
Use of Prescription Opioid Narcotics in Utah Decedents from 1999-2004

What proportion had a valid
prescription?

Background

- Fatalities due to prescription medication increasing
 - 2003: Poisoning surpassed motor vehicle crash as the leading cause of injury death in Utah
 - Most deaths caused by opioids
 - Methadone, hydrocodone, oxycodone, fentanyl are of most concern based on review of ME data
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Drug Overdose in 2006

485 fatal overdoses
investigated by OME

Mean age = 40 years

96 illicit drugs only

Mean age = 35.4 yrs

Range 16-59

76% male

66% undetermined
intent

58% involve heroin

57% involve cocaine

12 counties

63 combination of
illicit and non-illicit

Mean age = 34 yrs

Range 18-61

71% male

98% undetermined intent

36% involve morphine
(heroin?)

66% involve cocaine

12 counties

307 non-illicit drugs only

Mean age = 41.9 yrs

Range 16-80

51% male

67% undetermined intent

56% involve rx narcotics

30% involve methadone

24 counties

Current Study

- Individual-level descriptive analysis of linked datasets
 - Controlled Substances Database
 - Vital Statistics
 - Medical Examiner
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- Determine if non-illicit drug overdose decedents had a Rx for opioid drug
 - At time of death
 - Within 30 days of death
 - Within 1 year of death
 - Concordance analysis
 - Did they have Rx for specific causative drug?
 - Only if ME data available
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Why does this matter?

- Defining the population of overdose decedents
 - Is the problem being driven by illicit trafficking of prescription drugs?
 - Is this a patient safety issue?
 - May help target interventions
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Utah CSDB

- Enacted by legislative mandate in 1995
 - Registry of all filled controlled substance prescriptions (Schedules II-V) from 1997 on
 - Pharmacies mandated to report: pharmacy ID #, name, address, birth date, and sex of Rx holder, date filled, Rx number, new/refill code, metric quantity of drug, days supply of drug, National Drug Code Number (NDC), prescriber identification number, date the prescription was written, and number of refills authorized
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Vital Statistics Data (Death Certificates)

- Primary cause of death
 - Up to 9 contributing causes of death
 - ICD-10 coding
 - 1999 on
 - Includes specific codes for *some* drugs of interest
 - Decedent demographics, information on causes & circumstances of death
 - Informed by ME investigation
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Medical Examiner Dataset

- ME has statute-specified jurisdiction over sudden and unexpected deaths including all deaths thought to be drug-related
 - Information on examination, cause of death, demographics, toxicology
 - ME Case Number links DC to this database
 - Including ME along with DC adds more information about specific drugs that is lost in the ICD-10 coding process
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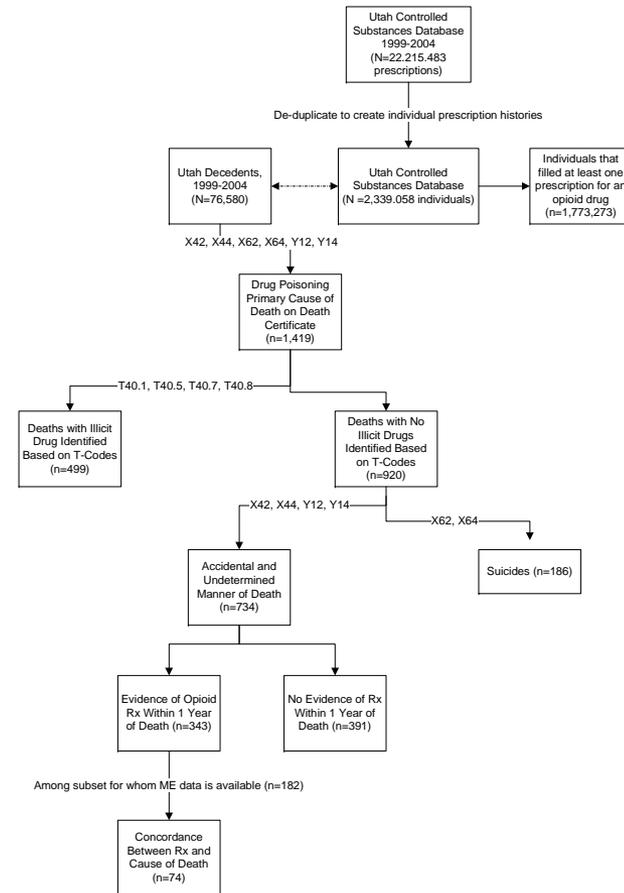
Methods

