

# New Metropolitan Perspectives

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# **Urban planning and Innovation: the strength role of the urban transformation demand. The case of Kendall Square in Cambridge**

Carmelina Bevilacqua  
Pasquale Pizzimenti

*CLUDsLab*

*PAU Department - Università degli Studi  
Mediterranea di Reggio Calabria, 89124, IT*

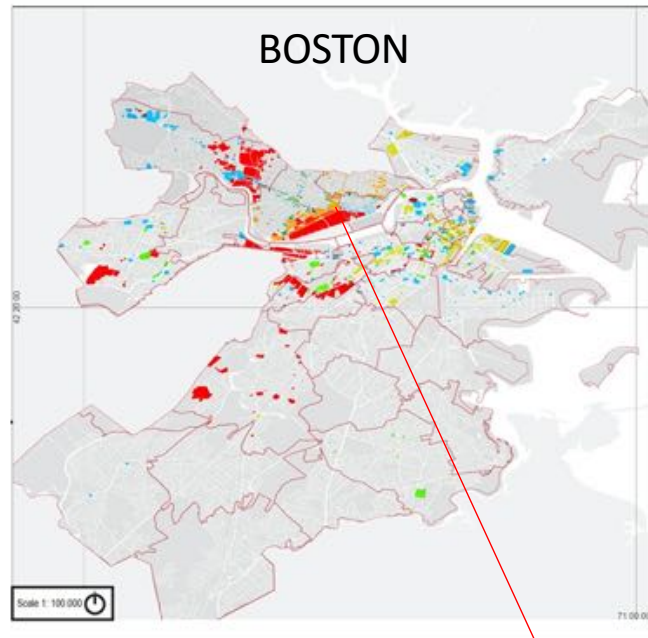
## urbanization: from challenge to opportunity

- By 2050 the majority of the population, economic activities as well social and cultural interactions will concentrate in cities. The challenges generated by rapid urbanization processes request an urban paradigm shift to reach a sustainable and inclusive development in the mid and long-term.
- However, recent reports from many International Organisation such as the UN Urban Agenda underlined a new “recognition of the correlation between good urbanization and development”
- If we take into account European – or widely western countries’ – cities, the urbanization concept is often associated with urban areas’ physical transformation and more precisely with the urban regeneration concept
- Therefore, ***urbanization represents an opportunity*** from which take advantage in the perspective of ***sustainable and inclusive growth***
- ***Thanks to its comprehensive and integrated approach [3], urban regeneration has the potential to tackle the current urban challenges underlined by the UN New Urban Agenda.***
- “The EU and its Member States will seek to boost the potential of cities as hubs for sustainable and inclusive growth and innovation...In line with the UN’s New Urban Agenda, they will promote sustainable land use planning, equitable management of land markets, sustainable urban mobility and smart, safe cities that make use of opportunities from digitalisation and technologies”

- The paper aimed at figuring out how the connection of urban transformation with place-based innovation approach allows at reaching the knowledge convergence to activate informational spillovers

