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November 2, 2015

Community-Engaged Decision Modeling for Local Economic Development

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COMMUNITY-ENGAGED DECISION MODELING FOR LOCAL ECONOMIC DEVELOPMENT

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INFORMS National Conference, Philadelphia, PA
November 2, 2015

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Problem motivation

- Devolution in American governance has resulted in public-private partnerships to deliver important services (Ketti, 2000)
- Thousands of Main Streets organizations partner with municipalities to support local economic development (Robertson, 2004; Seidman, 2004)
- In the city of Boston, 20 Main Street Districts are required to report process and outcome data through a monthly survey to their primary funder, the Department of Neighborhood Development
- Generally, MSDs feel that the data they must report are not those that they feel reflect the real nature of their work or measures of impact.

What economic development success metrics should Main Street organizations collect? How can these data help them choose local initiatives to pursue?

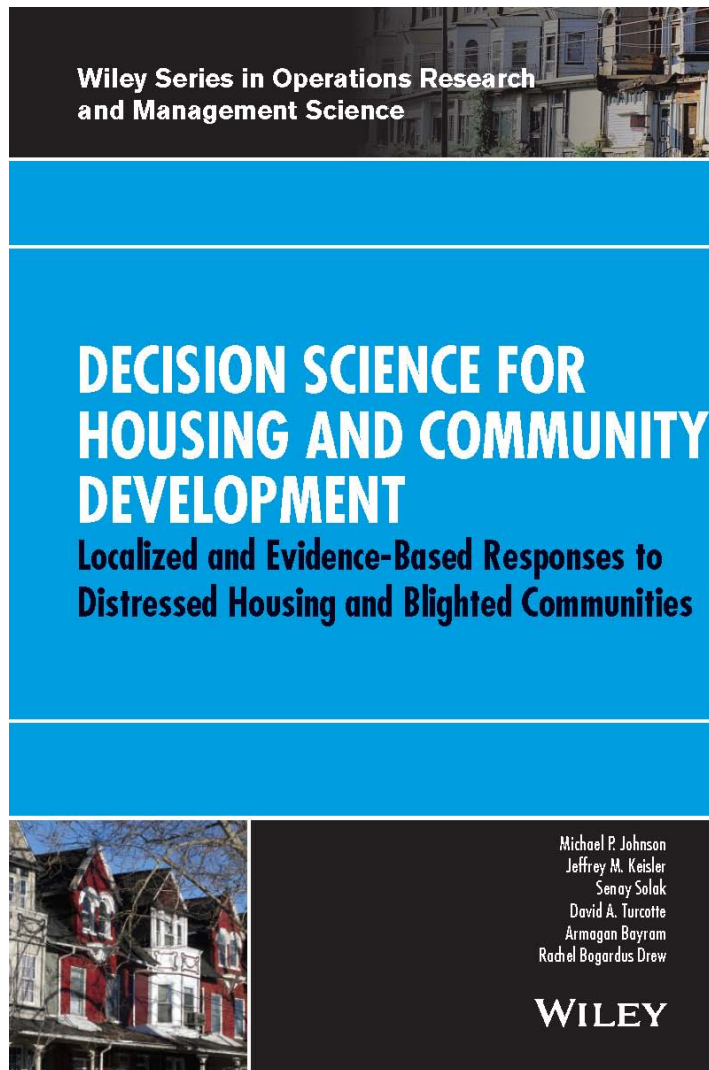
Problem details

- Main Streets tasks: physical improvements, technical assistance to businesses, marketing and place-building
- Types of data that Boston MSDs currently collect: business vacancy rates, volunteer hours, business owner contacts, etc.
- Boston MSDs have very limited resources to perform their activities
- Disconnection between knowledge and use of data analytics & information technology (IT) and the needs of urban communities and marginalized populations (Johnson, 2015)
- Analytics often reflects large datasets, quantitative methods and a small set of objectives traditionally associated with the private sector or larger government organizations (Liberatore and Luo, 2010; Winston, Albright and Zappe, 2010)

Why is this a problem that our field should address?

- OR/MS provides systems thinking to broaden concept of outcomes (vs. outputs) and decision alternatives (vs. defined tasks) to support multi-attribute decision-making
- Keeney's (1996) value-focused thinking approach can support development of values structures by which attributes and alternatives can be identified
- Community-based operations research (Johnson, 2012; Midgley and Ochoa-Arias, 2004) provide a theoretical framework for inductive, mixed-methods, community-engaged problem-solving
- Basis for design and application of diverse solution approaches in public-sector applications of OR/MS facility location, service area design, marketing science, project management