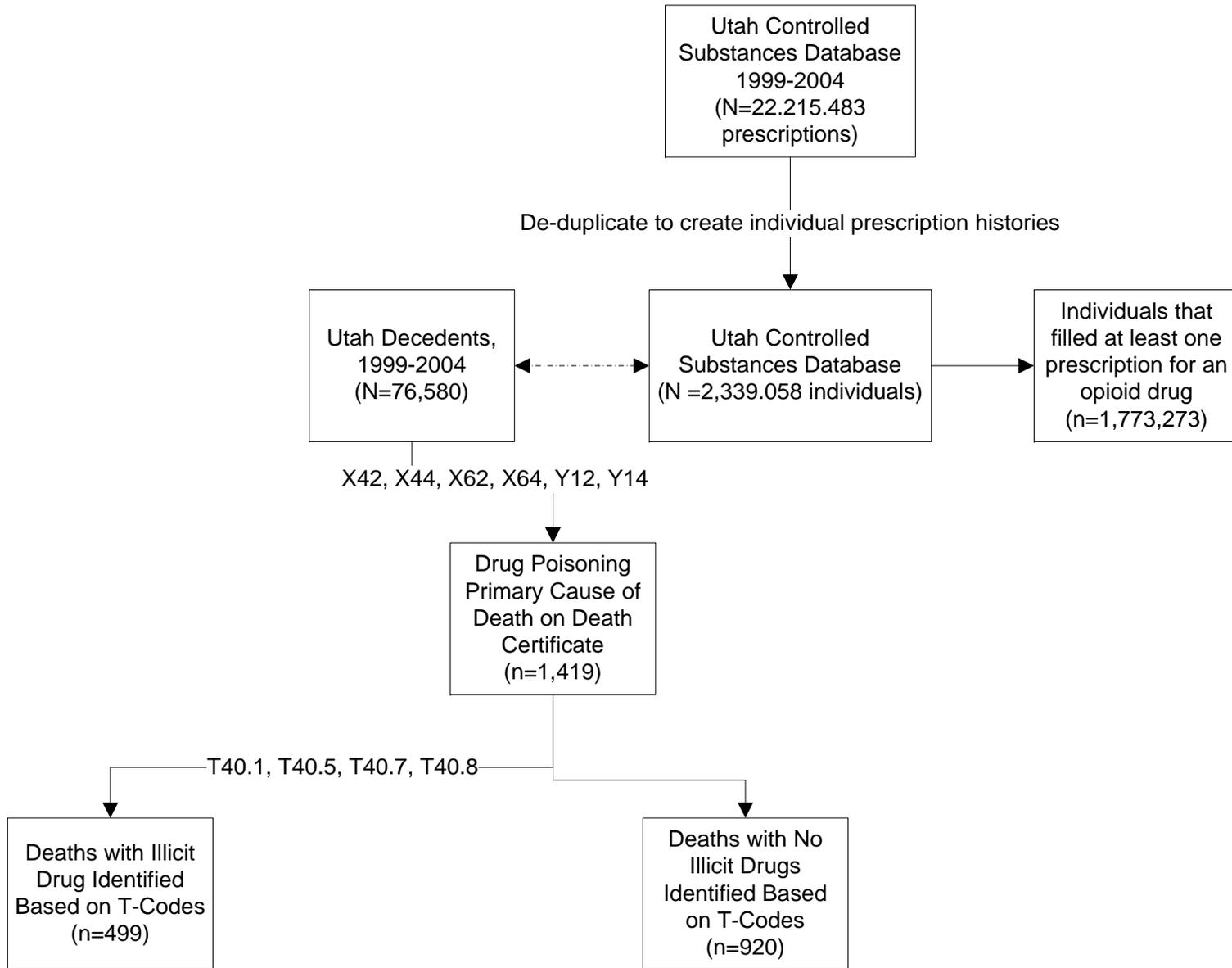
- Study period 1999-2004
 - ICD-10 for DC
 - CSDB data complete through 2004
 - Generated individual prescription histories and linked CSDB to DC using Link King
 - Deterministic and probabilistic linkage software
 - Added ME data with 1:1 link to DC
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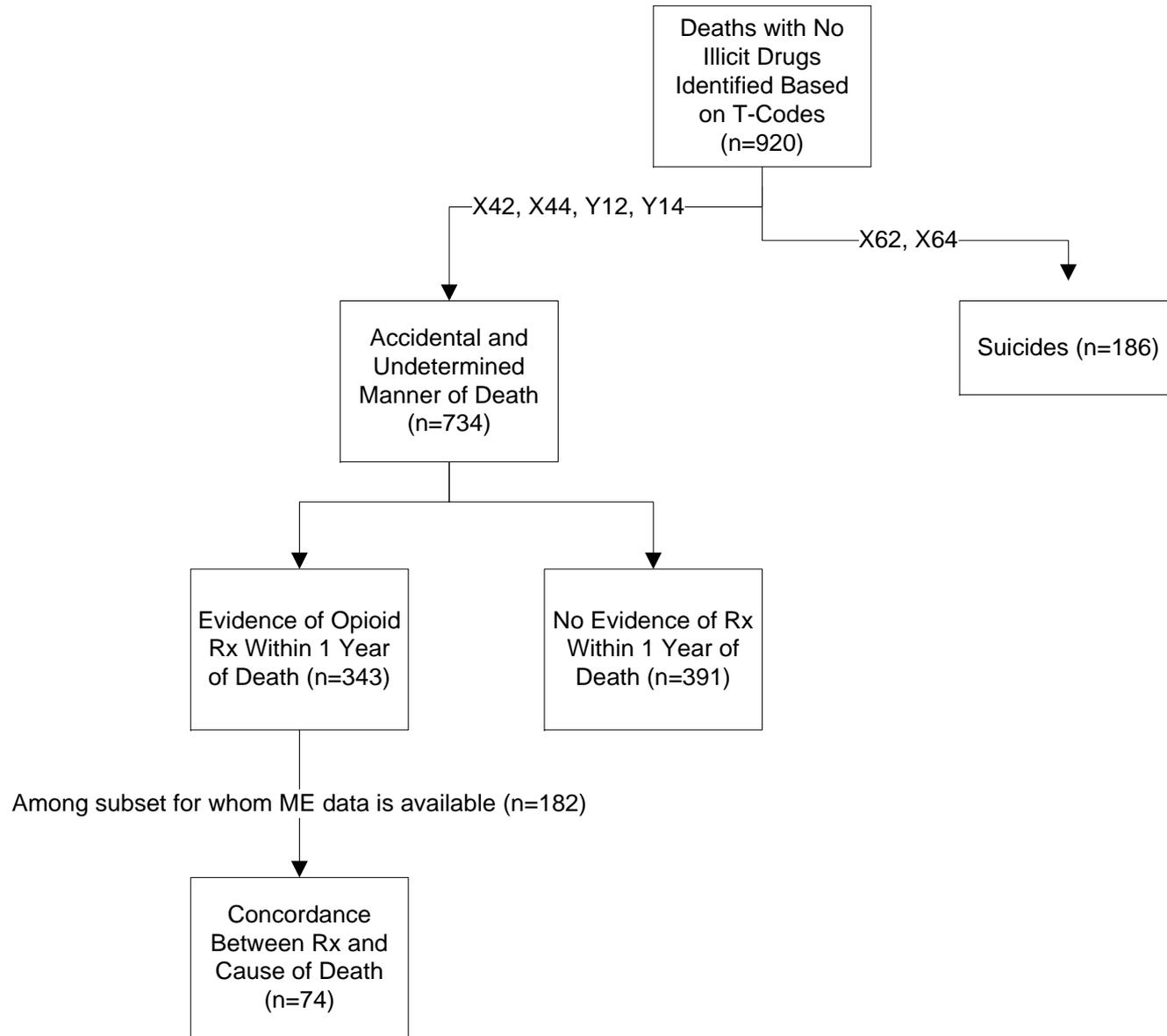
Population Identification Scheme

