

# RELATIVE IMPORTANCE OF FACTORS EXPLAINING SENIORS' ACTIVITY PATTERNS<sup>1</sup>

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## **The Key Research Issues**

What are the key determinants of the distribution of the older population among alternative activity patterns, and what is their relative importance? What hypotheses offer a useful rationale for the indicated hierarchy of importance among the determinants? What are some notable implications of such hypotheses for policy analysis in countries whose leaders are addressing a perceived need to increase the levels of active ageing within their populations?

Our study is still going on, and adequate answers to all of these questions are not available today. However, we will try to suggest some key aspects of possibly useful answers to the questions.

## **Organization of the Discussion**

The paper begins with some necessary conceptual preliminaries. These are followed by illustrations of sex and age variations in the distribution of population over alternative classes of activity patterns. These classes take into account paid work, unpaid work such as volunteer work done for organizations, as well as aspects of active leisure, civic participation and educational pursuits.

We suggest a theoretical framework for addressing the issue of relative importance of factors that help to determine that distribution. Then the results of relevant multivariate analysis will be presented and very briefly discussed.

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<sup>1</sup> This is a shortened version of the original paper. Some tables or charts are missing.

## Conceptual Preliminaries

A person's activity pattern is the *shape of the distribution* of her or his activities over alternative activity dimensions. What are these dimensions?

Our approach to this question gives priority to current policy concerns regarding active ageing. A number of governments have debated policies designed to increase the proportion of their seniors who are engaged in active ageing.

The phrase "active ageing" is not defined precisely at this time. However, its usage indicates a focus upon aspects of one or more of the following: (1) paid work, (2) unpaid contributions of work outputs to community development and maintenance, (3) other aspects of civic participation where work outputs are not identified, (4) leisure activities that promote maintenance or improvement of physical and mental functioning, and (5) educational activities. In defining the dimensions of an activity pattern we give emphasis to these considerations.

However, we add an important condition for almost all leisure-oriented activities -- they should normally bring people into social interaction with persons that do not live with them, and thus can be deemed to promote the avoidance of social isolation. For this reason, we coin the phrase "social leisure activity".

Figure 1 seems useful for illustrating some features of our approach to defining activity patterns operationally. On the left side of Figure 1 there are three schematic diagrams that point to three classes of dimensions of work.<sup>2</sup> The classes are based on destination of the output of work activity.

To the right of the diagrams that deal with dimensions of work are two diagrams that represent social leisure activities, civic participation, and pursuit of educational courses in a context where frequent social interaction with others is normal.

It would be good to separately identify social leisure, civic participation and educational pursuits throughout this work; but sample size issues prevent this from being done.

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<sup>2</sup> Here "work" here means an activity that yields an identifiable output used by identifiable party (or "destination" of the work output). It is understood that these 'destinations' are the primary beneficiaries, since many work outputs have multiple beneficiaries.

Recall that we have defined a person's activity pattern as the shape of the distribution of her/his allocation of time over alternative destinations for work outputs *as well as* over alternative leisure-oriented, civic and educational activities. Thus we want to look at how the person allocates time over all of the first five dimensions cited in Figure 1.

Let us use the symbols shown in Figure 1 to develop this idea. The symbols are W1, W2 and W3 for the three work dimensions, and SP1 and SP2 for two social participation dimensions. Residual time (RT) covers all remaining time including sleeping time.

The definition of an activity pattern also needs to take into account *the amount of effort* made in each dimension. Amount of effort is measured by locating a person in her/his population's cumulative distribution of time spent doing the activity in question; but always taking into account the social-contact information already cited. For some purposes, a person's amount of effort is rated as Low if it is among the lower percentiles, or High if it is among the higher percentiles. High, Medium and Low positions are represented by H, M and L in Figure 1.

Using the symbols just cited, an example of one activity pattern can be represented as [ H(W1), L(W2), M(W3), L(SP1), M(SP2), L(RT) ].

A person with this pattern is in the upper quartiles of paid-work time, the middle quartiles of time spent helping relatives-and-friends and of time in social participation of Type SP2. This person is also in the lower quartiles on volunteer-work time (work on behalf of an organization, including the family business), social participation of Type SP1, and residual time.

Using only these simple designations of amount of effort (High, Medium and Low) in each of the named dimensions we can define 729 activity patterns. Hence some meaningful grouping of these 729 possibilities into a smaller set of activity-pattern *classes* is needed.

The design principles that we have used to try to achieve a meaningful grouping are the following. Each activity-pattern class should represent combinations of levels of the dimensions that are of substantive interest for scientific or policy concerns with aspects of active ageing, based on our understanding of those concerns.

Also, sample size limitations are relevant. For example, we have avoided defining classes that represent much less than 2% of the total sample of nearly 10,000 persons in the 1998 General Social Survey for Canada.

These principles lead to the construction of 17 classes of activity patterns. Appendix B provides a detailed comment about the content of each of these 17 classes. That information can be briefly summarized as follows.

