

## 7.4 Maternal age and Trisomy 21

The age at which women first give birth has been increasing in the United States, in some places more than others. According to the New York Times,[1] our home town of San Francisco has the distinction of having the oldest first-time mothers in the US, at an average age of 32 years. The youngest first-time mothers in the U.S. are in Todd County, South Dakota with an average age of 20 years.

As was previously mentioned, maternal age is a strong risk factor for Trisomy 21 (Down syndrome). Assume that the association between maternal age and Trisomy 21 illustrated in Figure 7.10 applies in both San Francisco and Todd County. For simplicity, let's dichotomize maternal age at 35 years. You are trying to estimate the likelihood that a fetus of a first-time mother has Trisomy 21. How would you expect the LR+ for the mother being over 35 years old to differ in San Francisco compared with Todd County, South Dakota? Explain.

***Answer: We'd expect the LR+ to be lower in San Francisco. Like the locations with a high prevalence of uncircumcised boys, a causal risk factor for UTI (Box 7.3), San Francisco has a higher prevalence of older mothers, a causal risk factor for Trisomy 21. So we would expect the pretest odds of Trisomy 21 to be higher in San Francisco, due to the average older age of the mother. If we find out a mother in San Francisco is > 35 years old, it's less surprising and we don't learn as much, so the posttest odds won't be that much higher than the pretest odds. Thus, the LR+ for being > 35 years old in San Francisco should be lower than the corresponding LR+ in South Dakota, where a 35-year-old first-time mother is much more unusual.***

## REFERENCES

1. Bui Q, Miller CC. The Age That Women Have Babies: How a Gap Divides America. New York Times. August 4, 2018.