

MIS 0855 Fall 2017 – Data Science

Day 10 – In Data We (Mis)Trust

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Do you trust your data?

- You have a decision to make.
- You have theory in mind and hypotheses to test.
- You have data at your hand!
- Do you believe in your data?



http://www.forbes.com/2010/07/21/trust-privacy-technology-wall-street-opinions-laneri-noer-trust_land.html

Can we trust the FBI's national crime stats?



The screenshot shows the top portion of the FBI's website for the 2013 Crime in the United States report. At the top left is the text "Uniform Crime Reports". To the right is a "Select Language" dropdown menu and a "Get FBI Updates" button with an envelope icon. Below this is a navigation bar with links: Home, About Us, CJIS, UCR, Crime in the U.S., 2013, and Crime in the U.S. 2013. The main banner features the text "U.S. DEPARTMENT OF JUSTICE • FEDERAL BUREAU OF INVESTIGATION • CRIMINAL JUSTICE INFORMATION SERVICES DIVISION" above a large graphic that says "CRIME in the United States 2013". The word "CRIME" is in large yellow letters, and "in the United States 2013" is in white and yellow. Below the banner is a dark bar with navigation links: "Criminal Justice Information Services Division", "Feedback | Contact Us | Data Quality Guidelines | UCR Home".

About Crime in the U.S. (CIUS) By offense, by region, by state, by local agency

Offenses Known to Law Enforcement	Persons Arrested	Police Employee Data
<ul style="list-style-type: none"> Violent Crime Property Crime Clearances <p>(offenses "closed" by arrest or exceptional means.)</p> <ul style="list-style-type: none"> Go to Offense Tables 	<p>Expanded Offense Data</p> <ul style="list-style-type: none"> Homicides Trends Rates Weapons <p>Includes data about the age, gender, and race of arrestees for 28 separate offenses including murder</p> <ul style="list-style-type: none"> Go to Arrest Tables 	<p>Includes data about sworn officers and civilian employees</p> <ul style="list-style-type: none"> Go to Police Employee Tables

About the Uniform Crime Reporting (UCR) Program
 A history of the UCR Program and an overview of what UCR can provide
[Read more](#)

A message from the Director of the FBI
[Read more](#)

Download files from this publication
 Access a compressed file with all of the spreadsheets and PDFs in this publication
[Go to previous editions of](#)

<http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s./2013/crime-in-the-u.s.-2013>

Uniform Crime Reports

[Home](#) • [About Us](#) • [CJIS](#) • [UCR](#) • [Frequently Asked Questions](#) • [UCR General FAQs](#)

UCR General FAQs

[View printable version \(pdf\)](#)

THE BASICS

What is the UCR Program?

The UCR Program is a voluntary city, university and college, county, state, tribal, and federal law enforcement program that provides a nationwide view of crime based on the submission of statistics by law enforcement agencies throughout the country.

OFFENSE INFORMATION

Which specific crimes are reported to the UCR Program, and why were these crimes identified for reporting?

The UCR Program collects offense information for murder and nonnegligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft, motor vehicle theft, and arson. These are Part I offenses and are serious crimes by nature and/or volume. Not all crimes, such as embezzlement, are readily brought to the attention of the police. Also, some serious crimes, such as kidnapping, occur infrequently. Therefore, the UCR Program limits the reporting of offenses known to the eight selected crime classifications because they are the crimes most likely to be reported and most likely to occur with sufficient frequency to provide an adequate basis for comparison.