- Based on primary cause of death
- Selected drug poisoning
- Excluded those with illicit involvement noted
- Misclassification
 - Missed some deaths
 - Illicit involvement

Figure 1. Data Sources and Population Identification Process





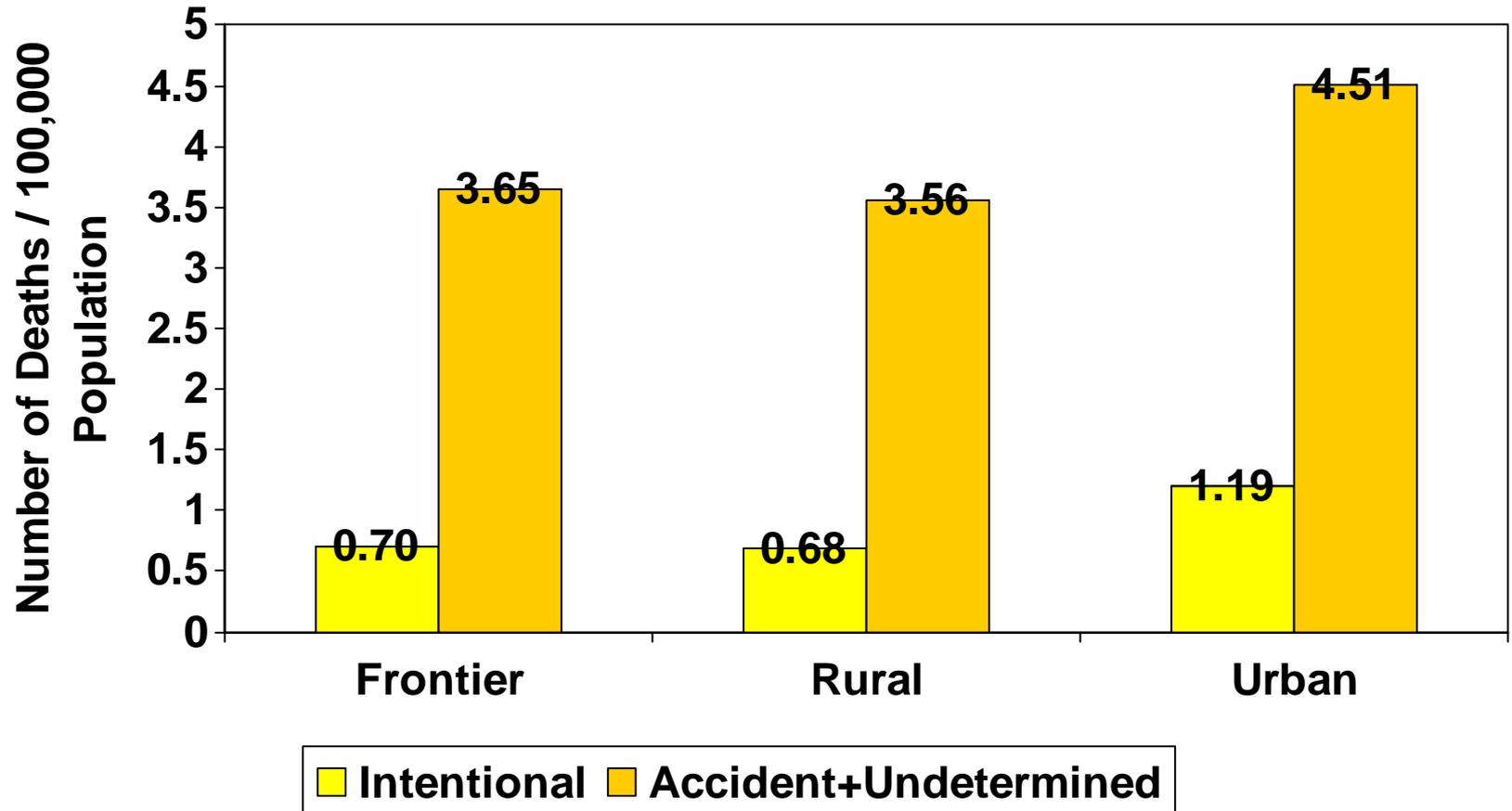


Results

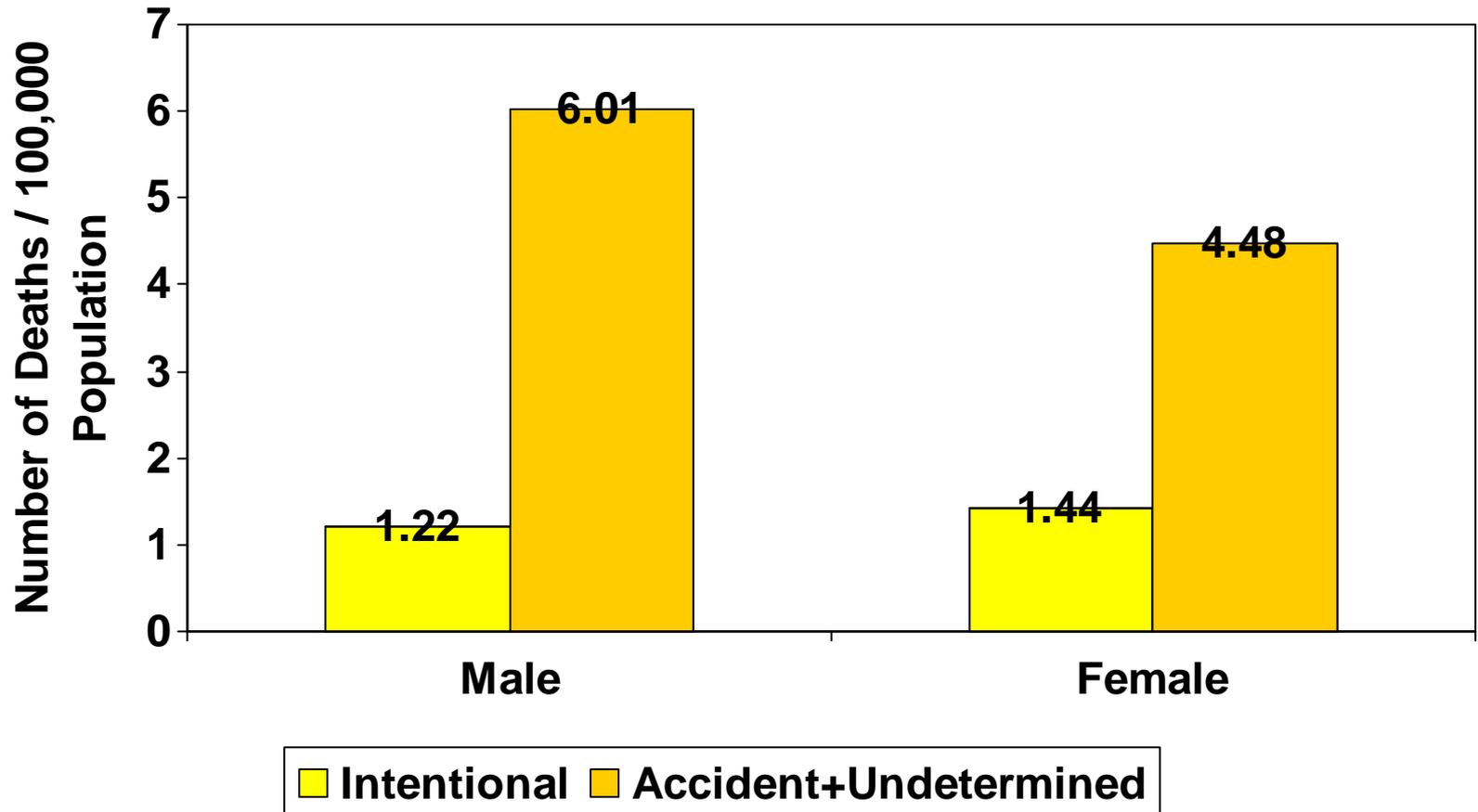
- 76,580 Utah decedents between 1999-2004
 - CSDB includes 22,215,483 Rx
 - 2,339,058 individuals with any CS Rx
 - 1,773,273 individuals with any opioid Rx
 - 1,419 deaths identified as drug poisonings using DC
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- 920 drug poisoning deaths with no mention of illicit drugs on the DC
 - 734 coded as accident or intent undetermined
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Death Rate by Geographic Area



