Assessing the Impact of U.S. Military Intervention on the Welfare of the Average Afghan: A Synthetic Control Analysis

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1. Introduction

The withdrawal of U.S. forces from Afghanistan in 2021 generated significant concerns among both Democratic and Republican Senators, who recognized the potential humanitarian consequences. Statements made by Democratic Senator Carper, highlighting the importance of not abandoning those who fought alongside the United States[1], and Senator Jeanne Shaheen, expressing fears of Afghan civilians falling victim to the Taliban in the absence of swift action[2], reflected the apprehensions shared by many. These sentiments echoed the widespread apprehensions about the role played by the United States in supporting Afghanistan's economic and social progress. However, their concern rests on an untested question: Did the intervention by the United States positively impact the welfare of the average Afghan?

Numerous studies have examined the localized effects of specific U.S. government programs. Through field experiments, evidence has shown that these programs successfully improved education and healthcare standards in particular villages. However, these well-intentioned programs also demonstrated unintended spill-over effects that may have had adverse consequences for neighboring communities. Additionally, the prolonged conflict in Afghanistan can be attributed, in part, to the presence of U.S. forces. Therefore, when considering the local level, it becomes clear that the effects of U.S. intervention are diverse and may have both positive and negative outcomes. Consequently, our focus in this paper is to comprehensively evaluate the aggregate impact of these various localized effects on the lives of Afghans as a whole, rather than solely examining the effects of individual programs.

To address this question, we employ a synthetic control methodology to construct a comparable control unit for Afghanistan that represents the scenario without U.S. intervention.

[1] https://www.npr.org/2021/08/16/1028081817/congressional-reaction-to-bidens-afghanistan-withdrawal-has-been-scathing
[2] https://www.npr.org/2021/08/16/1028081817/congressional-reaction-to-bidens-afghanistan-withdrawal-has-been-scathing

By utilizing development data from other fragile, conflict-affected countries, we can quantify the differences in quality of life outcomes resulting from U.S. intervention at the national level.

Our analysis reveals no statistically significant changes in development outcomes due to U.S. intervention. In fact, in-space placebo tests demonstrate similar post/pre-treatment mean squared prediction error (MSPE) ratios between Afghanistan and placebo units. Consequently, we lack sufficient evidence to support the conclusion that U.S. intervention improved quality of life outcomes for the average Afghan citizen.

Beyond the concerns for welfare, our study sheds light on a fundamental assumption in theories of intervention, counterinsurgency, and civil war: the belief that aligning with the intervener, such as the United States, brings benefits as they can provide services that alternative political forces, such as the Taliban, cannot. In the case of Afghanistan, we conclude that the positive effects of well-intentioned aid programs were offset by the negative consequences of prolonged conflict, foreign imposed regime change, and volatile aid. Importantly, our implementation of synthetic control for national level outcomes provides evidence that this claim extends across the entire conflict area, rather than being confined to a few localized cases.

2. Context of Afghanistan

Afghanistan, prior to the intervention by the United States, was grappling with profound challenges as one of the world's poorest nations. The country ranked poorly across various socio-economic indicators[3], reflecting its low levels of human and economic progress. The country's underdevelopment can be attributed to a combination of factors, with decades of conflict playing a significant role.

From the late 1970s until 1996, Afghanistan experienced a tumultuous period marked by near-constant strife. It began with rebels fighting against the Soviet occupation during the 1980s.

[3] https://georgewbush-whitehouse.archives.gov/infocus/nationalsecurity/rebuildingafghanistan.html

Following the Soviet Union's withdrawal in 1989, the country was engulfed in a devastating civil war (1992-1996) as local warlords competed for power. The civil war concluded in 1996 when the Taliban and affiliated militias took control over most of Afghanistan. Under the Taliban's autocratic rule, characterized by strict adherence to Sharia law and severe repression, Afghanistan continued to suffer from underdevelopment. Women were systematically excluded from educational and economic opportunities, elections were nonexistent, and the legitimacy of the Taliban government relied solely on an oath of allegiance. Furthermore, the Taliban regime exhibited deep suspicion toward foreign aid, leading to the closure of NGO and UN offices in Kabul in 1998[4].

However, amidst these challenges, the Taliban government did implement certain policies that had positive effects in some parts of the country. They enforced stringent anti-corruption measures and initiated limited social welfare programs. The Taliban also made efforts to improve road safety, curbing the brutality and corruption associated with local warlords, which garnered some support from the Afghan public[5].

