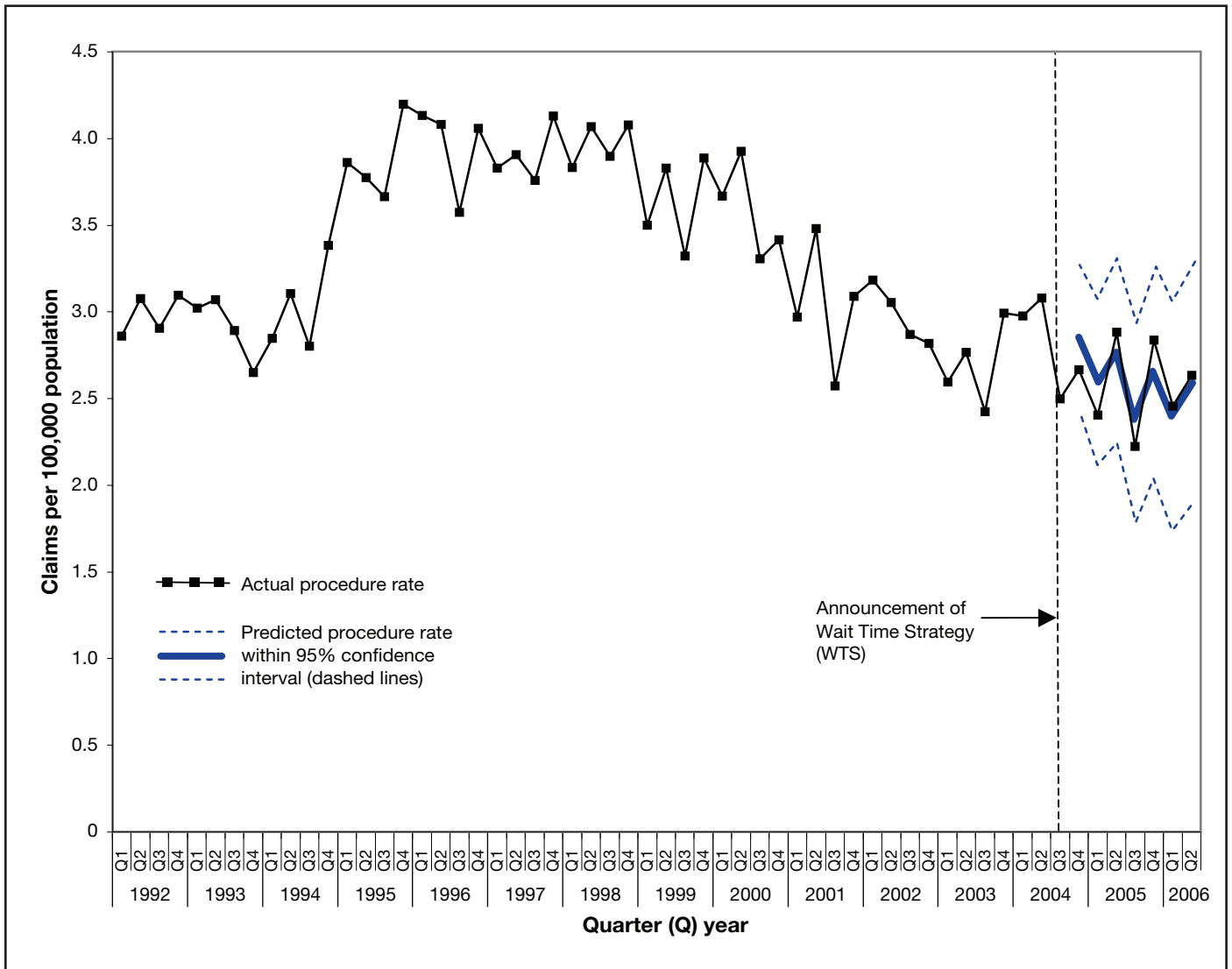
* A non-WTS surgical procedure

Exhibit 1.28 Ontario Health Insurance Plan (OHIP) claims per 100,000 females for caesarean section*, by quarter-year, in Ontario, 1992–2006