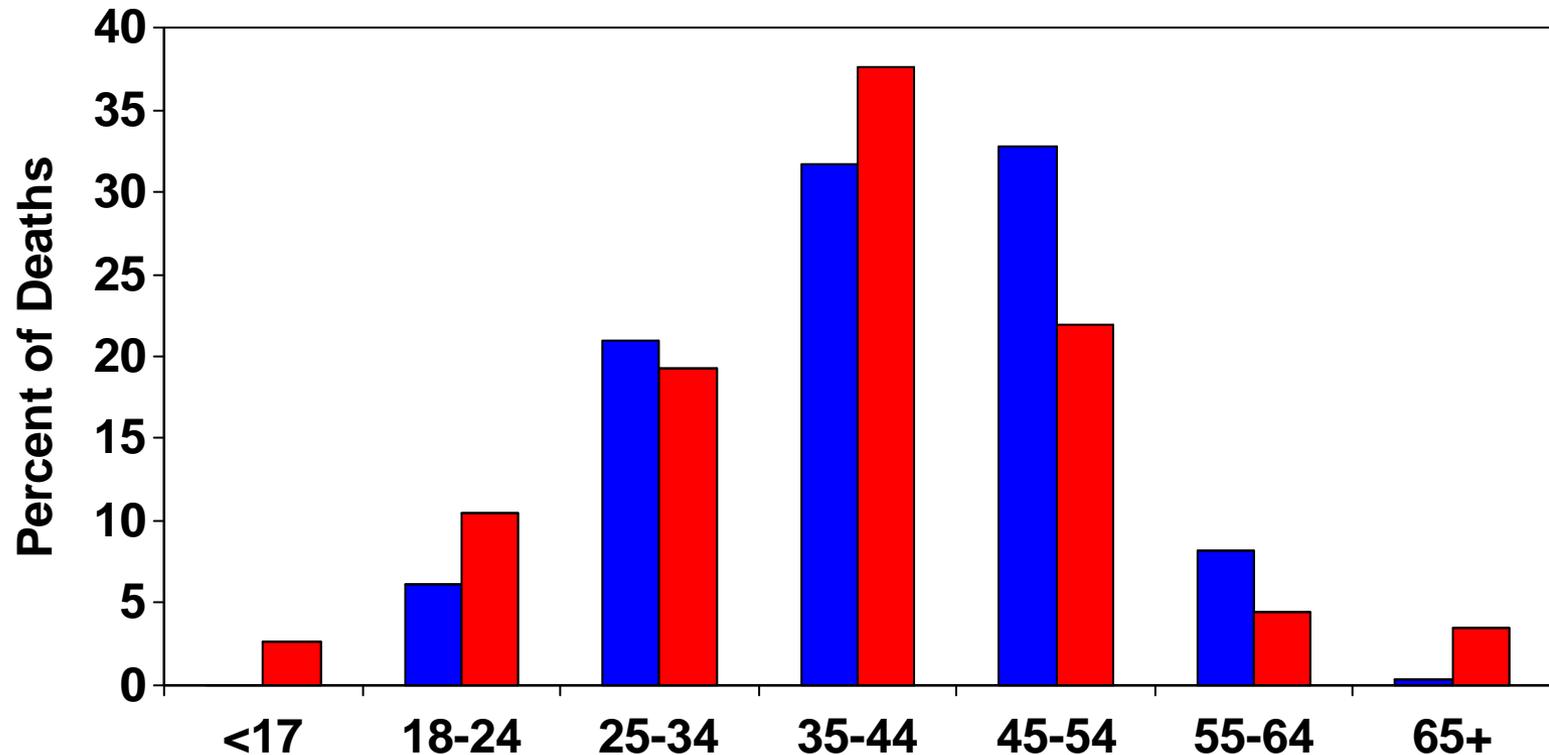
Death Rate by Sex



Proportion with Prescription

- 47% (347) had an active Rx for an opioid medication at time of death
 - 57% (421) ... within 30 days of death
 - 63% (462) ... within 90 days of death
 - 75% (552) ... within 365 days of death
 - Only 15% (n=115) with no evidence of an opioid Rx between 1999 and 2004
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Decedent Age Distribution

