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# Exposures through Breastmilk: An Analysis of Exposure and Information Calls to US Poison Centers, 2001–2017

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## BACKGROUND

- Breastfed infants may be at risk for exposure to a drug or other substance present in breastmilk.
- Lactating women may become concerned about potential exposures to their infant through breastmilk, and may consult a poison center for information, or a potential exposure via lactation.
- There is a paucity of published descriptions of the patients or substances involved in breastmilk exposure or information calls to United States poison centers.

## METHODS

- This study analyzed reports to the National Poison Data System (NPDS) from 2001 through 2017 for exposure with Scenario of 'Exposure through breastmilk' (Exposures) or information call for 'Drug use during breastfeeding' (Info Calls).
- Data handling and descriptive statistics for these calls including substances involved, effects, and disposition were carried out using SAS JMP 12.0.1.

## RESULTS

- Between 2001–2017, U.S. Poison Centers received 76,416 Info Calls and 2,319 Exposures related to breastmilk.

### EXPOSURE CALLS:

- Exposures to substances in breastmilk included children who were 51% female (n=1,184), 41% male (n=948), and the sex was unknown in 8% (n=186).
- Calls were initiated mostly from the caller's own residence (76%, n=1,758) with a smaller percentage from healthcare facilities (15.5%, n=360) and 0.6% from a workplace (n=15).
- The majority of exposure calls were managed on site (78%, n=1,802); 297 were en route to a health care facility (HCF) when poison center was called (12.8%); and 169 were referred to a HCF (7.3%).
- There were 466 exposures (20.1%) managed at a HCF: 269 were evaluated and released (58%); 38 were admitted to ICU (8.2%); 53 were admitted to floor (11%); 86 were lost to follow up or left against medical advice (18%).

- Medical outcomes included: one death (0.04%); eight major effect (0.3%); 43 moderate effect (1.9%); 170 minor effect (7.3%); 390 no effect (16.8%).
- The death was a 4-month-old male with a possible exposure to benzodiazepines, opioids, and an SSRI via breastmilk, however, the death was judged unrelated to the exposure.
- The substances associated with major effects among breastfed infants included opioids, benzodiazepines, ethanol, cyclobenzaprine, insulin, and amphetamines (See Table 1).
- Exposure calls were most commonly in reference to antibiotics, antifungals, benzodiazepines, opioids, and SSRIs.
- Figure 1 shows the substances (by generic code) most commonly reported in exposures.
- 1,192 exposures (51.4%) had reported signs/symptoms. The most common signs/symptoms were drowsiness, agitation, rash, and vomiting/diarrhea (Figure 2).
- Dilution, irrigation, washing and food/snack were the most common interventions (Figure 3).
- Figure 4 shows incidence of calls to poison centers regarding potential exposures via breastmilk over time.

### INFORMATION CALLS:

- For comparison, data on Information Calls for those same substances are shown (Figure 1). Information calls were most commonly in reference to systemic antibiotics, SSRIs, antihistamines, corticosteroids and benzodiazepines.

## CONCLUSIONS

- Substances common to both exposures via breastmilk and information calls concerning drug use during breastfeeding included antibiotics, benzodiazepines, and SSRIs.
- Most cases of severe toxicity included potential exposures via breastmilk to benzodiazepines and opioids.
- These data should help inform educational outreach and bedside care for breastfeeding mothers.
- Further study into exposures via breastmilk may help inform an understanding of the potential risks of substance exposure to breastfed infants.

Medical Outcome	Age	Gender	Substance	Level Of Care	Clinical Effect
Death	4 months	Male	Methodone, Benzodiazepines, SSRI	Admitted to ICU	Deemed unrelated to exposure; Cardiac arrest, Respiratory arrest
Major effect	16 days	Male	Cyclobenzaprine, Acetaminophen with Oxycodone	Admitted to noncritical care unit	Bradycardia, Hypotension, Respiratory arrest
Major effect	1 month	Male	Methodone	Admitted to ICU	Agitated/irritable, Tremor, Respiratory arrest, Diarrhea, Drowsiness/lethargy
Major effect	13 months	Male	Methodone	Admitted to ICU	Respiratory depression
Major effect	14 days	Male	Acetaminophen with Oxycodone	Treated/evaluated and released	Cyanosis
Major effect	16 days	Male	Ethanol, Benzodiazepines	Admitted to ICU	Cardiac arrest, Respiratory arrest
Major effect	6 months	Female	Benzodiazepines, Methadone	Admitted to ICU	Drowsiness/lethargy, Seizure, Tremor
Major effect	17 months	Male	Fentanyl, Morphine, Oxycodone, Benzodiazepines	Admitted to ICU	Tachycardia, Agitated/irritable, Confusion, Drowsiness/lethargy, Miosis, Respiratory depression, Acidosis, Hyperglycemia

