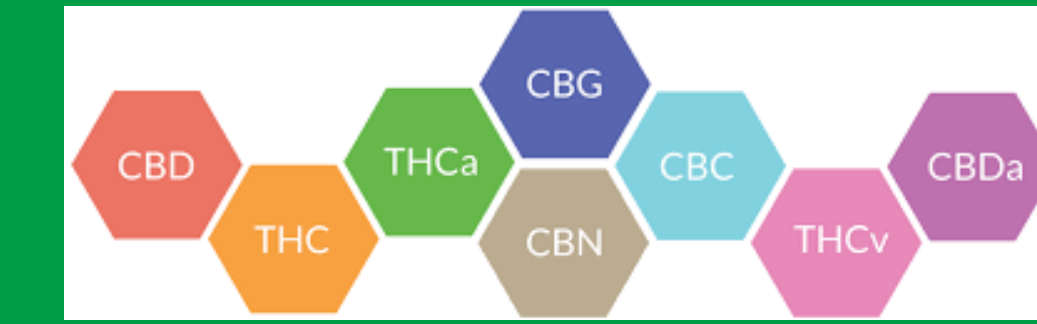


# AGRICULTURE, ACADEMIA, NSF, AND HEMP. SAY WHAT?



## INTRODUCTION/BACKGROUND

### Objectives and Aims:

- 1) Identify the elements of a business canvas model and their value to successful business planning for hemp industry start-up.
- 2) Demonstrate ability to generate a hypothesis that meets hemp industry research needs.
- 2) Debate the practicality of partnerships with academia and participation in NSF programs to enhance hemp industry venture success.
- 3) Set goals for next steps in advancing in hemp industry product diversification.

**Hemp Background:** North Carolina was one of the leading growers of hemp with a record 39 tons in 1850 and 3,016 tons grown in 1860. However, the Civil War altered the growing patterns of many crops including Hemp cultivation in North Carolina. Competition from large industrial companies further impacted market viability for industrial hemp products. North Carolina reinstated hemp farming in 2017 through the Industrial Hemp Pilot Program resulting in 1000 acres of production through the issuance of licenses by the Industrial Hemp Commission. Hemp grown in NC's program is required to have a THC analysis of 0.3% or less by dry weight confirmed by external laboratories. 2018 US Farm Bill passed, removing Hemp from schedule 1 drug list. According to the Cooperative Extension Hemp Coordinator (Fall, 2018), 80% of Hemp grown in North Carolina is used to produce CBD oil. Most of the hemp in North Carolina used to produce CBD oil is grown in specially designed green houses with artificial lighting and heat. In winter of 2018, 420 licensed producers were approved in North Carolina with open enrollment pending for 2019.

## METHODS

The National Science Foundation Innovation Corps (I-Corps) prepares scientists and engineers with unique knowledge and skill sets to extend beyond academia and even partner with community to improve the economic and societal benefits as well as advance outputs toward commercialization. The I-Corps program uses a business canvas model with nine elements that begins with generation of a hypothesis and interviews with adjustments to the nine elements as the process unfolds.

