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**Urban-rural variations in health and health services
utilization: an annotated bibliography**



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INTRODUCTION AND GUIDE TO THE BIBLIOGRAPHY

Introduction

In this bibliogaphy literature is compiled in which differences in health and health service utilization are studied and which pay attention to the impact of urbanicity. The word urbanicity is meant to indicate the extent to which a place is urban or rural. It should not be confused with urbanization which refers to the process of a place becoming urban.

The reason for our interest in urban-rural variations is twofold. It is based on its relevance fo public policy and with research methodology and outcomes.

First, urban-rural variations are highly relevant in public policy issues. Inequalities between urban and rural areas concerning health are highly unacceptable from a policy point of view. The same applies to inequalities in accessibility of services. Most governments aim at assigning health budgets to regions according to need, and thereby a highly relevant problem of resource allocation. The policy relevance of the urban-rural distinction is further illustrated by the fact that the World Health Organization (WHO), who has been developing a Healthy Cities Project that aims at improving the health of urban residents. A large number of European cities are participating in this project.

The second reason is that urbanicity constitutes one of the most often employed environmental features in research on health and health services utilization. In many cases it is in fact the only geographic variable that is taken into account and usually is the one of the few geographic variables that does have, at least to some extent, a universal meaning (contrary to, for instance, the variable 'region'). Theoretical considerations behind this are not often made explicit.

Apparently authors do have some intuitive feeling that urbanicity must matter but an idea about the mechanisms behind this is frequently lacking. Some authors even contend that many utilization studies lack theoretical foundation altogether (Béland, 1988). Indeed, the concept of urbanicity is very vague. As Hoggart (1990) writes: 'I do not mean (...) that there are no differences between (most) rural and urban places, but rather that in the main these are

generated by the uneven presence of some known causal factor 'X', as opposed to either rurality or urbanity. The obvious follow-up point is that for theory to progress we should focus on 'X'(p.251). A similar point is made by Webb [6]: 'as far as the differential prevalence of mental disorder is concerned, the rural-urban variable has little utility', and 'Rather the area being studied must be defined in terms of more relevant criteria, especially the detailed composition of the population'. In other words, the concept of urbanicity needs more clarification. This bibliography, together with the review on the following pages, offers some clues as to how this can be achieved.

Method

Data files were screened in the fields of medicine, sociology, economy and psychology. Titles were drawn from the following CD-rom databases: Medline, PsychLit, Sociofile, Econlit, SCI (Science Citation Index) and GSI (General Science Index). In addition literature was searched in the catalogue of the Netherlands Institute of Primary Health Care (NIVEL).

The keywords '(sub)urban' and 'rural' in combination with 'morbidity', 'utilization', 'medical consumption', 'health' and/or 'medical' were employed, as well as their French, German, and Dutch equivalents. These keywords had to be stated in either the keyword list, the title or the abstract. This keyword-driven approach is not fool-proof. Sometimes references were included in the original search that did not deal with urban-rural differences at all. This implies that also the opposite may be true: that references were not included that should have been. However, within these limitations we believe to have gathered all the literature that appeared between January 1st 1985 and June 1st 1994. In order to obtain at least some common understanding of the words urban and rural, this bibliography is limited to OECD countries.

A further requirement was that the last year in which data were collected should not be before 1980. Only those articles were selected in which empirical research was reported that dealt explicitly with urban-rural differences. In addition, duplications were avoided by not including more than one article covering the same subject and written by the same authors and based on the same datasource. Finally, references on dental care were excluded.

Content of the bibliography

The articles are presented in chapters according to dependent variables, the subject of the article: Physical Health, Mental Health, Physical Health Service

Utilization and Mental Health Service Utilization. Within these four chapters the choice of paragraphs is based on a combination of sex/age groups, disease groups and an anatomic classification. This was done on the basis of frequency of occurrence of references in these groups.

A problem was that most articles on utilization, also deal with health. Such articles ended up in the chapters on utilization. Another problem concerned references dealing with two types of health (for instance physical and mental health). These were assigned to chapters according to the emphasis in the reference concerned. For the further convenience of the reader, a subject index is included.