The U.S. military intervention in 2001 brought about significant changes that were expected to contribute to Afghanistan's development. Humanitarian aid, including healthcare assistance such as vaccinations and the reconstruction of hospitals and clinics, was provided by the United States[6]. Over a span of 20 years, the U.S. government invested $145 billion in reconstruction efforts[7]. Additionally, the intervention facilitated the establishment of a new interim government, which eventually evolved into the Islamic Republic of Afghanistan in 2004. This new government prioritized the expansion of infrastructure and worked to alleviate the

[4] Rashid, Ahmed (2000), Taliban: Militant Islam, Oil and Fundamentalism in Central Asia, New Haven: Yale University Press, ISBN 978-0-300-08340-8
[5] https://cisac.fsi.stanford.edu/mappingmilitants/profiles/afghan-taliban
[6] https://georgewbush-whitehouse.archives.gov/infocus/nationalsecurity/rebuildingafghanistan.html
[7] SIGAR(https://www.sigar.mil/pdf/lessonslearned/SIGAR-21-46-LL.pdf)

repressive social norms imposed by the Taliban. The relaxation of social norms was particularly impactful for women, who had been barred from attending schools under the previous regime.

However, it is crucial to acknowledge that the U.S. intervention had its downsides as well. The military campaign resulted in significant human casualties, with an estimated 48,000 civilian deaths, and a staggering financial cost, with approximately $837 billion spent on warfare over the course of two decades[8]. The following table briefly summarizes the key changes brought about by US intervention.

	Afghanistan August 2001	US-driven changes
Governance	Autocratic government. Responds to dissent with harsh repression. Refused female participation in the workforce and education. Strong-anti corruption measures + social distribution of available resources.	Democratic government. Limited repression and progress towards equal representation. Very corrupt, difficulty administering social services.
Economics	Very little data. However, Afghanistan was one of the poorest countries in the world. Little foreign aid, no efforts to build industry. The country had low levels of urbanization and industrialization.	Extensive foreign aid and foreign investment. Efforts to increase industrialization and urbanization. Efforts to increase efficient farming practices.
Conflict	The Taliban controlled the majority of the country, with a small dissenting Northern Alliance.	US intervention and occupation required ousting the Taliban regime. Taliban insurgency required counterinsurgency measures from the US

3. Existing Scholarship on Affects

Numerous scholars and evaluators working within aid organizations have conducted studies utilizing field experiments to assess the impact of U.S. programs in Afghanistan. These

[8] SIGAR(https://www.sigar.mil/pdf/lessonslearned/SIGAR-21-46-LL.pdf)

studies have provided evidence of specific U.S. programs that successfully improved the well-being of participants and fostered both local development and governmental solidarity[9]. However, it is important to recognize that not all aid programs yielded significant humanitarian outcomes[10]. One limitation of these localized studies is their inability to ascertain whether the observed effects persist over time or if they are counterbalanced by other factors associated with U.S. intervention.

There are valid concerns that the overall impact of the U.S. intervention may be negative. Cross-national studies have shown that prolonged civil wars[11], aid volatility[12], and foreign-imposed regime changes can hinder national-level development[13]. However, these studies typically report average effects across multiple cases and may not fully consider the substantial manpower and financial support provided by the United States to enhance welfare in the specific case of Afghanistan. Consequently, generalizing the findings of these studies to the unique context of counterinsurgency in Afghanistan can be challenging.

Additionally, other studies have examined spillover effects within the context of civil wars and counterinsurgency. These studies reveal that local interventions aimed at improving civilian welfare can generate both positive and negative effects, often resulting in an aggregate impact that cancels out[14]. However, these studies primarily focus on specific programs and fail to consider the broader national-level impacts within the Afghan context.

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[9] Field experiments conducted in Afghanistan, such as Beath et al. (2017), provide evidence that U.S. insurgency programs have improved economic outcomes. Additionally, the National Solidarity Program, primarily funded by the U.S., successfully promoted development by empowering local community development councils.
[10] Beitler et al. found no positive impact on health resulting from U.S. health initiatives in Afghanistan.
[11] Ghobarah et al., Collier et al., and Gates et al. (2015) demonstrate the negative health and economic development outcomes associated with civil conflict.
[12] Nourou (2020) demonstrates how U.S. aid volatility leads to worse economic development.
[13] Peic and Reiter illustrate how foreign-imposed regime change leads to the destruction of state infrastructure and increased civil conflict.
[14] Berman et al. (2016) reveal that counterinsurgency efforts, despite positive local effects, have a net aggregate effect of zero.

In summary, existing theory and evidence suggest that various aspects of the U.S. intervention could both contribute to and detract from Afghan development in different cases. Moreover, different individuals may be exposed to these positive and negative effects to varying degrees. Currently, no study provides a comprehensive understanding of how these multifaceted interventions collectively shape the average welfare of the Afghan population.

