

# Learning mortality risks

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The World Bank

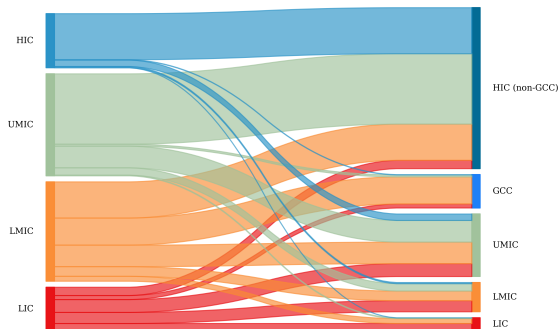
BREAD/IGC Virtual PhD Course  
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## Readings for today's lecture

- Shrestha, Maheshwor. “Death scares: How potential work-migrants infer mortality rates from migrant deaths.” *Journal of Development Economics*. 141 (2019): 102368. Available **here**
- Shrestha, Maheshwor. “Get rich or die tryin’: Perceived earnings, perceived mortality rates, and migration decisions of potential work migrants from Nepal.” *The World Bank Economic Review*. 34, no. 1 (2020): 1-27. Available **here**

# GCC: Increasingly important destination for low-skilled workers



- 6 countries in the Gulf Cooperation Council (GCC) hosted 11 percent of global migrant stock in 2020.
  - Over a fifth of the change in migrant stock between 2000 and 2020.

... and tales of migrant worker abuses abound among low-skilled workers (and not just in the GCC)

### Revealed: Qatar's World Cup 'slaves'

The Guardian



### Up to 10,000 Asian migrant workers die in the Gulf every year, claims report

The Guardian · Mar 11



### Migrant Workers Abused in Middle East Seek Justice

Global Press Journal · Dec 9



### 'A lot of abuse for little pay': how US farming profits from exploitation and brutality

The Guardian · Dec 27



## Various risks and uncertainties faced by migrant workers in this setting

- Not landing a job or pay that they had expected
- Locked in a job without ability to switch (eg, Kafala system)
- No job security – migrant workers are some the first groups to be fired (eg. during COVID-19)
- Delays on payments
- Documents (passports, work-permits) kept by employers
- Physical abuse (particularly for women or those working within private households)
- Workplace injury and accidents
- Deaths

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- No job security – migrant workers are some the first groups to be fired (eg. during COVID-19)
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- Physical abuse (particularly for women or those working within private households)
- Workplace injury and accidents
- Deaths
- Hard to have good data on the extent of these abuses to inform perceptions and policies

# Key questions

- In absence of reliable data/information, how do workers (and their migration decision) respond to realizations of these risks?
  - What does that tell us about how they form beliefs about these risks
  
- Is there scope for external interventions to fix the market failure?

# Key questions

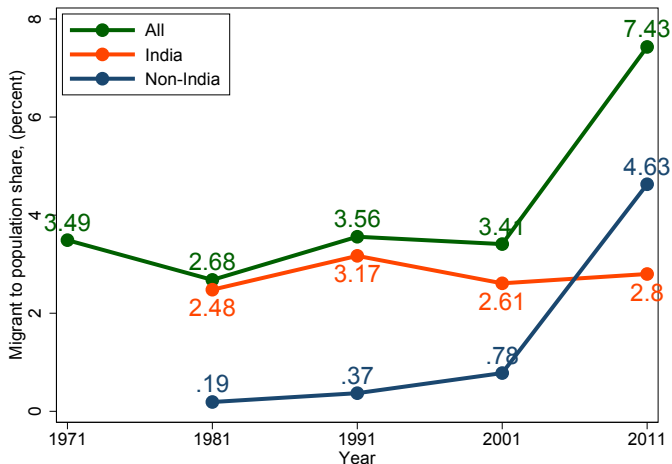
- In absence of reliable data/information, how do workers (and their migration decision) respond to realizations of these risks?
  - What does that tell us about how they form beliefs about these risks
- Is there scope for external interventions to fix the market failure?
- Answer these questions in the context of a very specific risk - the risk of death among migrant workers.