### I-CORPS BootCamp September 2018

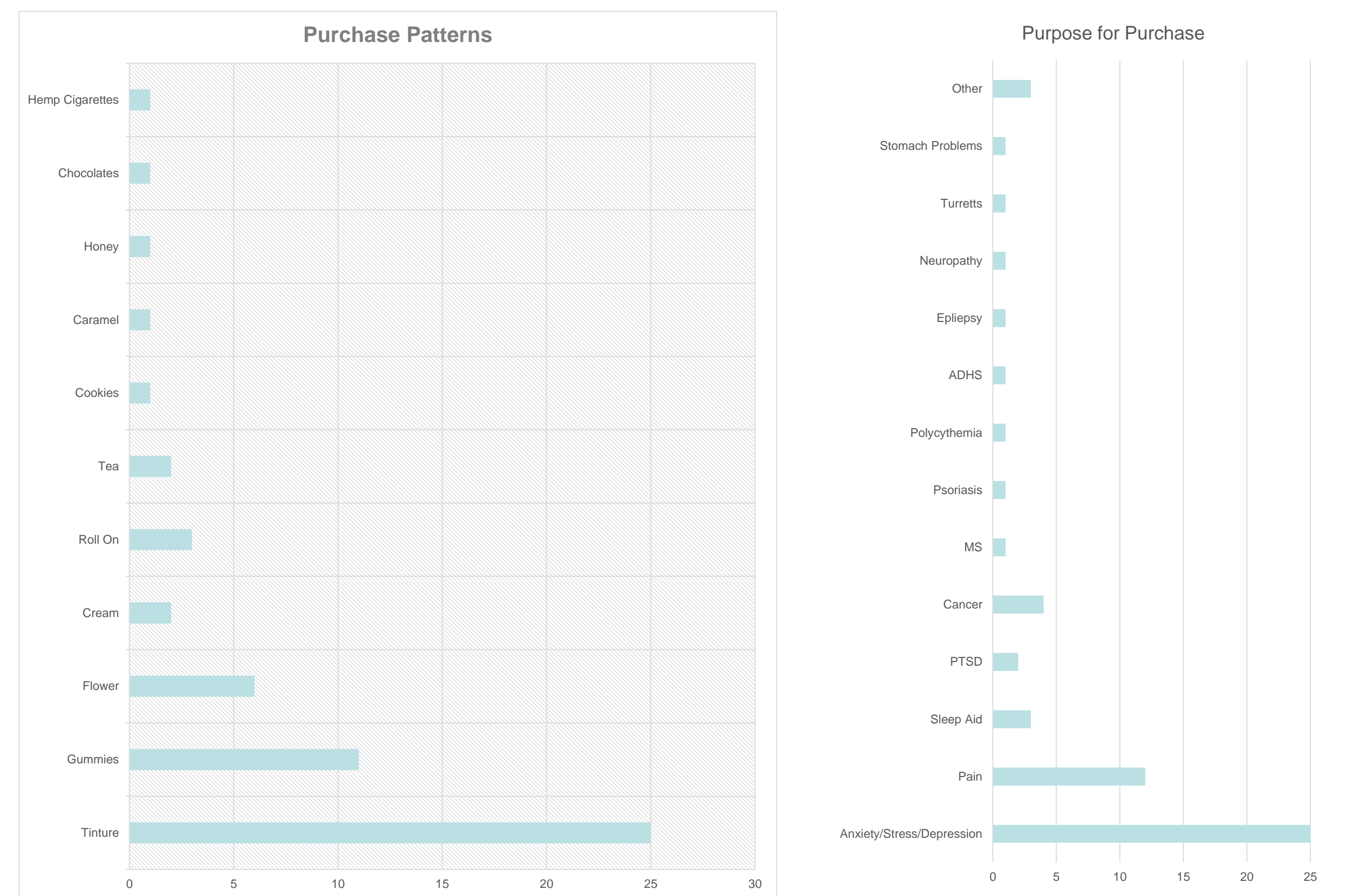
Exploratory Introduction to the I-Corps Program. a) An idea identified; b) an effort to conduct 5-10 customer interviews; and c) a team ideally consisting of 3 individuals. Preferably, teams should consist of a faculty or staff member, student and mentor and/or community member.

### I-CORPS Phase II October – November 2018

A five-week program guided by skilled mentors that dives more deeply into customer identification and value proposition, while also assessing channels, customer relationships, revenue streams, key resources, key activities, key partners, and cost structure. At the conclusion, teams will have conducted a minimum of 40 interviews and come to a Go/No-Go decision.

## PRELIMINARY RESULTS

Of the 44 marketing responses, purchases were made for the following (note some noted purchasing more than one product). Tincture (46%), Gummies (20%), and Flower (11%) followed by Roll-on (5%) are the most frequent purchase patterns. The purpose of purchase included anxiety, depression, and stress (43.8%), pain (21%), cancer (7%), and sleep aid (5%). Only 31.8% of those survey expressed an interest in other hemp food products.



## Industrial Hemp Uses

**Seeds:** Industrial Products (Oil paints, Varnishes, Printing inks, Fuel, Solvents, Coatings); Foods (Hemp Seed Hearts, Hemp Seed Oil, Hemp Protein Powder, EFA Food Supplements); Body Care (Soaps, Shampoos, Lotions, Balms, Cosmetics).

**Stalk:** Paper (Printing, Newsprint, Cardboard, Packaging); Textiles (Clothing, Diapers, Handbags, Denim, Shoes, Fine fabrics); Building Materials (Fibreboard, Insulation, Acrylics, Fibreglass substitute); Industrial Textiles (Rope, Canvas, Tarps, Carpeting, Netting, Caulking, Moulded parts); Essential Oils; Medicines; Nutritional Supplements; Animal Bedding; Animal Feed; Body Care Products; Construction; Moulded Plastics.

**Leaves:** Very absorbent and good for animal bedding; Mulch and compost.

**Roots:** Organic compost and nutrients; Remedy for conditions such as arthritis or joint pain, fibromyalgia, and eczema.

**THE BENEFITS OF CULTIVATING HEMP:** Hemp can yield 3-5 dry tons of fibre per acre. That's four times what an average forest can yield. Hemp cultivation requires no chemicals, pesticides or herbicides.

