

# Substance Exposed Babies in Orange County 2007 Hospital Prevalence Study

#### **EXECUTIVE SUMMARY**

This report describes the findings from the Substance Exposed Babies Study that was conducted at ten birthing hospitals in Orange County, California during the spring of 2007. The purpose of the study was to assess the prevalence rate of babies exposed to alcohol, tobacco or other drugs prior to birth and to use this information to inform program development and improve birth outcomes for babies born in Orange County. Anonymous urinalysis was conducted for **1,578** expectant mothers giving birth at the participating hospitals. The study sample represented about a third (34%) of the 4,361 births that occurred county-wide during the study. Information about patients' demographics (e.g., ethnicity, age, education, source of payment, region of residence), prenatal care, birth outcomes (e.g., birth weight and gestational age), reported substance use, and other risk factors were also collected anonymously through patient interview and chart review by labor and delivery nurses. This information was linked to the urinalysis results by a numerical coding system and findings could not be traced to individual patients.

# Key findings from the study include:

- Urinalysis revealed a **4.0%** prevalence of substance use (including alcohol, tobacco, and drugs) at the time of labor and delivery, corresponding to an estimated **1,800** babies exposed out of about 45,000 babies born per year in Orange County.
- The prevalence rate of reported substance use at any time during the pregnancy was about the same at 4.1%.
- Tobacco (nicotine) was the most common substance detected (1.8%) at the time of labor/delivery and was reportedly used by 2.8% of mothers at some point during their pregnancy.
- Alcohol was the least common substance detected (0.3%). Alcohol has a shorter half-life (or time during which it can be detected in the urine) than other substances, which may account for the low percentage. The prevalence for reported alcohol use was 2.3% at any time during the pregnancy.
- The prevalence of illicit drugs was found to be **2.4%**, with opiates, amphetamines and marijuana (THC) the most common, while fewer women (**1.4%**) reported using drugs.
- Whites represented the largest proportion of all the substance-using mothers (54.4%), followed by Hispanic/Latinas at 35.1%. African-American mothers accounted for 7.0% of all the substance users, while mothers of Asian/Pacific Islander descent accounted for only 3.5% of substance users identified in the study.

- Prevalence rates within racial/ethnic groups similarly showed that white mothers had the highest rate (7.9%), followed by "Others" with 6.9%. Hispanic/Latina and Asian/Pacific Islander mothers had prevalence rates of 2.2% and 1.4%, respectively.
- Mothers covered by publicly-funded health insurance (e.g., Medi-Cal, Healthy Families) had the same substance use prevalence rate as mothers covered by private insurance (4.0%).
- The majority of substance-using mothers had a high school degree. They were **two** times more likely to have a high school degree than to have no degree. Also, substance users were almost 4 times more likely to have a high school degree than to have a college degree.
- Substance-using mothers were twice as likely to initiate prenatal care late in pregnancy than non-using mothers. The majority of non-users (82%) initiated prenatal care during the first trimester. Substance-using mothers were almost twenty times less likely to have received any prenatal care than non-substance-using mothers.
- The average number of prior spontaneous abortions (or miscarriages) and therapeutic abortions was 2.7 times higher for substance-users than non-users.
- Substance-using mothers reported higher stress levels during the past year, almost **two** times (1.8) more than non-using mothers.
- Substance-using mothers were more likely to give birth to a low or very low birth weight baby with a shorter gestational age compared to non-using mothers.
- In 1992, a statewide study found that **2.1%** of Orange County pregnant women tested positive for illicit drugs, which is about the same as the current 2007 rate of **2.4%**.
- The prevalence rate of *self-reported* tobacco use in Orange County was estimated to be **5.9%** in 1992, compared to **2.8%** in the present study a decrease in the use of tobacco that is consistent with recent reports of reduced smoking in the county.
- The use of alcohol has shown the largest decrease since the 1992 study. Specifically, only **0.3%** of mothers tested positive for alcohol in 2007, compared to **4.2%** of Orange County pregnant women in 1992.

While the prevalence of tobacco and alcohol use at the time of labor and delivery appears to be lower than previously reported, the use of illicit drugs has not decreased. Moreover, the drugs of choice have changed since 1992. Provided that urine testing at the time of labor and delivery only reveals recent substance use, the present study indicated that an estimated 1,800 babies are born each year exposed to nicotine, alcohol, and/or illicit drugs in Orange County.

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## SECTION I: OVERVIEW OF STUDY PURPOSE & DESIGN

A pregnant woman who uses substances (alcohol, tobacco, and/or drugs) places her unborn child at risk for developmental, physical, behavioral, and social disabilities due to their deleterious effects on the developing fetus. Potential outcomes for the newborn include a lifetime of challenges requiring public support. A variety of interventions to support the reduction in substance use by pregnant women have been utilized over the years in Orange County.

In 1992¹, a state-wide study was conducted in California to determine prevalence of substance use during pregnancy. This study estimated that 7.5% of Orange County pregnant women tested positive for alcohol and/or drugs. Tobacco toxicology tests were not part of the study, but the rate of self-reported tobacco use during pregnancy was estimated to be 5.9%.

Because the demographics of the county as well as the drugs of choice have changed over the past 15 years, the Orange County Grand Jury recommended that a new study be conducted to assess the current prevalence rates and ensure that the appropriate strategies are being used for this population. The current study was conducted with a similar design of the 1992 study to provide more recent data on perinatal substance use at the time of delivery.

This report describes the findings from the Substance Exposed Babies Study that was conducted at ten birthing hospitals in Orange County, California during the spring of 2007. It provides the prevalence rate of babies exposed to alcohol, tobacco or other drugs prior to birth. This information may inform program development and improve birth outcomes for babies in Orange County.

