

Developing a tool to measure the healthfulness of the hawker food environment

The Food Environment Assessment in Singapore Tools (FEAST) study

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PURPOSE

- Poor nutrition is the leading contributor to premature death and disability in Singapore
- Over 75% of adult Singaporeans eat out daily, mainly at hawker centers and school canteens
- Common hawker foods have comparable amounts of saturated fats, and higher amounts of sodium than Western fast foods
- Excessive consumption has been linked to hypertension, dysglycemia and heart disease
- National programmes such as the healthier dining programme, aim to improve the healthfulness of hawker foods
- However tools to measure the healthfulness of the hawker environment in Asian settings are lacking
- An instrument that is contextualized to Asian settings, and takes into account the unique structure of hawker centers is important

FEAST OBSERVED TOOL STRUCTURE

Modified from Nutrition Environment Measures Survey-Restaurants

**Menu**

Are healthier foods & beverage available?

Based on availability of food groups (e.g.)

- Plus points: wholegrains, white meats, legumes, vegetables, fruits, water, lower-sugar beverages
- Minus points: Processed meat, fried foods, sweet beverages
- Also considers: cooking method and food variety

**Support**

Does the environment support healthier eating?

**Barriers**

Does the environment present barriers to healthier eating?

**Price**

Are healthier foods & beverages available at similar or lower cost as compared to less healthier options?

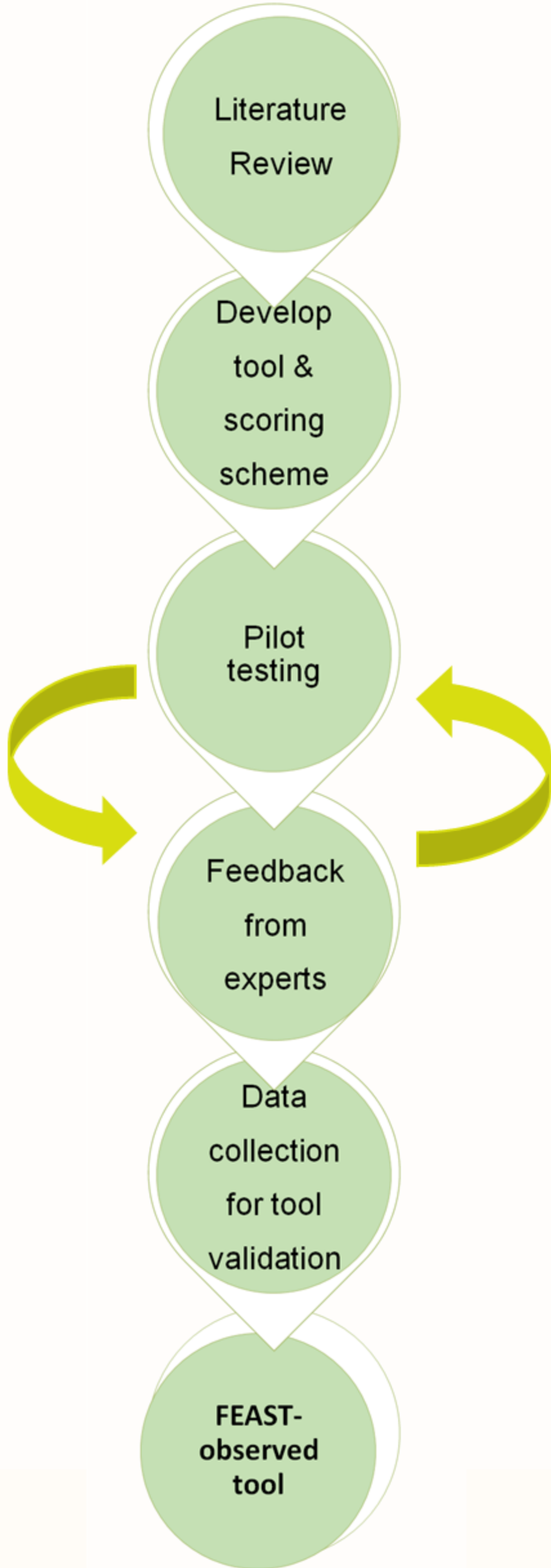


Figure 1. Process of tool development

Guiding design principles of FEAST

observed tool

- Accommodates the structure of hawker centers and canteens
- Contextualized to Asian foods
- Does not require nutritional composition data of foods sold
- Does not require substantial vendor interaction
- Can be conducted by a lay person with some training
- Does not require substantial amount of time



Figure 2. A typical hawker stall in Singapore

- Similar to food courts, hawker centers are eating establishments where multiple hawkers (about 35 vendors per center) sell cooked food, with shared eating spaces
- Vendors generally sell a limited number of dishes and there are separate stalls selling drinks and desserts.
- Hawker centers are typically located near housing estates and businesses complexes
- Rents for many vendors are subsidized by the government
- There are 107 hawker centers in Singapore with over 5900 cooked food stalls

