1. Slide 1: Introduce myself as a student and a math teacher.
   1. Share experiences over the past few days, especially “what job is this, and how can I get that job, because this is exactly what I want to do.”
   2. Introduce project:
      1. a good way to practice basic exploratory statistics with a good-sized data set (using R)
      2. topic is directly applicable to my own situation, being relatively new to the city
      3. crime is an area of interest to many people: why do people do the things they do, and how often do they do it?
      4. possibility of sharing results with students, bringing excitement to the classroom around statistics
2. Slide 2: Introduce project
   1. Some questions I set out to answer with the project
   2. Slide 3: introduce the data sources used for the project. Highlight the benefits of having this data available to the public. Police data like this help to foster transparency in government, and are being utilized more and more by police bureaus themselves in increasing effectiveness in proactively and preventively policing.
3. Slide 4: Speak about general trends.
   1. Total crime has decreased over time, but…
   2. Slide 5: Crime rates have also gone down with rising population. These three variables are linked to each other (among many others, including possible recent economic gains, businesses moving to the area, etc.). This is an area where it’s difficult to eliminate confounding variables.
   3. Slide 6: Looking at some specifics: notice trends, but also the absolute numbers. Here we have the trends in homicide, an example of a crime against person. The correlation between homicide and time is lower than that for total crime incidence; however, homicide rates in Portland are also fairly low compared to other cities with similar population.
   4. Slide 7: Burglaries (an example of a property crime), on the other hand, show a dramatic decline over the time period specified. Note the high standard deviation, and the decreased incidence: 7255 in 2004 compared to 4102 in 2014.
   5. Slide 8: One statutory crime of interest is DUII (influence of intoxicants). High of 2415 in 2006 to low of 1483 in 2014.
4. Moving on to questions of interest:
   1. Slide 9: Speaking of intoxicants, one interesting association was found between liquor law offenses and drug-related offenses. The graphs are shown here: notice the increase in liquor-related when drug-related goes down. Mention marijuana legalization (this doesn’t come into play until 2015).
   2. Slide 10: Examine the actual correlation between the two. This is considered a relatively strong relationship for sociological data. Implications could be several: emphasis of policing, cost of one substance or another, perhaps an interruption in the drug supply chain, haha.
   3. Slide 11: Several studies have indicated that economic factors can play a part in crime rates. In particular, Gould, Weinberg and Mustard found in 2002 that good economic markers are, in fact, correlated with lower incidence of certain types of crime.
   4. Slide 12: One offense that I guessed might be affected by unemployment is larceny. In looking at Portland’s data, there was a relatively weak correlation found between larceny offenses and unemployment rates. Other economic markers would be good to include if data were available, such as relative wages, etc., but no strong relationship was found at this level.
   5. Slide 13: The strongest relationship actually turned out to be with drug offenses, and it was a negative one of moderate strength. Can you guess which crimes had a positive correlation with unemployment?
   6. Slide 14: There was actually only one: liquor law offenses.
   7. Slide 15: The Ferguson Effect was talked about in the media following the events in Ferguson, MO on August 9, 2014. This effect was described by some in leaders in law enforcement as an increase in crime rates following Ferguson as a result of law enforcement officials being reluctant to utilize necessary force in dangerous situations for fear of backlash by media and the public.
   8. Slide 16: Shown here is the distribution of daily robberies for 2004-2014. It follows a fairly normal pattern, with a small positive skew. To examine the question of whether events in Ferguson had an effect on Portland’s robbery rates, the time frame under consideration was narrowed. Data was only available through December 31, 2014. This limits the post-Ferguson available data to 144 days. The period before the Ferguson event was also limited to 144 days to ensure that a symmetrical comparison was being made. This puts the start date for the pre-Ferguson period of interest at March 18, 2014.
   9. Slide 17: It is apparent that the mean number of robberies per day is lower in 2014 than the overall mean for 2004-2014. The question is, is the mean before the August 9 significantly different than the mean afterward? To determine the significance, Student’s t-test was performed on the two means, with an alpha-confidence level of 0.05. The t statistic calculated was 0.464, with 250 degrees of freedom. This gives a p-value of 0.6431, well outside the confidence level desired. This leads to the conclusion that the events in Ferguson had did not have a statistically significant effect on robberies in Portland. Of course, it would be desirable to perform a similar calculation with data extending further in both directions; such data is not yet available.
   10. Slide 18: Studies have also been done on whether certain areas are safer than others, depending on the racial composition of the neighborhood in question. Portland is a notoriously “white” city, but certain areas do have differing racial proportions.
   11. O’Flaherty and Sethi conducted interesting research in 2007 examining the relationship between racial segregation and robbery rates.1 Their fascinating paper postulates that, given a robbery attempt, since whites are perceived as less likely than blacks to resist robbery, whites are also more likely to be targeted by robbers. Because whites are more likely to be targeted, they are also more likely to move to a safer neighborhood if their economic circumstances allow it. Since whites are also, on average, better off economically than blacks, these safer neighborhoods tend to become predominantly white, while the more dangerous neighborhoods tend to become more and more black. “Hence, conditional on income, blacks live in more dangerous neighborhoods than whites.”
   12. Slide 19: This slide shows the robbery frequency based on the proportion of black, white, and not white people in Portland’s 95 neighborhoods. As can be seen from the correlation coefficients, some effect seems to be taking place, but no strong relationship is observed. This brings us back to O’Flaherty and Sethi’s conclusion emphasizing “conditional on income.” Unfortunately, further analysis, including neighborhood income information, is beyond the scope of this project.