1. Nothing
2. For the first 25 years of my life I had a myopic view of the world. And among the many places that were far away, California was the furthest. It was a remote place. My first recollection was of a baseball stadium where players wore long sleeves in July and fans sipped hot chocolate. Then it was Hollywood. And finally, Yosemite and the Golden Gate Bridge. I visited after college but never thought I would get a chance to live here. And it was not until I moved here 22 years ago that I came to appreciate and later love the place. Starr’s preface captures the dream and the contradictions: 5th largest economy on the planet. Home to the second and fourth largest metro areas, unmatched beauty and cultural energy unrivaled worldwide. Following up on yesterday’s lecture, let’s put some people on the map…
3. 80% of the people live on 20% of the area. We’ll talk about the two triangles later.
4. Half of the nation’s fresh fruit and vegetables. 90% of the wine in the US (Napa is synonymous with US wine). More dairy than Wisconsin.
5. 6 of top 20 universities in the world are in CA. More than 10% of the Nobel prize winners in the world were affiliated with a CA university at the time they received the award. 10X than Texas despite similar size.
6. A leader on issues related to the environment as shown in this figure—Over a 40 year period we held the line while the rest of the country doubled. There is something different about this place.
7. The purpose of today’s lecture is not to review the history of the entire state or to review 5th grade curriculum. Rather it is to think about the way in which the geography of the place and the events that happened, mainly over the past 150 years, relate to our big idea. I’m going to make some broad generalizations about five eras in CA history and I’ll round off numbers to give you an approximate feeling for the place. I want to focus on the more recent history b/c that determines where we are today.
8. The first people arrived here around 15,000 years ago when the land bridge connected US to Asia. Remember those macrofauna from Friday? Well, these big-brained predators wiped played a big role in hunting them to extinction. Connection to guns, germs and steel. In addition to hunting, these people managed the land with fire and established trading routes. I like this map from the Oakland museum and can’t find a better one so here it is.
9. As predicted those Europeans arrived eventually, in the form of Jesuits around 1700. Replaced by Franciscans (Junipero Serra) in 1768 who set up in San Diego and moved North. The Royal Road or El Camino Real is essentially today’s highway 101 running along the coast (see map). Note that the Presidio were located in the places with better ports: San Diego, Santa Barbara, Monetrey and San Francisco (hence the city’s names).

1. The state was built on Gold and Farming.
2. 1848 gold was discovered near Sacramento. Between 1850 and 1860 an equivalent of $10 billion in today’s currency was taken out of the goldfields. In many ways, the gold miners were the first entrepreneurs in CA. The fee-simple title system (aka claim-patent system) established a way for land of the gov’t to be transferred to an individual (much like an idea is patented). The key is that development of the land is in the interest of the state. As long as you work your claim, the land is there for the taking (even if it did “belong” to the natives).
3. My answer to problem 4.
4. After the gold nuggets were plucked out of the streams a more mechanized system was needed. Placer deposits were mined by hydraulic mining (see photos). Environmental damage: Hg contamination (still dealing with it today); gravel in rivers for > 100 years. Effect of future development: Water rights system—diversions for working claims become rights; forestry, farming, cities. Not too many miners became rich and not too many stayed in the mountains. The people who sold them stuff, like Levi Strauss, Mark Hopkins and Leland Stanford made fortunes.
5. Pretty quickly the miners “left” the hills and became farmers. By 1879, ag had replaced mining as the top economic sector in the state. Export market for grain and canned fruits/vegetables. Man of those other goods and non-recreational services were initially in support of ag—will come back to them later.
6. In those early years, most of the food was grown near the people, which was why the Santa Clara Valley which was called the Valley of Heart’s Delight until the 1930s, wheat was grown in the Sac Valley and ranches were the way that people farmed in the arid south. Some fruit in current day LA.
7. During the period thirsty farmers in the central valley and SoCal began to get imaginative about irrigation, coming together in irrigation districts to move water out of rivers and onto their nearby farms via canals. Prof Silver already mentioned the Salton Sea. I want to take a diversion to show you how it came to being during this era. In 1904 the muddy sediments from the CO river were clogging the inlet to the canal that diverted the river into the valley. To clean out the sediments the engineers punctured a hole in the canal.
8. The results were the Salton Sea; an environmental disaster that we still don’t really know how to fix today. See video and New Yorker article (optional reading).
9. The next piece of the puzzle was the discovery of oil and growth of the oil industry in CA. Although you can still see remnants of it today, few people recognize that SoCal was built on oil. The discovery of oil in SoCal by Edward Doheny (who was fictionalized as by Daniel Day Lewis in “There Must be Blood” in 2007, fundamentally altered the state. Top oil producer nationally and top economy of the state. Also key to development of automobile and industry in socal.
10. Oil production in CA follows peak oil curve. It helps illustrate how long it takes for peak oil to pass.
11. Through the years of the great depression and the expansion that followed a number of forces conspired to convert the state to the most prosperous and advanced state in the country. Pictured here are the CA aqueduct, the Kaiser shipyard in Richmond, Edwards Air Force Base and of course, Hollywood. All pieces of the CA mega-state puzzle.
