



Collaborating Centre for Oxford University and CUHK
for Disaster and Medical Humanitarian Response
CCOUC 災害與人道救援研究所

General Public Knowledge of Health-Emergency & Disaster Risk Management(H-EDRM) in Emergency Fire Incidents: The case of public transportation system in Hong Kong.

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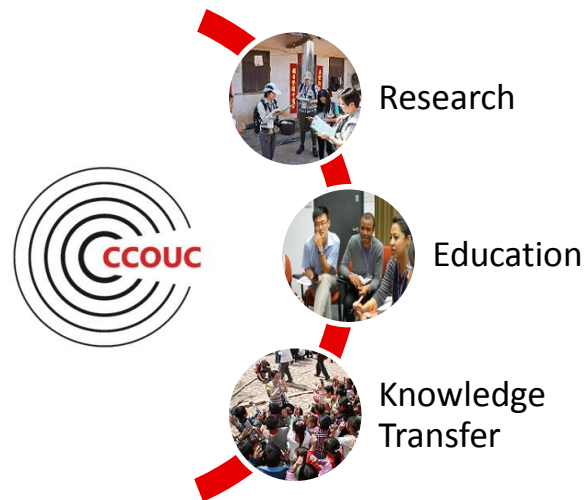
Today's sharing

- Background
- HEDRM in Urban: Transport
- The Case Study in HK: Metro Transport (2017)
- Others....



CCOUC

- Established in 2011
- Mission - to serve as a **multidisciplinary platform** for **research, education,** and **community knowledge transfer** in the areas of disaster and medical humanitarian crisis policy development, planning and response
- IRDR ICoE since Nov 2016





International Engagement

- **Academic partner of:**



- **Integrated Research on Disaster Risk International Centre of Excellence (IRDR ICoE)**

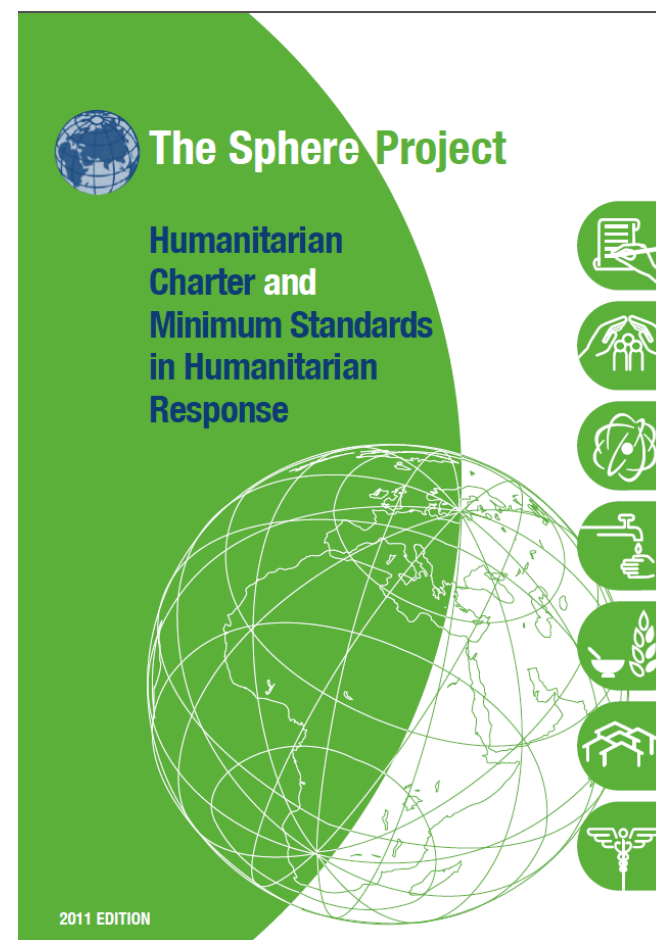
- Established by International Council of Science, International Council of Social Science, UNISDR in 2012
- Hosts one of the 13 ICoEs worldwide
- CCOUC since Nov 2016
- The only Global centre focuses on “Health” and DRR





The Sphere Project

- The aim of the project is to improve the quality of the actions during disaster response and to be held accountable for them.
- 47 focal points, covers 44 countries.
- CCOUC is **China Focal Point** of The Sphere Project since June 2014



International Engagement

- **UNISDR Asia Science Technology and Academia Advisory Group (ASTAAG)**
 - Since May 2016
 - Provides **policy advisory services** to governments and other stakeholders to strengthen and advocate science-based decision making for DRR.
- **WHO Thematic Platform for Health Emergency & Disaster Risk Management (H-EDRM) Research Group**
 - **Secretariat** since Sept 2016
 - Provides a multi-stakeholder and inter-disciplinary platform to coordinate research activities, share information and provide technical advice to UN agencies and other stakeholders





Health-EDRM:

Health-Emergency and Disaster Risk Management

Defined as: *the systematic analysis and management of **health risks** surrounding emergencies and disasters by **reducing the hazards** and **vulnerability** along with extending preparedness, response, and recovery measures.*

Table 1 Guiding principles from the Sendai Framework (UNISDR) on DRR that may be applied to health-EDRM

Guiding Principles from the Sendai Framework on DRR that may be applied to Health-EDRM

1. Shared responsibility between central Governments and national authorities, sectors and stakeholders as appropriate to national circumstances
2. Engagement from all of society
3. Coherence of disaster risk reduction and sustainable development policies, plans, practices and mechanisms, across different sectors
4. Decision-making to be inclusive and risk-informed while using a multi-hazard approach
5. The quality of global partnership and international cooperation to be effective, meaningful and strong

