



The challenges of data collection for physical activity studies in Latin America: The IPEN-study experience (Brazil, Colombia and Mexico)

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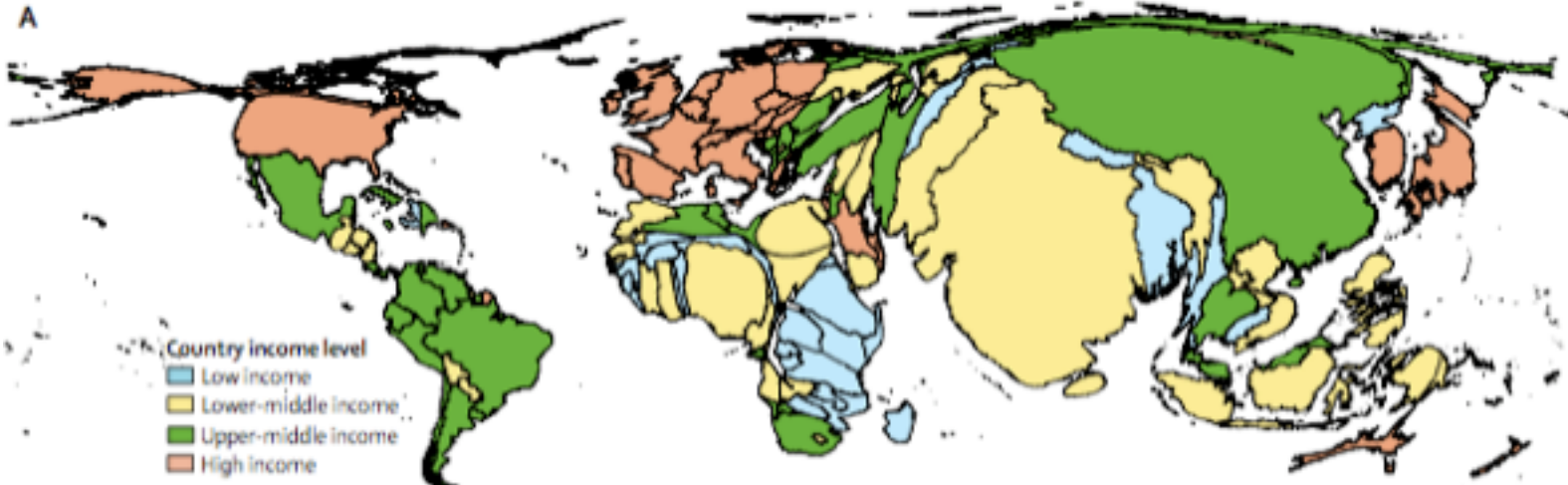


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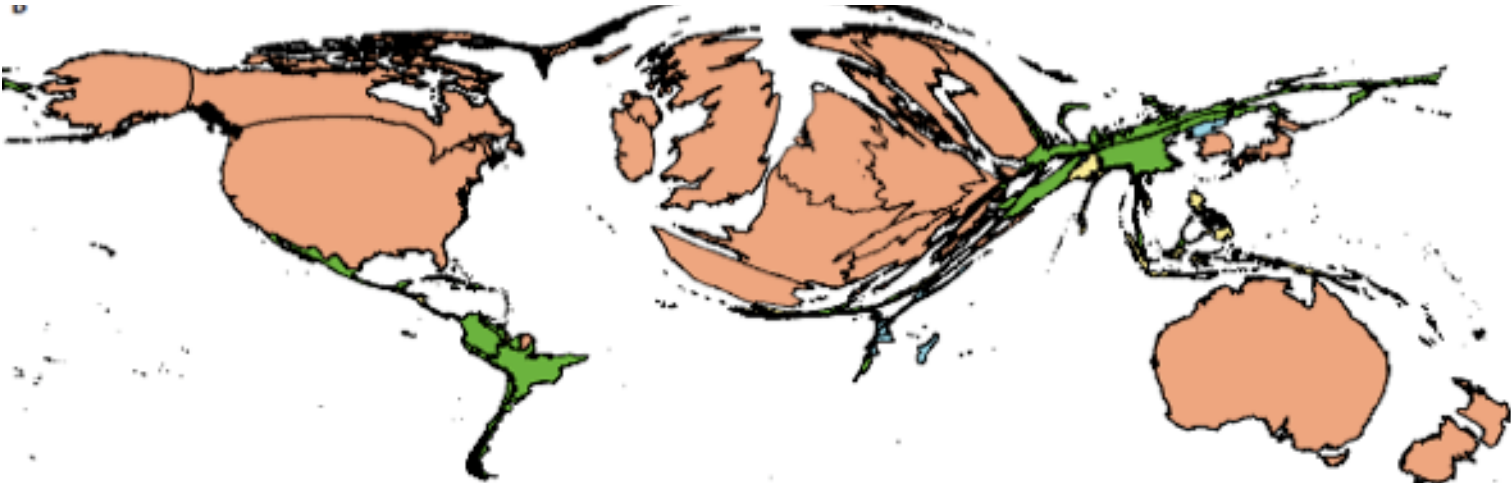