#### Administration

In order to measure the prevalence of substance exposed babies, a urine sample was to be collected from approximately 1,500 to 1,700 pregnant women at the time of delivery at local birthing hospitals. The study was conducted over a five-week period (April 2 through May 7, 2007). In order to obtain accurate and representative results, urine samples were collected blindly, without informed consent. Waiver of informed consent was obtained from the County of Orange Human Subjects Review Committee and each hospital's own human subjects review committee (i.e., Institutional Review Board). Patient information was collected confidentially and anonymously (by attending Labor and Delivery nurses) and noted on a questionnaire (i.e., The Patient Data Collection Form). The Patient Data Collection Form (shown in Appendix A) was linked to the urine sample through the use of peel-off code numbers that were placed on a specimen cup and a laboratory request form. Urine samples were then sent directly via courier to the University of California, Irvine Medical Center Toxicology Lab for testing. The urine collection cup and laboratory request form did not contain any identifying information other than a machine and human readable code number linking the specimen with the data collection form. The Patient Data Collection Forms, completed by the hospital staff, were picked up two to four times per week by Health Care Agency (HCA) study team members. Only the investigators had access to individuals' anonymous demographic information, birth outcomes and urinalysis drug test results.

#### Sampling Design

Because Orange County hospitals vary in the number of deliveries per year, a proportionate sampling scheme was developed with the goal of enrolling all women giving birth during the study period. Data for 2004 showed that there were 42,751 OC resident births or about 822 births per week. To obtain the required sample size with a 3% error rate and 99% confidence interval approximately 1,500 urine samples were required. Based on this estimate, hospitals were given a proportionate number of forms and materials.

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<sup>&</sup>lt;sup>1</sup> Vega, W.A. et al (1993) "Prevalence and Magnitude of Perinatal Substance Exposures in California," *The New England Journal of Medicine*, Vol. 329:850-854, No. 12.

#### Limitations

While the study methodology provides accurate results, avoiding self-selection bias or response biases resulting from social desirability such as in a survey, the investigators acknowledge the limitations of a urine toxicology screening. Urine toxicology screenings are time-limited tests. Urine tests can generally only account for substances used in the last 12 to 96 hours, depending on, a) the type of substance, b) the amount used, and c) the frequency of use (See Appendix B). Consequently, urine toxicology tests reveal only current substance use, but cannot reliably determine dosages or amounts used over time. Therefore, this study may be underestimating use because of the short half-life of substances and can not speak to substance use patterns throughout a woman's pregnancy. Despite these limitations, urinalysis is one of the most reliable, efficient and economical methods to measure substance use at a specific point in time.

#### **Patient Data Collection Form**

An 18-item instrument, the Patient Data Collection Form, was the primary means for collecting patient data (See Appendix A). Attending Labor and Delivery nurses were trained to complete the Patient Data Collection Form by surveying mothers and/or conducting data extraction from the mother's chart. The instrument included items on demographics, birth outcomes, pregnancy history data, reported alcohol, tobacco and drug use, and overall stress level. The *demographic* items identified participant's age, race/ethnicity, education, ZIP code of residence, and source of payment. *Birth outcome* items noted the birth weight, gestational age, and whether or not this was a multiple birth. *Pregnancy history data* items included the number of preterm births, the number of term births, the number of abortions (spontaneous and therapeutic), and the number of children living. *General medical care* items identified prenatal care, preadmission prescriptions, and any drugs administered before the urine specimen was taken. Labor and Delivery nurses identified *reported alcohol, tobacco, and/or other drug use* based on a review of the patient's chart and/or by asking the patient directly. Nurses asked mothers to rate their overall stress level during the past year on a scale from one to six (i.e., 1 indicating 'no stress' up to 6 corresponding to 'extreme stress').

## Urinalysis Drug Testing by UCIMC Clinical Laboratory

Urine samples were tested using a drug and alcohol panel for the following: THC (marijuana), nicotine, cocaine, amphetamines/methamphetamines, barbiturates (e.g., Phenobarbital and Seconal; depressants), benzodiazepines (e.g., Valium and Xanax; minor tranquilizers), MDMA (Ecstasy), opiates (e.g., heroin and morphine), phencyclidine (PCP), propoxyphene (e.g., Darvon; narcotic analgesic), and alcohol. Samples that were positive on initial immunoassay screen were confirmed using gas chromatography/mass spectrometry (GC/MS) procedures to confirm the identity of drug metabolites and actual concentration. The sample results were linked only to the study number and reported directly to the study monitor. See Appendix B for additional details on laboratory urinalysis (UA) procedures and cutoff levels.

#### **Data Analysis**

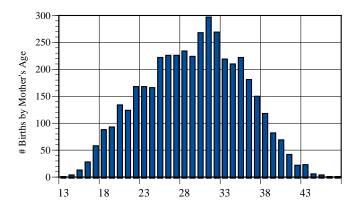
In the initial phase of analysis, the data were cleaned, coded, and the UA results were merged with data scanned from the Patient Data Collection Form. This phase was needed to ensure that the information gathered was adequately structured for analyses and comparisons with local and national studies. The second phase of data analysis consisted of descriptive, bivariate and multivariate analysis. Descriptive statistics were generated to produce minimum value, maximum value, mean and standard deviations for variables of interest. Additional analyses were conducted using cross-tabulations, *t*-tests, and analysis of variance to determine if differences existed between various groups. Significance of differences between groups was tested at the 95% confidence level (p<.05).

#### SECTION II: PARTICIPANT DEMOGRAPHICS

Data were collected from 1,578 pregnant women who presented for labor and delivery during the study period at one of the ten participating birthing hospitals. After omitting 108 participants whose Patient Data Collection Form or urine test result was missing (74 and 34, respectively), the total number of participating mothers was 1,470, about 34% of the 4,361 births that occurred county-wide during the study period.

