

Trends in the incidence of thyroid cancer, Israel, 1980-2012

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St. Louis, Missouri
June 11-16, 2016



State of Israel
Ministry of Health
משרד הבריאות, ישראל

Cancer of the thyroid

- Most commonly diagnosed endocrine cancer
- Incidence has risen worldwide over the past thirty years
- Primary histologic types:
 - papillary (75-85% of cases)
 - follicular (10-20%)
 - poorly differentiated (medullary, anaplastic)
- Risk factors:
 - Exposure to ionizing radiation
 - Gender (3 times as common in women than in men)
 - Age
 - Family history

TABLE 1: Increase of thyroid cancer incidence rate in different countries.

Country	Source	Years		Variation of incidence (APC)	
				Females	Males
Australia	[27] (Patients aged 15–30 years)	1982	2007	—	4.0
		1982	2000	2.0	—
		2000	2007	13.8	—
Canada	[28] [29]	1970/72	1994/96	3.5*	3.2*
		2002	2008	7.3	8.4
China (Shanghai)	[30]	1983	2000	—	2.6
		1983	2003	4.9	—
Denmark	[2]	1973/1977	1998/2002	81.3%‡	20.0%‡
Finland	[2]	1973/1977	1998/2002	62.8%‡	29.4%‡
France	[31]	1983	2000	8.98	8.13
Israel-Jews	[2]	1973/1977	1998/2002	95.2%‡	34.6%‡
Italy	[4]	1991/95	2001/05	145%‡	127%‡
Japan	[2]	1973/1977	1998/2002	85.7%‡	52.4%‡
Spain	[10] (Only PTCs)	1978	2001	9.4 [§]	2.6 [§]
Switzerland	[2]	1973/1977	1998/2002	85.7%‡	5.3%‡
UK	http://info.cancerresearchuk.org/cancerstats/	1993	2008	2.3	0.6
USA	[12] http://seer.cancer.gov/statfacts/html/thyro.html	1998	2005	7.0	6.3
		1997	2009	7.0	—

APC: annual percent change.

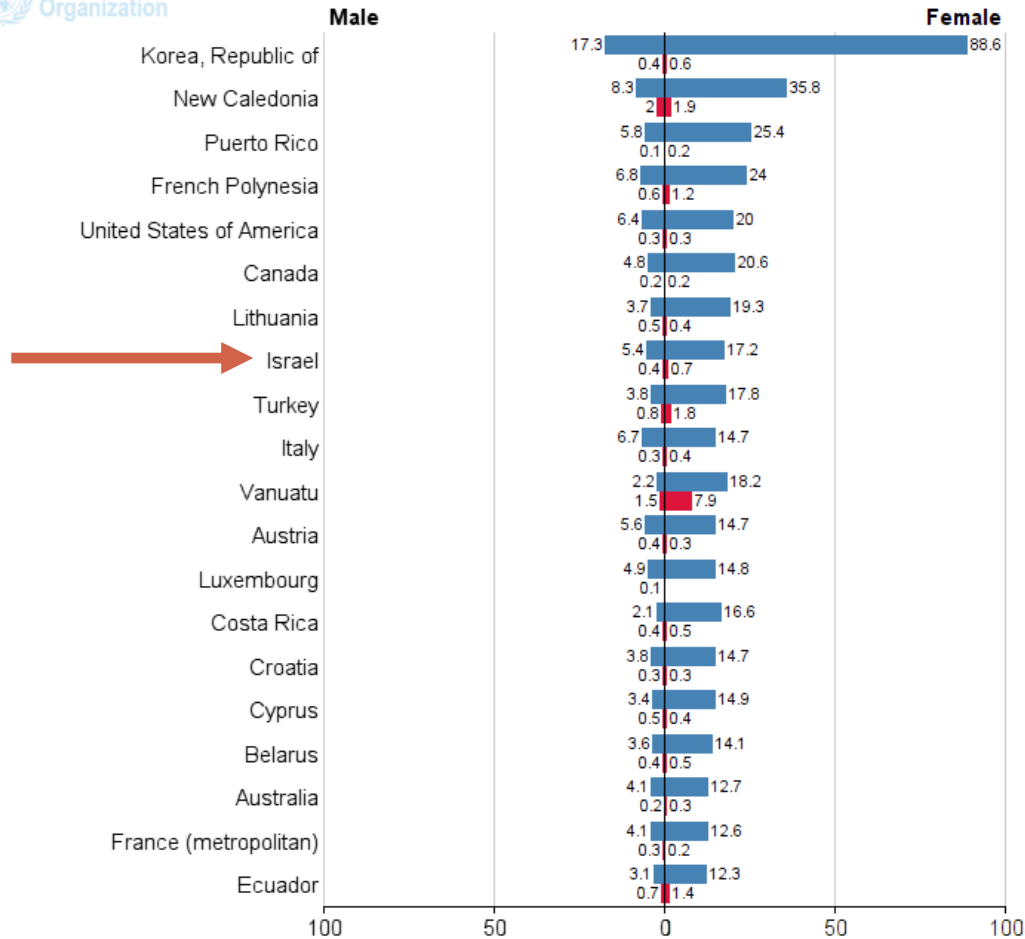
* Average annual percent increase.

