



# GENETICALLY ENGINEERED CROPS, GLYPHOSATE AND THE DETERIORATION OF HEALTH IN THE UNITED STATES OF AMERICA

The following graphs are extracted from the article by  
Nancy L. Swanson et al. (2014) Journal of Organic  
Systems. <http://www.organic-systems.org/journal/92/abstracts/Swanson-et-al.html>

# Genetically engineered crops, glyphosate and the deterioration of health in the United States of America

Nancy L. Swanson<sup>1</sup>, Andre Leu<sup>2\*</sup>, Jon Abrahamson<sup>3</sup> and Bradley Wallet<sup>4</sup>

<sup>1</sup> *Abacus Enterprises, Lummi Island, WA, USA*

<sup>2</sup> *International Federation of Organic Agricultural Movements, Bonn, Germany*

<sup>3</sup> *Abacus Enterprises, Lummi Island, WA, USA*

<sup>4</sup> *Crustal Imaging Facility, Conoco Phillips School of Geology and Geophysics, University of Oklahoma, USA*

\* *Corresponding author: andreleu.al@gmail.com*

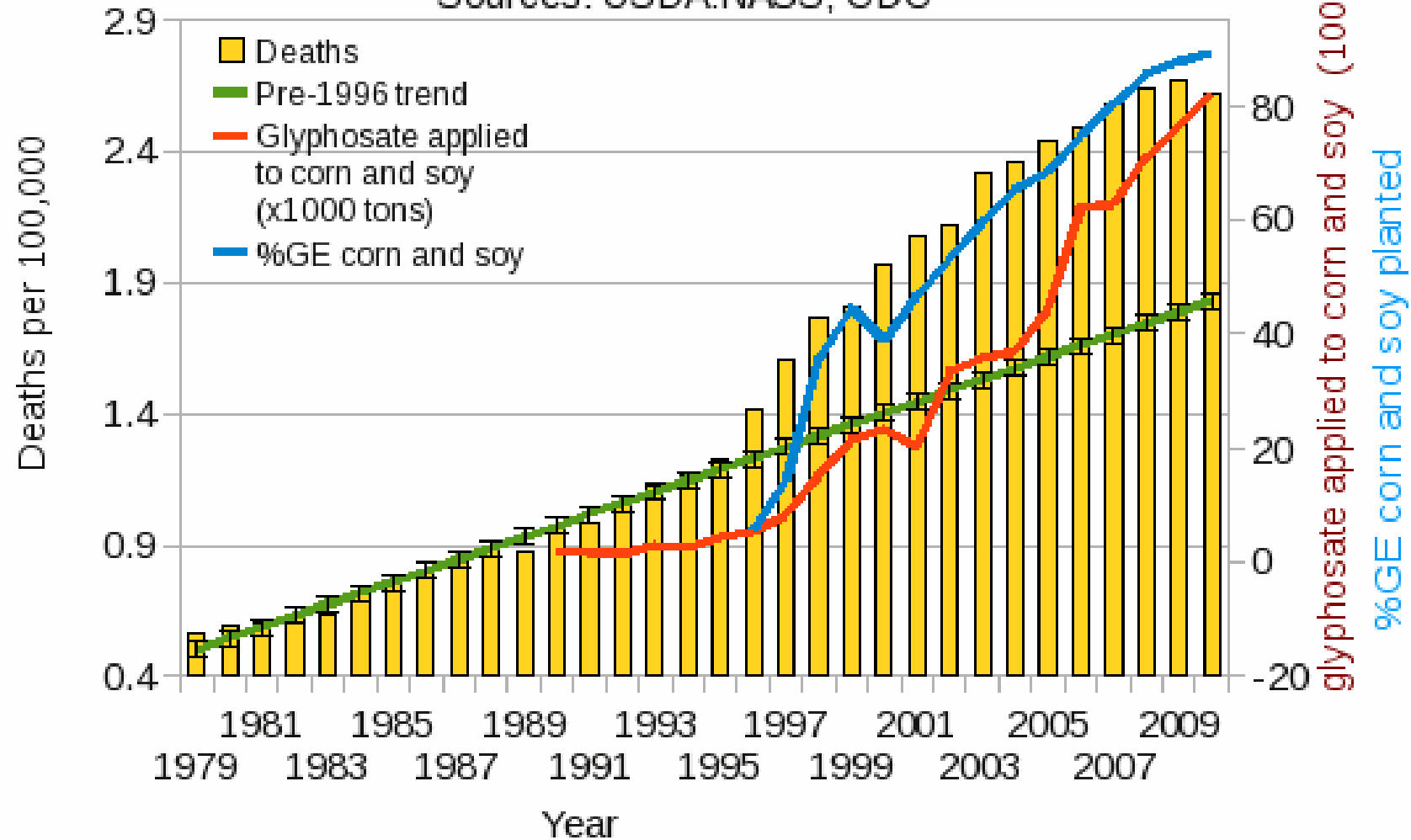
## Abstract

A huge increase in the incidence and prevalence of chronic diseases has been reported in the United States (US) over the last 20 years. Similar increases have been seen globally. The herbicide glyphosate was introduced in 1974 and its use is accelerating with the advent of herbicide-tolerant genetically engineered (GE) crops. Evidence is mounting that glyphosate interferes with many metabolic processes in plants and animals and glyphosate residues have been detected in both. Glyphosate disrupts the endocrine system and the balance of gut bacteria, it damages DNA and is a driver of mutations that lead to cancer.

In the present study, US government databases were searched for GE crop data, glyphosate application data and disease epidemiological data. Correlation analyses were then performed on a total of 22 diseases in these time-series data sets. The Pearson correlation coefficients are highly significant ( $< 10^{-5}$ ) between glyphosate applications and hypertension (R = 0.923), stroke (R = 0.925), diabetes prevalence (R = 0.971), diabetes incidence (R = 0.935), obesity (R = 0.962), lipoprotein metabolism disorder (R = 0.973), Alzheimer's (R = 0.917), senile dementia (R = 0.994), Parkinson's (R = 0.875), multiple sclerosis (R = 0.828), autism (R = 0.989), inflammatory bowel disease (R = 0.938), intestinal infections (R = 0.974), end stage renal disease (R = 0.975), acute kidney failure (R = 0.978), cancers of the thyroid (R = 0.988), liver (R = 0.960), bladder (R = 0.981), pancreas (R = 0.918), kidney (R = 0.973) and myeloid leukaemia (R = 0.878).

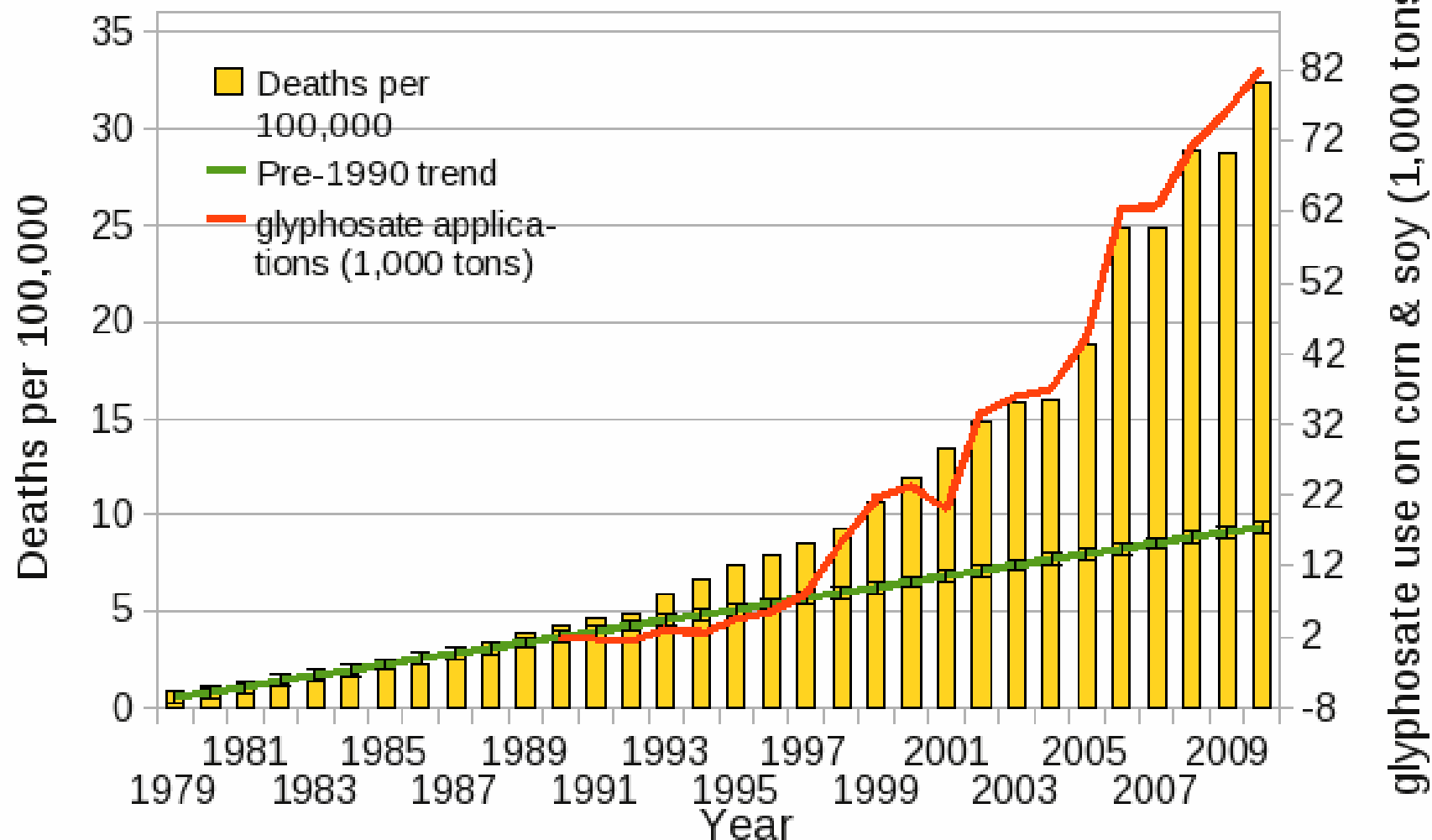
# Age Adjusted Deaths due to Stroke (ICD I62.9 & 432.9 hemorrhage, non embolic)

Plotted against %GE corn and soy ( $R = 0.9827$ ,  $p \leq 1.354e-06$ )  
& glyphosate applied to corn and soy ( $R = 0.9246$ ,  $p \leq 1.471e-07$ )  
Sources: USDA:NASS; CDC



# Age Adjusted Deaths from Senile Dementia (ICD F01, F03 & 290)

plotted against glyphosate applications on corn & soy  
( $R = 0.9942$ ,  $p \leq 1.822e-09$ ) sources: USDA:NASS; CDC

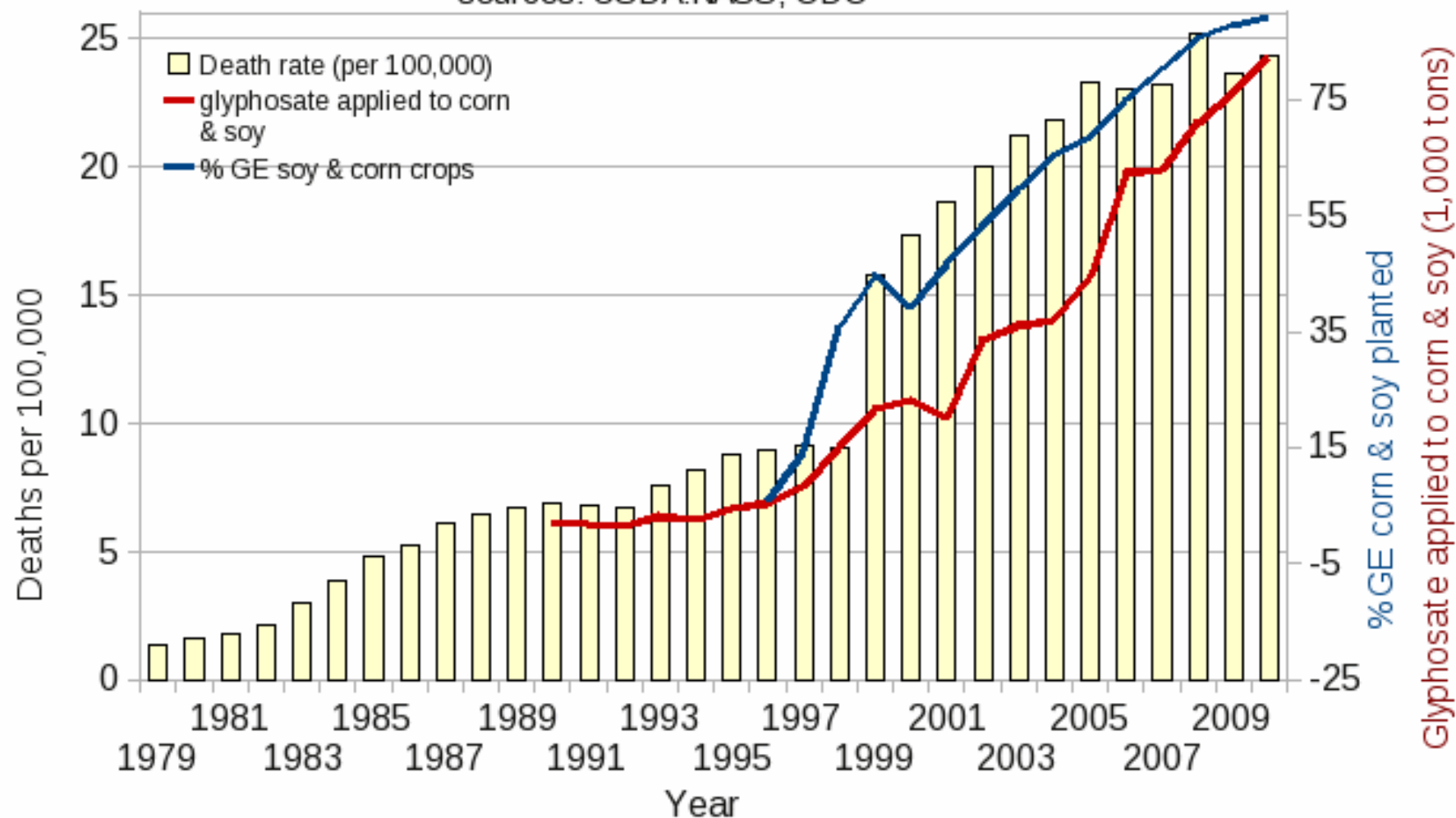


## Age Adjusted Deaths from Alzheimer's (ICD G30.9 & 331.0)

Plotted against glyphosate use ( $R = 0.917$ ,  $p \leq 2.205e-07$ ) &

%GE crops planted ( $R = 0.9373$ ,  $p \leq 9.604e-06$ )