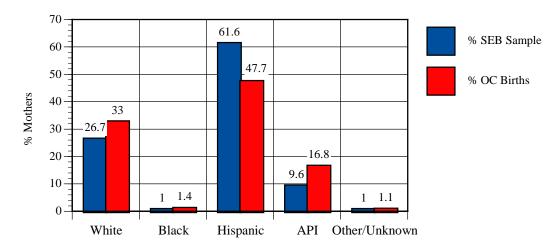
#### Age

Mothers ranged in age from 13 to 44 years. Age followed a normal distribution with a mean of 28 years ( $\pm$  6.54). Among all mothers, 11.3% were adolescents under 20 years of age, 47.8% were between 20 and 29 years of age, and 40.9% were 30 years of age or older.



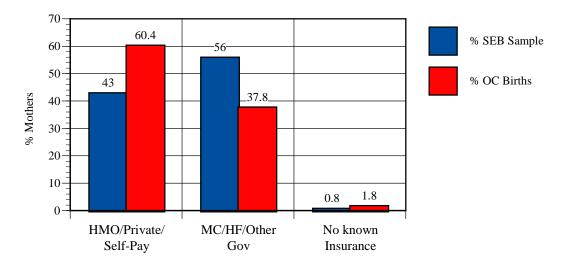
# Race/Ethnicity

The majority of the mothers sampled (61.6%) were Hispanic/Latina women. White women accounted for 26.7% of the sample. Asian/Pacific Islander women accounted for approximately 10% of the sample. African-American/Black women accounted for 1% of the mothers. The remaining 1% consisted of Native Americans and women categorized as other/unknown origin. When comparing the current study sample with all OC births during the study period, whites were slightly under-sampled by 6% and Asian Pacific Islanders by 7%. Hispanics were over-sampled by 14%. African-American/Black mothers were sampled equally with their proportion of the birthing population. Below is the ethnic profile of the Substance Exposed Baby (SEB) study sample in comparison to county-wide births.



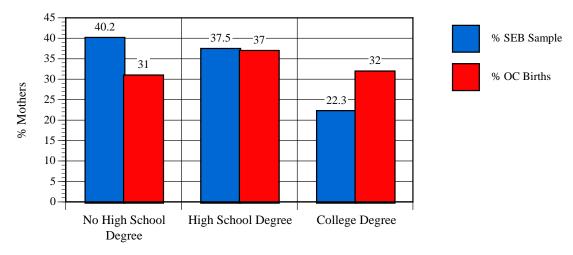
# **Source of Payment**

Forty-three percent of the mothers had private insurance (such as HMO) or were self-pay<sup>2</sup>. About fifty-six percent had Medi-Cal/Healthy Families or another government program. Less than 1% had no known insurance. Compared to county-wide birth data, the current study sample distribution represents an over-representation of mothers with government funded insurance (56.0% vs. 37.8%) and a concomitant undersampling of mothers with private insurance/Self-Pay (43.0% vs. 60.4%).



## **Education**

A large percentage of the sample consisted of mothers who did not complete high school. In fact, over 40% of the sample did not complete high school. Specifically, 17.3% had no high school education and 23% had some high school education but did not graduate. For those with a higher level of education, approximately 24% of the mothers sampled were high school graduates; 14% had some college; and approximately 18% were college graduates. Less than 5% of the sample had post-graduate education. Compared to the educational level of women across the county who delivered during the study period, an over-sampling of mothers without a high school degree occurred as well as an under-sampling of mothers with a college education.

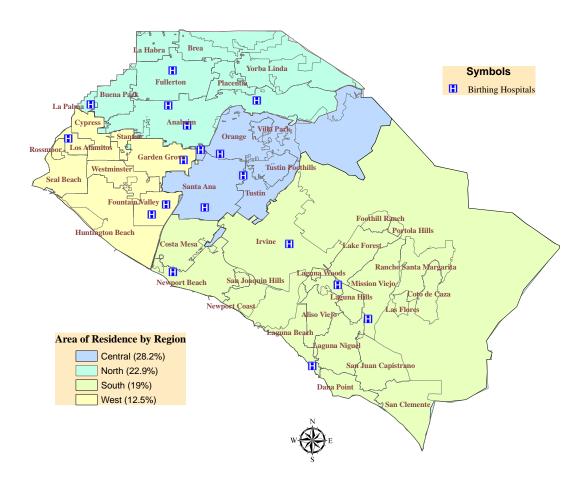


<sup>&</sup>lt;sup>2</sup> Patients with the financial means who pay cash for medical services rendered are routinely grouped with those patients covered by private insurance, such as in county/state birth reports.

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# Region of Residence

Participants' ZIP code of residence was divided into four regions: North, South, West and Central. As shown in the map below, the majority of mothers (28.2%) were from the Central region of the county. An additional 22.9% were from the Northern region of the county. Nineteen percent (19%) of participating mothers were from the Southern region, while 12.5% participants were from the Western region of the county. Eleven percent (11.3%) of the mothers were from un-identifiable regions of the county and the remaining 6.1% were from another county altogether (e.g., Los Angeles, Riverside County). The distribution of all births in the county is given in the table below.



Regional Distribution of All Births During Study Period

Region	% SEB Births Sampled	% Births in OC
Central	28.2	22.4
North	22.9	22.9
South	19.0	29.0
West	12.5	16.6

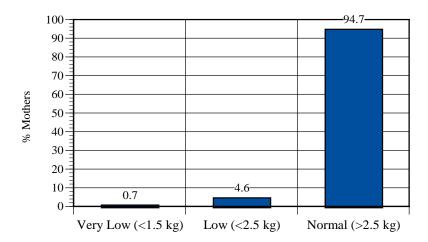
#### SECTION III: BIRTH OUTCOMES AND PREGNANCY DATA

# **Gestational Age**

Mothers were an average of 38.3 weeks along in their pregnancy when they entered the hospital (± 2.86 weeks). Notably, some mothers with low gestational ages (such as those less than 30 weeks) were sent home undelivered. These mothers did not deliver and were not included in 'birth weight' analyses.