‡Percent temporal change (% increase) in the indicated period.

[§]Incidence increase in the indicated period.

Source: Pellegriti G, Frasca F, Regalbuto C, Squatrito S, Vigneri R. Worldwide increasing incidence of thyroid cancer: Update on epidemiology and risk factors. *Journal of Cancer Epidemiology* 2013; Article ID 965212, <http://dx.doi.org/10.1155/2013/965212>

Thyroid
ASR (W) per 100,000, all ages



GLOBOCAN 2012 (IARC) (18.5.2016)

■ Incidence
■ Mortality

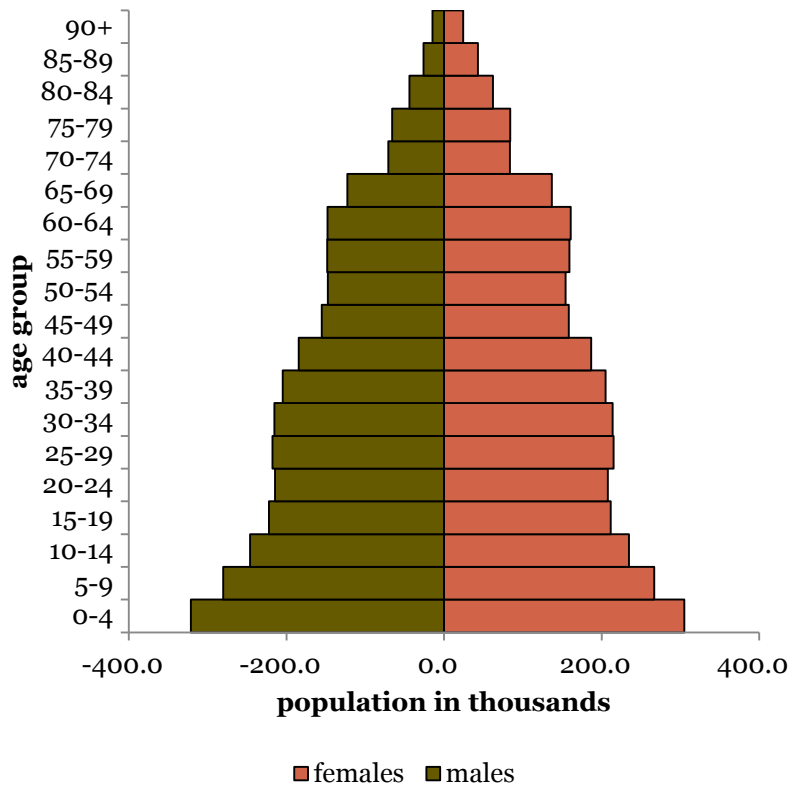
Source: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray, F. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>, accessed on 18.05.2016

Population of Israel

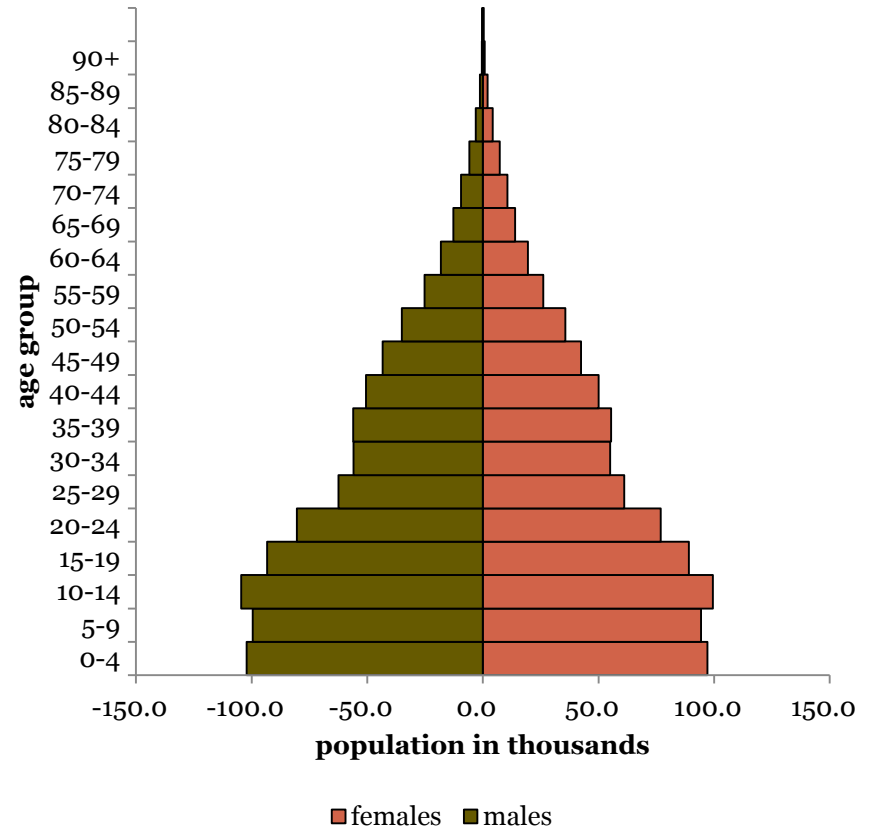
- 8.2 million as of December 31, 2014
 - Jewish—75.0%
 - Arab—20.7%
 - Ages 0-14: 28.2%
 - Ages 65+: 10.7%
- Life expectancy at birth, 2013
 - Males 80.3 years
 - Females 83.9 years
- Immigrants
 - 24.7% of the Jewish population born overseas