Problems with UCR Data

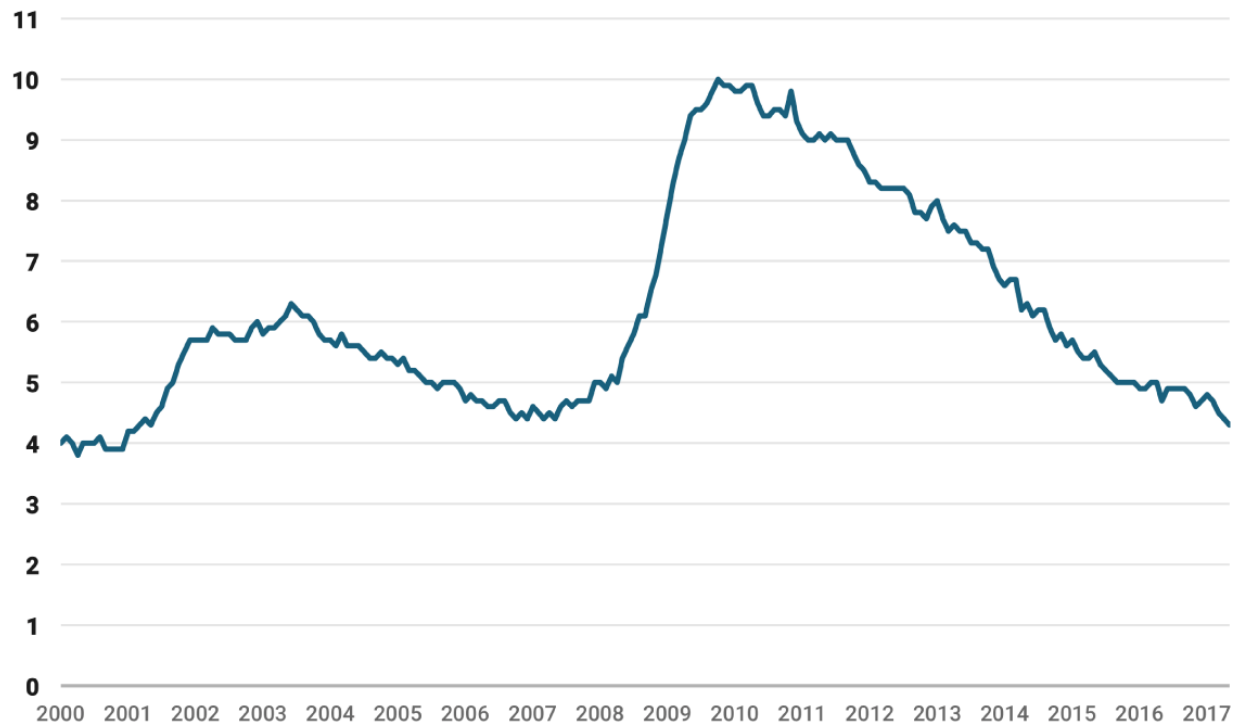
- *The UCR reports only crimes known to the police.*
- *The UCR reports on only the most serious crime incidents.*
- *The UCR does not collect all relevant data.*
 - “Forcible rape of a male victim is recorded as an aggravated assault.”
- *The UCR reveals more about police behavior than it does about criminality.*
 - Reporting by local police to the FBI is on a voluntary basis.

Unemployment Rates – Can We Trust This?

MARKETS | CHART OF THE DAY

UNEMPLOYMENT RATE

Percent of civilian labor force



SOURCE: Bureau of Labor Statistics via FRED

BUSINESS INSIDER

<http://www.businessinsider.com/us-jobs-report-may-2017-6>

How to Calculate Unemployment Rates

People looking for work
 ↓
 # Unemployed
 Unemployment Rate = $\frac{\text{# Unemployed}}{\text{# Labor Force}} \times 100$
 ↑
 people working + people looking for work

- Unemployment rates can be lower when more people stop looking for work.
- when more people work for part-time jobs.

Hospital Performance Measures

$$\text{Readmission Rate} = \frac{\text{\# of Patients Who Are Re-admitted in 30 days}}{\text{\# of Discharged Patients}}$$