Background: Physical Activity Research worldwide

A. Map showing country area by population size

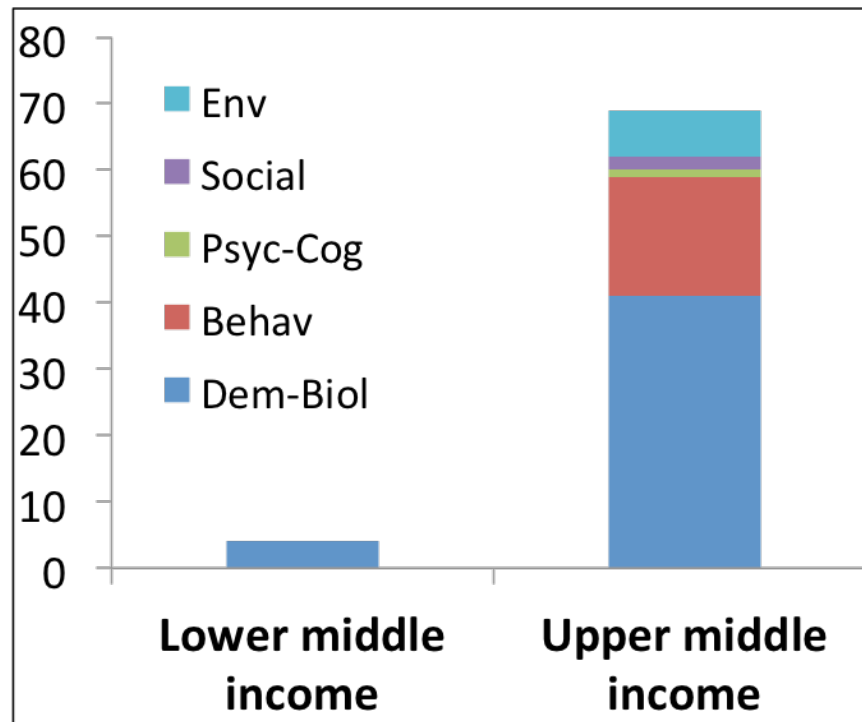


B. Map showing country area by publications on PA-interventions



Background: PA correlate studies in LMIC

- US, Northern Europe and Australia: **Many studies** to identify characteristics of the built environment associated to PA
- 2012 Lancet: Synthesis of 9 reviews of environmental correlates of PA for adults (**over 400 studies represented**)
- LMIC: **Only 11 studies with environmental correlates for PA**



Why is PA research so scarce in Latin America?

