

The Rising Incidence of Autism: Associations with Thimerosal

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AUTISM AND MERCURY EXPOSURE

The incidence of autism is rising sharply in the United States (and in other countries as well)

U.S. infants were exposed to sharply higher amounts of mercury (via thimerosal-containing vaccines) starting around 1990

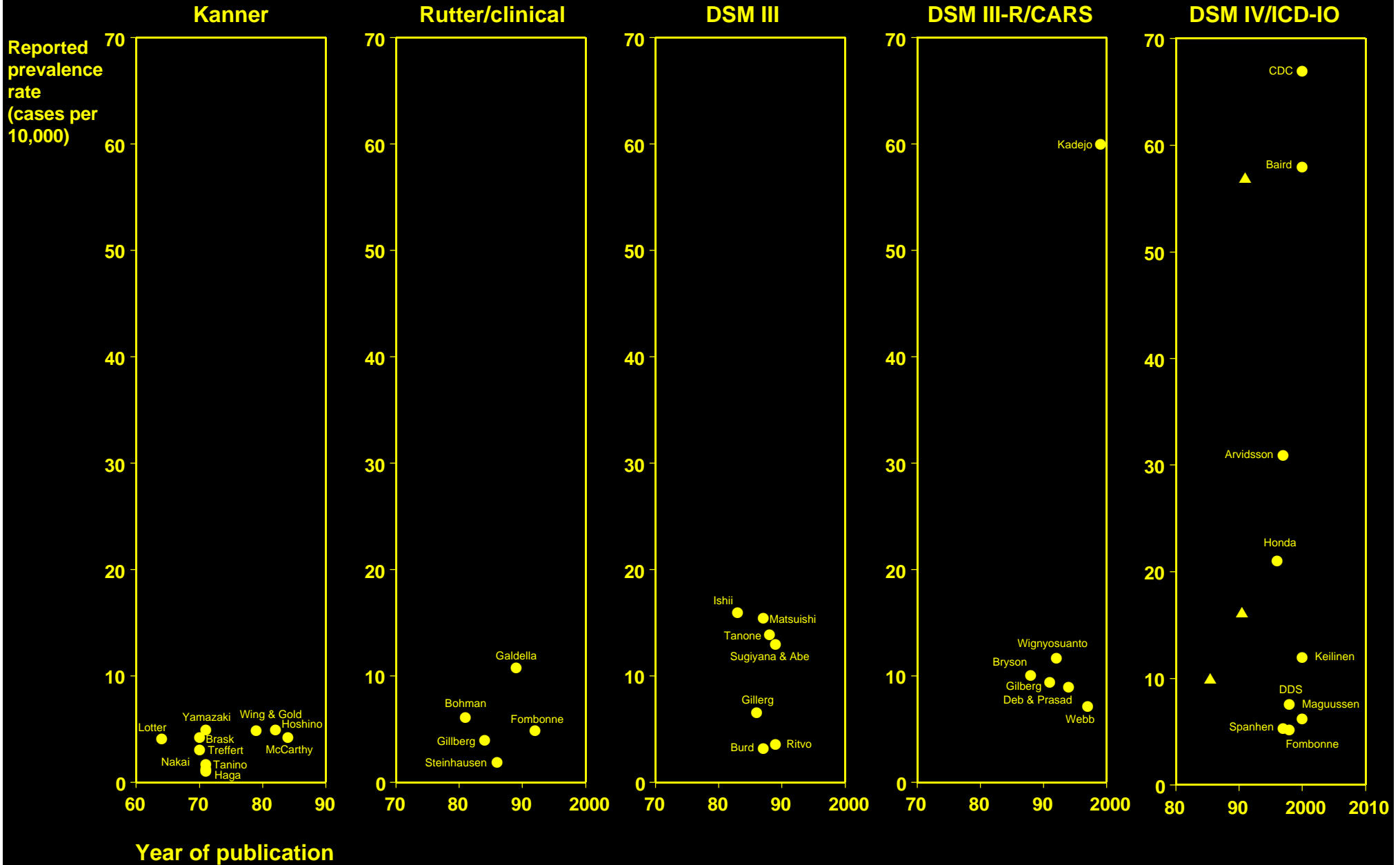
The timing of the increases in autism rates and the increases in infant mercury exposures (via thimerosal-containing vaccines) are closely associated

THE CONTROVERSY OVER RISING AUTISM INCIDENCE

To date, the epidemiologic data for a secular increase in the incidence of PDDs is both meager and negative. We simply lack good data to test hypotheses on secular changes in the incidence of autism. Because of specific methodologic limitations, the high prevalence rates reported in recent autism surveys cannot be used to derive conclusions on this issue. Prevalence data nevertheless point to the magnitude of the problem, which had clearly been underestimated in the past. But there is no need to raise false alarms on putative epidemics nor to practice poor science to draw attention to the unmet needs of large numbers of seriously impaired children and adults.

