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The Economic Impact of U.S. Drone Strikes on Pakistan

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THE ECONOMIC IMPACT OF U.S. DRONE STRIKES ON PAKISTAN

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Abstract

Drone strikes have a detrimental impact on the region of a nation, especially when the contact is not the targeted threat. When drone strikes are sent out, they result in consequences such as death, infrastructure damage, and consequently, unemployment increases. While proponents of drone strikes say they are precise weapons with little disruption to civilian life, this paper shows that in Pakistan, U.S. drone strikes have had an economic impact, particularly by increasing unemployment. Using an OLS model, the drone data from the Bureau of Investigative Journalism and individual survey data from the Pakistan Bureau of Statistics were used to find the effect of drone strikes on employment in Pakistan.

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Introduction

Between 2010 and 2020, U.S. drone strikes in Afghanistan, Pakistan, Somalia, and Yemen killed between 8,500 and 12,000 people, including as many as 1,700 civilians – 400 of whom were children.¹ In Pakistan, Open Society Foundations estimated that drone strikes have killed well over 2,000 people, including civilians who were not supposed to be targeted.² Former U.S. President Barack Obama advocated for Unmanned Aerial Vehicles (UAVs) or drones as a military technology that avoids most of the hazards associated with conventional air strikes, promising precision and limiting unintended consequences.³ However, in practice, the consequences of drone strikes remain difficult to isolate and include unnecessary civilian death, and damage to the society.

In 2004, Pervez Musharraf, then President of Pakistan, gave the U.S. approval to use UAVs as terrorism spread rapidly throughout the region.⁴ UAVs are remotely operated aircraft that do not carry human pilots or passengers. These are used by the U.S. military and intelligence agencies to conduct surveillance, gain intelligence, and for operations of combat.⁵ In Pakistan's Newly Merged Tribal Districts, drones are used to counter terrorist militant activity in the region.³ *The Independent Review* believes that the cause of terrorism and the reason for its continuity is because of the unintended consequences of the drone strikes on the region.⁶

Drone strikes are not only an economic issue but also a humanitarian issue. President Obama's chief counter-terrorism advisor John Brennan claimed that the U.S. counter-terrorism

¹ Bureau of Investigative Journalism, "Drone Warfare," 2020

² Open Society Foundations, "After the Dead Are Counted: U.S. and Pakistani Responsibilities to Victims of Drone Strikes," 2014

³ Barack Obama, "Transcript of President Obama's Speech on U.S. Drone and Counterterror Policy," 2013

⁴ Steve Coll, "The Unblinking Stare," 2014

⁵ Andrew Callam, "Drone Wars: Armed Unmanned Aerial Vehicles," 2010

⁶ Christopher J. Coyne and Abigail R. Hall, "The Drone Paradox: Fighting Terrorism with Mechanized Terror," 2018

operation had not killed any civilian in nearly a year. However, his assertion was false. For months, reports that civilians were dying in U.S. drone strikes had appeared in Pakistani and international media.⁷ The term civilian is used when the individual is not part of the armed forces or the reason for the need for drone strikes. Additionally, Ahmed Raza Kasuri, a prominent lawyer, and leader of the Pakistan Muslim League, claimed that drone attacks should be stopped. He stated that drone strikes are a violation of human rights, international law, and all above country's sovereignty.⁷

Beyond physical damages and deaths, drone strikes also have psychological and health risks. It only takes one death in a family to have a detrimental impact on the well-being of the entire family. With no compensation being offered to the civilians of Pakistan that have been impacted by the drone strikes, it is very easy for living to become difficult. On top of the mental health impact of having a family member die, these civilians also face the mental drain of figuring out how to survive afterward. Additionally, with drones being a surveillance tool, having them hover over the communities constantly has caused anxiety and psychological trauma to the civilians of the communities.⁸ The study will also discuss the social impacts that are caused by drone strikes, which include the human rights that are violated, the physical and mental health impacts, and the ethical issues that are questioned.

The purpose of this study is to look at the broader economic impact of drone strikes. After the 9/11 attack, the Coalition Support Fund (CSF) was created, which reimbursed certain countries, including Pakistan, for expenses incurred by the countries regarding U.S. military operations. Since 2002, Congress has appropriated \$7.3 billion as funding for the entire CSF

⁷ Dr. Raza Bokhari, Musharraf spokesman and friend and Philadelphia entrepreneur, interview with author over phone, (2013)

⁸ Matthew Bolton et al., "The Humanitarian Impact of Drones", 2017

program. Pakistan has been the largest single recipient, receiving approximately \$6 billion in reimbursements.⁹ This study will look specifically at whether drone strikes have an impact on the unemployment rate, looking at data collected across Pakistan 2007 to 2011. The study hypothesizes is that if there is a drone strike occurrence in a region of Pakistan, employment will decrease.

This study is essential because drone strikes have changed warfare strategy, action, and perception. The proliferation of drone technology among states and militant groups poses a new threat to the international community. With drone strikes' impact on mental health, infringement on human rights, and ethical issues, researchers question the necessity of drone strikes as the weapon of choice for international warfare.