Population of Israel, 2014

Jewish



Arab



Israel National Cancer Registry (INCR)

- National, population-based, passive cancer registry, receiving reports of cancer cases diagnosed in the Israeli population
- Member, Middle East Cancer Consortium (MECC)
- Receive approximately 150,000 reports per year (pathology, hospital discharge summaries, oncology program patient registries, death certificates)
- Currently includes data on over 700,000 cancer cases; approximately 30,000 new cancer cases added per year
- Data complete through calendar year 2013

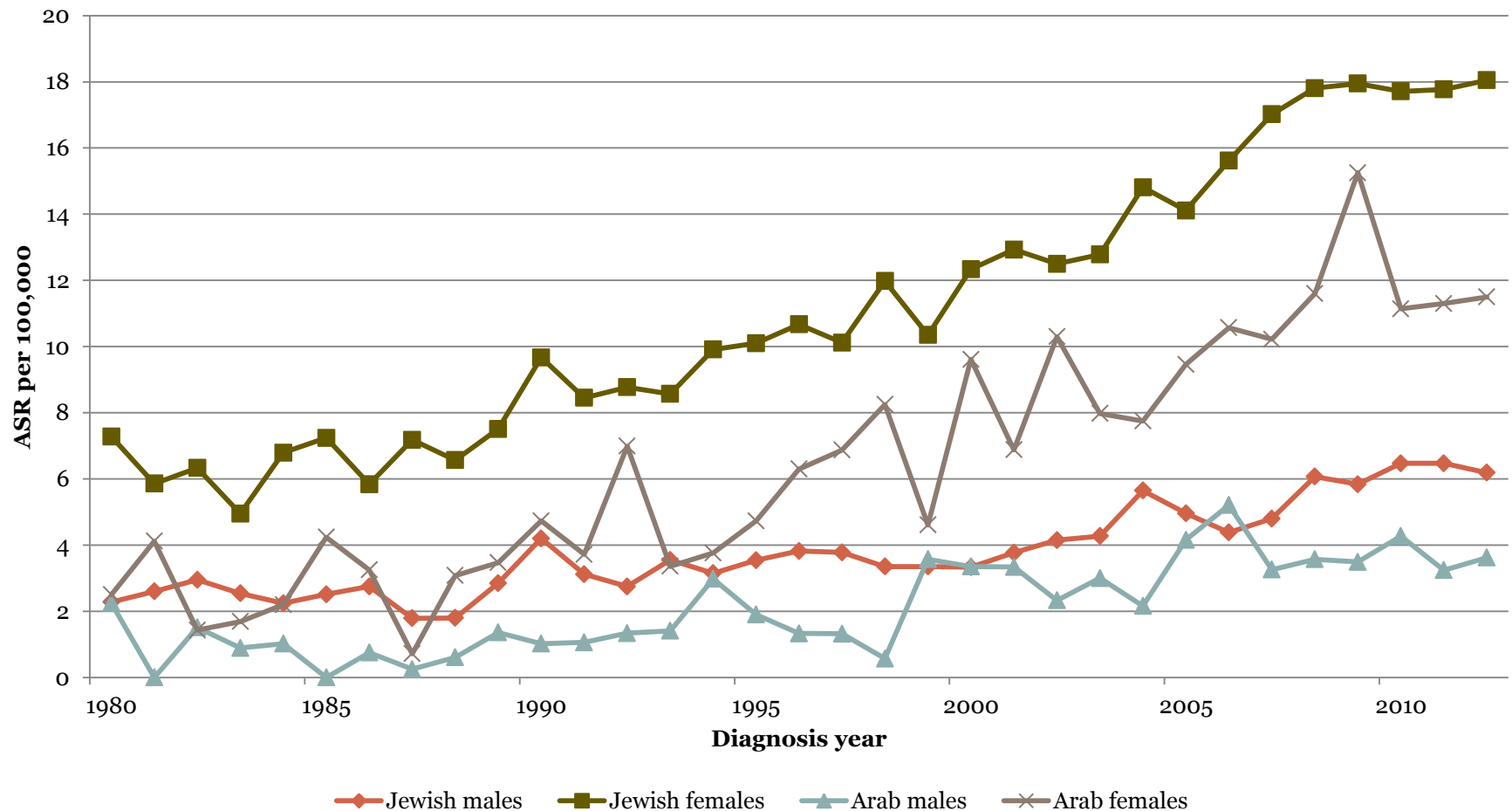
Study objectives

- To examine temporal trends in the incidence of thyroid cancer in Israel, overall and by age, gender and ethnicity
- To determine whether changes in incidence are driven by specific morphologies
- To identify population groups at highest risk for a diagnosis of cancer of the thyroid