One of the most important features of this bibliography is the summary of not only dependent but also independent variables that is included with most of the references. In addition, the years in which data were collected, the study population size, operationalization of urbanicity and the results. This way the reader is presented a concise overview of the relevant aspects of the reference. Finally an abstract of the article is presented. For reasons of space it was not possible to include such summaries and abstracts for all references.

A CRITICAL REVIEW OF THE LITERATURE ON URBAN-RURAL DIFFERENCES IN HEALTH AND HEALTH SERVICES UTILIZATION

by Robert Verheij and Dinny de Bakker

1. INTRODUCTION

The main purpose of this bibliography is to give an overview of the literature on urban-rural variations in health and health services utilization. However, it is not wise to leave it with this. In this chapter we elaborate on the question what can be learned from all this literature. More specific, in this chapter we will try to draw conclusions with respect to the outcomes of empirical studies as well as to their methodology. This will be done separately for studies on differences in health and on health services utilization. The following paragraph deals with differences in health.

2. HEALTH

The central question in this paragraph is *what is the role of urbanicity in explaining the health of individuals*. There are two hypotheses addressing this question: the breeder and the drift hypothesis (table 1). The breeder hypothesis points to exposure and behaviour, while the drift hypothesis refers to movements of specific categories of people.

Table 1. Four mechanisms to account for geographical variations in health

DRIFT HYPOTHESIS: spatial concentration of illness caused by:	BREEDER HYPOTHESIS: spatial concentration of illness caused by:
direct selection: ill people move to (or from) specific environments or remain in these environments	spatial variations in exposure to environmental factors (e.g. pollution; traffic; housing quality)
indirect selection: susceptible persons move to (or from) specific environments or remain there	spatial variations in behaviour (e.g. drug/alcohol abuse; physical exercise; church attendance)

Behind the **drift hypothesis** (see for example Lewis et al., 1992; Blazer et al., 1985) there is a notion of selection processes that result in a higher concentration of either ill people (direct selection) or in a spatial concentration of more susceptible persons (indirect selection). Direct selection may take place because healthy people stay and ill people move, or the other way around. Indirect selection takes place if people with certain health related characteristics move to or from specific places. An empirical confirmation of the drift hypothesis, would be that urban/rural differences would not persist when accurate measures of past and present illness, together with past and present other individual determinants of health are included in analytic models.

Behind the **breeder hypothesis** two other mechanisms may be at work. First, there may be certain environmental factors to which people are directly exposed. Obvious examples of the physical environment are the negative externalities of nuclear plants, high traffic densities, high levels of noise and pollution. Also the social environment may be important: exposure to activities of other persons that are specific to certain environments.

Studies which investigate the drift hypothesis are very rare. There are some examples of cross-sectional studies in which an attempt is made to test this hypothesis (Blazer et al., 1985; Lewis et al., 1992) but in fact it can not be tested without longitudinal data. Longitudinal studies were not found in our literature search. Therefore it was decided to concentrate on the breeder hypothesis. However, it can be argued that describing the effects of urbanicity on health as such does not bring us much further than the stage in which present research on this topic already is: a vague notion that urbanicity must matter, without really understanding the mechanisms behind it. It may be more promising to concentrate on interaction effects instead. According to Marsella (1990) studying urban-rural differences as such does not bring us much further and future research should focus on specific sub-populations. Living in a particular type of area (urban or rural) has a meaning for people and their health that may vary between demographic or other categories. The impact of the environment may vary from person to person (or the impact of individual variables may vary from place to place). Only comparing sub-populations with other sub-populations will yield information about the health relevance of aspects of urbanicity. In other words, we should concentrate on interaction-effects. In the remainder of this paragraph some attention will be

a critical review

devoted to urbanicity's main effects but the emphasis will be on these interaction-effects.

Literature dealing with mental health, well-being and physical health will be looked at separately in the following paragraphs.

A summary of interaction effects that were found in the literature is given in table 2-4. Caution should be used with interpreting the signs. They indicate only the *relative* position of urban versus rural residents in the same demographic or other category. '+' signs indicate relatively better health, '-' signs relatively worse health.