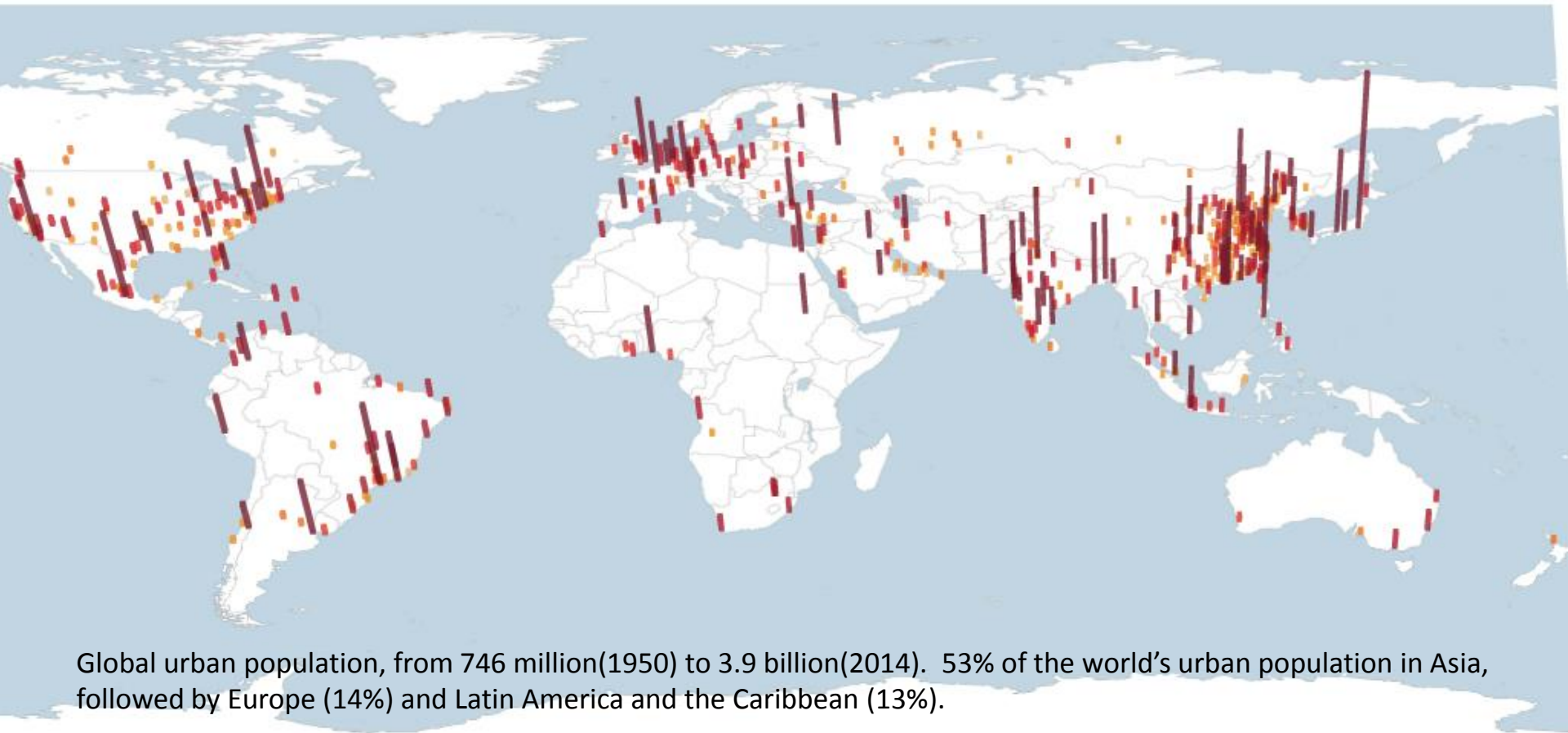
UNISDR= The United Nations Office for Disaster Risk Reduction



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Global Cities and H-EDRM



Global urban population, from 746 million(1950) to 3.9 billion(2014). 53% of the world's urban population in Asia, followed by Europe (14%) and Latin America and the Caribbean (13%).

Source: *World Urbanization Prospects The 2014 Revision*.
Department of Economic and Social Affairs, United Nations.

Source: <https://www.mckinsey.com/global-themes/urbanization/global-cities-of-the-future-an-interactive-map>





Global Cities and H-EDRM (2)



Globe

Hong Kong, Hong Kong SAR

Population, thousands	7,053	8,160
Total GDP, \$ billion	225	424
Per capita GDP, \$ thousand	46	71
	2010	2025

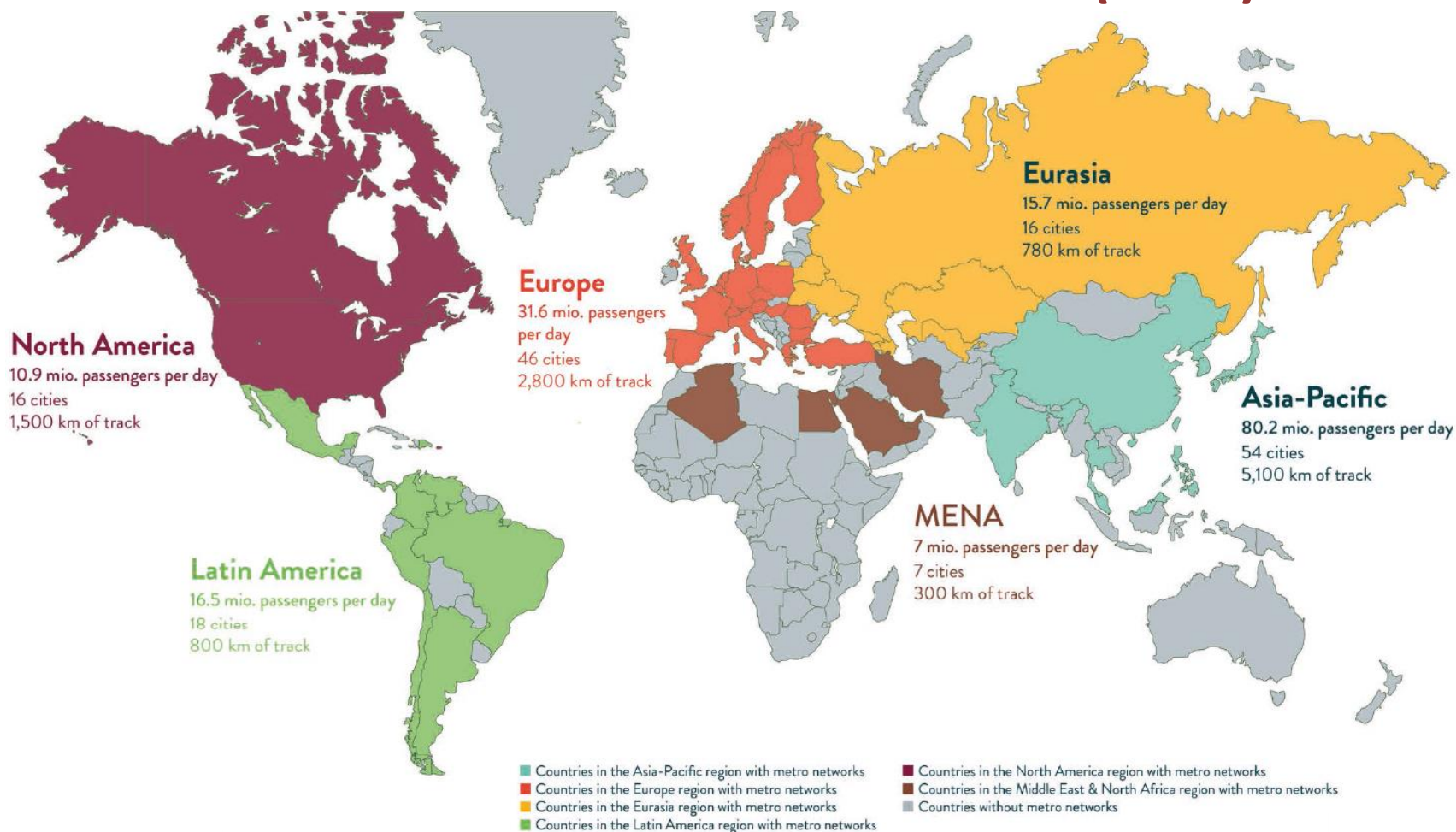
The fastest-growing urban agglomerations are medium-sized cities and cities with less than 1 million inhabitants located in **Asia and Africa**

Source: *World Urbanization Prospects The 2014 Revision*.
Department of Economic and Social Affairs, United Nations.