The question of average welfare at the national level is of utmost importance as intervention in Afghanistan, particularly foreign-imposed regime change, occurred at the national level. Consequently, it is crucial to move beyond simplistic assessments of local-level effects and consider the broader implications of the U.S. intervention in Afghanistan.

4. Synthetic Control

The primary objective of this research paper is to estimate the overall impact of the U.S. intervention in Afghanistan on the welfare of Afghan citizens. To achieve this goal, we employ the synthetic control methodology, which is a statistical approach for analyzing the effects of a single policy intervention. This methodology involves constructing a synthetic model that represents the hypothetical outcomes of the treated unit (Afghanistan) in the absence of the intervention by using a weighted combination of control units that did not receive the same treatment. By comparing the treated unit with this synthetic counterfactual, it becomes possible to estimate the behavioral changes attributable to the intervention. Synthetic control methodology has notably been used to estimate the economic effects of German reunification[15] and changes in tobacco consumption due to California's Prop 99 legislation[16].

Conducting a traditional experiment to measure the effects of the intervention is unfeasible since random assignment of units to treatment and control groups is not possible.

[15] (Abadie et al 2015)
[16] (Abadie et al 2010)

Moreover, synthetic control offers distinct advantages over traditional difference-in-difference estimation in this context. The weighted aggregation of control units provides a more comprehensive representation of the complex changes occurring in Afghanistan, surpassing the limitations of an individual control unit. Additionally, synthetic control is better suited for measuring specific effects within the Afghan case, as opposed to regression analysis, which is more appropriate for assessing average effects across many countries. Synthetic control also avoids extrapolation issues, as the weights assigned to different units are non-negative and sum to one, in contrast to regression. Furthermore, the sparsity of weights in synthetic control models allows for a more straightforward interpretation of the counterfactual scenario.

Given the time series nature of the problem and the presence of a single observed intervention in a single treatment unit, synthetic control emerges as the most suitable methodology. The availability of panel data spanning multiple years before the intervention enables the construction of a meaningful control group. Furthermore, the Taliban could not have anticipated the Al-Qaeda attacks on the U.S. nor the U.S. response which fulfills synthetic control's no anticipation feasibility requirement.

5. Data and Model Selection

A. Outcome Selection

The selection of outcome variables is a crucial aspect of designing a synthetic control experiment. In this study, we propose two outcome measures that capture the quality of life for the average Afghan citizen. Firstly, we consider the Human Development Index (HDI), which provides an aggregated assessment of various dimensions, including life expectancy at birth, mean years of schooling, expected years of schooling, and GNI per capita. The HDI serves as an ideal indicator to gauge the quality of life for Afghan citizens. Secondly, we select infant

mortality rates as an outcome measure. We choose infant mortality over other health indicators due to its relatively lower susceptibility to the impact of battle deaths, in comparison to measures like life expectancy or general mortality rates. Moreover, infant mortality is a directly measured metric, unlike life expectancy at birth which involves ongoing projections. Traditional economic development measures such as GDP or GNI per capita are not employed as outcomes of interest in this study due to the limited availability of data with a sufficiently long time series prior to the intervention.

B. Donor Pool Selection

The selection of an appropriate donor pool necessitates certain requirements. First and foremost, units that have undergone a treatment similar to Afghanistan (foreign military intervention) are excluded from consideration. Additionally, units exhibiting significant structural shocks affecting our outcome variables are also excluded. It is crucial to limit the donor pool to feasible control units, rather than including all countries, to avoid overfitting.

For this study, three potential donor pools are proposed based on World Bank classifications: *heavily indebted poor countries, fragile and conflict-affected situations, and least developed countries*. These donor pools align with the characteristics of Afghanistan as a poor, underdeveloped, and conflict-affected nation, thereby offering viable comparability. Furthermore, utilizing these donor pools aids in controlling for the effects of underdevelopment and conflict. Ultimately, the fragile and conflict-affected situations[17] donor pool was used for its most consistent model fits, which is discussed further in the results section.

C. Variable Selection

Consistent with the time series analysis framework, pre-intervention observations of the outcome variable play a pivotal role in modeling post-intervention behavior. Various sets of lags

[17] https://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations

can be considered for model fitting, such as the mean of the pre-treatment outcome variable, the final pre-treatment observation, or all pre-treatment observations. In the case of the HDI, we utilize the mean of all pre-treatment observations, as it achieves a satisfactory fit without placing undue weight on lagged outcomes as predictors. Regarding infant mortality, all pre-treatment observations from 1991 to 2001 are included as predictors as was required to achieve a good model fit.