Though there has been a lot of study on the impact of drone strikes on a region, not many have accounted for the economic impact, which I will be assessing by studying Pakistan's employment. There has been past research done by economists that compared the GDP of their region of study with the impact of drone strikes.¹⁰ They used diff and diff analysis to compare the change in the outcome over time between the population that was hit by a drone strike and those that were not. Their research concluded that there was a statistically significant relationship between drone strike occurrence and GDP. This is similar to what is being done in the research comparing the outcomes between the control and treatment groups. The treatment group is the regions that were hit by drone strikes, while the control group is those that were not hit by drone strikes. Different variables found in the dataset will be used to determine the employment status and examine the impact of job status when drone strikes throughout 2007 and 2011 are considered.

⁹ House of Representatives, "Oversight of US Coalition Support Funds to Pakistan," 2008

¹⁰ Rafat Mahmood and Michael Jetter, "Military Intervention via Drone Strikes," 2019

The rest of the paper is organized as follows. A brief literature review about drone strikes and their impact on society is followed by an exploration of the relation to Keynesian theory. Next, data representing Pakistan as the case study and the methodology of the study are presented, followed by a discussion of the results. Finally, the paper concludes with a description of what this study means for future research and policy recommendations.

Literature Review- The Socioeconomic Impact of Drone Strikes

Drones have been used in warfare since the 19th century.¹¹ They have been used to monitor climate change, conduct surveillance, film, deliver goods, and arguably most significantly, revolutionize warfare. Armed drones provide the capabilities for reconnaissance and targeted attacks. Drone strikes have occurred in Afghanistan, Yemen, Somalia, Sudan, and the Philippines.¹² These transformative capabilities granted drones the title of being the centerpiece of U.S. counterterrorism strategy.¹³

Many commentators support the use of drone strikes for counterterrorism purposes. They argue that armed drones are , “smart weapons,”¹⁴ allowing more precise forms of targeting, avoiding indiscriminate attacks¹⁵ and unnecessary death, injury, or suffering.¹⁶ In the US, drone strikes are broadly supported by the public because they enable U.S. armed forces to mount tactical assaults, without putting U.S. personnel in harm’s way.¹⁷ Drones are generally supported by the domestic population because of the direct targeting abilities and their ability to reach more remote places to provide information.

¹¹ Bureau of Investigative Journalism, “History of Drone Warfare,” 2020

¹² Priya Satia , "Drones: a history from the British Middle East." 2014

¹³ Lynette Lithgow, "The Joan Shorenstein Center on the Press, Politics and Public Policy." 2000

¹⁴ Eyal Benvenisti, “The Legal Battle to Define the Law on Transnational Asymmetric Warfare,” 2010

¹⁵ Jordan J. Paust, "Self-Defense Targeting’s of Non-State Actors and Permissibility of US Use of Drones in Pakistan." 2009.

¹⁶ Eyal Benvenisti, “The Legal Battle to Define the Law on Transnational Asymmetric Warfare,” 2010

¹⁷ Jacqueline L. Hazelton, "Drones: What Are They Good For?" 2013

Country	Years	Total Casualty by Drone Strike	Civilian Casualty by Drone Strike
Somalia	2007-2020	58-169	11-57
Yemen	2012-2020	531-779	258-270
Pakistan	2012-2020	2562-3325	474-881

*Source: Bureau of Investigative Journalism*¹⁸

The U.S. has carried out drone strikes in Pakistan since 2004, in Yemen since 2011, and in Somalia since 2011. A close examination of U.S. drone strikes contradicts supporters' claims of precision and few to no casualties. As seen in the table above, The Bureau of Investigative Journalism tabulated the total casualties and the civilian casualties caused by drone strikes.

Most U.S. drone strikes have occurred in Pakistan.¹⁹ Supporters see drone strikes as justified because they perceive the Pakistani Government as unable to constrain a global terrorist threat emanating from within its borders, either because of a lack of determination or inability.²⁰ However, Pakistan's Foreign Minister, Hina Rabbani Khar, has argued that drone strikes are "unlawful, against international law, and [a] violation of sovereignty."²¹ Other critics have noted that U.S. drone strikes are indicative of a paternalistic approach to foreign policy into the domestic affairs of Pakistan.²²

Within Pakistan, many civilians are not entirely against drone strikes, however, they believe they must hit the correct targets.²³ The U.S., itself describes their drone campaign in Pakistan as causing minimal civilian casualties.²⁴ However, open-source data on Pakistan drone

¹⁸ Bureau of Investigative Journalism

¹⁹ Center for Civilians in Conflict and Human Rights Clinic at Columbia Law School. "The Civilian Impact of Drones: Unexamined Costs, Unanswered Questions." 2012

²⁰ Aryn. Baker, "US Stepping Up Operations in Pakistan," 2008.