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# International migration from Nepal



# International migration from Nepal

- Migration to countries outside India has increased drastically in recent years.
  - driven by low-skilled male migration to Malaysia and the Persian Gulf
  - temporary migration (each episode lasts 2 to 3 years).
  - in many countries visa is tied with specific employer
- Migration process is heavily intermediated:
  - Potential migrants typically contact independent local agents.
  - Local agents put them in contact with recruitment agencies.
  - Recruitment agencies match the workers with firms or agencies abroad. also arrange for visa, travel, clearances, permits, and other paperwork.
  - Both agents and manpower companies receive a commission.
- Workers receive minimal pre-departure training and information session.
- Each worker is required to have an employment permit to work abroad. Need to obtain mandatory life insurance.

# Data

- **DoFE permit database for migrant outflow:** Every permit (1.34m) granted by the Government of Nepal from 2009 to 2013.
  - date of permit, district of residence, destination country, age, gender, contracted wages, fees paid, and occupation.
- **FEPB database on migrant deaths:** Foreign Employment Promotion Board assists migrant families with repatriation efforts upon migrant deaths and keeps a comprehensive records of migrant deaths.
  - All migrant deaths that occurred between 2009 to 2013
  - observe date of death, district of residence, destination country, reported cause of deaths

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  - observe date of death, district of residence, destination country, reported cause of deaths
- Aggregate data up to district-destination-month cells for analysis

## How bad is the overall mortality rate?

- Average mortality rate: 6.5 per 10 thousand workers per year
- Comparison (not causal) with mortality rate for same demographics for natives in:
  - Nepal: 23
  - United States: 14.4
  - Canada: 8.2

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  - Nepal: 23
  - United States: 14.4
  - Canada: 8.2
- Potential migrants' beliefs about their mortality rates: 139!

# Empirical Strategy

- Main specification

$$y_{odt,x} = \beta D_{odt} + \alpha_{od} + \gamma_{ot} + \xi_{dt} + \varepsilon_{odt}$$

- Heterogeneity:

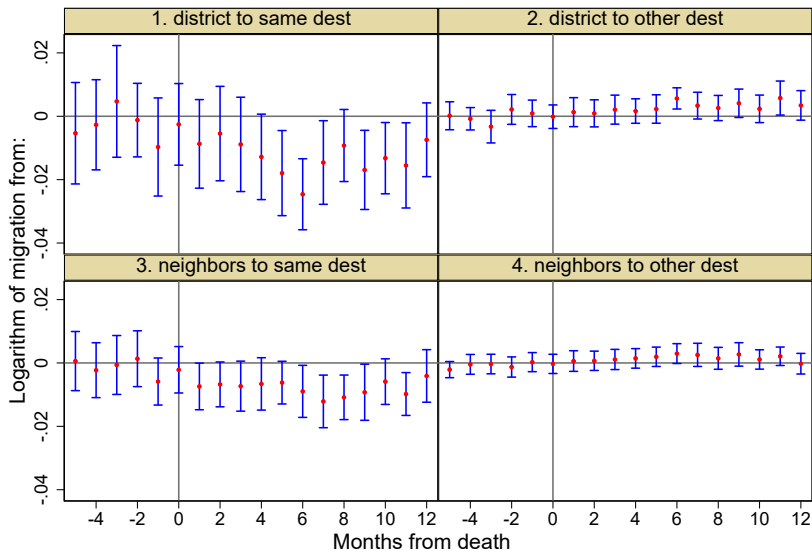
$$y_{odt,x} = \beta D_{odt} + \delta (D_{odt} \times X_{odt}) + \zeta X_{odt} + \alpha_{od} + \gamma_{ot} + \xi_{dt} + \varepsilon_{odt}$$



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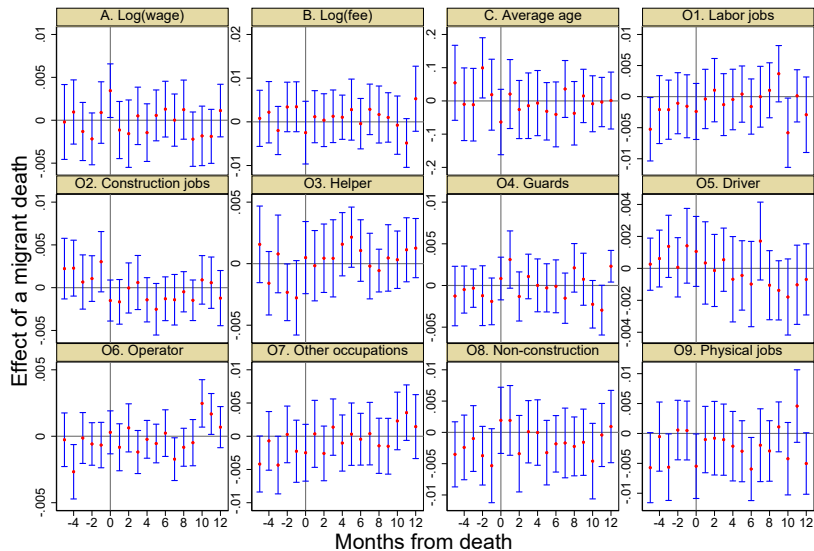
# Migrant outflow falls in response to migrant deaths



