

## Markov Chains

1. Suppose people either buy or rent a house. Every year, 15% of homeowners sell their houses and rent, while 10% of renters buy a house. Set up a transition matrix for this situation. If initially there are 200 owners and 400 renters, what will the situation be in two years?
2. Suppose the day's weather can either be rainy or sunny. Consider the following sequence of days:

*RRSSSSSRSRSSSRSSSSRRRS*

- (a) Form a Markov transition matrix that models this sequence.
- (b) According to your model, if it is rainy today, what is the probability that it is rainy tomorrow?
- (c) If it is rainy today, what is the probability that it is rainy the day after tomorrow?