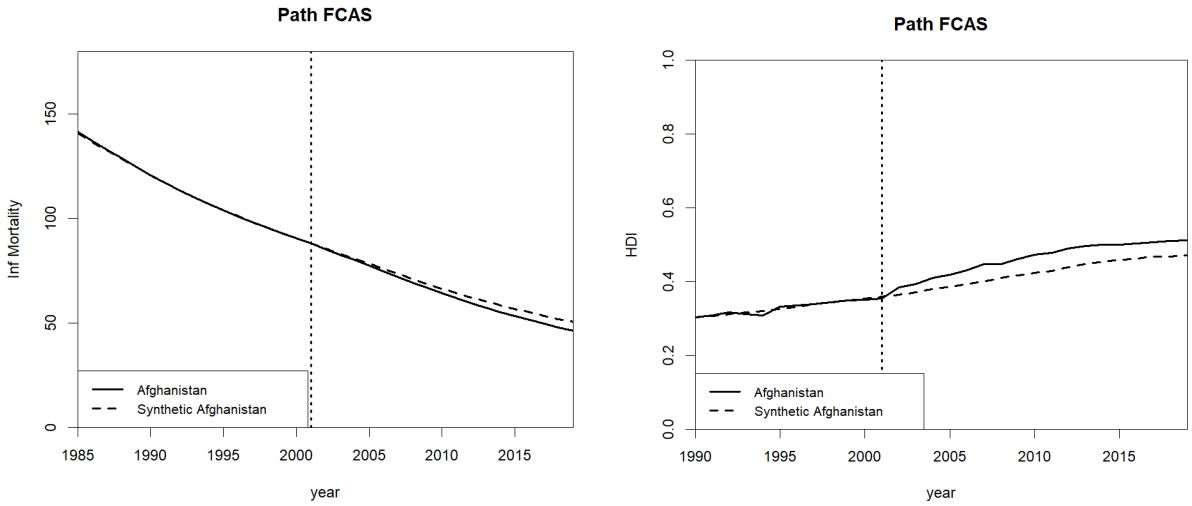
In addition to lagged outcomes, synthetic control models may incorporate other predictors that potentially influence the outcome variable. For our models, we selected UCDP/PRIO conflict intensity data, U.S. aid disbursements, workforce participation, and energy consumption as additional predictors. Previous research has established a causal relationship between both foreign aid disbursements and conflict intensity on development outcomes. Workforce participation and energy consumption aid in modeling and tracking overall development within the country and serve as a proxy for more traditional economic indicators such as GDP or GNI per capita.

6. Results

A. Constructing a Synthetic Counterfactual for Afghanistan without US Intervention

The objective of this section is to quantify the impact of US military intervention on human development in Afghanistan. To achieve this, we construct a synthetic counterfactual model for the country. For the analysis of infant mortality, we utilize the time period from 1985 to 2001 as the pre-intervention time series and optimize the sum of squared residuals (SSR) over 1991 to 2001. This approach allows us to validate our model's ability to track infant mortality on out-of-sample data using the period 1985 to 1990. As for the Human Development Index (HDI), which was first measured in 1990, pre-intervention data is available from 1990 onwards. We

optimize the SSR for HDI over the period 1991 to 2001 and validate the model using the year 1990. The final models are selected from the donor pool of fragile conflict-affected situations, as this pool consistently yields the best pre-treatment fits. Figure 1 illustrates the observed values (Y1) and the synthetic counterfactual values (Y1*) for infant mortality spanning from 1985 to 2019, while Figure 2 displays the corresponding values for HDI from 1990 to 2019. Both figures demonstrate a strong pre-treatment fit, with Y1* closely tracking Y1 prior to the intervention. The discrepancies between Y1 and Y1* for infant mortality and HDI are depicted in Figures 3 and 4, respectively.