²¹ Christine Fair, Karl Kaltenthaler, and William J. Miller. "Pakistani Opposition to American Drone Strikes." 2014

²² Sikander Ahmed Shah, "International Law and Drone Strikes in Pakistan: The Legal and Socio-Political Aspects," 2014

²³ Richard L. Wilson, "Ethical Issues with Use of Drone Aircraft," 2014

strikes, as well as data on air operations in Afghanistan, including drone operations—points to, higher casualty numbers than suggested in official statements.²⁵ Indeed, the U.S. military has been reluctant to acknowledge that they caused civilian casualties. Reportedly, the U.S. President personally approves every military target in Yemen and Somalia. However, only about a third of the CIA’s targets in Pakistan are reviewed—those that seem particularly controversial. The discrepancy in reviewing the targets allows for room to make an error when the casualty rate ends up being more than was expected.²⁶ The American Security Project argues that drones have a greater tendency toward “mishaps,” which is the preferred term for crashes.²⁷ These mishaps can cause further harm to civilian lives. As a result, drone strikes are not being used carefully enough to prevent the civilian loss, which infringes on human rights.²⁸

The U.S. asserts that some civilian deaths are not human rights violations, arguing that those who are targeted, for example, by a high-flying drone in a foreign country are not protected under the general human right to life. In any event, if they are lawfully targeted in compliance with the principles of distinction, reasonable necessity, and proportionality their deaths will not be “arbitrary” within the meaning of human rights law.²⁹ However, the U.S. government rarely acknowledges civilian casualties of drone strikes. When acknowledged, civilian casualties are likely undercounted. Because of the lack of transparency, the U.S. government hinders the democratic debate about critical aspects of U.S. foreign and national security policy.³⁰ Consequently, the U.S. may be setting a lethal global precedent by masking details of such a

²⁴ Larry Lewis, “Drone strikes in Pakistan: Reasons to Assess Civilian Casualties.” 2014

²⁵ Larry Lewis, “Drone strikes in Pakistan: Reasons to Assess Civilian Casualties.” 2014

²⁶ Center for Civilians in Conflict and Human Rights Clinic at Columbia Law School. “The Civilian Impact of Drones: Unexamined Costs, Unanswered Questions.” 2012

²⁷ Ashley Boyle, “The US and its UAVs: A Cost-Benefit Analysis,” 2012

²⁸ Richard L. Wilson, “Ethical Issues with Use of Drone Aircraft,” 2014

²⁹ Richard L. Wilson, “Ethical Issues with Use of Drone Aircraft,” 2014

³⁰ International Human Rights and Conflict Resolution Clinic At Stanford Law School And Global Justice Clinic At NYU School Of Law, “Living Under Drones: Death, Injury, And Trauma To Civilians From Us Drone Practices In Pakistan,” 2012

deadly and controversial operation. There can never be adequate discussion and policy change for drone usage because of this precedent, and it poses a significant risk to international peace and security.³¹

Armed drones are not explicitly regulated under international humanitarian law (the law of armed conflict), but they are still subject to more general restrictions. The principle of distinction requires targets to be military targets, not civilians, whether they are objects or individuals. The principle of proportionality requires that when military targets are engaged that the collateral damage is not as detrimental as the direct military advantage anticipated from the attack. However, the use of armed drones poses challenges to these rules because, even if the drone strike is accurate, there is no guarantee that the target was the correct individual. With the challenges with ensuring certainty with the drone strikes, there are many people who argue that they are threatening crucial human rights protections.³² Some researchers have raised concerns that drone strikes may enable a “PlayStation” mindset, in which the drone operator is disconnected from the humanity of the people on the ground.³³ The casual and playful language of comparing to a video game shapes public perception domestically and abroad to a more dehumanizing view of the targets the drones are searching for.³⁴

In addition to the greater numbers of casualties than acknowledged by the US, there are many social impacts. Deaths, injuries, displacement, property loss, privacy invasion and more are all attributes of the effects of drone strikes on an area. Most of the time, strikes occur unannounced and can cause even more traumatic pain on a victim.³⁵ One civilian death or injury

³¹ Geneva Academy of International Humanitarian Law and Human Rights, “Humanitarian Concerns raised by the Use of Armed Drones” 2020

³² Matthew Bolton et al., “The Humanitarian Impact of Drones”, 2017

³³ Shima D Keene, “Lethal and Legal The Ethics of Drone Strikes,” 2015

³⁴ Shima D Keene, “Lethal and Legal The Ethics of Drone Strikes,” 2015

can dramatically alter a family's life, especially in developing countries like Pakistan. While the United States had a practice of offering amends in the form of recognition, explanations, and monetary payments to civilians suffering losses as a result of U.S. combat operations in Vietnam, Iraq, and Afghanistan, no such amends exist for civilians harmed by U.S. drones in Pakistan, Yemen, or Somalia.³⁶

Drone strikes are typically preceded by substantial monitoring of the targets and general region.³⁷ This constant monitoring impacts the lives of civilians, who may change how they act, even in their own home. Drones hover over northern Pakistan 24 hours a day and strike homes, vehicles, public spaces without warning. Many civilians are terrorized by these events, which has caused a rise in anxiety and psychological trauma to people in the region. Because of this, many members of the community decide to keep their children home from school to avoid the possibility of them being struck at school, and they even skip attending large gatherings, such as a religious event or even funerals, because of the fear that it would draw the drone operators' attention to them.³⁸ This is infringement on their right to assemble and right to education. The people cannot partake in basic human rights because of the chance and fear of losing their life. Living under drones – dealing with the constant fear and anticipatory anxiety, leaves a lasting effect on the survivors with symptoms such as emotional breakdowns, running indoors or hiding when drones appear above, fainting, nightmares and other intrusive thoughts, hyper startled reactions to loud noises, outburst of anger or irritability, and loss of appetite and other physical disturbances.³⁹ Reports suggest that people in regions most hit by drone strikes suffer from

³⁵ Center for Civilians in Conflict and Human Rights Clinic at Columbia Law School. "The Civilian Impact of Drones: Unexamined Costs, Unanswered Questions." 2012

