

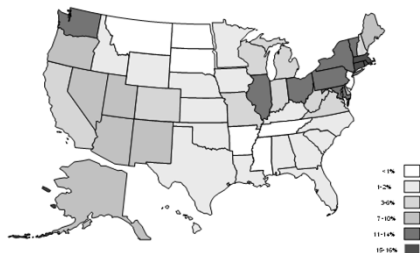
Drug Trends: Old Drugs and New Problems - New Drugs and New Problems

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The author has no financial disclosure

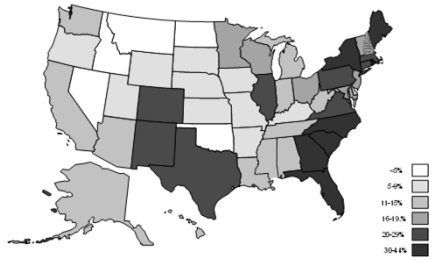
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Percentage of Drug Items Identified as Heroin by Tox Labs: NFLIS 2010



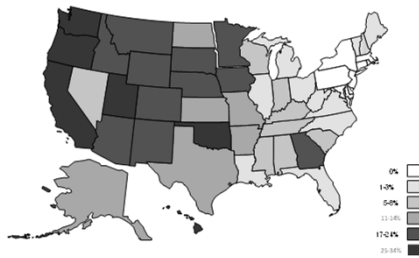
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Percentage of Drug Items Identified as Cocaine by Tox Labs: NFLIS 2010



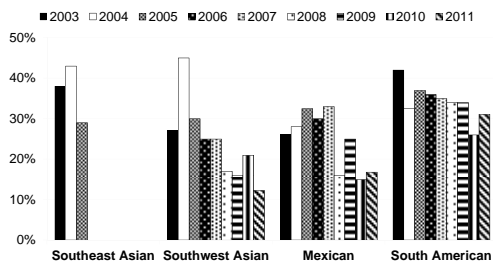
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Percentage of Drug Items Identified as Methamphetamine by Tox Labs: NFLIS 2010



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Average Purity of Heroin Samples in the US: 2003-2011



DEA's Heroin Domestic Monitor Program

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Mexican Black Tar Heroin

Mexican Brown Heroin

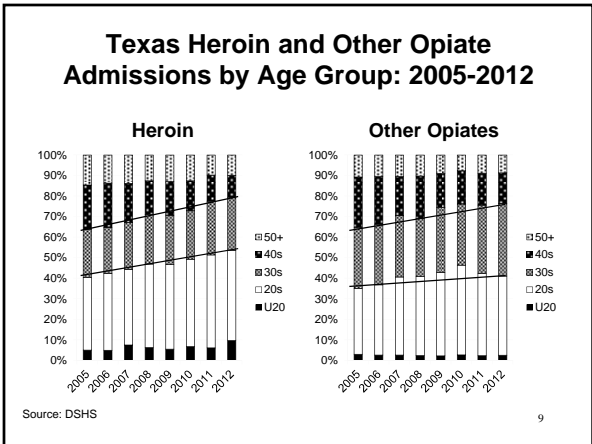
South American Heroin

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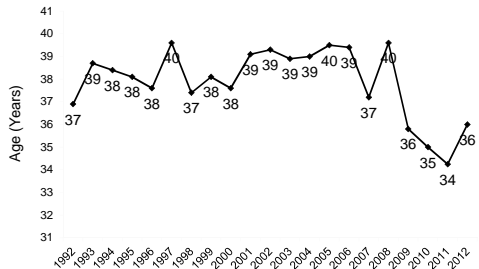
Heroin

- Almost all heroin in the U.S. is from Mexico or South America.
- East of the Mississippi, white South American heroin and in the West, Mexican heroin, but seeing Black Tar move eastward and into the South, while South American now seen in Chicago and St Louis.
- Number of U.S. heroin treatment admissions under age 25 increased from 16,357 in 1992 to 57,060 in 2010.
- Increasing heroin use among suburban youth and young users.
- Reports of fentanyl mixed with white South American heroin in the NE and Canada.