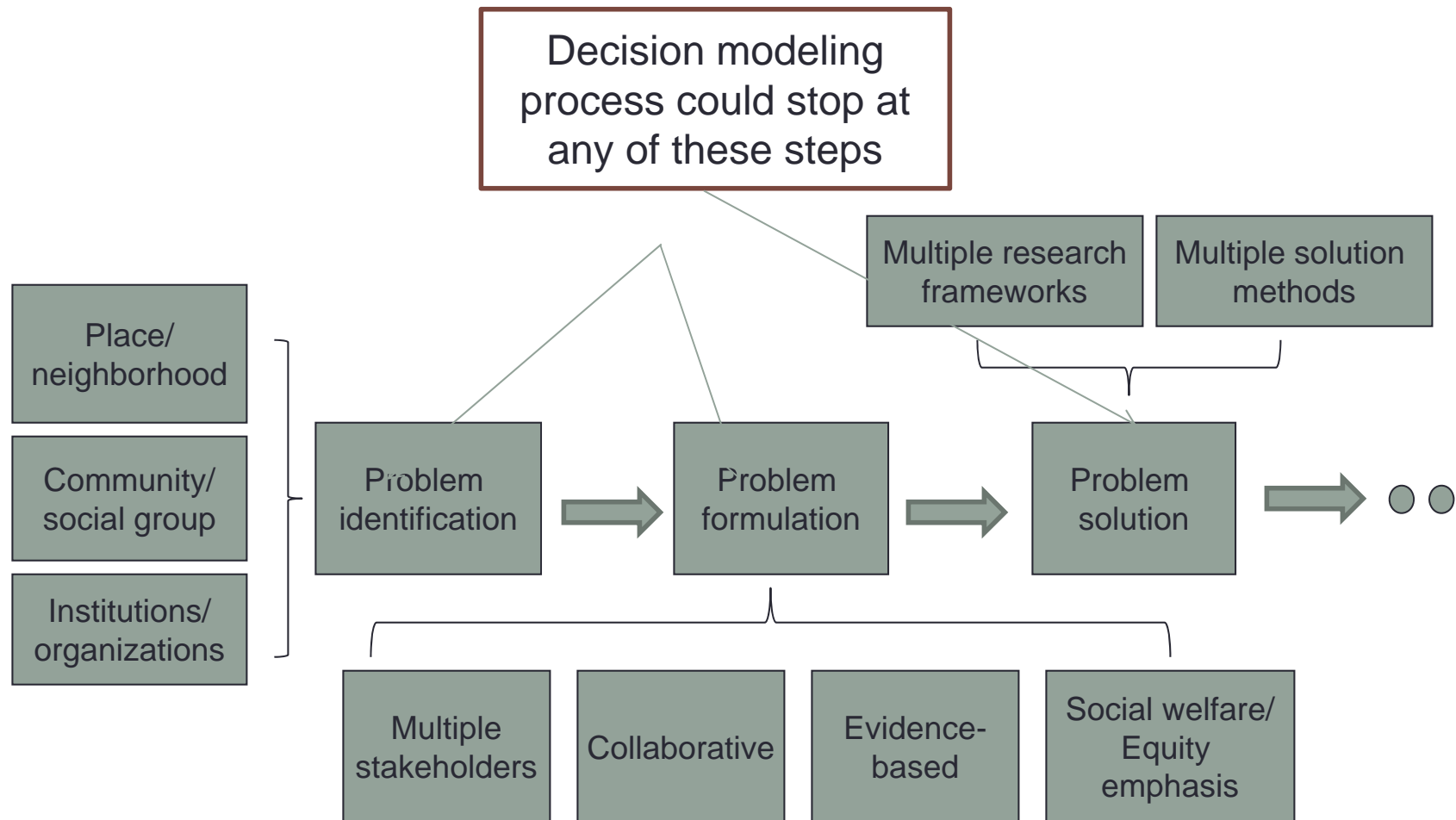
Current work supporting project



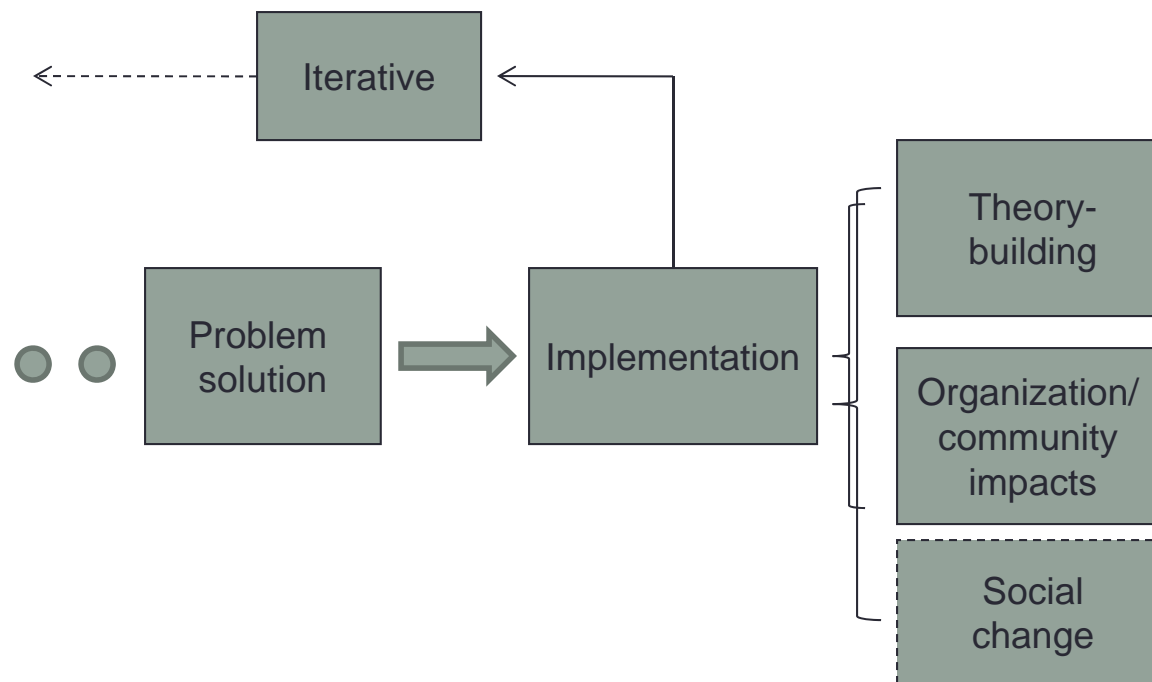
Analytic methods:

- Multi-site case study
- Descriptive analytics
- Value-focused thinking
- Objectives design
 - Facility location
 - Markov chain analysis
- Multi-objective optimization for site selection
- Markov decision models for property acquisition
- Stochastic multi-objective integer programming for strategy design

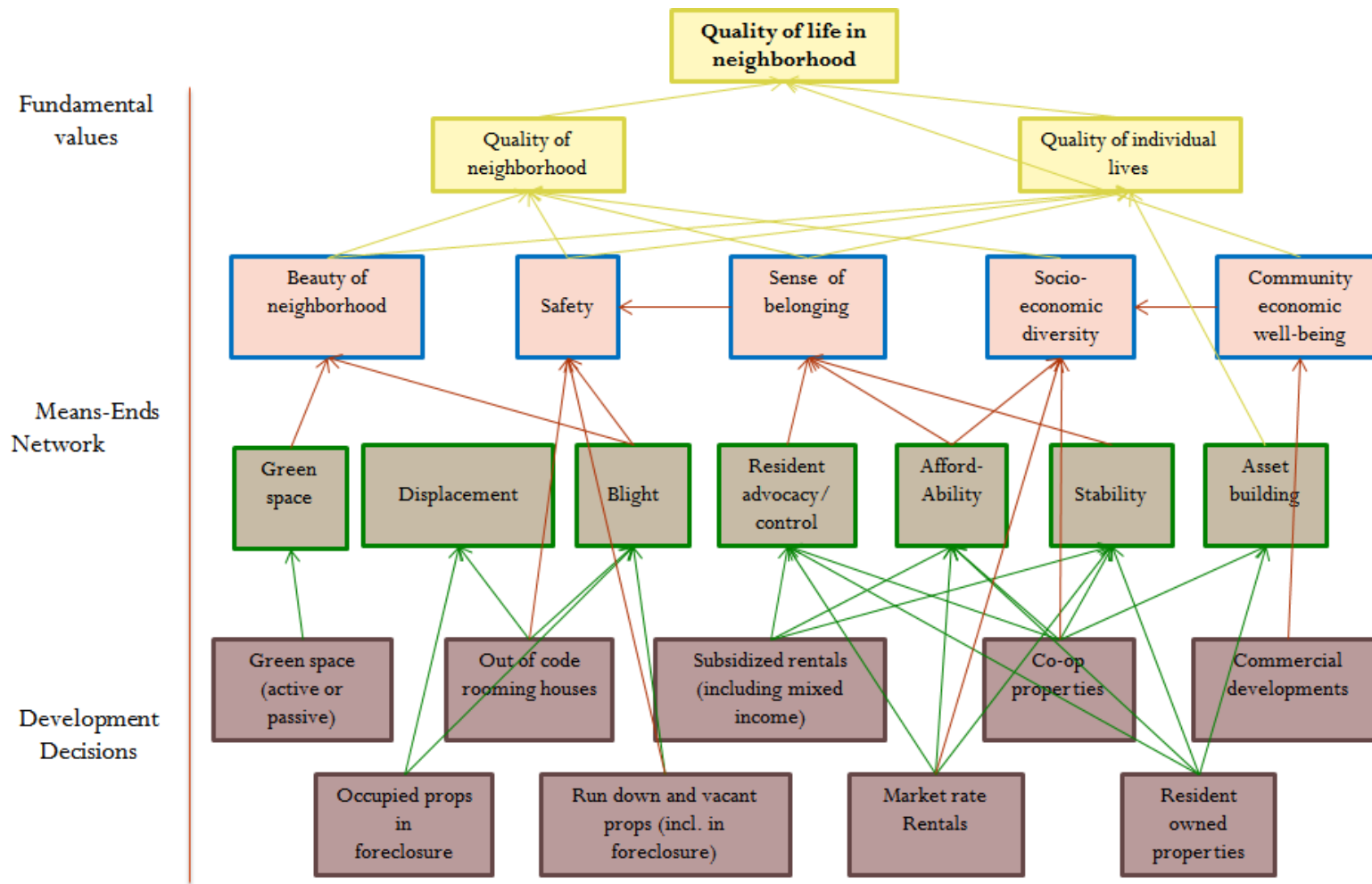
CBOR enlarges traditional notions of decision modeling



CBOR enlarges traditional notions of decision modeling, continued



Value-focused thinking can be used to connect values with alternatives...