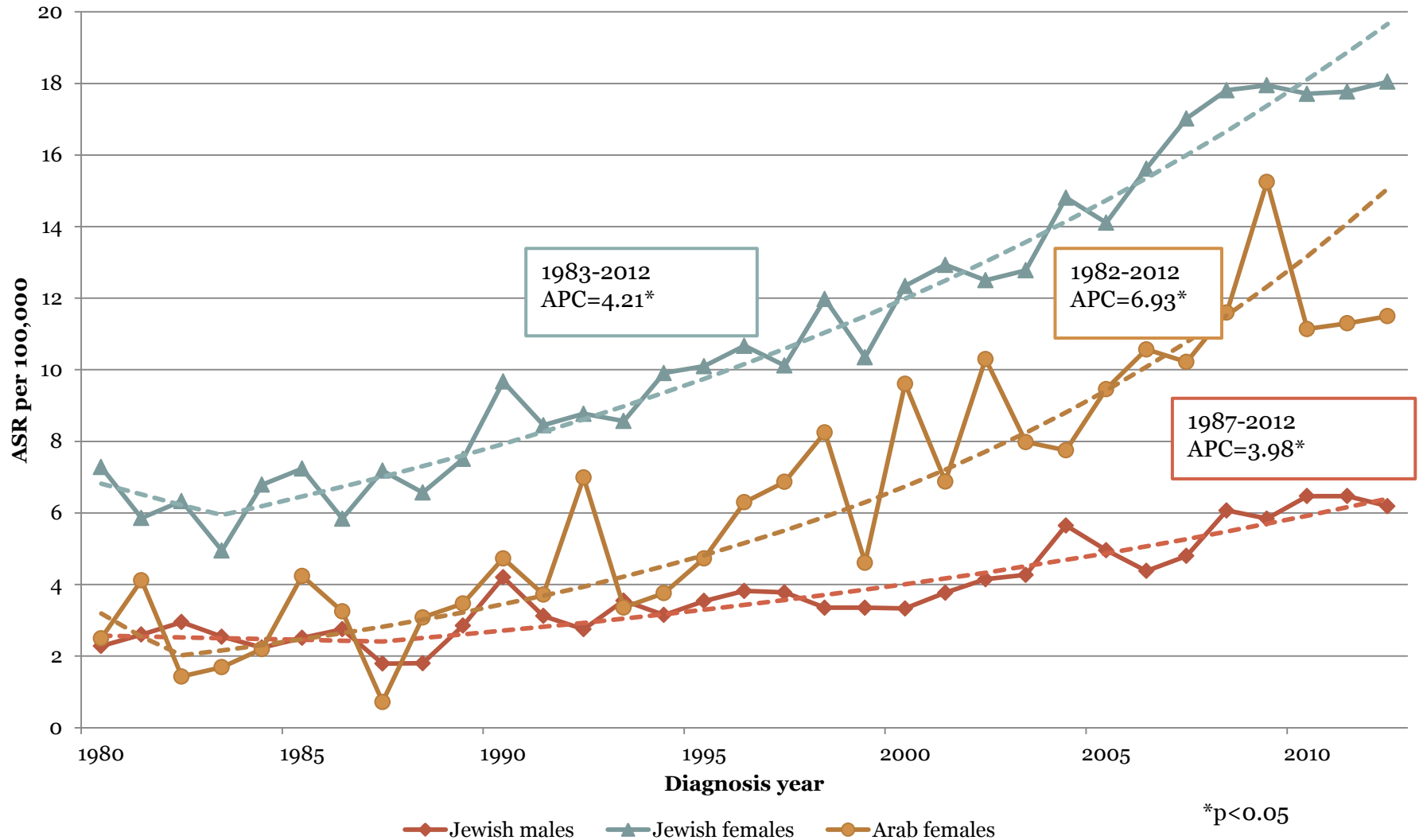
Thyroid cancer—case definition

- ICD-O-3 typography code 73.9
- Diagnosis years 1980-2012
- Morphology groups:
 - Papillary carcinoma (ICD-O-3 8050, 8260, 8340-8341, 8343-8344, 8350)
 - Follicular carcinoma (ICD-O-3 8290, 8330-8332, 8335)
 - Medullary carcinoma (ICD-O-3 8345-8346, 8510)
 - Anaplastic carcinoma (ICD-O-3 8012, 8020-8021, 8030-8032)
 - Other