Eric Fombonne, "Is There an Epidemic of Autism?", letter to Pediatrics, February, 2001.

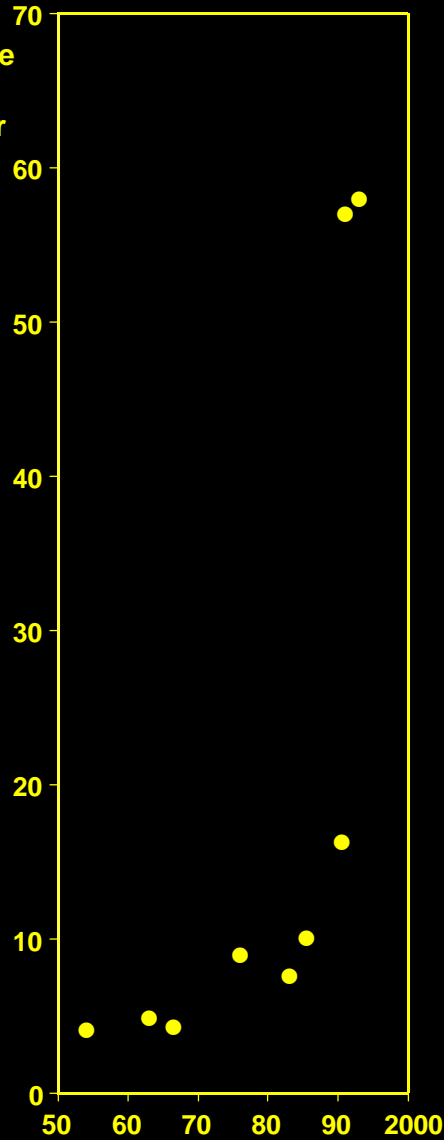
THE PUBLICATION LENS: FOCUS ON "SPECIFIC METHODOLOGIC LIMITATIONS"



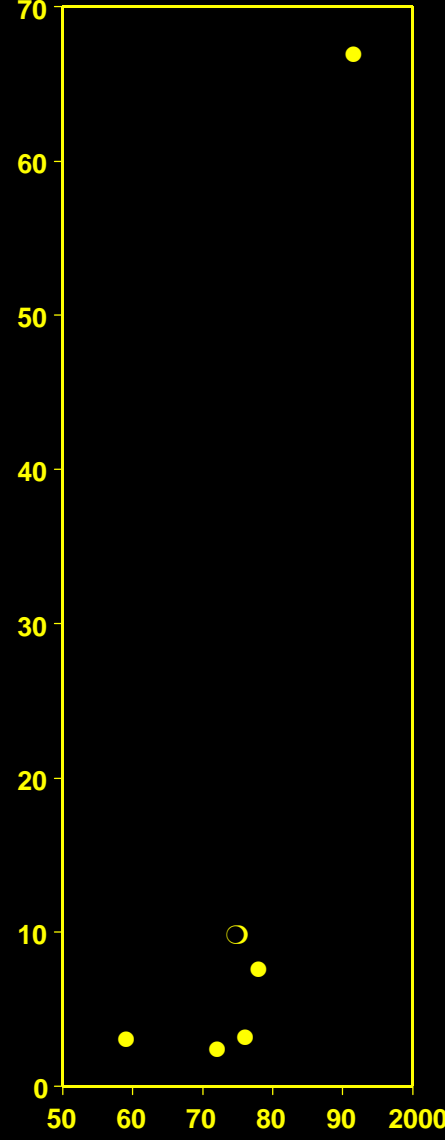
THE DATA LENS: EMPHASIZING THE TIME OF BIRTH