Source: Johnson, et al. (2015)

and to organize new decision strategies according to values-based objectives

Fundamental Objective	Means Objective	What decisions/ strategies are associated with each means/lower level/actionable objective?					
MAX Quality of Area Proximate to Units	MAX green space	Organize/ provide for clean-up crews for vacant lots (linked to youth)	Creating/sustaining green spaces from neg opportunity spaces	Turn vacant lots near multi-units into active green space e.g. playgrounds	Partner with city to share costs of manage public spaces (e.g. insurance, landscaping)	Other partnerships/ coordination, e.g. 'friends of the park'	Expand on existing community/ residential garden efforts
	MAX quality of amenities	Develop artist space (@ BF Brown), create cultural district on Main St.	Expand farmers market on Main St.	Attract/ develop more commercial enterprises (e.g. restaurants)	Address vacant store-fronts on Main - pre-dev/bring up to code/make ready for new businesses	Expand tenant meeting space/on-site services	
	MAX accessibility of units to amenities	Increase downtown rental development	Locating green/community space close to occupied units				
MAX Sustainability of Quality	MAX spending/ private investment/ municipal investment	Encourage local employment on construction and rehab projects	Increase availability of capital in Fitchburg generally	Use local sources to access credit for developing/ rehabbing residential investors and mixed use properties	Work with redevelopment authority to increase commercial property (i.e. small business) funding		
	MAX impact of responsible investors/ MIN impact of speculators	Use receivership to take control of 'cancerous' properties (bad fits, no \$ for rehab, absentee landlords)	Partnership opportunities w/private property owners that lack resources (e.g. technical/administrative assistance, coordinate on adjoining props)?	Become the go-to source for large projects, not 'developer of last resort'	Serve as advisor/ consultant/ go-to source for new neighborhood investments/ developments?		
	MAX number of responsible owner-occupants	Use receivership	Expand community building activities	Offer assistance (accessing financing, resources) to private homeowners			
MAX Quality of individual Units	MAX quality of (own) tenants	Hire resident services coordinator in Fitchburg - for case management and community building	Tenant associations, "Neighbor Circles"	Be a responsible landlord of own props (i.e. new property management service)			

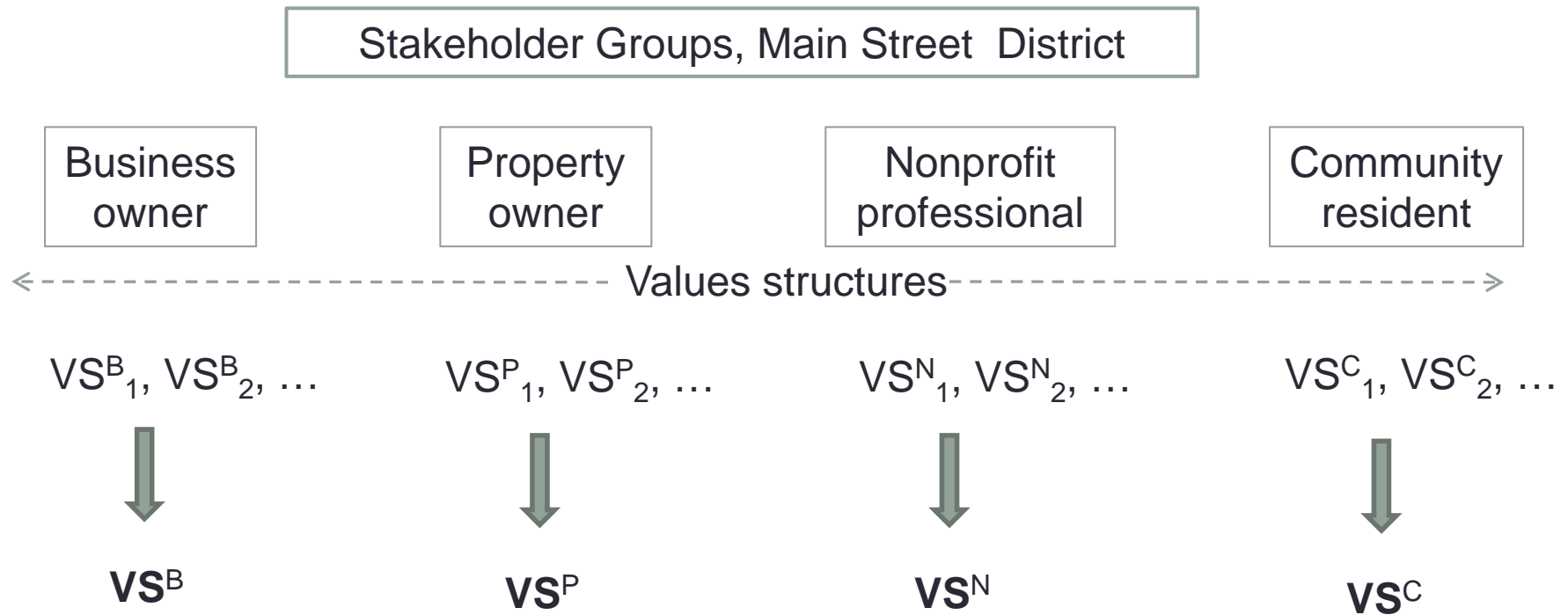
LEGEND	
	Possibly actionable strategies by TCCDC (15)
	Possible partnerships/collaborations/ coordinating opportunities for TCCDC (13)
	Outside of TCCDC core activities, but can advocate/encourage other orgs to address (4)
	Expanding on existing TCCDC efforts (3)
	Already being addressed by TCCDC (11)

Source: Johnson, et al. (2015)

Our analytic strategy

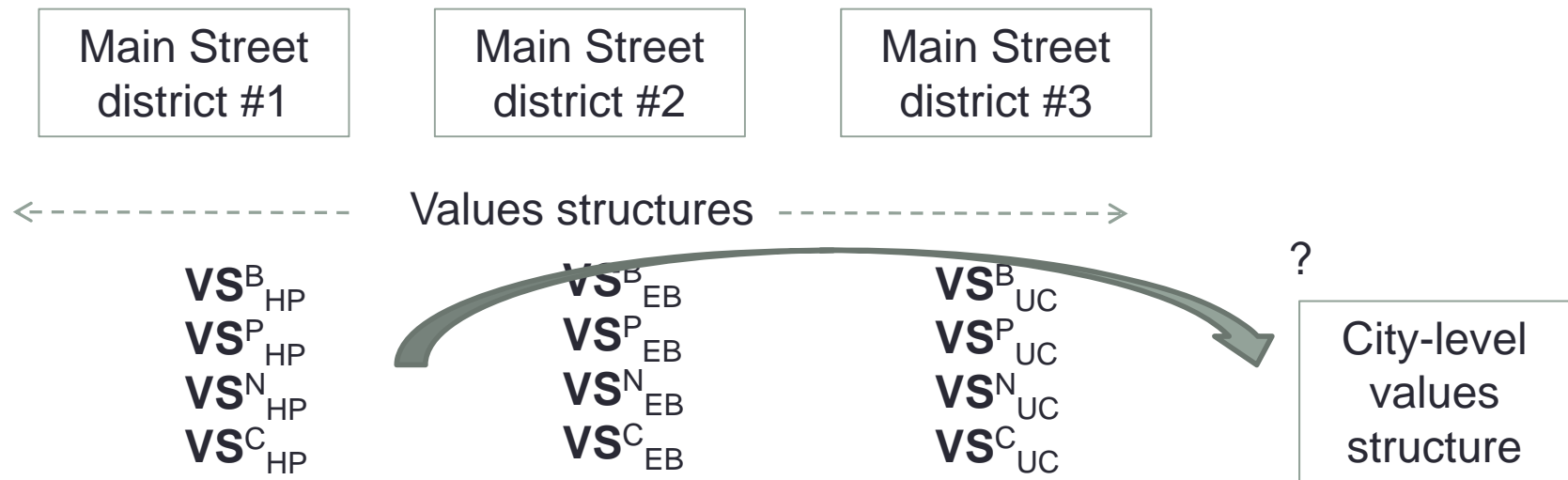
- A single focus group of community stakeholders reflecting all of Boston's MSDs would be unwieldy
- Instead, employ multi-site case study design: select small number of MSDs that, together, reflect city's diversity
- For each MSD case, conduct interviews with individuals from defined stakeholder groups: business owners, property owners, nonprofit professionals, residents
- Extract values structures and look for commonalities and differences within and across case study communities
- Construct metrics that are *essential, measurable* and *controllable*

Single-case VFT-based analysis



Research questions: Are there are there commonalities in values structures across stakeholder groups? Do economic development metrics appear to be specific to certain stakeholder groups? What might explain variations, if any, across stakeholder groups?