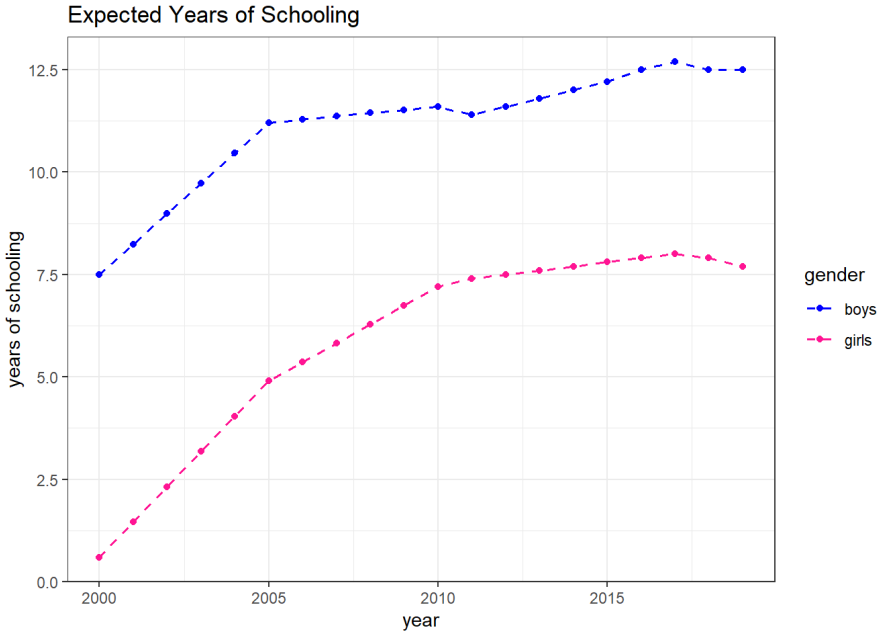


B. Results of the Intervention's Impact on Development Outcomes

The models' results indicate improved development outcomes relative to the synthetic counterfactual. By 2019, infant mortality had decreased by 4 deaths per thousand live births, suggesting that foreign aid and US efforts to rebuild Afghanistan have had a positive impact on health outcomes. Through the model's estimation, using World Bank population and crude birth rate data, we determine a total of 49,600 fewer infant deaths occurring from 2002 to 2019. The effect of the intervention on infant mortality rates does not manifest instantly; instead, it

gradually grows over time. This outcome is expected since rebuilding health infrastructure, training healthcare professionals, and enhancing maternal health require a considerable amount of time.

Figure 4 exhibits an almost immediate increase in HDI as a result of the intervention. This outcome can be explained by the expanded educational opportunities, particularly for girls, under the interim Afghan government and later the Islamic Republic of Afghanistan. Other components of HDI, such as GNI per capita and life expectancy at birth, exhibit gradual improvements. Figure 5 illustrates the expected years of schooling for boys and girls in Afghanistan from 2000 onwards. Girls experience a rapid increase in expected years of schooling from 2000 to 2005, followed by a slower increase from 2006 to 2010. This trend aligns well with the predicted difference in HDI, which also demonstrates a rapid increase from 2001 to 2007 before stabilizing after 2010.



C. Placebo Studies

Although the aforementioned results are plausible, it is crucial to examine the robustness of the observed gaps in infant mortality and HDI to ascertain whether they are truly attributable to the U.S. intervention. To address this concern, we conduct a placebo study by applying the

same synthetic model specifications to all other countries in the donor pool. If the gaps observed in infant mortality and HDI are indeed a result of the intervention, countries that did not receive a similar treatment in 2001 should not exhibit differences in these outcomes comparable to those depicted in Figures 3 and 4. Figures 6 and 7 present the results of the placebo tests for infant mortality and HDI, respectively. To assess the magnitude of the effect, we only plot placebos with a pre-treatment mean squared prediction error (MSPE) within a factor of 5 of the synthetic models, ensuring we only compare against placebos that demonstrate a good pre-treatment fit.

For both outcomes, the magnitude of the difference between Y1 and Y1* falls within the range of the placebos, suggesting that it is not extreme enough to attribute the disparity solely to U.S. intervention. In order to convincingly demonstrate that these improvements are a direct result of the intervention, the MSPE ratios for Afghanistan should exceed those of all placebo units. Since this is not the case, we cannot conclude that the difference between our synthetic unit and the treatment unit can be solely attributed to intervention. Instead, this disparity lies within the realm of normal modeling error, thus explaining the small variations observed in both outcome variables. In summary, the placebo tests indicate that either a) our models lack robustness, or b) the improvements in development cannot be exclusively attributed to U.S. intervention.

7. Implications / Conclusion

The impact of the U.S. military intervention in Afghanistan has encompassed significant political, economic, and developmental transformations within the country. However, the cumulative effect of changes in democratization, violence, humanitarian aid, and governmental corruption on the quality of life for the average Afghan citizen remains unclear.

In this study, we employ synthetic control methodology to examine the effects of intervention on Human Development Index (HDI) and infant mortality. Our findings indicate that the U.S. intervention in Afghanistan had no discernible impact on the quality of life for the average Afghan citizen, as evidenced by the insignificant differences between our synthetic model and the observed treatment. Although Afghanistan did witness improved development outcomes during the intervention period, these positive changes cannot be attributed solely to U.S. intervention. Instead, they are comparable to the experiences of other conflict-affected countries.

