



**From the Individual to Society:**  
How Systems and Societal Factors  
Shape Health Care Decisions

18 - 20 October 2021 | Virtual Meeting



**Abstract Title:** COVID-19 Excess Mortality and the Cost-Effectiveness of Treatment Options

Seleccionar idioma ▼

Con la tecnología de  Traductor de Google

**ABSTRACT PREVIEW: COVID-19 EXCESS MORTALITY AND THE COST-EFFECTIVENESS OF TREATMENT OPTIONS**

[COVID-19 Excess Mortality and the Cost-Effectiveness of Treatment Options](#)

Abstract ID: 1070603

Submission Type: Virtual Oral Presentation

Content Categories: Applied Health Economics (AHE)

Abstract Status: Active

**Author(s)**

**Diaz A. Hirvin**

**Position:**

Masters student

**Organization:**

Center for Research and Teaching in Economics (CIDE-Spanish acronym)

**Office Phone:**

(553) 918-3493

**Email:**

hirvinazael@gmail.com

**Role:**

Author

**Biography**

Hirvin A. Diaz-Zepeda is an Economist by the National Autonomous University of Mexico and master's student in Methods for the Analysis of Public Policy at the Center for Research and Teaching in Economics (CIDE-Spanish acronym). Since 2020 he is part of the Stanford-CIDE Coronavirus Simulation (SC-COSMO) Modelling Consortium and currently studying COVID-19 pandemic-related topics. Author of the abstract Estimation of COVID-19 Case Fatality Ratio in Mexico at a National Level presented at the 42nd Annual Meeting of the Society for Medical Decision Making.

**Disclosure Status:** Complete

**Disclosure:** Nothing to Disclose

**Signed:** *Hirvin A. Diaz-Zepeda* (06/07/2021, 2:55 PM)

**Part 1**

I Agree

**Part 1**

Abstract Presenter

**Jeremy D. Goldhaber-Fiebert, PhD****Position:**

Associate Professor of Medicine

**Organization:**

Stanford University

**Office Phone:**

(650) 721-2486

**Email:**

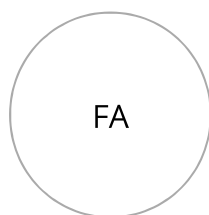
jeremygf@stanford.edu

**Role:**

Author

**Biography**

Jeremy Goldhaber-Fiebert, PhD, is an Associate Professor of Medicine, a Core Faculty Member at the Centers for Health Policy/Primary Care and Outcomes Research, and a Faculty Affiliate of the Stanford Center on Longevity and Stanford Center for International Development. His research focuses on complex policy decisions surrounding the prevention and management of increasingly common, chronic diseases and the life course impact of exposure to their risk factors. In the context of both developing and developed countries including the US, India, China, and South Africa, he has examined chronic conditions including type 2 diabetes and cardiovascular diseases, human papillomavirus and cervical cancer, tuberculosis, and hepatitis C and on risk factors including smoking, physical activity, obesity, malnutrition, and other diseases themselves. He combines simulation modeling methods and cost-effectiveness analyses with econometric approaches and behavioral economic studies to address these issues. Dr. Goldhaber-Fiebert graduated magna cum laude from Harvard College in 1997, with an A.B. in the History and Literature of America. After working as a software engineer and consultant, he conducted a year-long public health research program in Costa Rica with his wife in 2001. Winner of the Lee B. Lusted Prize for Outstanding Student Research from the Society for Medical Decision Making in 2006 and in 2008, he completed his PhD in Health Policy concentrating in Decision Science at Harvard University in 2008. He was elected as a Trustee of the Society for Medical Decision Making in 2011 and as Secretary/Treasurer in 2020.

**Fernando Alarid-Escudero, PhD****Position:**

Assistant Professor

**Organization:**

CIDE

**Office Phone:**

(920) 840-4123

**Email:**

fernando.alarid@cide.edu

**Role:**

Author

**Biography**

-

## Abstract

---

**I am a student/trainee and am submitting this abstract for the Lee B. Lusted Student Prize Competition?**

- Yes

**If yes, please provide the name and email address of your University Faculty Member/Advisor to verify your student status. If no, then enter N/A.**

fernando.alarid@cide.edu

## Purpose

Mexico has experienced one of the worst COVID-19 epidemics worldwide, with high hospitalization and case fatality rates. There is limited evidence to guide treatment decisions aimed at mitigating these disease burdens. We aim to evaluate the cost-effectiveness of different treatments that reduce mortality in COVID-19 hospitalized patients in Mexico using a microsimulation model.

## Methods

We developed a decision-analytic microsimulation model that simulates cohorts of intubated and non-intubated hospitalized COVID-19 patients. We used this model to evaluate various treatments that have shown effectiveness in reducing mortality among COVID-19 patients. The main outcomes were quality-adjusted life years (QALYs), lifetime healthcare costs (Mexican pesos [\$]), and incremental cost-effectiveness ratios. We assumed a willingness-to-pay (WTP) threshold of Mexico's per-capita GDP. We compared three treatments for non-intubated patients: 1) Remdesivir; 2) Remdesivir and Baricitinib, and 3) no treatment. For intubated patients, we compared two treatments: 1) Dexamethasone; 2) no treatment. Focusing on those hospitalized, we used publicly available data for COVID-19 deaths and background age- and sex-specific mortality rates to estimate the COVID-19-specific mortality for Mexico's population aged 45 years and older using relative survival methods. We quantified and propagated the uncertainty of model parameters through probabilistic sensitivity analysis (PSA).

## Results

The COVID-19-specific mortality rate increases with age (438 per 100,000 in patients 45-54 years-old to 1,009 per 100,000 in patients aged 70 and older)). Men face higher mortality rates than women (794 vs. 665 per 100,000). The non-intubated cohort lives 5.27 discounted QALYs and experiences costs of \$250,000 without COVID-19 treatment, 5.97 QALYs and \$332,000 with Remdesivir alone, and 6.70 QALYs and \$401,300 with Remdesivir and Baricitinib. At the per-capita GDP WTP, Remdesivir and Baricitinib is cost-effective – robustly so with respect to parameter uncertainty (Figure, upper panel). For intubated hospitalized patients, Dexamethasone yields 2.73 discounted QALYs with lifetime costs of \$719,500, while no COVID-19 treatment yields 1.45 QALYs and costs of \$684,900. Dexamethasone is highly likely to be cost-effective at the per-capita GDP WTP (Figure, lower panel).

## Conclusions

Treating COVID-19 hospitalized patients in Mexico is cost-effective. Remdesivir and Baricitinib is a high-value strategy for non-intubated patients as is Dexamethasone for intubated patients.