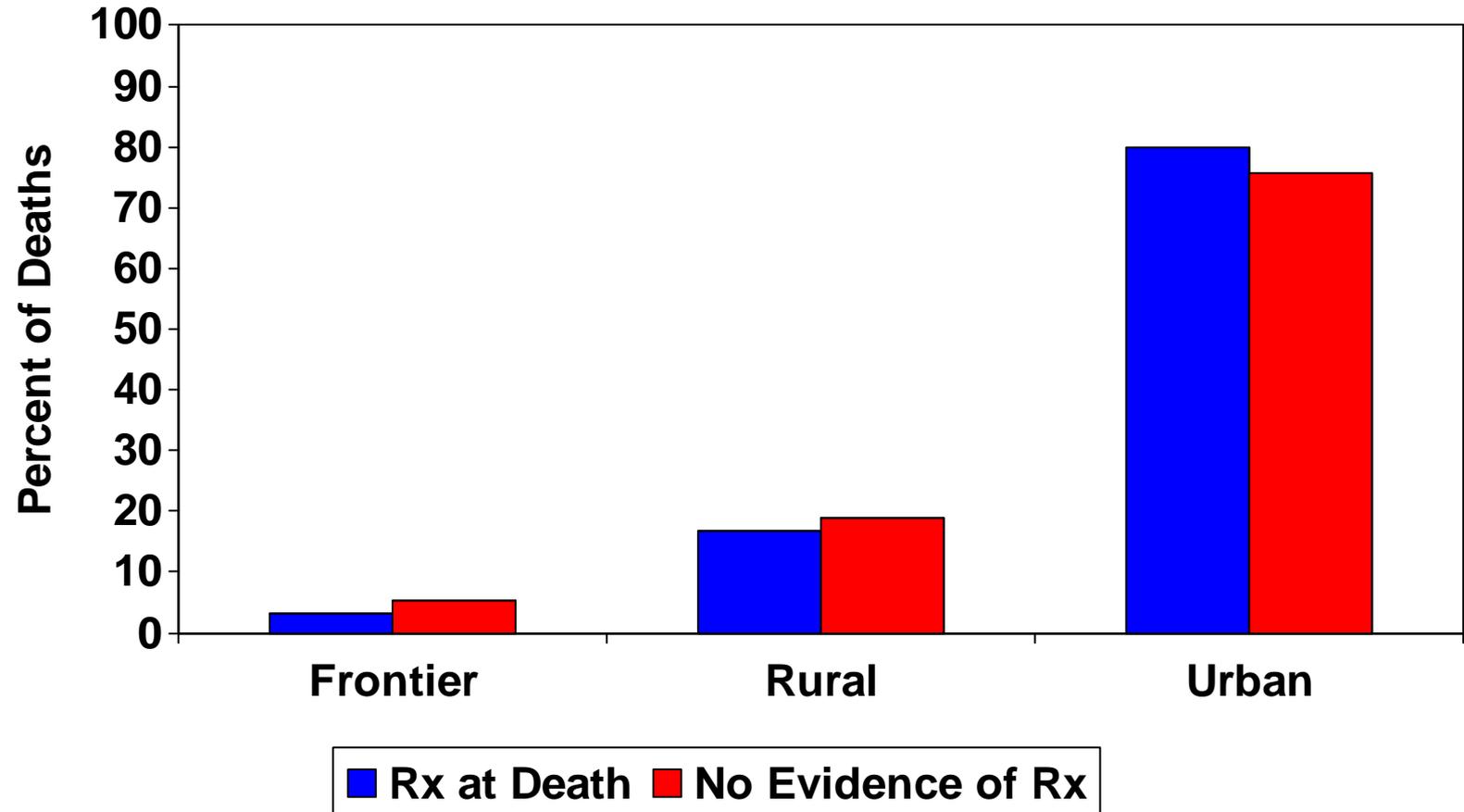


Mean = 41.0
Median = 42

■ Rx at Death ■ No Evidence of Rx

Mean = 39.6
Median = 40

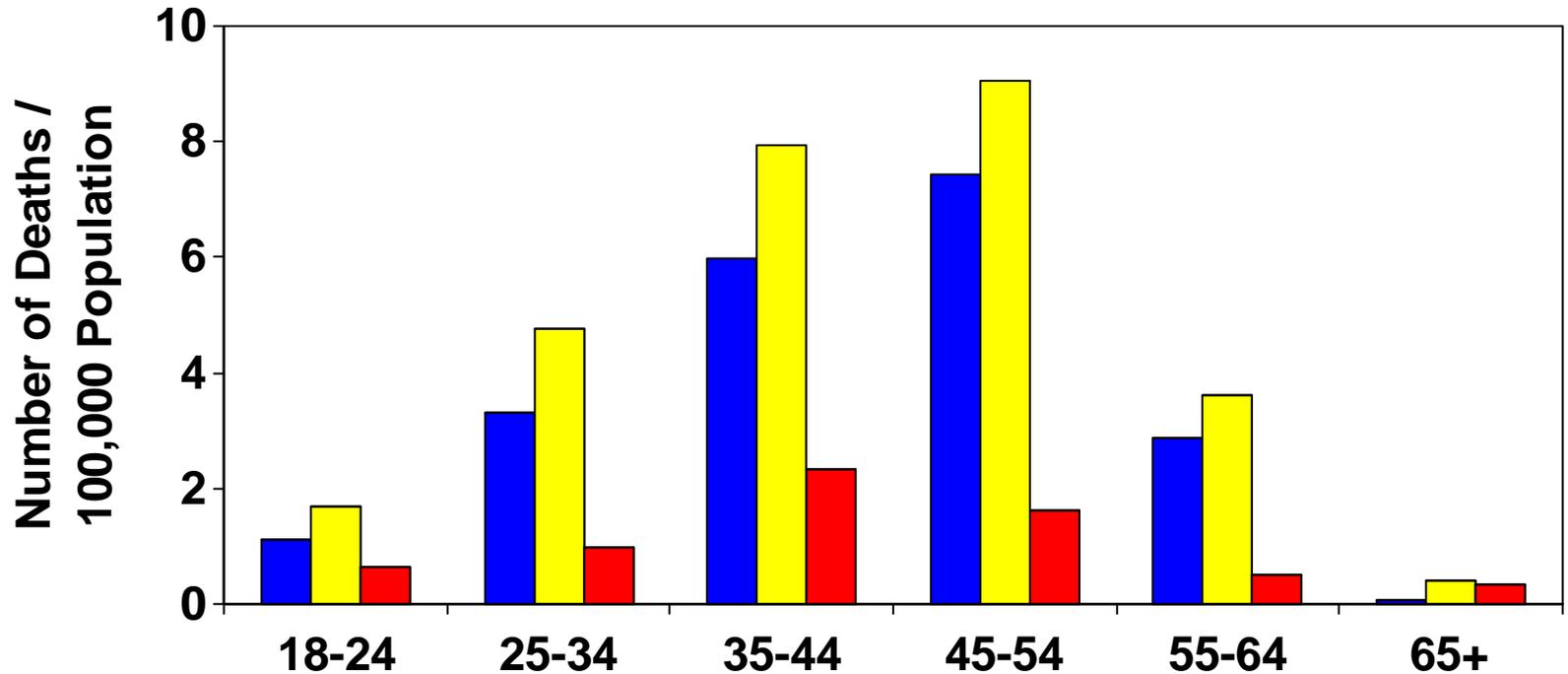
Decedent Geographic Distribution



Describing the Populations

| Rx status | n | % Male | % Urban | Mean Age |
|-------------|-----|--------|---------|----------|
| At death | 347 | 54.9 | 80.0 | 41.0 |
| Within 30d | 421 | 54.7 | 80.2 | 41.0 |
| Within 60d | 445 | 54.4 | 80.4 | 40.8 |
| Within 90d | 462 | 55.5 | 80.3 | 40.6 |
| Within 365d | 552 | 58.8 | 80.3 | 40.1 |
| No Rx ever | 115 | 69.0 | 75.8 | 39.6 |