Multiple-case VFT-based analysis

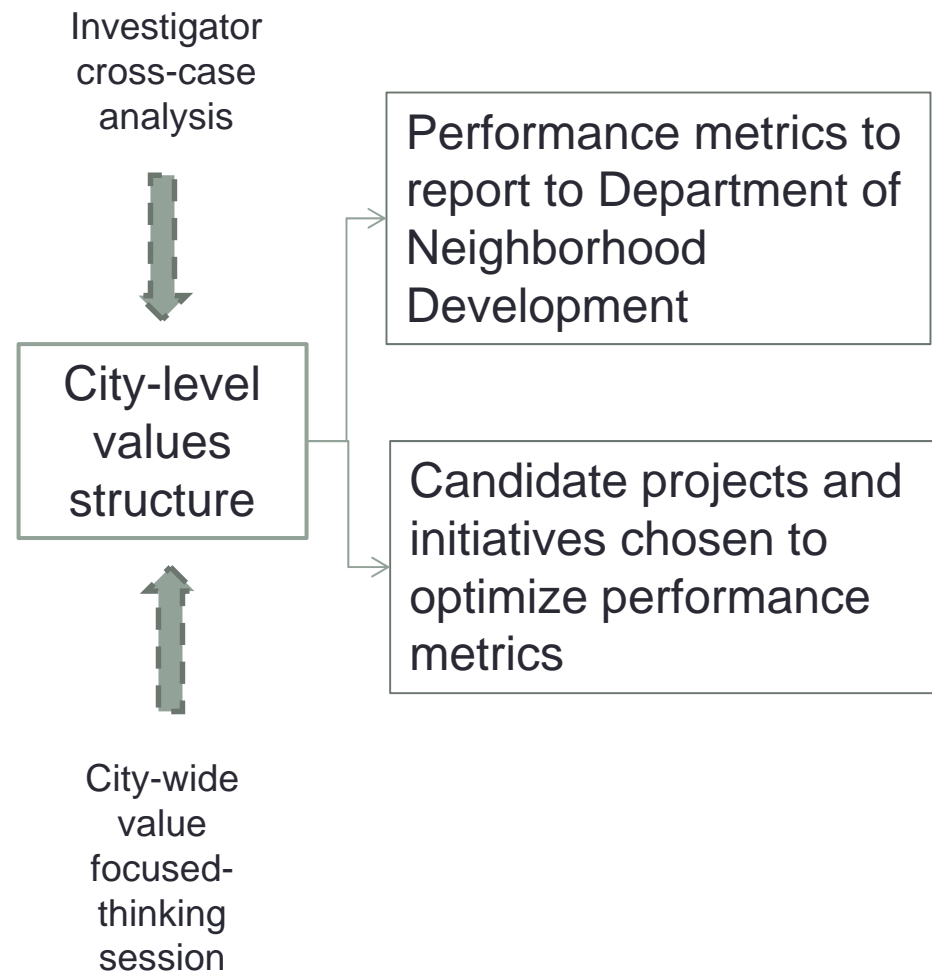


Research questions: What variation is apparent in values structures across stakeholder groups and communities? What explains these variations, if any? Do certain types of economic development metrics appear to be specific to certain stakeholder groups and community types?

Synthesis of cross-case findings

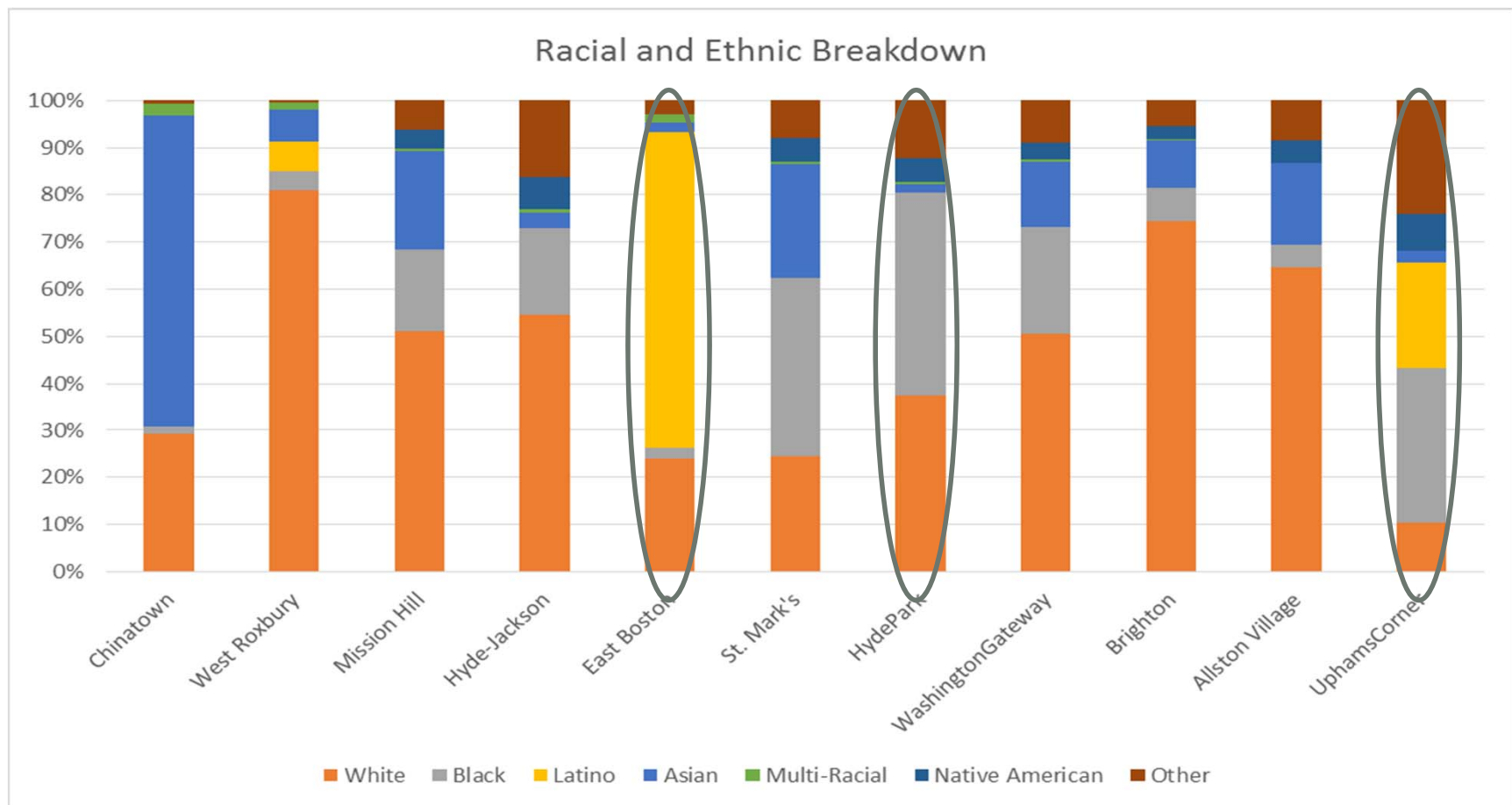
If values structures do not vary greatly across communities, build performance metrics that comprise consensus most-important metrics for each of the four stakeholder groups.

If the cross-case analysis yields values structures that appear to be quite distinct across neighborhoods, conduct focus groups in which we would apply value-focused thinking to representatives of all of our target communities.

