



ROAD SAFETY
RESEARCH, POLICING AND EDUCATION
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Transdermal Alcohol Monitoring in Compliance with Abstinence

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BACKGROUND

DWI Process in the U.S.

An impaired driver is:

- Detected
- Arrested
- Prosecuted
- Sentenced

What happens after that?



DWI SANCTIONS

Effective Sanctions for DWI Offenders

- **Licensing sanctions**
- **Vehicle actions**
- **Assessment and treatment/rehabilitation**
- **Sentencing options and alternatives to jail**



REDUCING DWI RECIDIVISM

- Assess offender's alcohol problem
- Select appropriate sanctions
- Provide treatment
- Monitor compliance
- Correct noncompliance
- Impose vehicle actions (where appropriate)
- **Impose alcohol monitoring (where appropriate)**



HIGH RISK DRIVERS

- Offenders convicted of a second or subsequent DWI offense within five years
 - a “traditional” **repeat offender**
- Offenders convicted of a DWI with a **BAC of .15 g/dL or higher**
- Offenders convicted of a **driving-while-suspended** offense, when the suspension was a result of a prior DWI



HIGH RISK DRIVERS

- **Problem** Drinkers or Hardcore Drinking Drivers
- **Binge** Drinkers (5+ drinks per session)
- **Persistent** Drinking Drivers
- **Repeat** Offenders not identified as such (e.g. diversion programs)



REPEAT DWI OFFENDERS

- Account for about **1/3 of all drivers arrested** each year for driving while intoxicated (DWI) in the U.S.
- Are over represented as drinking drivers in fatal crashes and **account for 10%-20%** of all drinking drivers in fatal crashes
- Are defined as drivers convicted of DWI more than once in a 5 year period



REPEAT DWI OFFENDERS

- Continue to drink and drive at illegal blood alcohol concentrations (BACs) over and over again
- Are obviously not affected by sanctions for their first DWI conviction
- Often have a history of other behavior problems
- Often have an alcohol and/or other substance abuse problem or have a heavy episodic (binge) drinking problem
- Rarely feel too impaired to drive and to most, DWI is not a serious issue



HIGH BAC (.15+) OFFENDER

- Account for half or more of all drivers arrested each year for driving while intoxicated (DWI).
- Are overrepresented as drinking drivers in fatal crashes and **account for over half of all drinking drivers in fatal crashes.**

Controlling DWI Offenders

■ Preventing All Driving

- Driver's license suspensions
- However, 36-88% of suspended DWI offenders drive anyway

■ Preventing Impaired Driving

- Alcohol ignition interlocks
- Effective while on the vehicle
- However, some offenders drive other vehicles

■ Preventing All Drinking (Requiring Abstinence)

- Administer Antabuse or equivalent
- House arrest/electronic monitoring
- **Difficult to monitor abstinence---better methods needed**

Alcohol Monitoring Programs

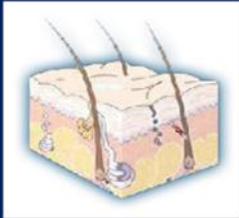
- Frequent contact by probation officers and judge or other officials (**observation**)
- **Surprise visits** in the home and BAC testing (and sometimes drug testing via urine sample)
- Daily call-in with **random testing**
- **Electronic monitoring** and home confinement with remote BAC testing
- Using alcohol ignition **interlock records**
- **Regularly scheduled testing** (twice daily)

Secure Continuous Remote Alcohol Monitoring (SCRAM™)



Product of Alcohol Monitoring Systems Inc. (AMS)

Transdermal Alcohol Measurement

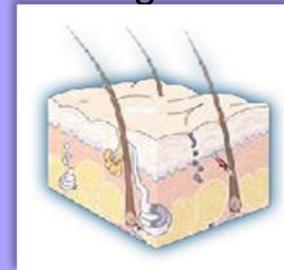


SCRAMx measures ethanol vapor as it is given off by the skin

Approximately 1% of ingested alcohol is eliminated through the skin via insensible perspiration