Source: <https://www.mckinsey.com/global-themes/urbanization/global-cities-of-the-future-an-interactive-map>

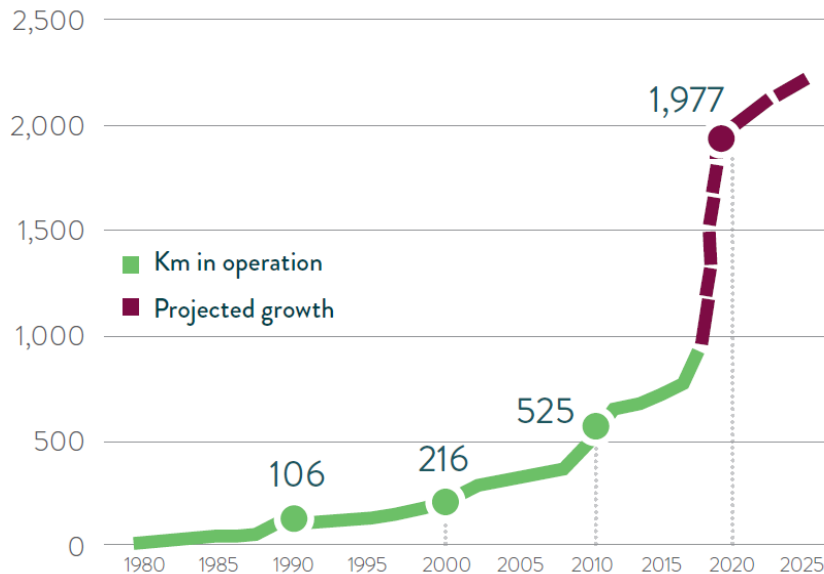


Urban Metro network worldwide (2014)



Map of countries which have metro networks, according to world region, with average daily ridership,

Urban Trend of metro automation



Total growth in automated metros
(km of lines operated in full automated mode)



Current length of automated metro lines and projected growth for the next decade, per world region

■ Current length of infrastructure for automated metros
■ Projected growth (2025) in infrastructure

- Fully automated metro lines (operated without staff on-board of trains) are a window into the **future of metro systems**
- An exponential growth for automated metro that is set to quadruple in the coming decade
- This growth will mainly concentrate in **Asia-Pacific**, Europe, and the Middle East and North Africa (MENA) region



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Emergency Fire Incidents: The case of public transportation system in Hong Kong.

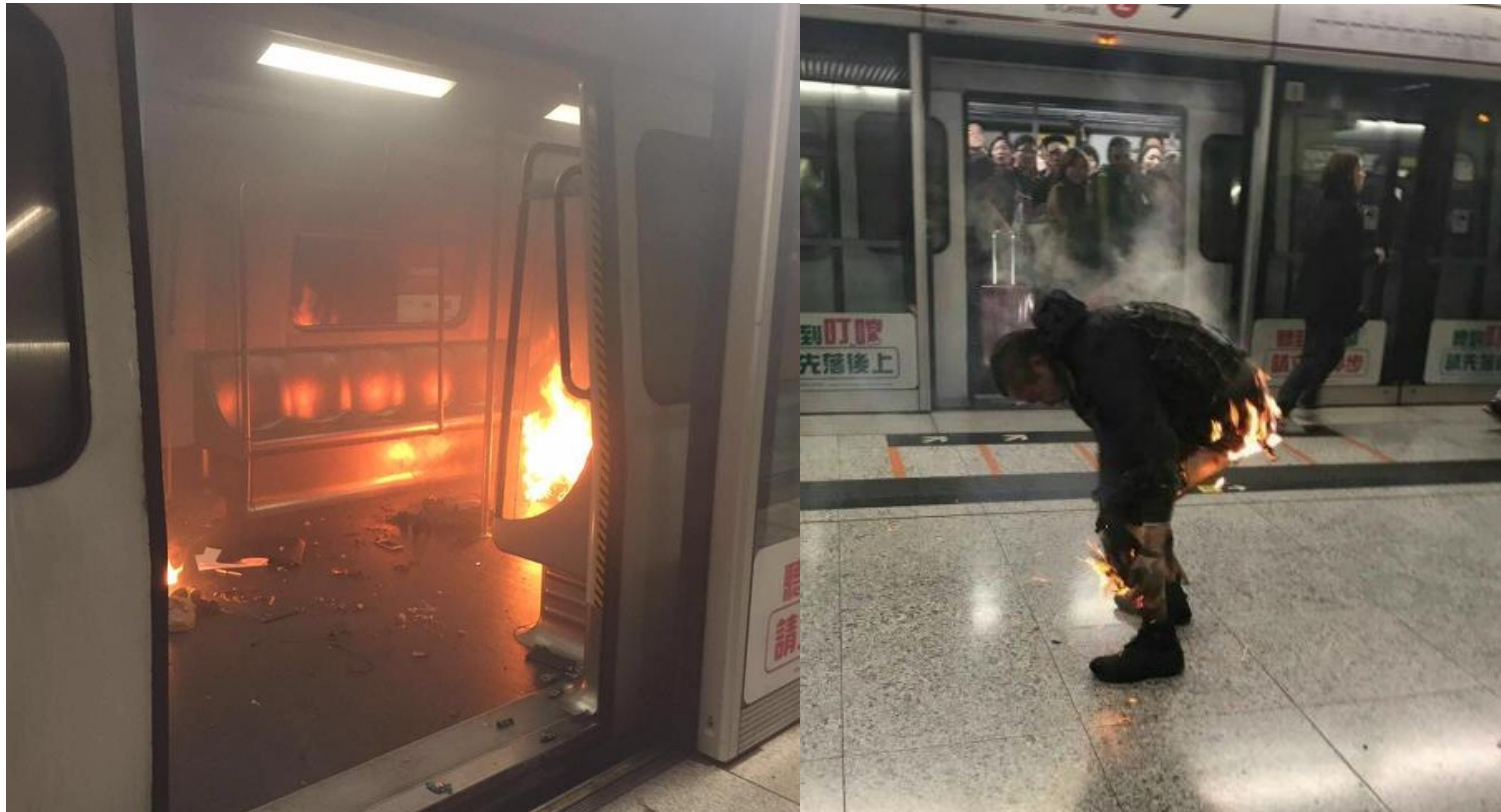




The case of Hong Kong

- Critical incidents in public transport system had caused human toll and anxiety in high density living cities.
 - fire incidents in urban underground public transportation system may cause catastrophic human outcomes
 - Smoke, temperature and toxic gases (e.g. Carbon Monoxide) were the most common causes of death
- **Over five millions trips** made on MTR each day and **railway safety** in Hong Kong in such density of population will have important implication on public safety.

Background: Emergency incidents in public transport



- On 10 Feb 2017, a subway fire during the evening rush hour had caused 18 injured and one death.