Table 1. Infants with Exposures to Substances via Breastmilk 2001-2017 with Medical Outcome of Major Effect or Death

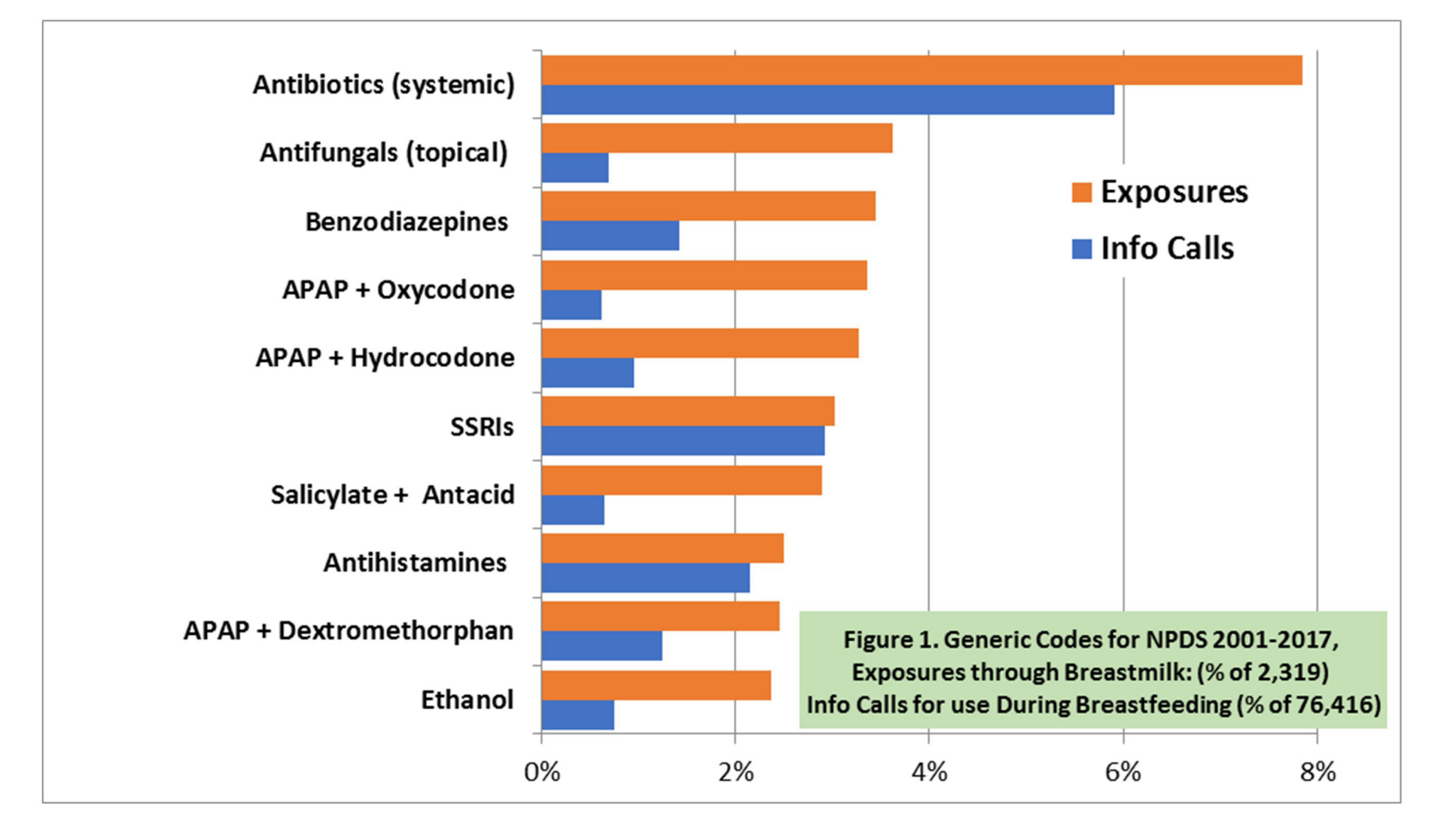


Figure 1. Generic Codes for NPDS 2001–2017, Exposures through Breastmilk: (% of 2,319) Info Calls for use During Breastfeeding (% of 76,416)