Two classes with High paid time and High “relatives-and-friends helping time” (See classes 1 and 2 in Appendix B). Class 1 requires Medium or High levels of either active social leisure, or other social leisure, civic participation or educational courses, or volunteer work for organizations; whereas Class 2 requires a Low rating on all three of these dimensions of social participation.

Three classes with High paid time and Low or Medium “relatives-and-friends helping time” (See classes 3, 4 and 5 in Appendix B). Class 3 requires Medium or High levels of volunteer work for organizations, while Class 4 requires Medium or High levels on either of the three dimensions of social participation just cited. Class 5 requires a Low rating on all three of these dimensions of social participation.

Two classes with Medium paid time and High “relatives-and-friends helping time” (See classes 6 and 7 in Appendix B). Class 6 requires Medium or High levels of either active social leisure, or other social leisure, civic participation or educational courses, or volunteer work for organizations; whereas Class 7 requires a Low rating on all three of these dimensions of social participation.

Two classes with Medium paid time and Low or Medium “relatives-and-friends helping time” (See classes 8 and 9 in Appendix B). Class 8 requires Medium or High levels of either active social leisure, or other social leisure, civic participation or educational courses, or volunteer work for organizations; whereas Class 9 requires a Low rating on all three of these dimensions of social participation.

Three classes with Low paid time and High “relatives-and-friends helping time” (See classes 10, 11 and 12 in Appendix B). Class 10 requires Medium or High levels of volunteer work for organizations,

while Class 11 requires Medium or High levels on either of the three dimensions of social participation just cited. Class 12 requires a Low rating on all three of these dimensions of social participation.

Two classes with Low paid time and Low or Medium “relatives-and-friends helping time” (See classes 13 and 14 in Appendix B). Class 13 requires Medium or High levels of volunteer work for organizations, as well as Medium or High levels on either of the remaining two dimensions of social participation. Class 14 collects all the other persons with Medium or High levels of volunteer work for organizations (they also have Low paid time and Low or Medium “relatives-and-friends helping time”).

Three classes with Low paid time and Low or Medium “relative-and-friends helping time” (See classes 15, 16 and 17 in Appendix B). ). Class 15 requires Medium or High levels of active social leisure. Class 16 requires Medium or High levels of other social leisure, civic participation or educational courses. Class 17 requires a Low rating on all three of these dimensions of social participation.

Underlying these broad classes of activity patterns is a very detailed list of the activities that fall into each class. This list is based on time use surveys that collect 24-hour diaries of respondents' activities. The lists for Canada and the other countries cited above are provided in Appendix A.

However, as Appendix A shows clearly for Canada, we need more than the description of an activity list to proceed with the classification work. Very often, we need to know the parties with whom the survey respondent was in contact while doing an activity. ( For related discussion see Stone and Chicha, 1996, and Stone and Pelletier, 2001).

### **Theoretical Propositions**

There is substantial association of the distribution of population among activity pattern classes with a number of demographic and social factors. Is there a basis for claiming causal links flowing from such factors to the shape of the distribution, and,

if so, what indications are there concerning the relative importance of these factors and what hypotheses can we propose to help us make sense of these indications?

To develop answers to these questions, we need to begin with a framework of theoretical propositions and associated concepts. Time allows only a brief outline of this framework (see Figure 2).

Among the relevant forces is a set that prompts people to be socially active; but the manifestation of such activity is subject to another set of constraining forces. Obligations, especially family obligations, and aspirations are prominent among the forces that prompt activity. Also, the extent and intensity of interactions with others who form a persons' social networks are sources of stimulation of certain activities.

To carry out the prompted activities, individuals need pertinent opportunities and abilities. Whether these opportunities and abilities are used will depend upon the perceived relevant social support, the latter being a function of the already cited social networks.

This is the broad theoretical framework, which is sketched schematically in Figure 2.

The forces just cited are all latent. They need to be represented by indicator variables when we move to the stage of empirical observations. Moreover, it is within that stage that a discussion of relative importance of factors can be done without a level of abstraction too great to allow hypotheses to be specified for testing and policy ramifications to be identified.

Moving to the level of indicator variables requires that we locate ourselves within a specific population in a given historical context. Indeed, it further requires that we accept the information that is available from specific datasets.

We begin by working within the provisions of the 1998 General Social Survey (GSS) for Canada. This survey incorporated a 24-hour time-use diary, as well as collecting information on a variety of attributes of respondents. Figure 3 indicates the variables we have adopted from the GSS to be indicators of the latent forces cited above.

Some variables are listed twice in Figure 3. That is because we hypothesize that they do reflect, often in unclear ways, the influences of two or more underlying latent forces. Shortage of time prevents discussion aimed at justifying the inclusion of

specific variables and the exclusion of others. However, relevant discussions can be found in the literature.

Figure 4 is a schematic representation of our theory concerning the network of influences that flow from the forces, as represented by the indicator variables, to the activity-pattern distribution of a population. Population sub-groups with differing compositions on these variables can be expected to have corresponding differentials in their distributions over activity patterns. Thus, a model designed to predict a particular sub-group's distribution should take into account how the sub-group is composed with regard to these variables. Figure 4, is the schematic representation of such a prediction model. (See Hildebrandt, Rosenthal and Laing 1976 for related methodological discussion on the prediction models.)