## Magnitudes of the overall impact

	Flow in the next		
	6 months (1)	9 months (2)	12 months (3)
<b>log(total migration from district)</b>			
All deaths in month	-0.012** (0.005)	-0.010** (0.005)	-0.009** (0.005)
Obs	4499	4500	4500
Adj R2	0.967	0.973	0.976
<b>log(total migration from neighboring district)</b>			
All deaths in month	-0.015*** (0.004)	-0.013*** (0.004)	-0.013*** (0.004)
Obs	4500	4500	4500
Adj R2	0.962	0.965	0.968
<b>log(total migration from 2<sup>nd</sup> degree neighbors)</b>			
All deaths in month	-0.002 (0.003)	-0.001 (0.003)	-0.000 (0.003)
Obs	4500	4500	4500
Adj R2	0.957	0.962	0.967

# No impact on prices or occupation choice



## Learning about risks?

- Does this behavior suggest that potential migrants are trying to learn about the risks abroad?
- Treat the realization of migrant death as a signal for the underlying mortality risk.

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- Does this behavior suggest that potential migrants are trying to learn about the risks abroad?
- Treat the realization of migrant death as a signal for the underlying mortality risk.
- Data inconsistent with a 'rational' Bayesian updating rule.
- Learning about low probability event like mortality rate with sparse data is very difficult.
- **Learning fallacy:** Behavioral 'heuristic' updating rules could better describe the migration response
  - The law of 'small' numbers (Tversky and Kahneman, 1971)
  - Sequences of signals matter - individuals over-infer from short sequences of signals (Rabin, 2002)

## Streaks matter for migration response

	Flow in the next		
	6 months (1)	9 months (2)	12 months (3)
<b>log(migration from district to same destination)</b>			
Deaths in month	-0.020*** (0.006)	-0.017*** (0.006)	-0.016*** (0.005)
× death streak in the last 3 months	-0.039** (0.019)	-0.042** (0.017)	-0.039** (0.018)
× no-death streak in the last 3 months	0.020** (0.008)	0.013* (0.008)	0.013 (0.008)
Death streak in the last 3 months	-0.044** (0.018)	-0.029* (0.015)	-0.029* (0.015)
No-death streak in the last 3 months	0.006 (0.007)	0.009 (0.007)	0.008 (0.007)
Obs	27000	27000	27000
Adj R2	0.979	0.984	0.987

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# Experiment: Do potential migrants respond to information on migrant deaths?



# Experiment design

- 3,319 passport applicants
  - 1,411 **inexperienced** (never been abroad before)
  - 1,341 **experienced** (been abroad at least once, but still need to look for jobs)
- who intend to migrate to the Gulf or Malaysia for employment

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- who intend to migrate to the Gulf or Malaysia for employment
- Randomly provide information about average wages (no, high, low) and deaths (no, high, low)
  - *Death information*: with  $\frac{1}{3}$  probability, get one of:
    - No death information
    - 'high' information (death toll from a district in the top 25th percentile)
    - 'low' information (death toll from a district in the bottom 25th percentile)

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- Elicit expectations about mortality risk (and earnings abroad)
- Follow-up in 3 months to see if they have migrated.

