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The Power of Closing Time: Using Library Occupancy Data to Inform Operational Changes

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The Tompkins-McCaw Library for the Health Sciences has explored several methods to realistically accommodate requests for extended operating hours. The library is collecting and analyzing building usage data to adapt its operating hours to the needs of patrons.

BACKGROUND:

The Tompkins-McCaw Library for the Health Sciences has heard requests for extended operating hours for several years. The library must balance between the needs of its users and the constraints of building, budget, and staffing concerns. Therefore it is necessary to more closely examine the impact of changes to operating hours.

The library incrementally changed its closing time from 9:00 pm to 10:00 pm. A survey was given in late 2013 to determine the most preferred time for the next extension. Following the survey, closing time moved to 12:00 am. Occupancy data were used to evaluate how changes to hours affected occupancy rates.

Currently, the library is staffed from 8:00 pm onward with only two hourly employees, one security guard, and more limited library services. The building is open until midnight 5 days per week.

QUESTIONS:

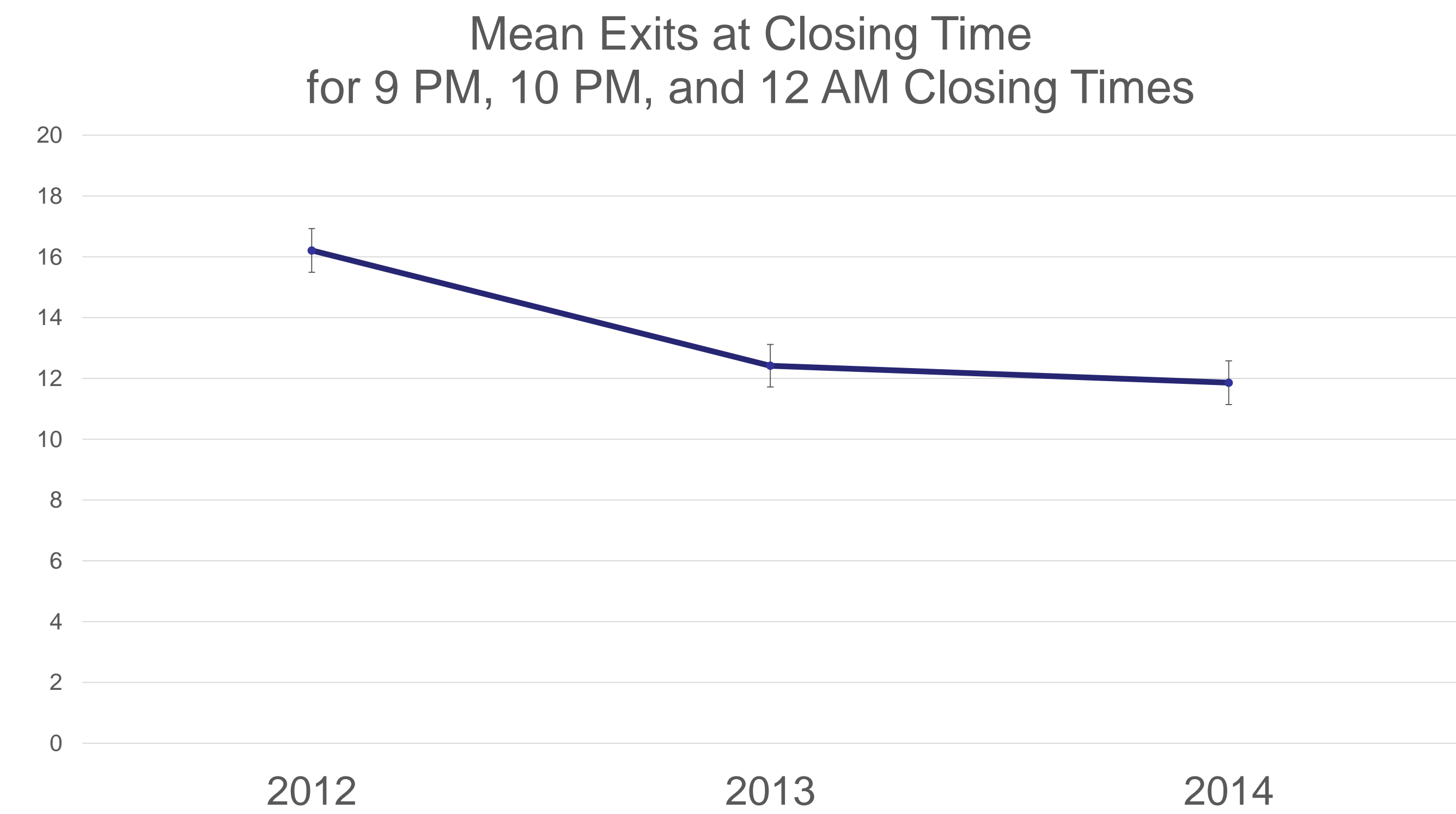
- Does changing the closing time affect building occupancy near closing?
- Does changing the closing time affect the number of patrons using the library during evening hours?