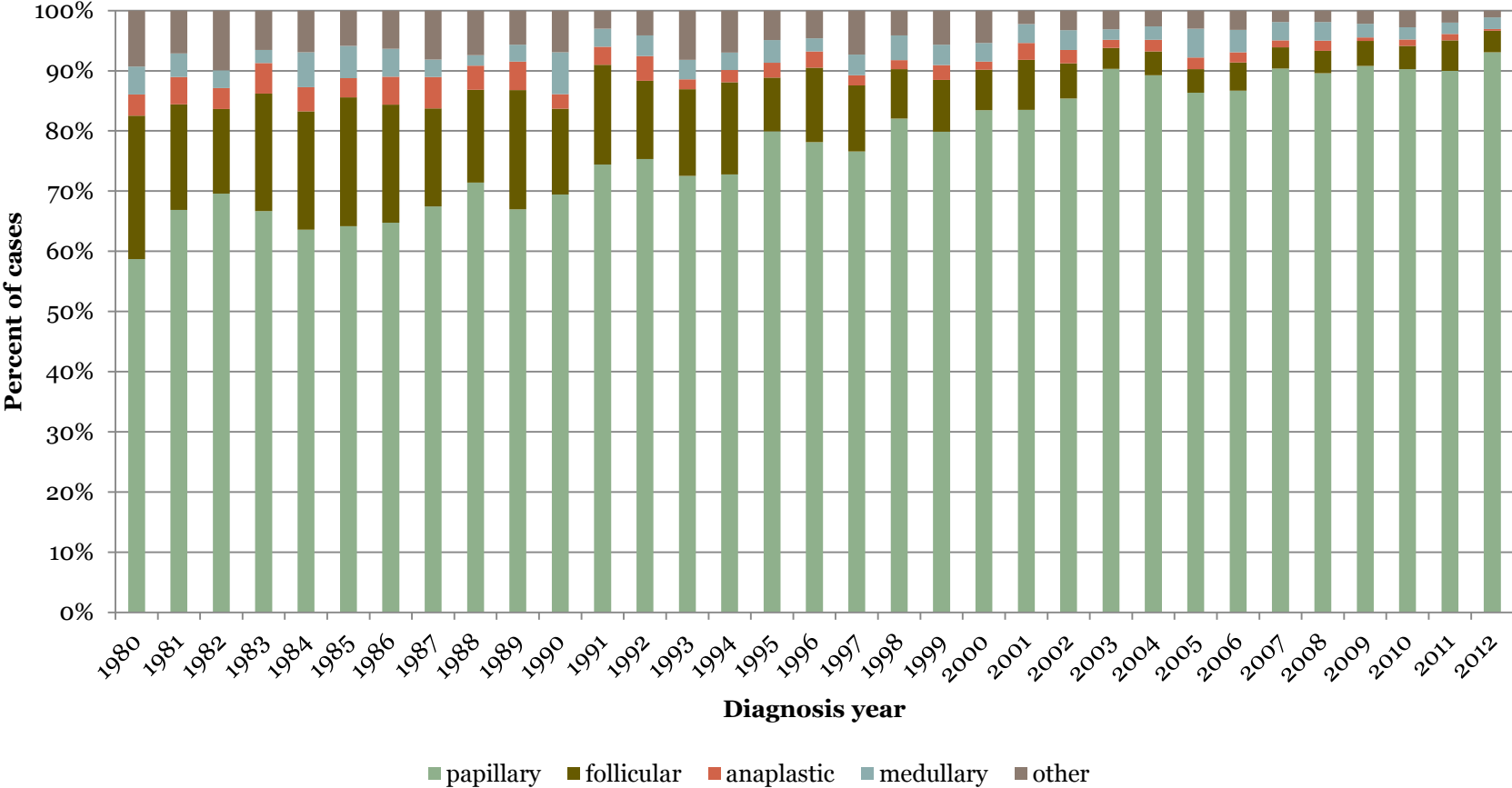
Thyroid cancer incidence, by gender and ethnic group, Israel, 1980-2012