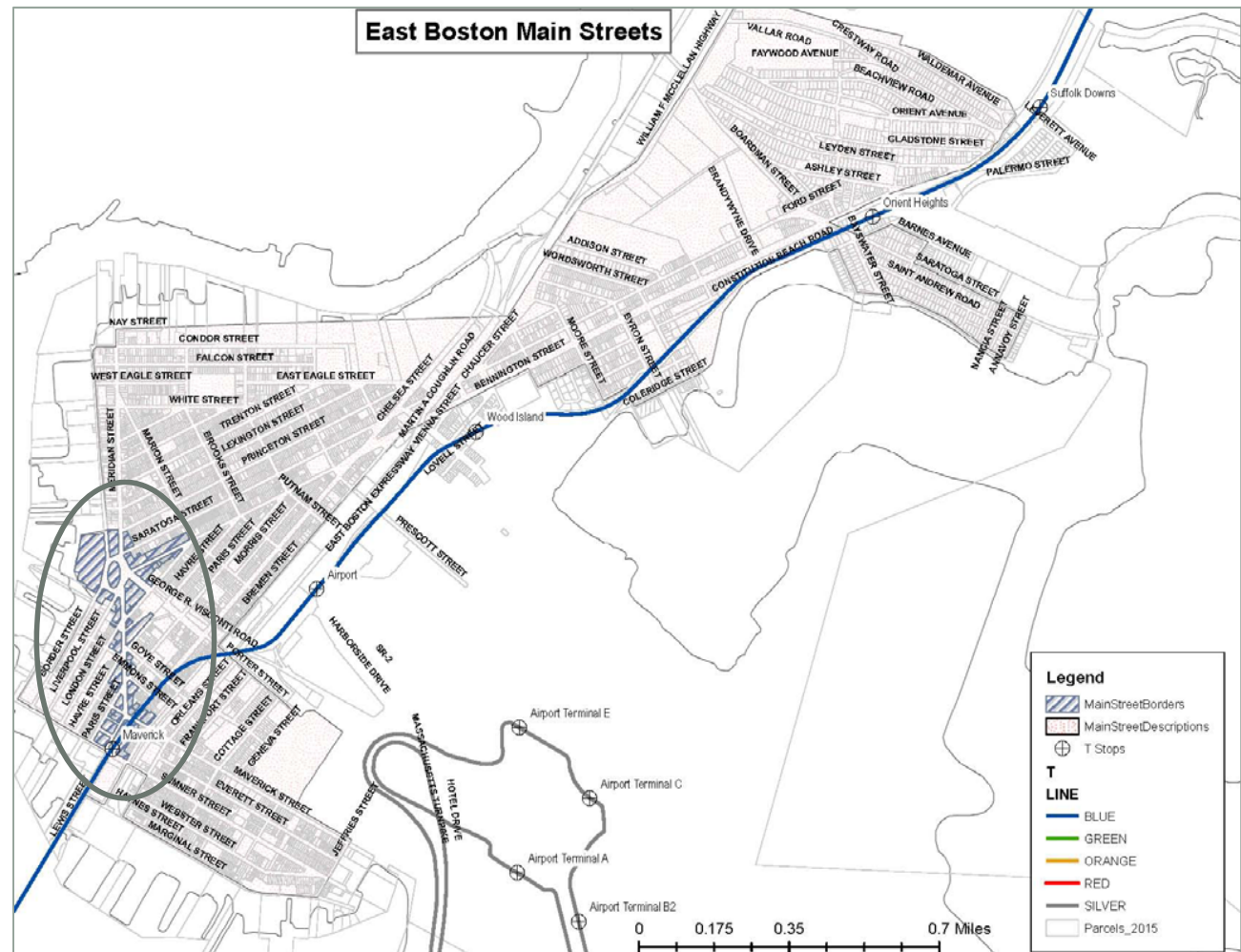


Selecting case study sites: Survey of Main Street district directors

Demographic characteristics



Service area (formal vs. actual)

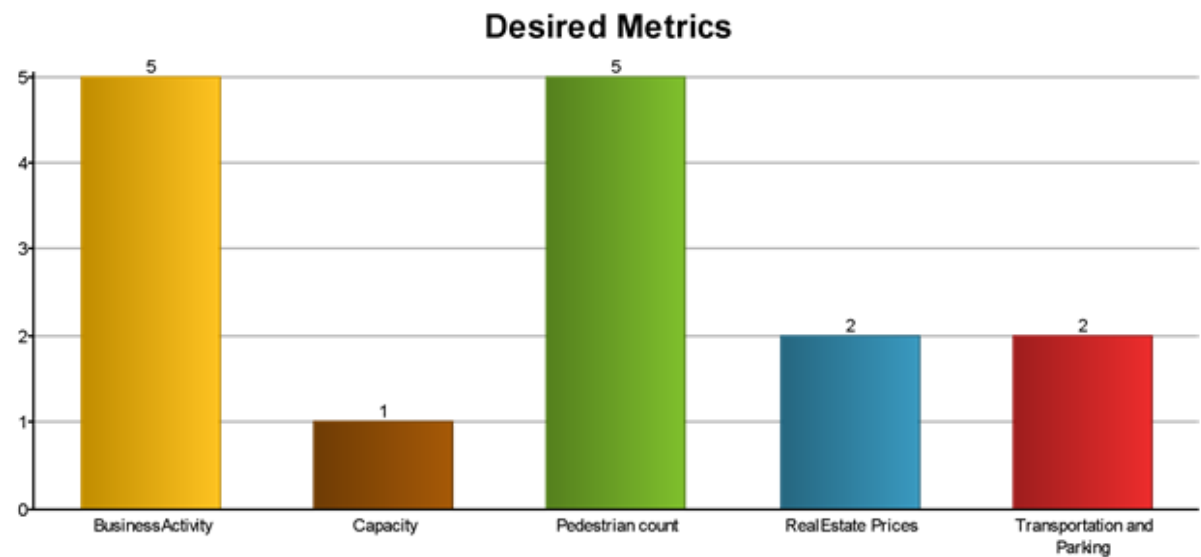


Selecting case study sites: Survey of Main Street district directors, continued

Current understanding/use of data for management, operations, strategy design

“Is there anything that you want to measure in your district, but do not have the means to measure?”

- “Impact special events have on small businesses”
- “I wish I knew how to measure how businesses in the district were performing economically”
- “In general I have the means to measure the things I need to - what I lack is the capacity/systems to easily and regularly collect data.”



Current results

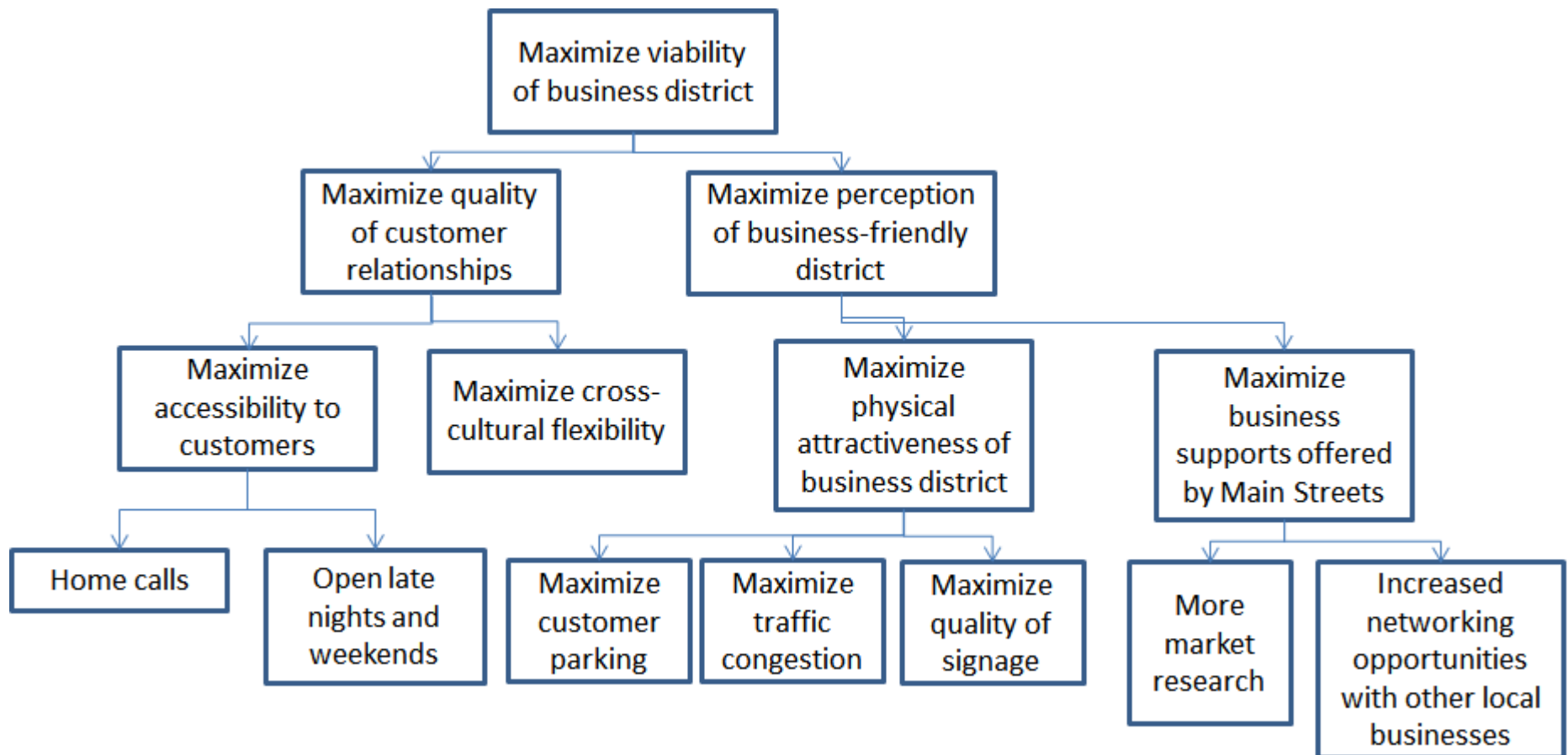
- Selected three Boston Main Street districts
- Conducted interviews in Hyde Park, East Boston
- Main Street directors advisory board wants focus on
 - Retail businesses versus service delivery
 - Stakeholders not closely tied to Main Street district, elected officials or other sources of influence or bias
- Detailed analysis:
 - Insurance broker, Hyde Park
 - Florist, Hyde Park
 - Property owner, Hyde Park