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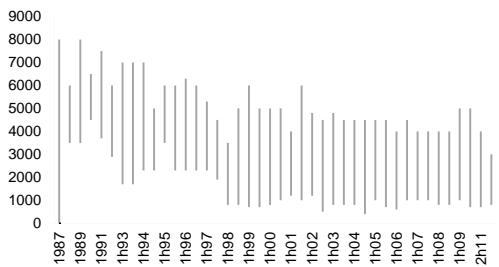
Average Age of Persons Dying with Mention of Heroin in Texas: 1992-2012



Source: DSHS

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Price of an Ounce of Mexican Black Tar Heroin in Texas: 1987-2012

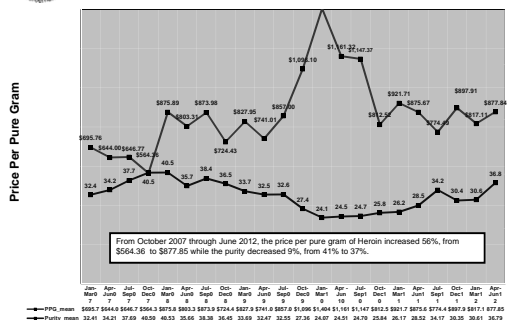


Source: DEA

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All Heroin Purchases Domestic STRIDE Data January 2007 - June 2012



Intelligence Division - Indications and Warning Section

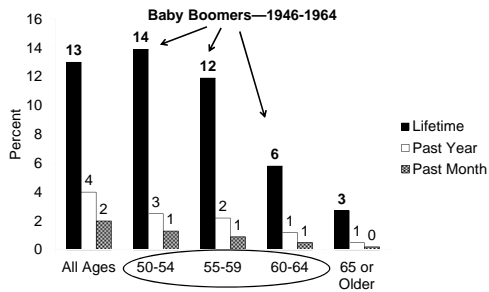
Other Opiates

•Shifting back and forth between Rx opiates and heroin. Which came first? Injection drug users report prescription opiate use predates heroin use and tolerance motivates them to try heroin. But also reports of those who became addicted to prescription opiates and when controls were tightened, then shifted to heroin.

•Cost difference? In Texas, heroin cap is \$10-\$20 vs. \$1/mg for 72 mg OxyContin.

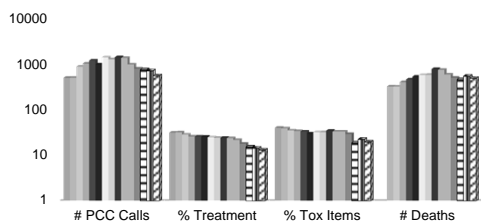
•Pollini et. Al., Problematic use of prescription-type opioids prior to heroin use among young heroin injectors. Substance Abuse and Rehabilitation 2011; 2 173-180, Lankenau SE, et al. (2012). Initiation into prescription opioid misuse amongst young injection drug users. Int J Drug Policy. 2012 Jan;23(1):37-44. Epub 2011 Jun 20.

Nonmedical Use of Pain Relievers: NSDUH 2011



Cocaine Indicators in Texas: 1998-2012

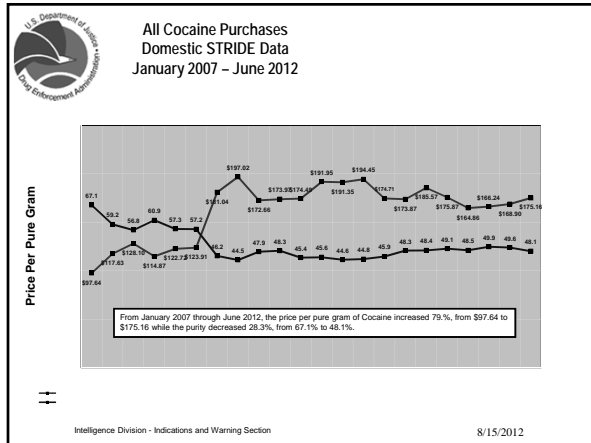
■ 1998 ■ 1999 ■ 2000 ■ 2001 ■ 2002 ■ 2003 ■ 2004 ■ 2005 ■ 2006 ■ 2007 ■ 2008 ■ 2009 ■ 2010 ■ 2011 ■ 2012