Beyond welfare considerations, our research sheds light on a critical assumption underlying theories of intervention, counterinsurgency, and civil war: that aligning with the intervener (e.g., the United States) is advantageous due to the services it can provide, which alternative political forces (e.g., the Taliban) cannot. However, our experiment fails to find evidence supporting this claim. In the case of Afghanistan, the negative aggregate effects of counterinsurgency, including increased conflict and volatile aid, offset the benefits of humanitarian assistance.

To enhance the experimental design, the inclusion of additional predictor variables is warranted. Notably, economic indicators such as GDP per capita and GNI per capita are excluded due to the lack of pre-intervention data for these variables. The literature has demonstrated their causal effect on the development outcomes of interest. Meaningful imputation of this missing data could lead to more accurate model fits.

Moreover, further application of this research design will be relevant to assess the impact of the recent Taliban takeover on the quality of life for the average Afghan citizen. Sufficient

time has not yet elapsed for synthetic control methodology to meaningfully measure such effects, nor have the outcomes of regime change substantially influenced our target variables.

Lastly, it is worth reiterating that the U.S. investment in Afghanistan, in terms of time, capital, and human lives, yielded no measurable effect on the welfare of the population. This observation underscores the importance of critically assessing the efficacy and long-term consequences of interventions to inform future policy decisions.

Appendix

Figure 1: Infant Mortality Rates Over Time Afghanistan vs Synthetic Counterfactual