Each variable in Figure 4 is seen as having a direct effect on the activity-pattern distribution of a population sub-group, the latter being what is we are predicting. However, only sex and cultural background have impacts that are not constrained by other cited variables, under this model. For example, the influence of health status is constrained by those of age and education. That of education is, in turn, constrained by those of age and cultural background.

The notion of "constraint" as used here needs to be clarified. All the references to variables above are references to distributions for sub-groups of population -- demographic structures. The unit of analysis is a population sub-group. References to what is happening at the level of one person are *not* intended.

Thus, for example, the arrow that goes from sex to age means that if we are predicting the age distribution of a population, it is helpful to know what is its sex composition. Or if we are predicting its distribution according to health status, it is helpful to know what is its educational attainment distribution.

Thus Figure 4 represents a prediction model for a particular kind of population distribution (the distribution according to activity patterns), and the other variables are seen as *contributing information quotients* towards the accuracy of the prediction.

## **Relative Importance of the Indicator Variables for Factors Determining the Activity-Pattern Distribution**

What is the relative importance of the indicator variables in the performance of this model? Figure 5, for Canada, shows the results of the calculations we have done on this issue. Table 1 gives the underlying details of the calculations. <<TABLE 1 TO COME.>>

The percentages in Figure 5 are the shares of the performance of the model that are attributable to the stated indicator variables. These calculations include minimal specification of statistical interaction effects (see Table 1).

Some 41% of the model's performance is attributed to the age variable. Far behind is the next highest contribution -- 14% attributed to the variable that takes into account both marital status and living arrangement. Other contributions above 10% are those of the sense of belongingness in the community (at 13%) and sex (at 11%). Below 10% are the contributions from perceived state of health, educational attainment and cultural background.

Thus the basic demographic variables -- age, sex, marital status and living arrangement -- are well ahead of the other measured socio-demographic variables in contributing to the performance of the prediction model for a population's activity-pattern distribution.

We could have a long discussion about what these indicator variables represent in the context of trying to provide hypotheses that help to explain their relative importance in this particular setting of data, operational definitions and computations. Time allows only a few relevant remarks.

Consider the overwhelming importance found for age in this work. Does that represent a pure effect of age upon activity patterns? Probably not. Instead, we hypothesize that age is a proxy for a network of systemic socio-cultural forces that exert constraints upon the opportunities to which people have access. The network comprises generally accepted cultural values and attitudes, as well as policies and practices of institutions. The force of this network increases as age rises both within a cohort and cross-sectionally across cohorts, we hypothesize.

A similar network of systemic forces is represented by the sex variable (system-level gendering forces); but these are set early in the life course of a cohort and tend to

remain stable over time for a given cohort cohort as well as cross-sectionally, we hypothesize.

The variable that combines marital status and living arrangement represents the extent to which a population sub-group has members who reside with, or are related to, others that are likely to need their support, even if only for psychic reasons.

Finally, the unimpressive performance of perceived health status is a result of its variance being low over almost all of the age range.

### **Summary of the Main Points and Discussion**

There is substantial association of the distribution of population among activity pattern classes with a number of demographic and social factors. Obligations, especially family obligations, and aspirations are prominent among the latent forces that prompt activity. Also, the extent and intensity of interactions with others who form a persons' social networks are sources of stimulation of certain activities. The pursuit of activities is constrained by pertinent opportunities and abilities. Whether available opportunities and abilities are used depend upon the perceived relevant social support, the latter being a function of the already cited social networks.

The latent forces need to be represented by indicator variables when we move to the stage of empirical observations. The indicator variables used for this analysis are drawn from the 1998 General Social Survey of Canada. They are: sex, age, marital status and living arrangement, perceived state of health, educational attainment, and sense of belongingness in ones community.

Setting up these variables within an operational prediction model for the activity-pattern distribution of a population sub-group, and applying the model to the 1998 General Social Survey data for Canada, we find that some 41% of the model's performance is attributed to the age variable. Far behind is the next highest contribution -- 14% attributed to the variable that takes into account both marital status and living arrangement. Other contributions above 10% are those of the sense of belongingness in the community (at 13%) and sex (at 11%).

Sense of belongingness in the community is measured crudely through a single question in the General Social Survey. It is arguable that this is a multi-dimensional factor that would, with greater resources to spend on survey questions, merit a battery of questions. A variable derived from respondents' answers to that battery of

questions should perform more strongly in a prediction model of activity pattern than does the available variable in our adopted model.

Our assumption here is that by placing a clear focus on activities that bring people into meaningful contacts with others outside their homes, we are tapping into dimensions of behaviour for which the sense of being 'at home' in one's community is very important. This implies that in trying to understand who is or is not likely to be engaged in active ageing, some attention is needed to persons' sense of belongingness in their communities.

In an attempt to follow up this issue, we have asked the following question. What combinations of attributes are associated with much higher than average probability of being engaged in a 'strong' mix of paid work, active social leisure, volunteer work for organizations, civic participation or educational courses? We also asked what combinations of attributes are associated with much higher than average probability (or measured risk) of being in the low-activity class number 17?