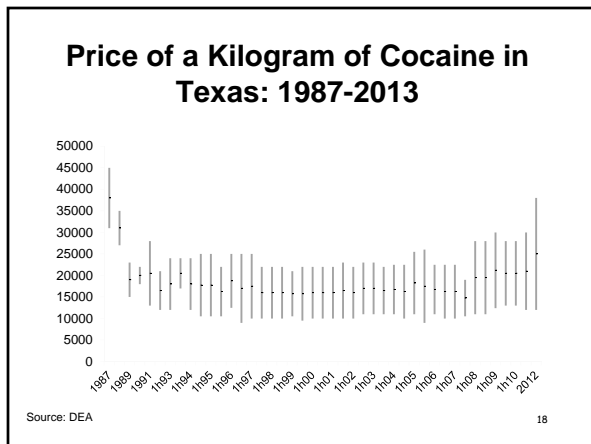


Cocaine: Why the Decline?

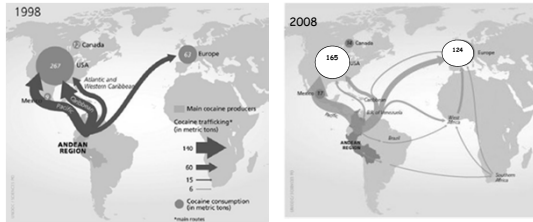
- Poison control, treatment, deaths, & tox lab indicators down in Texas; price up.
- Amount of coca under cultivation in South America is down 15%
- Demand in Europe for cocaine.
- Use of Levamisole as a filler with serious medical consequences.
- Users in Austin report it is so weak “not worth paying for” and mixing coke with synthetic cathinones to increase effect.
- *Are the shortages of cocaine and increased supply of methamphetamine related?*

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Main Global Cocaine Flows: 1998 and 2008



UNODC, World Drug Report, Drug Trafficking, 1998 & 2010

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New Problems with Cocaine



- Levamisole is cancer medication also used in de-worming animals.
- Can result in agranulocytosis (discoloration of skin, beginning in ears—sign of skin cell death)
- Results in neutropenia (bone marrow does not make enough white blood cells)

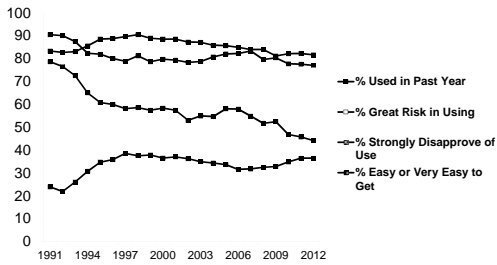
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Marijuana

- Supply changes—Mexican down due to drought & what is coming across is poor quality. Beginning of increased supply of more hydroponic & indoor grows in Texas and less from Mexico?
- Role of Blunts, Wrappers, Dabs, Vapor Pens in increasing use
- Increased proportion of treatment admissions (23%) and more impaired.
- What will happen with medical marijuana and legalization?

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Monitoring the Future Survey: 1991-2012: Marijuana Use by 12th Graders



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Dabs, BHO, Honey, Budder

•Dabs, shatter wax and vaporizer pens contain hash oil ("wax"). Supposedly 80%-90% THC. Different methods on the web.

•Butane Honey Oil or Butane Hash Oil is a golden resin created by placing dried and ground marijuana into a special pvc filter. Butane gas is shot in through one end of the filter while the other end is placed in a bowl full of water. The filter spews out the fresh oil in to the cold water where it sinks to the bottom. The bottom is scraped and the oil is ready to use.