# Birth Weight

A large majority of participating mothers delivered babies of normal weight (94.7%). A small percentage of babies were born with a low birth weight (4.6%) or very low birth weight (0.7%).



## Gestational Age (Prematurity) and Birth Weight

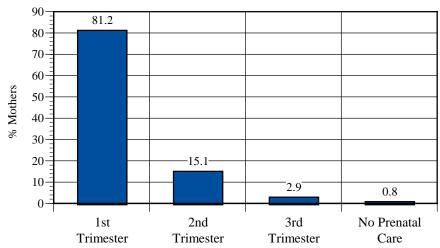
The percentage of normal birth weight babies that were born premature (i.e., 36 or fewer weeks in gestational age) was examined. Among premature babies, slightly more than half had normal birth weight (53.3%) and slightly less than half (46.7%) had low or very low birth weight. Among mature babies, a large majority (98.6%) had a normal birth weight (>2500 grams), and only 1.4% had a low or very low birth weight.

# **Pregnancy History**

Of the data gathered on mothers, most were single delivery births. Only 3% of the births were multiple births (e.g., twins). In terms of pregnancy history, most women had been pregnant before (65%), of which 96% delivered a child, and most women had one or two live children.

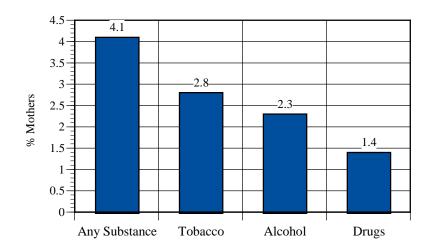
# Prenatal Care – Trimester in which Care Began

Prenatal care, a factor predictive of healthy pregnancies and babies, was initiated early (in the first trimester) by most mothers (81.7%). Some mothers (15.1%) initiated prenatal care in their second trimester. A few mothers (2.9%) initiated prenatal care late in their pregnancy (in their 3<sup>rd</sup> trimester), and 0.8% had no prenatal care.



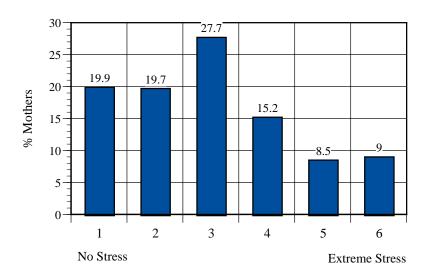
# SECTION IV: REPORTED ALCOHOL, TOBACCO AND OTHER DRUG USE

According to self-report and/or medical chart review, mothers' reported use of substances during their pregnancy was determined. Four percent of all mothers reportedly used substances at any time during their pregnancy. Forty mothers (2.8%) reported smoking cigarettes. Thirty-four mothers (2.3%) reported drinking alcohol. Twenty mothers (1.4%) reported using illicit drugs during their pregnancy.



## **SECTION V: STRESS**

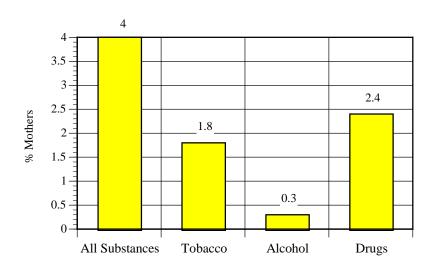
Mothers were asked to rate the amount of stress they experienced in their life over the past year, on a scale of 1 to 6, from 'no stress' to 'extreme stress.' Sixty-seven percent reported having a stress level ranging from 1 to 3 (or "low" stress) and 32.7% reported having a stress level of 4 to 6 (or "high" stress).



# SECTION VI: SUBSTANCE USE (URINALYSIS RESULTS)

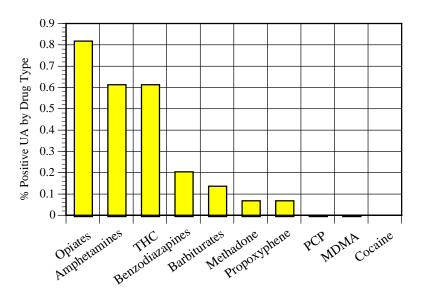
## Mothers with Positive Urinalysis

Mothers' substance use varied by type of substance. Based on urinalysis (UA) results, 4% of mothers tested positive for at least one substance (n=59). Tobacco was used by 1.8% of the mothers (n=27). Alcohol was used by 0.3% of the mothers (n=6), and illicit drugs were used by 2.4% of the mothers (n=36). These rates represent the number of mothers who used substances shortly before being admitted to the hospital for delivery. Given the short half-life of most substances for detection in UA testing, the rates are indicative of substance use at the time of labor and delivery.



# Type of Drug Used

The type of drug used by mothers ranged (in order from most commonly used to least commonly used): opiates, amphetamines, THC, benzodiazapines, barbiturates, methadone, and propoxyphene. No mothers were found to have used Cocaine, PCP, or MDMA (Ectasy). A small proportion of substance-using mothers were found to be poly-drug users (18%). Note that the prevalence of specific drugs is influenced by the fact that different substances remain detectable in the urine for different periods of time (see also Limitations on page 5 and the detection period and levels in Appendix B).



## Poly-Substance Users' Drug Choice Combination

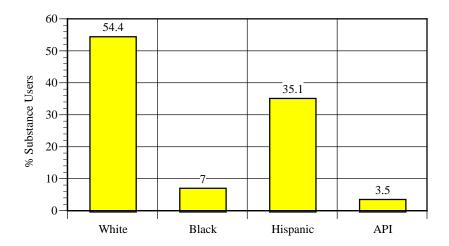
Nearly 1 in 5 substance-using mothers was a poly-substance user (whose urinalysis indicated two or three substances had been used). Nicotine was the most common substance used by poly-users. Most poly-users had used nicotine and an illicit drug. A few had used two illicit substances.

#### Age

Substance-using mothers tended to be older than non-using mothers, 30 years versus 28 years of age, respectively.

