Assignment 1: Information Seeking

# Dataset 1: Chemicals in Cosmetics Database

**Citation of Dataset**: State of California. (2018, September 8). Chemicals in Cosmetics [dataset]. Retrieved September 9, 2018, from Healthdata.gov: <https://healthdata.gov/dataset/chemicals-cosmetics>.

**Details of the license or terms of use**: This database has an Open Data Commons Open Database License (Healthdata.gov, 2018a). This allows users to use the database if it is attributed and works that use the data are provided with the same terms (e.g., public use) (University of Virginia Library, n.d.).

**Why these data are interesting**: Between 2004 and 2016, over 5,000 adverse effects from cosmetic products (including shampoo) were reported to the Food and Drug Administration (FDA), and the number of cases reported per year increased between 2005 and 2016 (Sifferlin, 2017). In addition, there are people concerned about the impact of the chemicals used in cosmetics (e.g., parabens, phthalates) on human health; although research the long-term impacts of cosmetic use on human health are limited (Marshall, 2016; The American Cancer Society Medical and Editorial Content Team, 2014; Geraghty, 2005). The FDA does not approve cosmetics before they are put on the market, and they do not have the authority to issue recalls on cosmetics (Food and Drug Administration, 2018a).

The California legislature passed the California Safe Cosmetics Act in 2005, requiring manufacturers to report a list of cosmetic products sold in the state of California which contain ingredients suspected to cause adverse health effects (e.g., cancer, developmental problems, reproductive health problems) (California Department of Public Health, 2017). Because companies must report if they have aggregate sales for cosmetics of at least a million dollars and sold cosmetics in California since the beginning of 2007, the cosmetic products in this database are also likely sold throughout the country (Healthdata.gov, 2018a). As a result, this data could help users gain a better understanding of the ingredients used in popular cosmetics.

**Potential data users and decision-makers**: I see three major groups that are likely to use this dataset. The first are consumers that are interested in the chemicals used in cosmetics, the data can help them decide whether to purchase or keep using a product. The second are activists who are interested in lobbying state or federal legislatures to ban certain substances, which they have done in the past for phthalates, or to make the public more aware of the chemicals in cosmetics (Geraghty, 2005). The third are state and federal legislatures, who may be interested in increasing oversight of cosmetics or who also want to ban certain chemicals used in cosmetics. The data in this study could support the goals of the second and third audiences because analyzing this data could help them learn more about which potentially harmful chemicals are most commonly used.

**Three questions this data might help to answer**:

1. What are the brands and cosmetic types (e.g., mascara, concealer) that are reported in California’s database most often?
2. What are the chemicals that are reported in California’s database most often?
   1. The California Department of Public Health also maintains a list of all chemicals listed in the Chemicals in Cosmetics Database, with links to profiles about the chemical and its potential effects (California Department of Public Health, n.d.). In addition to getting a list of commonly used chemicals, it would be interesting to see if the most common chemicals are associated with similar possible adverse health effects.
3. Have there been any reported adverse reactions to any of the products in California’s database?
   1. The FDA maintains the CFSAN Adverse Event Reporting system, which contains information on adverse event reports submitted for cosmetics, as well as food and dietary substances (Food and Drug Administration, 2018b; Sifferlin, 2017). Although there is the potential for underreporting of adverse events, the list of products in the FDA database can be compared to the list of products in California’s database (Sifferlin, 2017). Although the same product showing up in both databases is not proof of a link between the use of a chemical and an adverse event, it could be a cause for further investigation.

# Dataset 2: Maryland Average Daily Traffic

**Citation of Dataset**: MD iMAP, Maryland Department of Transportation (MDOT), Maryland Department of Transportation State Highway Administration (MDOT SHA), Maryland Transportation Authority (MDTA), Maryland Department of Transportation State Highway Administration. (2017, July 1). Maryland Annual Average Daily Traffic - Annual Average Daily Traffic (SHA Statewide AADT Lines) [dataset]. Retrieved September 9, 2018, from Maryland GIS Data Catalog: <http://data.imap.maryland.gov/datasets/maryland-annual-average-daily-traffic-annual-average-daily-traffic-sha-statewide-aadt-lines?geometry=-84.68%2C37.336%2C-69.859%2C40.331>.

**Details of the license or terms of use**: According to the metadata entry for this dataset, there are no access constraints for the data and the data can be freely distributed as long as the metadata entry is not modified/deleted (Maryland Department of Transportation, 2017). The State of Maryland must be cited in any analysis that is derived from this dataset (Maryland Department of Transportation, 2017).

**Why these data are interesting**: Traffic is a major problem in the State of Maryland. This is reflected by a recent report by the website WalletHub which claims that Maryland is the third overall worst state to drive in; in terms of traffic congestion Maryland was ranked as the second worst (Aaron, 2018; McCann, 2018). Furthermore, this problem can be an expensive one to fix; for example, a 2017 plan to improve congestion on I‑270 was estimated to cost $100 million (Shaver, 2017). This dataset provides information about annual average daily traffic and annual average week day traffic for 2006-2016, and annual average daily traffic by vehicle type for 2016, for public roadways throughout Maryland (Maryland Department of Transportation, 2017). Therefore, it will allow those accessing the data to learn more about the areas in Maryland with the heaviest traffic.