Objectives

- To examine H-EDRM perception of public transport
- To explore the association among attitude, knowledge and willingness to learn community disaster response
- To explore the relationship between first aid training and knowledge of fire emergency response



Study Methods (1)

- A **cross-sectional population-based self-reported telephone survey**
- **Random digit dialing (RDD)** method for selection of the households randomly
- Participants were chosen based on **“last birthday method”** in the household
- All calls were conducted in 2-12 March 2017, **within 1 month** after the subway fire incident



Methods (2): Sample population

- Overall study subjects were recruited with the intention to ensure a representative sample according to the distribution of Hong Kong population on **age, gender** and % of population in the **18 districts**.
- Exclusion Criteria:
 - Aged **below 15** years
 - **Non-Cantonese** speaking respondents
 - **Overseas visitors** holding tourist visas to Hong Kong
 - Those who were unable to be interviewed due to **medical reasons**



Methods (3): Telephone interview

- The telephone interviews were conducted by trained interviewers
 - from 6pm to 10pm on weekdays and from 10am to 10pm on weekends to prevent **over representation** of the unemployed population.
- **23 questions** were asked and each interview lasted between 15 and 25 minutes
 - 5 questions on gender, age, geographical distribution, marital status and education attainment
 - 18 questions on daily transport, attitude of the subway fire incident, knowledge of fire emergency response, willingness to learn community disaster preparedness, and first aid training experience



Ethics Approval and Funding

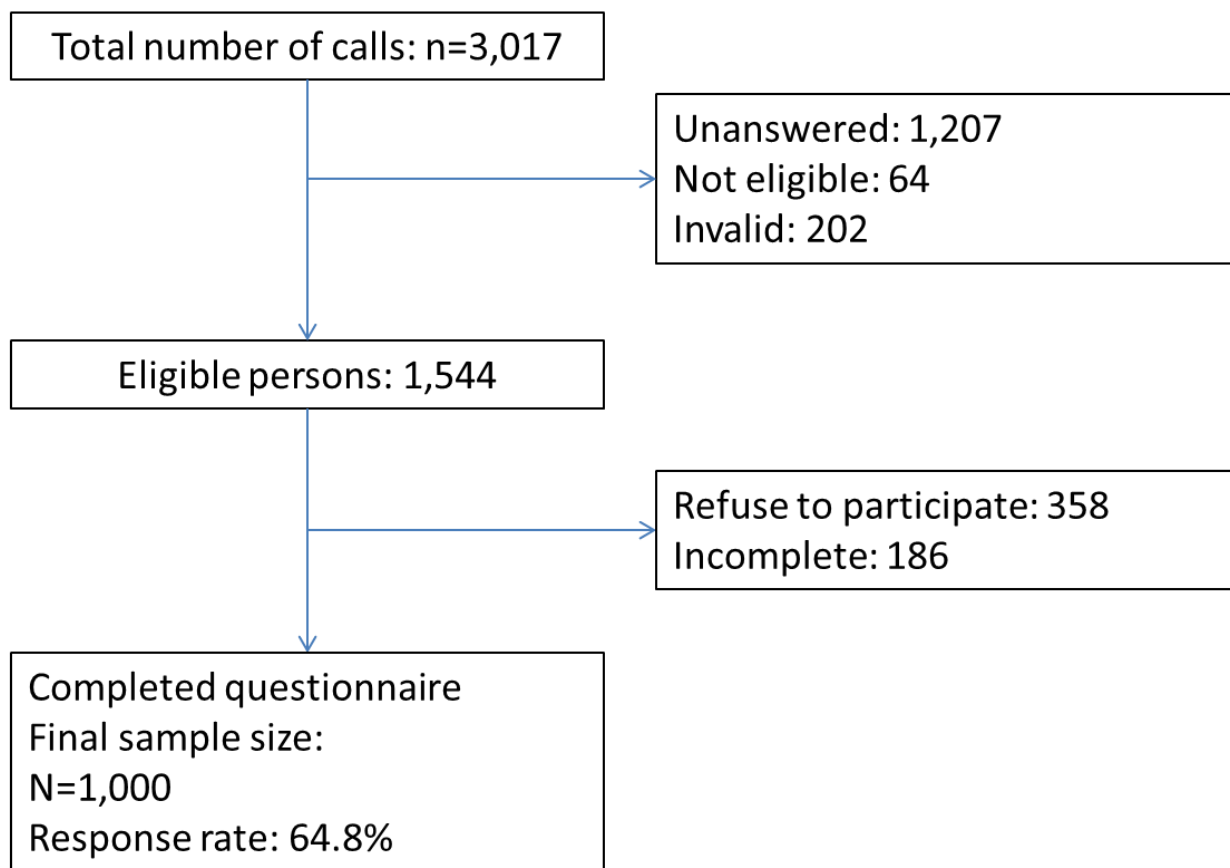
Ethics Approval:

- Obtained from Survey and Behavioral Research Ethics Committee of The Chinese University of Hong Kong

Funding support:

- the Chinese University of Hong Kong (CUHK) Focused Innovations Scheme-Scheme A: Biomedical Science (Phase 2)
- the CUHK Climate Change and Health research project fund
- CCOUC Disaster and Medical research fund