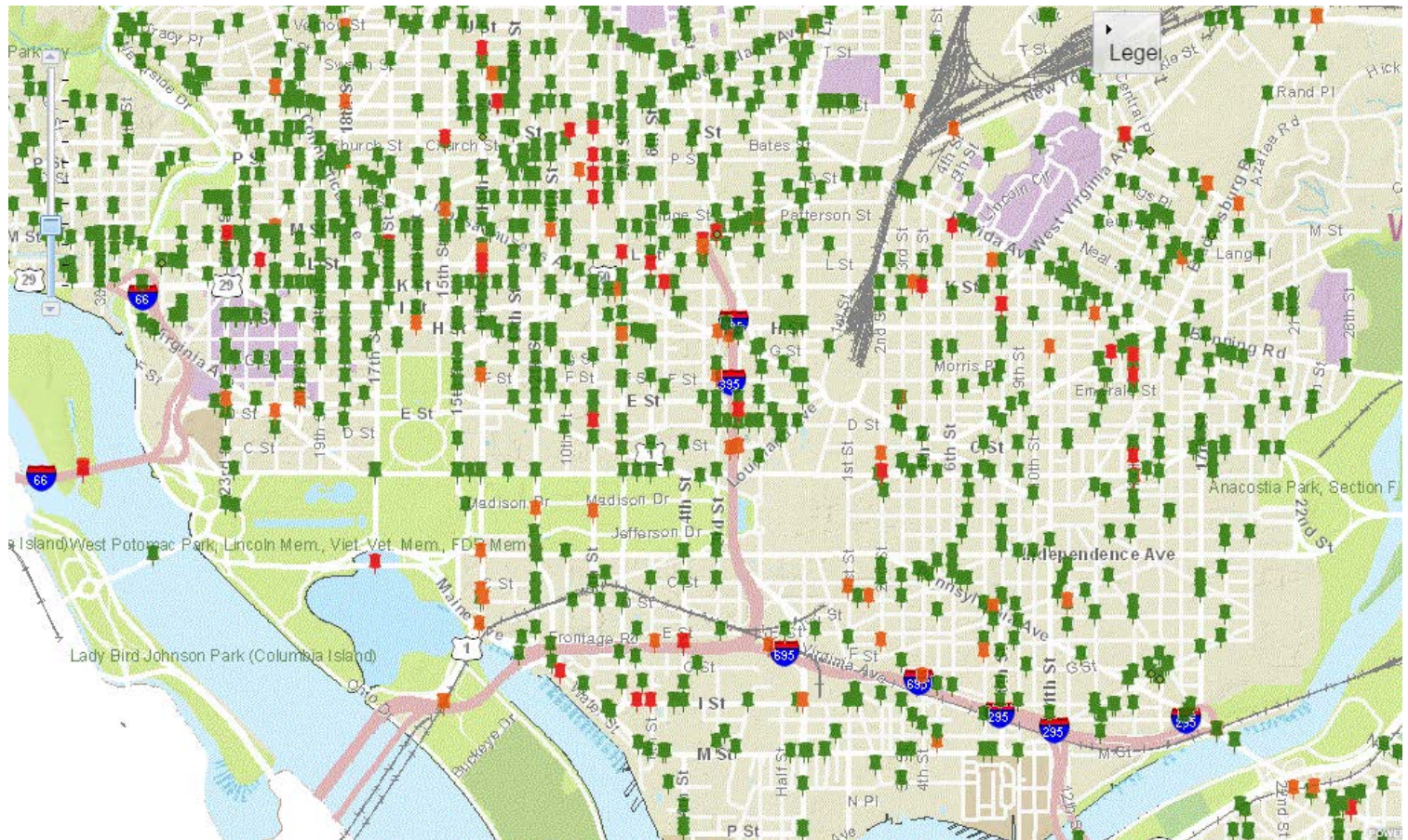
$$\text{Mortality Rate} = \frac{\text{\# of Patients Who Died at Hospital}}{\text{\# of Discharged Patients}}$$

- How can a hospital improve these performance *measures*?