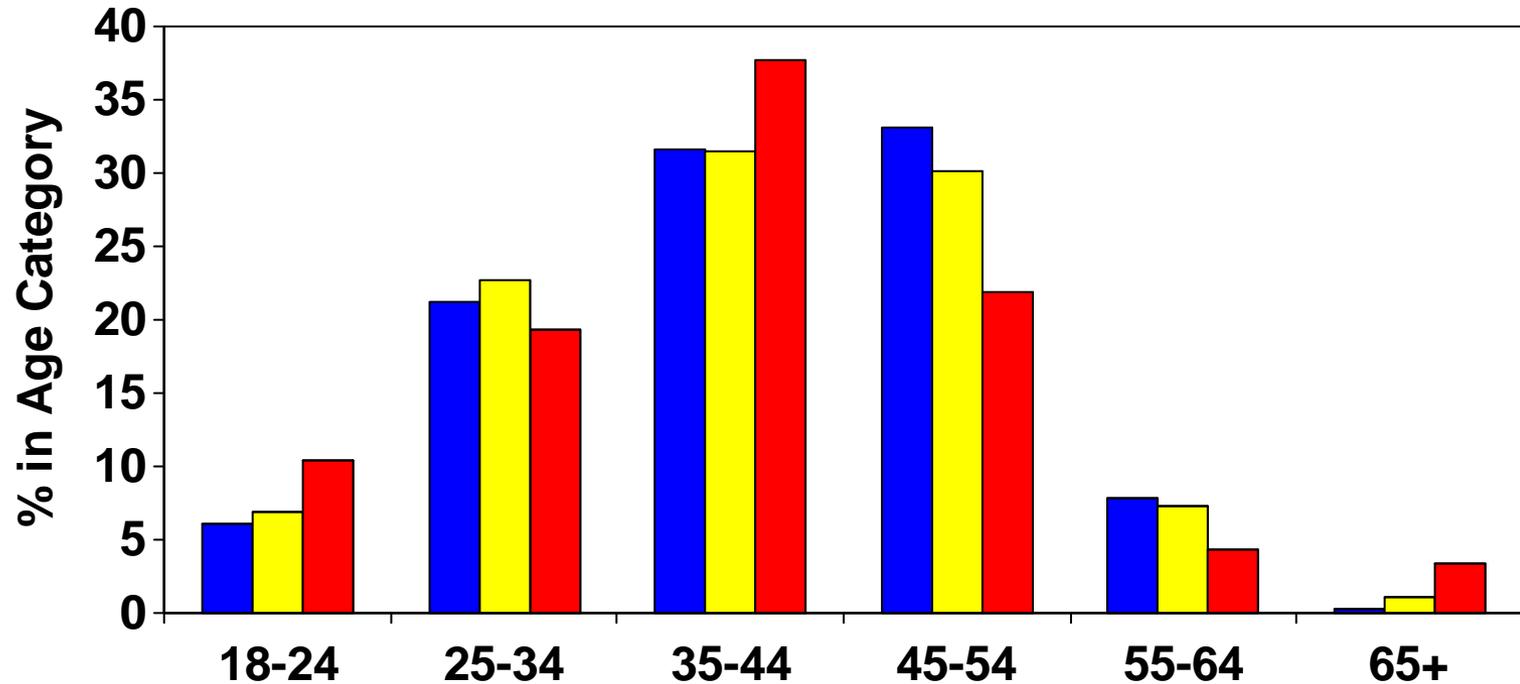
Death Rate by Age Category and Timing of Opioid Rx



■ Opioid Rx at Time of Death
■ No Evidence of Opioid Rx

■ Opioid Rx within 1 Year of Death

Age Distribution by Timing of Opioid Rx



■ Opioid Rx at Time of Death
■ No Evidence of Opioid Rx

■ Opioid Rx within 1 Year of Death

Concordance

- 40% had Rx for drug that caused death
 - Concordant decedents older than discordant
 - Almost statistically significant
 - No differences in sex or geography
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| | Concordant n=78/182, 43% | Discordant n=104/182, 57% | p for difference |
|---------------------|--------------------------------|---------------------------------|---------------------|
| Male | 55% | 67% | 0.0958 |
| Urban | 75% | 86% | 0.0945 |
| Mean age (years) | 41.7 | 38.1 | 0.0503 |

Concordance

- Preliminary results
 - Expect the number concordant to increase as we resolve issues of shared metabolic pathways
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Analyses in Progress

Exploring Change in Dose

- *Examine the relationship between change in dose and time to death*
 - *New prescription*
 - *Increased dosage*

 - *Drug-specific analysis*
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Drug Combinations

- *Examine all drugs active at time of death to look for frequent combinations*
 - *For example, an opioid and benzodiazepine or multiple opioids may change risk*
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