ASSESSMENT & ANALYSIS:

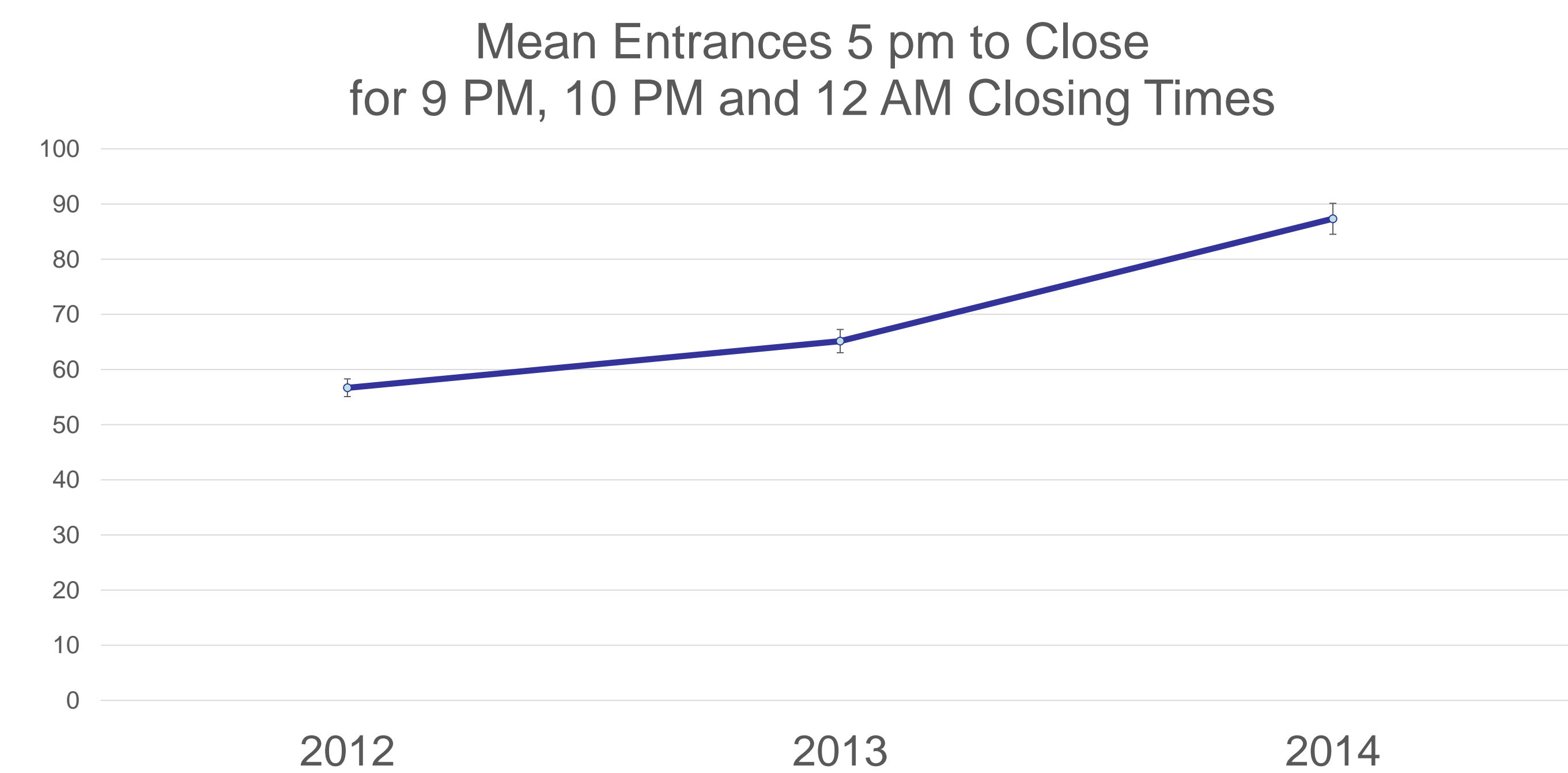
Data were collected using an automated gate count system at the primary entrance to the library. The system tracked the number of people entering and exiting the building hourly each day.

TML's hours of operation were changed immediately following Labor Day in 2013 and 2014. We pulled data for Monday through Thursday in the same 18-week time period across all three years: 13 weeks in the Fall semester and 5 weeks in the Spring semester. The year 2012 is used here because it was the last year in which the library closed at 9:00 pm before the new hours were put in place.