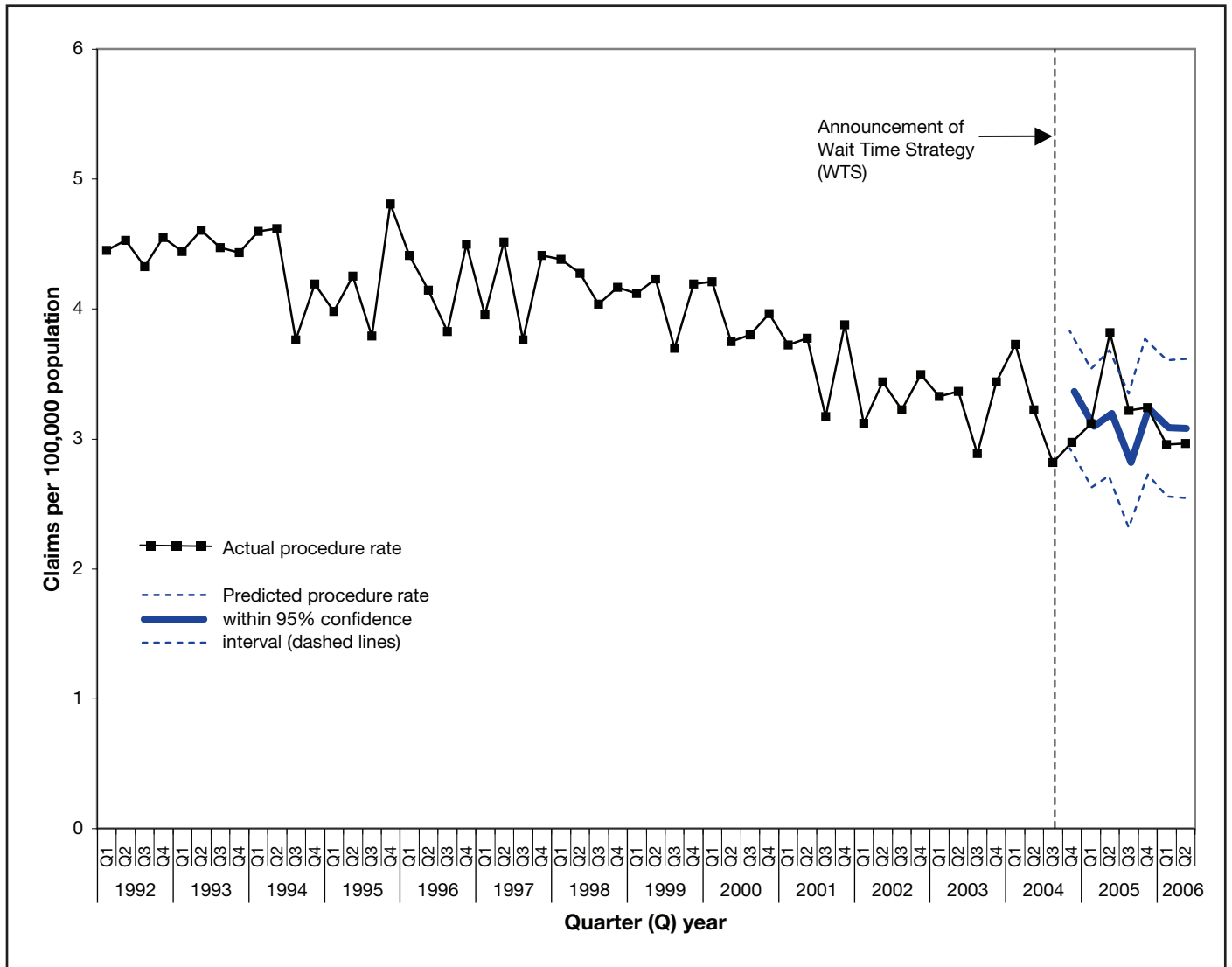
* A non-WTS surgical procedure

Exhibit 1.29 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for carotid endarterectomy*, by quarter-year, in Ontario, 1992–2006



* A non-WTS surgical procedure

Exhibit 1.30 Ontario Health Insurance Plan (OHIP) claims per 100,000 population for elective abdominal aortic aneurysm repair*, by quarter-year, in Ontario, 1992–2006



* A non-WTS surgical procedure

Summary and Conclusions

As expected, rates of total hip and total knee replacement showed clear evidence of an impact of the Wait Time Strategy (WTS). Evidence of impact for cataract extraction was less pronounced. The rate did not significantly decrease in any of the other 27 procedures after introduction of the WTS, when compared with pre-policy trends. However, among the 10 orthopedic procedures that did not receive specific WTS funding, the post-policy rates of four procedures—total shoulder arthroplasty, ganglion excision, meniscectomy, and claw and hammer toe surgery—sometimes exceeded the 95% confidence intervals for the predicted rates.

In a recent evaluation of trends in surgical rates within and outside the WTS priority areas, the Canadian Institute for Health Information (CIHI) assessed relative change within the categories and consistently found greater one-year growth inside relative to outside the WTS.² While overall surgical rates outside the priority areas grew, the magnitude of the growth varied by surgical specialty. For example, whereas rates of orthopedic surgery other than total joint replacement increased at about the same pace as the population, the number of eye procedures (other than cataract surgery) rose by three percent after adjustment for aging and population growth.² These findings varied substantially by province and, because procedures were studied in aggregate, it was not possible to consider effects at the level of procedure type.