2.1 Mental health

It has long been recognised that mental illness is to some extent associated with demographic variables like age and gender, as well as socioeconomic variables. It is not very surprising to find such variables most commonly being taken into account. Differences exist concerning the inclusion of race, health behaviour, social support variables and mobility measures. Race is included only in studies in which there is indeed a substantial amount of variation in race, which is usually not the case in European studies. Among measures of health behaviour, drinking seems to matter (Neff et al., 1985). Social support variables may concern the 'availability and adequacy of social integration and attachment' (Romans-Clarkson et al., 1990), but also more simple measures like the availability of a confidant (Crowell et al., 1986). Mobility is sometimes included and is usually measured by asking whether or not one has recently moved (see for example Blazer et al., 1985; Neff et al., 1987).

It is often found that urban residents are in worse mental shape. There are many exceptions, however. One exception is a Finnish study by Joukamaa et al. (1993) who found no effect of urbanicity on mental health. Another exception is found by Reitzes et al. (1991) who found no direct effect of urbanicity on mental health in an elderly population, controlling for personal and social characteristics, network and activity variables. Also among children in Sweden no urbanicity-effect was found regarding depressive symptoms (Larsson et al., 1992). And a study among New Zealand women did not show any urban/rural differences in mental health (Romans-Clarkson et al., 1990). The often cited conclusion drawn by Dohrenwend and Dohrenwend (1974) that the

level of mental problems is on the whole higher in urban areas can not be maintained on the basis of recent literature.

Table 2. Interaction effects found in the literature and their explanations. Signs indicate the relative position of urban versus rural residents in the same (demographic or other) category. + indicates better health status, - worse health status.

health problem	interaction urbanicity with	specification	explanation
Mental health	race (Neff et al., 1987)	+ black urban + - black rural -	learned helplessness
	unemployment (Harding et al., 1992)	- urban men - + rural men +	informal employment possibilities in rural areas, social support
	alcohol consumption (Neff et al., 1985)	- urban drinkers - + rural drinkers +	not given
	age (Crowell et al., 1986)	+ elderly urban + - elderly rural - <hr/> - young urban - + young rural +	social change
	marital status (Romans-Clarkson et al., 1990)	+ urban divorced + - rural divorced -	'stigmatization/ tolerance

Regarding explanations for urban-rural differences in mental health, the stress-hypothesis is most popular, contending that the urban environment is more stressful, leading to higher levels of mental disorder. Evidence is found by several authors in the fact that there is a direct effect of stress-indicating variables that are indeed associated with city life (either through selection mechanisms or through exposure).

However, the summary of interaction effects (table 2) shows that this is too simple an explanation. Interaction effects were found for race (Neff et al., 1987), gender (Swartz et al., 1989), age (Romans-Clarkson et al., 1990; Crowell et al., 1986), education (Swartz et al., 1989; Carpiello et al., 1989), marital status (Romans-Clarkson et al., 1990), occurrence of stressful life events (Bigbee, 1990) drinking behavior (Neff et al., 1985) and unemployment (Harding et al., 1992; Leeflang et al., 1992), showing that the impact of stress variables themselves may vary according to urbanicity. The most convincing interactions are listed in table 2.

There are two aspects of urbanicity that seem to be important: stigmatization/tolerance and learned helplessness. Divorce can for instance be regarded as a stressor that is strongly associated with city life. At the same time, however, it is city life that offers better opportunities to cope with divorce via a higher tolerance and less stigmatization towards the unusual, as well as offering more opportunities to meet new partners, thereby limiting the negative health consequences of divorce. Another example of urban/rural differences in possibilities for coping with individual trouble is learned helplessness which is suggested to prevail among black rural residents and not in black urban residents in the US and which counterbalances the fact that urban blacks tend to live in relatively unhealthy environments. Negative aspects of city life may be present in the stress resulting from social change and limited informal employment possibilities. The latter would then explain a higher prevalence of mental problems in young city residents as compared to older city residents.

2.2 Well-being

Not surprisingly the effects of demographic and socioeconomic variables are evident with respect to well-being too. It is also not surprising that physical health status plays an important role as well. Social network variables are also sometimes included (Bowling et al., 1991b; Reitzes et al., 1991). Health behaviour variables are usually not taken into account. Drinking, smoking and other habits are apparently not believed to affect people's well-being. Some puzzling interaction-effects and the possible mechanisms behind them will be discussed below.