## Intervention message

- Basic information:  
**Every month, XXXX people from Nepal leave for work in DEST**
- Wage information: **In YYYY, migrants to DEST earned NRs EEEE only in a month**
- Death information:  
**Last year, NN individuals from DIST, one of Nepal's 75 districts, died in DEST**


## Sample information cards




GROUP  
7

## मलेशिया


प्रत्येक महिना नेपालबाट वैदेशिक रोजगारीका लागि **14,100** जना मलेशिया जान्छन् ।



सन् 2013 मा Malaysia जाने हरूले एक महिनामा नेरु **24,500** कमाए।



गत वर्ष नेपालको ७५ जिल्ला मध्येको एक जिल्ला Arghakhanchi बाट मात्रै Malaysia मा **2** जनाको मृत्यु भयो ।





GROUP  
2

## कतार

प्रत्येक महिना नेपालबाट वैदेशिक रोजगारीका लागि **8,300** जना Qatar जान्छन्।



गत वर्ष नेपालको ७५ जिल्ला मध्येको एक जिल्ला Tanahun बाट Qatar मा **8** जनाको मृत्यु भयो।





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# 'Low' death information lowers expected mortality rates, among the inexperienced

	All		Inexperienced		Experienced	
	(1)	(2)	(3)	(4)	(5)	(6)
Death info: 'high'	0.221 (1.587)	-0.743 (1.644)	-1.849 (3.047)	-3.889 (3.013)	1.598 (2.124)	1.150 (2.146)
Death info: 'low'	-4.327** (1.733)	-4.843*** (1.708)	-7.413** (3.247)	-8.081** (3.221)	-2.250 (2.071)	-3.020 (2.344)
Wage info: 'high'	-0.843 (1.678)	-1.218 (1.680)	2.098 (2.931)	1.781 (3.179)	-2.899 (2.586)	-4.198 (2.812)
Wage info: 'low'	-0.626 (1.843)	-0.699 (1.846)	2.209 (2.991)	2.580 (3.028)	-3.125 (2.889)	-2.817 (2.955)
Controls	NO	YES	NO	YES	NO	YES
Observations	3319	3319	1411	1411	1341	1341
R-squared	0.003	0.087	0.005	0.112	0.004	0.118
Control group mean	21.276		27.570		17.417	
SD	(39.973)		(51.029)		(28.786)	

## ... and increases actual migration

	All		Inexperienced		Experienced	
	(1)	(2)	(3)	(4)	(5)	(6)
Death info: 'high'	<b>0.036*</b> (0.020)	<b>0.040**</b> (0.019)	<b>0.020</b> (0.029)	<b>0.033</b> (0.030)	<b>0.054</b> (0.034)	<b>0.042</b> (0.038)
Death info: 'low'	<b>0.062***</b> (0.021)	<b>0.071***</b> (0.020)	<b>0.070**</b> (0.031)	<b>0.072**</b> (0.031)	<b>0.094***</b> (0.030)	<b>0.087***</b> (0.032)
Wage info: 'high'	-0.011 (0.022)	-0.023 (0.021)	-0.060* (0.031)	-0.064** (0.032)	0.012 (0.034)	0.003 (0.035)
Wage info: 'low'	-0.004 (0.021)	-0.007 (0.020)	-0.053* (0.031)	-0.071** (0.033)	0.033 (0.035)	0.035 (0.035)
Controls	NO	YES	NO	YES	NO	YES
Observations	3210	3210	1364	1364	1297	1297
R2	0.003	0.240	0.007	0.136	0.007	0.168
Control group mean	0.410		0.308		0.370	
SD	(0.493)		(0.463)		(0.484)	

# How are migrants updating their beliefs?

- Administrative data: migration changes in response to an actual migrant death.
- Experimental data: migration changes in response to updated beliefs about mortality risks.
- Combine the two estimates to infer the implied belief updating that happens in response to an actual migrant death.

# How are migrants updating their beliefs?

- Administrative data: migration changes in response to an actual migrant death.
- Experimental data: migration changes in response to updated beliefs about mortality risks.
- Combine the two estimates to infer the implied belief updating that happens in response to an actual migrant death.
- A single migrant deaths increases the belief about mortality rate abroad by **26** per 10 thousand workers per year.
  - too large... suggesting *over-inference*
- Behavioral fallacy in the way potential migrants learn leads to over-reaction to migrant deaths.

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# Conclusion

- Migrants also face risks on non-income dimensions of migration (e.g. abuse, injury, potential death)
- Hard to obtain data and information about these risks, particularly in low-skilled and poor information settings.
- Potential migrants form beliefs based on realized incidents of these risks (and potentially anecdotes).
- Behavioral fallacies are likely to play a key role on how migrants learn (or *mis*-learn).
- But informational interventions can help correct some of these beliefs and consequential actions that potential migrants take.