# This project aims to discover how social and economic factors impact innovation in America.

The dataset is from <https://opportunityinsights.org/data/>. Specifically, our team has used the below two datasets:

* Inventors in America: Commuting Zone Innovation Rates by Childhood Commuting Zone, Gender, and Parent Income
* Careers of Inventors: Innovation Rates by Current State, Gender, Year of Birth, and Age

# The rationale for our design

Raising an exciting and relevant question by reviewing the dataset; then discovering insights using the "peel an onion" method.

### Part1. The relationship between commuting zone(state) and innovation

We use a bar chart to list states on the x-axis and the mean of num\_grants on the y-axis (descending order). This design can help audiences easily spot which state(s) has the highest average of num\_grants. At first, using the scatter plot, the bar chart is more straightforward when there are many unique values on the x-axis. Based on a similar reason, the bar chart is used for comparing the average inventor rate by state and commuting zones.

### Part2. The relationship between the year of born and innovation

I use multiple line charts to show the relationship between birth year and the average number of patents granted per individual. By adding age as the color category, this chart shows that 1963 is the year of birth with the most average number of grants, and inventors aged 40 are the most productive. Initially, I chose points instead of the line, but it isn't easy to find insights from many points.

# Overview of our development process

We had three meetings in total for this project from beginning to finish.

Meeting 1. Decided on the dataset and split the workload

* Cuiting: discover how gender and parent income impact innovation
* Haoyu: find how childhood commuting zone and cohort impact innovation

Meeting 2. Check-in on each other's progress

Meeting 3.

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| Efforts |  |  |
| Team Mates | Working Hours breakdown | The aspect of spending the most time |
| Cuiting |  |  |
| Haoyu | 10/7 Dataset Discover : 3h  10/8 Meeting #1 + EDA : 5h  10/9 Meeting #2 + Build Interactive App: 4.5h  10/10 Improve App + TA: 3h  10/11 Improve App + Writeup: 4h |  |

# Insights Summary

The neighborhood does impact innovation in America. East and West coast have higher invention rates than other parts of the U.S. Based on the interactive charts from our app, Vermont is the 1st inventor state in the U.S. Massachusetts ranks 2nd place with a focus on the Drugs and Medical patent category. The outstanding performance in the Computers and Communications field wins California 3rd place.

Fun facts:

* The birth year between 1960 and 1965 has the highest average number of patent grants per individual; Inventors aged around 40 are most productive based on the average number of patent grants per individual 😎.
* Childhood commuting zone Oak Bluffs, MA, has the highest share of children who patent in the technology category and have total patent citations in the top 5% of their birth cohort.