# Race/Ethnicity

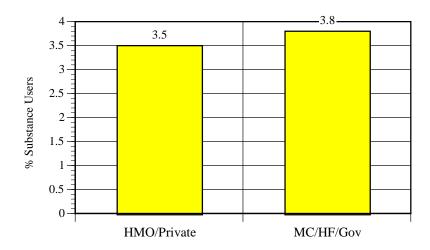
The racial/ethnic background of all substance using mothers is shown in the figure below. Non-Hispanic, white mothers represented 54.4% of substance-using mothers, which was significantly higher than all other groups, including Hispanic mothers who represented 35.1% of substance-using mothers. African-Americans accounted for 7.0% of all users and Asian/Pacific Islanders represented the smallest proportion of substance-using mothers at 3.5%.



The prevalence of substance use *within* each racial/ethnic group was also analyzed. Because only 15 African-American/Black mothers were captured in the present study, they were grouped with the 'Other' category. The "Other" category had the highest prevalence rate of 13.8% and white mothers had a prevalence rate of 7.9%. Hispanic/Latina and Asian/Pacific Islander mothers had prevalence rates of 2.2% and 1.4%, respectively.

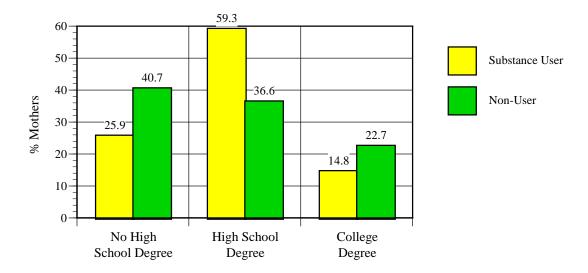
## Source of Payment

Mothers with government-funded medical coverage and mothers with private insurance, HMO, or self-pay were equally likely to be users. Among mothers who used HMO, private insurance, or self-pay, 3.5% were substance-users. Among mothers who had government funding (Medi-Cal, Healthy Families, or other government funding), 3.8% were substance users.



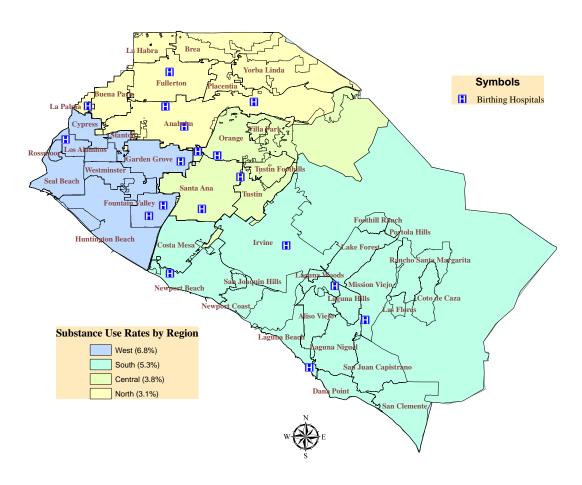
## Education

Mothers' substance use varied by educational level. While the majority of all mothers in the study (40%) had no high school degree, most substance users had at least a high school education. Specifically, among substance-using mothers, the majority (59.3%) had at least a high school degree, while only 25.9% of those testing positive did not. Having a college degree (or higher) appeared to be a protective factor, resulting in the lowest prevalence of substance use just before giving birth (14.8%).



# **Regional Prevalence Rates**

As shown in the map and table below, regional differences were noted in the prevalence of substance use among pregnant women in the study. Specifically, mothers who resided in the western (6.8%) and southern (5.3%) regions of Orange County had higher rates in the use of all substances compared to mothers living in central (3.8%) and northern (3.1%) regions. Similarly, these geographic differences held for illicit drug use, where the highest rates of use were found in the western and southern regions of the county.

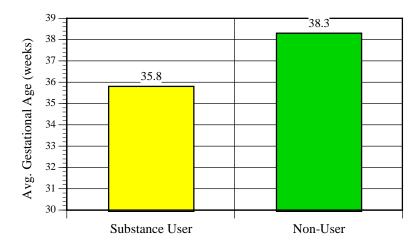


Summary of Substance Use by Region

	All		
Region	Substances	Drugs	Nicotine
West	6.8%	3.8%	2.5%
South	5.3%	3.3%	2.0%
Central	3.8%	1.9%	0.6%
North	3.1%	1.0%	2.0%

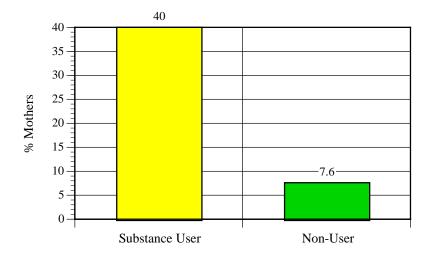
# **Gestational Age**

The mean gestational age for substance-users was 2.5 weeks shorter compared to that for non-users (35.8 weeks vs. 38.3 weeks).



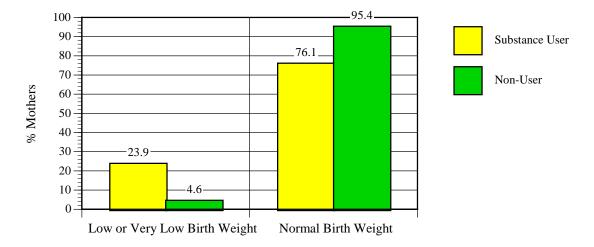
# **Gestational Age (Prematurity)**

About 4 in 10 substance-using mothers (40%) had a premature baby (defined as 36 or fewer weeks in gestational age). In sharp contrast, less than 1 in 10 non-substance using mothers (7.6%) had a premature baby.