**Potential data users and decision-makers**: I see two major groups that are likely to use this dataset. The first are people who drive in Maryland, they can use the data to learn more about which public roadways have the highest average daily traffic. This could help determine where to live or the best way to commute to work. The second are state and/or local governments (including legislatures/city councils), who can use this data to determine what infrastructure improvements are needed (e.g., a roadway that has particularly high use may be highly congested or need repairs due to the impact of having many cars on a roadway). This is particularly important since Amazon is considering locating their new headquarters in Northern Virginia; the District of Columbia; and Montgomery County, Maryland (Cohn, 2018). Estimates from Amazon indicate that this could bring 50,000 new jobs to the region, which may cause people to move to Maryland, which could cause more further strain on the public roadways and congestion (Cohn, 2018; McCartney & Shaver, 2018). This data could potentially be used by state legislatures, local governments, and/or transportation planners as a foundation to be used to develop projections about how new residents will impact traffic levels as well as plans to mitigate the impacts.

**Three questions this data might help to answer**:

1. Have there been specific areas or regions within Maryland that have seen increased average daily traffic levels between 2006 and 2016?
2. For specific areas and regions within Maryland with increased average daily traffic levels, has this resulted in a significant increase in traffic accidents and fatalities? To answer this question, we would need data on traffic accidents and fatalities in Maryland. However, this might be difficult as the publicly available data on traffic crashes and fatalities from the Maryland Highway Safety Office and the National Highway Traffic Safety Commission are provided in aggregate and the specific location of the accident is not available (Maryland Department of Transportation, n.d., National Highway Traffic Safety Administration, n.d.).
3. Do areas that have a higher average number of busses on public roadways have a lower average number of cars? We will need to factor in population data for the area, because urban areas will have a higher number of busses and cars. However, because the data is collected at specified program count stations, it may be difficult to get an exact population for the surrounding area (Maryland Department of Transportation, 2017).

# Dataset 3: National Vital Statistics System Provisional Drug Overdose Death Counts

**Citation of Dataset**: Ahmad FB, Rossen LM, Spencer MR, Warner M, Sutton P. (2018). Provisional drug overdose death counts [dataset]. Retrieved September 9, 2018, from Healthdata.gov: <https://healthdata.gov/dataset/vsrr-provisional-drug-overdose-death-counts>.

**Details of the license or terms of use**: According to the summary page for this dataset on Healthdata.gov, the license for use of this data is “U.S. Government Works” (Healthdata.gov, 2018b). This means that there is generally no limitation on how the data can be used, unless it violates privacy, indicates endorsement by a U.S. government agency, or was done by a contractor (USA.gov, 2018). Because the data are counts of overdose deaths happening in a state in a given month, it cannot be traced back to an individual, so the privacy of an individual who died from an overdose would not be violated (Ahmad , Rossen, Spencer, Warner, & Sutton, 2018).

**Why these data are interesting**: Opioid overdose rates have been increasing in recent years (National Institute on Drug Abuse, 2018a). For example, in 2015, over 33,000 Americans died due to an opioid overdose (including prescription opioids, heroin, and synthetic opioids) (National Institute on Drug Abuse, 2018a). In 2016, synthetic opioids surpassed prescription opioids as the most common drug involved in U.S. overdose deaths (National Institute on Drug Abuse, 2018b). Synthetic opioids are significantly stronger than other opioids and require a more sustained dose of naloxone (used to treat an overdose) (Fox, 2018). Because of the severity of the problem, data is needed to determine the scope of the problem and where it is concentrated. The data provides estimated monthly overdose counts in each state and the District of Columbia from 2015-2018 (Ahmad , Rossen, Spencer, Warner, & Sutton, 2018). Furthermore, the data provide estimated monthly overdose deaths due to the following drugs: cocaine, heroin, methadone, natural and semi-synthetic opioids, opioids, psychostimulants with abuse potential, and synthetic opioids (Ahmad , Rossen, Spencer, Warner, & Sutton, 2018).

**Potential data users and decision-makers**: I see three major groups that are likely to use this dataset. The first are state and federal agencies, particularly public health agencies. If there is a significant increase in overdose deaths due to a specific drug, the state government would need to develop a plan for mitigating the problem, in collaboration with necessary federal agencies. The second are health care providers, particularly hospitals, who may see an increase of patients due to an increase in overdose deaths and can use this data to add context to what they are witnessing first-hand. They will need to develop a plan for treating those who are overdosing on a drug, train their staff to effectively do so, and order enough naloxone to handle the demand (especially because some drugs require a more sustained dose) (Fox, 2018). Hospitals can use this data to determine how to target their planning and training. The final group are state and federal legislatures, who can use this data to determine the scope of the problem and where it concentrated. This could be used to determine if new programs need to be created or modified, statutory authority for state agencies needs to be increased, and/or if funding needs to be increased for programs that target substance use disorders.

**Three questions this data might help to answer**:

1. What states have seen an overall increase in overdose deaths since 2015?
2. For states with an increase in overdose deaths since 2015, is there one drug that is driving the increase or are there multiple drugs driving the increase?
3. Are there particular regions where overdose deaths due to certain drugs are more common than others?

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