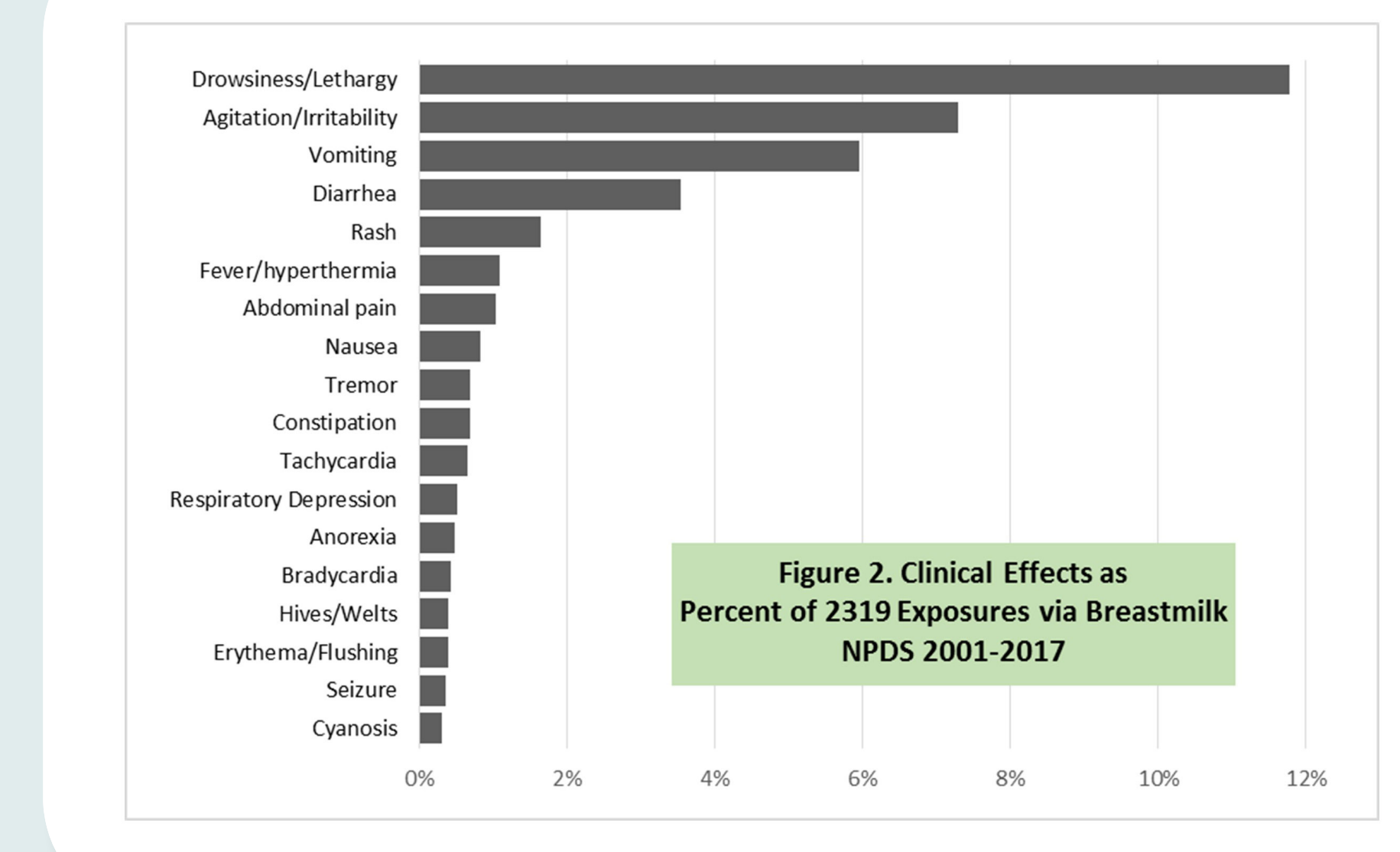


Figure 2. Clinical Effects as Percent of 2,319 Exposures via Breastmilk NPDS 2001–2017

