

# The impact of the biotechnology industry on local economic development in the Boston and San Diego metropolitan areas

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## Abstract

High-technology/knowledge-intensive industries have become of increasing importance as sources of job growth and revenue to communities seeking to develop their economies. Communities want these industries so that they can be as economically vigorous as possible. However, although high-tech industries such as biotechnology are coveted as drivers of economic development, the local development impact of these clusters of regional innovation is not entirely positive. This is especially true with regard to the impact upon the low and semi-skilled populations. In some regions, the new growth generated by high-tech clusters has converted relatively inexpensive open space into haphazard commercial and industrial use that has contributed to sprawl, transportation congestion, lack of affordable housing, and gentrification. These problems are particularly evident in the Boston and San Diego metropolitan areas, which rank as the second and third largest U.S. biotechnology clusters respectively. This paper seeks to gauge the local economic development impact—especially with regard to the labor and real estate markets—of the biotechnology clusters in the San Diego and Boston metropolitan areas.

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Fads are dangerous. This has become especially evident now that the “irrational exuberance” of the 1990s dotcom boom has gone dotcom bust. What the dotcoms were to the 1990s, biotechnology has become to the new millennium. Venture capital is flowing to this sector of

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the high-technology industry and government officials are targeting it as critical to local economic development. Indeed, a survey of 77 local and 36 state economic development agencies reported that 83% have listed biotechnology as one of their top two targets for industrial development [1]. Yet, with all of the talk about the importance of the high-tech sector, it has become increasingly evident that little thought has been given to the actual impact that high-tech industries such as biotechnology have upon local economic development. Moreover, an underlying assumption seems to be that the impact of all high-tech/knowledge-intensive industries is the same, which is to say overwhelmingly positive. Information technology, biotechnology, and the new materials revolution are all lumped together as one happy family of technologies whose presence can't help but be beneficial. But beneficial to whom? While it is clear that the highly-skilled will benefit from increased employment opportunities, the impact of specific high-tech industries on the lives of the low and semi-skilled must be clarified in order for policymakers to understand how to service the needs of this critical component of the American citizenry. As Prof. Maryann Feldman has noted, significant resources are being spent trying to promote the development of biotech clusters but there is a limited understanding of how locations may effectively reap economic rewards from this industry [2]. This paper is an attempt to isolate the impact of a particular high-technology industry—biotechnology—upon local economic development in two major American biotechnology centers, the Boston and San Diego metropolitan areas. My intent is not to malign the biotechnology industry—its importance is indisputable—but rather to awaken policymakers to the reality that biotechnology is not a panacea for local economic development, especially with regard to the housing and employment needs of the low and semi-skilled.

## **1. Hypothesis**

The central hypothesis of this paper is that contrary to what policymakers believe, biotechnology has significant negative impacts on local economic development, particularly for low and semi-skilled populations. The underlying reasons for this assertion are:

- 1) The expansion of the biotechnology cluster into new areas is leading to gentrification.
- 2) Biotechnology is not a significant source of employment for the low and semi-skilled.
- 3) A focus on biotechnology is not conducive to the economic diversity that is essential to sustainable local economic development.
- 4) Biotechnology has a deleterious environmental impact.

This hypothesis and the associated corollaries will be examined herein as they pertain to the Boston and San Diego metropolitan areas. The Boston metropolitan area refers primarily to the cities of Boston, and Cambridge each of which plays a distinct role in the regional biotechnology production system. The San Diego metro area refers to the county, including the key cities of San Diego and La Jolla. Local economic development refers to impacts on the real estate and labor markets, with a special emphasis on the degree to which the biotechnology industry both generates “jobs with ladders” [3] for the low income and moderately skilled members of the community and affects the market for affordable housing.

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