## MAPS-LED: the Kendall Square case selection

Cluster Spatialisation at urban level



Target Areas Analysis

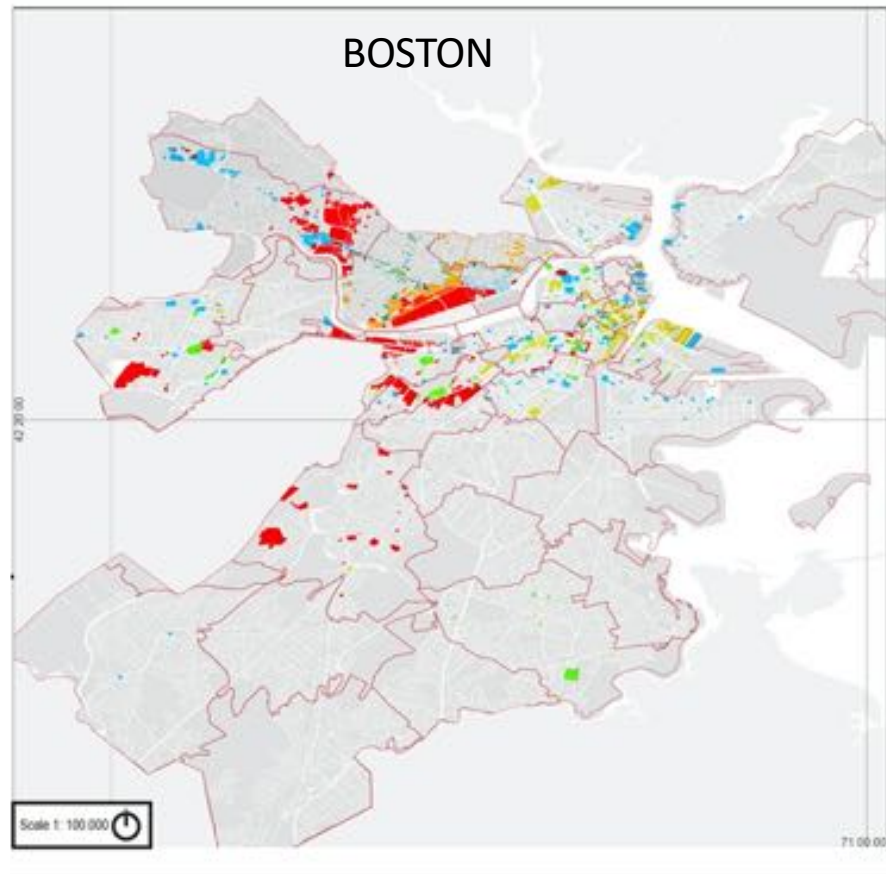


+

Overlap of Urban  
Regeneration and  
cluster oriented  
initiatives in the area

→

Cambridge  
Kendall Square



- With respect to the MAPS-LED cluster spatialization the City of Cambridge performs two strongest Clusters: Education and Knowledge Creation and Business Services. and offers interesting insights on the process of knowledge convergence through the concentration of creativity, innovation and entrepreneurship.
- The presence in the area of worldwide leading Research Institutions (Harvard, MIT) and a high number of related activities, remarks a high density level of relationships among public, private sectors, cluster organizations, innovation stakeholders (such as start-ups, small-medium enterprises) and local community (citizens, entrepreneurs).

## number of biotech + IT firms per square mile

Research Triangle Park, NC

1

Berkeley Area, CA

2

Austin, TX

8

South San Francisco, CA

11

Harvard Sq & Longwood Area, MA

21

Palo Alto, CA

36

Kendall Sq, MA

163

***Kendall Square area presents a concentration of a high number of companies, start-ups - the highest density of start-up in the country - incubators, research laboratories and facilities, and the presence of anchor institutions.***

*Diagram reproduced from BCG's 2010 study of Kendall Square. Original data source: Capital IQ Database, US Census Bureau, BCG Analysis (as stated in the presentation).*



## a Focus on Kendall Square

- During the last three decades, Kendall Square experienced a shift from an office district to one of the world's leading centers for research and innovation in several sectors
- The development of the area started during the 1960s with the Kendall Square Urban Renewal Plan, which main aim was to locate in Cambridge the NASA's Electronic Research Centre.
- During the 1970s, the willing of NASA to locate its facilities in other cities pushed the Cambridge Redevelopment Authority, owner of 70% of the land, to transfer the project for the construction of the Department of Transportation (DoT).
- This change signed the shift from a post-world war renewal phase to a significant physical transformation of the area, which started being recognized as an opportunity for economic development (attraction of businesses).
- During the last two decades, Kendall Square evolved into a livable mixed-use district thanks also to the attention of the City with the Department of Community Development, which focused on crucial aspects such as housing affordability, open spaces and transportation accessibility.



*Kendall Square (Cambridge) in the 60s and today  
Example of research and innovation-driven transformation*



## a Focus on Kendall Square

**1950s**



- Before the 1960s: Kendall Square as an industrial landscape



**1960s-  
2000s**

- 1960s-2000s: Kendall Square as an office park district

**2000s-  
2012**



- 2000s-2012: Kendall Square evolving into a livelier, more mixed-use district



**K2C2  
vision**

- Kendall Square Today: Kendall Square as a thriving innovation community

## a Focus on Kendall Square

Government  
+  
Anchors



Private  
+  
Anchors

## The vision for Kendall Square: the K2C2 Plan

- The vision of the study aims to inspire the Cambridge's sustainable and globally significant innovation community.
- The approach is characterized by the willingness to increase density encouraging the development of housing, incubators spaces, open spaces and other amenities and facilities

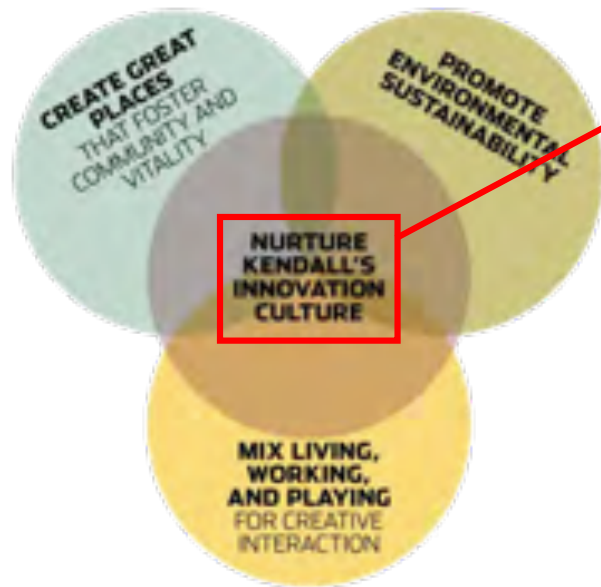


Table 1. Kendall Square Plan: Summary of zoning & Urban Design Recommendations.