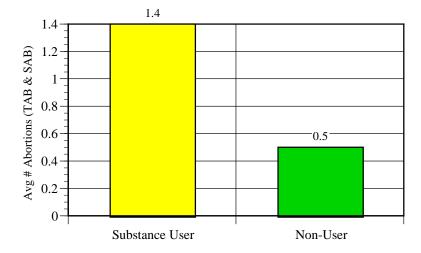
# Birth Weight

Substance-using mothers delivered more very low or low birth weight babies (23.9%) than non-using mothers (4.6%). Conversely, the majority of non-using mothers (95.4%) had babies with healthy birth weights compared to only 76.1% of substance-using mothers.



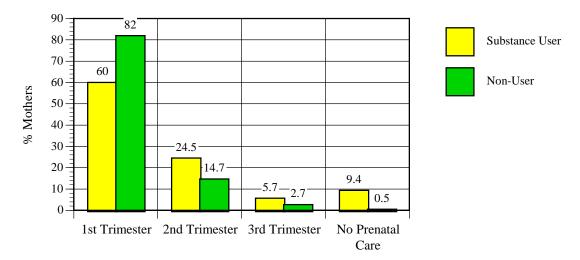
# **Pregnancy History**

The mean number of previous spontaneous abortions (or miscarriages) and therapeutic abortions was almost three (2.7) times higher for substance-users (1.4 abortions) compared to non-users (0.5 abortions).



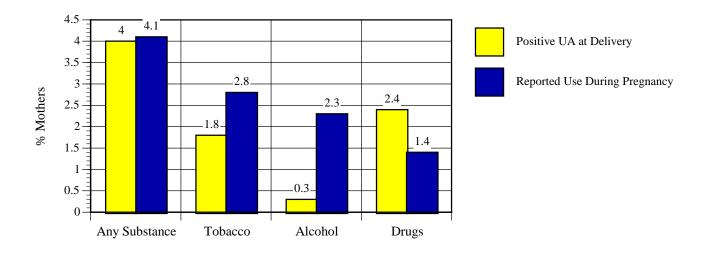
# Prenatal Care - Trimester in which Care Began

Almost 10% of substance-using mothers had no prenatal care in comparison to only 0.5% of non-substance using mothers, a factor predictive of healthy pregnancies and babies. More than half (60.1%) of substance-using mothers had prenatal care in the first trimester, followed by a quarter (24.5%) in the 2<sup>nd</sup> trimester, and 5.7% in the 3<sup>nd</sup> trimester. A large majority of non-substance-using mothers (82%) started prenatal care early in their pregnancy—in the first trimester. Some non-using mothers (14.7%) began prenatal care in their second trimester, and only 2.7% began care in their 3<sup>nd</sup> trimester.



# Reported Substance Use

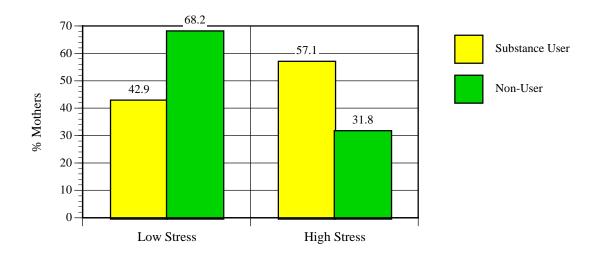
Reported substance use during the course of the pregnancy, according to the mother and/or medical records, was compared with mothers' actual substance use (based on the urinalysis tests that assessed substance use shortly before delivery). While the reported substance use prevalence rate was similar to the urinalysis (UA) results, important differences were noted. Specifically, mothers who were using illicit drugs (2.4%) were much less likely to report their drug usage to their prenatal care provider(s). Conversely, alcohol and tobacco use were more prevalent in reported data compared to the UA data.



For those mothers who had a positive UA, the majority did not disclose (or report) their substance use. About half of tobacco-using mothers did not disclose cigarette use. Three out of four (75%) mothers who drank alcohol did not disclose their drinking. A large majority (83%) of illicit drug users did not disclose their drug use to their medical provider.

#### Stress

Participants were divided into two groups—low stress and high stress—according to how much stress they reported experiencing over the past year. High stress was reported more often by substance-using mothers (57.1%) than non-using mothers (31.8%). Conversely, low stress was reported more often by non-substance-using mothers (31.8%) than substance-using mothers (42.9%).



## **SECTION VII: CONCLUSIONS**

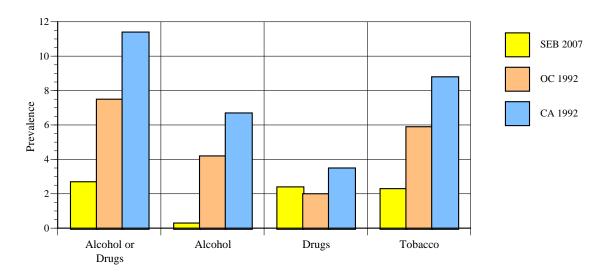
The goal of the current study was to assess the prevalence rate of babies exposed to alcohol, tobacco or other drugs. The study has determined that the current prevalence of substance-exposed (SEB) babies in Orange County at the time of labor and delivery is 4% for all substances. Tobacco (nicotine) was the most common substance detected (1.8%). Given that it is only detectable for 10-12 hours, alcohol was only detected in 0.3% of mothers, while the reported use was higher at 2.3%. The prevalence for illicit drugs was found to be 2.4%, with opiates, amphetamines and marijuana being most prevalent.

# Profile of Substance-Using Mothers in Orange County

In the present study, whites represented the largest proportion of substance-using mothers. Most substance-using mothers were high school graduates. Mothers from West and South Orange County had higher rates of substance use than mothers from Central and North regions of the county. Substance-using mothers were *less* likely to have had prenatal care. Also, they were more likely to initiate prenatal care later in their pregnancy when compared to mothers who did not use substances. The average number of previous spontaneous abortions (or miscarriages) and therapeutic abortions was significantly higher for substance-users compared to non-users. Substance-using mothers reported higher stress levels than non-using mothers. Substance-using mothers also delivered babies at a shorter gestational age and a low or very low birth weight compared to non-using mothers. Mothers covered by publicly-funded health insurance had the same substance use prevalence as mothers covered by private insurance/self-pay.