Urbanicity moderates the relation between stressors and health also with respect to well-being. There is evidence that this applies to race (Amato et al., 1992; Palisi et al., 1986), poverty, gender and family status (Amato et al., 1992) and physical health status (Bowling et al., 1991b; Reitzes et al., 1991). The most convincing interaction effects are summarised in table 3.

Table 3. Interaction effects found in the literature and their explanations. Signs indicate the relative position of urban versus rural residents in the same (demographic or other) category. + indicates better health status, - worse health status.

health problem	interaction urbanicity with	specification	explanation
Well-being	physical health status (Bowling et al., 1991b)	- bad ph. health urb. - + bad ph. health rur. +	constraints in physical environment
	family status (Amato et al., 1992)	+ married no children urban + - married with children urban -	street violence, traffic
	race (Amato et al., 1992)	- poor black urb.- + poor white urban + + poor black rur. + - poor white rural -	ghettos relatively unhealthy

The evidence is particularly convincing with respect to physical health. Physical health problems clearly constitute a meaning for well-being that differs from city to countryside. Factors that make living with a physical handicap more problematic, like stairclimbing or crossing busy roads, occur much more frequently in urban areas. Regarding race there is less agreement among authors. Race-urbanicity interactions are found but not consistently so.

2.3 Physical health

Compared to the measures of well-being and mental health discussed above, it is much more difficult to conduct large scale population surveys on distinct physical health problems. The incidence or prevalence figures are often simply too low to allow this. Therefore, in this area of research, aggregate studies are more usual and it does not make sense to limit ourselves to population based surveys. The exception is perhaps the area of self-assessed general physical health. This health measure will be discussed first. After that attention will be paid to five broad categories of disorders: cancer, respiratory diseases, musculoskeletal disorders, sexually transmitted diseases and cardiovascular diseases.

General physical health is usually measured in terms of 'self assessed health' or 'functional ability'. Multivariate individual-based studies have found varying results. In some studies higher urban morbidity is reported, adjusting for other variables, in other studies higher rural morbidity. For example, a Finnish study by Vuorinen et al. (1991) reports a smaller number of restricted activity days in children in the periphery compared to children in the core area (but no difference in chronic diseases). In a Dutch study (Mackenbach, 1993) urbanicity was regarded an unimportant but not negligible factor compared to gender, marital status and level of education. A British study based on the National Household Survey (Haynes, 1991) revealed unexplained urban/rural variation in perceived health after controls had been brought in. On the other hand, Krout (1989), adjusting for age, gender, race, living arrangement, marital status and several SES-measures, did not find significant residence differences in health dependency and self-assessed health in elderly people. Also in a sample of elderly in Finland no significant differences were found, controlling for gender (Matilla et al., 1988). In Northern England also the larger part of the relationship between urbanicity and health at ward level breaks down when controlling for wealth (Phillimore et al., 1992).

In conclusion, there seems to be a tendency towards better perceived health in rural areas, but this tendency disappears in many studies when controlling for demographic variables such as gender and age and enabling variables like socioeconomic status.

Interaction effects were found with respect to gender (Haynes, 1991; Perenboom et al., 1988), unemployment, not having a partner (Leeflang et al., 1992) and education (Palisi et al., 1986). The most convincing interaction effects are listed in table 4.

Table 4. Interaction effects found in the literature and their explanations. Signs indicate the relative position of urban versus rural residents in the same (demographic or other) category. + indicates better health status, - worse health status.

health problem	interaction urbanicity with	specification	explanation
Physical health	gender (Perenboom et al., 1988; Haynes, 1991)	- female urban - + female rural +	women higher exposure to unhealthy citylife
	not having a partner (Leeflang et al., 1992)	+ single urban + - single rural -	stigmatization/ tolerance
	low education (Palisi et al., 1986)	+ low education urban + - low education rural -	relative deprivation

The most convincing interaction effect is between urbanicity and gender. Urban-rural health differences in physical health status seem to be particularly prevalent in women. Haynes (1991) contended that this may be due to the presumed weakness of supportive networks in cities. This would imply, however, that social networks are more important for women's health than for men's health. This could not be corroborated with other literature. An alternative explanation for this is perhaps found in an article by Gabe and Williams (1987): If there are health differences that can be attributed to environmental differences, these health differences should be observable particularly in those groups that are most tied to the house and immediate neighbourhood: women.