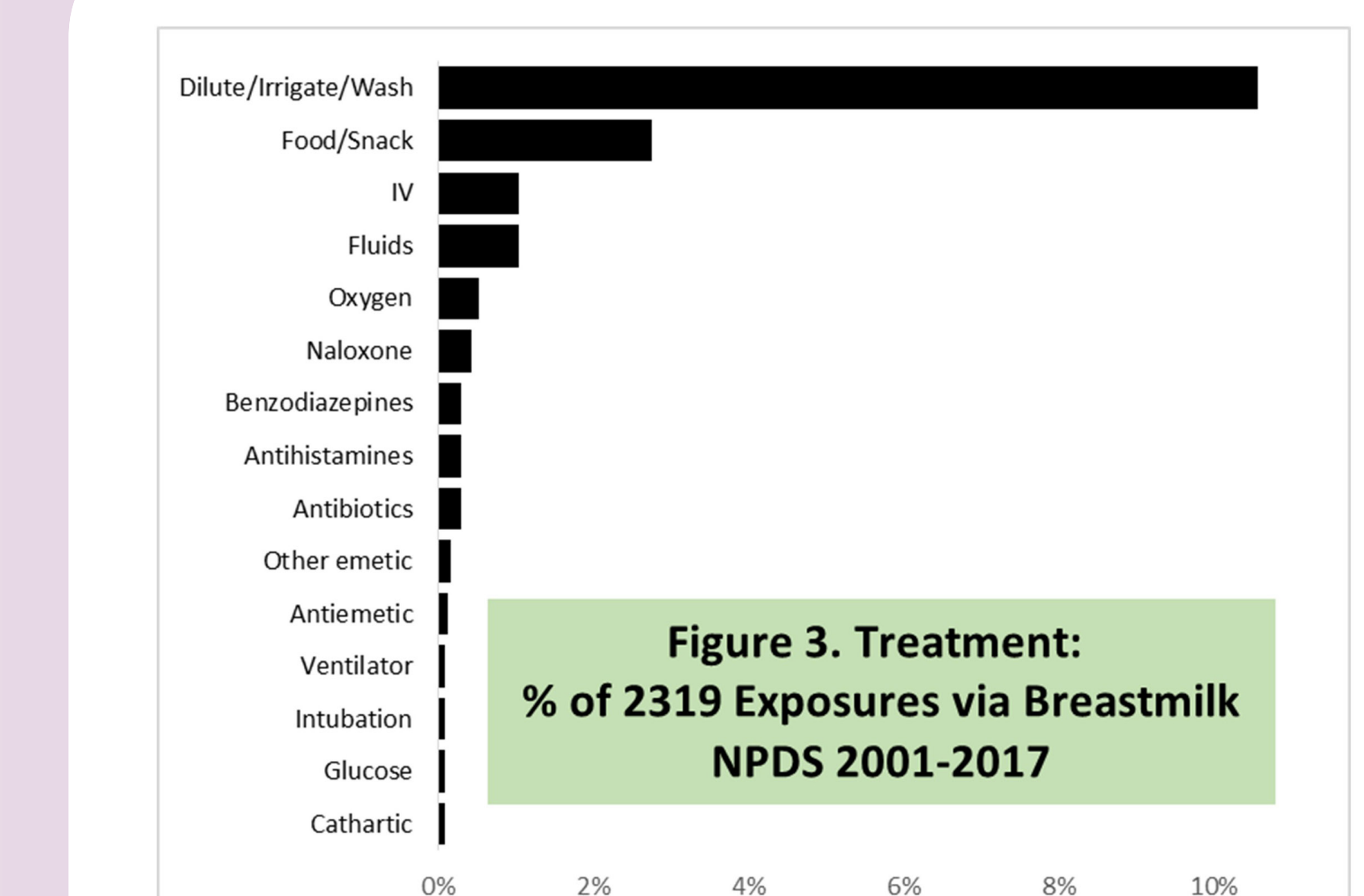


Figure 3. Treatment: Percent of 2,319 Exposures via Breastmilk NPDS 2001–2017