Pillar	Actions
Nurture Kendall's innovation culture	<ul style="list-style-type: none"> <li>- Expand opportunities for Kendall Square knowledge economy to continue to grow;</li> <li>- Foster a strong connection between the MIT campus and the rest of Kendall Square. Enable MIT to develop in a manner consistent with its academic and research mission, so that it continues to be a magnet attracting innovative businesses to the area</li> <li>- Support a vibrant environment for creative interaction;</li> <li>- Three themes (below) working together supporting the central theme of nurturing Kendall's innovation culture</li> </ul>
Create Great Places	<ul style="list-style-type: none"> <li>- Support open space and recreation needs of a growing neighbourhood;</li> <li>- Create lively, walkable streets;</li> <li>- Expand opportunities for Kendall's diverse community to interact;</li> <li>- Development and public place improvements must happen in tandem</li> </ul>
Promote Environmental Sustainability	<ul style="list-style-type: none"> <li>- Expand convenient, affordable transportation and access choices</li> <li>- Enhance streets as public places</li> <li>- Create a healthier natural environment</li> <li>- Reduce resource consumption, waste emissions</li> <li>- Leverage the environmental and economic benefits of compact development</li> </ul>
Mix Living, Working and Playing	<ul style="list-style-type: none"> <li>- Leverage community and innovation benefits of mixed-use environment</li> <li>- Focus intensity around transit</li> <li>- Minimize development pressures on traditional neighbourhoods</li> <li>- Continue to support city and state economic development</li> </ul>



## Goal 1

- Recognize that all aspects of the vision for Kendall Square need to work together if the innovation culture is to realize its full potential.
- Retain and expand incubator spaces for entrepreneurs



MIT's transformation of the "Badger Building" from a foreboding 1960s office tower with a fortress-like base to a new home for the Cambridge Innovation Center may be seen as a metaphor for how the 21st century has arrived in Kendall Square, breathing new life into what had been a rather stodgy environment. In addition to making the ground floor and the rest of the base more useable with better fenestration, new emphasis has been placed on active retail uses, and a small plaza with outdoor seating is a welcome addition as one enters Kendall Square.

*source: K2C2 final report 2013*

## Goal 2: CREATE GREAT PLACES

- Engage buildings and streets to create lively public places.
- Enhance connections to the Charles River, especially at Broad Canal.
- Reintegrate Kendall/MIT station entries more effectively into their urban context.
- Develop wayfinding strategy to help orient people to the Square and its surroundings.
- Support open space needs of a growing neighborhood



source: K2C2 final report 2013



## Goal 3 – PROMOTE ENVIRONMENTAL SUSTAINABILITY

- Incorporate significant sustainability elements through land use planning approach
- Continue to require green design for buildings and site design.
- Go beyond existing approaches to more sustainable design.
- Create K2 EcoDistrict through public-private partnership.