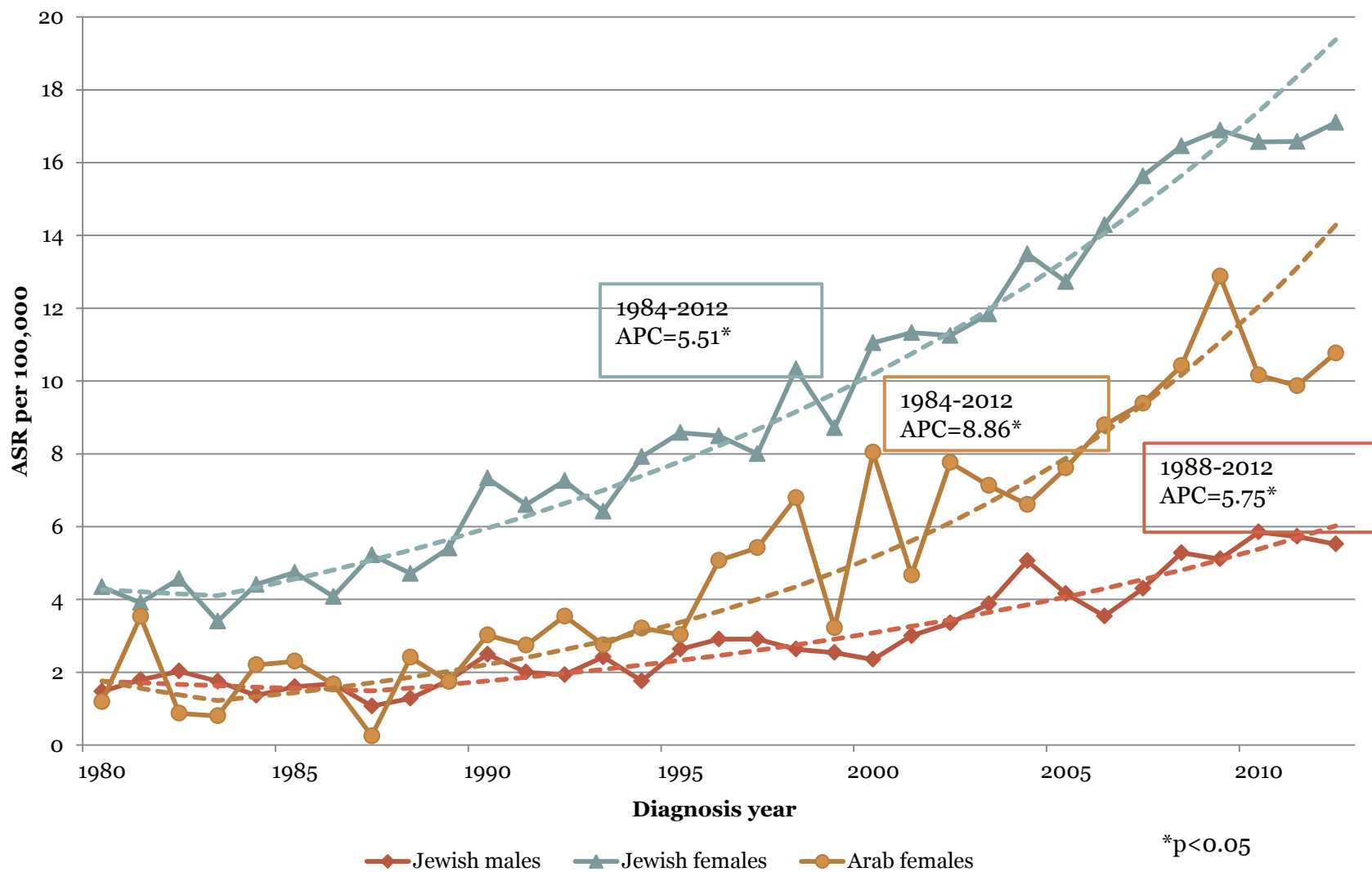
Thyroid cancer incidence by gender and ethnic group, Israel 1980-2013—joinpoint model



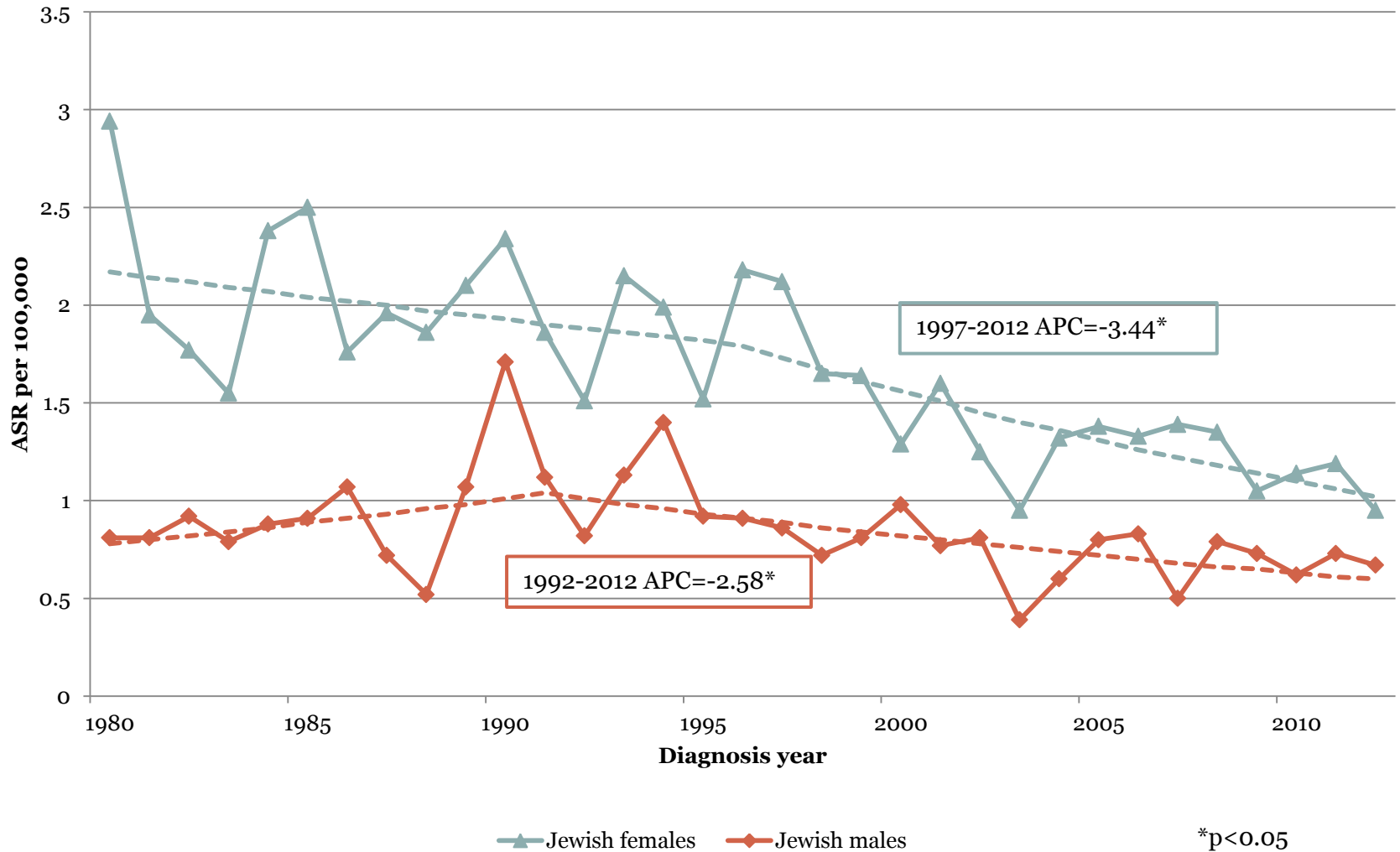
Thyroid cancer, Israel, 1980-2012, by morphology group