Study flow of the telephone survey



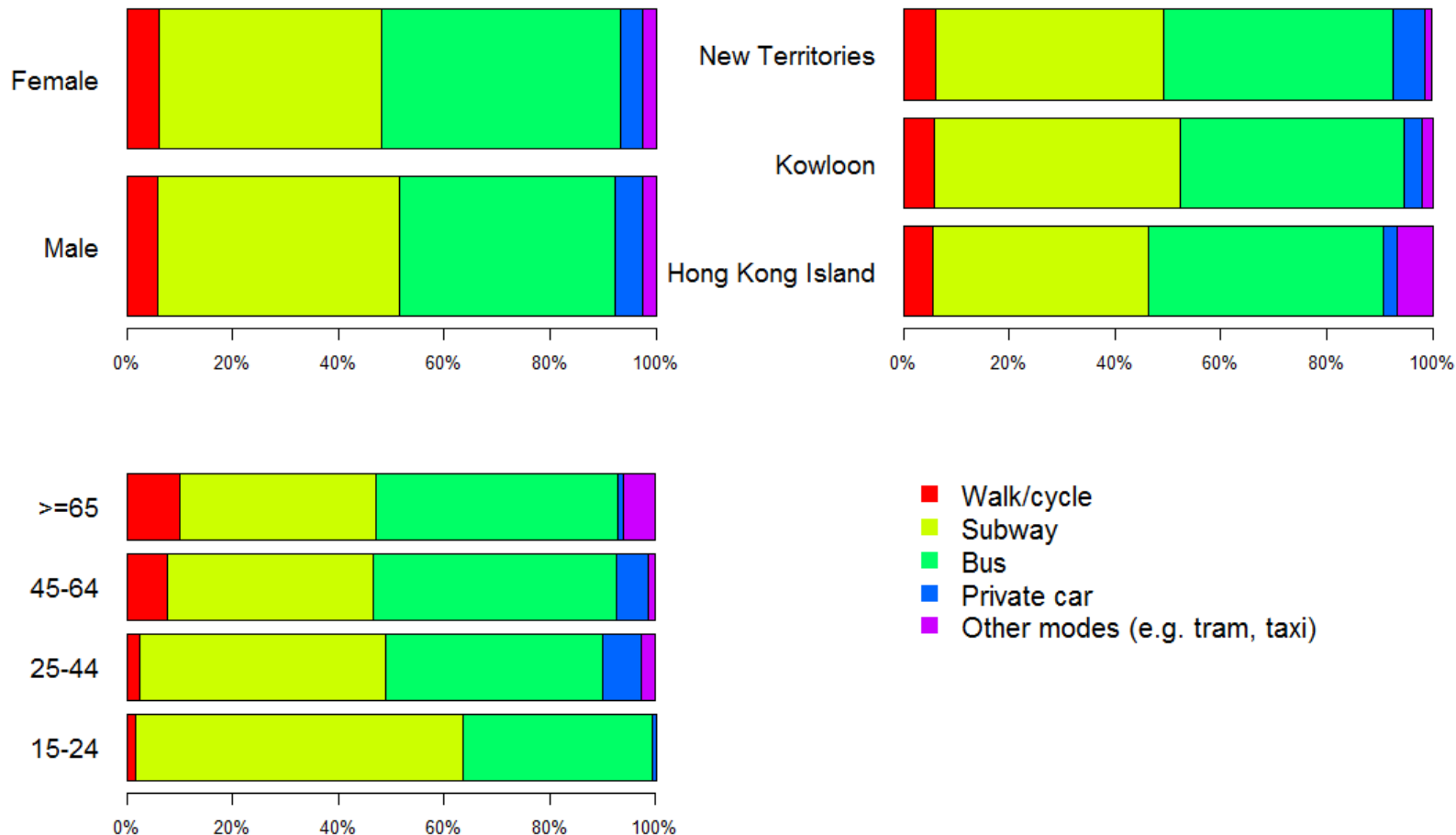


Sample versus Population

	Sample Population (n=1,000)		Hong Kong Population (n=6,506,130)		Chi-square test P-value
	n	%	n	%	
Age					
15-24 yrs	129	12.9	785,981	12.1	<0.01
25-44 yrs	283	28.3	2,228,566	34.3	
45-64 yrs	377	37.7	2,328,430	35.8	
≥65 yrs	210	21.0	1,163,153	17.9	
Gender					
Male	456	45.6	2,947,073	45.3	0.87
Female	544	54.4	3,559,057	54.7	
Area of residence					
Hong Kong Island	182	18.2	1,120,143	17.2	0.70
Kowloon	300	30.0	1,987,380	30.6	
New Territories	517	51.8	3,397,499	52.2	

Study sample consisted of 1,000 respondents (Response rate of 64.8%) and was **comparable** to the gender, area of residence and other key demographics of the **2016 HK Census**.

Subgroup analysis of daily transport mode



Pattern of daily transport and level of perceived safety

	n	%	1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Slightly agree	5 Agree	6 Strongly agree	Mean
Total	996	100.0%	1.4%	2.0%	14.1%	22.6%	38.9%	21.1%	4.59
Walk/cycle	57	5.7%	1.8%	1.8%	14.0%	17.5%	38.6%	26.3%	4.68
Subway	437	43.9%	1.4%	0.7%	12.4%	20.8%	41.0%	23.8%	4.71
Bus	430	43.2%	1.4%	3.3%	16.3%	25.6%	36.7%	16.7%	4.43
Private car	46	4.6%	2.2%	2.2%	8.7%	19.6%	32.6%	34.8%	4.83
Others	26	2.6%	0.0%	3.8%	15.4%	19.2%	50.0%	11.5%	4.5

Note: others include tram, taxi etc.