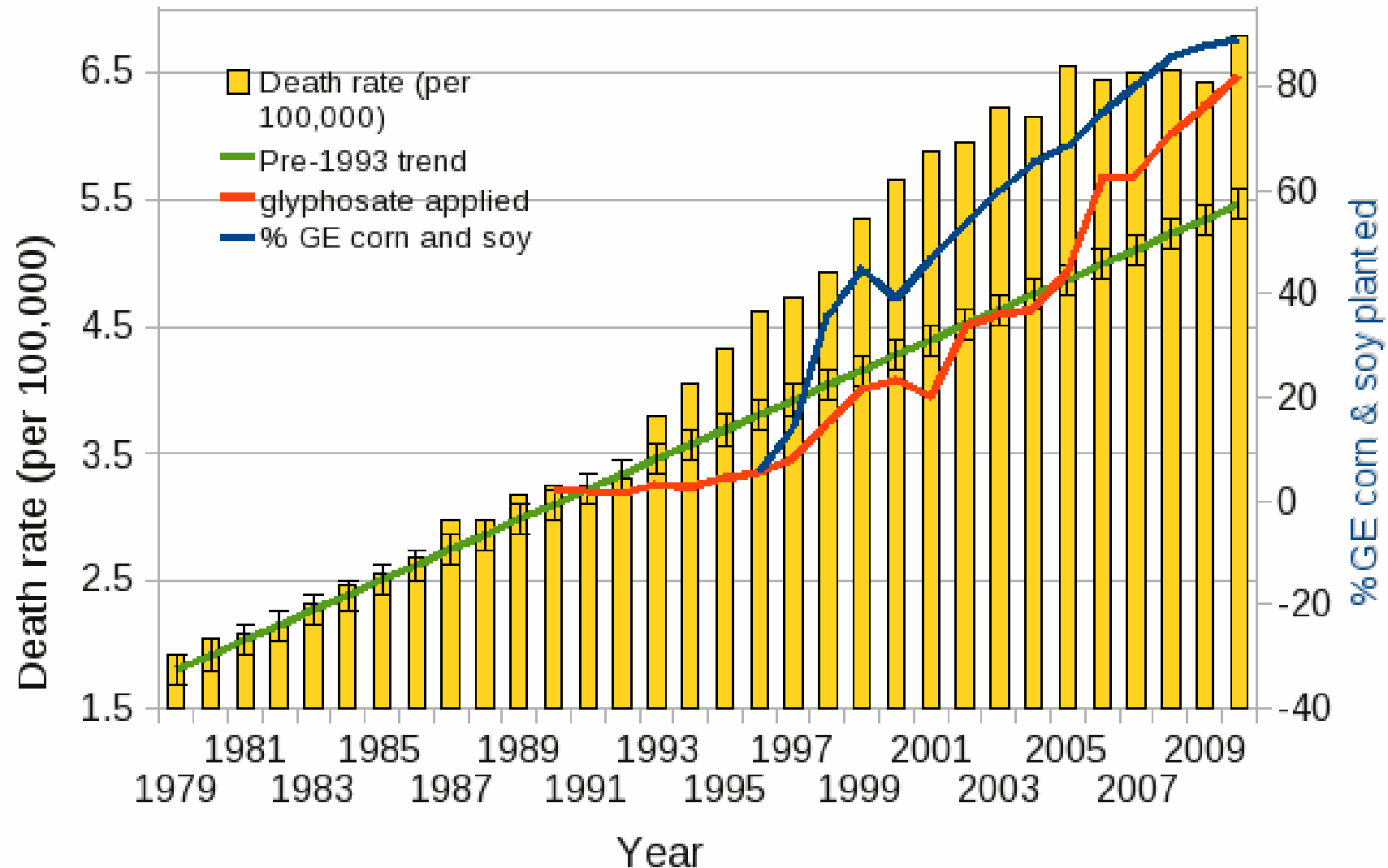
sources: USDA:NASS; CDC



# Age Adjusted Deaths from Parkinson's Disease (ICD G20 & 332.0)

plotted against glyphosate use on corn & soy ( $R = 0.8754$ ,  $p \leq 1.631e-06$ )  
and percent GE corn & soy planted ( $R = 0.9516$ ,  $p \leq 5.398e-06$ )

sources: USDA:NASS; CDC

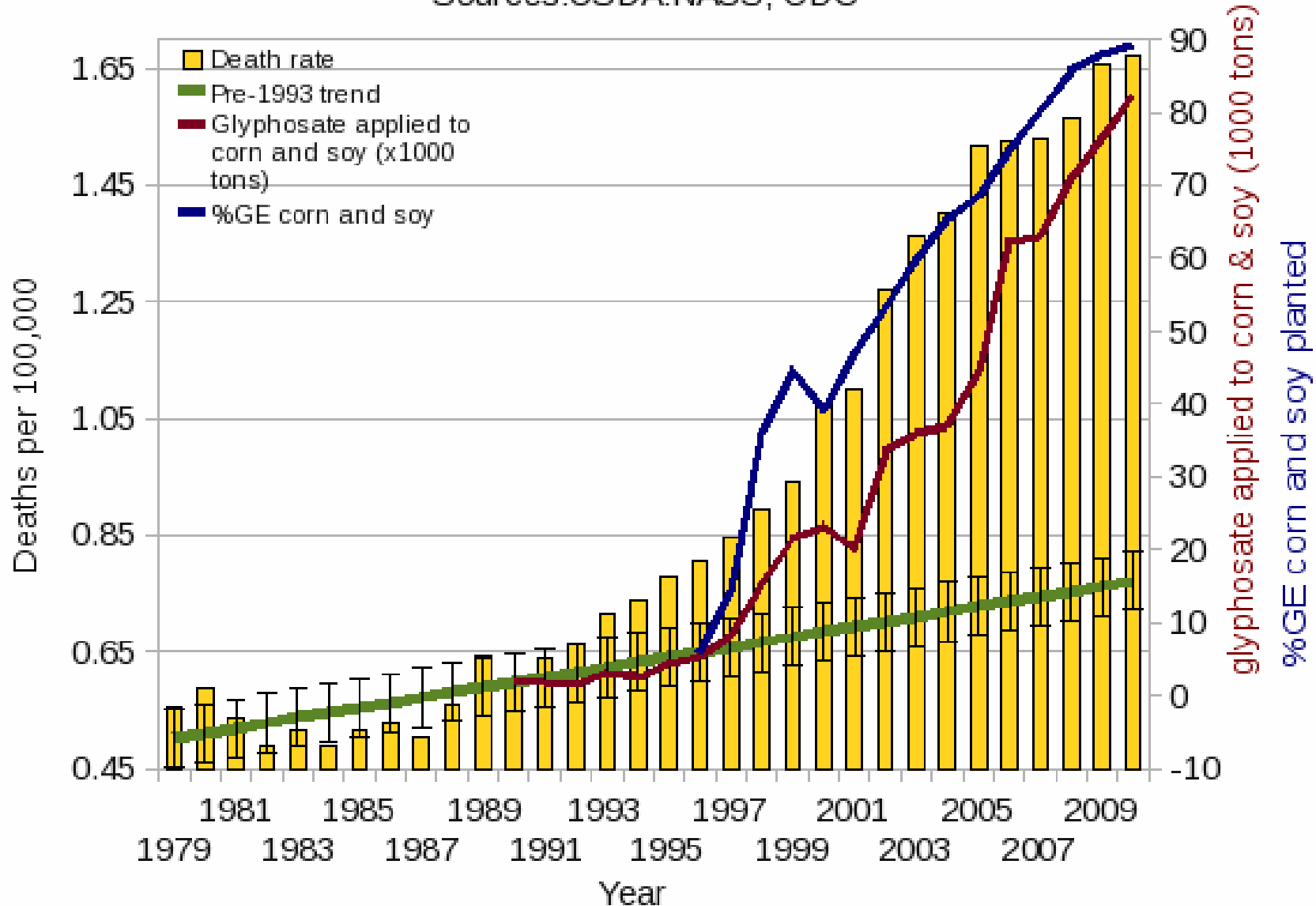


glyphosate applied to corn & soy (1,000 tons)

## Age Adjusted Deaths due to Obesity (ICD E66 & 278)

plotted against %GE corn & soy ( $R = 0.9618$ ,  $p \leq 3.504e-06$ )  
and glyphosate applied to corn & soy ( $R = 0.9616$ ,  $p \leq 1.695e-08$ )

Sources: USDA: NASS; CDC

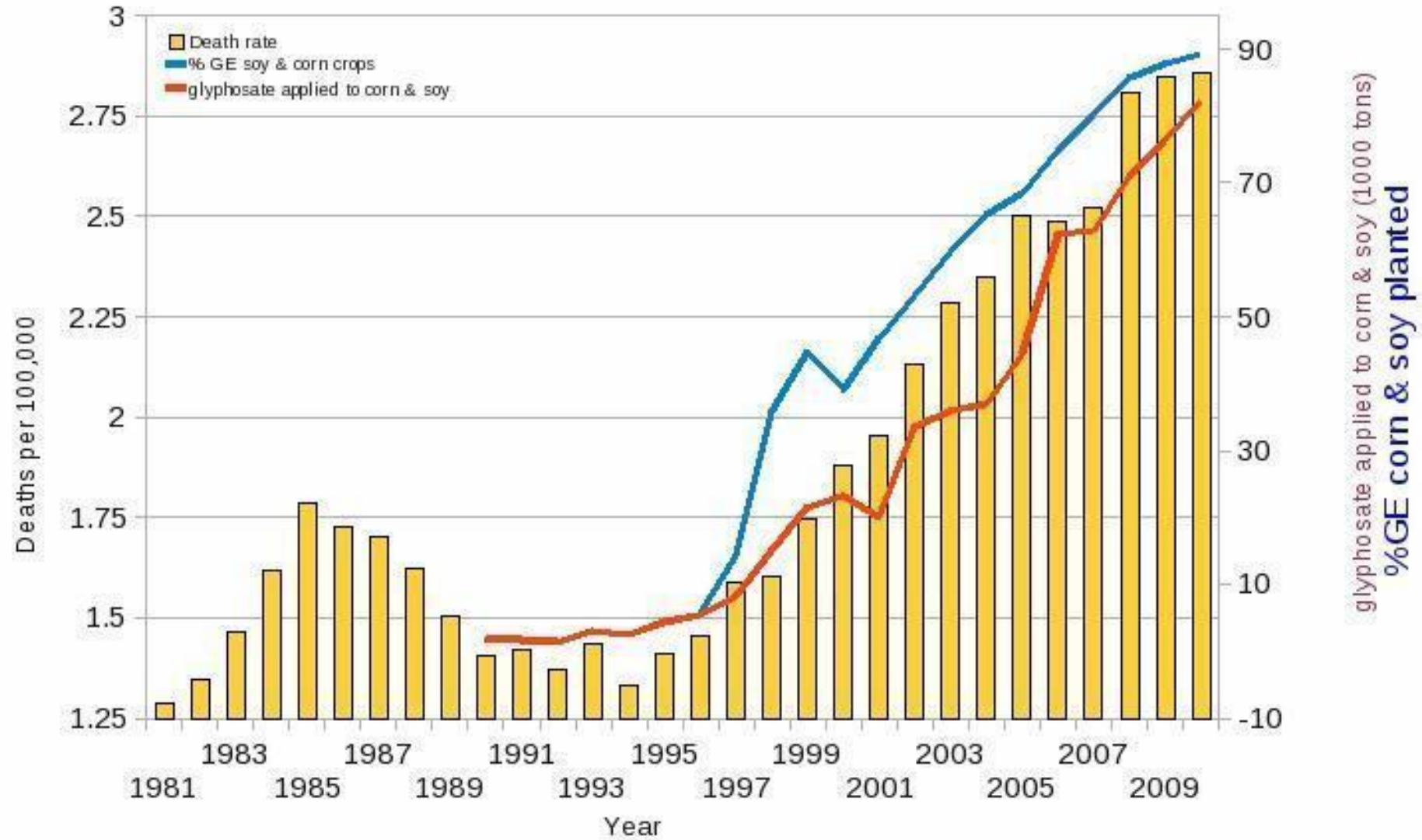




## Age Adjusted Acute Renal Failure Death (ICD N17. 584)

plotted against %GE corn and soy planted ( $R = 0.9674$ ,  $p \leq 2.736e-06$ )  
and glyphosate applied to corn and soy ( $R = 0.9775$ ,  $p \leq 5.953e-09$ )

