

Ambien®: Drives Like a Dream? - Case Studies of Zolpidem-Impaired Drivers in Wisconsin

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2005 Wisconsin DUID Data



- 45,539 Impaired Driving Arrests
- 23,074 Blood Alcohol Tests (WSLH)
- 2,347 Blood Drug Panels (WSLH)
- 1,902 Positive for ≥ 1 drugs other than alcohol

Toxicology Special Session:
Driving Under the Influence of Drugs

Wisconsin DUID Data

Drug Name	2004		2005	
	# Cases	Rank	# Cases	Rank
THC (Cannabinoids)	1005	1	1300	1
Cocaine	250	2	333	2
Diazepam/Nordiaz.	141	3	182	3
Alprazolam	134	4	162	4
Amphetamine	94	5	131	6
Morphine	83	6	113	8
Methamphetamine	79	7	105	9
Oxycodone	76	8	85	11
Hydrocodone	73	9	78	12
Clonazepam	72	10	136	5

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Wisconsin DUID Data

Drug Name	2004		2005	
	# Cases	Rank	# Cases	Rank
Citalopram/Norcital	72	11	86	10
Diphenhydramine	62	12	75	13
Lorazepam	141	13	66	14
Methadone	55	14	118	7
Venlafaxine/Norven	54	15	49	18-Tie
Meprobamate	51	16	57	15
Carisoprodol	46	17	49	18-Tie
Fluoxetine/Norfluox	49	18	55	16
Zolpidem	46	19	53	17
Trazodone	45	20	(33	-)
Dextromethorphan	(27	-)	41	20

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Wisconsin DUID Laws

- “Impaired by...”
 - Any intoxicant or drug
 - Illicit, prescription & OTC included
 - “...rendered incapable of safely operating a motor vehicle”
- “Per Se” / Zero Tolerance
 - Illicit Drugs - Any Detectable Amount
 - Schedule I Drugs
 - Cocaine & metabolites
 - Methamphetamine



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Zolpidem (Ambien®) Facts

- Non-benzodiazepine sedative hypnotic
- Available since 1993 in US
- Time release formula now available
- 5 mg or 10 mg tablet
- Use only with 8 hours uninterrupted sleep
- Peak concentrations 1.5 – 2.5 hours
- T_{1/2} = 1.4 - 4.5 hours
- Therapeutic serum levels: 29 - 272 ng/mL



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Zolpidem Case Studies

Selection Criteria:

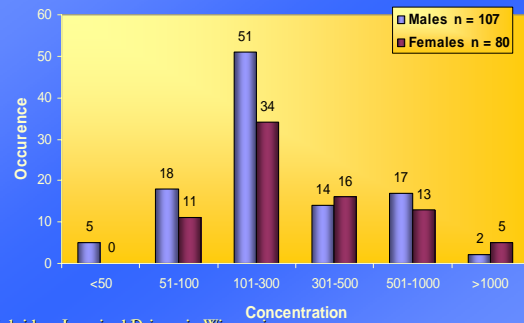
- **RANDOM:** 6 Recent cases set for trial

Toxicology Results:

- **Ethanol** - Negative for all cases
- **Other Drugs**
 - 3 Cases – No other drugs
 - 3 Cases – SSRI Antidepressants (1 or 2 present)
- **Zolpidem Concentrations**
Range: 190 to 4400 ng/mL

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Zolpidem Concentration in Males & Females (WSLH data 1999-2004)



Zolpidem Impaired Drivers in Wisconsin:
A Six Year Retrospective; William R. Johnson et al - SOFT 2005

Case #1:

Funeral Home Parking Lot

- **Driving**
 - Multiple citizens called dispatch to report
 - Subject drove into funeral home parking
 - Almost hit another vehicle

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Case #1:

Funeral Home Parking Lot

- **Behavior/Physical Abilities**
 - Slow to respond
 - Swaying, unsteady gait
 - Subject seemed “very out of it”
- **Drugs Detected:**
 - Zolpidem - 670 ng/mL

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Case #2:

Bridge Over Troubled Waters

- **Driving**
 - Crashed into parked car (Officer observed)
 - Bizarre driving with near-collision
 - Inattentive – Unsafe stop by a bridge
 - Didn’t follow simple driving directions
 - Drove over curb (all 4 wheels) & struck a chain between two posts

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Case #2:

Bridge Over Troubled Waters

- **Behavior/Physical Abilities**
 - Delayed response; Speech slow, slurred
 - Very unsteady – almost fell over
 - Did not recall any of the recent incidents
 - Inappropriate clothing & eyewear
 - Blurred & double vision
- **Drugs Detected:**
 - Zolpidem - 500 ng/mL, Citalopram <50 ng/mL

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Case #3: Blue-Light Special

- **Driving**
 - Two citizens reported erratic driver
 - Drove westbound in eastbound lane
 - Nearly struck two vehicles head-on
 - Stopped car ~2 ft from curb