source: K2C2 final report 2013

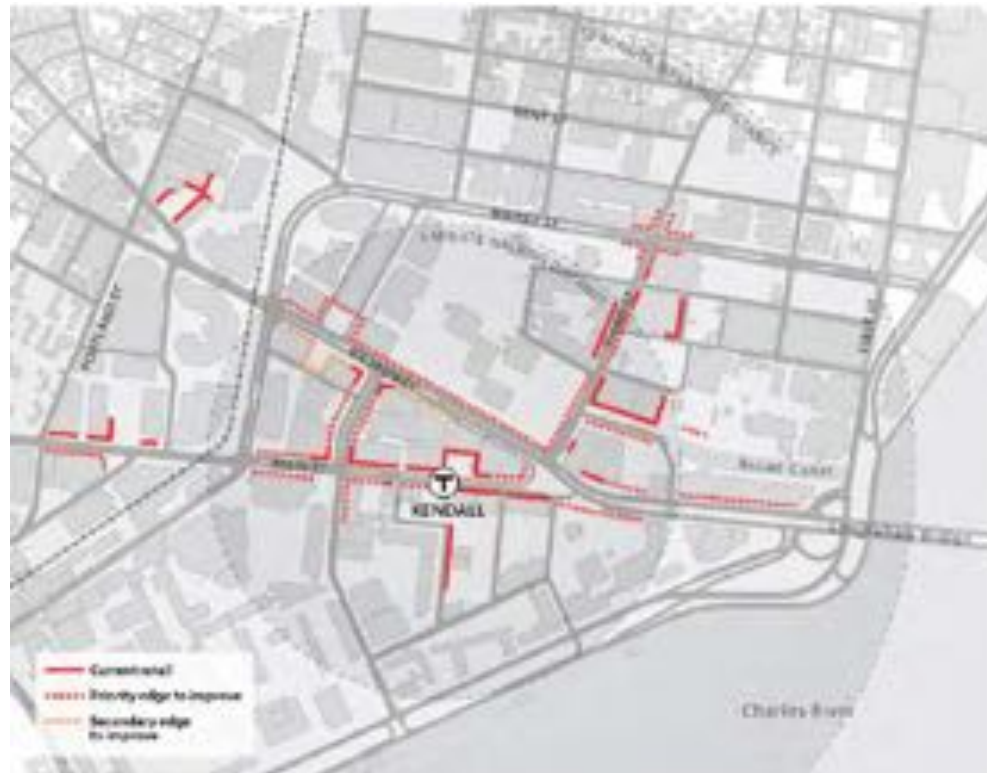


The Genzyme building in Cambridge Research Park, which combines innovative design and cutting-edge technology to create a sustainable and healthy office building, is certified at the LEED Platinum level.

source: K2C2 final report 2013

## Goal 4 - MIX LIVING, WORKING, LEARNING, AND PLAYING

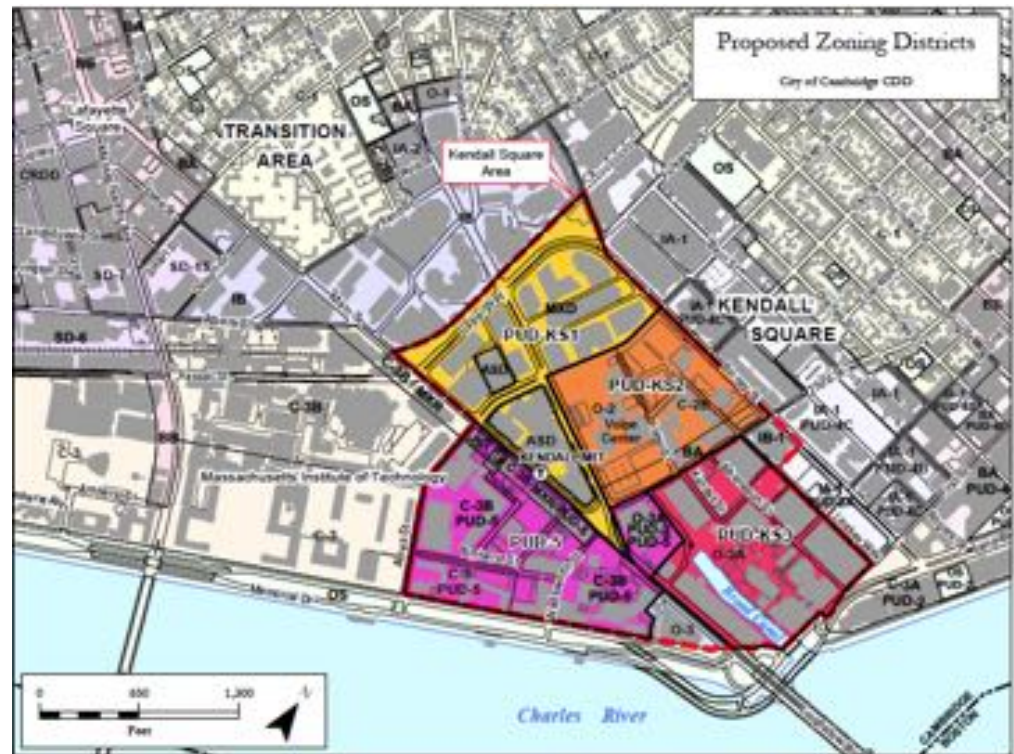
- Encourage a significant presence of housing integrated with other uses
- Create room for research and technology businesses to locate and grow.
- Add retail to create active ground floors and animate the streetscape



source: K2C2 final report 2013

## Kendall Square: Zoning

- The Kendall Square area is included in two of these specific districts: The Cambridge Centre Mixed Use Development District (MXD) and the Planned Unit Development Districts (PUD).
- The first was created to guide development in the Kendall Square Urban Renewal Area and requires a balanced mix of uses (light industrial, office, retail, institutional and residential uses) with the requirement of extensive public open spaces. The PUD district is a special category district allowing a more intense and diverse mixed-use development and permits the coordination of public and private development to implement the urban design for these areas.



**PUD KS1:** currently zoned as Mixed-Use District (MXD), under the control of the Cambridge Redevelopment Authority with its designated developer, Boston Properties.