U.K./Ireland

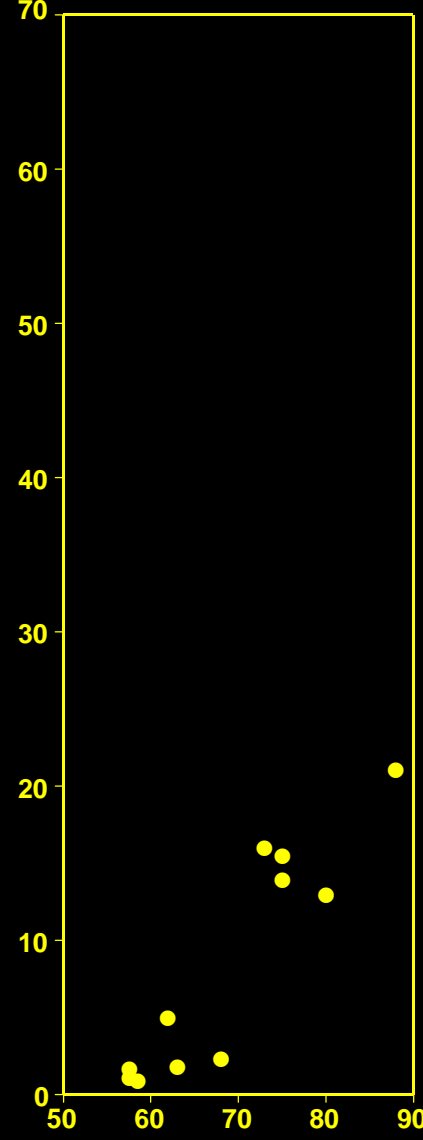
Reported prevalence rate (cases per 10,000)