Alcohol present in this sweat was not metabolized in the liver

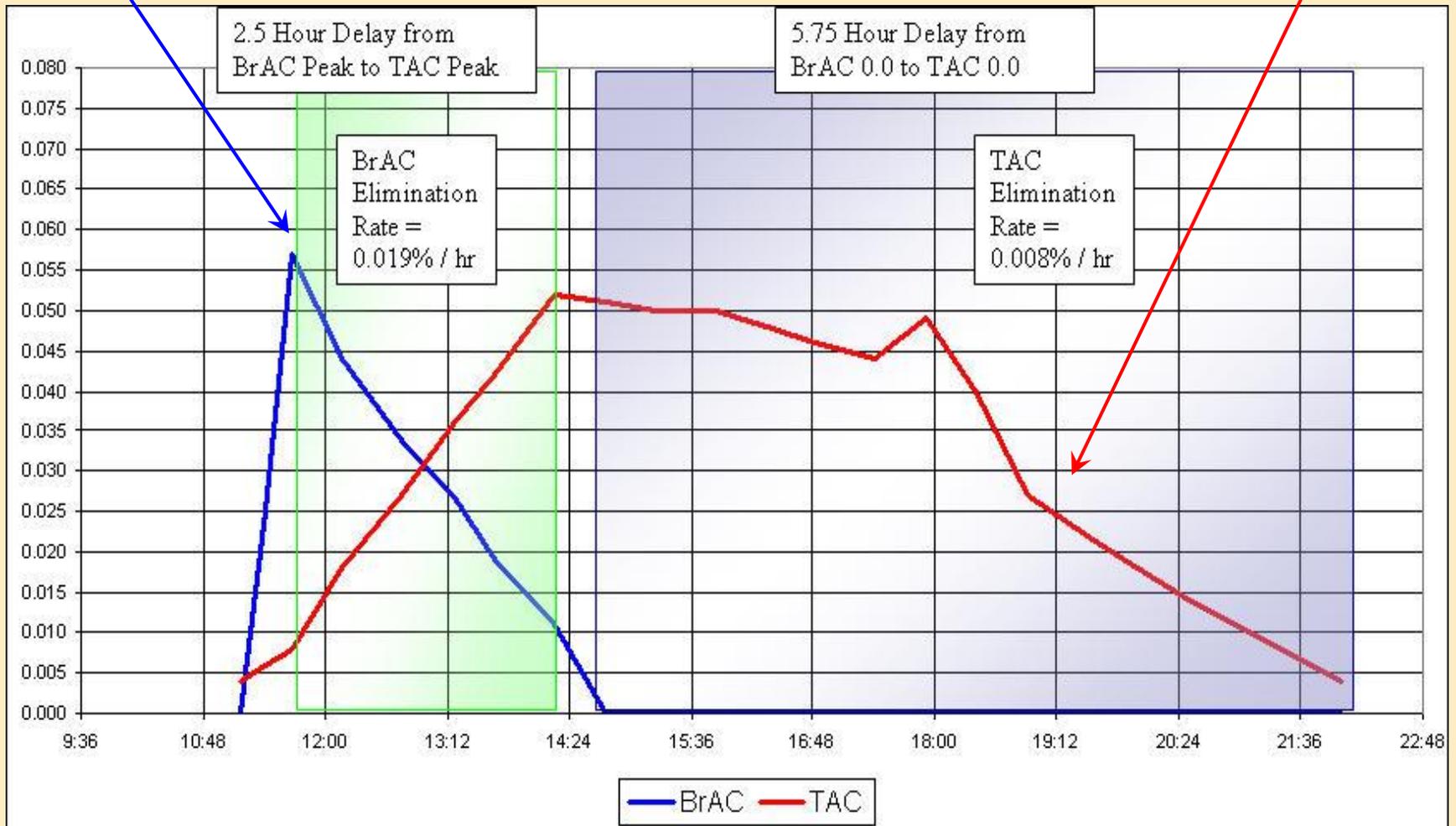
- Leaves the body unchanged



Transdermal Alcohol Concentration vs. Breath Alcohol Concentration

Typical BrAC Curve

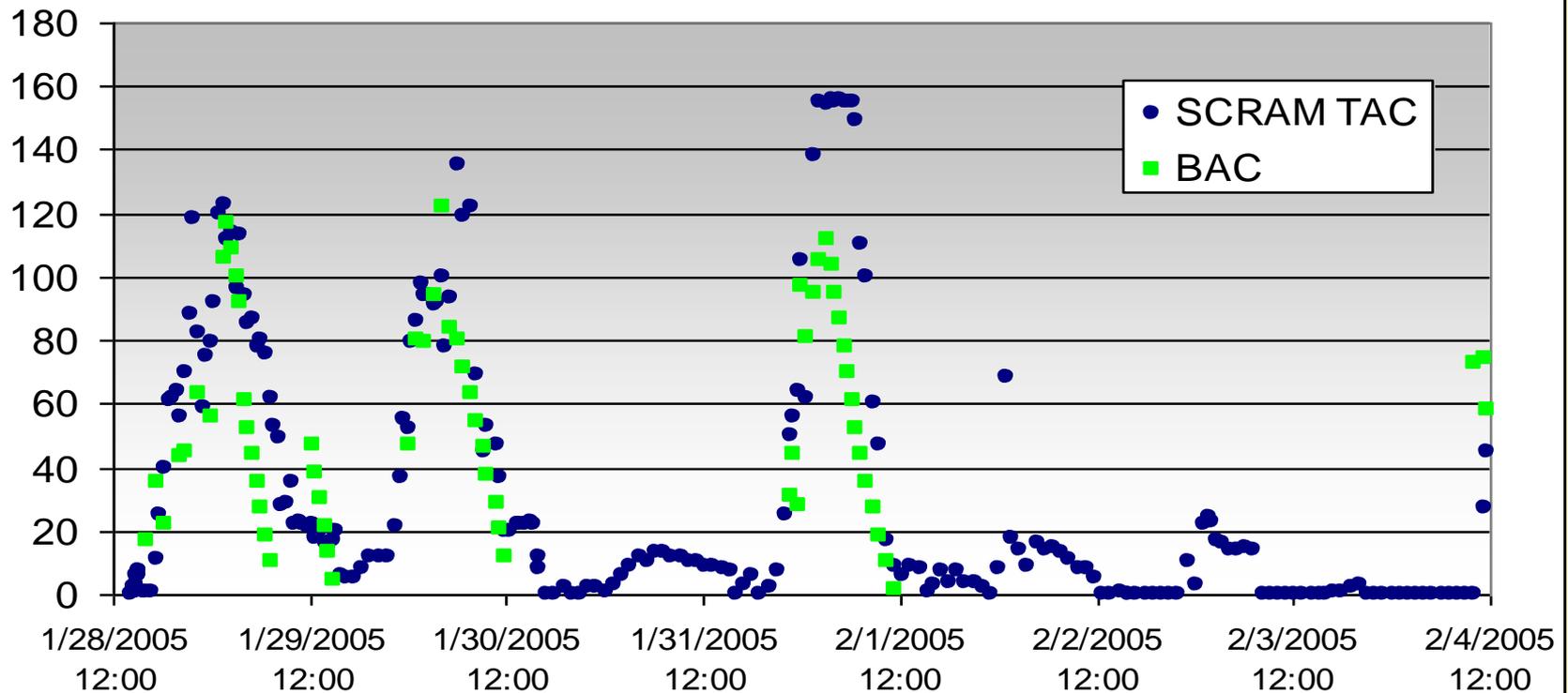
Corresponding TAC Curve



One Week-One Person (heavy drinker) Continuous SCRAM (ankle) Monitoring



ZL SCRAM scale is mg% (e.g., 0.10 = 100)





SCRAM FEATURES

- Detects drinking any significant amount of alcohol
- Detects any attempts to tamper or circumvent the device
- Monitors on a continuous 24/7 basis (sample every 30 minutes)
- Reports to court officials or probation officials any confirmed drinking or tampering events



