## Opportunity and Significance
Mothers specifically have demonstrated medical conditions caused by increased musculoskeletal force and fatigue. The current car seat carrier is one of the main contributing factors to this problem. A lightweight infant carrier as a lightweight solution is necessary to address this problem.

## Technical Objectives
The user, also referred as the caregiver of the infant, needs an independent, safe, lightweight, portable infant carrier compatible with strollers and shopping carts in order to alleviate the fatigue experienced due to carrying infants up to the 95th percentile.

## Functional Requirements:
- Cannot contribute to muscle fatigue in the person handling the carrier
- Hold a 95 percentile infant up to one year of age
- Does not impede current function of the car seat
- Convenient to place infant in and remove from the car seat
- Minimize the physical manipulation of an infant
- Cannot cause discomfort, pain or inflict an injury on the infant

## Performance Requirements:
- Priced at approximately $100
- Lightweight at 5.5 lbs
- Use of a sturdy and durable material that withstands 178 N³
- Can withstand temperatures of up to 172 degrees Fahrenheit
- Optimal infant body posture for maximum oxygenation

## Interface Requirements:
- Compatible with top three carrier brands: Graco, Chicco, and Britax
- Compatible with a standard shopping cart
- Compatible with standard stroller
- Compatibility of insert material, car seat, and carrier to avoid degradation of any material
- Easy to install within current infant carrier/car seat devices
- Cannot cause dermatitis of any kind
- Washable/completely removable

## Related Work and State of Practice

### Puig Matrix

<table>
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<th>Category</th>
<th>Feature</th>
<th>Puig's Rating</th>
<th>Manufacturer's Design Target</th>
<th>Competitive Analysis</th>
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## Technical Approach, Accomplishments and Results

### Lightweight Infant Carrier
Tannia Rodriguez, Almasa Omerovic, Hamad Mirza

### Technical Approach
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**Next Steps for Development and Test**
- Hard shell material-lighter/sturdier option
- Varying sizes to account for >1 year olds
- Car seat capabilities
- Crash testing
- Customer feedback: survey
- Next stage prototype development with final material selection

**Commercialization Plan & Partners**
The team is currently working with Dr. Shamaya Creagh who first introduced the problem of extraneous stress on caregivers while transporting infants during the Winter 2016 semester.

**Challenges:**
- Building a brand to sell this product would require identifying a manufacturer
- Competitive marketplace
- Extensive regulations and approvals necessary

To commercialize the product we plan to pursue a licensing deal with the top three carrier brands: Graco, Chicco, and Britax. This approach would produce profit without taking on the risk that producing our device ourselves would have, and the license can be shared with many different brands.

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