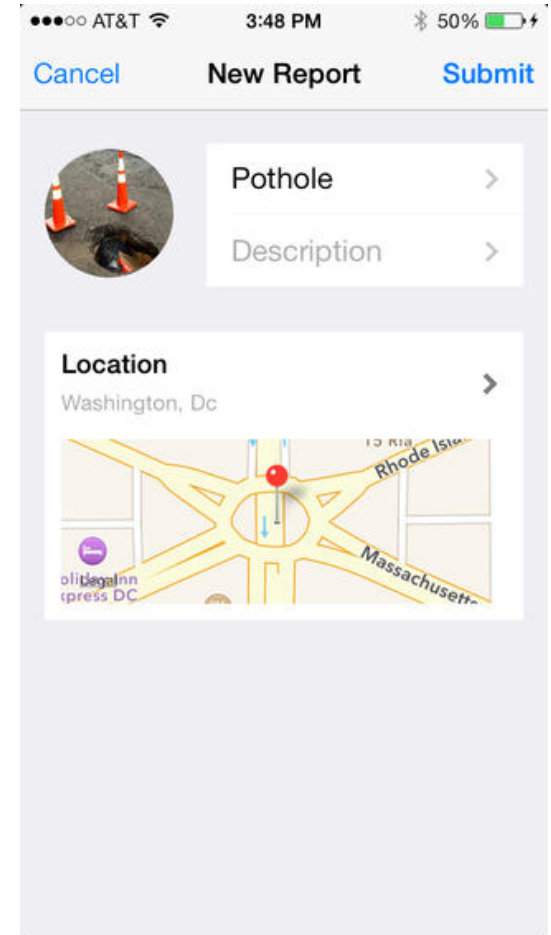
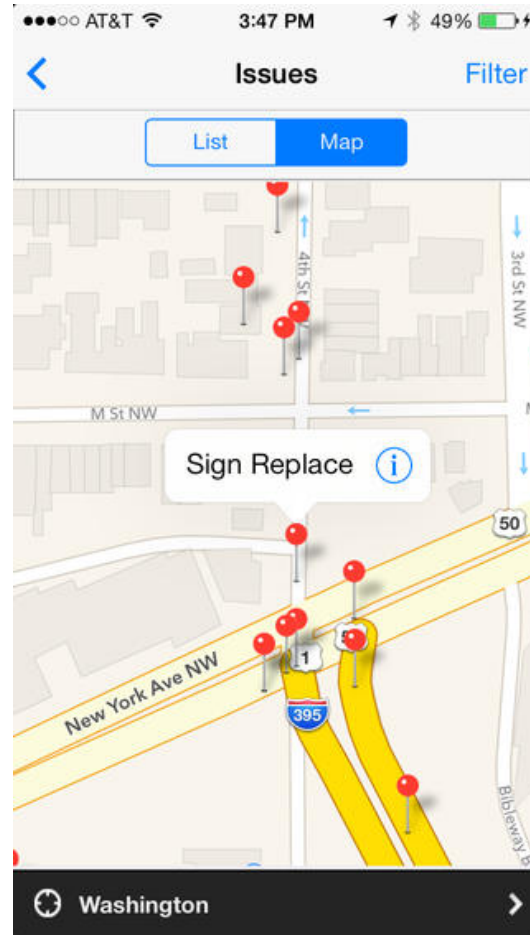
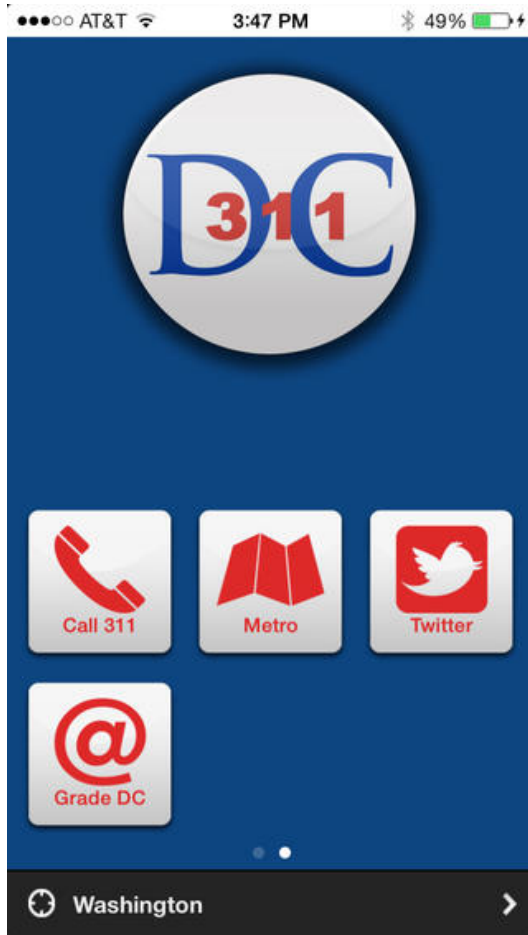


<http://www.communitechservices.com/hospital-contact-centers/>

Washington D.C. Potholes Map (<http://ddot.dc.gov/service/pothole-repair/>)