To answer the first question, we defined a "strong mix" of activities as one where the person does some paid work and Medium or higher level of other social participation, civic activity or educational courses, along with one of the following: Medium or higher active social leisure or Medium or higher volunteer work for organizations. About 7% of the Canadian population aged 15 or more had such a mix of activities.

In the population aged 65 or more, just 1% had combinations of measured attributes for which the likelihood of having a "strong mix" of activities was at least twice as high as that of the population aged 15 or more as a whole. What attributes did this one percent of seniors tend to share? All were Mainly Francophone in cultural background, had a very strong sense of belongingness in their communities, and rated their health as better than "Good" (see table 2). Also all had either a technical diploma or university degree. They were not restricted to particular age or sex categories.

Turning to the second question, we defined the "weak mix" of activities as one where the person did no paid work and had low levels on all of the following: other social participation, civic activity or educational courses, active social leisure, and volunteer work for organizations. About 17% of the Canadian population aged 15 or more had this 'weak mix' of activities in 1998 .

In the population aged 65 or more, 9% had combinations of attributes for which the likelihood of having a 'weak mix' of activities was at least three times as high as that of the population aged 15 or more as a whole. These high-risk combinations are much more heterogenous in composition than the ones most likely to have a 'strong mix' of activities (see table 3). However, some attributes recur among the combinations with much greater than average frequency. They include: male sex, health rated as less than 'Good', and a weak sense of belongingness in the community.

What do these results suggest for the policy analysts? We think they point to substantial percentages of seniors that could be ageing much more actively than they currently are. Improving the percentages ageing actively will involve attention to preserving functional capacity as much as feasible, enhancing peoples' sense of belongingness in their communities (a dimension of social cohesion), and an aggressive approach to educational enhancement as a lifelong pursuit. There is nothing especially new in these ideas; but we would emphasize the notion that there is a need to have a combination of different factors that enhance active ageing, and that among these factors bringing people into greater levels of involvement in community activities and affairs is one that needs special thought on how to achieve it..

## **Appendix A**

<<APPENDIX A TO COME LATER >>

## **Appendix B. Plain Language Definitions of Alternative Classes of Activity Patterns**

### Activity pattern, class 1

- High paid time: 360 minutes (6 hours) and over on diary day. The median is 560 minutes (9.3 hours) on diary day.<sup>3</sup> (If the six hour value is projected over a five-day work week, it is equivalent to 30 hours and over per week and the median would be 46.7 hours per week.)

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<sup>3</sup> All references to “the median” are to the median for the specific range cited. For example, the 560 minutes cited here is the median within the range for High paid time, and not the media for all of paid time.

- High “relatives-and-friends helping time”: 1.3 hours and over on diary day. The median is 2.7 hours on diary day.
- Any one of:
  - a) Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.
  - b) Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.
  - c) Medium or High volunteer work for a group or organization in the past year: at least an average of one hour per month in the past year. The median is 120 hours in the past year.

### Activity pattern, class 2

- High paid time: 360 minutes (6 hours) and over on diary day. The median is 560 minutes (9.3 hours) on diary day.
- High “relatives-and-friends helping time”: 1.3 hours and over on diary day. The median is 2.7 hours on diary day.
- All of:
  - a) Low “active leisure” that includes external contacts: No “active leisure”.
  - b) Low “other social leisure, civic participation or educational courses”: at most 90 minutes on diary day. The median is 0.
  - c) Low volunteer work for a group or organization in the past year. No volunteer work in the past year.

### Activity pattern, class 3

- High paid time: 360 minutes (6 hours) and over on diary day. The median is 560 minutes (9.3 hours) on diary day.
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- Medium or High volunteer work for a group or organization: at least an average of one hour per month in the past year. The median is 120 hours in the past year.

- Any one of:
  - a) Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.
  - b) Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.

#### Activity pattern, class 4

- High paid time: 360 minutes (6 hours) and over on diary day. The median is 560 minutes (9.3 hours) on diary day.
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- Any one of:
  - a) Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.
  - b) Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.
  - c) Medium or High volunteer work for a group or organization: at least an average of one hour per month in the past year. The median is 120 hours in the past year.

#### Activity pattern, class 5

- High paid time: 360 minutes (6 hours) and over on diary day. The median is 560 minutes (9.3 hours) on diary day.
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- All of:
  - a) Low “active leisure” that includes external contacts: No “active leisure”.
  - b) Low “other social leisure, civic participation or educational courses”: at most 90 minutes on diary day. The median is 0.

- c) Low volunteer work for a group or organization in the past year. No volunteer work in the past year.

Activity pattern, class 6

- Medium paid time (some paid-work time but less than 6 hours on diary day)
- High “relatives-and-friends helping time”: 1.3 hours and over on diary day. The median is 2.7 hours on diary day.
- Any one of:
  - a) Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.
  - b) Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.
  - c) Medium or High volunteer work for a group or organization: at least an average of one hour per month in the past year. The median is 120 hours in the past year.

