

Thesis Portfolio

Preliminary Design of a Light Attack Aircraft for Austere Airfield
(Technical Report)

The Causes and Effects of the Steadily Increasing Price of Insulin in the US
(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science
University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree
Bachelor of Science, School of Engineering

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Spring, 2021

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Sociotechnical Synthesis

The technical topic in this paper is an AIAA competition for the preliminary design of a light attack aircraft for austere airfields. This aircraft's intended use is as a cheap, efficient alternative to modern fighter aircraft or attack helicopters in uncontested airspace. It is intended to operate on short runways with limited servicing and maintenance. The goal of this design is to provide deliverables describing the aircraft configuration, sizing, and concept of operations. The preliminary design provides a baseline proof of concept before more resources are invested into the program. The aircraft we designed is a two-engine, tilt wing, VTOL/STOL concept. The ethical implications for any military design are complicated, but I believe the use of a light attack aircraft is worthwhile due to the reduction of waste from manufacturing and fuel use compared to fighter aircraft or attack helicopters. This aircraft will be used to kill people, but only as an alternative to current aircraft. I do not believe this aircraft will result in the killings of more innocents, and therefore believe the designing of it to be ethical.

In July 2019, Bernie Sanders' 'Caravan to Canada' travelled to Canada with a group of people who had diabetes in order to buy thousands of dollars' worth of insulin at one tenth the price of the same drug in the United States (Hoskins, 2020). Insulin is a life-saving medicine for many people and its price has steadily increased since 2002, becoming a substantial burden on those who require it. This STS prospectus aims to examine the causes of high insulin prices in the United States. I am hypothesizing that the pricing of insulin is not a result of the cost of production and/or innovation, but of complex price politics. I will examine how the relevant parties communicate with each other in order to set the price of insulin. My goal is to use insulin as a case study to explain increasing pharmaceutical and healthcare prices in the United States as a whole.

The technical subject of the STS prospectus and the technical topic for the Dept. of Aerospace Engineering are not related.