Sample Data: Property Owner, Hyde Park

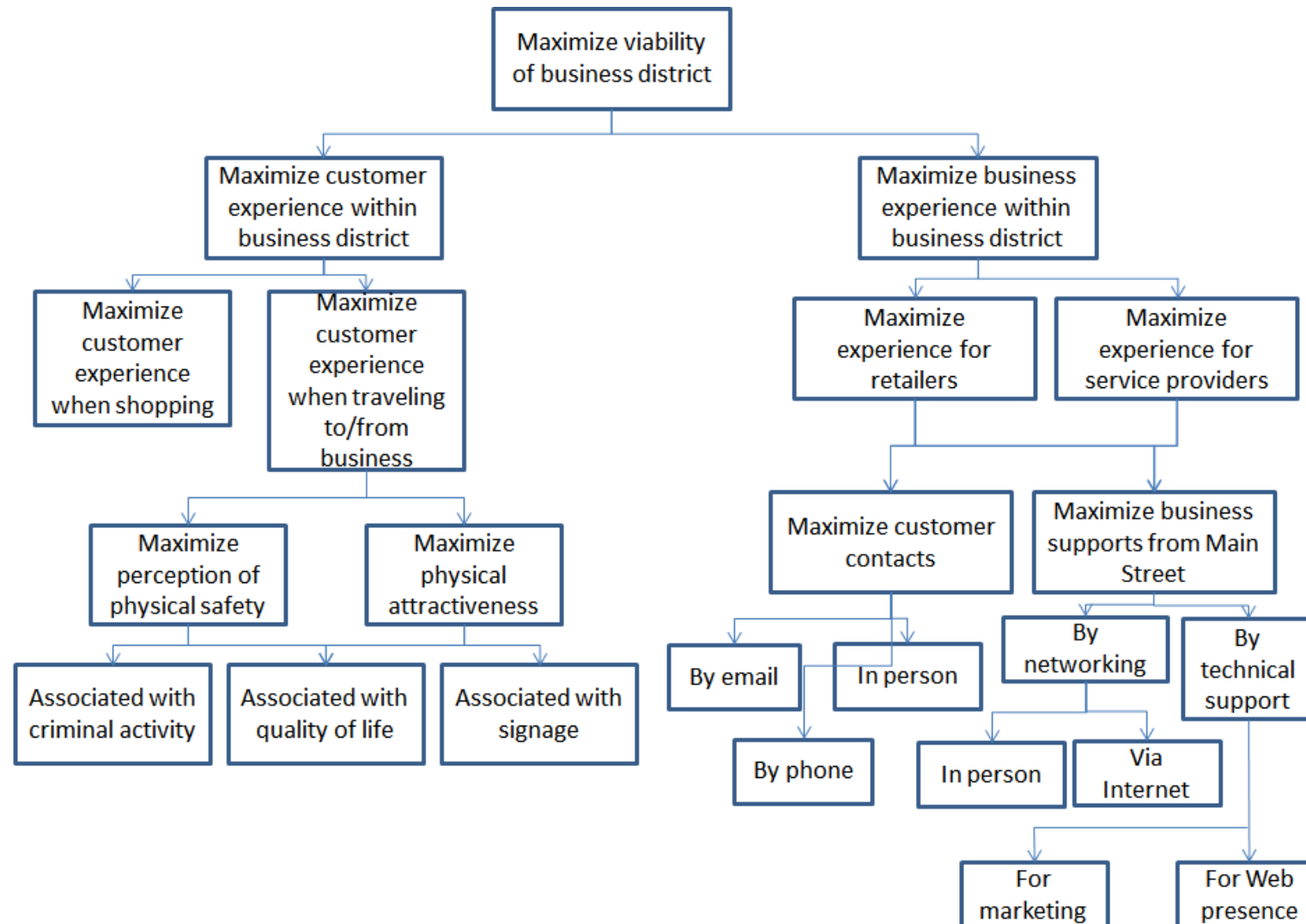
- finds it extremely difficult to measure every objective
- Every neighborhood is different
- He manages properties in multiple neighborhoods: Hyde Park, East Boston, and Mattapan
- While he owns properties in these neighborhoods, he lives in Brookline
- He does not like the idea of non-owners telling what owners what to do
 - Will cause friction between property owners and tenants
- would love it if Emily and Main Streets can facilitate negotiations between owners and tenants
- Emily is a conduit between him and the neighborhood
- Also Tim McCarthy has helped
 - great grandfather built the properties
 - Originally built to suit a large Woolworth's store
 - Shopping center was then redesign to suit mom and pop stores.
- There are only two vacant spots among his Clearly Square properties
- finds it difficult to find qualified tenants
- Hyde Park was a middle class neighborhood
- Lots of African Americans, Haitians, Africans, Hispanics
 - These groups desire to open more businesses but they need capital
 - Many lack business experience and business model that would succeed
- Need to draw businesses from other community segments
 - Service-oriented stores
 - Find a tenant mix that actually works
 - Communities that have more disposable income
 - Can't find good tenants
- They've succeeded in Clearly Square.
- goal is to make money
 - Which he sees through making Clearly Square a vibrant shopping district

- goal is to make money
 - Which he sees through making Clearly Square a vibrant shopping district
- How to measure level of integration in the community?
 - Needs a diversity of tenants that reflects the community
- Financial needs
 - \$ for signs
 - \$ for storefront
 - Loans
- Social problems → Perceptions
- Need to draw customers across boundaries
 - Social
 - Geographical
- Main Streets has managed to bring the community together
 - How to measure this?
 - Socio-economic diversity of tenants and customers
- Need minority tenants who have business expertise
 - They need to have a formal education, not just Main Streets
 - MS is one organization that can organize
- Economy in neighborhood (real estate prices)
 - Some properties have lower rent than before the economic crash
 - Though there have been upticks in rent
- Resources for the entrepreneurs
 - UMB is a possible source
- Email organizations for volunteers who gave businesses assistance
- Entrepreneurial
- Racial and ethnic tensions are a problem
 - Whites are more likely to say they don't shop in Clearly Square
 - "too many Blacks"
 - Cross Racial comfort
- Shared community
- Why didn't the farmers' market work?
 - Farmer's market is an example of businesses that could attract a diverse clientele, by selling staples.
 - But maybe too expensive
- Family Dollar
- Why did that store fail when it could have succeeded
 - was talking about the butcher