Activity pattern, class 7

- Medium paid time (some paid-work time but less than 6 hours on diary day)
- High “relatives-and-friends helping time”: 1.3 hours and over on diary day. The median is 2.7 hours on diary day.
- All of:
  - a) Low “active leisure” that includes external contacts: No “active leisure”.
  - b) Low “other social leisure, civic participation or educational courses”: at most 90 minutes on diary day. The median is 0.
  - c) Low volunteer work for a group or organization in the past year. No volunteer work in the past year.

Activity pattern, class 8

- Medium paid time (some paid-work time but less than 6 hours on diary day)
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- Any one of:
  - a) Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.
  - b) Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.
  - c) Medium or High volunteer work for a group or organization: at least an average of one hour per month in the past year. The median is 120 hours in the past year.

### Activity pattern, class 9

- Medium paid time (some paid-work time but less than 6 hours on diary day)
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- All of:
  - a) Low “active leisure” that includes external contacts: No “active leisure”.
  - b) Low “other social leisure, civic participation or educational courses”: at most 90 minutes on diary day. The median is 0.
  - c) Low volunteer work for a group or organization in the past year. No volunteer work in the past year.

### Activity pattern, class 10

- Low paid time: No paid-work time on diary day.
- High “relatives-and-friends helping time”: 1.3 hours and over on diary day.
- Medium or High volunteer work for a group or organization: at least an average of one hour per month in the past year. The median is 120 hours in the past year.
- Any one of:
  - c) Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.
  - d) Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.

### Activity pattern, class 11

- Low paid time: No paid-work time on diary day.
- High “relatives-and-friends helping time”: 1.3 hours and over on diary day.
- Any one of:
  - a) Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.

- b) Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.
- c) Medium or High volunteer work for a group or organization: at least an average of one hour per month in the past year. The median is 120 hours in the past year.

#### Activity pattern, class 12

- Low paid time: No paid-work time on diary day.
- High “relatives-and-friends helping time”: 1.3 hours and over on diary day.
- All of:
  - a) Low “active leisure” that includes external contacts: No “active leisure”.
  - b) Low “other social leisure, civic participation or educational courses”: at most 90 minutes on diary day. The median is 0.
  - c) Low volunteer work for a group or organization in the past year. No volunteer work in the past year.

#### Activity pattern, class 13

- Low paid time: No paid-work time on diary day.
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- Medium or High volunteer work for a group or organization: at least an average of one hour per month in the past year. The median is 120 hours in the past year.
- Any one of:
  - a) Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.
  - b) Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.

#### Activity pattern, class 14

- Low paid time: No paid-work time on diary day.
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- Medium or High volunteer work for a group or organization: at least an average of one hour per month in the past year. The median is 120 hours in the past year.

#### Activity pattern, class 15

- Low paid time: No paid-work time on diary day.
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- Med. or High “active leisure” that includes external contacts: 5 or more minutes on diary day. The median is 1.9 hours on diary day.

#### Activity pattern, class 16

- Low paid time: No paid-work time on diary day.
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.
- Medium or High “other social leisure, civic participation or educational courses”: 90 or more minutes on diary day. The median is 4.4 hours on diary day.

