

## SAMoSA Study Short Form 36 (SF-36) Report

The Spatial Accessibility to a Multitude of Services and Amenities (SAMoSA) study examines the influence of the environment on the health and well-being of those who live within the Halifax Regional Municipality (HRM). The SAMoSA study will determine the ease of access to healthy food outlets, green and recreational spaces (i.e., parks), public transit, family doctors, affordable housing, and jobs. Survey results collected by residents within HRM will be used to develop Indicators of Health-enhancing Opportunity Structures (IHOPS).

A total of 626 surveys were filled out as part of the SAMoSA study, including those in paper (n=211) and online (n=415) formats. Depending on the questions filled out by each respondent, the sample size (n) used in each section of the descriptive statistics varies. Many survey respondents opted to not answer every survey question, where 19.5% of surveys had at least one missing answer (n=122). These surveys were not omitted on the grounds of questions being intentionally or unintentionally blank.

The SAMoSA survey has two sections. The first section asked participants about their general health outcomes. This section has 36 questions that were adopted from the RAND Short Form 36 (SF-36) questionnaire. This questionnaire is often used in public health research to measure a respondent's perception of his or her own health and well-being. The final section of the SAMoSA survey asked participants about general demographic information, such as age, sex, and income. This report outlines the historical context of the RAND SF-36 Report and explains how the RAND SF-36 is suitable for the SAMoSA research project. The report also outlines the results of the RAND SF-36 SAMoSA survey responses and considers further research that can be completed.

### **Section 1: Historical Overview of the RAND Foundation 36-Item Short Form Survey**

The RAND Foundation 36-Item Short Form Survey (RAND SF-36) was a tool developed as part of the Medical Outcomes Study (MOS). The MOS was a four-year project which began in 1986 to explore the relationship between specific treatments and the patient's experienced changes in their overall health and well-being (Ware, Snow, Kosinski, & Gandek, 1993).

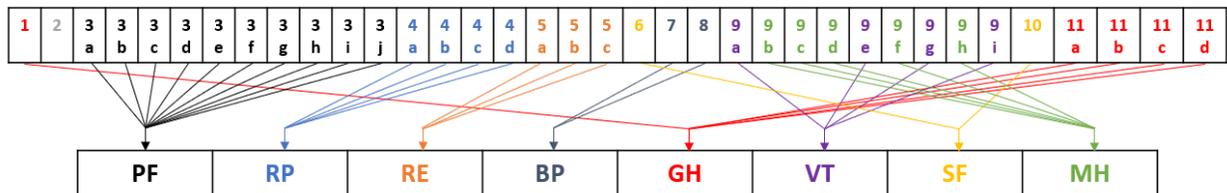
The MOS required a tool that could be used to standardize the patient's perception of health. To accomplish this, the researchers emphasized the development of a short-form survey that was easy to use and understand. This short-form survey was constructed with 36 questions that can be used to rank a patient's health in eight health dimensions: vitality (VT), physical functioning (PF), bodily pain (BP), general health perception (GH), physical role functioning (RP), emotional role functioning (RE), social role functioning (SF), and mental health (MH) (RAND Foundation, 2019a). Later iterations of the short-form survey include the RAND Foundation 12-Item Short Form Survey (RAND SF-12) and the RAND Foundation 6-Dimensions Short Form Survey (RAND SF-6D). These short-form surveys are widely accepted as one of the most reliable and valid tools available for observing the patient's point of view on his or her quality of life (Hopman, et al., 2000).

These surveys have been adopted by many public health researchers since their development in 1986 through the Medical Outcomes Study (Lins & Carvalho, 2016). These surveys continue to be used as a tool for measuring the effectiveness of a specific treatment or health care system on a patient’s general health and well-being. As well, the short-form surveys are often used across communities to provide normative data that groups or individuals can be compared to in order to determine whether the health and well-being of that group or individual scores better or worse than a larger comparable population (Hopman, et al., 2000).

**Section 2: Utilizing the RAND SF-36 for the SAMoSA Survey**

For the SAMoSA Survey to examine the health and well-being of those who live within the HRM, two things are needed. First, SAMoSA requires a standardized method for measuring health and well-being among individuals across communities. This is needed in order to ensure that individuals are being measured across the same health outcomes which will allow SAMoSA to reliably compare communities. Second, SAMoSA is required to establish a baseline by which to compare communities to. This is needed to establish whether a community’s health and well-being is notably better or worse than the broader population’s health and well-being. It was determined that the RAND SF-36 was the most appropriate tool for sufficiently addressing these two requirements.

The RAND SF-36 asks questions that can be categorized into eight health dimensions. The questions are categorized into the eight health dimensions as follows:



Note that question 2 is not used in the eight health dimensions, but rather is asked to determine a patient’s observation of their general health over time, which the RAND Foundation calls a patient’s Change in Health (Ware, Snow, Kosinski, & Gandek, 1993). The SAMoSA research cannot use question 2 responses for analyses unless follow up surveys are offered to those who originally responded to the SAMoSA Survey.