**PUD KS2:** the area largely controlled by the US DOT, with the separate 303 Third Street housing project

**PUD KS3:** mostly built-out, includes the Cambridge Research Park (Lyne) PUD with Watermark housing, Genzyme HQ, etc.

**PUD-4:** Alexandria area recently rezoned in 2009, not suggested to be changed.

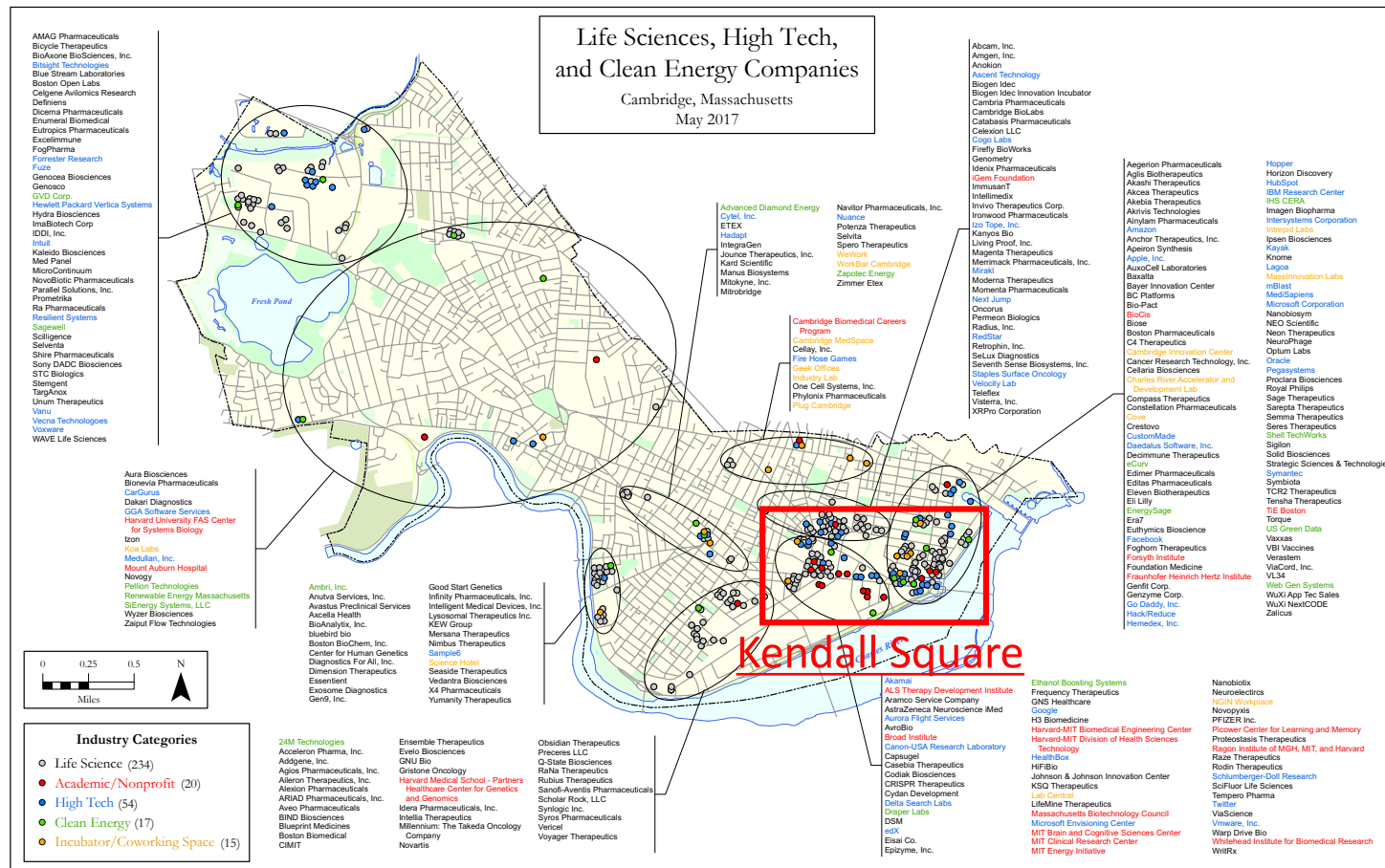
**PUD-5:** MIT campus area, recently rezoned in 2013 based on the K2 zoning recommendations.