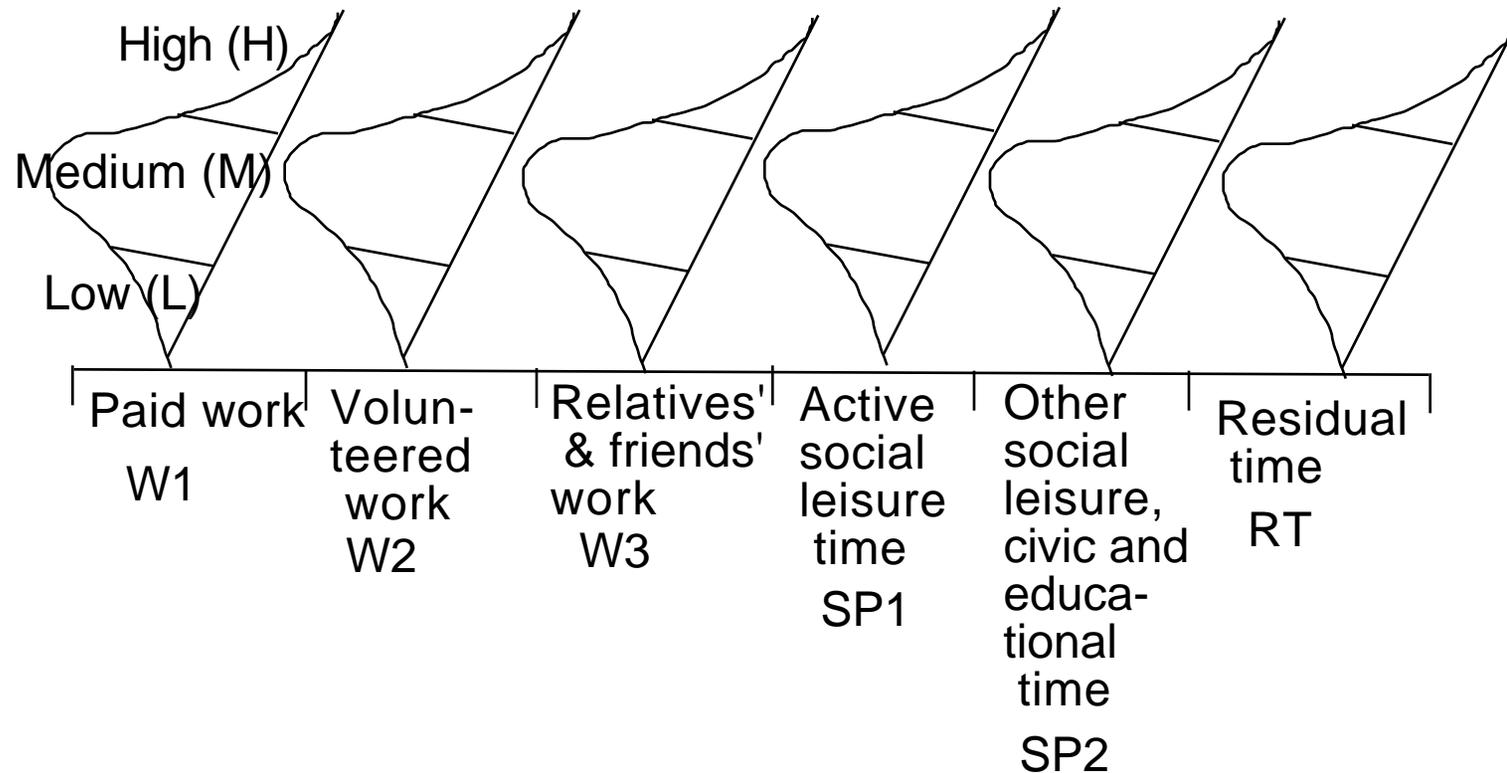
#### Activity pattern, class 17

- Low paid time: No paid-work time on diary day.
- Low or Medium “relatives-and-friends helping time”: less than 1.3 hours on diary day. The median is 0 on diary day.

- All of:
  - a) Low “active leisure” that includes external contacts: No “active leisure”.
  - b) Low “other social leisure, civic participation or educational courses”: at most 90 minutes on diary day. The median is 0.
  - c) Low volunteer work for a group or organization in the past year. No volunteer work in the past year.

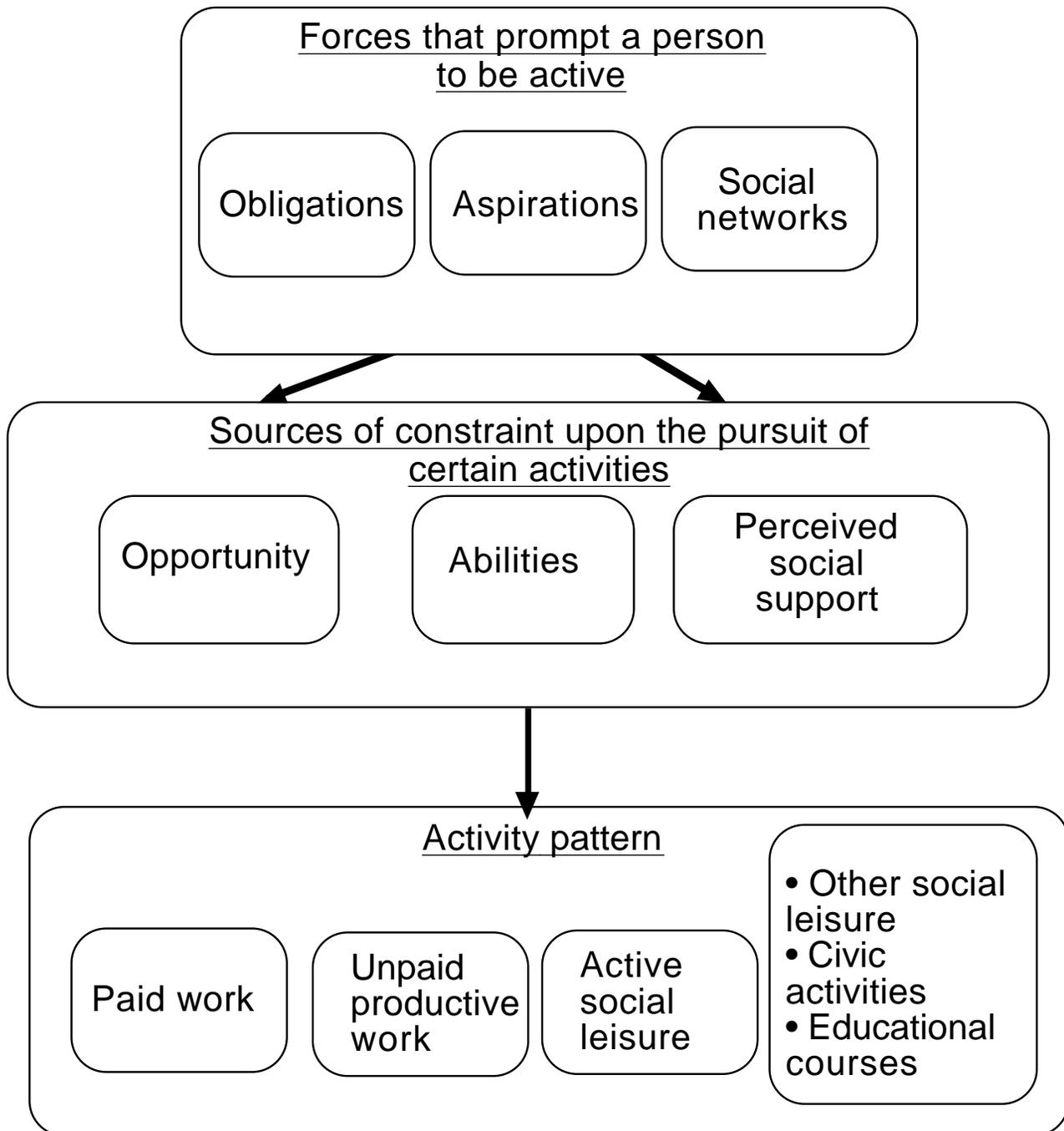
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Figure 1: Sources of Variation in Activity Patterns