³⁶ Shima D Keene, "Lethal and Legal The Ethics of Drone Strikes," 2015

³⁷ Patrick Keenan, "Drones and Civilians: Emerging Evidence of the Terrorizing Effects of the US Drone Programs." 2021

³⁸ Center for Civilians in Conflict and Human Rights Clinic at Columbia Law School. "The Civilian Impact of Drones: Unexamined Costs, Unanswered Questions." 2012

PTSD, anxiety and severe stress as armed drones are perpetually seen and heard above their villages without knowing when (or if) they will strike next.⁴⁰ Human rights researchers have argued that this infringes on the rights of people since human rights laws prohibit the unnecessary use of force to curb insurgent armed groups.⁴¹ Their right to privacy is infringed, as they are being surveilled by the drones constantly. The human rights researchers continue to explain the infringement of the rights of people because of the violation of their privacy, creates ethical issues. They have argued that this infringes on the rights of people in regions affected by drone strikes,⁴² violating their privacy,⁴³ creates ethical issues,⁴⁴ and cause health and psychological damage to the civilians of the victim nation, who were not part of the problem that the drones were sent to resolve.⁴⁵

Moreover, drone attacks have led to the torture and death of civilians alleged to be in collusion with the US. They have also stigmatized civilians mistakenly targeted. The fabled precision of drones can mean that civilian victims of drone strikes are assumed by their community to be connected to militancy. Victims face the double burden of dealing with the physical attack and clearing their name.⁴⁶

The resentment caused by drone strikes may also be politically counterproductive. There is a correlation between the occurrence of drone strike and recruitment by militant groups.⁴⁷ In 2010, a Pakistani immigrant to the United States named Faisal Shahzad unsuccessfully attempted

³⁹ International Human Rights And Conflict Resolution Clinic At Stanford Law School And Global Justice Clinic At NYU School Of Law, "Living Under Drones: Death, Injury, And Trauma To Civilians From Us Drone Practices In Pakistan," 2012

⁴⁰ Matija Renčelj, "Permanent Presence of Armed Drones and the Elusive Concept of Psychological Harm," 2018

⁴¹ Waseem Ahmad Qureshi, "The Legality and Conduct of Drone Attacks," 2017

⁴² Larry Lewis, "Drone Strikes in Pakistan: Reasons to Assess Civilian Casualties," 2014

⁴³ Rabbi Shmuly Yanklowitz, "The Humanitarian Impact of Drones," 2017

⁴⁴ Center for Civilians in Conflict and Human Rights Clinic at Columbia Law School. "The Civilian Impact of Drones: Unexamined Costs, Unanswered Questions." 2012

⁴⁵ Aliya Robin Deri, "" Costless" War: American and Pakistani Reactions to the US Drone" 2012

⁴⁶ Center for Civilians in Conflict and Human Rights Clinic at Columbia Law School. "The Civilian Impact of Drones: Unexamined Costs, Unanswered Questions." 2012

⁴⁷ Deri, Aliya Robin. "" Costless" war: American and Pakistani reactions to the US Drone war." 2012

to bomb Times Square. During his trial, he testified that American drone strikes had inspired his plot and that people like him would continue to attack the United States until such military action had discontinued.⁴⁸ This correlation constitutes an ethical issue, as many Americans believe in the drone campaign because they believe it makes them safe.

Despite the extensive evidence that drone strikes have a wider impact on society than suggested by their supporters, there has been little research done on the economic impact that drone strikes have on a region. Nevertheless, broader economic research on economic dimensions of armed conflict and terrorism offers some possible clues as to the potential impact. Choi's cross-national, time series data analysis found that "when countries enjoy high levels of industrial growth, they are less disposed to domestic and international terrorist events."⁴⁹ Pakistan's agriculture sector has been the largest in their region, according to the World Bank, and the industrial sector has been growing at a slow rate.⁵⁰ This would suggest that Pakistan would be more prone to an international or domestic terrorist attack. Additionally, there is already an alarming rate of unemployment in the country of Pakistan. The annual plan released with the 2011-12 budget explained that the "country's labor force is estimated at 58.4 million – 45.1 million or 77 percent males and 13.3 million or 23 percent females – and 3.2 million of them are jobless."⁵¹ Qureshi and Mian conclude that in order to counteract this unemployment Pakistan should focus on "educat[ing] their youth... to unleash their entrepreneurial potential to address the challenge of unemployment and hence economic development."⁵² In Pakistan, the youth unemployment rate is higher than the adult unemployment rate, and it has been recognized

⁴⁸ Deri, Aliya Robin. "" Costless" war: American and Pakistani reactions to the US Drone war." 2012

⁴⁹ Seung-Whan Choi, "Economic Growth and Terrorism: Domestic, International, and Suicide," 2015

⁵⁰ World Bank, "The World Bank in Pakistan," 2021

⁵¹ Eastern Worker, "1.3 Millions Youths Among 3.2 Millions Jobless," 2011

⁵² Shahis Qureshi and Sarfraz Mian, "Transfer of entrepreneurship education best practices from business schools to engineering and technology institutions: evidence from Pakistan," 2021

that the transition from school to the labor market is not smooth.⁵³ Moreover, connecting Choi and Mian and Qureshi's study, Adelaja and George look at the contribution that youth unemployment rates have on domestic terrorism statistics using cross-country panel database. Their results showed a positive relationship between youth unemployment and domestic terrorism, conditional upon different development factors, including "corruption, government ineffectiveness, and the absence of the rule of law."⁵⁴ With all of these factors considered into the nation's economy, it would be difficult for people to be able to live their daily life, which may contribute to the increase in unemployment. Concurrently, drone strike usage increases with an increase in the activity of terrorist groups. With the positive relationships between youth unemployment and terrorism, and terrorism with drone strike usage. Consequently, one might expect a positive relationship between youth unemployment and drone strike usage.