## Kendall Square: Zoning and innovation

- Within the PUD 5-KS the development proposals containing new Office Uses, must include Innovation Office Spaces as zoning requirement: the 5% of the Gross Floor Area approved for Office Uses by the development plan. Furthermore, the zoning ordinance provides also the characteristics of innovation spaces:
  - **Durations** of lease agreements (or other similar occupancy agreements) with individual business entities shall be for periods of approximately one (1) month;
  - No single business entity may **occupy more than 2,000 square feet or 10%** of the entire Innovation Office Space required to be provided in the PUD-5 District, whichever is greater;
  - The **average size** of separately contracted private suites may not exceed 200 square feet of GFA;
  - Innovation Office Space shall include shared **resources** (i.e., co-working areas, conference space, office equipment, supplies and kitchens) available to all tenants and must occupy at least 50% of the Innovation Office Space;
  - Individual **entities** occupying Innovation Office Space may include small business incubators, small research laboratories, office space for investors and entrepreneurs, facilities for teaching and for theoretical, basic and applied research, product development and testing and prototype fabrication or production of experimental products”.
- The Economic Development Division of the City of Cambridge set out specific measures in order to attract and support businesses in the highly innovative sectors such as Life Science and Technology. The awareness of the increasing role played by these sectors in the Cambridge economy, pushed the administration to provide assistance and services in order to attract and create companies, start-ups and industries.

- The area shows a high concentration of start-ups and companies for the Life Science and Clean Tech sectors located within or in close proximity to, the Kendall Square Area. Here are located approximately 70 Life Science related companies, 13 Academic/no profit institutions, 31 High Tech related companies/start-ups, 7 High Tech related companies/startups, and 6 Incubators/co-working Spaces.





## The role of anchor institutions in empowering the local innovation ecosystem

***“MIT serves as a central node in a vibrant environment of invention, innovation and commercialization***

*Startup companies founded on groundbreaking technologies, energized by entrepreneurial spirit. Lively nexus of students, researchers, entrepreneurs, venture capitalists, government officials. Proximity allows fluid flow of ideas, information and resources”*



Talent + Resources + Proximity = Discovery, Innovation & Entrepreneurship + Capital,  
Partnering and Commercial Products

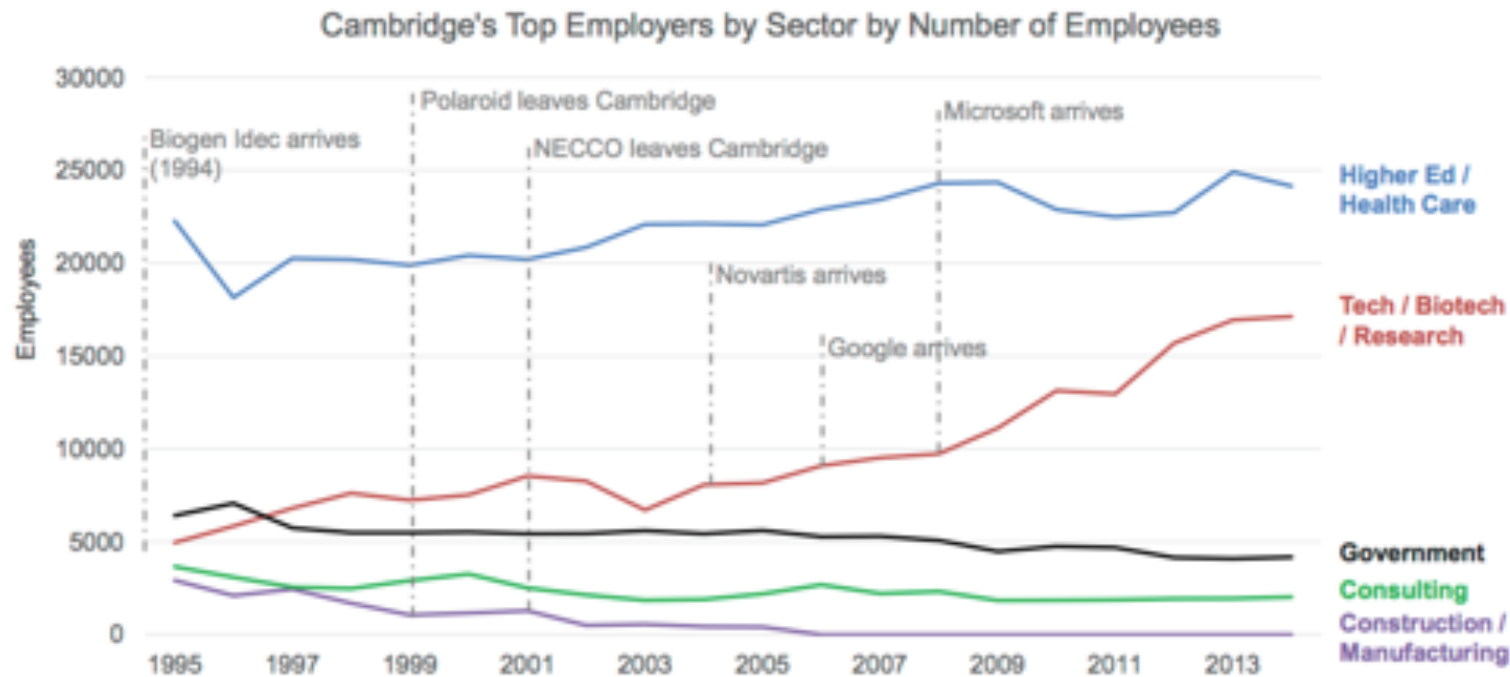
Cambridge  
Innovation  
Ecosystem



Knowledge (network)  
*creation (Knots)*  
*sharing (links)*  
*transfer (flows)*

## Big Companies attraction

The largest employers are increasingly in tech and biotech.