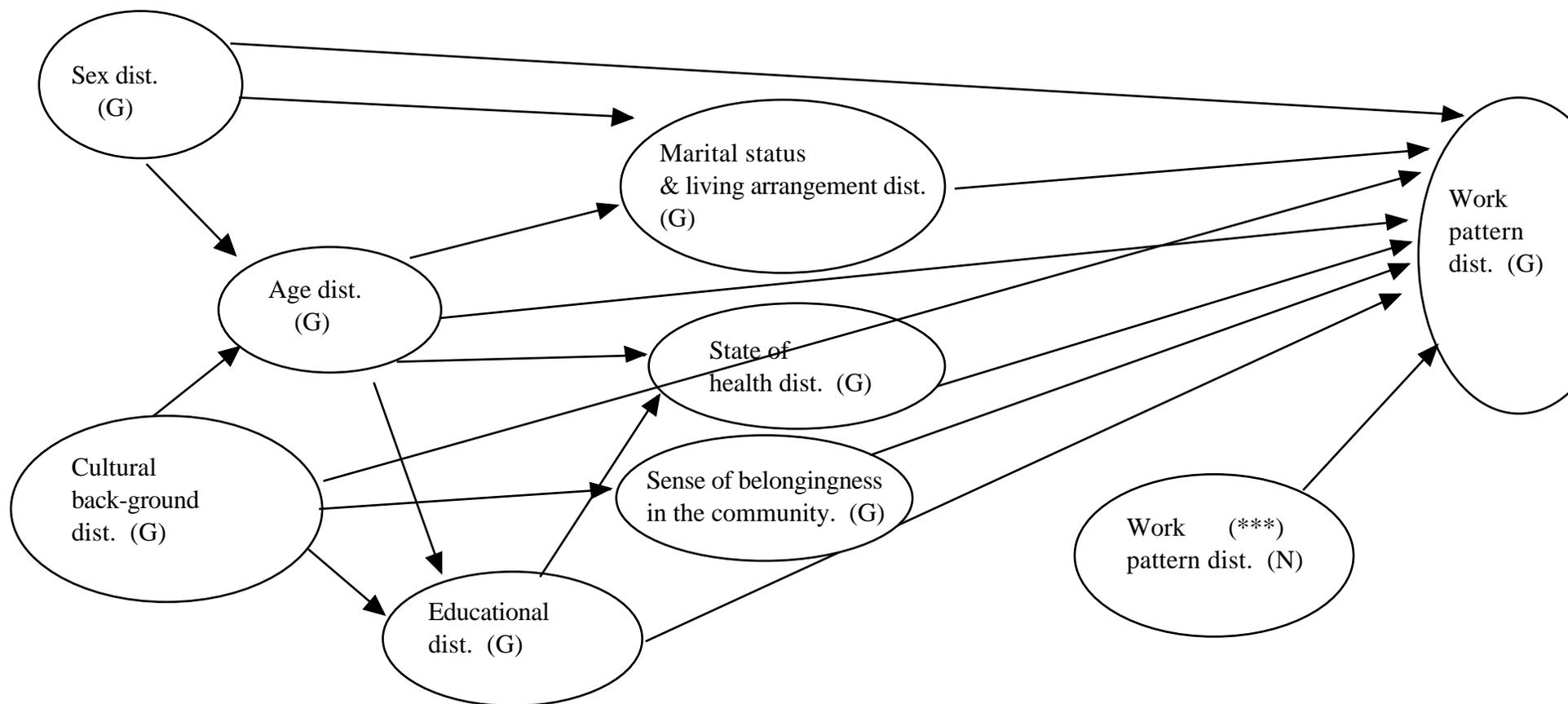


Note: Using the symbols above, one activity pattern can be represented as [ H(W1), L(W2), M(W3), L(SP1), M(SP2), L(RT) ].