Drone Strikes and Employment

There are many factors, especially in developing countries, when it comes to determining the reason for employment to shift. The research defines drone strikes as the reason for the decrease in employment because in the time period that is being observed, the years between 2007 and 2011, there is an increase in drone strike usage. The research will derive its theoretical underpinning from Keynes. Both the Keynesian Theory of Employment and Income,⁵⁵ where Keynes explained that by increasing consumption or investment, which can be caused by an increase in income, employment increases as an effect. Moreover, the Keynes belief in anchor consumer confidence initiated the research. Pakistan, between these years, experienced the

⁵³ Xiaohui Hou, "Challenges for You Employment in Pakistan: Are They Youth Specific?" 2010

⁵⁴ Adesoji Adelaja and Justin George, "Is Youth Unemployment Related to Domestic Terrorism?" 2020

⁵⁵ Keynes, John Maynard. "The General Theory of Employment, Interest, and Money," 1936

insurgence of the Taliban in their country. With that clarified, the uncertainty of the country may have caused consumer confidence to go down and with that employment would decrease also.

Additionally, the concept of this research is based on the assumption that drone strikes would impact not just the people but the area also. While considering this question, it was among the idea that a drone strike would occur, and the unintended consequences would be the reason that employment would decrease. When drone strikes occur and ends civilian lives, while also destroying infrastructure ties into the idea that employment would decrease. Since drone strikes cause civilian casualties the unemployment rate would increase, moreover, if the infrastructure is destroyed there would be less places to work, which would dissolve job opportunities, once again increasing unemployment.

Data and Methodology

The data was collected between the years 2007 and 2011 with a gap for the saddle year of 2009-2010 because that year of data was not provided. From the Pakistan Bureau of Statistics, the individual level data collected was able to summarize the life of everyone in Pakistan. With the Pakistan Social and Living Standards Measurement Survey (PSLM), which is one of the “main mechanisms for monitoring the implementation of the development projects and tracking of the [SDGs].”⁵⁶ The data obtained assisted in defining and controlling employment. A caveat to this data is that many of the data variables in the original data set were not consistent through the years on the survey, which did not allow me to include them. There was also a consideration that throughout the years the households may have changed, however, after analyzing the data further, noticing that the answers to the survey for each person surveyed were consistent, it was safe to assume that the consistency of those surveyed was accurate. Additionally, having more

⁵⁶ Pakistan Bureau of Statistics, “Microdata”

data completed would create more concrete and strong research. Finally, with Pakistan being a developing country with a lot of political disputes, it is important to note the limitation of the reliability of the data provided. As it is something to consider that some countries may not be completely truthful about the realities of their nation.

The data on drone strikes was collected by Drone Wars, which is a database that was developed by drone-enabled airstrike data received from The Bureau of Investigative Journalism. This data set provided me with data on drone strikes showing exact location using longitude and latitude, the region, the date, and the casualties. The Summary Statistics Table provides the labels of the data, standard deviation, minimum, maximum, 25th percentile and 75th percentile of each variable.

Summary Statistics

	(1)	(2)	(3)	(4)	(5)	(6)
	Mean	Sd	Min	Max	p25	p75
job2	.8590671	.347953	0	1	1	1
drone	.0658798	.2480722	0	1	0	0
occup	38.81253	33.74159	0	93	6	61
lninc	.8417779	2.91442	0	16.1181	0	0
age	34.17051	14.01686	0	99	22	45
educ	5.070959	5.069249	0	23	0	10
livestock	.6916707	1.484413	0	4	0	0
gender	1.152258	.3593378	0	2	1	1
mowrklstyr	7.327466	5.723882	0	12	0	12
readwrite	1.275873	.6318472	0	2	1	2
math	1.195991	.3970654	0	2	1	1
<i>N</i>	292366					

Source: Pakistan Bureau of Statistics and Bureau of Investigative Journalism

Job2 is the binary dependent variable that shows if a person is employed or not. *Drone* is also a binary variable that indicates if the region was hit by a drone strike or not. *Occupation* has 93 characteristics within the variable. This means that there are 93 different occupations in the dataset. The *lninc* variable shows the natural log of income. We found the natural log in order to account for the heteroskedasticity that was found with the original income variable. The *age* variable shows that there were people interviewed between the ages of zero and ninety-nine. Zero is considered because missing values were filled in by zero to account for the missing data. The *education* variable shows the highest level of education the person received, this data correlate to different levels of education in Pakistan. The *livestock* variable has four characteristics under it determining if the person has livestock for personal use, business use, both, or does not have livestock. This variable is another indicator of employment because the agricultural sector of the economy is the most prominent in Pakistan, additionally, it correlates to a person's wealth because in order to own livestock you must have the means to acquire it. The *gender* variable determines gender, which is seen as male being one, female being two, and if the data was missing it is represented as zero. The next variable is *mowrklstyr*, which is how many months did the individual work the year before. *Readwrite* and *math* are both variables that relate back to education, which can attribute to employment because if a person can read and write or do math, they may be more likely to be employed. Finally, *N* is the number of non-missing observations, which in this case is 292,366.