The current study evaluated the effect of the WTS in Ontario in more detail than the CIHI study, focusing on specific types of surgery, including those for which there have been reports of poorer access since the WTS (e.g., gall bladder surgery, hernia repair, as well as surgery on shoulders, feet and retinas).^{4,5} An adverse impact of Ontario's WTS upon the rate of non-priority surgeries could not be demonstrated. If anything, the findings suggest that the rate of a small number of non-funded orthopedic procedures may have increased since the start of the WTS.

Challenges and Limitations

Several caveats merit emphasis. First, province-level data may hide trends that exist at the level of an institution or region. In future analyses, the authors hope to evaluate access on an institutional and regional basis. Second, for some less frequent procedures (i.e., total shoulder arthroplasty, pelvic fracture surgery, claw and hammer toe surgery, and elective abdominal aorta aneurysm repair), the fit of the predictive models was less than ideal. Though this occurred infrequently, and more often when there appeared to be increasing (rather than decreasing) rates of surgery, it is possible that true negative impacts of the WTS may have been missed. However, these would have been relatively small on a provincial basis. Third, the methods precluded study of low volume, highly specialized surgery. Fourth, because this was an observational study, other changes within the Ontario health care system may have occurred at the same time as the WTS, thus impacting procedure rates. However, the authors are unaware of such changes. Fifth, although no adverse impact upon quarterly rates of surgery was found, it is possible that waiting times for procedures may have increased. This could have occurred if the demand for elective procedures increased faster than the rate of surgery. Urgent procedures, for which waits are typically measured in hours or days, could also be delayed without detectable impact upon quarterly rates. Future research should assess effects of the WTS on surgical waits, particularly for urgent procedures where evidence suggests that delay may compromise outcomes.⁷ Finally, only a short period of time after introduction of the WTS was evaluated (less than two years). Ongoing studies of this issue are therefore warranted.

Appendix A. How the Research was Done

This study was a retrospective, cross-sectional time series analysis of physician service claims paid by the Ontario Health Insurance Plan (OHIP) between January 1, 1992 and June 30, 2006. Because surgical procedures involve multiple physicians, only claims with fee code suffix 'A' (those submitted by the primary physician) were included. The study procedures and corresponding fee codes are listed in Table 1.1.

To assess the impact of the Wait Time Strategy (WTS) upon procedure volumes, each year was divided into quarters. The number of procedures performed each quarter was counted and expressed as a fraction of Ontario's population. Quarterly population estimates were derived through linear interpolation of annual census estimates provided by Statistics Canada. Time series models (autoregressive integrated moving average or exponential smoothing) were then used to forecast post-policy procedure rates (with 95% confidence intervals [CIs]). The forecasted and actual procedure rates were compared for the seven quarters following announcement of the WTS. Where actual rates consistently fell outside the 95% CI of forecasted rates, procedure volumes were considered to have been influenced by the WTS.

Limitations

The ability to accurately model the pre-policy surgical rates varied by procedure. Most of the models explained a large part of the variation in procedure rates (with coefficients of determination [R^2] in the range of 0.90 to 0.98); however, several of the models explained no more than about 75% of the variance. The width of the 95% CIs around the predicted rates gives a partial indication of the quality of model fit.

Table 1.1 Ontario Health Insurance Plan (OHIP) fee codes for various Wait Time Strategy (WTS) and non-WTS surgical procedures, by category

Category and surgical procedure		OHIP fee codes	
Orthopedic	Wait time strategy (WTS) procedures	Total knee arthroplasty	R441, R248, R244
		Total hip arthroplasty	R440, R553, R241
	Non-WTS procedures	Total shoulder arthroplasty	R487, R438, R240
		Rotator cuff repair	R594, R594
		Carpal tunnel release	N290
		Ganglion excision	R549
		Hip fracture surgery	F098, F099, F100, F101
		Pelvic and acetabular fracture surgery	F134, F135, D046, D047, D052, D059, D060
		Meniscectomy	R207
		Knee debridement	R204, R205
		Hallux valgus (bunion) repair	R355, R304
Claw and hammer toe repair	R430		
Ophthalmology	WTS procedures	Cataract extraction, all types, by any procedure	E140
	Non-WTS procedures	Retinal surgery	E151, E152, E153
		Glaucoma filtering procedures	E132
		Corneal transplants	E121, E122
	Extra-ocular muscle surgery	E158, E159, E162	
Other non-WTS procedures	Cholecystectomy	S287	
	Appendectomy	S205, S206	
	Herniotomy	S322, S323, S326, S328, S329, S330, S332, S333	
	Myringotomy	Z912, Z914	
	Tonsillectomy	S063	
	Adenoidectomy	S065	
	Circumcision (for physical symptomatology)	S573, S577	
	Vasectomy	S626	
	Tubal ligation	S741	
	Caesarean section	P018, P041, P042	
	Transurethral resection of the prostate	S654, S655	
	Carotid endarterectomy	R792	
Elective abdominal aorta aneurysm repair	R802, R816, R817		

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