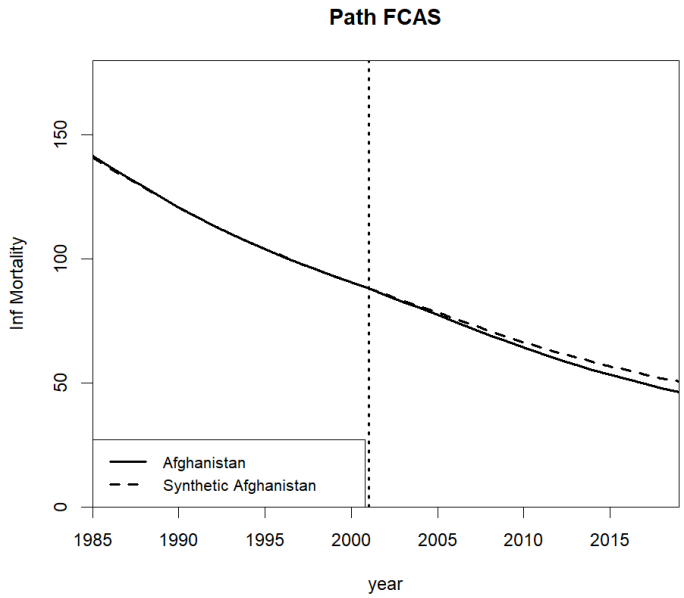


Figure 2: HDI Over Time Afghanistan vs Synthetic Counterfactual

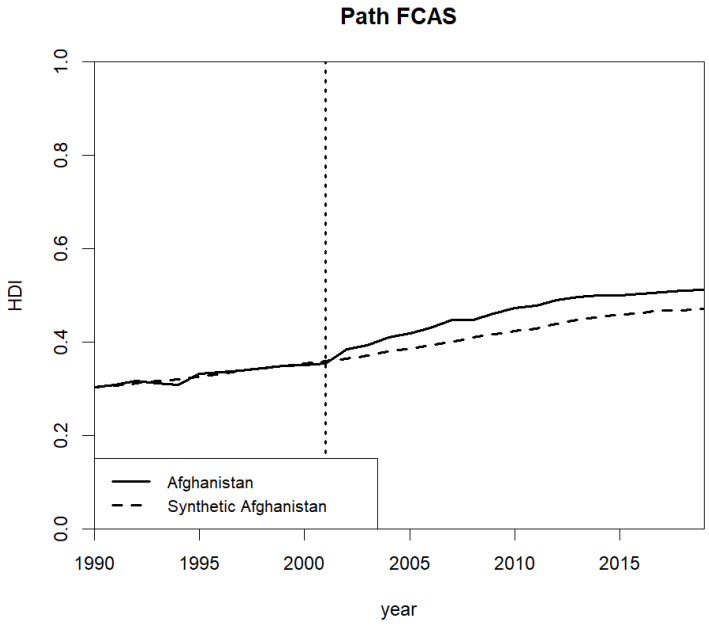


Figure 3: Predicted Difference in Infant Mortality

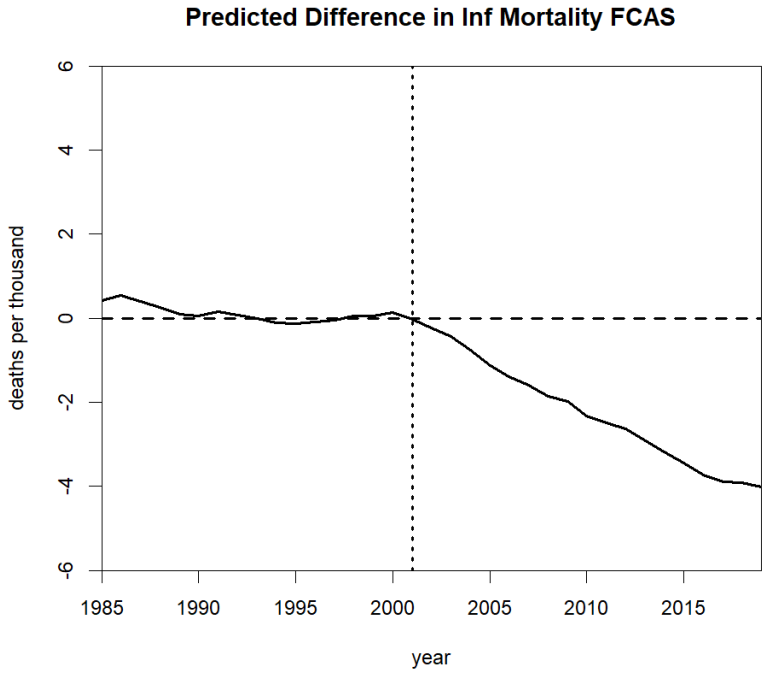


Figure 4: Predicted Difference in HDI