•Touch the heated knife point or the pin to the Budder on the end of a pin and inhale fumes ("and sit down").

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Vapor Pens

- Advertised for “patients”
- Cost \$100-\$200
- Potency varies
- Higher percentage of THC
- No odor. Similar to electric cigarettes
- Pen-style vaporizers contain 100-150 hits
- Some can be recharged & refilled
- <http://potappetit.com/the-pen-is-mightier-than-the-bong-or-mini-vaporizers-got-the-right-stuff/>

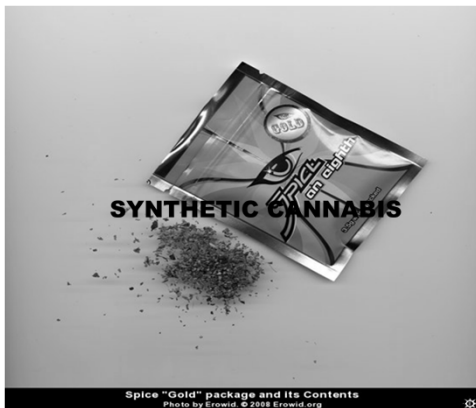


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Medical Marijuana and Drugged Driving in California: 2007 v. 2010

- Using 2007 Roadside Survey methodology, marijuana use by drivers increased from 4.0% testing positive for THC in 2007 to 7.8% in 2010.
- Nearly 1 in 10 weekend nighttime drivers tested positive for THC, and in some jurisdictions, the rate was nearly 1-in-5.
- 39% of holders of medical marijuana permits tested positive for THC versus 8% without permits.
- Drivers testing positive for THC did not think it affected their driving.

Johnson MB et al., 2012. The prevalence of cannabis-involved driving in California. Drug and Alcohol Dependence, 1123, 105-109.



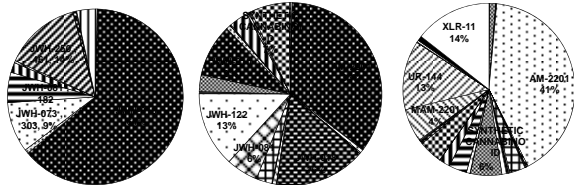
Spice "Gold" package and its contents. Photo by Erowid. © 2008 Erowid.org

Cannabinoids Identified in U. S. NFLIS Toxicology Labs

19 variations reported in 2010

44 variations reported in 2011

55 variations reported in 2012



SOURCE: National Forensic Laboratory Information System, 2010, 2011, 2012

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Cannabis vs. Cannabinoids: Clinical Cases

Most symptoms are similar to cannabis intoxication

- Tachycardia
- Reddened eyes
- Anxiousness
- Mild sedation
- Hallucinations, acute psychosis
- Memory deficits

Symptoms not typically seen after cannabis intoxication

- Seizures
- Hypokalemia (low potassium)
- Hypertension (high blood pressure)
- Nausea/vomiting
- Coma
- Agitation, violent behavior

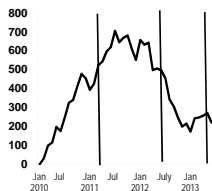
Early articles on psychosis or schizophrenia with synthetic cannabis or cannabis

- Association between age at onset of psychosis and age at onset of cannabis use in non-affective psychosis. Galvez-Bucollini, *Schizophrenia Research* 139 (2012) 157-160.
- Letter to the Editors, *Schizophrenia Research* 118 (2010) 309-310.
- Synthetic cannabinoid JWH-018 and psychosis: An explorative study. Every-Palmer, *Drug and Alcohol Dependence* 117 (2011) 152-157.
- Spicing things up. Spadema et al., *Psychopharmacology* (2013) 228:525-540
- Miotto et al., Clinical & pharmacological aspects of bath salt use. *Drug & Alcohol Dependence* (2013) in press.