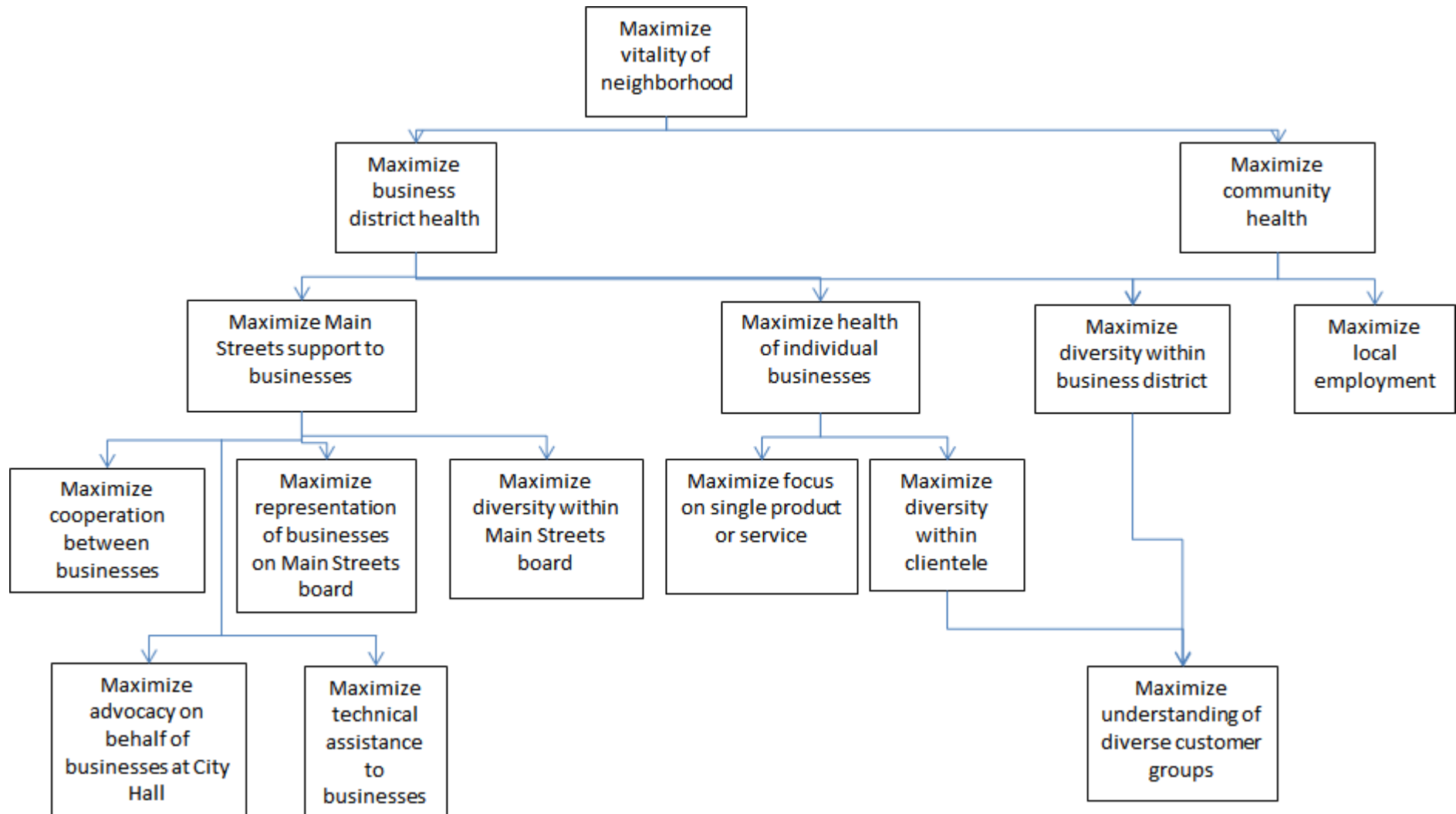
Insurance broker: Means-ends network



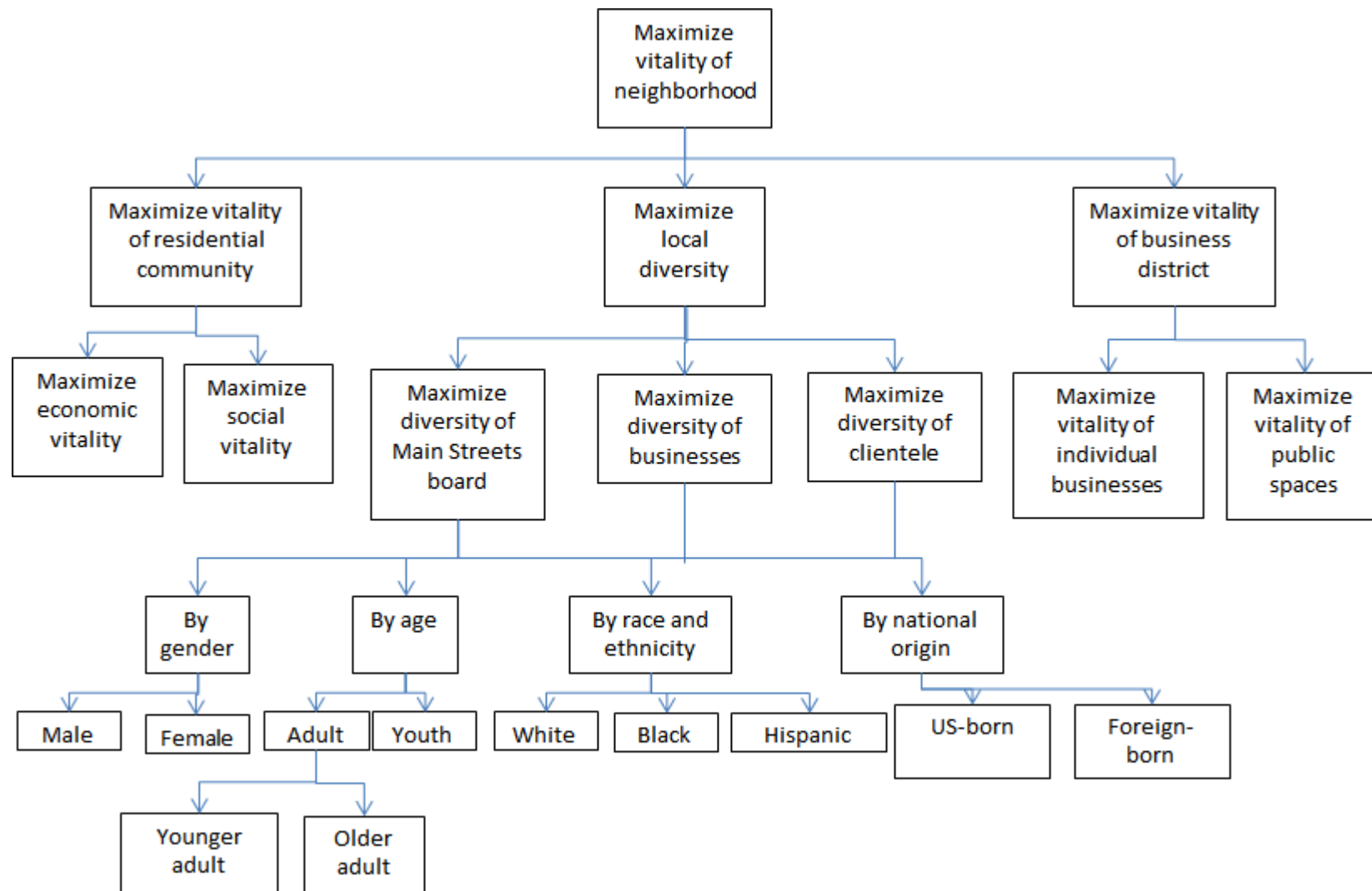
Insurance broker: Fundamental values hierarchy