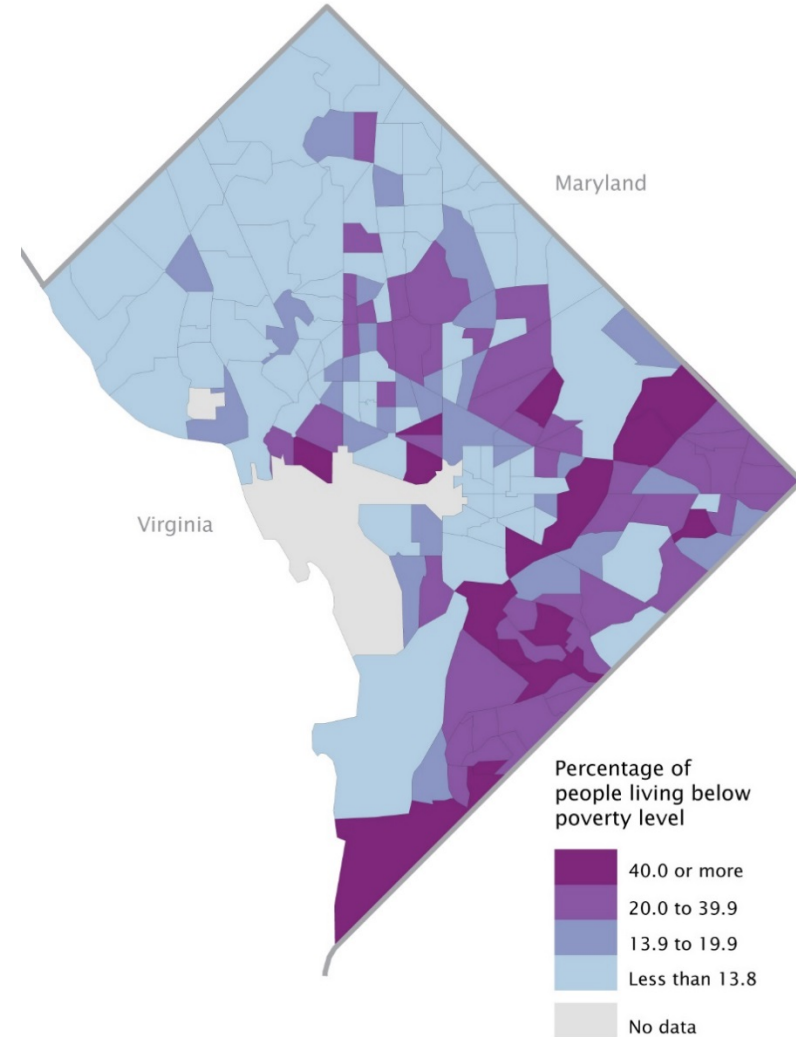
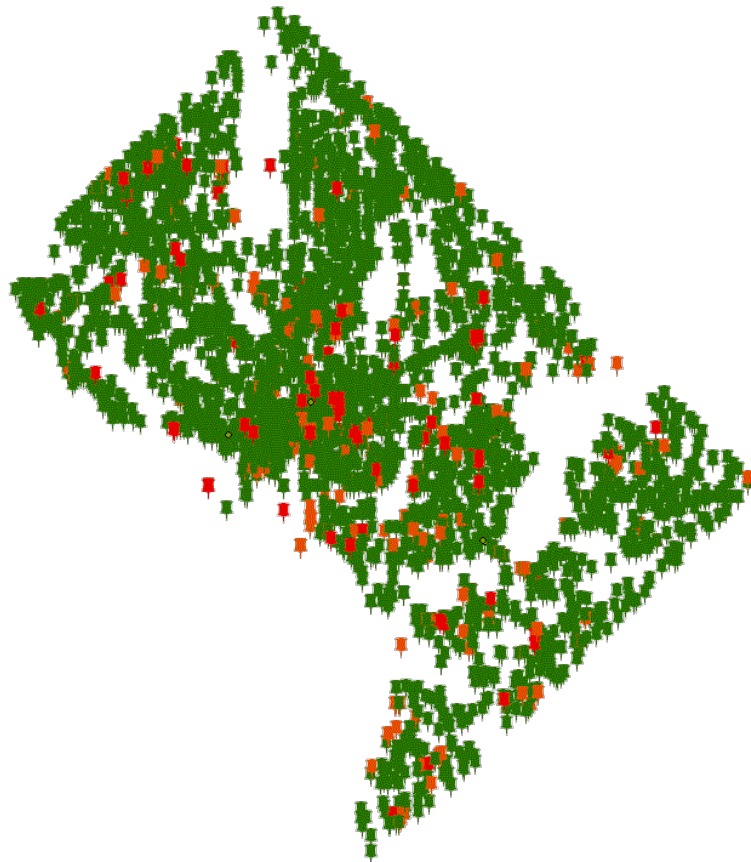


Reported via DC 311 *Mobile App*



<https://itunes.apple.com/us/app/washington-dc-311/id498625758?mt=8>

Percentage of People in Poverty in the Past 12 Months for the District of Columbia by Census Tract: 2006–2010



Source: U.S. Census Bureau, 2006–2010 American Community Survey. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/acs/www.

<http://gis.ddot.dc.gov/potholeapp/IdentifyPotholes.aspx>

<http://www.citylab.com/work/2011/12/map-day-uneven-spread-urban-poverty/721/>

Do we believe Yelp stars and reviews?