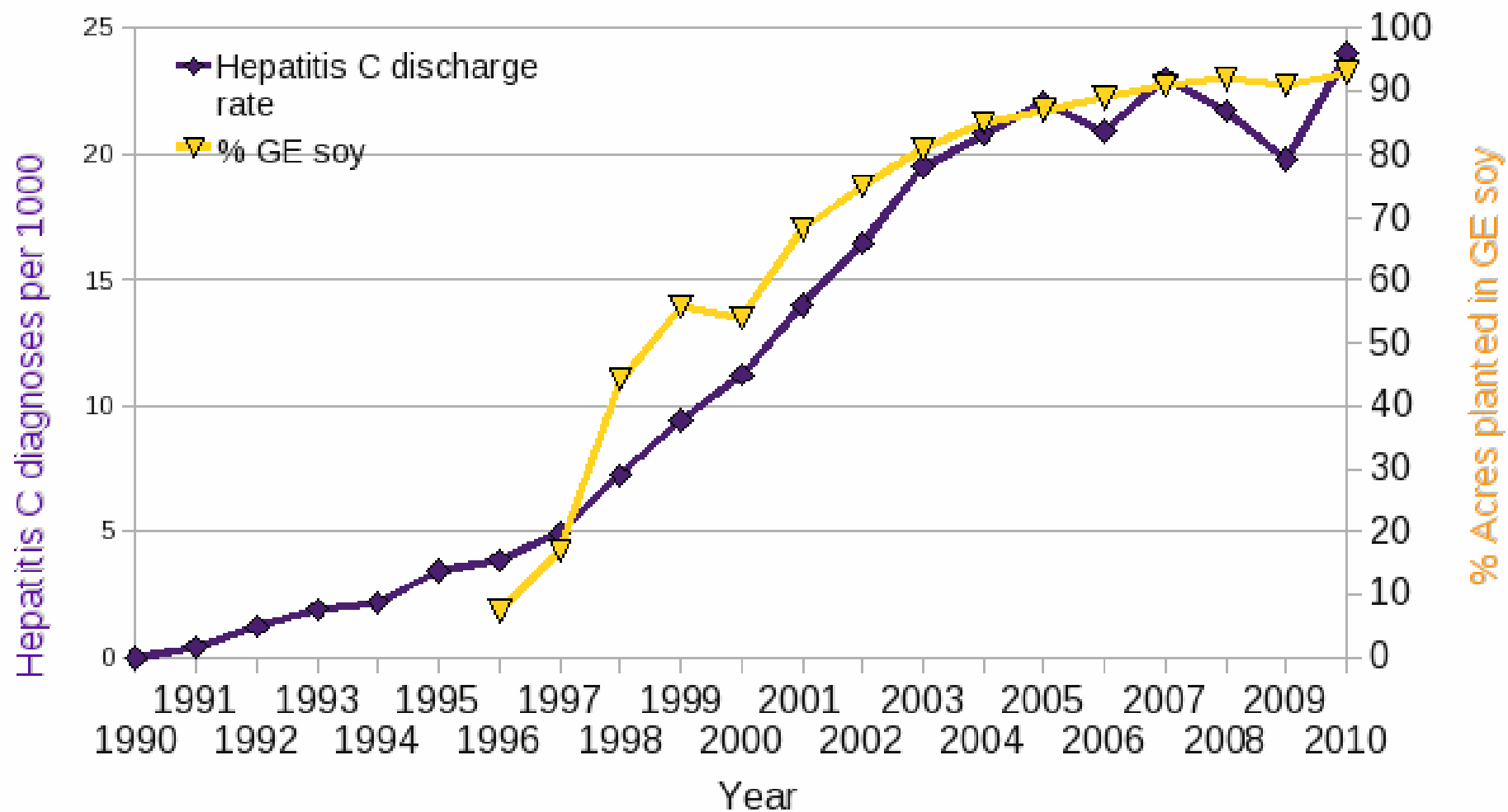
Sources: USDA:NASS; CDC





## Hospital discharge diagnosis of Hepatitis C ICD 070.4-070.7

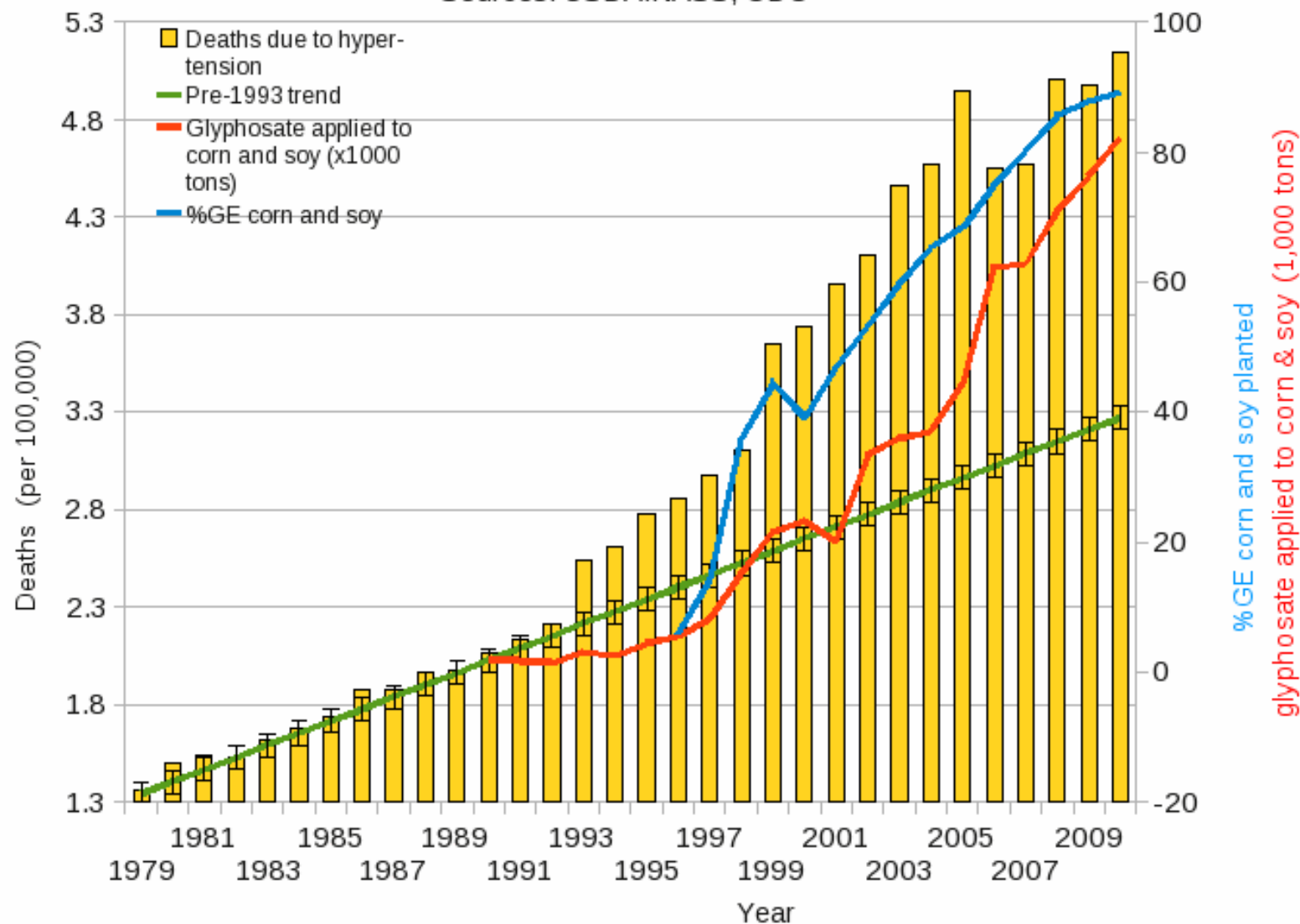
plotted against % acres planted in GE soy ( $R = 0.9456$ ,  $p \leq 6.914e-06$ )



## Age Adjusted Deaths due to Hypertension (ICD I10 & 401)

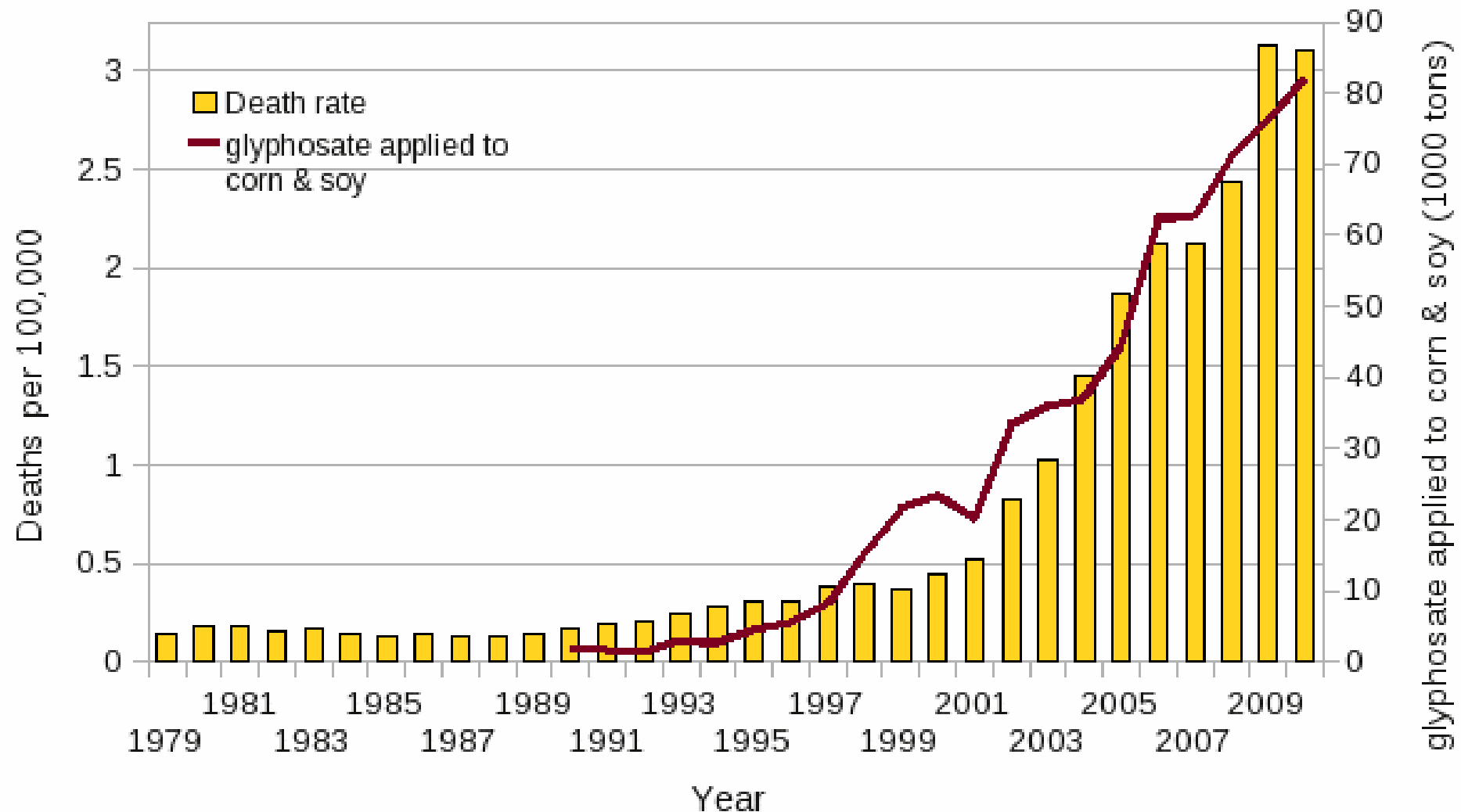
plotted against %GE corn and soy ( $R = 0.9607$ ,  $p \leq 3.675e-06$ )  
& glyphosate applied to corn and soy ( $R = 0.923$ ,  $p \leq 1.603e-07$ )

Sources: USDA:NASS; CDC

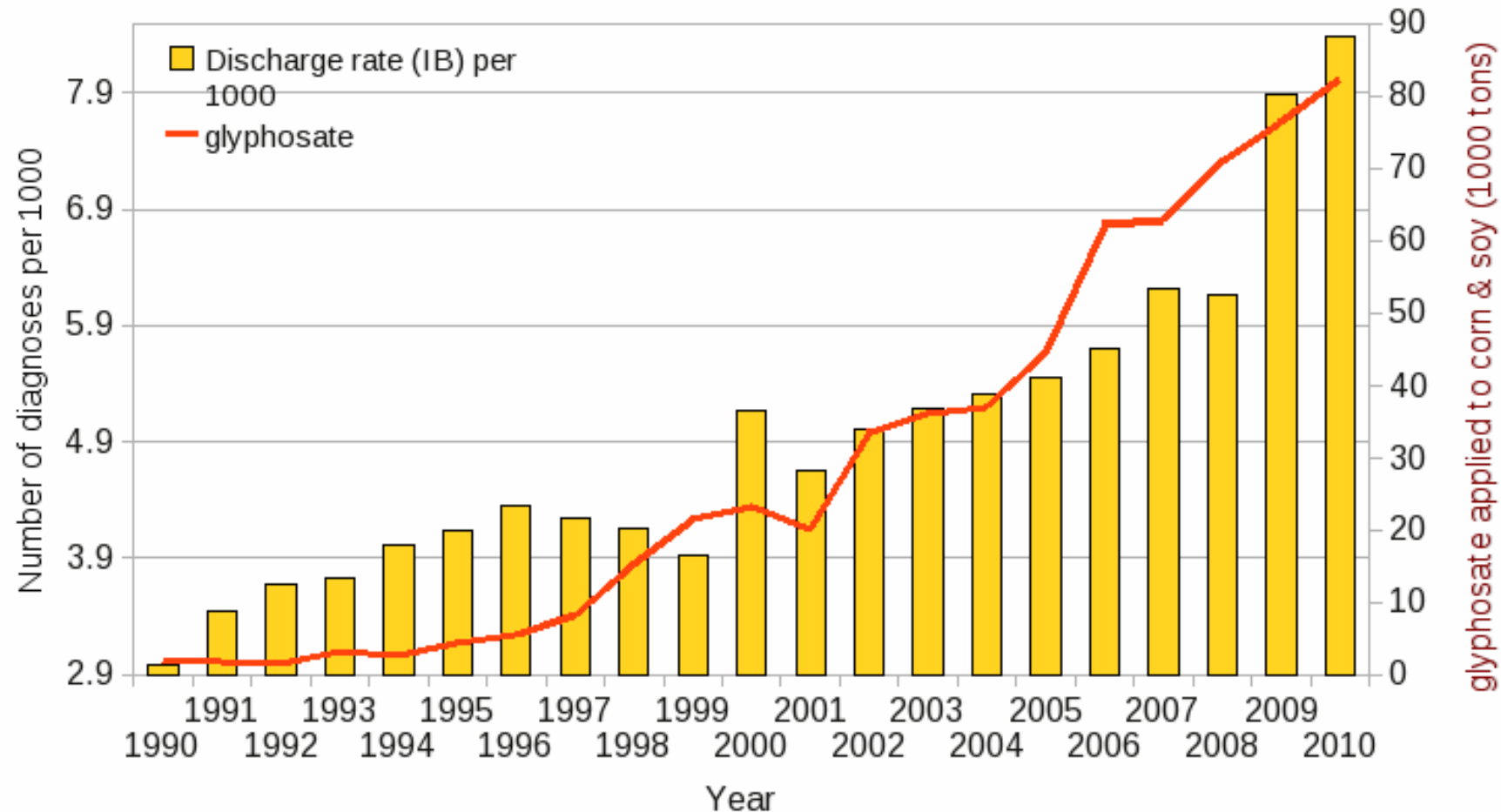


# Age Adjusted Deaths due to Intestinal Infection (ICD A04, A09; 008, 009)

plotted against glyphosate applied to corn & soy ( $R = 0.9738$ ,  $p \leq 7.632e-09$ )  
Sources USDA:NASS; CDC