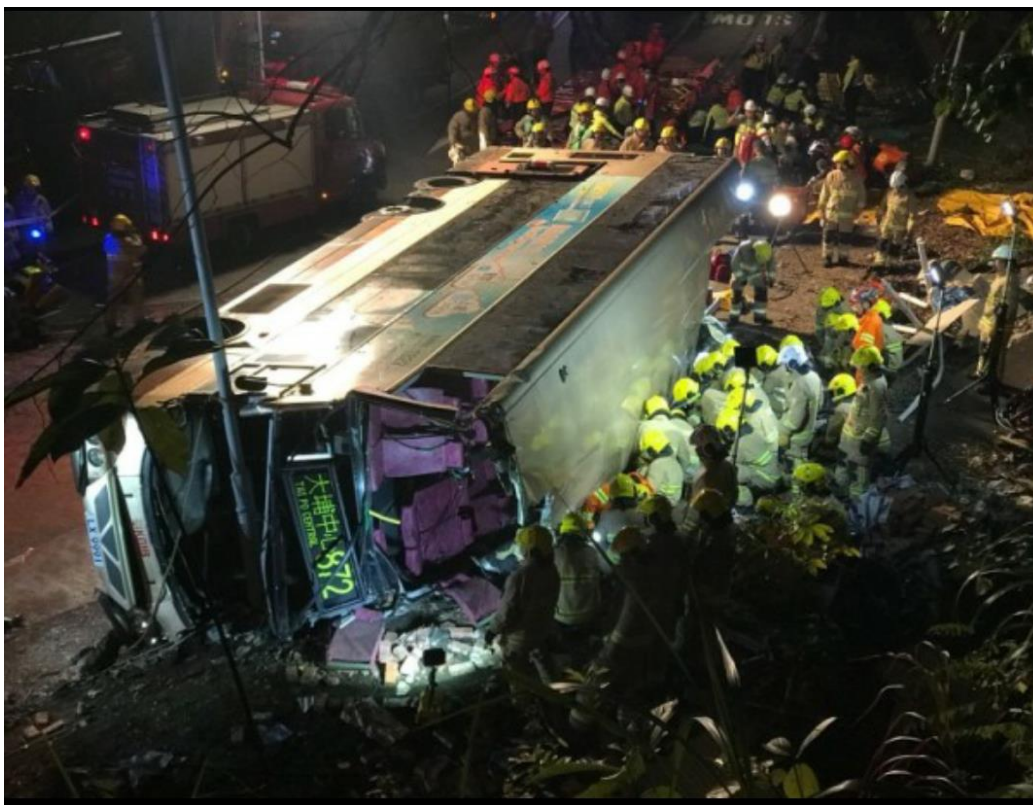
Bus crash in Shau Kei Wan in 2012



3 killed, 57 injured in a bus collision



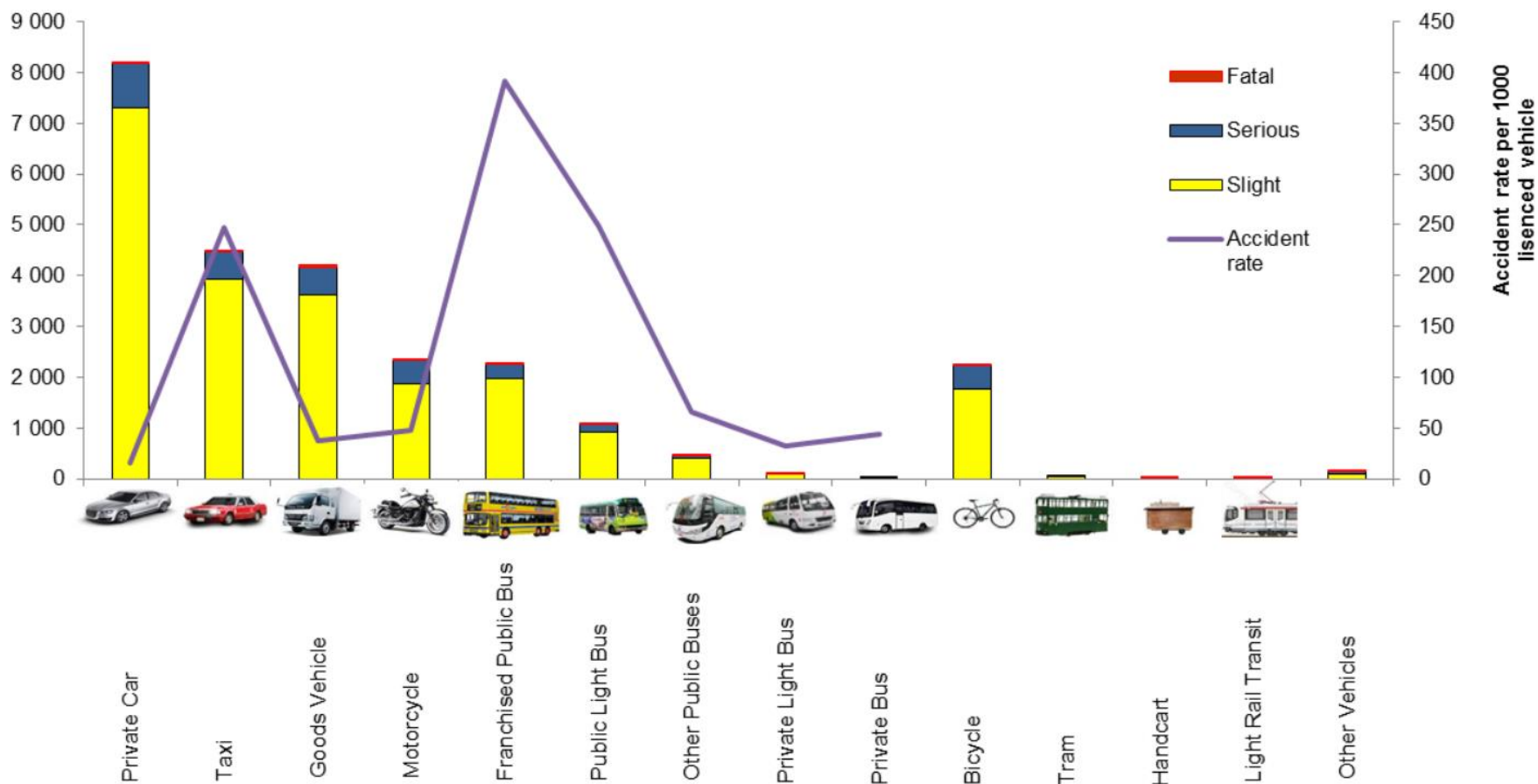
Bus rolled over on Tai Po Road in 2018



By Oriental Daily News

19 killed, over 60 injured in Hong Kong double-decker bus crash

Number of Vehicles Involved in Traffic Accidents in 2016



Source: Hong Kong Police Force. Traffic report 2016
https://www.police.gov.hk/info/doc/statistics/traffic_report_2016_en.pdf



Factors associated with expressed concern of incident occurring on transport

I am worried that disaster/incident will occur on the daily transport I take (disagree vs agree)				
Characteristics	Unadjusted		Adjusted	
	OR (95% CI)	P-value	OR (95% CI)	P-value
<u>Gender</u>				
Male	1		1	
Female	1.48 (1.05-2.10)	0.03	1.52 (1.07-2.18)	0.02
<u>Age</u>				
15-25	1		1	
25-44	0.63 (0.29-1.37)	0.25	0.69 (0.31-1.54)	0.36
45-64	0.31 (0.15-0.63)	<0.01	0.35 (0.15-0.78)	0.01
>=65	0.33 (0.15-0.70)	<0.01	0.37 (0.16-0.84)	0.02
<u>Area of Residence</u>				
Hong Kong Island	1		1	
Kowloon	1.31 (0.81-2.10)	0.27	1.17 (0.72-1.90)	0.53
New Territories	1.74 (1.12-2.72)	0.01	1.65 (1.04-2.60)	0.03
<u>Marital status</u>				
Single	1		1	
Married	0.59 (0.41-0.85)	<0.01	0.85 (0.56-1.31)	0.47

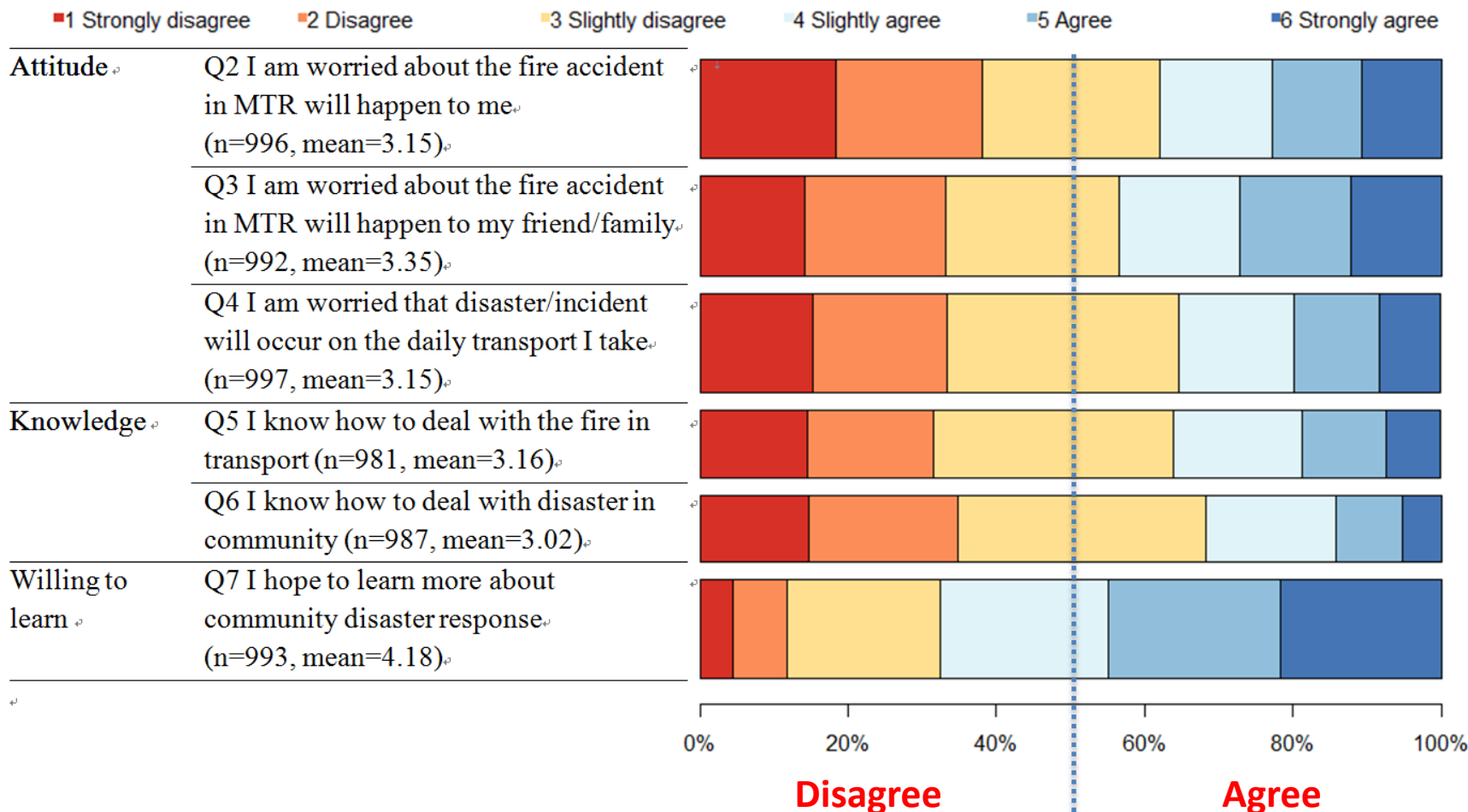
Insignificant Variable education and form of daily transport



