Analyzing Crime in Lincoln Nebraska: Answer Key

Analysis

1. Open map, examine layers, etc. (no answer needed)
2. How many police stations exist in Lincoln? **11** How many police districts exist? **5** Why do you suppose a few districts have more than 1 station? **Areal size, community interest, or high incidence of crime.** What do you think is the largest district that is only served by one station? **District 4, followed by District 3.**
3. Which of the 3 types of offense listed (larceny, assault, or auto theft) is the most common type of crime in Lincoln (listed under COUNT)? **Larceny.**
4. How many crime points exist in the data set? **1025** If this data set covers one year, how many crimes occur on an average day? **1025 / 365 = 2.8 per day.**
5. Use the filter tool to determine the *day of the week* in which crime is most frequent. **SUN=143. MON=144. TUE=156. WED=164. THU=129. FRI=138. SAT=151. SAT with 151 crimes.** What is the 2nd most frequent day of the week when crime occurs?   **WED with 151 crimes.** Name 2 reasons that could account for these being the top 2 days for crime. **SAT: fewer people working, more mischief? WED: Businesses open, robberies?** If you had the time of day in your data set, what block of time do you suspect most crimes occur (midnight-6am, 6am-Noon, Noon-6pm, 6pm-Midnight). **Any answer will suit as long as it is thoughtfully explained.** Why? Would these times of day be different depending on the type of offense? **Any answer will suit as long as it is thoughtfully explained.**
6. What patterns do you notice on the heat map of crime? **Any answer will suit as long as it is thoughtfully explained. But there are some brighter colors near downtown, W of downtown, S of downtown, less on S and SE side of town.** Are there any "hotter" areas for crime near the Westfield Gateway Mall to the east of downtown, or in or near the university campus or downtown, vs. elsewhere in the city? **Any answer will suit as long as it is thoughtfully explained. But there are some brighter colors near the university campus and near the mall.** Note the major arterials (US 77, US 34, I-80, NE-2): Do more crimes occur near busy streets? **Any answer will suit as long as it is thoughtfully explained, but no clear indication that busy streets are more attractive to rime, though some are evident along US 77.**
7. Do crimes seem to occur adjacent to busy streets, in parks, next to businesses, or near or on other types of features? **Any answer will suit as long as it is thoughtfully explained.** Make 1-2 additional observations. **Any answer will suit as long as it is thoughtfully explained: Example: Some spots due south of downtown along S. 17th Street.**
8. Compare the information that you gain from the heat map vs. the map of crime by type symbolized as point data that you were examining earlier. What are the advantages of each type of map? **Any answer will suit as long as it is thoughtfully explained. Heat map shows patterns a bit more quickly and is a bit easier to understand. Point data map is more detailed and able to be better understood in depth and by individual location.**
9. Filter the data for Assault > Create a heat map. What patterns do you notice on the heat map for assaults? **Any answer will suit as long as it is thoughtfully explained, but many assaults seem to have occurred SE of downtown (sadly) just W of Lincoln High School along S 21st St.**
10. Change Style to Show location only > Single Symbol. Is there a district, or a part of Lincoln, in which crime seems to be dominant?   **Any answer will suit as long as it is thoughtfully explained, but crime seems to be most problematic W and E and S of downtown.**
11. Change Style > Offense > Select each type of offense, one by one: Is there a district, or a part of Lincoln, in which a specific *type* of crime seems to be dominant? **Any answer will suit as long as it is thoughtfully explained, but assaults seem to have occurred SE of downtown (sadly) just W of Lincoln High School along S 21st St and larceny (20 points) at the mall, alone.**
12. Save map. (no answer needed)

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13. Drive time: Do the results surprise you? **Any answer will suit as long as it is thoughtfully explained.** What percentage of the city of Lincoln would you say is inside the 5 minute drive time of any police station? **Any answer will suit as long as it is thoughtfully explained, but the estimate should be between 60% and 80%.**

14. Based on the crime locations, the stations, and the 5 minute drive time, do you recommend an additional police station at this time, or a redrawing of the district boundaries, or not? **Any answer will suit as long as it is thoughtfully explained.**

15. Which cell contains the most points and where is it located? **One cell to the west of downtown represents 23 crimes.** Name 2 pieces of additional insights that this new layer provides you. **Any answer will suit as long as it is evident that the density layer has been created.**

16. Density Map: Where in Lincoln does the crime show the greatest density?   What is the range of this density per square mile? **The area south of downtown is the densest, with a value of 155 to 172 crimes/square mile.**

17. Hot Spot: Indicate where in the city significantly more crime occurs than in other areas. **Significantly more crime occurs in the center of the city with downtown at the center of the hot spot.** Indicate where significantly less crime occurs. **Significantly less crime occurs near the airport, and in the northeast and southeast parts of the city.** Name 2 pieces of additional insight that this new layer provides you.   **Any answer will suit as long as it is thoughtfully explained.**

18. Name 2 additional data layers that you think would be helpful in this crime analysis. Name 1 additional *analysis method* that you think would be helpful in this crime analysis. **Any answer will suit as long as the layers and the analysis methods are thoughtfully explained.**

19. Summarize in 2 sentences what you have learned about mapping, analysis, crime mapping, and how GIS tools helped you to understand a situation or issue, and to make decisions.   **Any application will suit as long as it is thoughtfully created with evidence of spatial thinking, and any 2 sentence answer will suit as long as it is thoughtfully explained.**

20. Create and give a presentation. Based on your research, articulate what your recommendations are to the city police chief for enhancing public safety: Additional stations, different patrols, community awareness, or some other program or action at this time? If so, what is it? **Any presentation will suit as long as it is thoughtfully presented with evidence of spatial thinking, and any answer will suit as long as it is thoughtfully explained.**

To review one possible final map after you complete your analysis, see this map.

Extend the lesson: (1) Use the Add data function to add crime data by census tract or block group from the ArcGIS Living Atlas of the World or from ArcGIS Online, and compare these new layer(s) against your crime point data. (2) If time permits, bring the crime data into Business Analyst Web and examine the type of business related to crime. Do crimes tend to be focused near certain types of businesses (check cashing, pawn shops, banks, others), or not?

Congratulations on thinking spatially and for using geospatial technology to help make the community safer! •