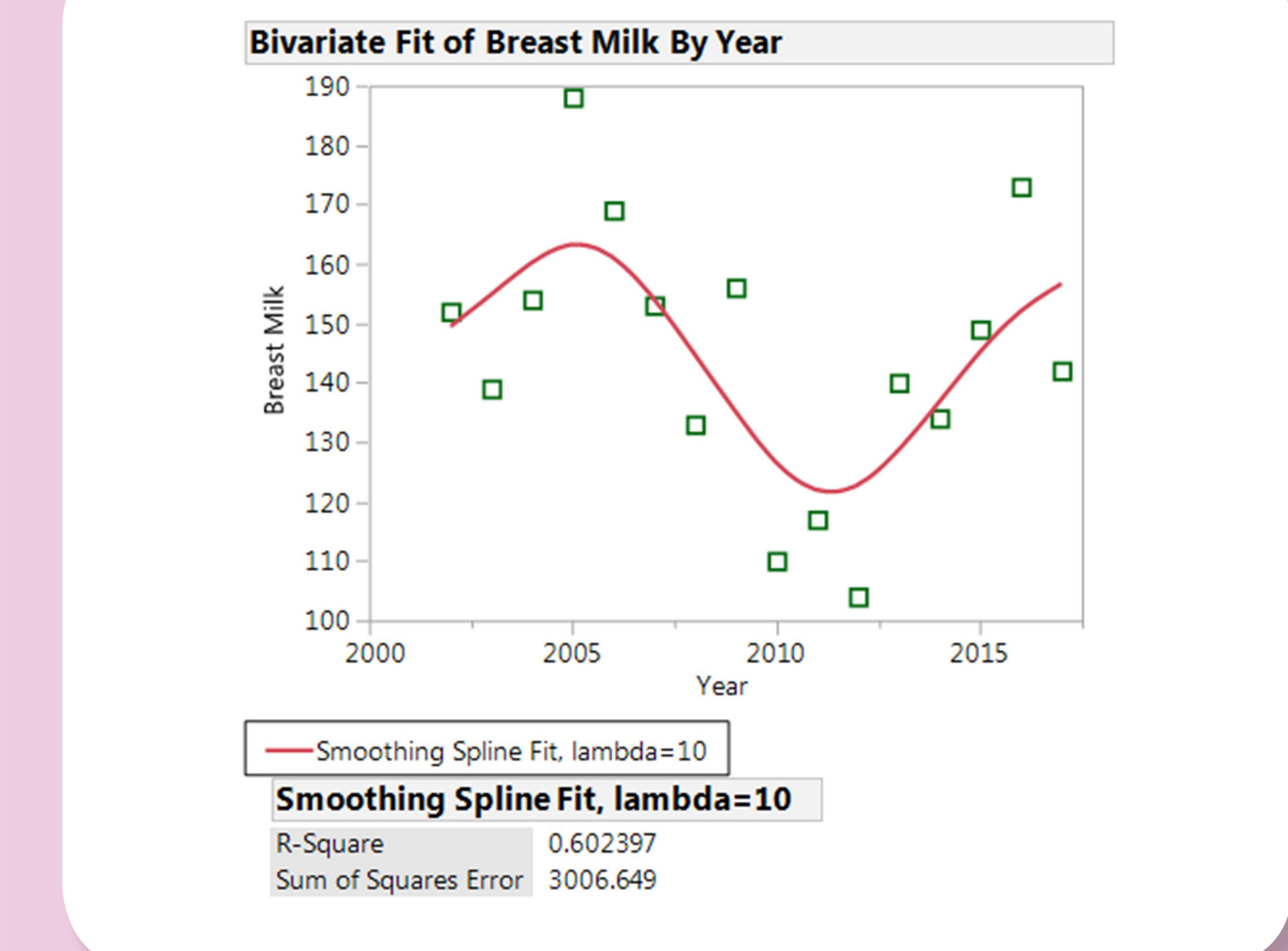


Figure 4. Incidence of Calls to Poison Centers for Infants with Exposures to Substances via Breastmilk by Year 2001-2017