Challenges and Benefits of Community Choice Aggregation Programs, MA

Faculty Sponsor: Marta Vicarelli
Undergraduate Research Assistant: John Stevenson
University of Massachusetts Amherst, Department of Economics

Introduction

Community choice aggregation (CCA) programs are energy procurement programs adopted by about 170 municipalities across Massachusetts, one of only eight states across the country to have enacted CCA legislation (*Electric Restructuring Act,* 1997). CCA programs allow local governments to aggregate the electricity loads of residents, businesses, and municipal facilities to procure a competitive supply of electricity. Potential benefits of CCA programs include savings for consumers (i.e. lower prices) and incentives to boost innovation and local economic development related to renewable energy technologies. Moreover CCAs may generate positive environmental externalities; by choosing their electricity supplier, municipalities may, for instance, increase the proportion of renewable energies in their energy mix and contribute to climate change mitigation.

Research Question

This study examines opportunities, determinants, and challenges associated to CCA programs. the original goals motivating the adoption of CCA programs by MA municipalities as well as the self-reported challenges and benefits associated to their implementation. We also examine to what extent CCA programs contribute to local economic development related to renewable energy programs and whether the programs fulfil their potential toward climate mitigation. **This specific poster looks at how education levels in a municipality affect the characteristics of a CCA; reflecting in package complexity and renewable energy ambition.**

Data and Methods

Our dataset combines survey data with publicly available data, aggregated and analysed in STATA. Survey data has been collected since Spring 2019 by a team of UMass students under the supervision of Prof. Vicarelli. The survey targets the officials of the 170 MA municipalities with CCA programs. Our dataset currently includes *** municipalities. Respondents include mayors, town managers, energy managers and chairs of sustainability and energy committees.

Results

How does Education affect CCA Characteristics?

Figure 1. - By law, CCA contracts must include a mandatory amount of MA Class 1 Renewable Energy Portfolio Standard (RPS) . Municipalities may, if they wish, procure more renewable energy than required (currently 16%, increasing annually by 1 percent).

- *Is the level of education in a municipality related to the amount of RPS levels for the CCA package?*
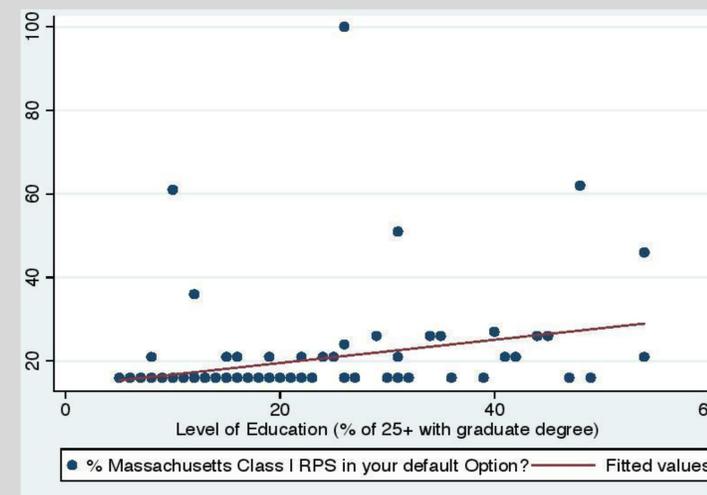

Figures 2. - Some municipalities' CCAs integrate different types of energy packages within the same contract; the packages present different amounts of RPS and often include the option of 100% renewable energy.

- *Is the level of education in the municipality related to the complexity of the contracts (number of packages)?*
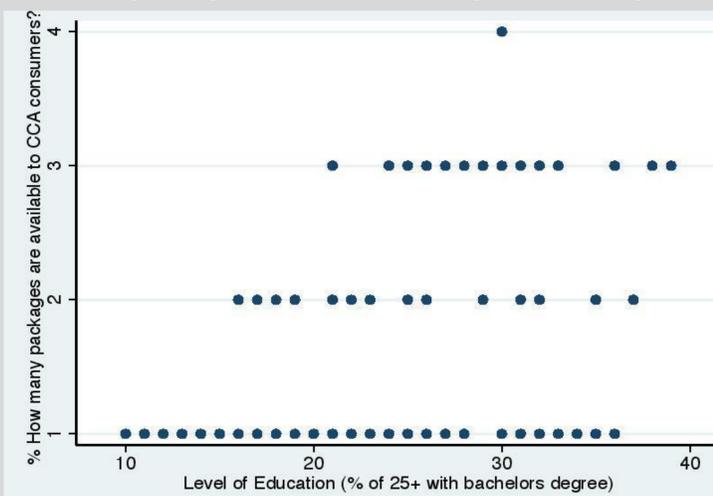
Figure 3. – Here the level of education indicates the percentage of residents with a graduate degree.
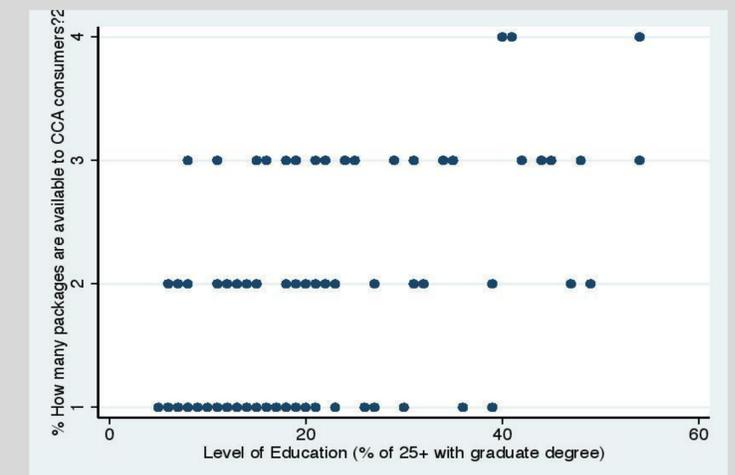
Conclusions

FIGURE 1:
- Most municipalities' default package does not include more than the required 16% of MA Class 1 RPS.
- However, the percentage of residents with bachelor and graduate degrees seem positively correlated with the share of RPS in the default package.
- This suggests that municipalities with a higher level of education adopt contracts with a higher share of local renewable energy.

FIGURES 2 and 3:
- There is a strong relationship between the complexity of contracts (number of packages available) and share of the population with a bachelor's degree (Fig 2) or with a graduate degree (Fig 3).
- We can infer that municipalities with a more educated population will be more likely to adopt environmentally ambitious contracts (higher amount of renewable energy) and/or more complex CCA contracts.

Role of the Research Assistant

Over the course of the semester I worked closely with fellow undergraduate research assistants Zachary Ettridge and Nihal Warawdekar. Duties as a research assistant involved internet research and data collection, assisting with the interview process, and the analysis of descriptive statistics.