Source: Envision Cambridge

## example Physical transformation of Kendall Square area

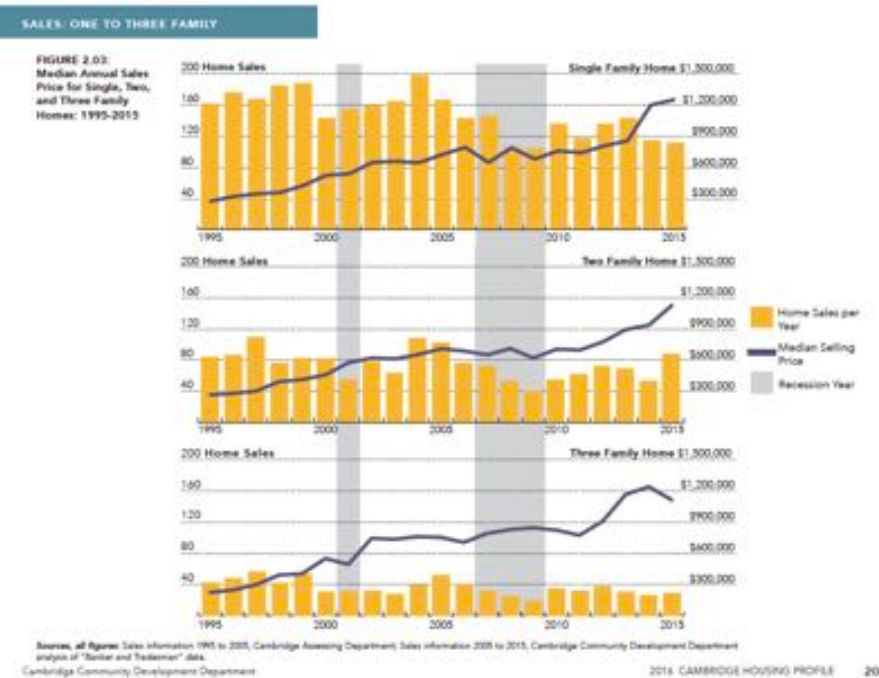


Novartis Expansion PUD (2011) is in the Osborn Triangle area, and thus relates both to C2 and K2 plans. Its ground floor retail and large landscaped courtyard will provide connections to both areas, and will help activate the streets on which it sits, especially Massachusetts Avenue.



## The effects?

Its too early to evaluate the effects of the K2C2 vision in the Kendall Square area (it was approved in 2013), however in the maenwhile...



**MAP 2.12: Rental Premiums Associated with Transit Station Proximity and Cambridge Location: November 2015**





## The effects?

Its too early to evaluate the effects of the K2C2 vision in the Kendall Square area (it was approved in 2013), however...

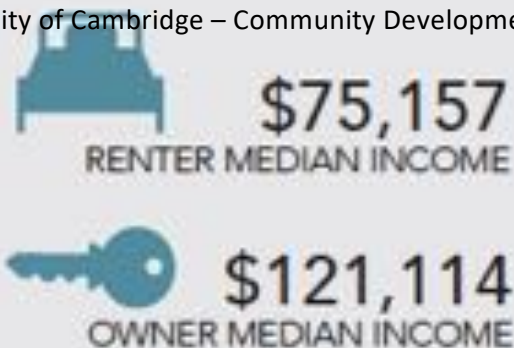
According to the 2012 - 2016 American Community Survey, median family income totaled \$107,897, in inflation adjusted dollars, up from \$85,660 in 1999 and \$74,764 in 1989. This **represents an increase of 26% from 1999 and 44% from 1989 in inflation adjusted dollars.**

The 2012 - 2016 American Community Survey indicates that the state median family income was \$90,180 and the national median income was \$67,871.

Cambridge median household incomes rose from \$69,135 in 1999 to \$83,122 in 2012 - 2016 in inflation adjusted dollars, a 20.2% increase. In 1989 median household income stood at \$61,957 in inflation adjusted dollars, indicating an increase of 34.2%.

The 2012 - 2016 American Community Survey indicates that the state median household was \$70,954 and the national median household income was \$55,322.