In order to estimate the effect on employment on the specific categories implemented, both a Fixed-Effects (FE) and Random-Effects (RE) panel estimation were utilized. This was done to control for differences between the different provinces and eliminate biases from variables that are unobserved and change over time. Research previously done examined the

relationship between GDP and the impact drone strike usage, in which they used diff and diff analysis to compare the change in the outcome over time between the population that was hit by a drone strike and those that were not. Similarly, the goal of this research is to find the relation between drone strikes and employment by comparing the outcomes between the control and treatment group. The treatment group is the regions that were hit by drone strikes while the control group is the regions that were not hit by drone strikes. Additionally, Ordinary Least Squares (OLS) regression technique was used. The OLS method estimates the relationship by minimizing the sum of the squares in the difference between the observed and predicted values of the dependent variable configured as a straight line.

Impact of Drone Strikes on Job Status in Pakistan

	(1) OLS Base	(2) OLS Controls	(3) OLS Interact Occups	(4) Reg Interact Assets
1.drone	-0.0720*** (0.00)	-0.0673*** (0.00)	-0.0509*** (0.00)	-0.111*** (0.00)
1.occup	0.150*** (0.01)	0.166*** (0.01)		
lninc	0.0167*** (0.00)	0.0383*** (0.00)	0.0166*** (0.00)	0.0174*** (0.00)
age		0.00208*** (0.00)		
educ		0.00931*** (0.00)		
livestock		0.0245*** (0.00)		
gender		-0.0576*** (0.00)		
mowrklstyr		0.0126*** (0.00)		
readwrite		0.112*** (0.00)		
math		-0.0262*** (0.00)		
1.armedforces			-0.189*** (0.00)	

1.drone#1.armedforces	0.138*** (0.00)
1.legoffmana	-0.0279*** (0.00)
1.drone#1.legoffmana	-0.0927*** (0.02)
1.professionals	-8.17e-10 (0.00)
1.drone#1.professionals	0 (.)
1.techasspro	-8.17e-10 (0.00)
1.drone#1.techasspro	0 (.)
1.clerk	-8.17e-10 (0.00)
1.drone#1.clerk	0 (.)
1.servicework	-8.17e-10 (0.00)
1.drone#1.servicework	0 (.)
1.agrifish	-0.103*** (0.00)
1.drone#1.agrifish	0 (.)
1.crafttrade	-8.17e-10

Source: Pakistan Bureau of Statistics and Bureau of Investigative Journalism

Three different regressions were run to analyze the impact the variables had on the employment status throughout the years. The following regression is the baseline model, which provides a point of comparison for the additional variables that is added on to the other regression equations.

Baseline Model:

The models are measured across time in a panel data and include indicator variables, which is why there is the use of the (i,t) subscripts. *Jobstatus* is the dependent variable that determines the individual unemployment of the people in Pakistan. The key independent variable is *drone*. It is conditioned into zero if the area was not hit by a drone strike and one if it was hit. The variable *occup* has 93 occupations within the variable. This variable directly impacts job status because if an occupation is listed that means they are employed. *Lninc* is used because if a person receives income, it is given that they are employed in some way. Lastly, ϵ_{it} is a contemporaneous error term.

Model with Additional Interactions

Additionally, by creating a regression that included interactions among the different occupations we were able to see the difference in occupations due to the drone strike. This interaction shows if a region was hit by a drone strike how likely they are to have a job in that occupation.

Complete Model:

By including more variables to the regression, we can see a more realistic effect on job status. This regression takes other variables into consideration to account for a fuller picture of

the individual. Adding more terms to the multiple regression inherently improves the fit. It gives a new term for the model to use to fit the data, and a new coefficient that it can vary to force a better fit. The variable age considers of age of the individual since the data is coming from individual level survey information. This would impact job status by incorporating the fact that some of the individuals included may not be of age to have a job. Similarly, with the gender variable, it takes into account the fact that the employment information in the survey was only calculated for male aged eight and up.⁵⁷

Results

The impact of drone strikes on job status in Pakistan table shows how each variable impacts the likelihood of being employed in Pakistan. The results show an abundance of statistically significant relationships, which means that the data is important and impacts the job status heavily. The drone variable is the most important variable because it directly answers the question, if drone strikes in Pakistan impact the individual employment. The table shows the four regressions that were run, and the results attributed to them.

For the control regression it showed that if an area of Pakistan is hit by a drone strike the likelihood of them having a job decreases by a -7.2 percentage points. As we look on to the regression that included more control variables, we see this number slightly increase from the baseline but still shows a decrease of -6.73 percentage points. Moreover, when the occupations were interacted, showing the impact that drone strike had on the different types of occupations of Pakistan, the drone variable shows a decrease of -5.09 percentage points for the likelihood of being employed. These interpretations are with the consideration of *ceteris paribus*. Moreover, the table shows another regression for Interacting assets. This was done to represent an

⁵⁷ Pakistan Bureau of Statistics, “Microdata”

individual's livelihood in Pakistan and see the effect that drone strike have on assets that the people owned. This regression was shown by the equation

$$y_{i,t}jobstatus = \alpha + \beta_1 lninc_{i,t} + \beta_2(drone_{i,t} * earnedpensionaddprofit_{i,t}) + \beta_3(drone_{i,t} * landcultlastyr_{i,t}) + \gamma_r(drone_{i,t} * livestock_{i,t}) + \epsilon$$

This regression includes any variables that could represent the wealth and livelihood of the individual through their assets. However, because the variables included in this regression were very limited with data, it is not a strong regression to consider. With that being said, it still represented a decrease of -11.1 percentage points for when a region is hit by a drone strike the likelihood of them being employed. These results prove the hypothesis right, that if a region of Pakistan is hit by a drone strike the number of employed individuals would decrease.