Each question of the RAND SF-36 is required to be recoded in order to determine the level of health and well-being of the respondent in each health dimension. The questions are multiple-choice which allows for the responses to be recoded into values along a scale of 0-100. Zero means that the respondent’s health and well-being is completely inhibited in this dimension, while 100 means that the respondent’s health and well-being is not inhibited at all in this dimension. The questions can be recoded using the Ware, Snow, Kosinski, & Gandek (1993) Manual and Interpretation Guide, or using the RAND Foundation Scoring Instructions online (RAND Foundation, 2019b). For the purpose of the SAMoSA study, survey responses were recoded using the Ware, Snow, Kosinski, & Gandek Manual and Interpretation Guide. The method for recoding each health dimension was as follows:

**Tables 1 through 8 : Recoding Structure for the Eight Health Dimensions**

PF Questions	Response Options	Precoded Value	Recoded Value
3a - 3j	Yes, limited a lot	1	1
	Yes, limited a little	2	2
	No, not limited at all	3	3

Table 1: Physical Functioning Structure for Recoding

RP Questions	Response Options	Precoded Value	Recoded Value
4a - 4d	Yes	1	1
	No	2	2

Table 2: Physical Role Functioning Structure for Recoding

BP Questions	Response Options	Precoded Value	Recoded Value	
7	None	1	6.0	
	Very mild	2	5.4	
	Mild	3	4.2	
	Moderate	4	3.1	
	Severe	5	2.2	
	Very Severe	6	1.0	
		Item 8 Precoded Value	Item 7 Precoded Value	Recoded Value
8 - if 7 and 8 are answered	Not at all	1	1	6
	Not at all	1	2 through 6	5
	A little bit	2	1 through 6	4
	Moderately	3	2 through 6	3
	Quite a bit	4	3 through 6	2
	Extremely	5	4 through 6	1
		Precoded Value	Recoded Value	
8 - if 7 is not answered	Not at all	1	6.0	
	A little bit	2	4.75	
	Moderately	3	3.50	
	Quite a bit	4	2.25	
	Extremely	5	1.0	

Table 3: Bodily Pain Structure for Recoding

GH Questions	Response Options	Precoded Value	Recoded Value
1	Excellent	1	5.0
	Very good	2	4.4
	Good	3	3.4
	Fair	4	2.0
	Poor	5	1.0
11a & 11c	Definitely true	1	1
	Mostly true	2	2
	Don't know	3	3
	Mostly false	4	4
	Definitely false	5	5
11b & 11d	Definitely true	1	5
	Mostly true	2	4
	Don't know	3	3
	Mostly false	4	2
	Definitely false	5	1

Table 4: General Health Structure for Recoding

VT Questions	Response Options	Precoded Value	Recoded Value
<b>9a &amp; 9c</b>	All of the time	1	6
	Most of the time	2	5
	A good bit of the time	3	4
	Some of the time	4	3
	A little of the time	5	2
	None of the time	6	1
<b>9g &amp; 9i</b>	All of the time	1	1
	Most of the time	2	2
	A good bit of the time	3	3
	Some of the time	4	4
	A little of the time	5	5
	None of the time	6	6

Table 5: Vitality Structure for Recoding

SF Questions	Response Options	Precoded Value	Recoded Value
<b>6</b>	Not at all	1	5
	Slightly	2	4
	Moderately	3	3
	Quite a bit	4	2
	Extremely	5	1
<b>10</b>	All of the time	1	1
	Most of the time	2	2
	Some of the time	3	3
	A little of the time	4	4
	None of the time	5	5

Table 6: Social Role Functioning Structure for Recoding

RE Questions	Response Options	Precoded Value	Recoded Value
<b>5a - 5c</b>	Yes	1	1
	No	2	2

Table 7: Emotional Role Functioning Structure for Recoding

MH Questions	Response Options	Precoded Value	Recoded Value
<b>9b, 9c &amp; 9f</b>	All of the time	1	1
	Most of the time	2	2
	A good bit of the time	3	3
	Some of the time	4	4
	A little of the time	5	5
	None of the time	6	6
<b>9d &amp; 9h</b>	All of the time	1	6
	Most of the time	2	5
	A good bit of the time	3	4
	Some of the time	4	3
	A little of the time	5	2
	None of the time	6	1

Table 8: Mental Health Structure for Recoding

Following the recoding of a respondent’s answers in each of the eight health dimensions, the values can be used to calculate the overall level of health and well-being within the category on a scale of 0-100. The Ware, Snow, Kosinski, & Gandek Manual and Interpretation Guide uses the following formula:

$$\text{Transformed scale} = \left[ \frac{(\text{actual raw score} - \text{lowest possible score})}{\text{Possible raw score range}} \right] \times 100$$

**Section 3: SAMoSA Survey Normative Results**

The 626 survey responses were used to establish normative data on HRM’s health and well-being across the eight health dimensions that can be derived through the RAND SF-36 survey. Using the process outlined in Section 2, each survey was recoded and processed to establish the respondent’s level of health and well-being in the eight health dimensions along a scale of 0-100. The average of the 626 surveys’ eight health dimension provides the normative data within HRM:

Health Dimension	Score
Physical Functioning	85.3
Physical Role Functioning	75.8
Bodily Pain	68.7
General Health	66.6
Vitality	51.8
Social Role Functioning	75.4
Emotional Role Functioning	65.5
Mental Health	68.4

**Section 4: Planned Work with the SAMoSA RAND SF-36 Results**

The data from the SAMoSA survey’s RAND SF-36 component can be used to determine the general health and well-being of community’s in HRM. SAMoSA survey responses will be compiled by community and each community will receive a score in the eight health dimensions. These scores can then be compared to HRM’s normative data to determine which communities are above or below expected levels in each of the eight health dimensions.

The SAMoSA study examines the influence of the environment on the health and well-being of those who live within the Halifax Regional Municipality (HRM). Those services and amenities that are to be observed include healthy food outlets, green and recreational space, public transit, family doctors, affordable housing, and jobs. These services and amenities can be explored according to their spatial distribution among communities in the HRM, allowing the SAMoSA study to determine which communities have an abundance of these services and amenities, and which communities do not.

It is expected that the eight health dimensions derived from the RAND SF-36 results have some relationship to the services and amenities identified in the SAMoSA study. These relationships could be explored individually, or collectively in order to determine which communities are particularly deprived of services and amenities which leads to lower than expected health outcomes.

## References

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