- Lack of recognition of physical inactivity as a public health problem
- Lack of funds for PA research
- Lack of capacity (highly trained researchers in the field of physical activity epidemiology)

➤ But also... **inability to replicate in an exact manner the state-of-the art data collection protocols developed in HIC**

- Key to generate high-quality, comparable data

The IPEN Study



OBJECTIVE: To accurately assess the relation between physical activity and built environment features using pooled data from all the studied countries

Measurement tools:

- ✓ PA: International Physical Activity Questionnaire (IPAQ) and Accelerometers
- ✓ Built Environment: GIS data, Neighborhood Environment Walkability Scale Survey (NEWS)



CUERNAVACA, BOGOTÁ, CURITIBA



Key areas requiring data-collection protocol adaptation for PA research in Latin America

- Research/Academic capacity
- Data availability, access and quality
- Political, institutional, economic infrastructure
- Socio-Cultural issues
- Safety
- Appropriateness of measures and instruments

Research capacity for state-of-the-art PA research in Latin America

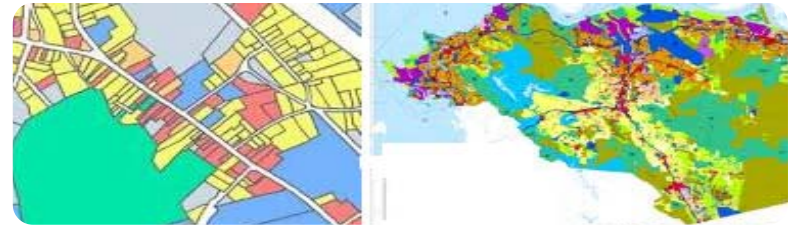
- Nascent field of research in Latin America
 - **Brazil** and **Colombia** have led the way
- Few highly-trained professionals specialized in PA as it relates to public health
- Very few academic programs specialized in PA and public health/epidemiology
- A generation of highly motivated individuals with training from top-academic institutions from HIC are making a difference

Data Availability, Access and Quality

HIC	Latin America
Obtain “public access” data for various phases of research	<ul style="list-style-type: none">- Data not always available or accessible- Quality/detail is not the same as in HIC Eg: GIS shapefiles for land use, crime data at the census tract level, public transit stops, etc.



Identify an ***adequate, well respected and influential local partner***:
e.g. **INSP in Mexico**



Optimize the available data : Eg. Digitalization of land use data and participants address

Data format: Sampling Units for IPEN

IPEN	Situation in Mexico
Primary sampling units → Neighborhoods	- Neighborhoods are not official administrative units

Localidades

- Available maps (shapefiles)
- Smallest administrative unit in a city in Mexico
- Vary in size and shape
- 29 in Cuernavaca

Census Tracts

- Available maps (shapefiles)
- Used only for the census
- 18 to 25 blocks
- 126 in Cuernavaca

Contextual Factors

- Inherent factors of conducting research (of any type) in LMIC
- Country/City level factors **beyond the scope of research**
 - Unreliable postal service
 - Low literacy (general, health-literacy, tech-literacy)
 - Lower labor costs allow to hire data collectors and recruiters → in-person data collection more feasible than in HIC

Socio-cultural issues

HIC	Latin America
Recruitment, surveys and accelerometry → Phone and/or mail	<ul style="list-style-type: none">- Not culturally accepted- Low response and compliance rates- Low literacy- Not always used to participating in research studies

In-person recruitment and data collection

- ↑ Human Resources needed
- Field work and planning is more challenging
- Low labor costs for professional field workers



Socio-cultural/regulatory issues: Incentives

HIC	LMIC
Many countries provide monetary incentives for participation	Not always allowed to provide cash as an incentive for participation in research studies

Options

No Incentives

- No cost
- Low participation and/or compliance

Alternative monetary/material incentive

- Higher Cost
- 8-15 dollar limits
- Increased participation and/or compliance
- Complicated approval by IRBs
- Safety issues

Feedback

- Lower cost
- Increased participation and/or compliance
- Time consuming
- Human resources required
- Delivery issues

Safety considerations

A) For field workers (recruiters and data collectors)

- Hired field workers; restricted use of students
- Work in pairs
- Provide cell phones/calling cards
- Sometimes → avoid certain neighborhoods
- Notify local authorities of research study

B) For participants

- Mistrust of strangers recruiting
 - Partner with well-known institution; field workers should always wear appropriate uniform
 - Difficult to access high-income gated communities/buildings
- Provide coordinating center phone number to verify that it is a real study
- Are accelerometers tracking where I go? → NO!