Another important variable to consider is the income variable, *lninc*. This variable shows how the change in income would impact the likelihood of being employed. The table shows that with a 1% increase in income there is a 0.000167 percentage point increase in the likelihood of having a job. Moreover, we see that when the additional controls are considered the results show that with a 1% increase in income there is a 0.000383 percentage point increase in the likelihood of having a job. Though the results are small, it still shows the increase that occurs in the region.

When interacting the drone strike information with the occupations it is important to note that many of the occupations had a lot of missing data, which should be considered in the results. However, there were still statistically significant results within this regression, for example, the table shows that if Pakistan

is hit by a drone strike and a person is in the armed forces there is a 13.8 percentage point increase in the likelihood of them having a job. This result makes sense because if the region is

hit by a drone strike this would indicate some type of conflict within the region and the armed forces would be necessary to defend their land and people.

Conclusion

While there has been much written about Pakistan's unemployment rate, there has not been much examination of the effects of drone strikes on employment. This paper attempts to do so. First, drone strikes do, in fact, show a causal relationship to the individual unemployment of the people of Pakistan. As discussed in the results of the table, if the region was hit by a drone strike, their likelihood of being employed would decrease by -7.2 percentage points. Additionally, these results were statistically significant, which emphasizes the degrees of causality that can be attributed to the connection. As the literature connected youth unemployment with terrorism and terrorism with drone strikes,⁵⁸ the results in the paper confirm the collaborated results being that drone strikes do impact the employment of a region.

The variables that were considered included the most consistent data through the years that were observed. This included drone, occupation, income, age, education, livestock, gender, months worked in the last year, reading and writing abilities, and math abilities. By incorporating the panel estimation for the year 2007 through 2011 and controlling for various demographic and socioeconomic factor, the paper finds that drone strikes are significantly correlated with individual unemployment. Running the data using both random effects and fixed effects for differences between the different provinces eliminates biases from variables that are unobserved and change over time. Overall, employment is impacted by a decrease of -7.2 percentage points when drone strikes occur, which suggests the hypothesis is correct. Moreover, when taking into consideration the different occupations and incomes through the years that the drone strikes

⁵⁸ Xiaohui Hou, "Challenges for Youth Employment in Pakistan: Are They Youth Specific?" 2010

occur, there is a positive impact on occupations and income. The analysis showed that with a 1% increase in income, there is a 0.000167 percentage point increase in the likelihood of having a job. For occupation, it showed that if you are in one of the occupations included in the household survey throughout the years when the drone strike occurs, there was a 15-percentage point increase in the likelihood of being employed.

Aside from the impact of the drone strikes on unemployment, the paper implies that, consequently, the impact of terrorism is also part of the equation. As mentioned in the paper before, the rate of drone strikes increased through the years 2007 to 2010. This is because the Taliban increased their control of the region throughout these years also. As the literature that was reviewed asserted the point that since both unemployment⁵⁹ and drone strikes⁶⁰ are related to terrorism, the data also implies this assertion by the consideration of the years and the political unrest that occurred during these times in Pakistan.

Additionally, the social impact of drone strikes on the civilians of the victim nation shows that the idea of precision that is associated with the thought of drone strikes is not justified. Civilians' mental health may deteriorate not only from the death of their neighbors, friends, and family but also from their need to continue to live and provide for themselves without the extra support and having gone through that traumatic experience.⁶¹ Human rights are infringed upon as the drones' strikes endanger and kill civilians, rather than specific targets.⁶² The addition to civilian deaths that came with the targeted deaths violated international law. As discussed in the research, the target should be confirmed with no doubt that they are civilians

⁵⁹ Adesoji Adelaja and Justin George, "Is Youth Unemployment Related to Domestic Terrorism?" 2020

⁶⁰ Seung-Wan Choi, "Economic Growth and Terrorism: Domestic, International, and Suicide," 2015

⁶¹ Patrick Keenan, "Drones and Civilians: Emerging Evidence of the Terrorizing Effects of the US Drone Programs." 2021

⁶² Center for Civilians in Conflict and Human Rights Clinic at Columbia Law School. "The Civilian Impact of Drones: Unexamined Costs, Unanswered Questions." 2012

when struck. However, this does not always occur, and the impact of the surrounding area is also affected. The ethics of the use of drone strikes is questioned because of the demolition that is caused by drone strikes. Pakistan specifically was not the target; it was the Afghanistan Taliban members that infiltrated Pakistan. With no permission from Pakistan for the drone strikes to occur, international law is once again violated, and the ethics of cause for deaths of civilians is unjustifiable.⁶³ The social implications, along with the economic impact, show the disastrous effect of drone strikes to victim nations, and specifically Pakistan.