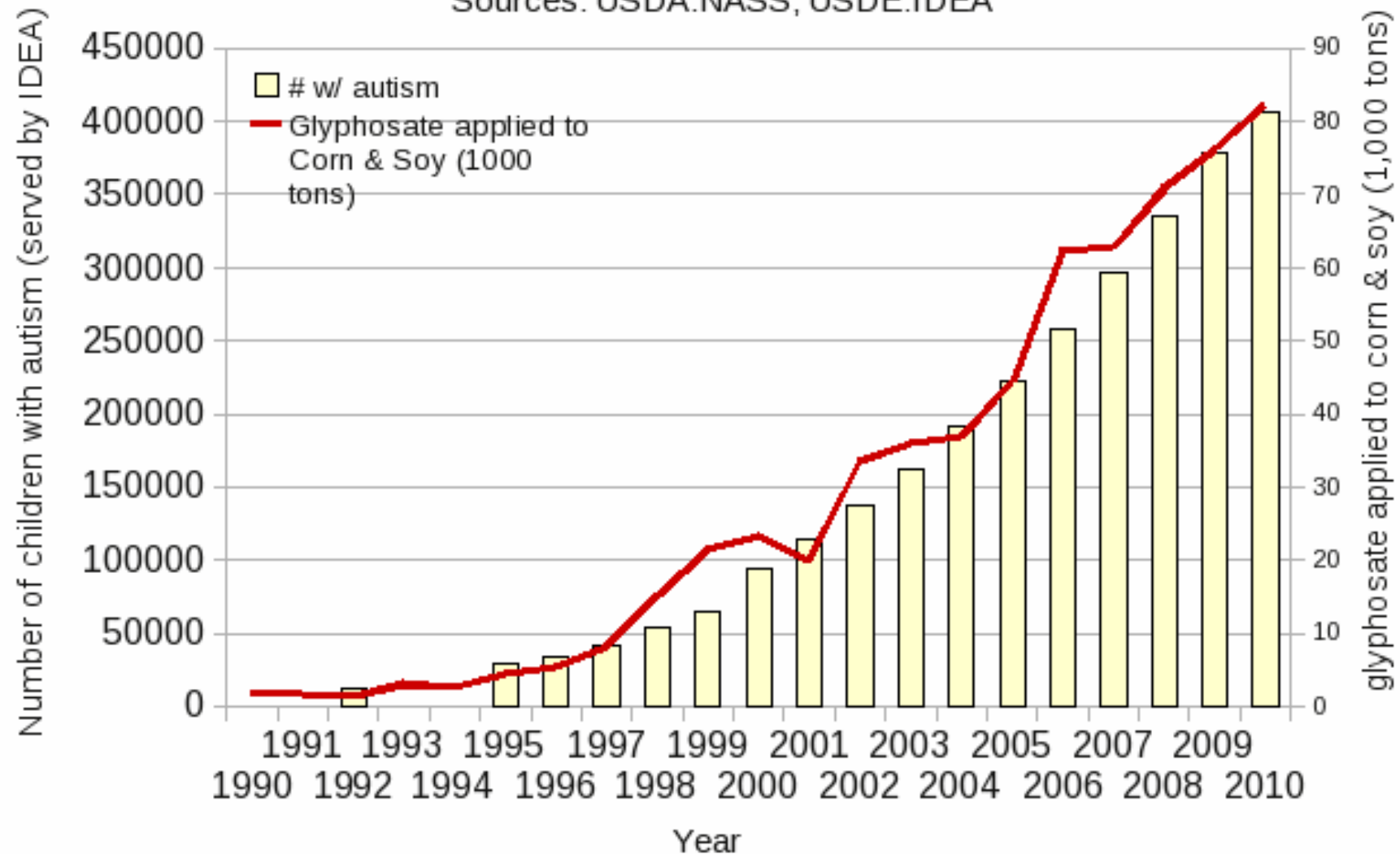
Hospital discharge diagnoses (any) of Inflammatory Bowel disease  
(Crohn's and Ulcerative Colitis ICD 555 & 556)  
plotted against glyphosate applied to corn and soy ( $R = 0.9378$ ,  $p \leq 7.068e-08$ )  
Sources: USDA & CDC



## Number of children (6-21yrs) with autism served by IDEA

plotted against glyphosate use on corn & soy ( $R = 0.9893$ ,  $p \leq 3.629e-07$ )

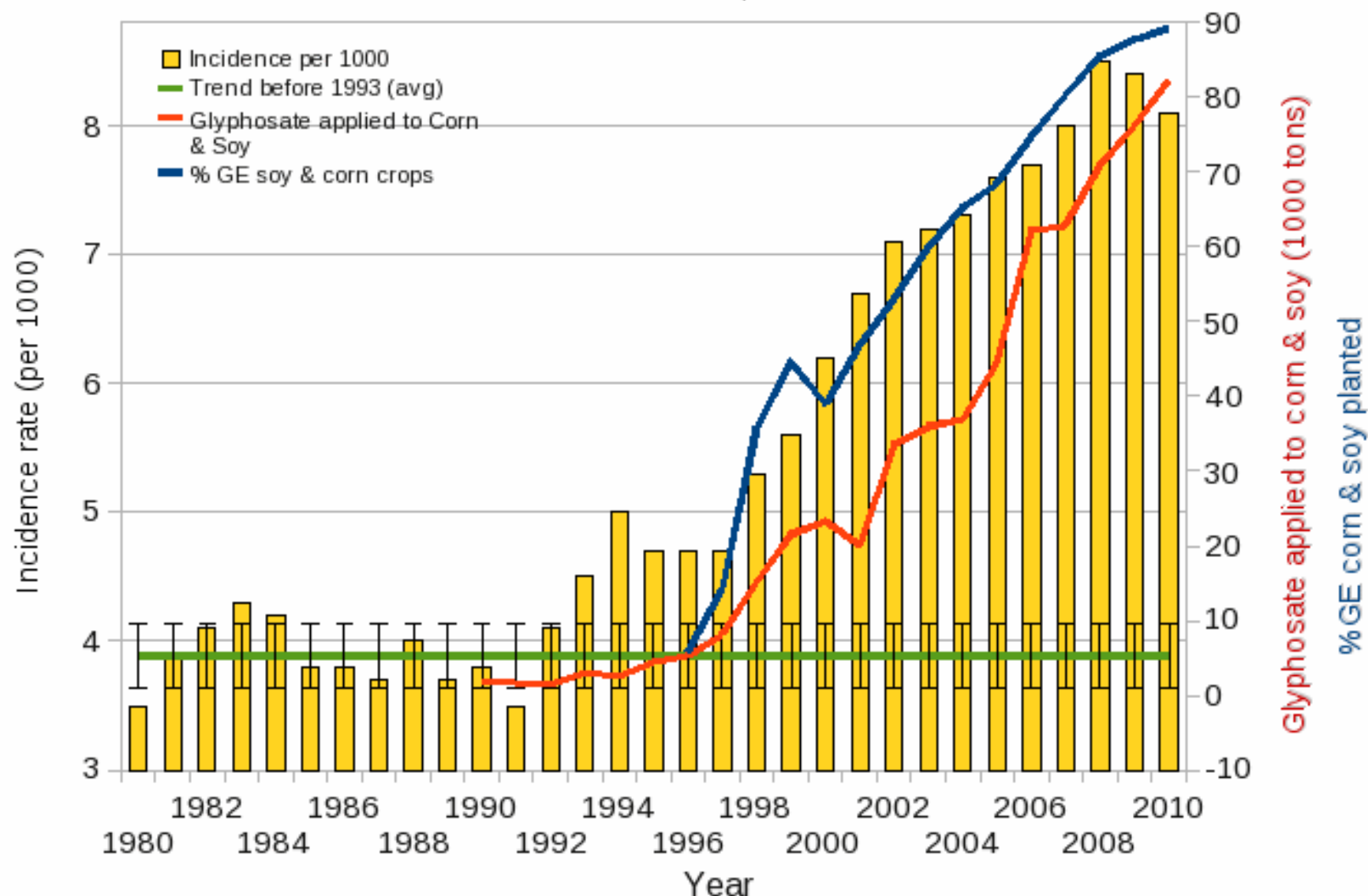
Sources: USDA:NASS; USDE:IDEA



## Annual Incidence of Diabetes (age adjusted)

plotted against %GE corn & soy crops planted ( $R = 0.9547$ ,  $p \leq 1.978e-06$ )  
along with glyphosate applied to corn & soy in U.S. ( $R = 0.935$ ,  $p \leq 8.303e-08$ )