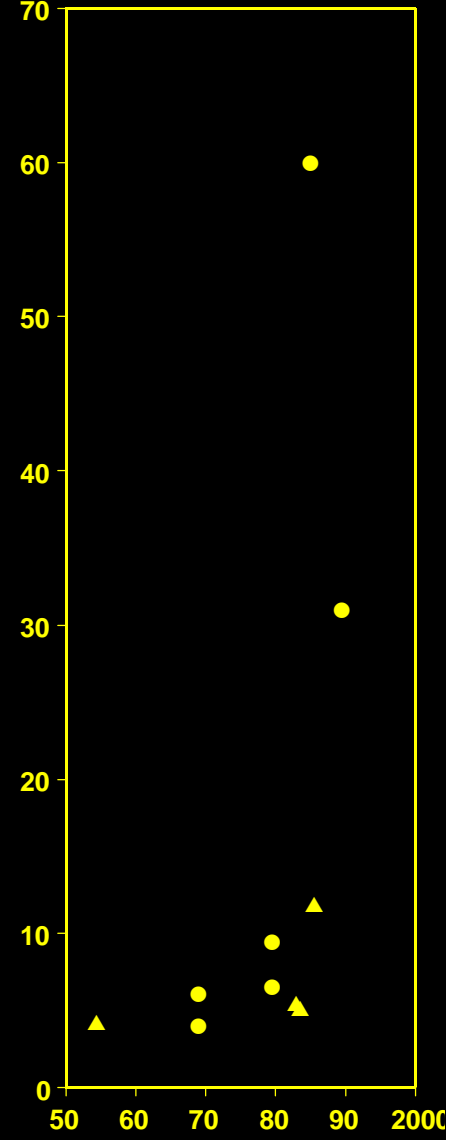
U.S./Canada



Japan



Sweden/Scandinavia

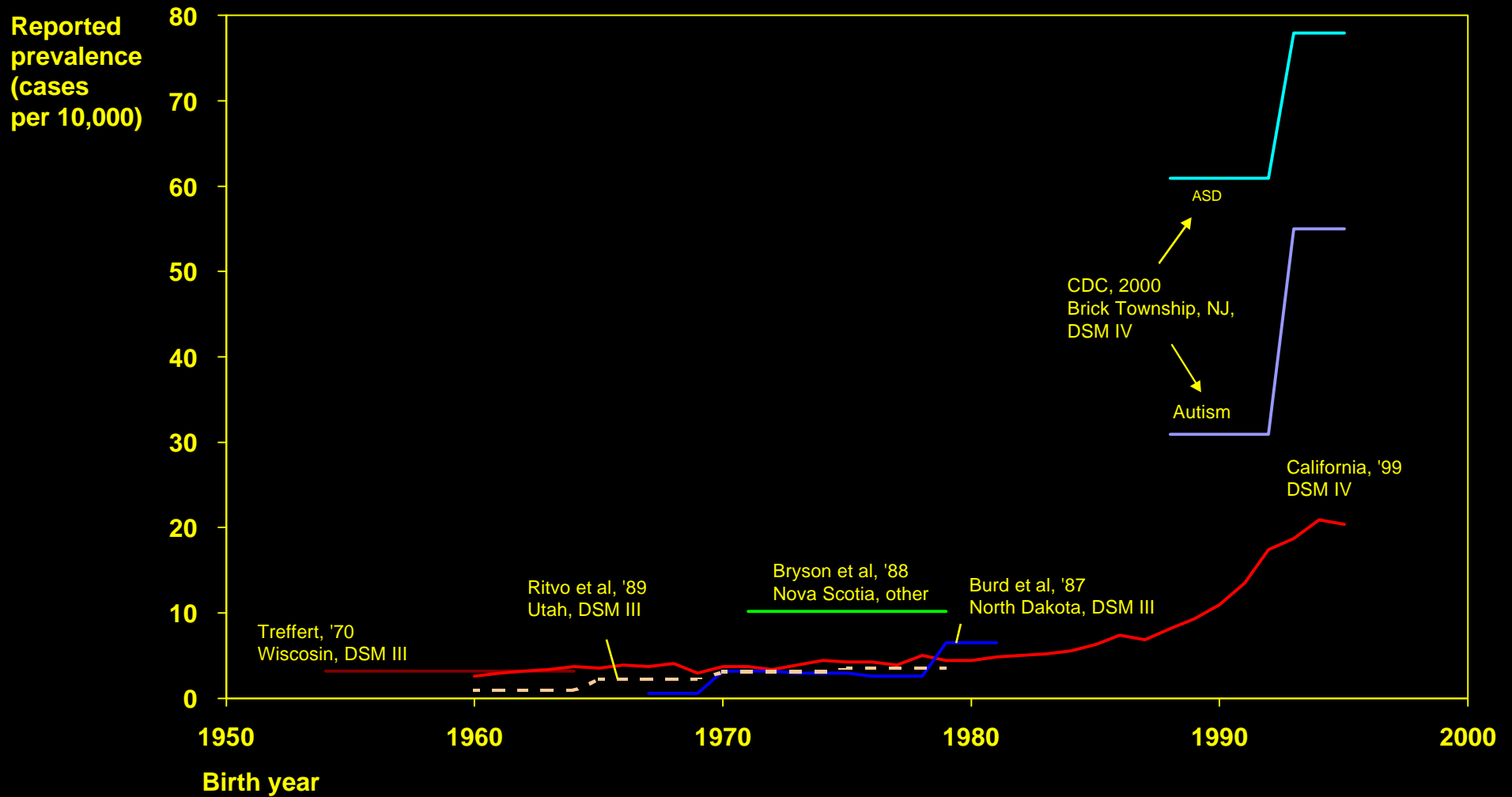


Year of birth (study midpoint)

