



Silicon Valley Center  
For Global Innovation and  
Immigration

# Migration, Immigration, and Innovation: The Rise of Green/Clean Technology and Its Relation to High Technology and Biotechnology in Silicon Valley

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# Thanks to...

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# Research Goals

Our goal broadly is to determine the relationship between innovation, immigration, and migration, with the nexus between green/clean tech, biotechnology, and high technology serving as a case study.

This study will examine the factors that support or inhibit the development of the newly emerging industry of green/clean technology and how dependent it is on inter-industry technology transfer from the mature emerging industries of high technology and biotechnology.

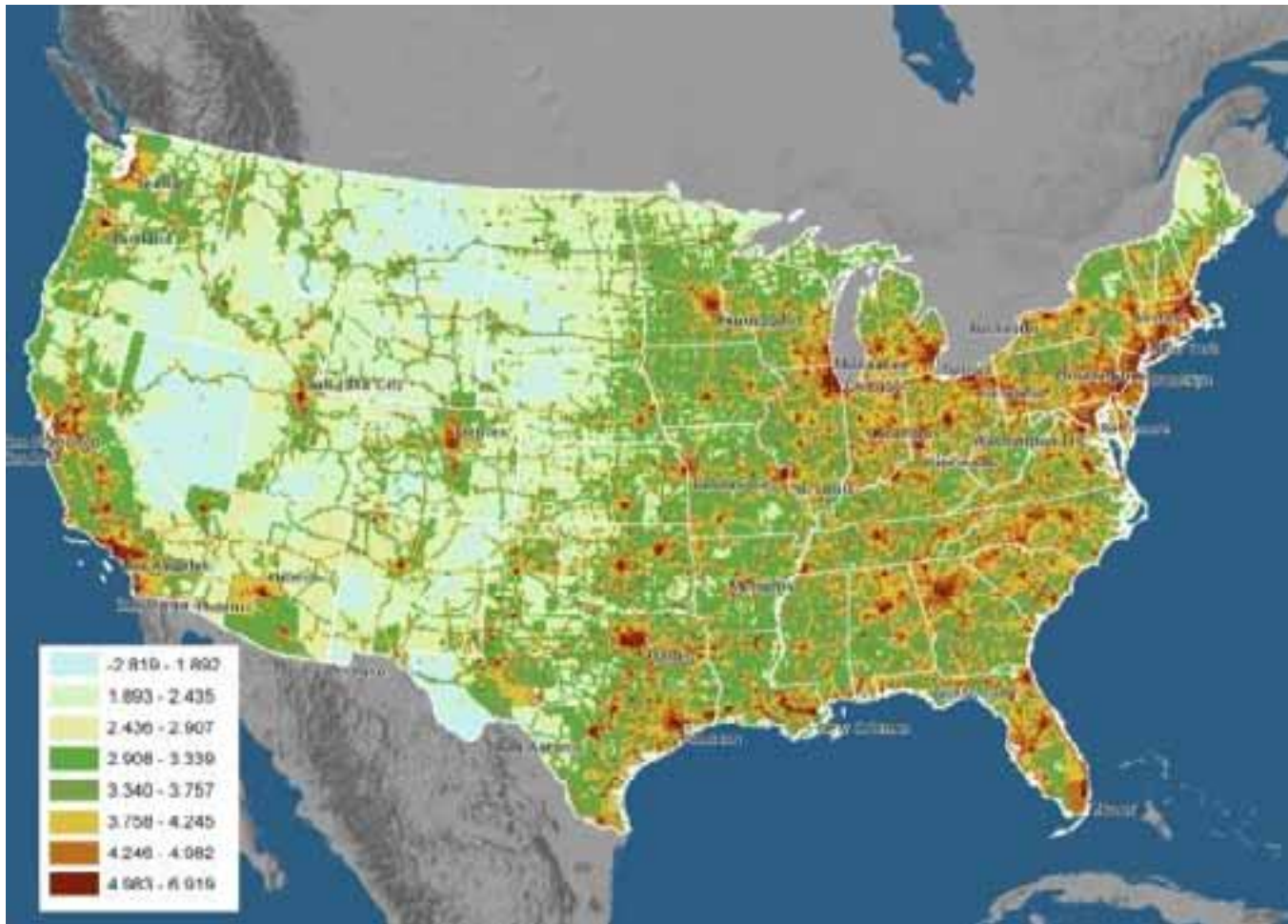
# Research Focii

- inter-industry technology transfer
  - geographic proximity
  - transfer of people (e.g., CEOs, CFOs, Chief Scientists, etc.)
  - transfer of technology embodied in new equipment and methods
- biotech and green/clean tech
  - Biotech: a “mature” emerging industry
  - Green/clean tech: a “newly” emerging industry