SCRAM USAGE

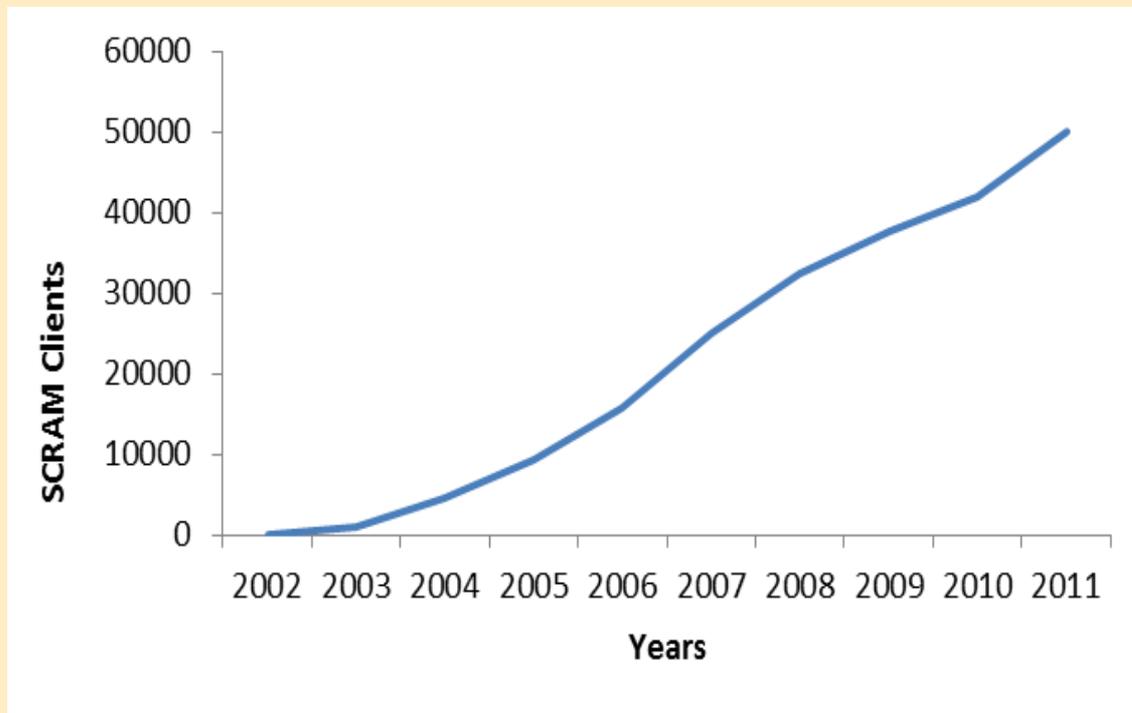
- Currently assigned by courts and used mainly on addicted, repeat DWI offenders.
- Anywhere from 30% – 50% of drivers **arrested** for DWI are either repeat offenders or could be diagnosed as a problem drinker or addicted to alcohol.
- Therefore, SCRAM could be installed on 300,000 – 600,000 DWI offenders in the U.S.
- Fairly reliable at detecting drinking episodes on a 24/7 basis (~80% effective).