# Comparison to Previous Statewide Study

In the figure below, the current study results are compared to the results from a state-wide study that was conducted by Vega and colleagues in California in 1992.<sup>3</sup> The 1992 study, which also tested women at the time of labor, found that 7.5% of Orange County pregnant women tested positive for alcohol and/or drugs, compared to 11.4% statewide. While it would appear that the current prevalence rate for Orange County of 2.7% is much lower, it is important to note that this reduction is largely due to the apparent decrease in the use prevalence of alcohol and tobacco. The use of illicit drugs has actually remained the same in Orange County since 1992 (2.4% vs. 2.1%).

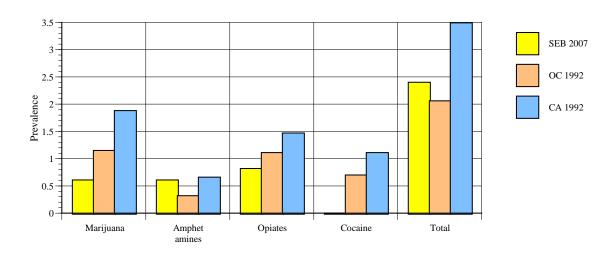


<sup>&</sup>lt;sup>3</sup> Vega, W.A. et al (1993) "Prevalence and Magnitude of Perinatal Substance Exposures in California," *The New England Journal of Medicine*, Vol. 329:850-854, No. 12.

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Taking the current reported use of alcohol (2.3%) into consideration, the overall prevalence of alcohol or drugs would be about 5% -- closer to the 1992 county rate of 7.5%. Toxicology tests for tobacco were not part of the previous study. However, the prevalence rate of *self-reported* tobacco use in Orange County was estimated to be 5.9% in 1992, compared to 2.8% in the present study – a decrease in the use of tobacco that is consistent with previous reports of reduced smoking in the county.<sup>4</sup>

Given that the prevalence of illicit drug use has remained constant since 1992, an important issue was to determine if the drugs of choice have changed over the past 15 years. As shown in the figure below, use of certain substances changed markedly.<sup>5</sup> For example, a notable increase in the prevalence of amphetamine use in Orange County has occurred since the 1992 study. Marijuana and opiates were less prevalent in the present study compared to county rates in 1992. Moreover, cocaine use was not detected in this study. Drugs such as benzodiazapines, methadone, and PCP remained relatively rare in both 1992 and 2007 (see page 12).



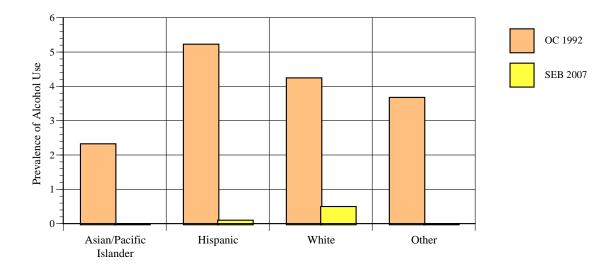
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<sup>&</sup>lt;sup>4</sup> Alcohol, Tobacco, and Other Drug Use Prevalence: 2002 Survey of Orange County Adults, County of Orange Health Care Agency, Public Health/ADEPT & Office of Quality Management.

<sup>&</sup>lt;sup>5</sup> Note that the prevalence of specific drugs is influenced by the fact that different substances remain detectable in the urine for different periods of time (see also Limitations on page 5 and the detection period and levels in Appendix B).

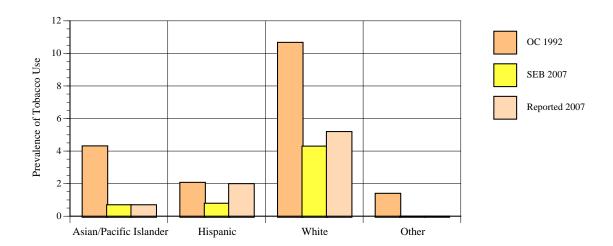
# Alcohol Use Prevalence Comparison

A comparison of the pattern of alcohol use by race/ethnicity between the present study and the 1992 statewide study showed substantial decreases in positive urinalyses across all groups. Note that these analyses do not include African-Americans because of the very small sample size that was statistically unreliable.



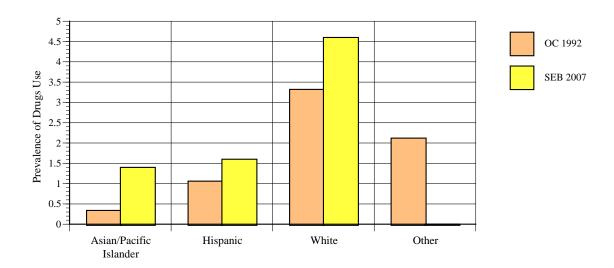
# **Tobacco Use Prevalence Comparison**

Because the 1992 study had to rely solely on self-reported tobacco use during pregnancy, we also include *reported* use along with UA results. Based on UA results, smoking has decreased notably since 1992 across all race/ethnic groups. *Reported* tobacco also decreased with the exception of Hispanic women, whose reported use of tobacco (2%) did not differ from the 1992 results.



# Illicit Drug Use Prevalence Comparison

In contrast to alcohol and tobacco use during pregnancy, the use of illicit drugs across all racial/ethnic groups has not decreased since 1992. While it was not possible to make statistical comparisons to the 1992 data, the current prevalence rate of illicit drug use for Asian/Pacific Islanders, Hispanics and White women has remained the same or increased during the past 15 years.