# The Geography of Green/Clean Tech

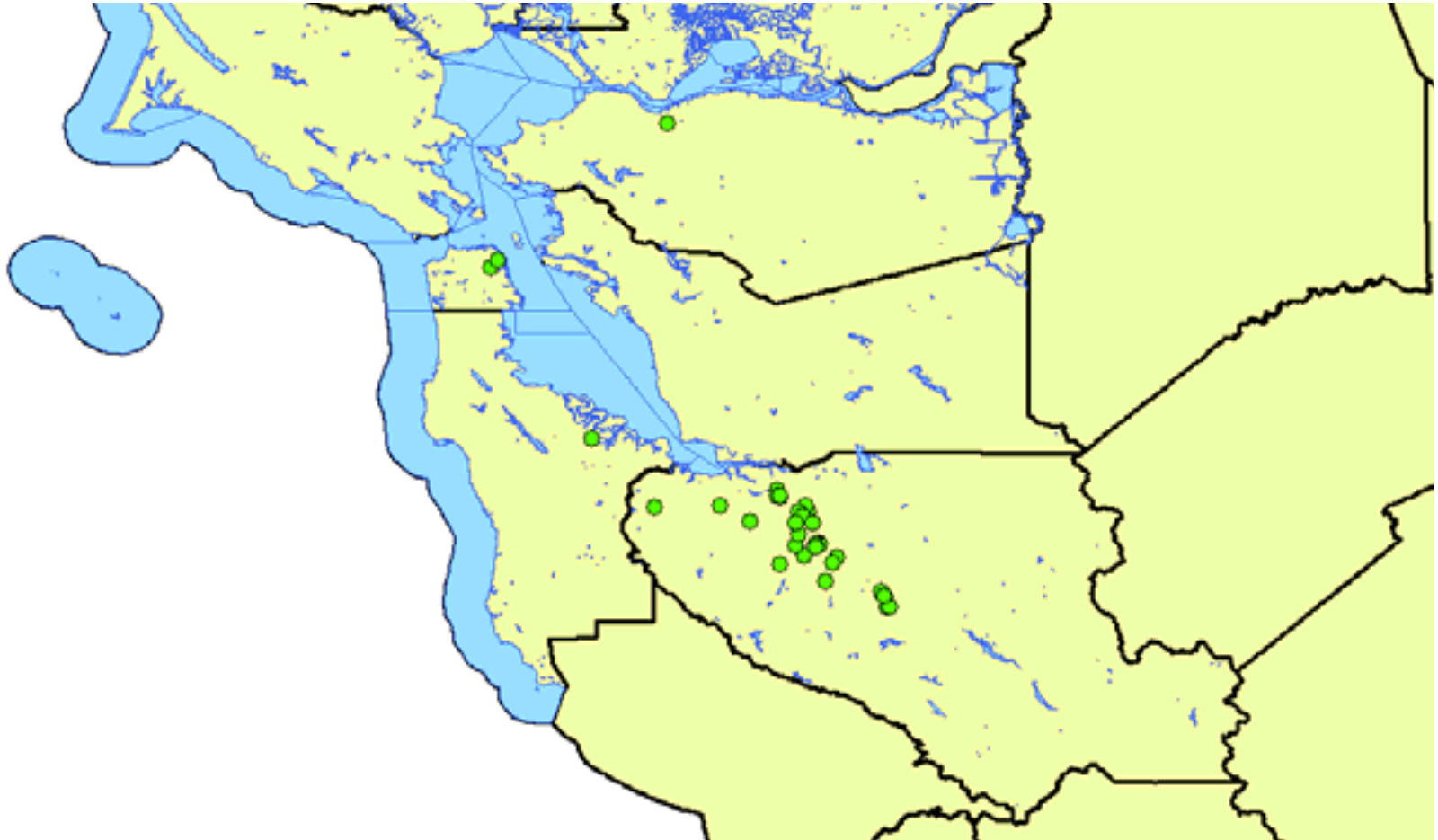
- What is Green/Clean Tech?
  - A controversy – two approaches
  - What NAICS codes constitute “Green Tech”?
- Where is Green/Clean Tech concentrated?