Results Summary (2)

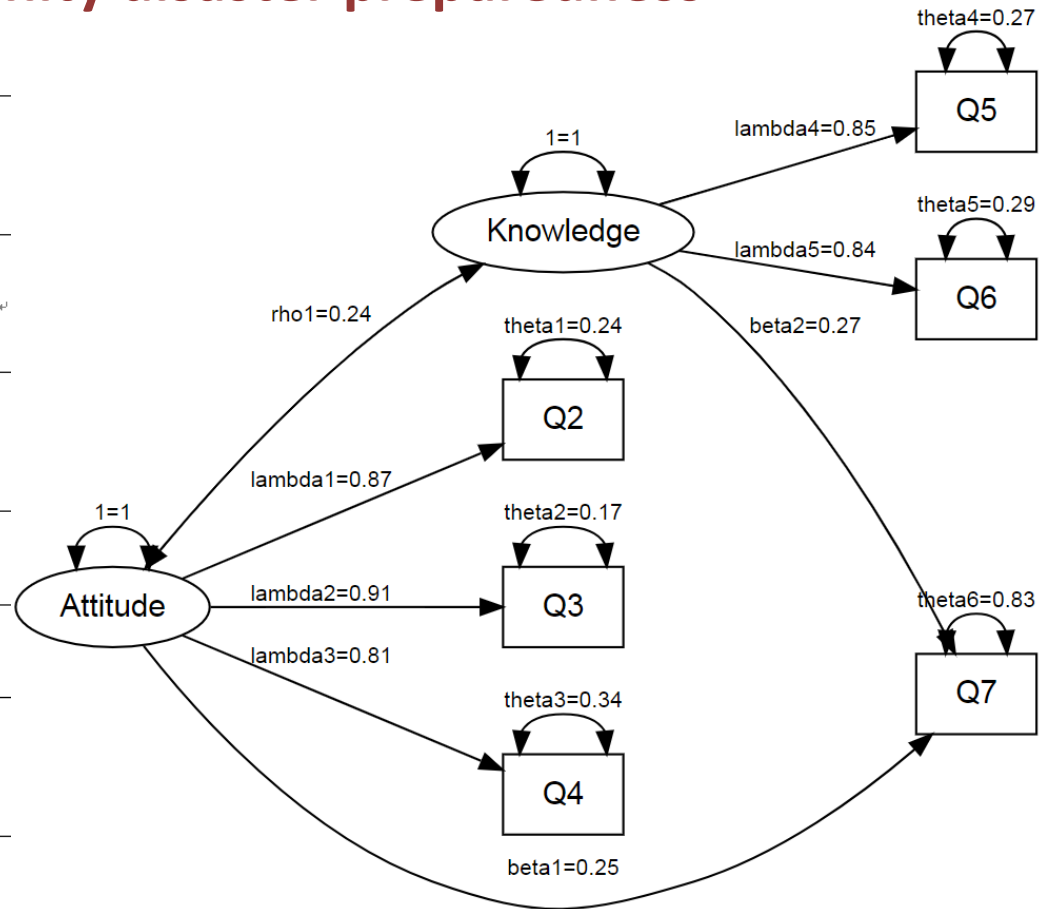
- Female and people living in New Territories were more likely to express anxiety about disaster/incident occurrence on their daily transport.
- People aged ≥ 45 were significantly less worried than the young.
- The association between the risk perception level on daily transport and the form of daily transport was non-significant.

Self-reported attitude, knowledge and willing to learn



Relationship between attitude, knowledge and willingness of learning community disaster preparedness

Attitude	Q2 I am worried about the fire accident in MTR will happen to me. (n=996, mean=3.15)
	Q3 I am worried about the fire accident in MTR will happen to my friend/family. (n=992, mean=3.35)
	Q4 I am worried that disaster/incident will occur on the daily transport I take. (n=997, mean=3.15)
Knowledge	Q5 I know how to deal with the fire in transport (n=981, mean=3.16)
	Q6 I know how to deal with disaster in community (n=987, mean=3.02)
Willing to learn	Q7 I hope to learn more about community disaster response. (n=993, mean=4.18)





Results Summary (3)

- Statistically significant inter-relationship between **Attitude** and **Knowledge** ($\rho=0.24$, $p<0.001$) was found.
 - Worrying more about disaster/incident was associated with knowing more about how to deal with disaster/incident
- **Willing to learn** was significantly associated with **Attitude** ($\beta=0.25$, $p<0.001$), as well as **Knowledge** ($\beta=0.27$, $p<0.001$)
 - People worrying more about disaster/incident or people knowing more about how to deal with disaster/incident would be more willing to learn community disaster response

Factors associated with first aid training receiving

Did you ever receive first aid training? (yes vs no)				
Characteristics	Unadjusted		Adjusted	
	OR (95% CI)	P-value	OR (95% CI)	P-value
<u>Age</u>				
15-25	1		1	
25-44	1.41 (0.90-2.18)	0.13	1.35 (0.87-2.11)	0.18
45-64	1.03 (0.67-1.58)	0.90	1.30 (0.84-2.02)	0.25
>=65	0.57 (0.35-0.94)	0.03	1.02 (0.60-1.74)	0.94
<u>Education</u>				
Primary	1		1	
Secondary	3.96 (2.06-7.60)	<0.01	3.61 (1.84-7.09)	<0.01
Post-secondary	6.82 (3.55-13.08)	<0.01	6.10 (3.03-12.28)	<0.01

Variable excluded: gender, area of residence, marital status



Results Summary (4)

- Around 32.0% of respondents have ever received first-aid training in 2017.
- Those who with higher education level were more likely to receive first aid training.
- Significant differences between first aid trained and non-trained participants were observed.