In spite of the challenges...



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- In person recruitment and survey application
- Coordinate appointments, more challenging logistically



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**In person data
collection has some
benefits!**

Accurate survey data and possibility to obtain more objective data



- Data collectors trained to apply the survey → can **clarify questions** and make sure participant is answering adequately
- **Objective measures** of height and weight
 - ✓ 100% in Cuernavaca and Curitiba
 - ✓ Bogota: 100% self-report and 70% objectively measured

Verification of appropriate use of measurement instruments

- Accelerometer log
- Demonstration of appropriate wearing position

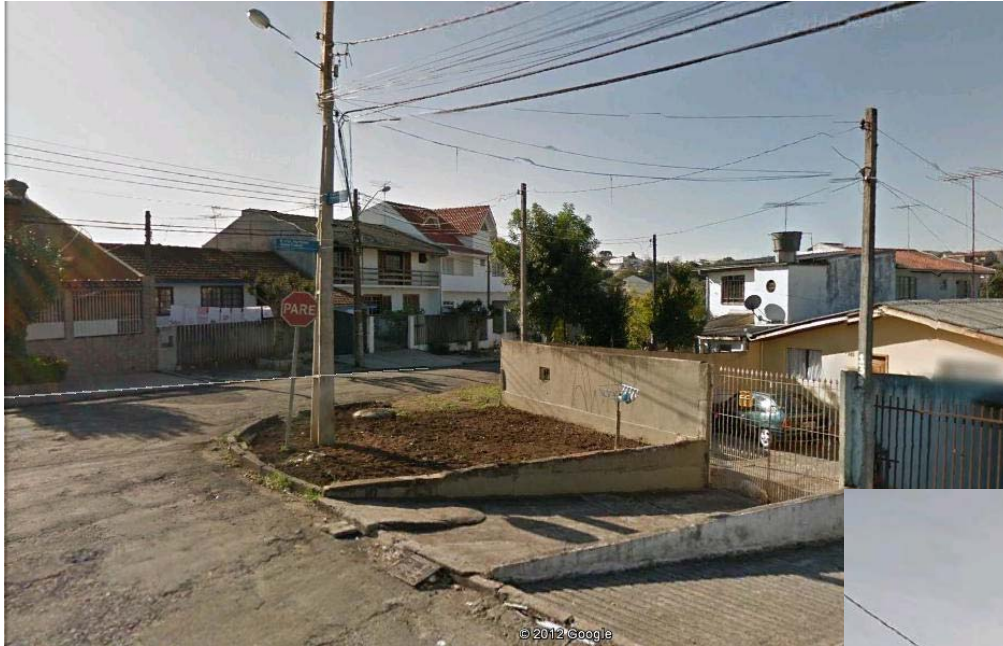


Appropriateness of measures and instruments

HIC	Situation in Mexico
Surveys (IPAQ, NEWS, etc) → Self or phone-based administration	- Field workers are in charge of in person administration of the surveys - They do not include the assessment of certain characteristics of Latin American environment

1. Modify *language* for cultural appropriateness
2. Modify *structure* for in person application
 - Collaborative effort with Colombian and Brazilian teams
3. New section to assess PA in *specific LA settings* (soccer fields, shopping malls, plazas)
 - Collaborative effort with Colombian and Brazilian teams
4. Two weeks prior to data collection → **Pilot test**

