A food environment typology and transitions over time

Shauna Downs, MS PhD
Rutgers School of Public Health
Overview of talk

To describe a food environment typology

To describe the transitions in food environments over time
Food environment types

• The food environment literature has been primarily focused on high-income countries

• The food environments that consumers interface with in low- and middle-income country contexts often have different characteristics

• There is a need to go beyond examining modern retail when examining food environments
Food environment research in LMICs

(Turner et al., 2019)
Food environment interventions targeting children and adolescents

There are major geographical gaps in the evidence base

(Downs & Demmler, Forthcoming)
Wild and cultivated environments

- Capturing the types of food environments that consumers interface with
- Moving beyond the built food environment
Approach to developing food environment typology

- Building on existing food environment literature
- Informed through our research characterizing food environments in LMICs

(Ahmed & Herforth, 2017)
A food environment typology

**FOOD ENVIRONMENT TYPOLOGY**

**NATURAL FOOD ENVIRONMENTS**
- Wild food environment
  - Forests & Jungles
  - Aquatic Areas
- Cultivated food environment
  - Fields
  - Grazed Pastures
- Aquaculture
- Gardens

**BUILT FOOD ENVIRONMENTS**
- Informal Market food environment
  - Farmer’s/Wet Markets
  - Street Vendors
  - Mobile Vendors
- Formal Market food environment
  - Supermarkets
  - Hyper Markets
  - Online Vendors
  - Restaurants
  - Institutions

(Downs, Ahmed & Herforth, forthcoming)
Natural Food Environments

Cultivated

Wild
Built Food Environments
Built Food Environments
Parameters of food environment type

- Diversity dependent on region
- Seasonality

- Limited diversity in smaller food outlets
- Branded and unbranded processed food

- Vast diversity of food available in all seasons
- Availability of foods may differ based on neighborhood SES
- High availability of processed foods

(Downs, Ahmed & Herforth, forthcoming)
Parameters of food environment type

- No monetary exchanges
- Trading of goods

- Staples relatively inexpensive
- Nutrient-rich foods (e.g., F&V & ASF) relatively expensive and/or price is highly seasonally variable
- Processed foods packaged in small packages to increase affordability

- Ultra-processed snack foods, ready meals, and fast foods are inexpensive
- Pay high premiums for specialty/niche foods and locally produced or organic foods

(Downs, Ahmed & Herforth, forthcoming)
Parameters of food environment type

- Can be labor and time intensive to hunt or gather
- In some situations can be highly convenient (e.g. when wild fruits are in season)
- Labor and time intensive during growing season
- Processing of staples and food preparation time sensitive
- Independent fast food and street vendors offer convenience foods such as ready to eat snacks and meals
- Distance to markets can be long and road access limited in rural areas
- Numerous convenience restaurants
- Improved infrastructure with cars and public transport increase market access
- Processing of ingredients, along with ready-to-eat and ready-to-heat foods reduces cooking time
- Increased use of online delivery

(Downs, Ahmed & Herforth, forthcoming)
Parameters of food environment type

- Promotion and marketing of food non-existent
- Food is fresh by definition when wild harvested
- Marketing non-existent
- Promotion of food limited to farmer-targeted programs or extension services
- Food is fresh when harvested; crop quality is variable
- Branding and advertisements in print in newspapers, posters
- Signs in stores, markets, buildings
- Verbal promotion on radios
- Variable freshness/quality common due to lack of cold chains and unstable storage conditions
- High level of food promotion
- High amount of labeling
- Food safety standards generally ensure safe food
- Quality of perishable food is typically high due to intact cold chains

(Downs, Ahmed & Herforth, forthcoming)
Parameters of food environment type

- Low carbon footprint
- Sustainability dependent on abundance of supply in ways that don’t deplete integrity of resource base
- Carbon and water footprint dependent on production practices
- Soil health dependent on production practices
- Food loss high in LMIC contexts
- Land tenure issues
- Relatively low levels of packaging
- Local and seasonal foods widely available
- Food system livelihood and equity issues
- High levels of food loss due to inadequate storage conditions
- High amounts of packaging
- High levels of food waste
- Food miles can be high
- High carbon and water footprint of some foods (e.g., beef)
- High-energy food storage of cold chain items

(Downs, Ahmed & Herforth, forthcoming)
Food environment transition over time
Objectives of analysis

To examine the food environments of countries at different stages of development as well as their changes over time.

To examine the availability, affordability, convenience and quality of foods within countries at different stages of development.
Country groupings for analysis

- We examined historical and forecasted global trends on the basis of country development stage using socio-demographic index (SDI)

- SDI is a measure for classifying the development stage of countries using a composite average ranking of incomes per capita, average educational attainment, and fertility rates
  - Low SDI (e.g., Ethiopia, Bangladesh, Senegal)
  - Low-middle SDI (e.g., Dominican Republic, Egypt, India)
  - Middle SDI (e.g., Ecuador, Mexico, Albania)
  - High-middle SDI (e.g., Serbia, Ukraine, Argentina)
  - High SDI (e.g., United States, Italy, Norway)

(Source: Institute for Health Metrics & Evaluation)
Data sources

- Food and Agriculture Organization (FAO STAT)
- Euromonitor International
- Euromonitor International

Different retailing and restaurant types: Euromonitor International
Shifts from traditional to modern retailers

(Data source: Euromonitor International; Downs & Ahmed et al., forthcoming)
Shifts in food outlet types

(Data source: Euromonitor International; Downs & Ahmed et al., forthcoming)
Shifts in foodservice outlet type

Source: Euromonitor International; Downs & Ahmed et al., forthcoming
Shifts in foodservice outlet type

(Data source: Euromonitor International; Downs & Ahmed et al., forthcoming)
Shifts in food availability

3a. Availability of Cereals and Starchy Roots

Legend:
- High SDI
- High-middle SDI
- Middle SDI
- Low-middle SDI
- Low SDI

Cereals

Mean Value (kcal/capita/year)

Year

Starchy Roots

Mean Value (kcal/capita/year)

Year

3b. Availability of Animal Sourced Foods

Offals

Eggs

Fish

Milk

Meat

(Data source: FAO Stat; Downs & Ahmed et al., forthcoming)
Shifts in food availability

(Data source: FAO Stat; Downs & Ahmed et al., forthcoming)
Data gaps to examine shifts over time

Affordability

Promotion & Quality
Shifting burdens of malnutrition

(Adapted from Swinburn et al., 2019; Downs & Ahmed et al., forthcoming)
The nutrition transition – to the food environment transition

Dietary patterns and risk factors

Nutrition and health outcomes

The food environment transition

(Downs & Ahmed et al., forthcoming)
The food environment transition towards sustainable diets

Various dietary risk factors

Burdens of malnutrition

Downs & Ahmed et al., forthcoming)
Key messages

• There is a need to comprehensively examine the different food environment types that consumers interface with

• As countries transition from low to high SDI their food environments drastically change
  • A greater reliance on the built food environment
  • Increased access to ultra-processed food & nutrient-rich foods

• Interventions aimed at improving diets need to target the various food environments in which consumers interface
  • Priority areas for interventions will shift as countries undergo the food environment transition