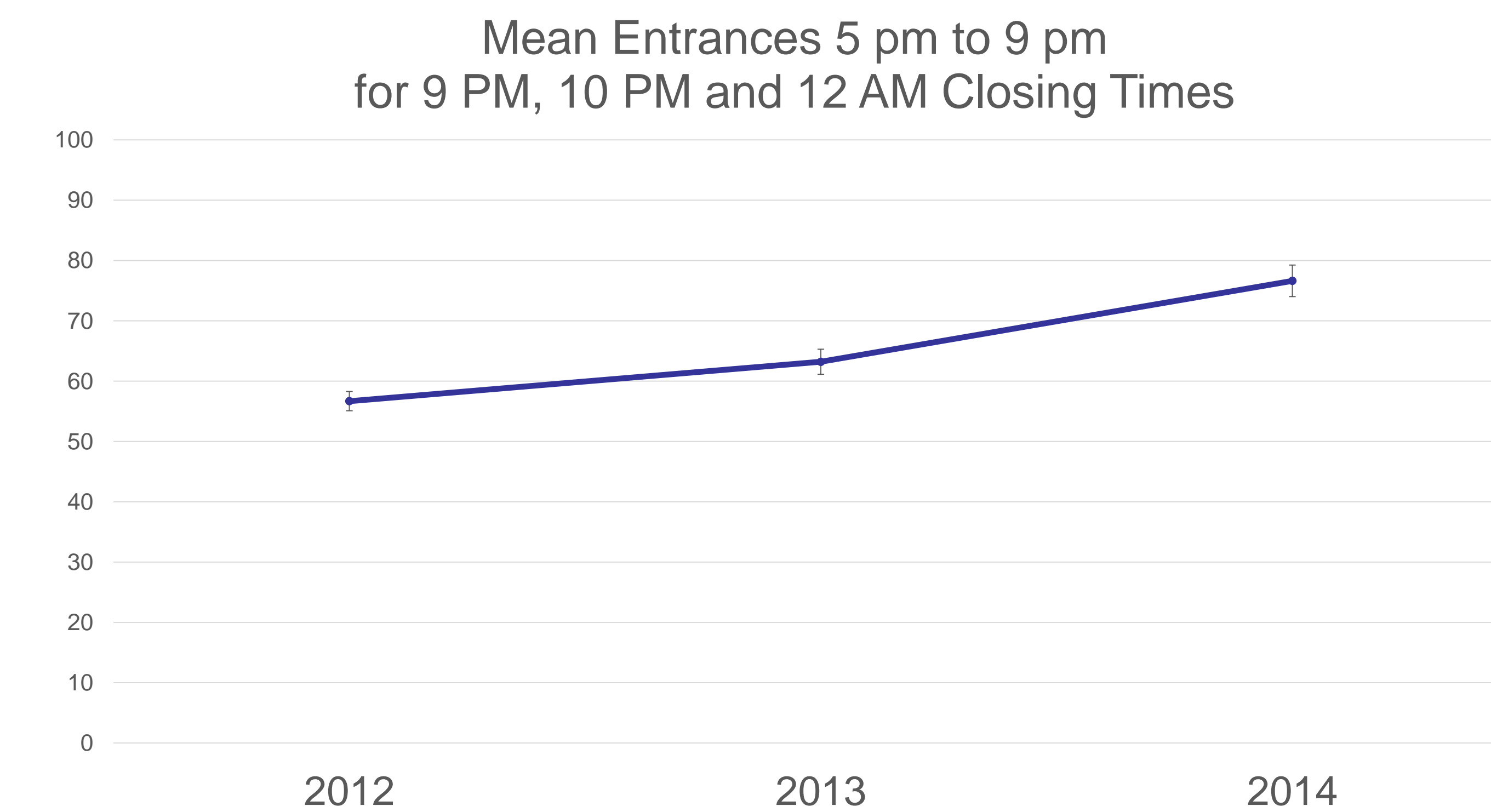
Using a series of repeated measures ANOVAs with three levels of the independent variable (2012, 2013, and 2014), we tested whether changes in closing time had a significant effect on mean exits at closing time and mean entrances throughout the evening and specifically from 5:00 to 9:00 pm as illustrated in the figures, right.



Mean exits at closing time for M - Th during same 18-week period across 3 years. Error bars are standard error of the mean.



Mean entrances 5 p.m. to closing M - Th during same 18-week period across 3 years. Error bars are standard error of the mean.



Mean entrances 5 pm to 9 pm M - Th during same 18-week period across 3 years. Error bars are standard error of the mean.

RESULTS:

- **Figure 1:** Mean number of people exiting the building during the hour before closing time **decreased** as closing time was moved later in the evening, $F(2,130) = 12.74, p < .001$.
- **Figure 2:** Mean entrances to the library during the evening hours (5 p.m. to closing) **increased** significantly as closing time was extended later in the evening, $F(2,134) = 66.07, p < .001$. On average, **30 additional patrons** entered the library in the evenings when closing time was extended from 9 p.m. to 12 midnight.
- **Figure 3:** Mean entrances to the library between 5 p.m. and 9 p.m. **increased** significantly as closing time was extended later in the evening, $F(2,134) = 31.15, p < .001$.
- Thus, the increased usage of the library during the evening hours with a later closing time cannot be accounted for simply because of more hours available for patron entry. Patrons are also using the library more frequently earlier in the evening (Figure 3).

CONCLUSIONS:

- Occupancy near closing decreased as closing time got later.
- While occupancy near closing decreased somewhat, usage earlier in the evening increased as library hours were extended.
- We determined that the benefits of increased library occupancy we observed in this study justify continuation of our extended hours.

NEXT STEPS:

- Conduct a more formal cost/benefit analysis—for example, calculate the cost per additional patron-hour of use as a result of our extended hours.
- Research the possible psychological and behavioral impact of closing time on rates of occupancy and building usage.