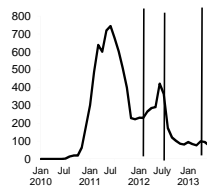
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U. S. Human Exposure Calls for Synthetic Cannabinoids and Cathinones and Impact of Federal Regulations

The Effect of Federal Controls on Synthetic Cannabinoids Calls to Poison Centers



The Effect of Federal Controls on Synthetic Cathinone Calls to Poison Centers



SOURCE: American Association of Poison Centers

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Who are the users of psychoactive drugs (synthetics, hallucinogens, phenethylamines, tryptamines, MDMA, etc.)?

- Users of synthetic cannabis: Preliminary analysis of poison center, emergency room, and treatment data show young (under age 20) males with low levels of employment and education and high levels of legal problems.
- Users of synthetic cathinones and hallucinogens more likely to be slightly older (26-30 years).
- Users of synthetic cathinones, tryptamines, LSD, and phenethylamines more likely to have more serious consequences when seen in emergency rooms, etc.

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Amphetamine-Type Stimulants: MDMA, 2C-xx, Khat, Meth, Amphet, Synthetic Cathinones

An Emerging Liking for Speedy or Upper Drugs and Examples of Drug Replacement

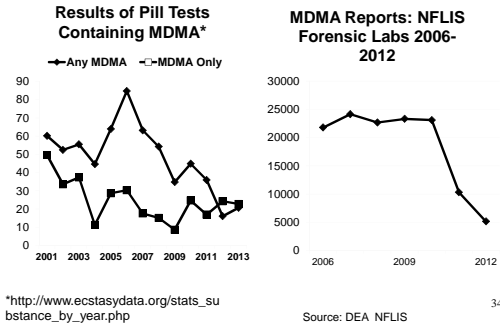
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Possible reason for the changes we are seeing?

1. MDMA drought
2. Change in supply of methamphetamine as precursors shift from pseudoephedrine, which is now limited to small number of tablets in US and banned in Mexico, to P2P/Phenylacetone, which is banned in US but available in Mexico.
3. The search for MDMA replacements using other Amphetamine Type Substances (ATS)?

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Glimpses of MDMA Situation in U.S.: 1999-2013

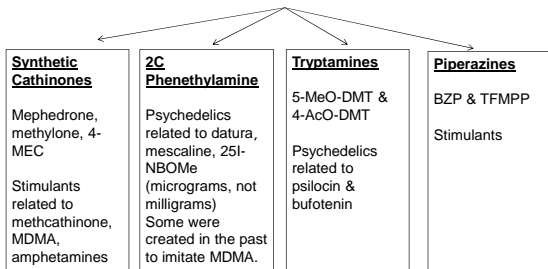


What's "Molly"?

- Ecstasy pills with little MDMA and lots of caffeine, meth, assorted drugs? - or -
- A pure crystalline form of MDMA, most often sold as a powder filled capsule? - or -
- Methylone? (Bath salts)? Reports of desired effects of euphoria, but also increased paranoia, agitated delirium, hallucinations, psychotic episodes, violent or destructive self-harm, including death
- Bottom line - Molly is no longer just a pure form of MDMA ecstasy, but may be a drug that is even more harmful than ecstasy itself.