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Case #3: Blue-Light Special

- **Behavior/Physical Abilities**
 - Slow to react
 - Slow to respond
 - Poor balance, nearly fell over
 - Poor comprehension, confused w/ colors
 - Questions needed to be repeated
- **Drugs Detected:**
 - Zolpidem - 820 ng/mL

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Case #4: Little Red Corvette

- **Driving**
 - Citizen reported red corvette driving erratically
 - Weaving, crossing lane, near head-on collisions
 - Driving southbound in northbound lane

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Case #4: Little Red Corvette

- **Behavior/Physical Abilities**
 - Very slow speech, 3-4 seconds to respond
 - Disoriented; confused
 - Unable to focus on officer
 - Body was shaking
- **Drugs Detected:**
 - Zolpidem - 190 ng/mL Venlafaxine – 510 ng/mL
 - Fluoxetine – 340 ng/mL Norvenlafaxine – Present
 - Norfluoxetine – 350 ng/mL

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Case #5a: Repeat Customer

- **Driving**
 - Witness: Incorrect stop position at 1st stop light
 - Didn't proceed when light turned green
 - Weaving
 - Crashed into truck stopped at next red light
 - Driver said brakes needed fixing.
 - Officer tested brakes, found no problems

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Case #5a: Repeat Customer

- **Behavior/Physical Abilities**
 - Confused
 - Disoriented
 - Eyes barely open – drowsy
 - Extremely slow slurred speech
 - Poor balance
- **Drugs Detected:**
 - Zolpidem – 1,000 ng/mL
 - Sertraline/Norsertaline - Present

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Case #5a: Repeat Customer

- Further Investigation (Per Daughter)
 - Prescribed Ambien in 1997
 - Subject increased doses after 6 years
 - Subject no longer has prescription
 - Obtains zolpidem on-line
 - Medbizsupply.com
 - Previous arrest 1.5 months before in neighboring jurisdiction

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Case #5b: Repeat Customer

- Driving
 - Driving to mall
 - Attempted to turn around - struck several mailboxes
 - Drove on rim after getting flat tire
 - Citizen called Police Dept.

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Case #5b: Repeat Customer

- Behavior/Physical Abilities
 - Very confused
 - Speech extremely slurred
 - Could not maintain eye contact w/officer
 - Poor balance while standing
- Drugs Detected:
Zolpidem – 4,400 ng/mL

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SFST - HGN

HGN Clues	1	2	3	4	5a	5b
Lack smooth pursuit	Yes	Yes	Yes	Yes	Yes	-
HGN at max. dev.	No	No	-	Yes	No	-
Onset prior to 45°	No	No	-	-	No	-
Instructed many times	No	No	Yes	Yes	No	Yes
Didn't Finish/Perform	No	No	Yes	Yes	No	Yes
Pupil description	Dilated	Dilated	Dilated	Dilated	Normal	-

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SFST – Walk and Turn

WAT Issues	1	2	3	4	5a	5b
Did not hold instruct. pos.	Yes	Yes	Yes	Yes	No	Yes
Balance Probs/Body Sway	Yes	Yes	Yes	Yes	Yes	Yes
Did not Count Out Loud	Yes	-	Yes	-	Yes	Yes
Did not walk heel to toe	Yes	Yes	Yes	-	Yes	Yes
Stepped off the line	Yes	Yes	Yes	-	Yes	-
Did not take 9 steps	Yes	-	Yes	-	Yes	Yes
Incorrect or no turn	Yes	-	Yes	-	Yes	-
Was reminded to continue	Yes	-	Yes	-	Yes	-
Unable to Complete/Perform	No	Yes	Yes	Yes	No	-

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SFST – One Leg Stand

OLS Issues	1	2	3	4	5a	5b
Body Sway noted	Yes	-	Yes	Yes	Yes	Yes
Almost Fell Over	Yes	-	Yes	Yes	Yes	No
Many attempts	Yes	-	Yes	Yes	Yes	Yes
Unable to Complete/Perform	Yes	Didn't Try	Yes	Yes	Yes	Yes

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Zolpidem Cases: A Common Theme

- Extreme driving impairment
 - Wide lane deviations
 - Many near head-on collisions
 - Bizarre driving maneuvers
- Mode of driver detection – citizen cell phone
- Collision with stationary objects

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Zolpidem Cases: A Common Theme

- Profound loss of balance
 - Incomplete SFST's – stopped for safety
- Confused & Disoriented
 - No recognition of poor driving
- Greatly reduced comprehension
 - Untypical, exaggerated delay in responding
 - Unable to follow directions
 - Instructions repeated multiple times
 - Do not remember recent events

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Zolpidem Summary

- Therapeutic concentration while driving

= 0 ng/mL

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