## DISCUSSION

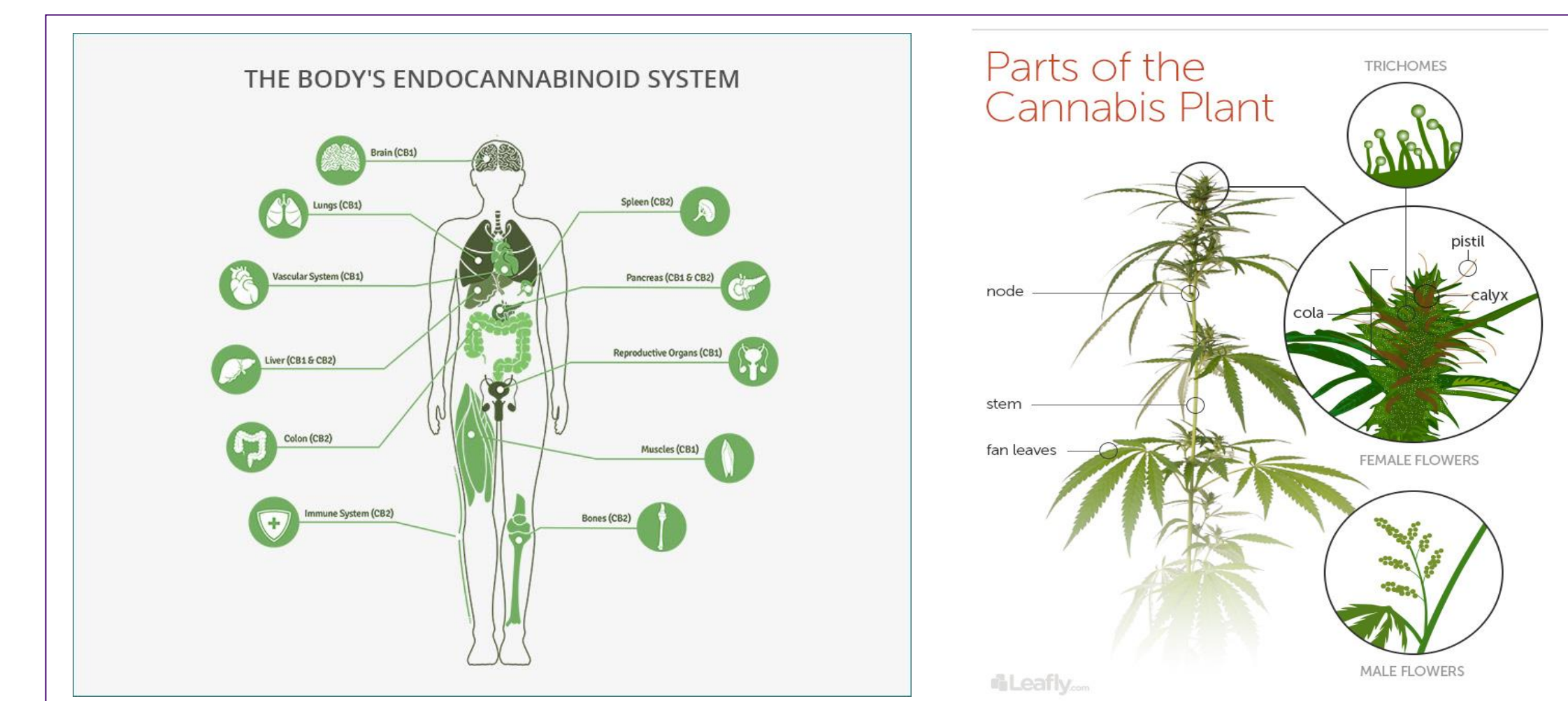
**Strengths:** This marketing survey targeted individuals in rural and urban areas that were purchasers of CBD oil to determine their interest in other hemp products.

**Limitations:** The small sample size will likely be a limitation of this study by limiting generalizability. Also, due to the fact marketing samples were limited to CBD oil pharmacies, type of hemp product availability of for purchase was limited. It would be important in future studies to survey marketing in food stores for those individuals purchasing nutritional products containing hemp.

### Next Steps:

- Continue to survey individuals with an interest in hemp products.
- Interview individuals in the industry at critical points of product marketing.
- Explore health and safety issues that could arise within hemp industry at each level of processing.

## Science of Endocannabinoids



## HEMP INDUSTRY GAPS & ACKNOWLEDGEMENTS

### Hemp Industry Gaps

- ❖ Community-wide Education for the public (large scale)
- ❖ Scalable Infrastructure
- ❖ Standard Operating Procedures
- ❖ Crop Insurance
- ❖ Economic Growth Impact Studies
- ❖ Environmental Impact Studies
- ❖ Acknowledgement

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