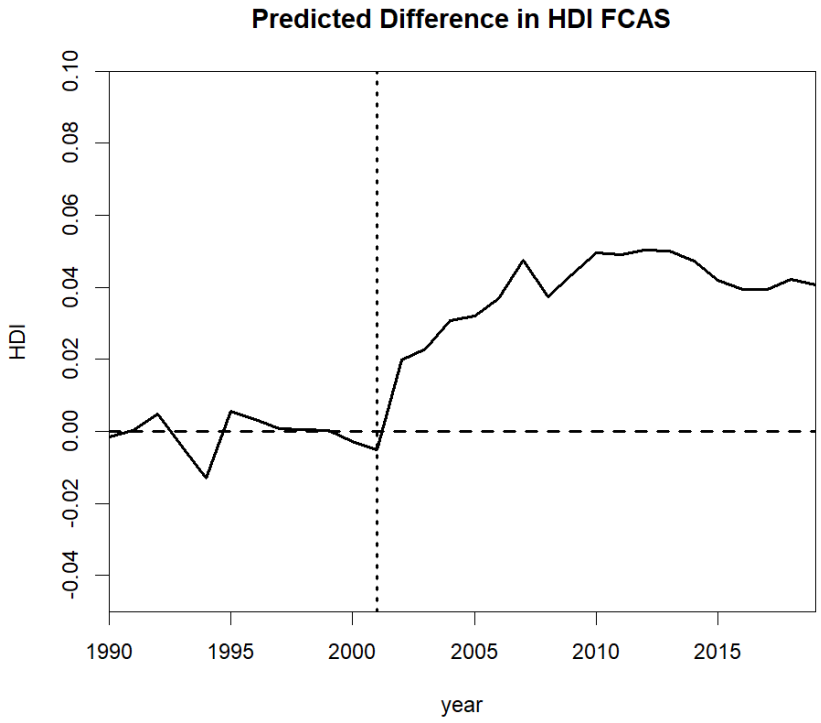


Figure 5: Expected Years of Schooling for Boys and Girls in Afghanistan

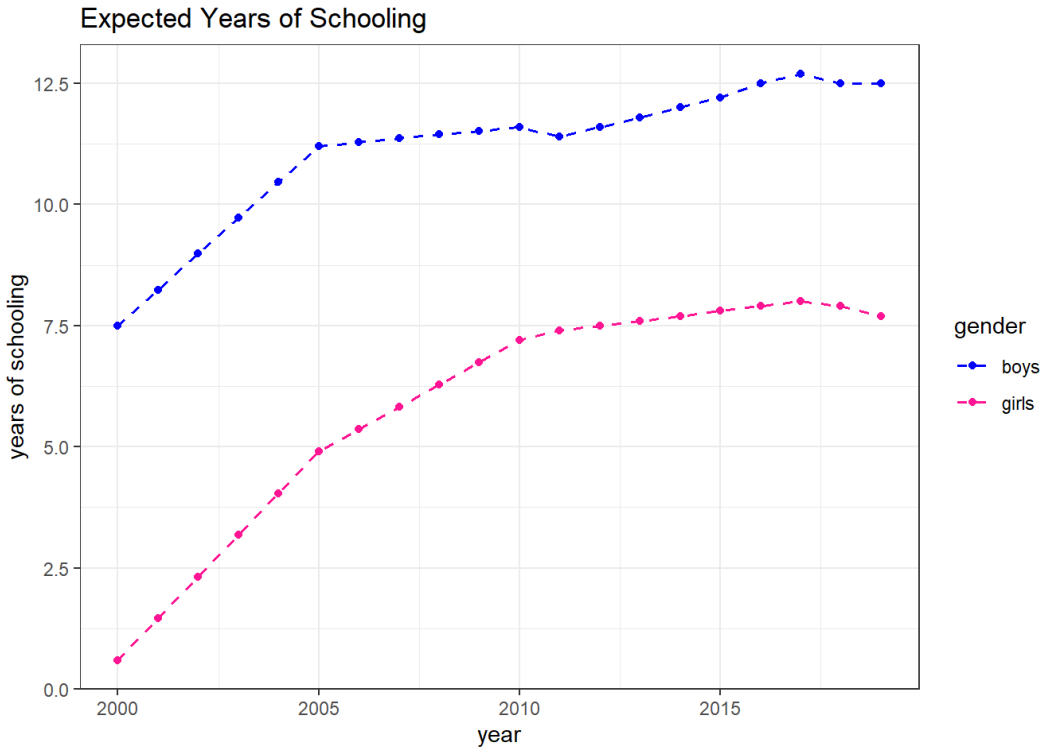


Figure 6: In Space Infant Mortality Placebos

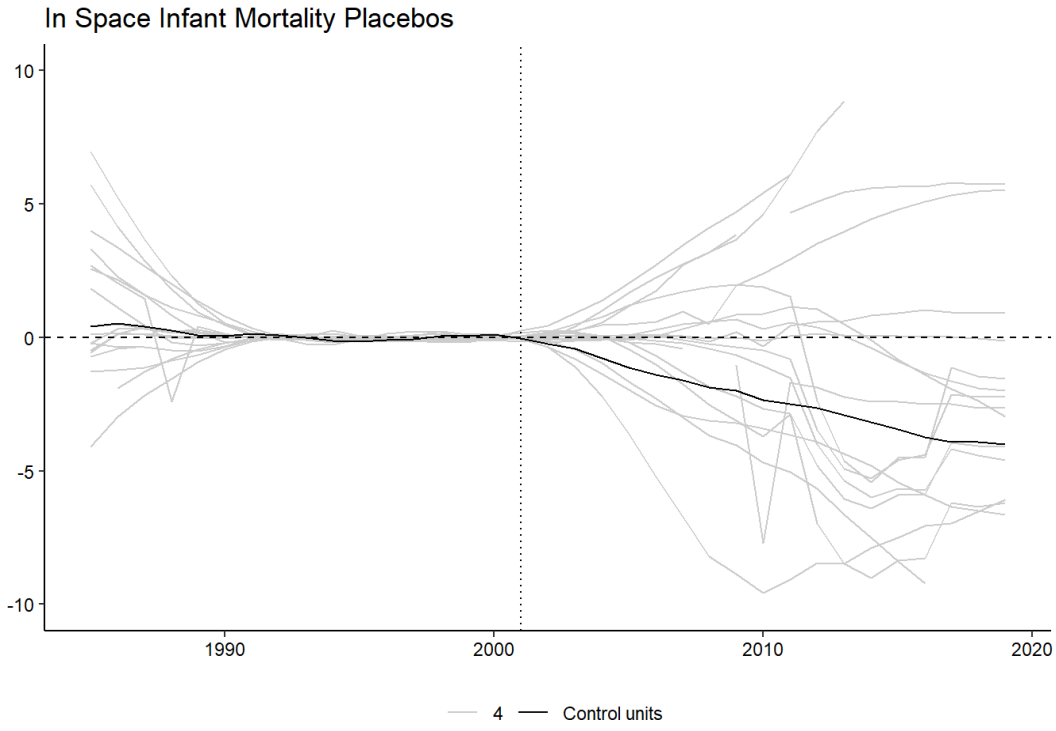


Figure 7: In Space HDI Placebos