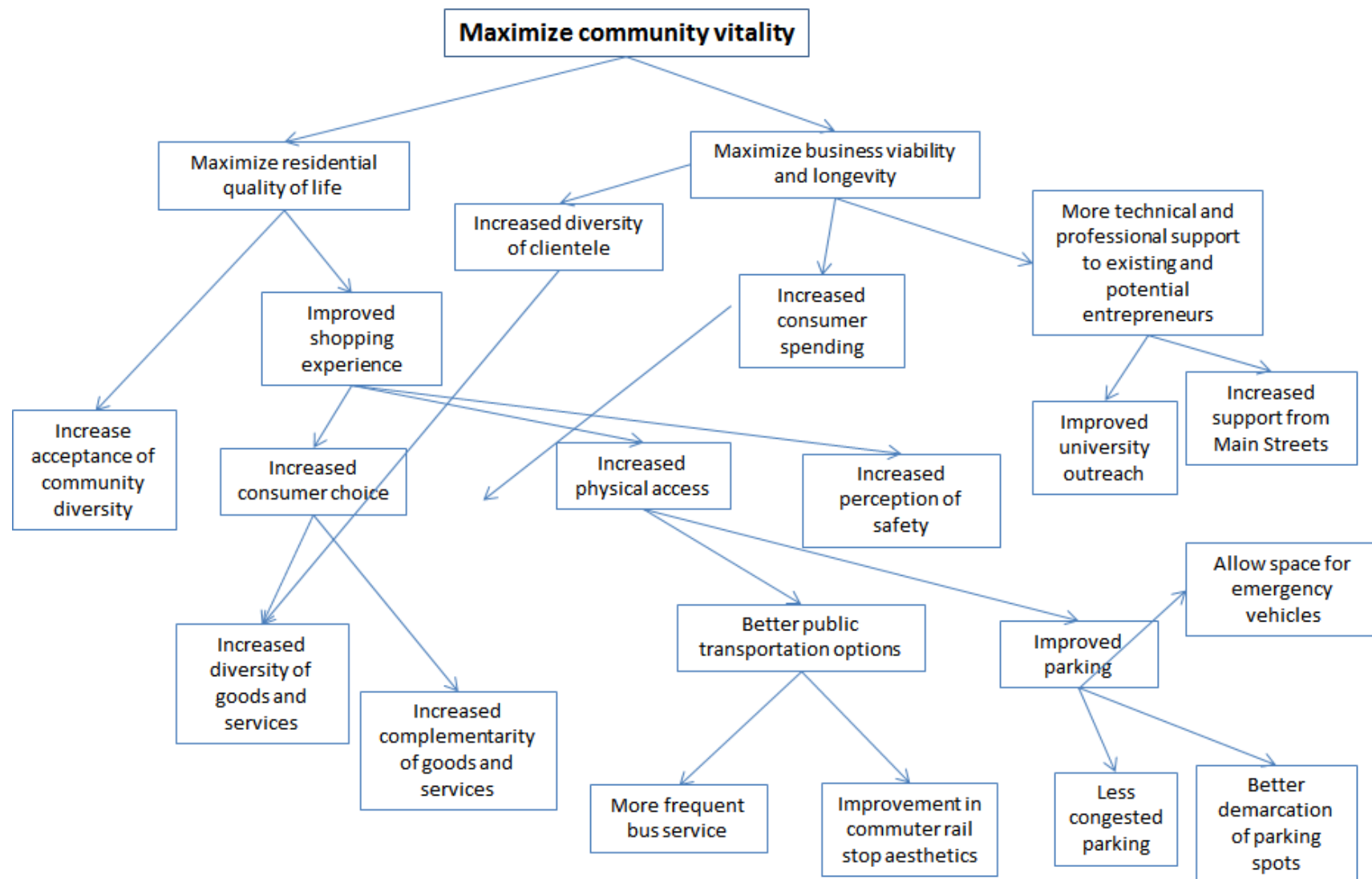
Florist: Means-ends network



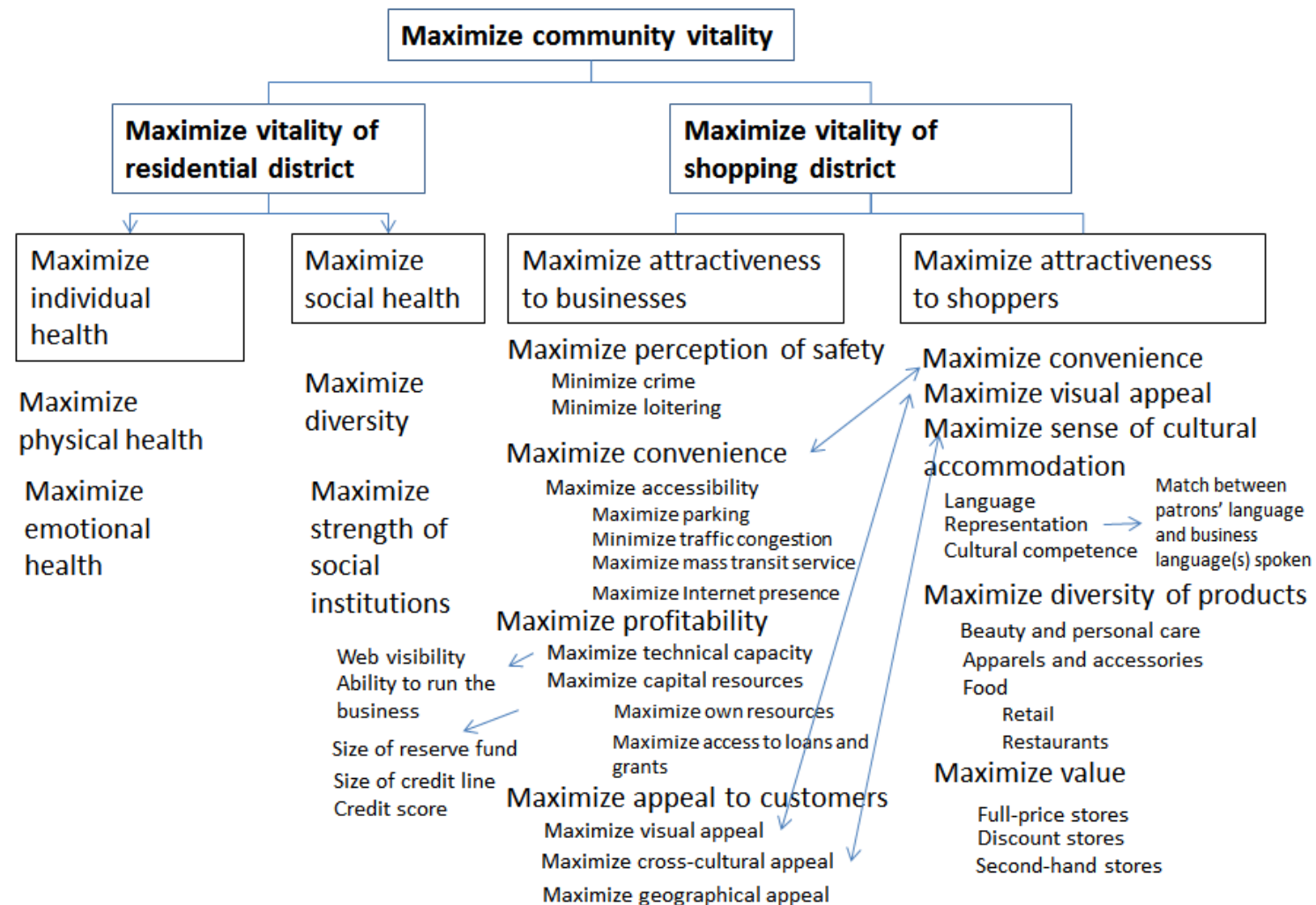
Florist: Fundamental values hierarchy



Property owner: Means-ends network



Property owner: Fundamental values hierarchy



Findings

- Process:
 - Applying VFT principles in field interviews is hard!
 - Participatory action research is an essential frame for data collection and analysis
- Outcomes:
 - Diversity is very important to many stakeholders
 - Not addressed at all in Main Street data reporting protocols
 - Multiple dimensions: race/ethnicity/national origin/class; products/services provided; customer base; proprietors; Main Street committee
 - Technical capacity of businesses central to success
 - Marketing
 - Finance
 - Operations
 - Quality of life and vitality of business district and residents intertwined
 - Quantifying metrics will be challenging

Next steps

- Continue interviews
 - Within Main Streets districts
 - DND manager
 - Main Streets America manager
- Within-case analysis
- Cross-case analysis
- Recommendations
 - Economic development success metrics
 - Decision opportunities
- Implementation
 - Integration into DND information system
 - Prescriptive decision modeling

Acknowledgements

Boston Main Streets Data Project Committee

- Gerald Robbins, Hyde Jackson Square Main Street
- Allison Carter, Brighton Main Streets
- Jennifer Effron, Washington Gateway Main Street

Case study community contacts

- Emily Patrick, Executive Director, Hyde Park Main Streets
- Max Gruner, Executive Director, East Boston Main Streets
- Valeska Daley, Executive Director, Upham's Corner Main Street

Key informants and thought leaders

- Deborah Elizabeth Finn, Tech Networks of Boston
- Jeffrey Keisler, College of Management, University of Massachusetts Boston
- Gerald Midgley, University of Hull, UK

Financial support provided by Boston Main Streets Foundation

Thank you!



Source: Boston Main Streets Foundation, 2015

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