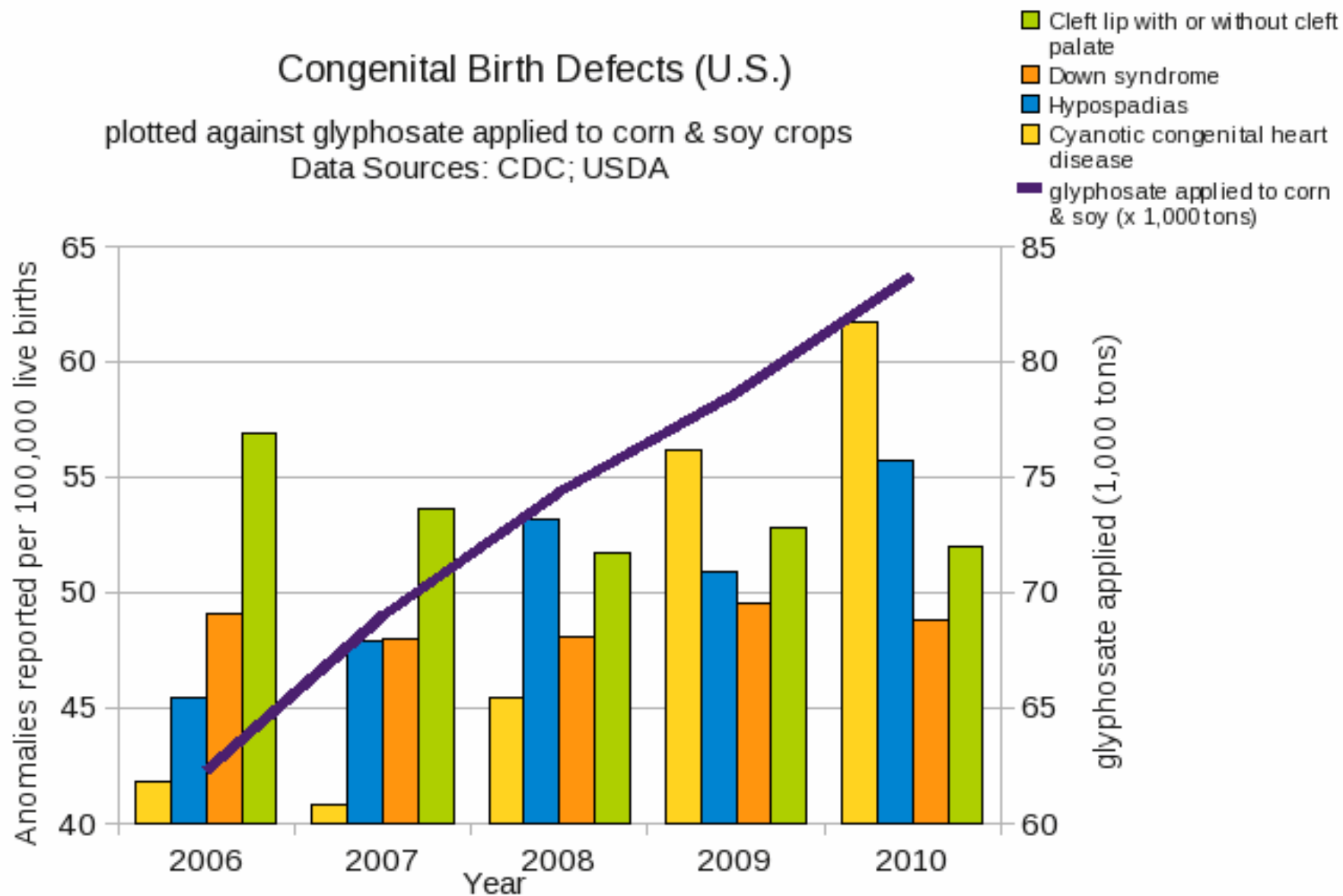
sources: USDA:NASS; CDC



## Congenital Birth Defects (U.S.)

plotted against glyphosate applied to corn & soy crops

Data Sources: CDC; USDA



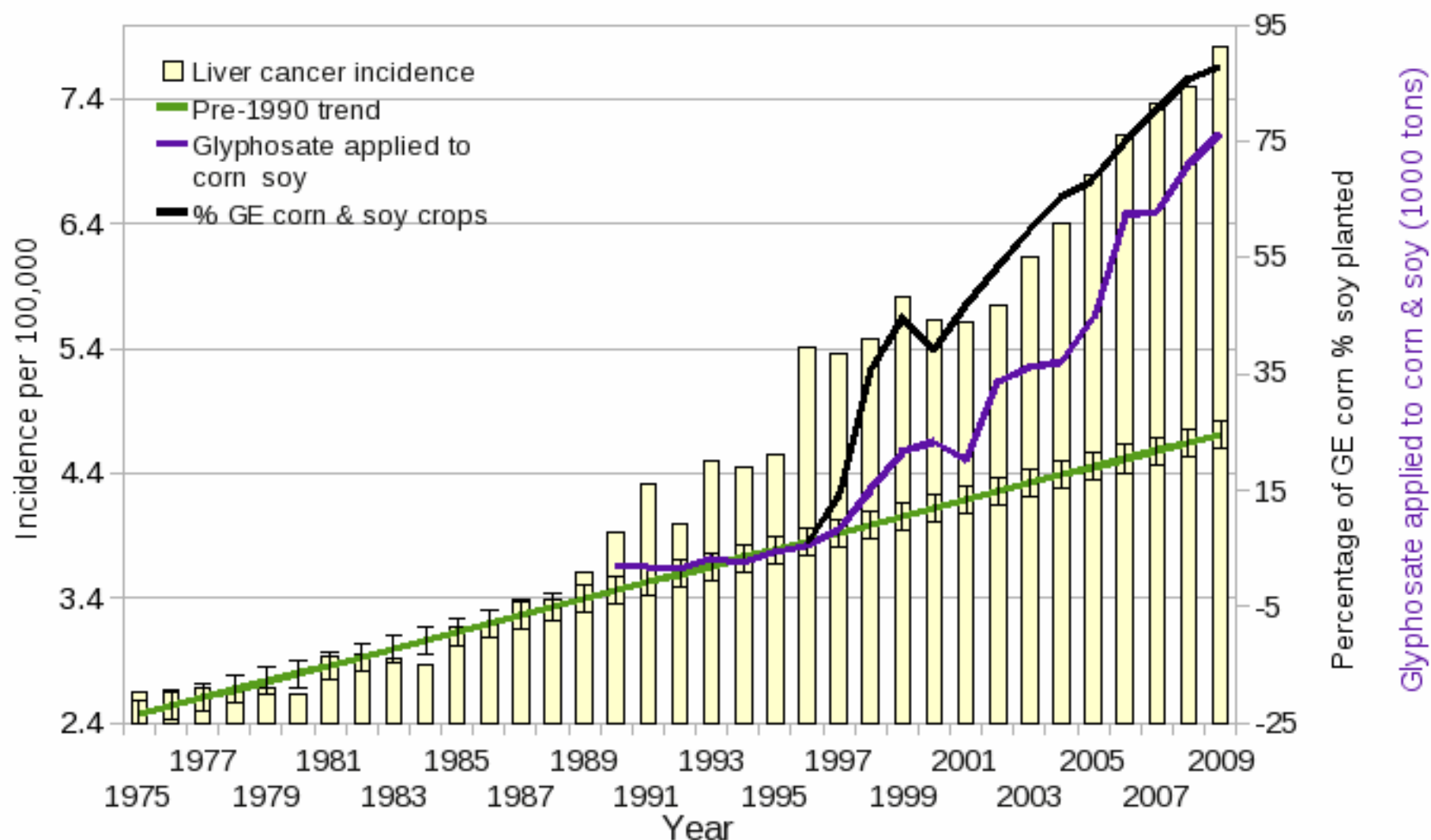


## Liver and Intrahepatic Bile Duct Cancer Incidence (age adjusted)

plotted against glyphosate applied to corn & soy ( $R = 0.9596$ ,  $p \leq 4.624e-08$ )

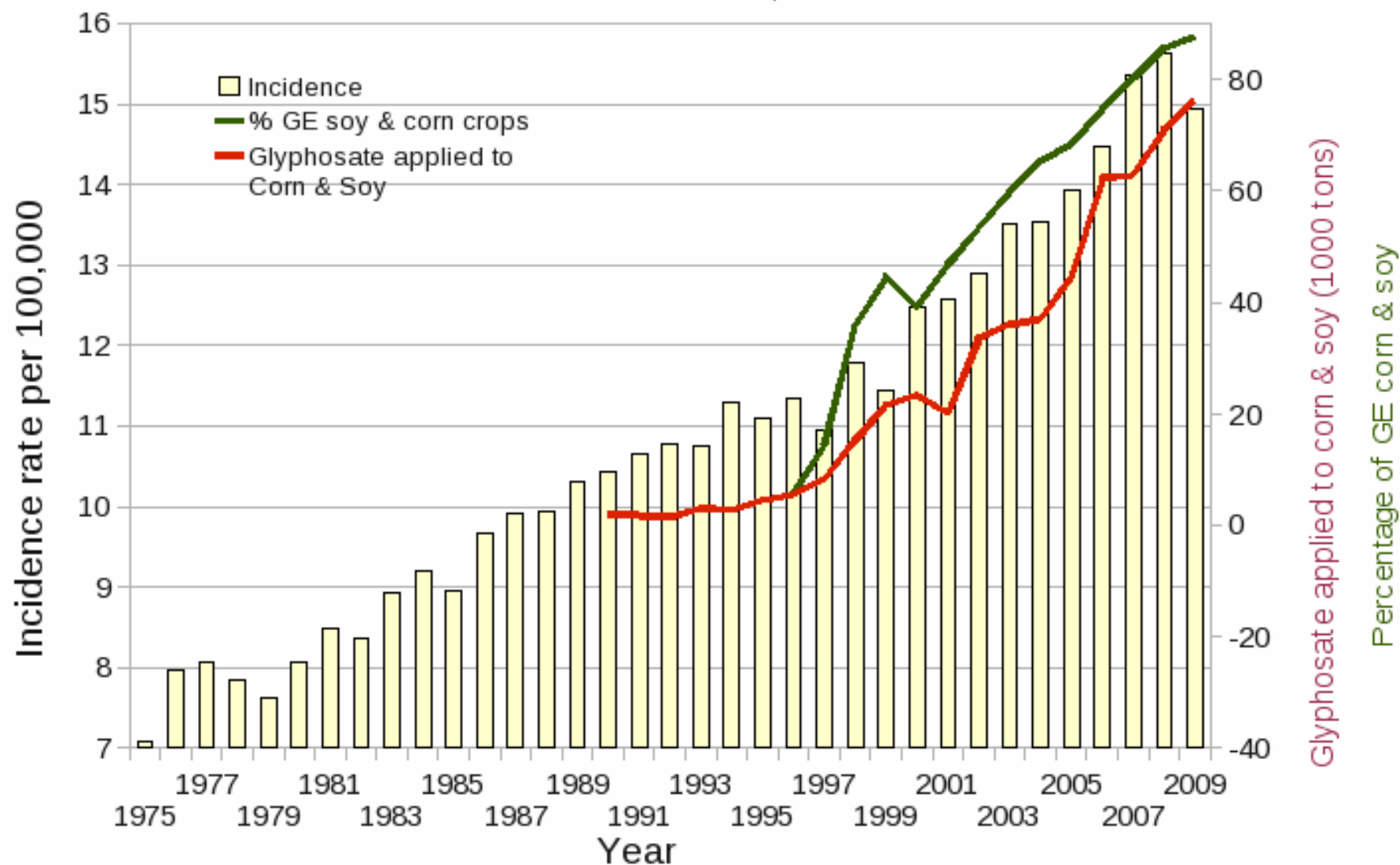
along with %GE corn & soy planted in U.S. ( $R = 0.9107$ ,  $p \leq 5.402e-05$ )

sources: USDA:NAS; SEER



# Kidney and Renal Pelvis Cancer Incidence (age adjusted)

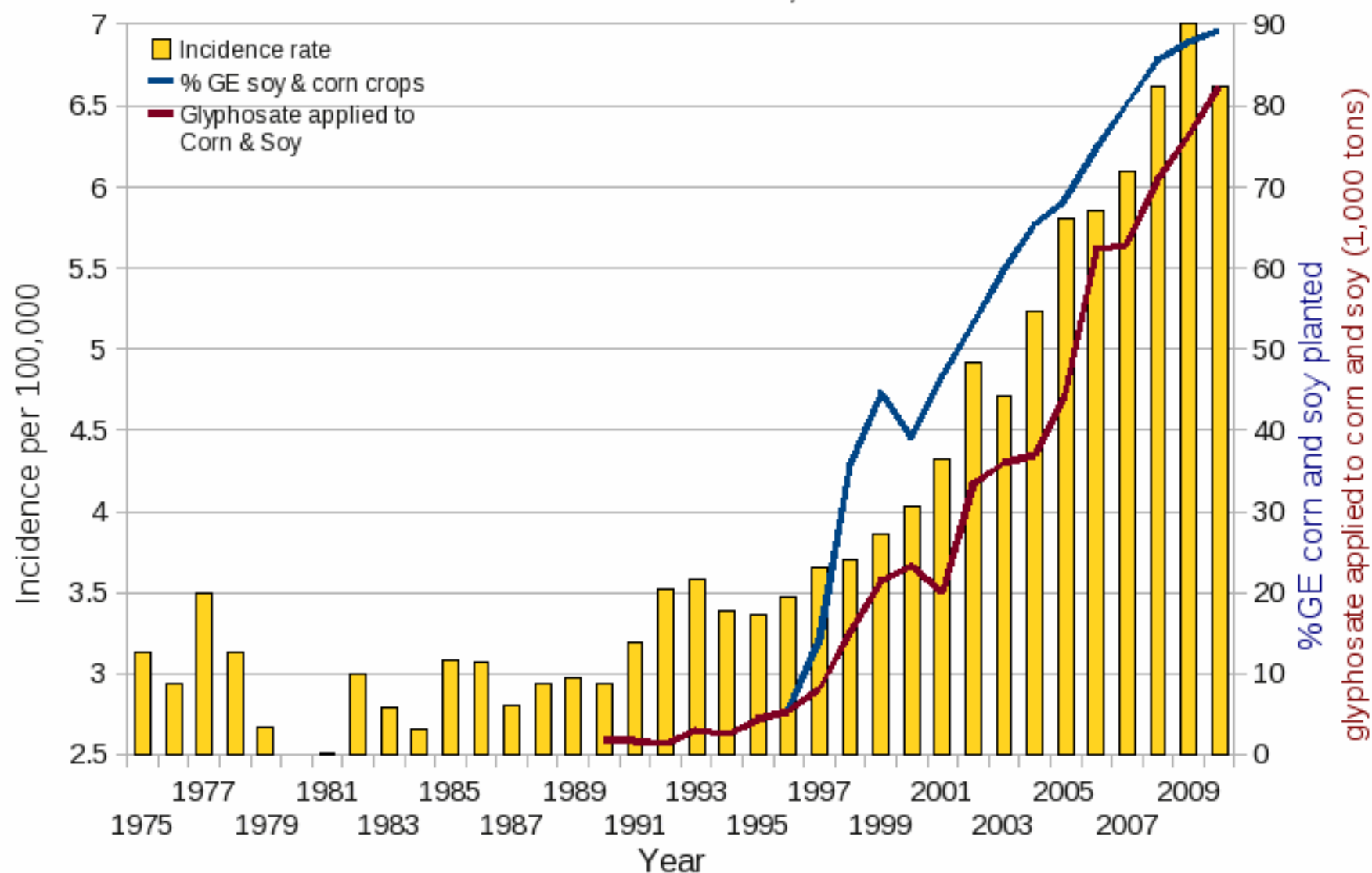
Plotted against amount of glyphosate applied to corn & soy ( $R = 0.9734$ ,  $p \leq 1.98e-08$ )  
along with %GE corn and soy planted in U.S. ( $R = 0.94$ ,  $p \leq 1.978e-05$ )  
sources: USDA:NASS; SEER



## Urinary/Bladder Cancer Incidence (age adjusted)

Plotted against % GE corn and soy ( $R = 0.9449$ ,  $p \leq 7.1e-06$ )  
and glyphosate applied to corn and soy ( $R = 0.981$ ,  $p \leq 4.702e-09$ )

sources: USDA:NASS; SEER

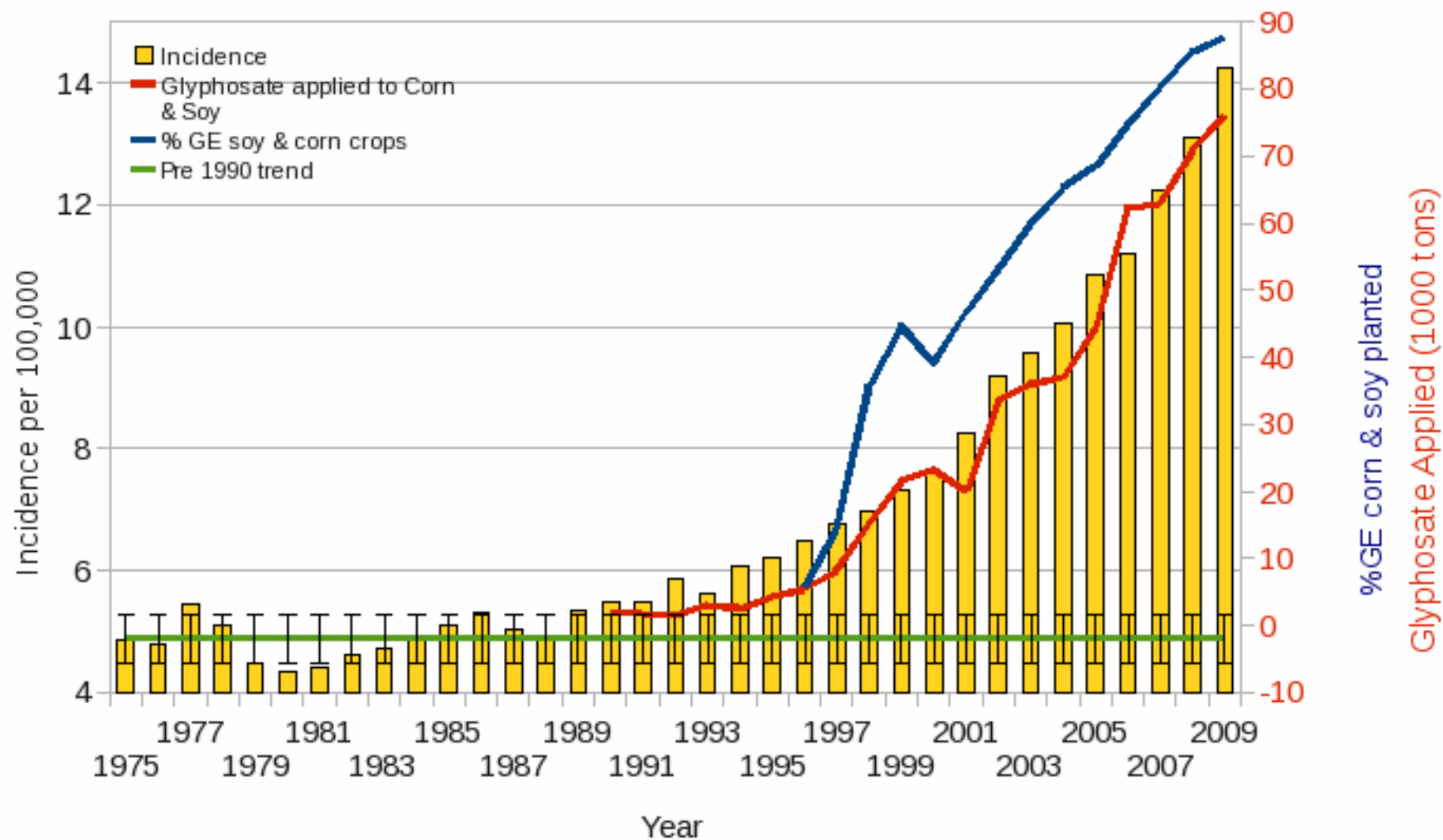


## Thyroid Cancer Incidence Rate (age adjusted)

plotted against glyphosate applied to U.S. corn & soy crops ( $R = 0.988$ ,  $p \leq 7.612e-09$ )