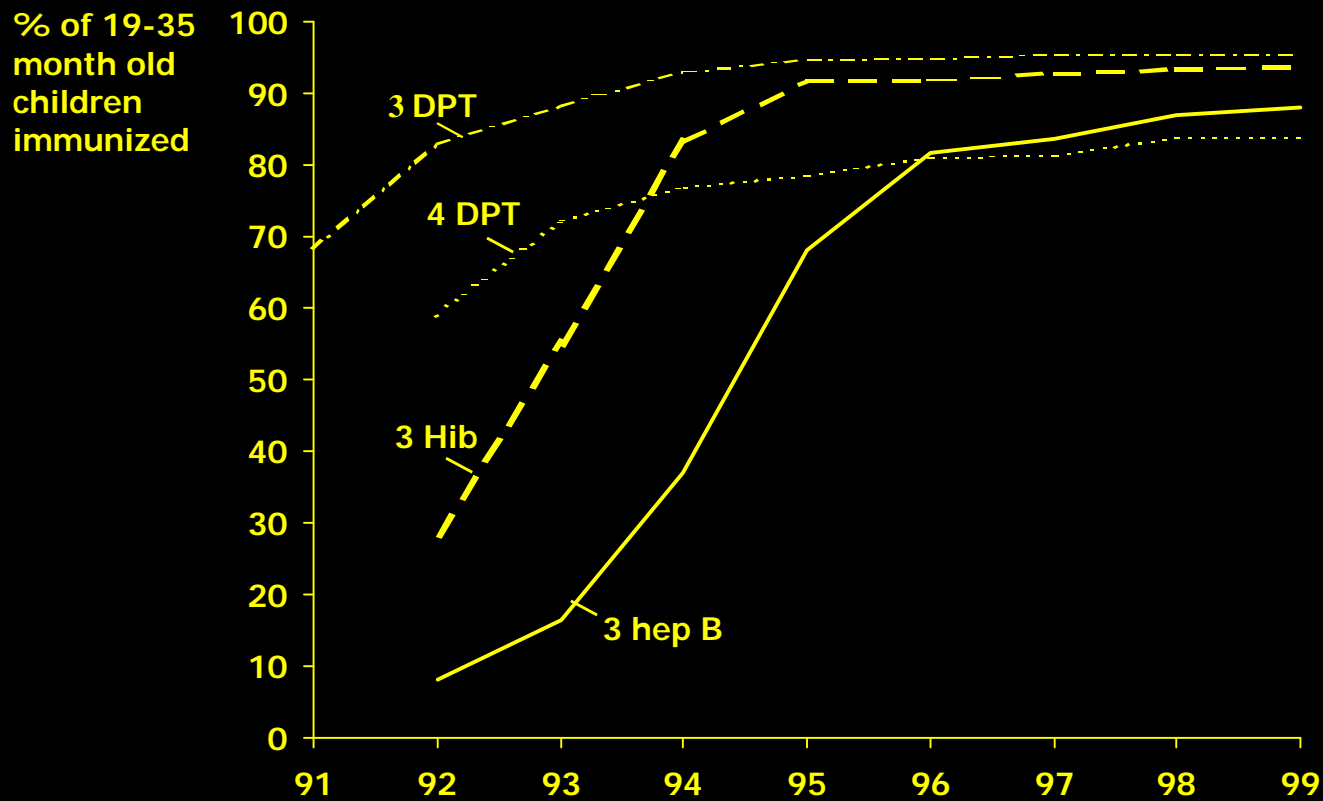
SIX AUTISM STUDIES IN NORTH AMERICA

Author/date	Location studied	Diagnostic criteria	Birth years covered	Prevalence rate
1. Treffert, 1970	Wisconsin	Kanner	1954-64	3.1 per 10,000
2. Burd et al, 1987	North Dakota	DSM III	1967-83	3.26
3. Ritvo et al, 1989	Utah	DSM III	1960-84 1975-79	2.47 total 3.5 "best estimate"
4. Bryson et al 1988	Nova Scotia, Canada	DSM III-R/other	1971-79	10.1
5. California, 1999	California	DSM IV	1960-95	7.6 (calculated)
6. CDC, 2000	Brick Township, NJ	DSM IV	1988-95	40 autism 67 ASD

U.S.: AUTISM TIME TRENDS BY BIRTH YEAR



INCREASING COVERAGE RATES FOR THIMEROSAL-CONTAINING VACCINES IN THE UNITED STATES



Source: National Health interview survey

COMPARING AUTISM RATES AND MERCURY EXPOSURES: METHODOLOGY

Autism prevalence rates

Autism cases by birth year obtained from California DDS

California births by year obtained from Census Department for 1960-95

Prevalence rate by birth cohort calculated as simple ratio between cases (by birth year) and births, assuming no migration or mortality bias