**Figure 2. Forces that help to determine activity patterns**

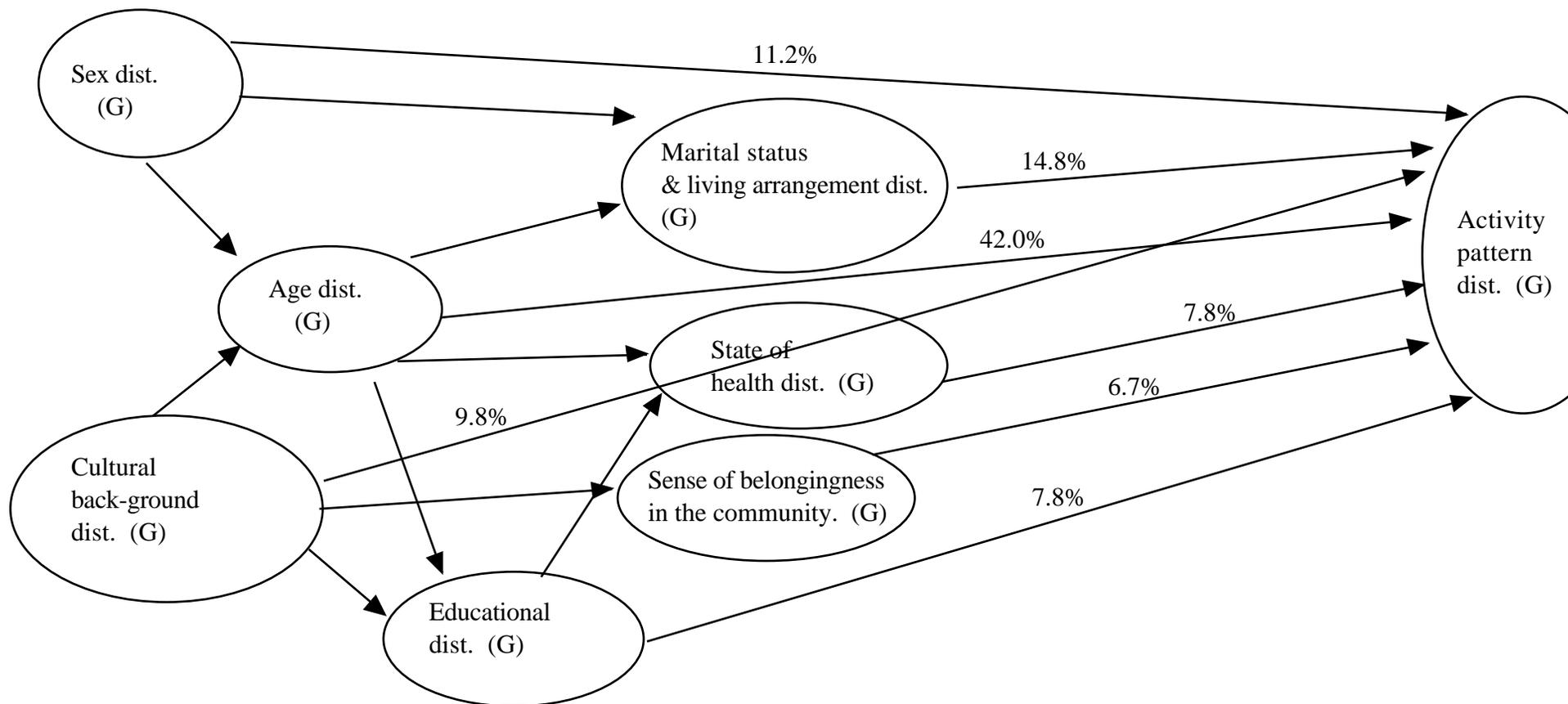


**GENERAL MODEL OF THE PATTERN OF INFLUENCES OF SELECTED PREDICTORS OF THE WORK-PATTERN DISTRIBUTION OF A POPULATION SUB-GROUP IN THE MAIN RETIREMENT AGES (50+)**



(\*\*\*) “Work pattern dist. (N)” stands for the work pattern distribution of the entire population of which group G is a sub-population. In predicting the work pattern distribution for group G, the arrow from Work pattern dist. (N) to Work pattern dist. (G) represents the null hypothesis -- this hypothesis states that to know the latter distribution it is sufficient to know the former. All the other arrows indicate ‘constraints’ that one distribution exerts upon another, and this information that the knowledge of one distribution can contribute to the accurate prediction of the other.

**ESTIMATED CONTRIBUTIONS OF SELECTED 'INFORMATION FACTORS' IN A PREDICTION MODEL FOR THE ACTIVITY-PATTERN DISTRIBUTION OF A POPULATION SUB-GROUP IN THE MAIN RETIREMENT AGES (50+)**



(\*). All percentages represent shares of each source of information (factor) to the overall predictive accuracy of the model (which is 29% out of a maximum of 100%) A comment on the issue of statistical significance regarding these contributions has been placed in the notes to Appendix table.<<?>>.

Interaction effects were not covered in developing the estimates

Source: Appendix Table ..<<?>> .