# Mapping the U.S. Carbon Footprint

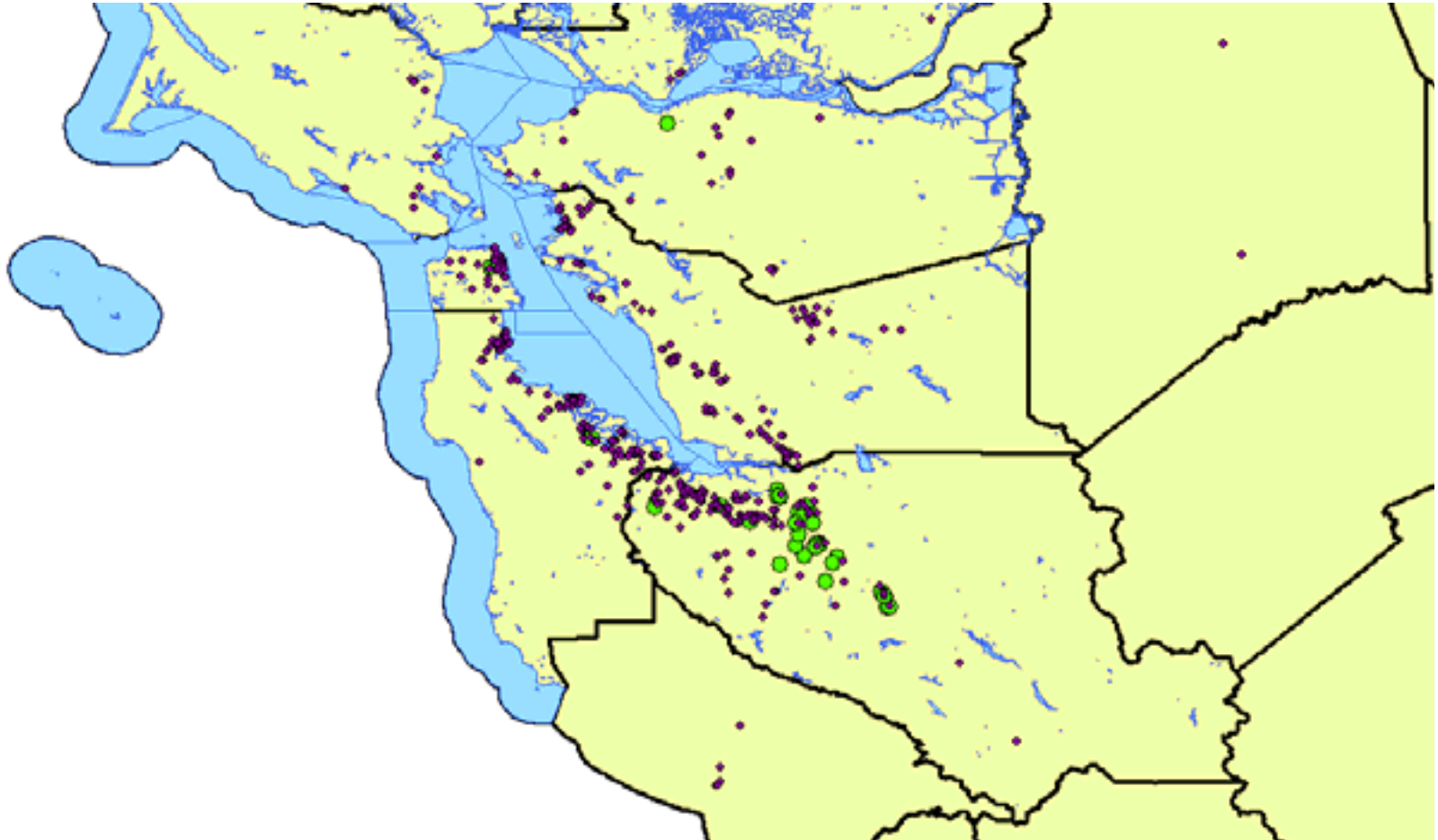


Source: [http://news.cnet.com/8301-11128\\_3-9914494-54.html](http://news.cnet.com/8301-11128_3-9914494-54.html)

# Mapping Green/Clean Tech San Jose Area Firms



# Mapping Green/Clean Tech vs. Biotech





# Proximity and History

- Measuring proximity
- Determining relationships

# Factors Determining Industry Development

- levels of research funding
- availability of a skilled workforce (educational attainment)
- support for specific educational programs to train people in skills relevant to biotechnology or clean technology (workforce development)

# Theoretical Models and Workforce Development

Our work relies on

- Core-Periphery Model of the New Economic Geography
- Human Capital Theory
- Recent study of connection between innovation and workforce development by Goldin and Katz\*

\* The Race between Education and Technology by Claudia Goldin and Lawrence F. Katz (Belknap Press of Harvard University Press, 2009)

# Implications for Workforce Development

- National Workforce Development Policy
- Local Implementation of Workforce Development Policy

# Literature Background

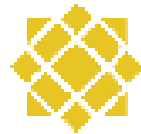
- Rise of Clean Technologies – 4 different categories (Gordon and Hays, 2008)
- Differs considerably from High Tech and Biotech in that heavily reliant on regional and national policy support in addition to local markets (Chapple, 2008)
- Cluster dynamics very important for Clean Technology – both traditional and innovative (Porter, 1990; Cassi & Morrison, 2007; Sallet et al. 2009)
- Successful Clusters also now determined by a “geography of talent” (Gertler et al. 2002; Florida 2002)

# Future Work

- Formal survey of Green/Clean Tech Firms
- Formal statistical tests of whether proximity matters
- Analysis of demographics of Green/Clean Tech firm location (based on U.S. Census data)
- Introduction of formal indexes of innovation

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# Questions or Comments?

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