FEAST OBSERVED TOOL VALIDATION

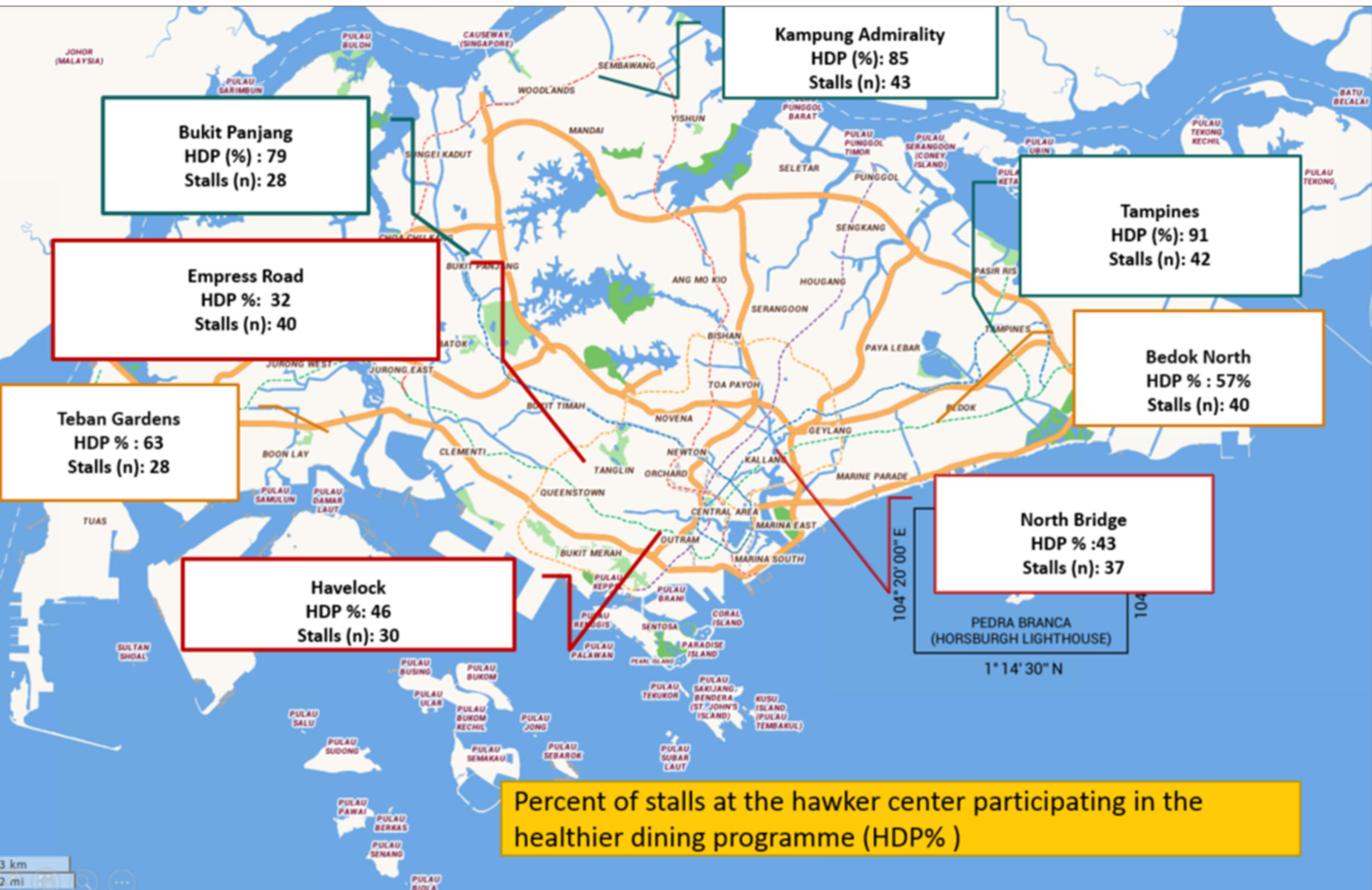


Figure 3. Data collection for validation at 8 hawker centers with varying participation rates in the healthier dining programme.

Inter-rater reliability (n = 288 stalls)

Usually done on the same or the next day, after the first rater evaluated the stall [July –September 2018]

Test-retest reliability (n = 254 stalls)

Usually done within a month after the first assessment by the same rater [August – October 2018]





Criterion validity

- Total and domain-specific (menu, price, barriers, support) scores will be computed for each of the stalls and centers
- Multiple linear regression will be used to examine the association between eatery score and HDP participation status

IMPLICATIONS

- Developed tool takes 5-7 minutes to administer for each stall and broadly met the principle design objectives
- Once validated the tool can be used for research, monitoring and evaluation purposes for hawkers centers in Singapore and similar urban Asian settings

FEAST OBSERVED SCORING - Stall

	Number of items	Point attribution (%)
	18	70
	6	14
	7	6
	7	10



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