Mercury exposures

Vaccine coverage rates obtained from NHIS survey of 19-35 month old children

Total mercury content from vaccines obtained from published sources

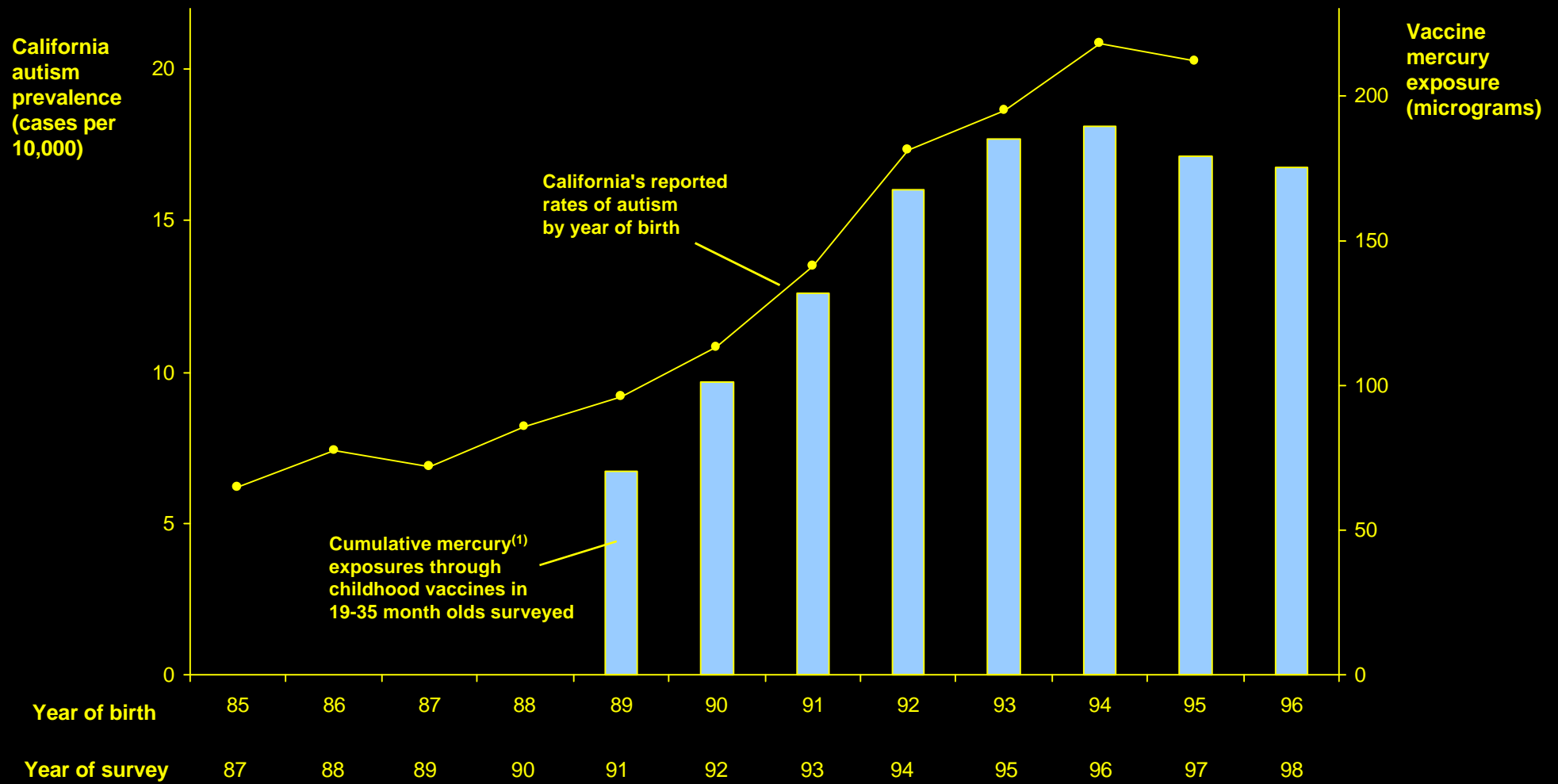
- 75/100 mcg for 3/4 course DPT
- 75 mcg for Hib course (3 or more)
- 37.5 mcg for hep B course (3 or more)

Cumulative mercury burden from vaccines calculated as sum of individual vaccine burdens adjusted for coverage rates

Specific adjustments

- 1990 4-dose DPT coverage (estimated)
- 1996-98 PRP-T Hib vaccine shares (thimerosal-free Hib vaccines reduce cumulative mercury burden)

VACCINE MERCURY BURDEN AND AUTISM RISK: UNITED STATES



(1) Includes DPT, haemophilus influenza B and hepatitis B exposures weighted by survey year compliance

OTHER ASSOCIATIONS BETWEEN INCREASED MERCURY EXPOSURES AND AUTISM INCREASES

Country	Mercury exposure	Autism increase
Japan	Niigata mercury episode, 1965	Hoshino et al (1982) report sharp autism increases in Fukushima-ken starting after 1965 birth cohort
Finland	Introduction of Hib vaccine, 1986	Kielinen et al (2000) report sharp autism increases in Finland starting in 1982-89 birth cohorts
United Kingdom	Accelerated schedule starting in May 1990	Numerous studies (e.g., Taylor, Kaye, Baird, Scott) show sharply higher autism rates starting after 1990 birth cohort