1. 6.1: Problem is that our notion of stability strictly relates only to behavior near equilibrium. The ultimate goal is to understand the dynamics of two-species system and not just their behavior near equilibrium. But it is still a useful because it helps as a first step in understanding the dynamics of a system.

6.3: Predator-prey model : If f_1 is the predator and N2 the prey $\frac{\partial f_1}{\partial N_2}$ then would have a positive sign as the change of per capita growth rate would increase as N2 increases as well. $\frac{\partial f_2}{\partial N_1}$ would show a negative sign as the population of N1 increases, the per capita growth rate of f_2 would decrease. Competition model: Both would see a negative sign as both would negatively effect each other's survival. Mutualism: Both would see positive signs as both would positively effect each other's survival.

2. Chapter 6 version evaluates partial derivatives at the equilibrium for which to try to determine the stability. Chapter 7 version represents interspecific and infraspecific density dependence. Instead of using j and i as different species maybe use alpha and beta as new notations for the chapter 7 version.

3. As P increases California's population does as well. Meanwhile New york's population decreases.

4. Link : https://docs.google.com/document/d/1S-zfALUmJtZ2puvnnE2bMEMaLRAhDcITlp8_u7L8xZ0/edit?usp=sharing