Papillary thyroid cancer, by gender and ethnicity, 1980-2013-joinpoint model



“Other” (non-papillary) thyroid cancers, Israel, 1980-2012-Joinpoint model



Stage at diagnosis*, thyroid cancers, Israel 2000-2012

	Unknown stage (Stage 9)	Of cases with known stage**		
		Localized (Stage 1)	Regional (stages 2,3,4,5)	Distant (stage 7)
2000	56.0%	28.8%	60.3%	10.9%
2001	54.7%	29.1%	64.8%	6.1%
2002	49.1%	37.5%	57.8%	4.7%
2003	41.8%	48.4%	50.1%	1.5%
2004	47.9%	42.7%	52.5%	4.8%
2005	47.5%	42.5%	53.8%	3.7%
2006	46.6%	43.9%	50.9%	5.2%
2007	43.3%	42.7%	53.7%	3.6%
2008	34.5%	48.6%	47.9%	3.5%
2009	28.8%	50.5%	47.6%	1.8%
2010	24.1%	55.2%	42.4%	2.4%
2011	25.8%	58.1%	40.6%	1.3%
2012	20.9%	56.1%	42.2%	1.7%

*SEER summary stage

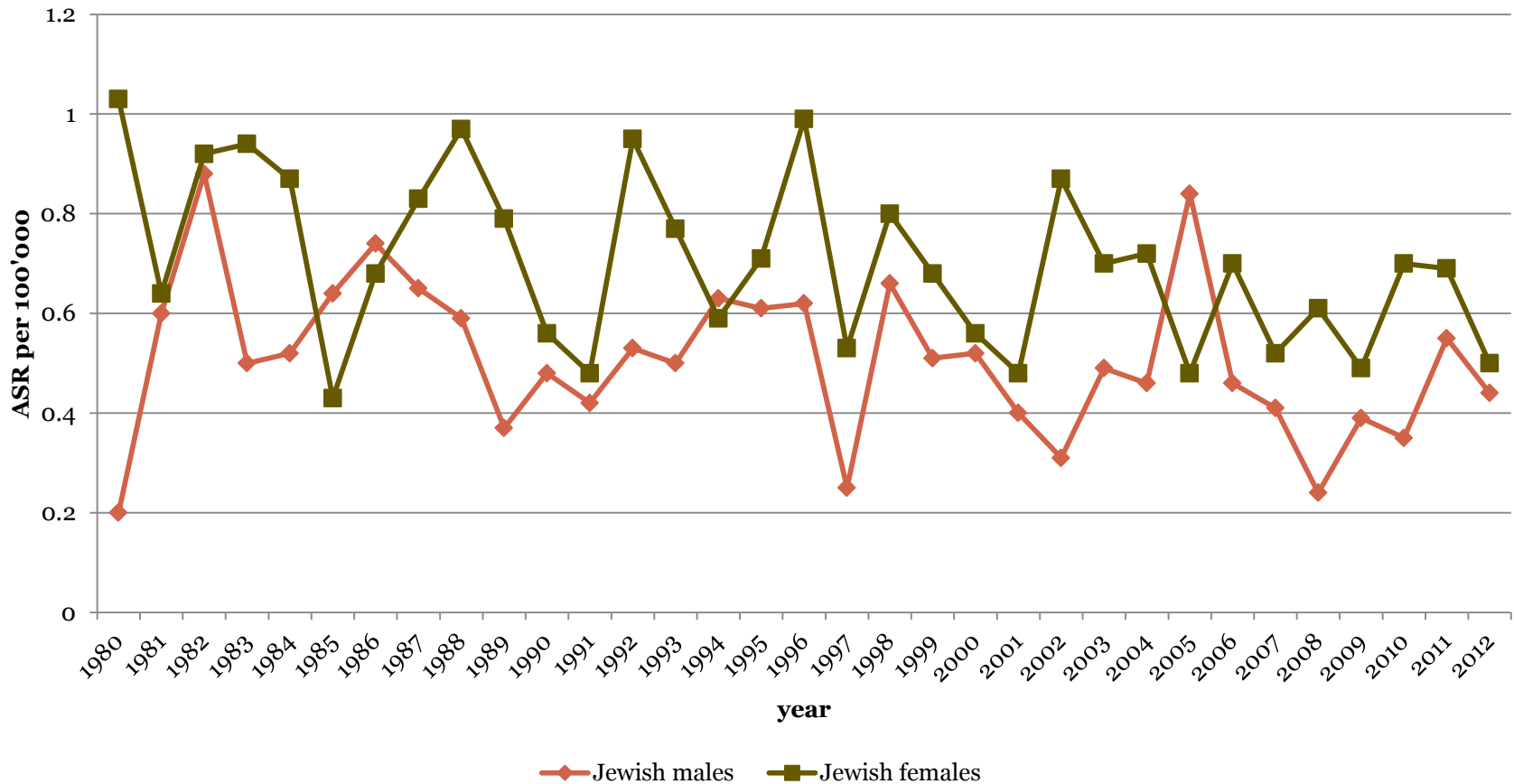
** $p < 0.001$ Mantel-Haenszel chi-square