Brazil, Curitiba – Low SES

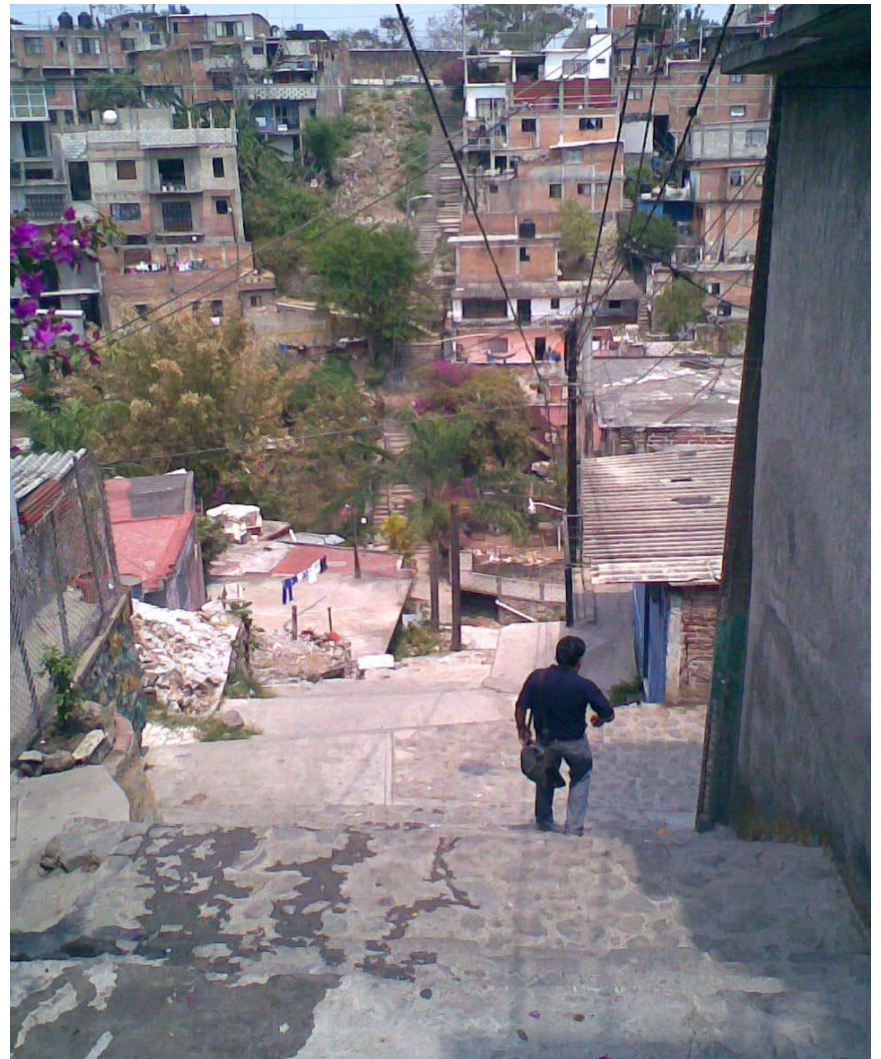
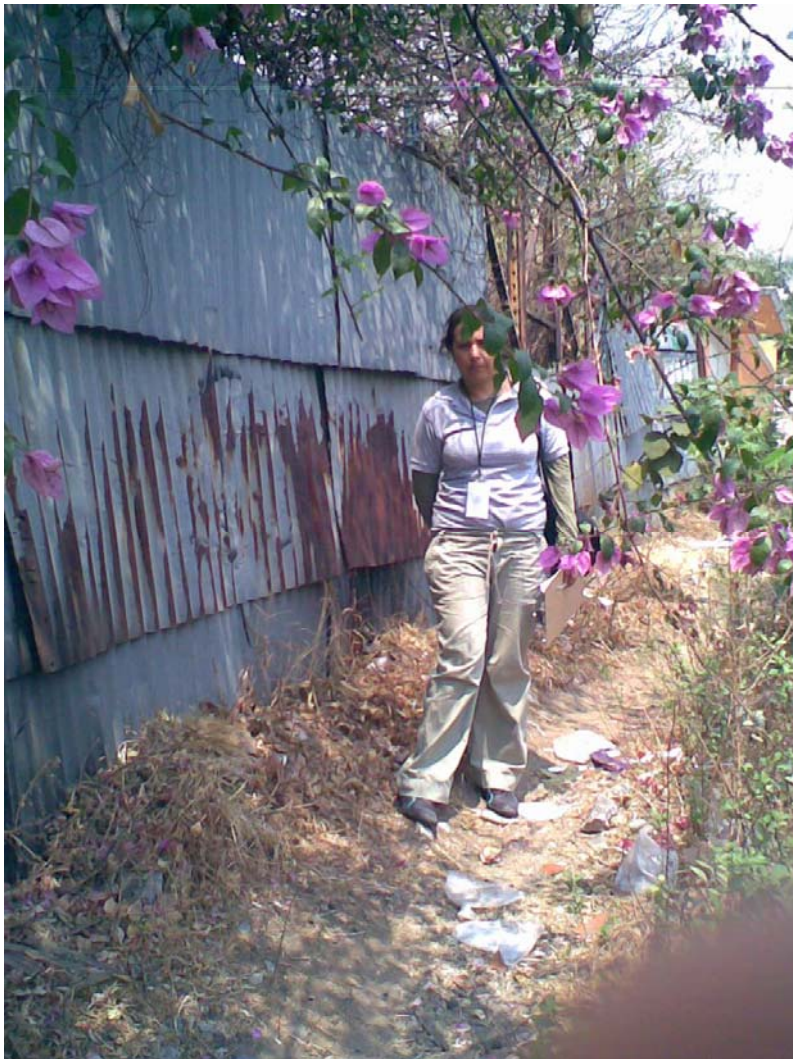