Masters Bar & Restaurant

★ ★ ★ ★ ☆
26 reviews
Details

★ Write a Review


Add Photo
Share
Bookmark

\$\$ · Bars, American (Traditional) Edit



1535 N Carlisle St
Philadelphia, PA 19121
Avenue of the Arts North

Get Directions
(215) 787-9933
Message the business
mastersphilly.com



Masters chopped salad
by Waylon N.

“Even when I moved to a new apartment farther away I will still take the extra walk to go there instead of the other bars near **temple**.” in 5 reviews

“EDIT: **Whalen** just made me a cocktail based on the following directions “I like tequila, I don’t like sweet, and I love spicy” and then he made me a cocktail sent from the tequila gods. :)” in 2 reviews

“Plenty of **TVs** on the wall and the staff are cool about switching it to whatever sporting event you may be interested in.” in 3 reviews
Has TV: Yes

Order Delivery or Pickup

Pickup

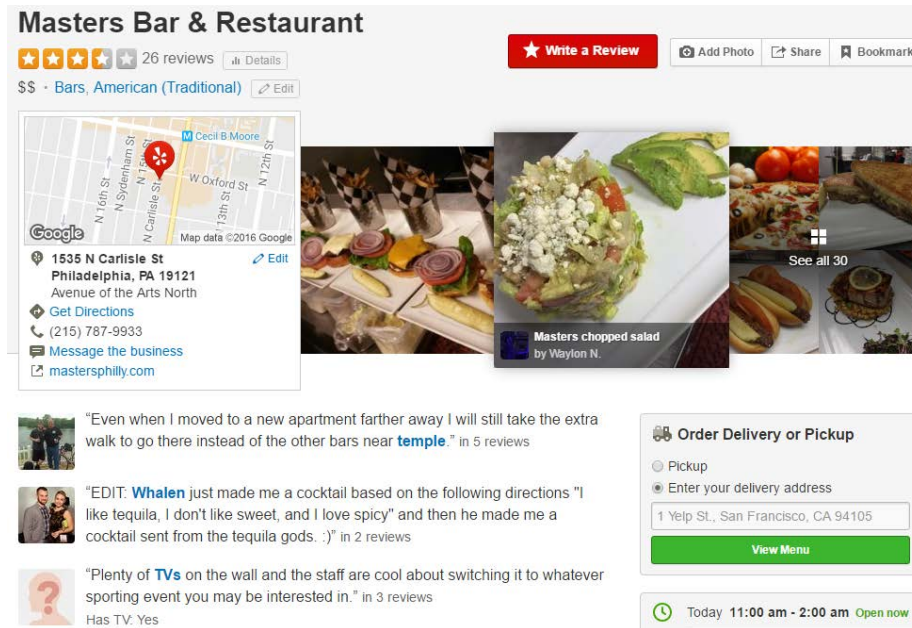
Enter your delivery address

1 Yelp St., San Francisco, CA 94105

View Menu

🕒 Today 11:00 am - 2:00 am Open now

Group Discussions – Customer Reviews



Masters Bar & Restaurant
 ★★★★★ 26 reviews
 Write a Review Add Photo Share Bookmark
 \$\$ Bars, American (Traditional)
 1535 N Carlisle St Philadelphia, PA 19121
 (215) 787-9933
 mastersphilly.com

“Even when I moved to a new apartment farther away I will still take the extra walk to go there instead of the other bars near **temple**.” in 5 reviews

“EDIT: **Whalen** just made me a cocktail based on the following directions “I like tequila, I don’t like sweet, and I love spicy” and then he made me a cocktail sent from the tequila gods. :)” in 2 reviews

“Plenty of **TVs** on the wall and the staff are cool about switching it to whatever sporting event you may be interested in.” in 3 reviews

Order Delivery or Pickup
 Pickup
 Enter your delivery address
 1 Yelp St., San Francisco, CA 94105
 View Menu
 Today 11:00 am - 2:00 am Open now

- In a group of two or three, come up with reasons why we shouldn’t believe stars and reviews in Yelp, Amazon.com, or iTunes.
- If you’re a manager at Yelp or Amazon.com, how would you remedy these problems?

The Ways Data Becomes Untrustworthy

- Data is underreported.
- Data does not capture all occurrences or complete facts.
- Data can be manipulated by data creators.
- Data can be processed incorrectly.
- So, what do we do? Just throw them out?
 - No. It could be better than nothing.
 - Use the data judiciously with being mindful of the issues. Don't trust the data completely.