along with %GE corn & soy crops  $R = 0.9377$ ,  $p \leq 2.152e-05$

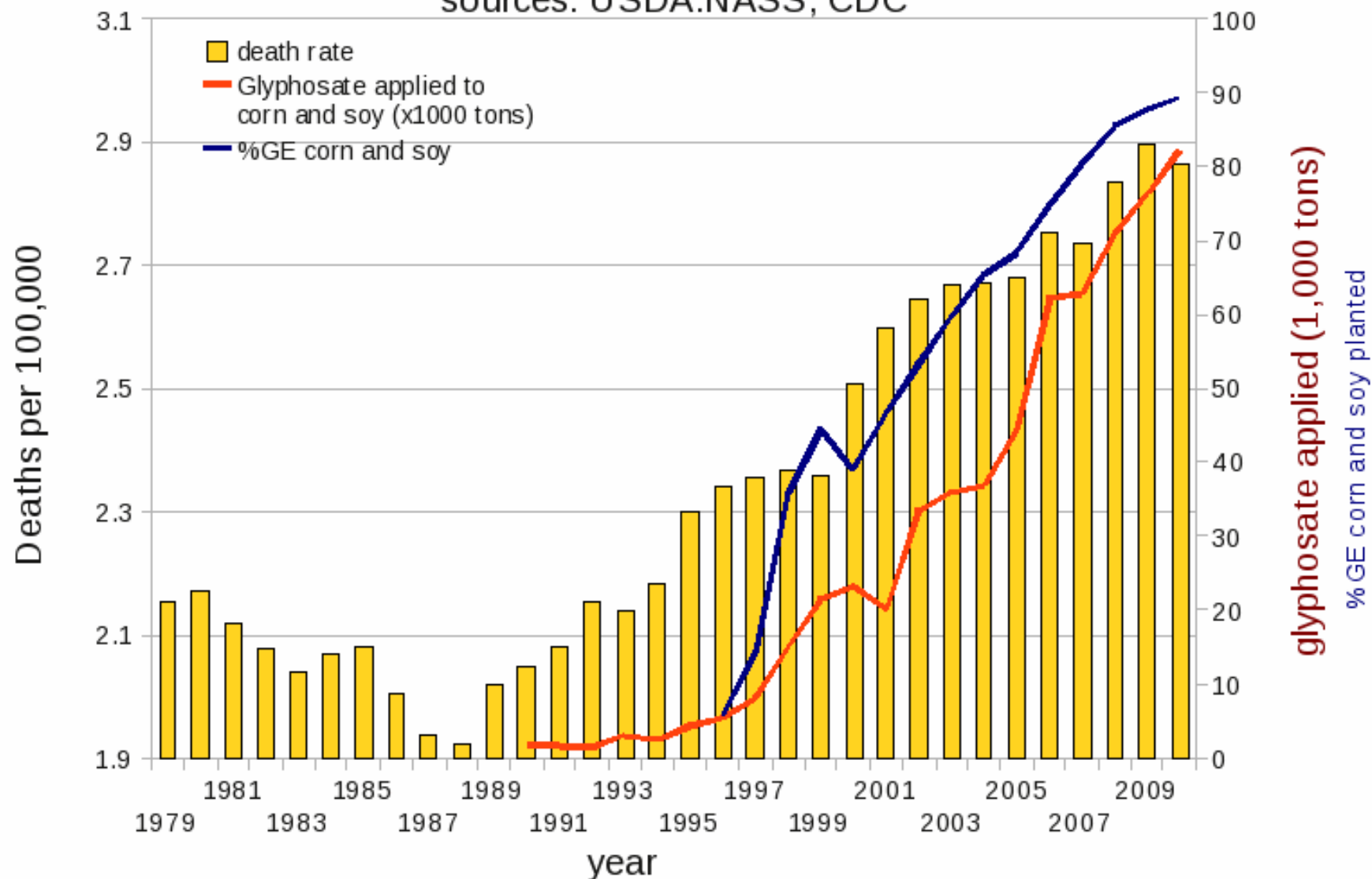
sources: USDA:NASS; SEER



## Deaths due to Acute Myeloid Leukaemia (ICD C92.0 & 205.0)

plotted against %GE corn & soy ( $R = 0.9466$ ,  $p \leq 6.625e-06$ )  
and glyphosate applied to corn & soy ( $R = 0.9293$ ,  $p \leq 1.143e-07$ )

sources: USDA:NASS; CDC



**Agricultural Sciences, 2015, 6, 42-70**

Published Online January 2015 in SciRes. <http://www.scirp.org/journal/as>

<http://dx.doi.org/10.4236/as.2015.61005>



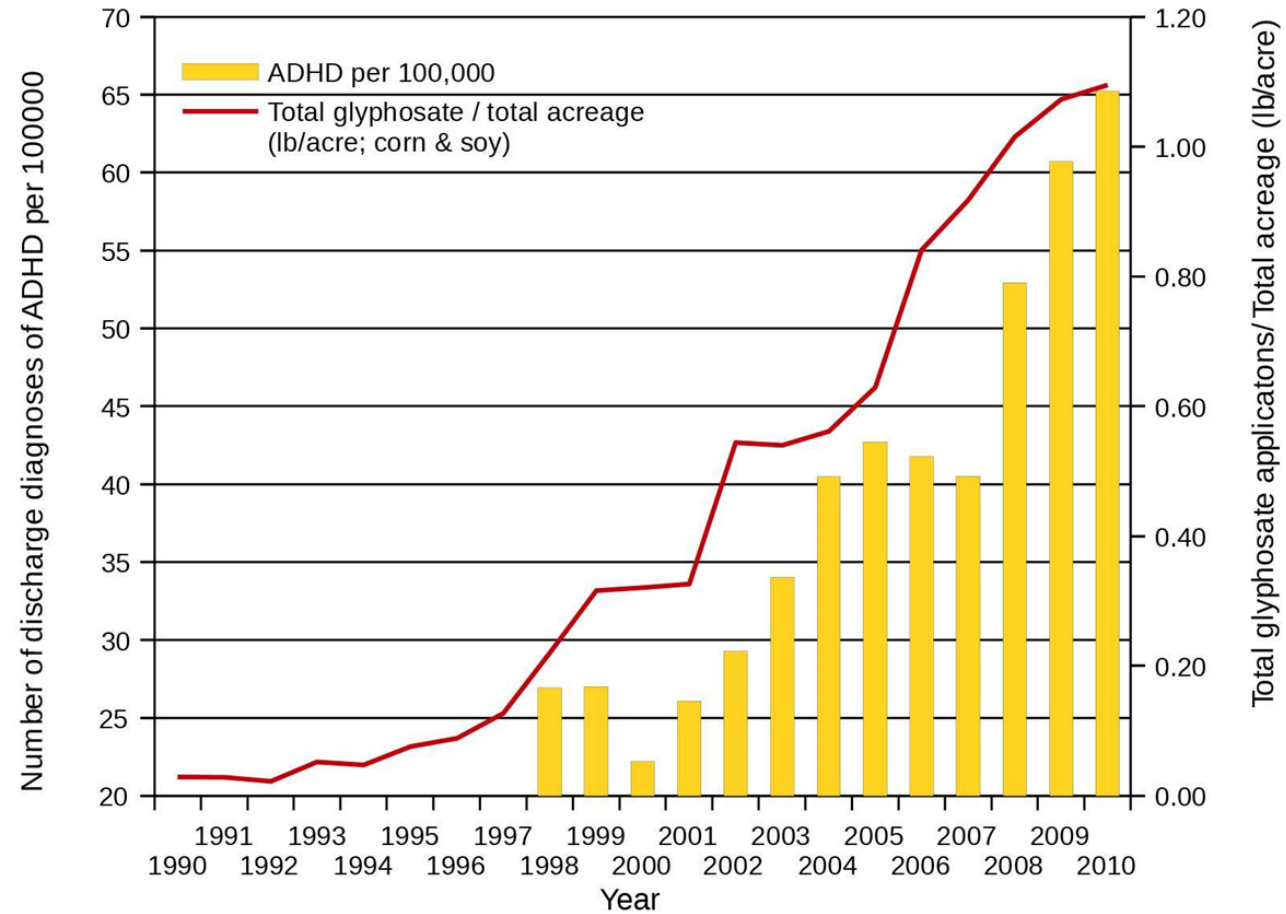
# **Aluminum and Glyphosate Can Synergistically Induce Pineal Gland Pathology: Connection to Gut Dysbiosis and Neurological Disease**