# Countywide Substance Exposed Babies Estimate

While the prevalence of tobacco and alcohol use appears to be lower than in previous years, the use of illicit drugs appears to have not decreased. Despite the fact that urinalysis only reveals recent use, these findings are a reliable measure of the prevalence of substance use near the time of labor and delivery. Moreover, these results also demonstrate the types of drugs babies are exposed to and the profile of the women most at risk. With these limitations in mind and given that about 45,000 babies are born each year in Orange County, based upon this study data it is estimated that about 1,800 babies annually are exposed at the time of birth to any substance (based on a 4% prevalence rate). Similarly, 1,100 are likely exposed at the time of birth to illicit drugs (based on 2.4% prevalence rate). These expectant mothers are placing their unborn children at risk for developmental, physical, behavioral, and social disabilities due to their prenatal substance use.



# ORANGE COUNTY Substance Exposed Baby Study

# Dear Labor & Delivery Nurse,

We are trying to get an idea of how many expectant mothers in Orange County have used alcohol, tobacco, or other drugs during pregnancy. Please help us by completing this brief, confidential and anonymous questionaire.

- Peel off the ID labels from this form and place on the mother's urine specimen container & lab test form.
- Seal this form in the envelope provided so that it can be mailed to the address below. Thank you.

- Jear this form in the envelope provided 30 that it can b	e mailed to the address below. Thank you.
Directions: Please use blue or black pen ● or X or 3 7  1. Pregnancy history Term births: (≥37 weeks)  Abortions (TAB or SAB):  Preterm births: (< 37 weeks) Live children:	9. What is the highest educational level of the mother?  No High School Some College College Graduate High School Graduate Post Graduate
2. What is the gestational age of this baby? weeks	10. What Zip Code does the mother live in?
3. Is this a multiple birth?  4. In what trimester did prenatal care begin?  1st  2nd  No prenatal care  Don't know	11. What is the source of payment for delivery?  HMO/Private insurance  Medi-Cal/Healthy Families  Other government program  Other
3rd	12. Did the mother smoke cigarettes during pregnancy?  Yes No/Denied Don't know
<ul> <li>5. What is the baby's birth weight? If this is a multiple birth, please report on the smallest infant.</li> <li>Very low birth weight (less than 1,500 g)</li> <li>Low birth weight (less than 2,500 g)</li> <li>Normal (greater than 2,500 g)</li> <li>6. What drugs/medications were given to the mother before the urine sample was collected?</li> <li>None</li> <li>Phenergan</li> <li>Nubain</li> <li>Demerol</li> <li>Sublimase (Fentanyl)</li> </ul>	13. Did the mother drink alcohol during pregnancy?  Yes No/Denied Don't know  14. Did the mother use illicit drugs during pregnancy?  Yes No/Denied Don't know  15. What is the birth mother's age?  Under 20 years 30 to 35 years
Morphine Other:	20 to 29 years 36 years or older
7. Preadmission prescription medications: Yes No Please specify:	<ul><li>16. Age in years:</li><li>17. Non-medical people in the labor and delivery room:</li></ul>
8. What is the mother's race/ethnicity?  White/Caucasian Hispanic/Latina African-American/Black Asian Amer. Indian/Alaskan Native Pacific Islander  Other Please specify:	Spouse/Partner Friend Mother Doula Other Please specify (e.g., sister):  18. Ask Patient (Optional) - "In the past year, how would you rate the amount of stress in your life at home or work from 1 for "no stress" to 6 for "extreme stress?"
OC Health Care Agency Research Center 405 W. 5th St., Suite 458	Place this label on specimen Place this label on test form  Participant ID # Label Participant ID # Label

405 W. 5th St., Suite 458 Santa Ana, CA 92701

Questions? Contact Dr. Curtis Condon at (714) 834-2034.

Participant ID #

M-106230-OCHC-L M12 0807 5 4 3 2 1

Appendix B: Laboratory Toxicology Procedures

URINALYSIS TOXICOLOGY TESTING	INITIAL TEST		ALTERNATIVE TEST	
		DETECTION LIIMIT		DETECTION PERIOD/LIMIT
DRUG OR DRUG CLASS	TEST USED	micrograms/	TEST USED	micrograms/
		milliliter		milliliter
				12-72 hrs
Amphetamines				
Amphetamine	Immunoassay	1	GC/MS	0.5
Methamphetamine	<b>دد</b>	1		0.5
				2-4 days
Barbiturates	cc			
Pentobarbital	"	0.3	GC/MS	0.5
Secobarbital	<b>66</b>	0.3	GC/MS	0.5
Phenobarbital		0.5	GC/MS	0.5
				1-4 days
Methadone	"	0.3	TLC	0.5
				2-4 days
Opiates				
Codeine	66	0.3	GC/MS	0.5
Morphine	66	0.3	GC/MS	0.5
				12-72 hrs
Cocaine				
Benzoylecgonine	cc	0.3	GC/MS	0.15
Benzodiazepines	66	0.3	Toxilab	1
Alprazolam (Xanax)				
Chlorazepoxide (Librium)				Up to 30 days
Clonazepam (Klonopin)				
Diazepam (Valium)				
Lorazepam (Ativan)				
Oxazepam (Serax)				
Propoxyphene				12-72 hrs
Norpropoxyphene	<i>د</i> د	0.3	TLC	1
				Up to 14 days
Marijuana (THC)	<b>cc</b>	0.05	TLC or GC/MS	0.04
	1		<del></del>	
Nicotine	Immunoassay	100 ng/ml		12-72 hr/Very short
Alcohol	Immunoassay	20 mg/dL	GC	20 mg/dL
				2-4 days
Opiates	TT C	_	00/20	0.0
Meperidine	TLC	1	GC/MS	0.2 mcg/mL
Hydrocodone Oxycodone	Immunoassay Immunoassay	0.3	"	0.2 mcg/mL
	1	1		0.5 mcg/mL

 $GC/MS = Gas\ Chromatography/Mass\ Spectrometry,\ GC = Gas\ Chromatography,\ TLC = Thin\ Layer\ Chromatography.$