



Chapter 10. Metrics

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Community Resilience Metrics

Two fundamental questions:

- How resilient is our community now?
- Will our efforts to improve resilience make a significant difference?



Community Resilience Metrics

- Communities require metrics that can be used to assess planning decisions about the built environment:
 - Siting, Design, Construction
 - Operation, Maintenance, Protection
 - Repair and Restoration



Three Primary Types of Metrics

- Recovery times
- Economic vitality
- Social well-being



Recovery Times

- Easy to grasp as goals, but difficult to predict with confidence
- Often estimated through some combination of simplified modeling, past experience, and/or expert opinion
- Recovery times for services supported by the built environment have a direct impact on the economic vitality and social well-being of the community



Economic Vitality

Ability to ...

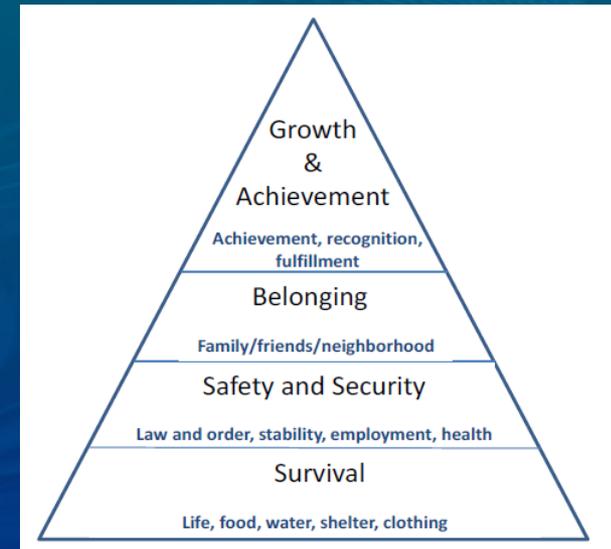
- Attract and retain businesses and jobs
- Maintain and grow the tax base
- Reduce poverty
- Provide services and amenities
- Maintain a vibrant and thriving economy



Social Well-being

Ability to meet human needs:

- Survival
 - Water, food, clothing, shelter
- Safety and security
 - Personal safety, economic security, health
- Sense of belonging
 - Civic participation, social networks, trust in govt.
- Growth and achievement
 - Education, arts, recreation



Many Existing Methodologies

- SPUR, Oregon
- UNISDR Disaster Resilience Scorecard
- CARRI Community Resilience System
- Communities Advancing Resilience Toolkit
- Baseline Resilience Indicators for Communities
- Rockefeller City Resilience Framework
- NOAA Coastal Resilience Index
- FEMA Hazus Methodology
- ...



Preliminary Assessment

Category	Sub-Category	SPUR	Oregon	Scorecard	CARRI CRS	CART	BRIC	CRF	CRI	Hazus
Scope	Community size	●	●	+	+	+	+	+	●	+
	Hazards	●	●	+	+	+	+	+	-	-
	Recovery time scales	+	+	?	?	?	?	+	●	-
	Systems	+	+	?	+	-	-	+	●	●
	Interdependencies	●	●	?	+?	-	-	+?	-	-

Symbol	Description
+	Addresses a broad range
●	Not inherently limited
-	Limitation
?	Additional info. required

Utility	User friendliness	●	●	+	+	+	+	●	+	●
	Utility without SMEs available	-	-	+	●?	●?	●?	●	●?	●?
	Value of outputs for planning	+	+	●	?	?	?	+?	●	●?
	Consistency with PPD-21	+	+	●	+	+	●	●	●	-

+	High
●	Moderate
-	Low
?	Additional info. required

Impacts	Recovery times	+	+	●	●	●	●	●	●	●
	Economic impacts	●	+?	●	●	●	●	+?	-	●
	Social impacts	●	●	●	●	●	●	+?	●	●

+	Explicitly assessed
●	Partially/indirectly assessed
-	Not assessed
?	Additional info. required

Techniques	Checklists	-	-	+	+	+	-	+	+	●
	Interviews, Surveys	-	-	-	●	+	-	+	●	●
	Ratings	+	+	+	●	+	-	+	●	+
	Existing national data sets	-	-	-	-	-	+	-	-	+
	Physical inspections	●	●	●	●	-	-	-	●	●
	Engrg. analysis or exp. opinion	+	+	●	●	-	-	-	●	+
	Statistical inference	●	●	-	●	-	-	-	-	+
	Simulations	●	●	-	●	-	-	-	-	+

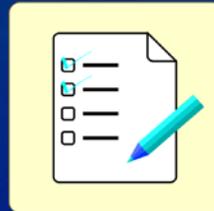
+	Yes
●	Optional
-	No
?	Additional info. required

Science	Maturity	+	+	●	+	-	+	●	?	+
	Unique/innovative	+	●	●	+	+	+	●	-	+
	Objective/repeatable	●	●	●	●	●	+	+?	-	+
	Scientific merit	+?	+?	-	?	?	?	+?	?	+

+	Strength
●	Neither
-	Weakness
?	Additional info. required

Breakout Topics

- Purpose of metrics
- Types of metrics
- Presentation: aggregate score vs. dashboard



- Existing metrics
- Challenges
- Chapter 10 feedback