Low walkability



High walkability

México, Cuernavaca: Low Walkability, Low SES Neighborhood



Colombia, Bogotá: Low Walkability, High SES



Latin American IPEN-Network: Model of multi-national/institutional collaboration

- **Akira Ferreira Hino** → UNIANDES, Bogotá, Colombia (2 months, 2009) and became **IPEN-Brazil's GIS expert**
- **Deborah Salvo** → UNIANDES, Bogota, Colombia (1 month) and at PUCPR, Curitiba, Brazil (1 month), 2010
 - **GIS, accelerometry, data collection procedures**
 - Co-PI for IPEN-Mexico (with Michael Pratt, CDC) , **INSP-CDC-Emory** collaborative effort
- **Andrea Ramírez** (data collection **coordinator of IPEN-Colombia**) → 1 month at INSP Cuernavaca, Mexico (2011)
 - Help launch and set up the data collection process for IPEN-Mexico



CDC-EMORY-UNIANDES-PUCPR-IPEN

Data collection outcomes in 3 IPEN-LA countries

	Mexico	Colombia	Brazil
Sample Size	<i>Final Sample: 679 Accelerometer: 674 Survey: 677 Survey + Accelerometer: 672</i>	<i>Final Sample: 1000 Accelerometer: 250 Survey: 1000 Survey + Accelerometer: 250</i>	<i>Final Sample: 699 Accelerometer: 254 Survey: 699 Survey + Accelerometer: 254</i>
Duration	<i>6 months</i>	<i>6 months</i>	<i>4 months</i>
Cost	<i>60,000 USD</i>	<i>60,000 USD</i>	<i>60,000 USD</i>
Accelerometer loss-rate	<i>2/65 = 3%</i>	<i>2/35 = 5%</i>	<i>0 %</i>

Impact and implications for public policies in Latin America (IPEN)

- The project has generated interest from the ministries & departments of *health, urban planing, communication, sports & recreation* → **Recognition of the problem**
- Our work has set the way to...
 - Develop standards to assess how health/unhealthy LA cities are
 - Design environmental interventions for LA settings
 - Focalize resources to improve the built environment where it's needed
- **Training and capacity building** → 1st generation of highly trained researchers in the field of physical activity epidemiology/public health

Conclusions

- Performing high quality physical activity epidemiological research in Latin American is **challenging but feasible**
- A committed, influential **local partner** is essential for success
- **Creative solutions** to adapt to the local context should be favored, without sacrificing methodological rigor
- **Cost-effective decisions** based on the available monetary, time and human resources should be made
- Our study may be used as a **model for future studies**, programs and policies addressing physical activity and the environment in the Latin American region
- A strong, well-connected, **collaborative network** (between countries and institutions) is key for a successful PA study in Latin America
- Our experience provides valuable information for studies involving **Latino population in the US**, and studies in **other LMIC**



THANK YOU!