Future research should turn to the impact drone strikes have on the individual's livelihood. Existing research examined the human rights impact that the drones' strikes are seen to disregard because of the unintended consequences that sometimes occur. Future studies should include a more humanitarian aspect to this research that would be able to show quantitative evidence that change may be needed to the drone strike policies that are currently implemented. Additionally, future research should expand on this data by looking across different countries and different years. By looking at the multiple countries, there would be more variation to consider and implement into the interpretation of the data that is collected. Lastly, from the data, the relation between drone strikes and unemployment is observed. Although the data did not go into the humanitarian impact, it is something to consider since there are people in the nation that are impacted who were not the targeted threat. With that being said, drone policies should be altered in a way that considers the well-being of the civilians of the region. International Humanitarian Law (IHL) already includes the need for drone targets to be correctly identified and for the impact of the drone to not have a dramatic effect on the region. However, this is a rule the U.S. government seems to overlook. There should be more punitive measures in place that ensure that IHL is followed. Additionally, to combat the unemployment that is caused by the

⁶³ Shima D Keene, "Lethal and Legal The Ethics of Drone Strikes," 2015

drone strikes, both the U.S. and victim country, Pakistan in this case, should work to create jobs for the civilians that were impacted by the drone strikes. With the infrastructure destroyed due to the drone strikes, the U.S. should assist in rebuilding and creating industries that would increase employment, at least back to the employment rate that the country had before the drone strike occurred.

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Appendix

Impact of Drone Strikes on Job Status in Pakistan

	(1) OLS Base	(2) OLS Controls	(3) OLS Interact Occups	(4) Reg Interact Assets
1.drone	-0.0720*** (0.00)	-0.0673*** (0.00)	-0.0509*** (0.00)	-0.111*** (0.00)
1.occup	0.150*** (0.01)	0.166*** (0.01)		
lninc	0.0167*** (0.00)	0.0383*** (0.00)	0.0166*** (0.00)	0.0174*** (0.00)
age		0.00208*** (0.00)		
educ		0.00931*** (0.00)		
livestock		0.0245*** (0.00)		
gender		-0.0576*** (0.00)		
mowrk1styr		0.0126*** (0.00)		
readwrite		0.112*** (0.00)		
math		-0.0262*** (0.00)		
1.armedforces			-0.189*** (0.00)	

1.drone#1.armedforces	0.138*** (0.00)
1.legoffmana	-0.0279*** (0.00)
1.drone#1.legoffmana	-0.0927*** (0.02)
1.professionals	-8.17e-10 (0.00)
1.drone#1.professionals	0 (.)
1.techasspro	-8.17e-10 (0.00)
1.drone#1.techasspro	0 (.)
1.clerk	-8.17e-10 (0.00)
1.drone#1.clerk	0 (.)
1.servicework	-8.17e-10 (0.00)
1.drone#1.servicework	0 (.)
1.agrifish	-0.103*** (0.00)
1.drone#1.agrifish	0 (.)
1.crafttrade	-8.17e-10

1.drone#1.saleservelemocc	-0.00172 (0.01)	
1.agrifishlab	-0.231*** (0.00)	
1.drone#1.agrifishlab	0.115*** (0.02)	
1.exconsmantran	-0.0646*** (0.00)	
1.drone#1.exconsmantran	0 (.)	
1.livestock		-0.0275*** (0.00)
2.livestock		-0.0252*** (0.00)
3.livestock		-0.0407*** (0.00)
4.livestock		-0.0187*** (0.00)
1.drone#1.livestock		1.136*** (0.01)
1.drone#2.livestock		1.136*** (0.01)
1.drone#3.livestock		1.151*** (0.01)
1.drone#4.livestock		1.129*** (0.01)

1.landcultlastyr				0.181*** (0.00)
2.landcultlastyr				0.208*** (0.00)
1.drone#1.landcultlastyr				0.110*** (0.00)
1.drone#2.landcultlastyr				-1.019*** (0.00)
_cons	0.817*** (0.00)	0.443*** (0.01)	1.000*** (0.00)	0.812*** (0.00)
N	292366	292366	292363	292366
r2_w				
r2_b				
r2_o				
r2_a	0.337	0.415	0.338	0.0633
N_clust>				

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Impact of Drone Strikes on Job Status in Pakistan: Fixed and Random Effects

	(5)	(6)	(9)	(10)
	<u>RE baseline</u>	<u>RE controls</u>	<u>FE baseline</u>	<u>FE controls</u>
drone	-0.291*** (0.00)	-0.101*** (0.01)	0.125 (0.10)	0.480** (0.19)
<u>occup</u>	0.0591*** (0.00)		0.0611*** (0.00)	
<u>lninc</u>	-0.0256*** (0.00)	0.0240*** (0.00)	0 (.)	0 (.)
age		0.0131*** (0.00)		0.0409*** (0.01)
educ		0.0114*** (0.00)		0.0305 (0.03)
livestock		0.161*** (0.00)		-0.118 (0.10)
gender		-0.589*** (0.00)		-1.398*** (0.23)
<u>mowrk1stvr</u>		0.109*** (0.00)		0.105*** (0.03)
<u>readwrite</u>		0.109*** (0.00)		-0.0453 (0.31)
math		0.469*** (0.01)		0.373 (0.38)