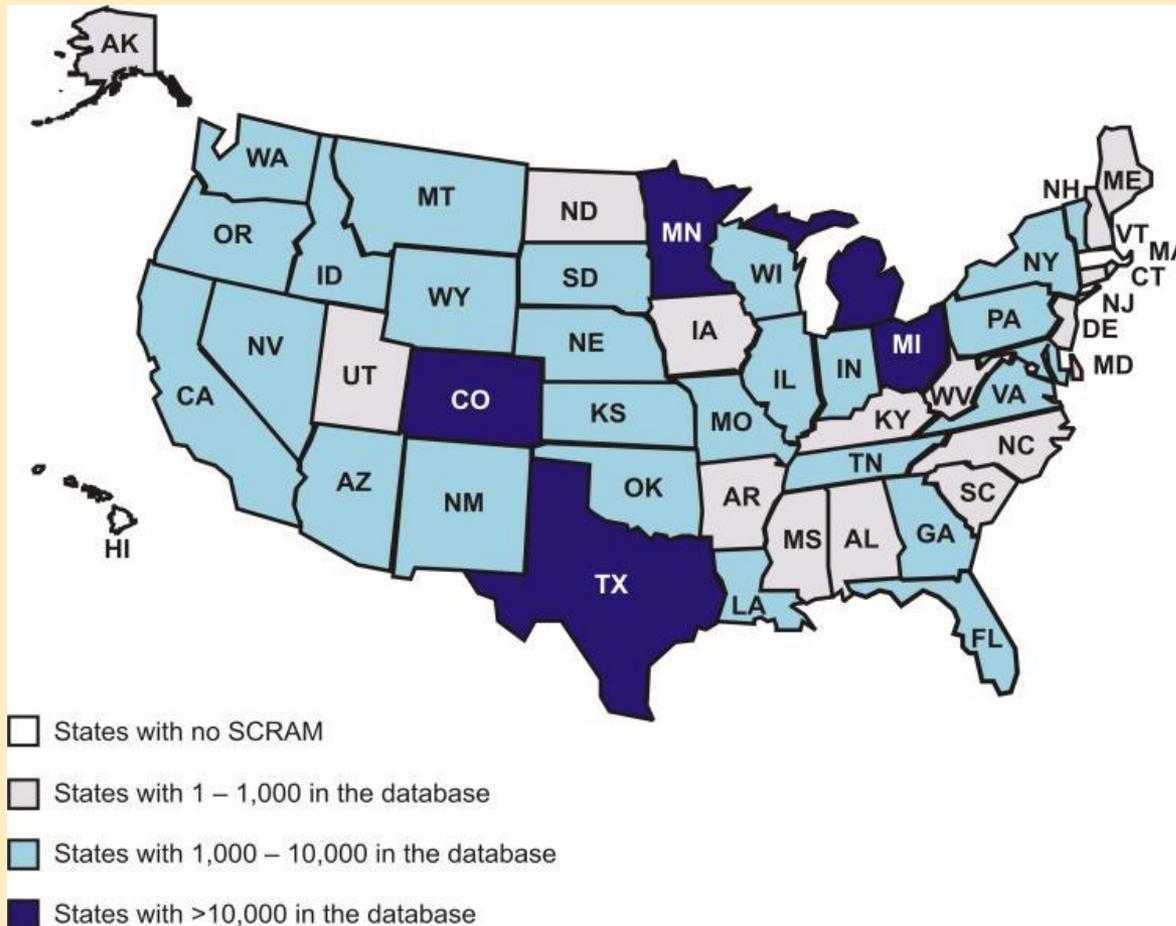
CURRENT SCRAM USAGE

- Introduced by AMS in 2002
- Currently, 200 SCRAM Service Providers in 1800 courts in the U.S.
- 34 States have had 1000+ offenders on SCRAM
- 8 States have had 10,000+ offenders on SCRAM

Growth in Number of SCRAM Offenders in each Year from 2002 to 2011



Number of SCRAM Monitoring Devices in the United States





METHODS

- AMS has allowed PIRE access to their database containing information on over 250,000 offenders
- PIRE is conducting preliminary analyses of the database to learn more about these SCRAM offenders



SCRAM DATABASE

- Name, DOB, Gender, Race/Ethnicity
- Offense
- Date placed on SCRAM and date SCRAM was removed
- Number and Date of confirmed drinking and tampering events
- Highest TAC reading



RESULTS

PRELIMINARY ANALYSES (N=157,584 Offenders)

- 79% of offenders are males
- 87% are between 21 and 54 years old
- 78% are DWI or other driving offenses



RESULTS

PRELIMINARY ANALYSES (N=157,584 Offenders)

Rates of Drinking and Tampering Violations:

- Males: 25%
- Ages 35-54: 27%
- African Americans: 31%
- All Offenders: 24%



RESULTS

PRELIMINARY ANALYSES

(N=157,584 Offenders)

Days Assigned to SCRAM:

- Males: 89 days
- Females: 77 days
- Caucasians: 87 days
- Hispanics: 93 days
- African Americans: 81 days
- All Offenders: 86 days



SCRAM: Research Needs

- Does the SCRAM ensure alcohol abstinence while it is on the offender?
- Does the SCRAM reduce DWI recidivism? During use? After use?
- Could SCRAM be used as an alternative to alcohol ignition interlocks?
- Does the use of SCRAM enhance the effectiveness of various alcohol treatment strategies?
- Do offenders use drugs other than alcohol while on the SCRAM?



SCRAM DATABASE: Research Analyses

- Rate of positive drinking episodes or attempts to circumvent per 30 days on SCRAM
 - Regression analyses exploring relationships of offender types & characteristics to the abstinence level achieved by SCRAM
- Time to first positive drinking event or attempt to circumvent
 - Survival analyses comparing different types of offenses and offenders



POTENTIAL BENEFITS OF ALCOHOL MONITORING

- Help judges, court officials and probation officers in monitoring abstinence requirement and imposing swift sanctions for non-compliance
- Help offenders with alcohol abuse and addiction issues to remain abstinent while receiving treatment
- Reduce DWI recidivism
- Provide cost effective alternative to incarceration

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