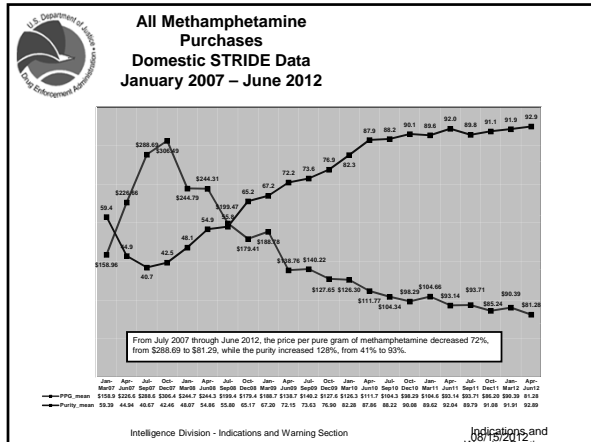
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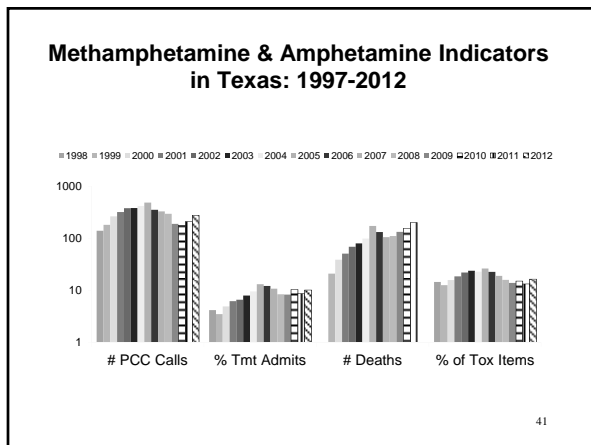
From the term "Bath Salts" to...



And Dissociatives related to ketamine and PCP and Opioids related to morphine, fentanyl, and heroin.

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Different Manufacturing Processes

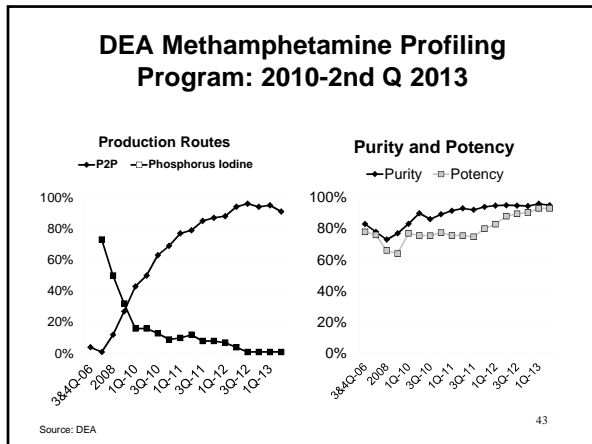
I. Ephedrine/Pseudoephedrine Based (d-form): (1% of samples over 6g tested)

- A. "Nazi Method"-lithium, anhydrous ammonia
- B. Cold method-red phosphorus, iodine crystals
- C. "One Pot" and "Shake and Bake" cooking using dry ammonia nitrite and cough syrup rather than liquid anhydrous ammonia. Still used in rural areas and Midwest and South, but usually produces less than 6 g of methamphetamine.

II. P2P/Phenylacetone (Illegal in US-Schedule II, precursors legal in Mexico) (l and d,l-forms): (95% of samples over 6g tested).

If drug is 100% potent, it's all d-form. If 0% potent, is all l-form. Mexican chemists are refining their process to produce more potent P2P meth.

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- ### Local Texas Reports on Meth Use
- Street outreach workers in Austin report more psychosis with the P2P meth, better highs, and some moving back to smoking Ice since it is available.
 - Other outreach workers reported closed groups of MSM using meth, often injecting, and increasing cases of syphilis.
 - Conversion labs in Texas change liquid meth from Mexico to powder or Ice.
 - Increases in meth use also reported by other CEWG members.
 - Increasing need for treatment as this more potent meth spreads.

**Will They Turn You into a Zombie?
What Clinicians Need to Know about
Synthetic Drugs**

<http://www.uclaisap.org/slides/synthetic-drug-training-package.html>

Data Sources

- Monitoring the Future Surveys: 2011-2012
- SAMHSA's Drug Abuse Warning Network: 2011-2012
- Texas poison control centers: 1998-6/1/2013
- Texas treatment data: 1986-2012
- Mortality from poison control centers: 2010-2012
- DEA's National Forensic Laboratory Information System (NFLIS): 2005-June 2013
- DEA's STRIDE system
- Reports from NIDA's Community Epidemiology Work Group members June 2013

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