Source: City of Cambridge – Community Development Department



### Cambridge Market Overview

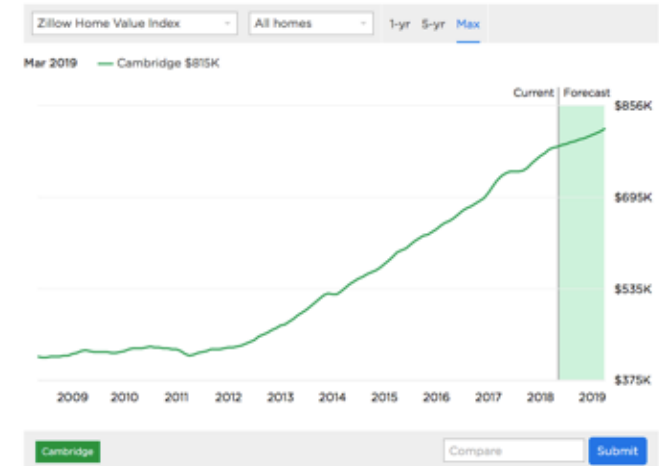
Data through Mar 31, 2018

\$781,602 Zillow

4.4% 1-yr forecast (Mar 31, 2018)

\$894,450 Median listing price

No data Median sale price



### Cambridge Rentals

Data through Mar 31, 2018

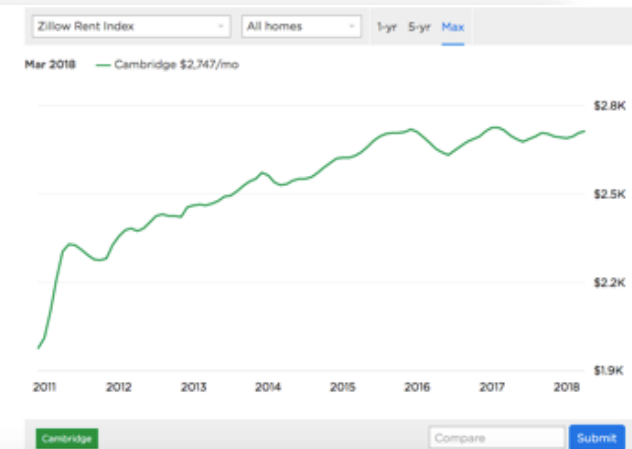
ZILLOW RENT INDEX



4.9 Break-even horizon

\$2,900 Rent list price

\$3.29 Rent list price / sq ft



- The case of Kendall Square shows how knowledge dynamics and innovation are contributing to the socio-economic and physical transformation of the area driven by innovation-oriented public policies (economic development measures and urban planning).
- The connection of urban and innovation-oriented policy in the City of Cambridge reveals a sort of innovation production oriented approach, in order to boost competitiveness and attract exogenous resources.
- the analysis of urban planning tools, together with economic development measures, shows up two integrated outcomes.
  - On one side, the public actors support the implementation of innovation-oriented policy, through economic development measures, in nurturing the innovation ecosystem creating the conditions for the retention and attraction of businesses
  - On the other side, the public actors enhance the above process through zoning and urban planning tools by adding innovation spaces requirement within mixed-use districts.
- The case of Kendall Square highlight how zoning and urban planning tools are contributing to support local innovation ecosystems acting as “big push” for innovation by setting new tools, or the adaptation of the existing ones, in response to the new and sophisticated socio-economic and physical demand of transformation. However, the innovation-oriented approach implemented

### ***Limitations***

- In Kendall Square the approach developed to nurture innovation fits with the socio-economic context conditions, where the demand of innovation is particularly high due to several appealing factors in attracting people, capitals, companies and ideas:
  - the presence of world-wide recognised anchors institutions (MIT- Harvard)
  - the presence of big companies (google, amazon, novartis etc)
  - the concentration of capitals (public investments, venture capitals, equity etc )
  - a local innovation ecosystem supported by public policies (economic development and urban planning)+
  - ...BUT ... What if in those places where such preconditions are lacking? Does the innovation districts approach solve the lack of preconditions for innovation in lagging cities/urban areas?

### ***Future Works***

- the innovation-oriented approach implemented in the Kendall Square case which is recognised as a “successful innovation districts” call for deeper comparative analysis from an international perspective in order to better understand how to avoid the possible side effects/impacts especially in terms of emerging gentrification phenomena, socially inclusive practices and sustainability issues.

# Thank you

## ***Pasquale Pizzimenti***

Marie Curie Experienced Researcher – MAPSLED Project  
Research Fellow in Urban and Regional Planning  
PAU Department - CLUDsLab  
Università Mediterranea of Reggio Calabria, Italy

[pasquale.pizzimenti@unirc.it](mailto:pasquale.pizzimenti@unirc.it)

[pizzimenti.pasquale@gmail.com](mailto:pizzimenti.pasquale@gmail.com)

<http://www.cluds-7fp.unirc.it/>