Limitation

- Telephone survey : Households with no possess of a land-based telephone service may be missed
 - Penetration rate of residential fixed line service in Hong Kong was more than 90%
- Self-reported questionnaire
 - Conducted right after the subway fire incident, reduced recall bias
- Cross-sectional study
 - Causal relationship not sure, further analyses and studies are needed



Discussion (1)

Mismatch of actual risks and Perceived risks

- The 2017 incident did not seem to affect public confidence as related to using of subways.
 - Around 85% of subway user considered it as a safe mode of public transportation
 - Private cars formed the largest group (32%) of traffic accidents in Hong Kong, resulting in 8,207 casualties in 2016
- Among the 35% of participants who expressed anxiety of disaster/incidents occurrence on their daily transport, female, and those living in New Territories and people aged < 45 were found to be significant predictors.
 - Women reported more worry than men did, which is consistent with other gender difference related research
 - New Territories which typical requires longer commute travel time, is the district where traffic accidents were most likely to occur (45.5%)
 - Why people aged < 45 expressed more concern was uncertain



Discussion (2)

Knowledge, expressed concern and willingness to learn are interrelated

- Greater perceived knowledge and expressed concern were positively associated with the willingness to learn community disaster response.
- Literature suggested that
 - knowledge on disaster preparedness, those with a higher level of threat-specific knowledge tend to be more prepared
 - anxiety, prior exposure and experience of disaster, risk perception and knowledge on disaster preparedness play important roles in determining the level of preparedness



Discussion (3)

General Skills/capacity in H-EDRM

- The low percentage (32.0%) of first-aid training
 - may explain on the small proportion of participants believing that they can respond to incidents; may not reflect the willing to learn more about disaster response
- Promoting the awareness and knowledge of the **general** public and increasing the awareness of **personal** vulnerability could be keys for disaster preparedness
- Hong Kong could enhance the first aid training for all via including it to **primary, secondary and university education as well as occupational training**.
 - In Norway, the workplace was the most common source of first aid training



Online Course

Public Health Principles in Disaster and Medical Humanitarian Response

- Public Health Approaches to Medical Disaster Response
- Disaster Concepts and Trends
- The Impact of Disasters
- The Human Health Impact of Disasters
- Responding to Health Needs in Disaster
- Public Health Emergency Preparedness

The poster features the 'Online COURSE' logo at the top left, with 'Online' in a smaller font and 'COURSE' in a larger, bold font. To the right are logos for CCOUC, CU Medicine, and the University of Oxford. Below the logos is a photograph of a multi-story building that has been severely damaged by a disaster, with debris and people in the foreground. To the right of the photo, the title 'Public Health Principles in Disaster and Medical Humanitarian Response' is written in a large, bold font. Below the title, a paragraph of text reads: 'Enroll for this free online course to gain insight and theoretical understanding of the public health issues related to disaster and medical humanitarian relief, particularly in the Asia Pacific Region. The course comprises of 7 lessons covering ...'. At the bottom right, there is a link that says 'Learn more -->'.



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D01-2: Climate Change and Health

Effective Date
1 June 2016

Enroll Now!

D01-2: Climate Change and Health



(This course is developed and contributed by Professor Emily YY Chan and her academic and technical team at CCOUC of Faculty of Medicine, the Chinese University of Hong Kong. The content of this online course is partially based on the teaching materials developed by Professor Chan at CUHK and University of Oxford in the relevant subject areas.)

Notes:

1) The 1st cohort of the course is now closed. The 2nd cohort is now open for registration and study on a first-come-first-served basis. Upon registration, students are allowed to study the course until 31 December 2016 at their own pace. A certificate of completion will be issued for participants who have successfully completed the course.

Enroll Now!



CUHK / CCOUC



Professor Emily Ying-yang CHAN
(Module Organiser)



Mr Kevin Sida LIU
(Tutor)

Effective Date
1 June 2017

Enroll Now!

Level Intermediate

Length 7 Lectures

Effort 1-2 hours of self-study per lecture

Subject Public Health

Institution CUHK / CCOUC

Language English



CUHK / CCOUC



Professor Emily YY CHAN



Professor May PS Yeung



Dr GUO Chunlan
(Tutor)

D03-2: Research Methodology for Disaster and Medical Humanitarian Response



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Notes:

1) The 2nd cohort is now open for registration and study on a first-come-first-served basis. Upon registration, students are allowed to study the course until 31 Dec 2017 at their own pace. A certificate of completion will be issued for participants who have successfully completed the course.

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About this course

Climate change & Health

Research Methodology for Disaster and Medical Humanitarian Response





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D04-1: Global Health Challenge for Human Security

Effective Date
29 Dec 2017

Enroll now!

Level	Intermediate
Length	6 Lectures
Effort	1-2 hours of self-study per lecture
Subject	Public Health
Institution	CUHK / CCOUC
Language	English

D04-1: Global Health Challenge for Human Security



(This course is developed and contributed by the academic and technical team of CCOUC at the Faculty of Medicine, the Chinese University of Hong Kong. The content of this online course is partially based on the teaching materials developed at CUHK and University of Oxford in the relevant subject areas)

Notes:

1) The 1st cohort is now open for registration and study on a first-come-first-served basis. Upon registration, students are allowed to study the course until 30 June 2018 at their own pace. A certificate of completion will be issued for participants who have successfully completed the course.

Enroll Now!

About this course

Upcoming course: Basic Sign Language Skills for health and disaster settings

Healthcare personnel

Disaster frontline responders: Fire, Ambulance, Police.

Volunteers participate in disaster settings

Scenario-based teaching

-disaster scene (rescue from hiking, fire in public transportation), A&E department etc..

Global Health Challenge for Human Security





Conclusion

- There is much to be learnt related to the KAP and patterns of H-EDRM within an urban community
- Gaps in self-help/individual resilience in responding to emergencies and disaster.
- Public education/risk communication is urgently needed.



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End

Thank you !





Results Summary (1)

- For pattern of daily transport:
 - subway (43.9%) and buses (43.2%), were reported to be **the two most commonly used forms** in daily transport in Hong Kong,
 - walk/cycle (5.7%) and private transportation (4.6%) was low.
- For level of perceived safety:
 - In general, respondents regarded their current daily transport were safe (mean = 4.59, range from 1-6).
 - Private car was reported to be **the safest mode** (mean = 4.83) while bus was **the least safe mode** (mean = 4.43).



Number of Vehicles Involved in Traffic Accidents in 2016

- **Private cars** formed the largest group (32%) of traffic accidents in Hong Kong, resulting in 8,207 casualties, followed by taxi at 4,493 (18%), Goods vehicle at 4,215 (16%).
- For the accident rate per 1,000 licensed vehicles, the most accident prone vehicle type was **Franchised public bus** at 392, followed by public light bus at 249 and taxi at 247.



- WHAT IS ALREADY KNOWN ON THIS TOPIC
 - Literature suggested anxiety, prior exposure and experience of disaster, risk perception and knowledge on disaster preparedness play important roles in determining the level of preparedness
 - Women reported more worry than men did
- WHAT THIS STUDY ADDS
 - Urban public health and emergency risk perception appear to be independent of major crisis in public transport
 - Female, and those living in suburban area and people aged < 45 were found to be sociodemographic significant predictors of expressed concern on disaster occurrence during their daily transport
 - Enhancing first aid training for all via including it to primary, secondary education as well as occupational training potentially improves community and individual capacity of disaster response