**Stephanie Seneff<sup>1\*</sup>, Nancy Swanson<sup>2</sup>, Chen Li<sup>1</sup>**

## Hospital Discharge Diagnoses of ADHD (ICD 314.00-01) & Glyphosate applied to corn & soy crops

$R = 0.9466$ ,  $p \leq 3.632e-05$

Sources: CDC; USDA

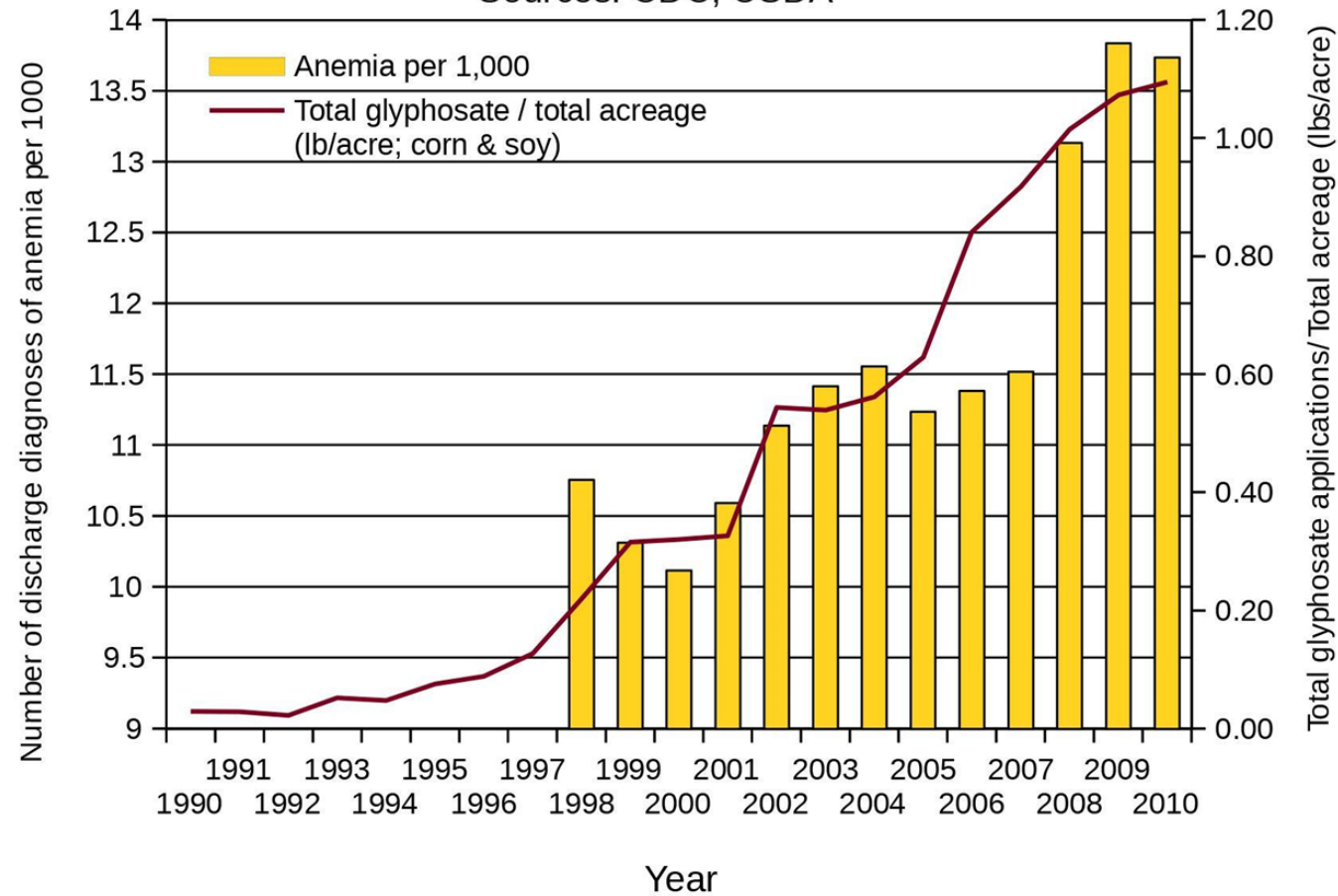




## Hospital Discharge Diagnoses of Anemia (ICD 280-85) & Glyphosate applied to corn & soy crops

$R = 0.8952$ ,  $p \leq 0.00018$

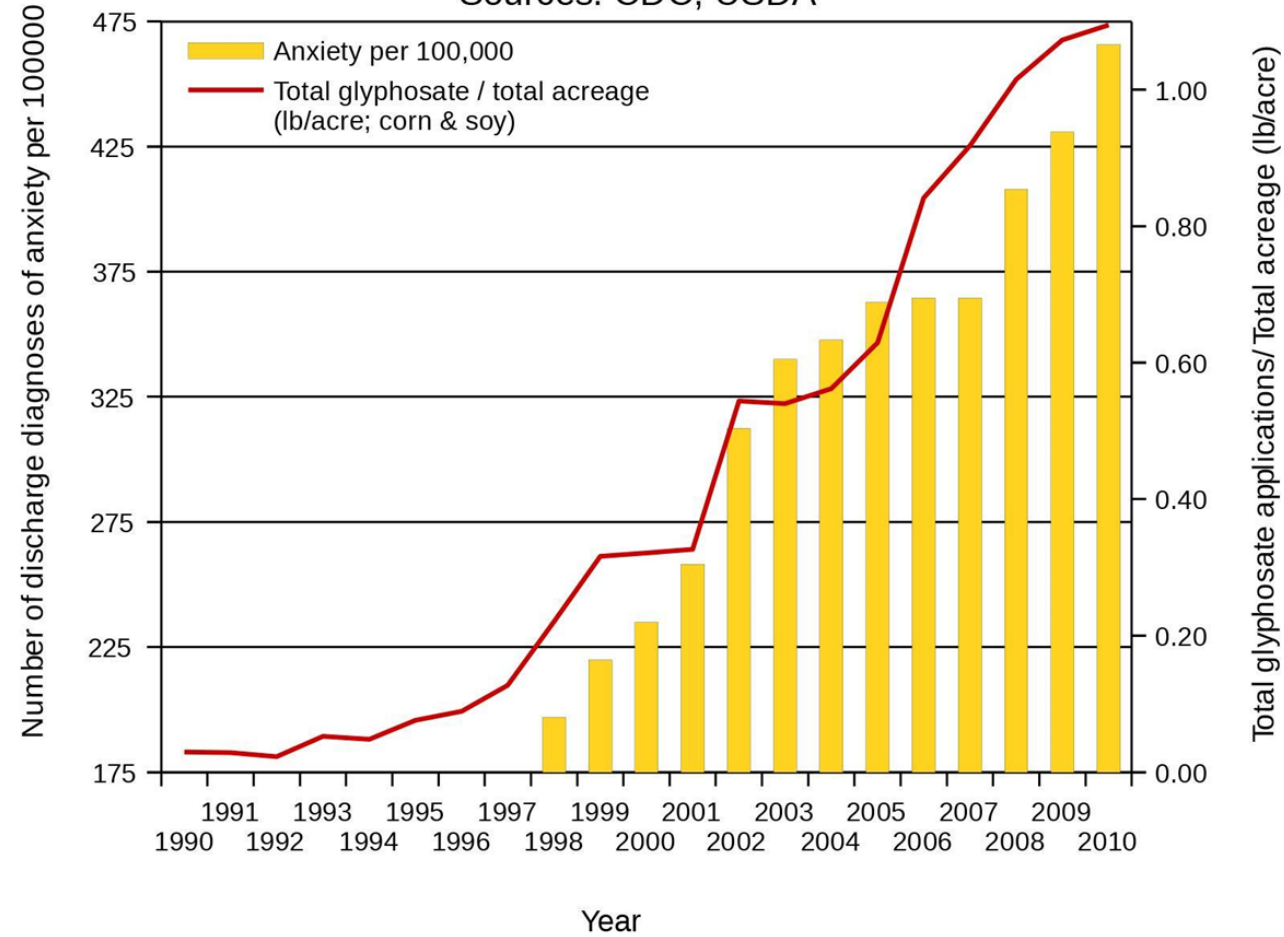
Sources: CDC; USDA



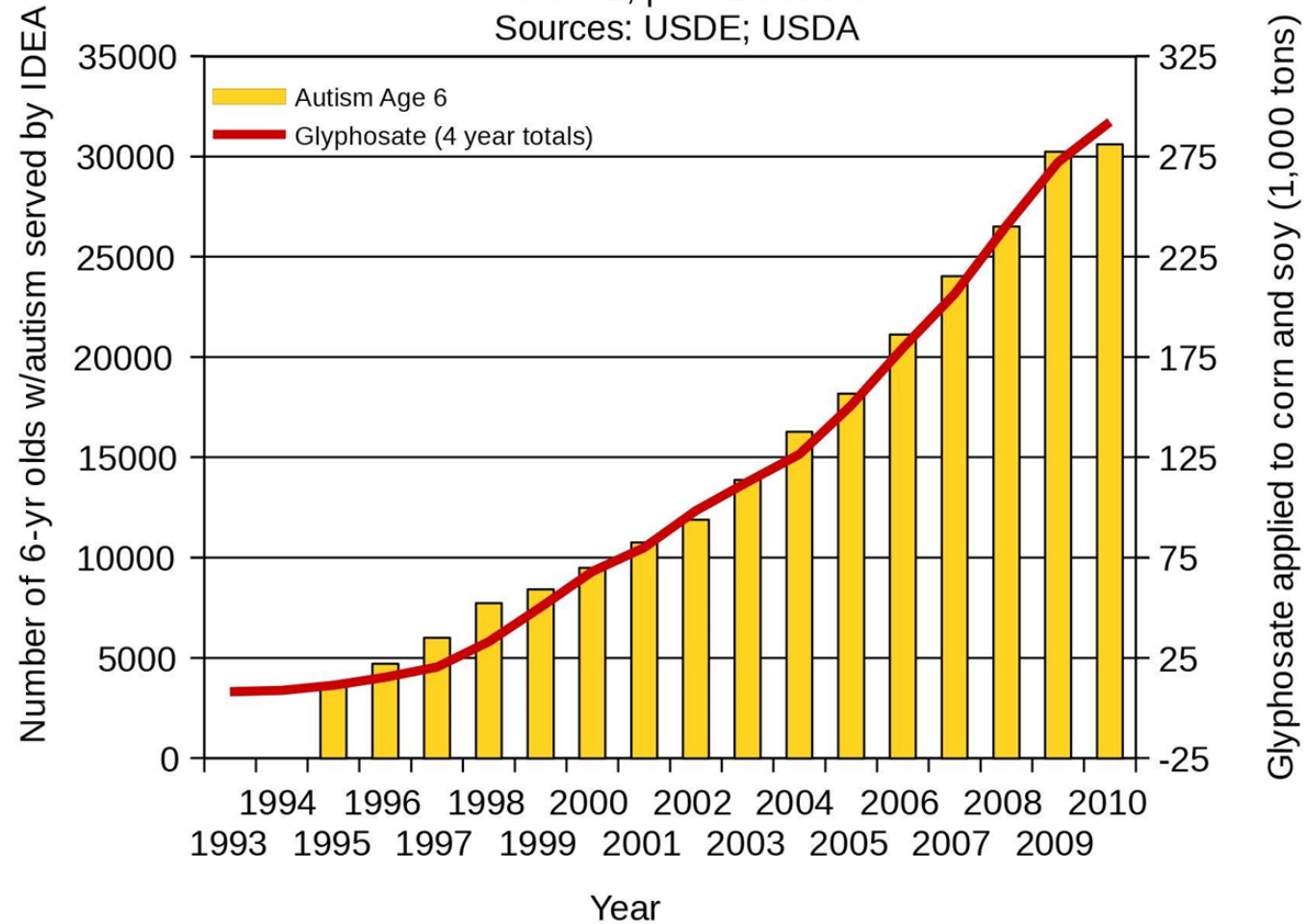
# Hospital Discharge Diagnoses of Anxiety (ICD 300) & Glyphosate applied to corn & soy crops

$R = 0.95$ ,  $p \leq 3.231e-05$

Sources: CDC; USDA



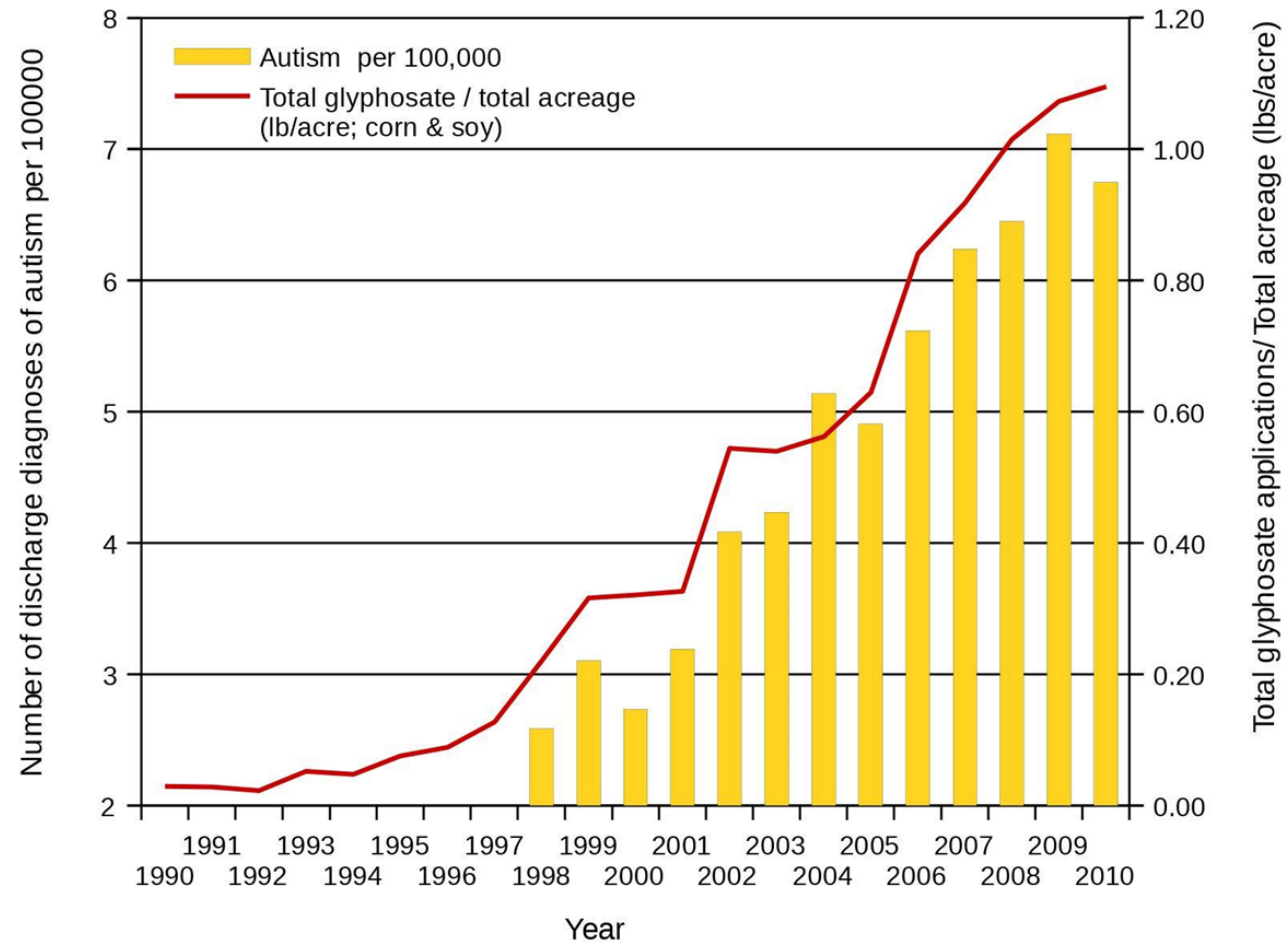
Autism Prevalence 6 yr-olds  
& Glyphosate applied to corn & soy crops  
glyphosate is total of year indicated + 3 previous years  
 $R = 0.9972$ ,  $p \leq 2.366e-07$   
Sources: USDE; USDA