12. Around 1900 wheat gave way to hay (meat, dairy). After 1930 fruits, vegetables and cotton took off—al water-intensive crops with higher value. Much of this growth was spurred by Federal and state government projects.
13. We will discuss the state’s plumbing later. For now, it’s enough to see Hoover Dam (1928); Federal Central Valley Project (1944) and State project (1966). Greatly increased availability of water. Farmers, being rational actors switched to high water crops.
14. In addition to locking us into a battle for water rights and subsidies for ag, it did a lot of environmental damage including: loss of remaining wetlands (figure); problems with fish migrations as dams started to control flow of water.
15. Mining and ag technologies created the know-how to build imported water projects for cities. LA aqueduct (1913); Hetch-Hetchy system 1923; Mokulmne System(1929) . Provided more than enough water for the metropolitan areas. Also provided power (public buses in SF and LADWP).
16. With ample water and power and a thriving oil industry, LA’s economy and population grew quickly. In addition to Hollywood—a topic with which you probably already have a vague knowledge, three other industries dominated. Manufacturing (e.g., CA was the second largest center for manufacturing automobiles and tires); aviation and aerospace, especially during WWII and cold war. Lockheed’s famous skunk works or NASA’s JPL are examples of how the industry leaders et up shop in LA. It was the proximity of the factories to the places where they were tested and deployed, like Edwards Air Force Base in the Mojave desert, that built the relationship between aerospace and military.
17. During the postwar period, LA’s population outstripped SF’s, but SF continued to grow, too. What were the economic drivers in SF Bay Area (recall, no oil, Hollywood, aerospace).
18. So how did the Bay Area grow? First, were the military bases that remained here. SF was Pacific hub. Alameda Naval Air Station, Moffett Field, Presidio etc. For example, Alameda Island was a company town. Much of the open space and parks on the coast can be traced back to military ownership, which reverted after the cold war. We still had the steelmakers and shipyards after the war. The electronics industry got started around 1957 when Fairchild Camera and Instrument was formed in San Jose. This would later become silicon valley (would also contaminate the region’s groundwater supply).
19. Jerry Brown has been governor of CA twice—1975 and 2016. This is also a convenient way to look at the most recent era. From an idealistic, rebellious time to a time when limits and the need to plan for the future were recognized. From a time of naïve optimism about the capacity to change to a time when we recognized the need to be pragmatic when talking about change.
20. Environmental awareness was kindled in the late 1960s by several very prominent events in SoCal. First, there was the recognition that DDT had caused the near collapse of Brown Pelicans and Bald Eagles. In LA the main US factory for DDT (Montrose Chemical) used to wash its residual DDT down the sewer every night. It went into Santa Monica Bay and contributed to the problem. And then in Jan/Feb 1969 the third largest oil spill in the US happened at Santa Barbara. Response at the Federal level created spill control response. At the state level it created the CA coastal commission which we will learn about—an organization that has power over developments along the coast.

1. Following the drought of 1977, Gov Brown and the legislature pushed through the peripheral canal, a $1.3 billion project to move water around the Delta (TBD). It was rejected by No Cal voters who saw it as a grab of resources (see map). It is back as the twin tunnels for reasons related to climate change that we will discuss.
2. In 1989 the Berlin fall, bringing about the end of the cold war. At about the same time, the US started reducing military expenditures for aerospace and bases in CA. About $10 billion hit to state’s economy. DoD still spends about $40 billion/yr in state. IN 2005, CA was 16th nationally in defense procurement on a per capita basis—much had moved to states that lobbied harder…
3. In thinking about the current state of the CA economy it is pretty easy to trace the development of Silicon Valley back to Stanford’s Dean of Engineering Frederick Terman, who, after helping the US defense industry in WWII pushed for his students to start companies like HP in the 1950s at Stanford industrial park. This later became silicon valley. In fact, we can trace Bill Gates and Steve Jobs to the environment created there and perhaps, the fall of the defense industry in the 1990s.
4. UC Berkeley and LBNL are hubs of innovation for energy. It is interesting to note the historic progression from the Manhattan project, where Berkeley Profs Oppenheimer, Glenn Seborg and Ernest Lawrence launched the secret project to make an atomic bomb in WWII. Explains why great physics people were here when energy crisis of 1974 hit. Art Rosenfeld defected from high energy physics and became head of CEC explaining “Rosenfeld Curve” from beginning of lecture. Inspired people like Steven Chu and John Holdren who are leading climate change response today.
5. Thinking back to all of the developments that we have seen, the state’s population grew slowly up until the turn of the century. Uptick from turn of century to 1930s with oil boom. Rapid growth in postwar industrial/military growth and now silicon valley era.
6. Looking ahead, the state projects that the population will continue to grow from 38.8 million today to about 50 million by 2050. That means more GHG emissions, more urban water demand and more impacts on the environment.
7. If we are going to have an intelligent discussion about the future of CA we need to keep in mind that we are in the middle of a period of incredible global ECONOMIC change, especially with the growth of China and India. This is a screenshot from Hans Rosling’s website illustartes the dramatic rise in purchasing power in these countries. Will affect economy, migration and flow of knowledge. It also means that solving climate change is impossible without solving the global problem. Does that mean that we shouldn’t think about dear CA? No. As we will see, this special place has always had a disproportionate impact on the world.