Mean age at thyroid cancer diagnosis, by morphologic group

Morphology	N	Mean age at diagnosis (years)*
anaplastic	313	72.1
follicular	1678	50.4
medullary	488	52.8
other	997	60.2
papillary	13665	48.6

* $P < 0.001$, ANOVA

Thyroid cancer mortality*, Israel, 1980-2012



*as reported on death certificates

Summary:

- Thyroid cancer incidence increased dramatically during the observation period
- This observed trend is driven by a rise in the incidence of papillary carcinoma
- The proportion of thyroid cancers diagnosed at an early stage increased significantly during the observation period
- No substantial change in mortality was observed during the observation period

True increase?

- Exposure to ionizing radiation (for diagnosis or treatment)
- Obesity
- Fertility treatments

VS.

Over-diagnosis?

- Increased availability and utilization of diagnostic studies
- Rise in incidence limited to papillary cancer
- Decrease in proportion of cases diagnosed at advanced stage
- No change in mortality

THANK YOU!

English | Русский | Français | Español | عربي



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מדינת ישראל
משרד הבריאות
Ministry of Health Israel



דף הבית | אודות | יחידות המשרד | נושאים | פניות הציבור | שירותים | הודעות וכנסים | אזהרות

דף הבית | יחידות המשרד | חטיבת הבריאות | מרכז לאומי לבקרת מחלות | הרישום הלאומי לסרטן | Cancer Incidence Table

מידע זה קיים גם בשפות:



Last Updates

Liver - Cancer Incidence Tables 2008

מלנמה ממאירה של העור, עדכון נתוני תחלואה ותמותה, מאי 2016

Thyroid - Cancer Incidence Tables 2010

Small Intestine - Cancer Incidence Tables 2010

Cancer Incidence Table

Introduction

The Israel National Cancer Registry (INCR) was founded in 1960. Cancer reporting by hospitals, pathology and cytology laboratories and other health care providers has been mandatory since 1982. The INCR covers the entire Israeli population (approximately 8 million). The registry does not include cases diagnosed in persons who are not Israeli residents, for example tourists or residents of the Palestinian Authority.

The following groups of diagnoses are recorded in the registry:

1. All malignant neoplasms, excluding basal cell and squamous cell carcinoma of the skin, but including squamous cell carcinoma of the genitals.
2. Carcinoma in situ/high grade (Grade III) intraepithelial neoplasias
3. Benign neoplasms of the brain and nervous system

Cancer cases are coded in the registry according to the International Classification of Diseases for Oncology, 3rd edition (ICD-O-3). Each case receives both a topography code, indicating the site or organ in which the disease originated and a morphology code, indicating the histologic diagnosis. The fifth digit of the morphology code indicates tumor behavior.

הרישום הלאומי לסרטן

Cancer Incidence Table

Cancer Incidence Table

כלל הגידולים (All Cancers)

כלל הגידולים החודרניים (Invasive tumors only)

סרטן כיס השתן (Urinary Bladder Cancer)

סרטן העצמות והמפרקים (Bone and joint cancer)

גידולי מוח ומערכת העצבים המרכזית (כל סוגי הגידולים) ALL BRAIN (All tumor types) Brain & CNS

גידולי מוח ומערכת העצבים