## Hospital Discharge Diagnoses of Autism (ICD 299.0) & Glyphosate applied to corn & soy crops

$R = 0.9824$ ,  $p \leq 9.569e-06$

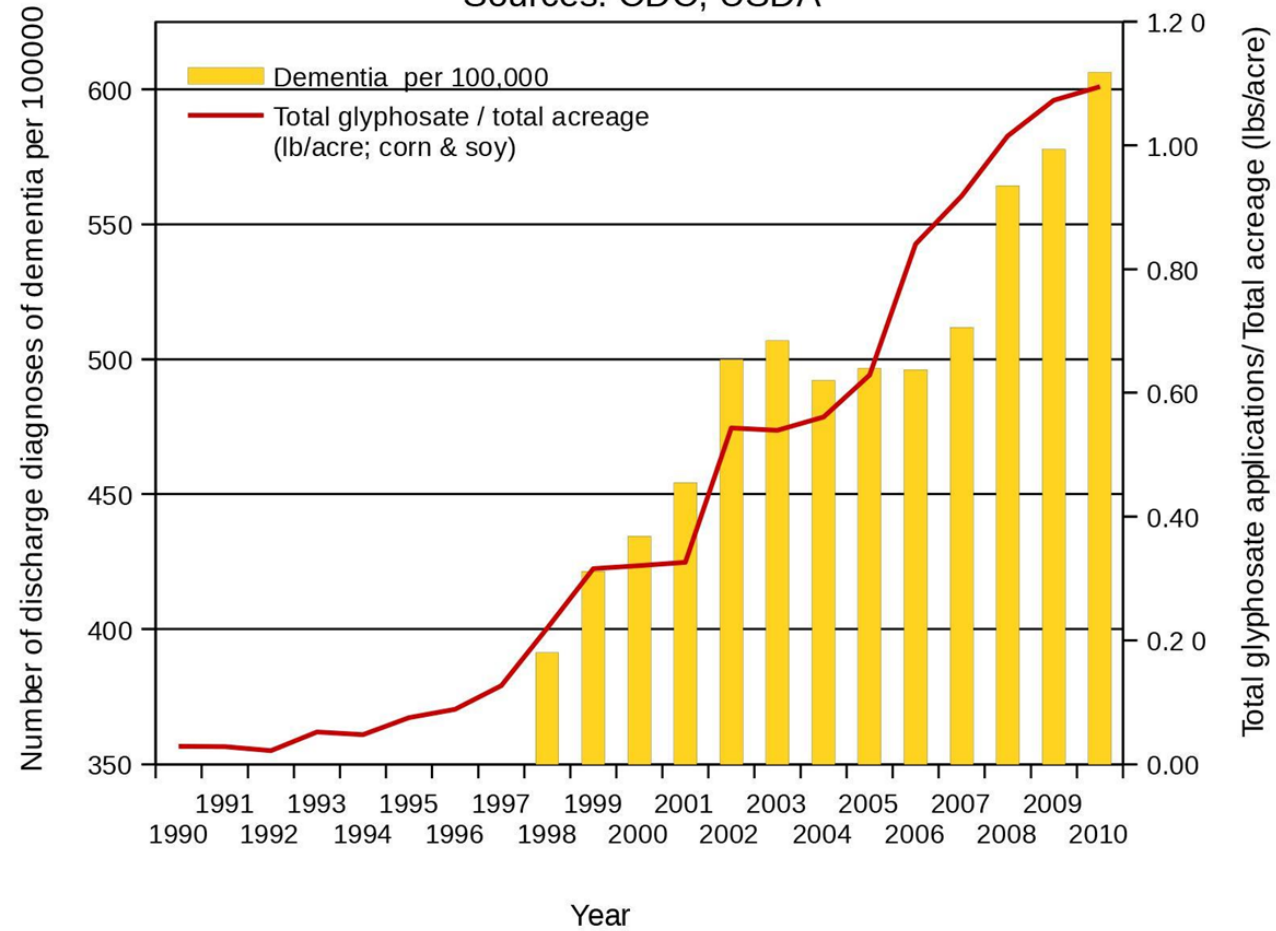
Sources: CDC; USDA



## Hospital Discharge Diagnoses of Dementia (ICD 290-294) & Glyphosate applications to corn & soy crops

$R = 0.9325$ ,  $p \leq 5.817e-05$

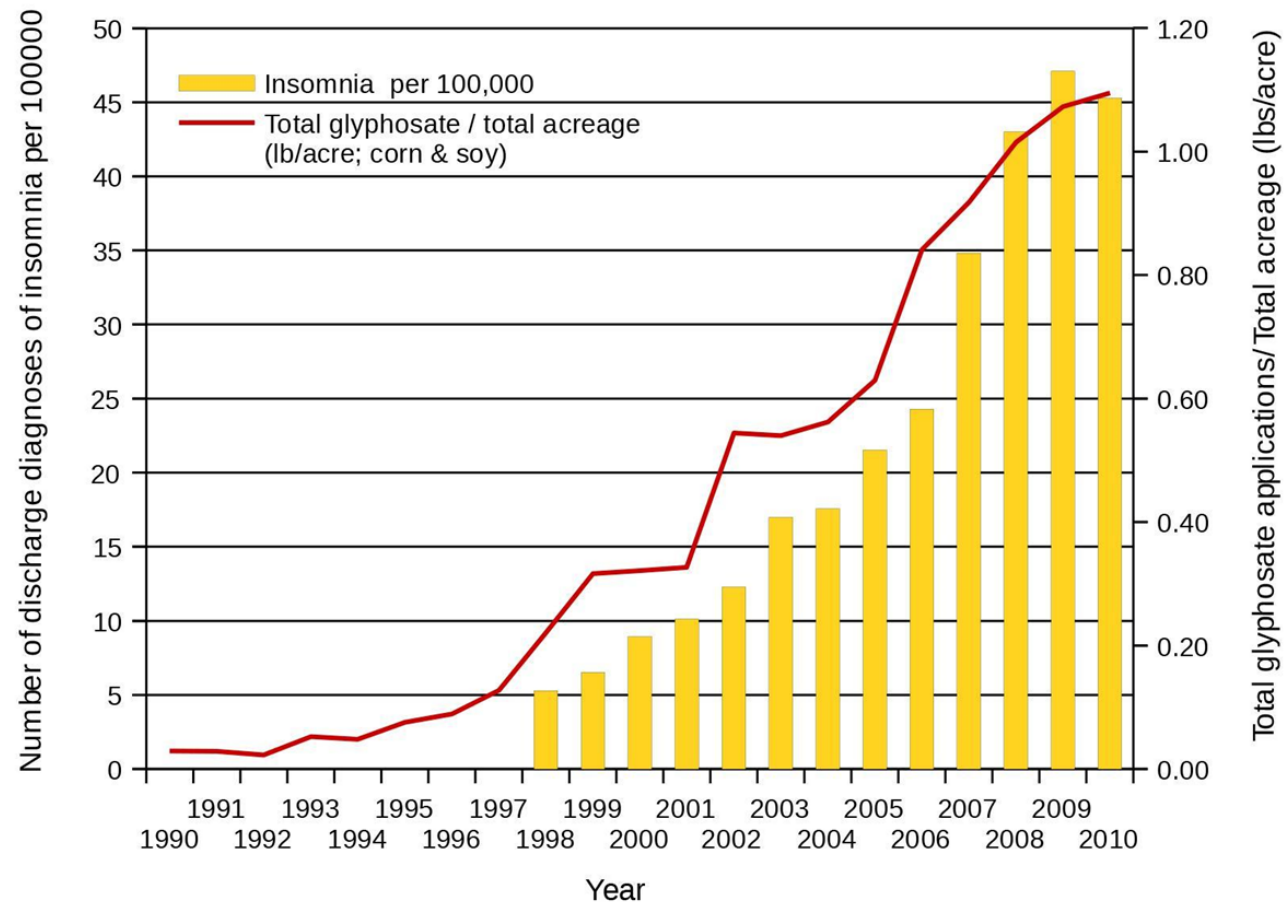
Sources: CDC; USDA



# Hospital Discharge Diagnoses of Insomnia (ICD 307.41-2; 327.0; 780.51-2) & Glyphosate applications corn & soy crops

$R = 0.9749$ ,  $p \leq 1.29e-05$

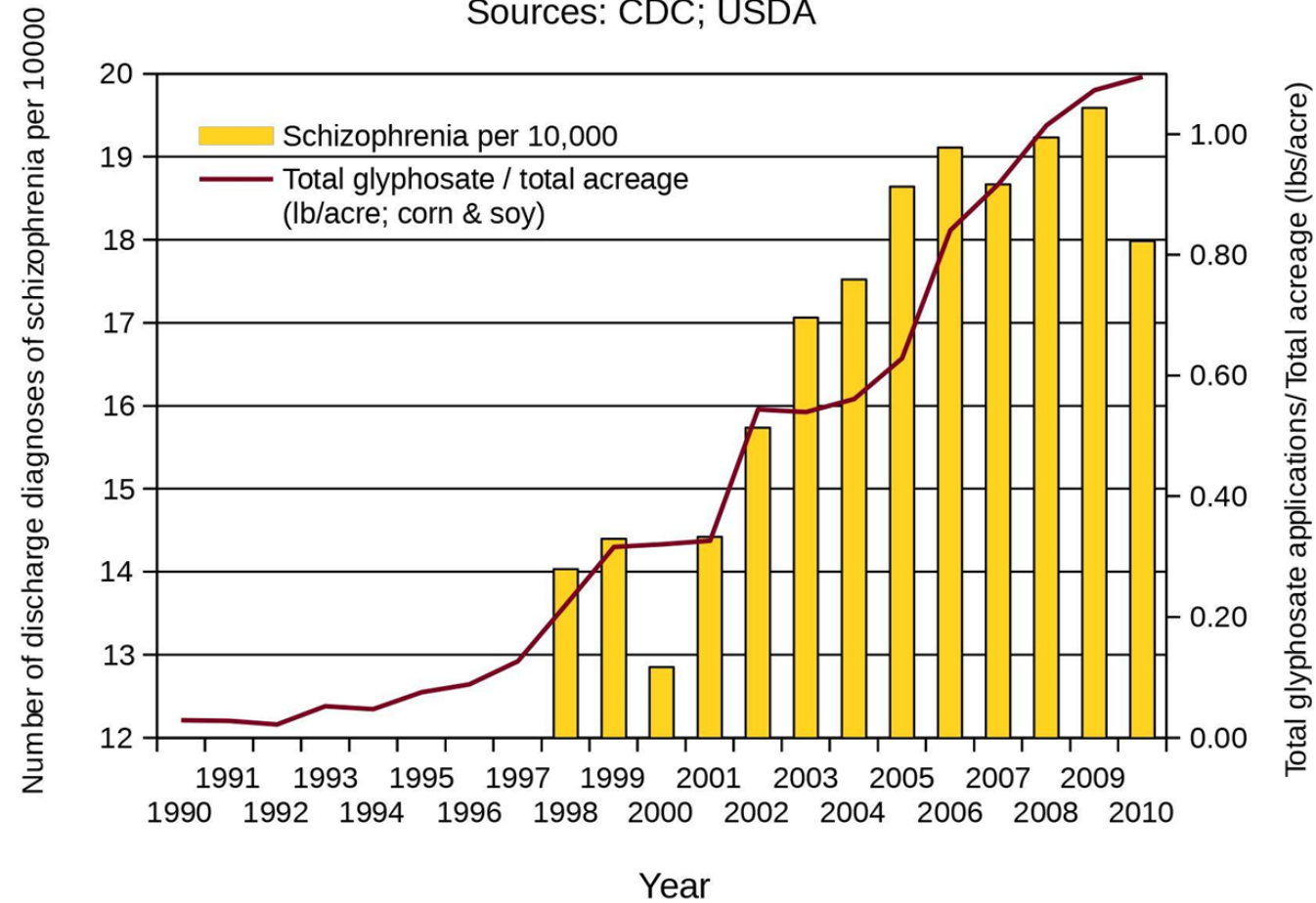
Sources: CDC; USDA



## Hospital Discharge Diagnoses of Schizophrenia (ICD 295) & Glyphosate applied to corn & soy crops

$R = 0.883$ ,  $p \leq 0.00025$

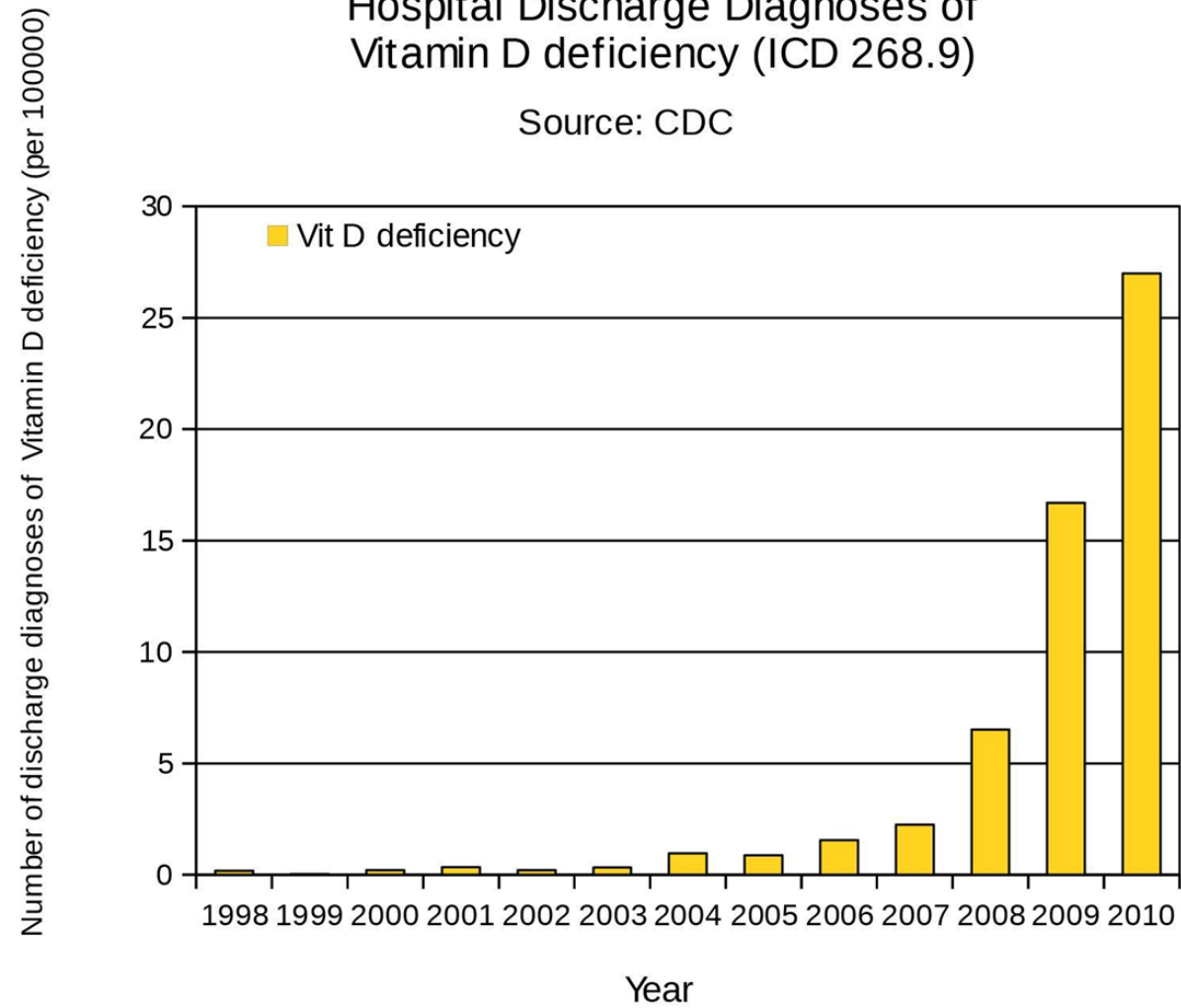
Sources: CDC; USDA





## Hospital Discharge Diagnoses of Vitamin D deficiency (ICD 268.9)

Source: CDC





*Founded in 2003 by international bestselling author and consumer advocate, Jeffrey Smith, the Institute for Responsible Technology (IRT) is dedicated to educating the public about the health risks of genetically modified food.*

Genetically modified organisms (GMOs) are present in over 70 % of processed foods in the U.S.

[ResponsibleTechnology.org](https://ResponsibleTechnology.org), is the most comprehensive source of information about the health risks of genetically modified food on the web.

Email IRT at [info@responsibletechnology.org](mailto:info@responsibletechnology.org)