Regarding cancer we may conclude that most types are more common in urban areas, with the exception of Leukemia, Hodgkin's disease and possibly cancer of the oesophagus. Furthermore, for most types of cancer urban excess is typical of men. This is probably due to gender-differences in lifestyle.

With respect to musculoskeletal disorders urban morbidity appears to be higher than rural morbidity as far as women are concerned (Sernbo et al., 1988; Madhok et al., 1993). No explanation for this finding was offered. Regarding the circular system again urban excess morbidity was found, but interaction effects were nowhere explicitly investigated. The same applies to sexually transmitted diseases. Regarding respiratory problems the picture is

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again diffuse. Some studies indicate higher urban morbidity and others higher rural morbidity.

The most important conclusion regarding the broad categories of physical disorders considered here must be that very little attention is paid to interaction effects and that much remains to be done.

It is clear that much can be improved regarding the models that are used. A first step in the right direction with respect to physical health studies is including more individual-based data. Including lifestyle characteristics is another step, though this is easier said than done: the time lag for the relation between for instance smoking and cancer incidence is unknown.

2.4 Conclusions

Regarding the three aspects of health discussed above, two important conclusions can be drawn. First, based on the fact that very often bivariate analyses have shown an urban disadvantage regarding health, the emphasis has been primarily on urban constraints rather than opportunities. Possibly combined with the 18th century pastoral romanticist ideology regarding the purity and salutary qualities of rural societies the result has been an insufficient appreciation of the positive aspects of urban living. Second, it is important to note that these environmental constraints and opportunities have an effect on health that is in many cases dependent on the person who is living in that environment. The extent to which the environment exerts its influence on a person's health is dependent on that person's individual characteristics. Much previous work on urban-rural differences has conceptualized this relation as depicted in figure 1a. This review, however, suggests to replace this by figure 1b, in which interactions between the individual level and environment are more fully appreciated.

However, these conclusions are important only for further investigating the breeder hypothesis. In order to gain more insight into the drift hypothesis much more work remains to be done. A start can be made with gathering population based longitudinal data in which breeder and drift hypotheses can be examined together.

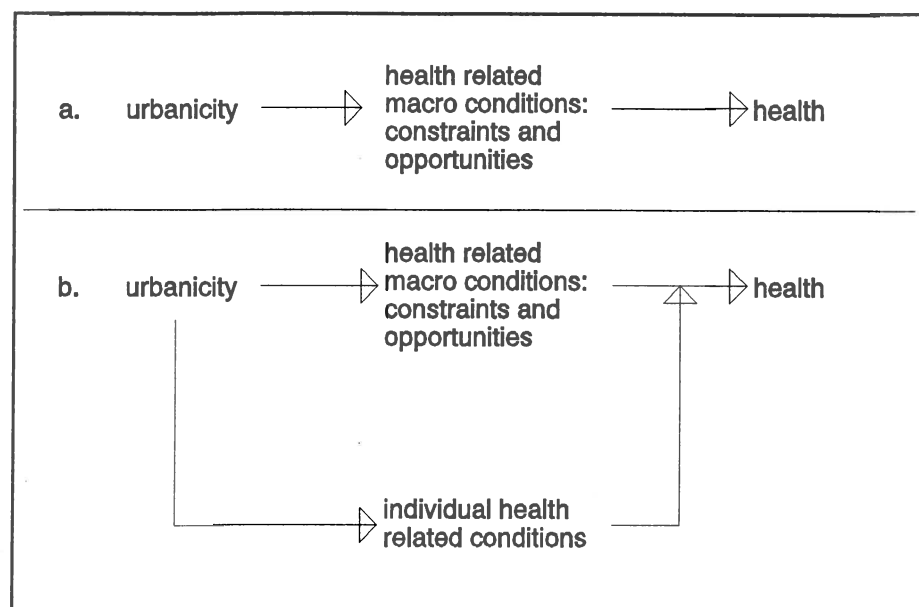


Figure 1

3. HEALTH SERVICES UTILIZATION

This paragraph deals with *the role of urbanicity in explaining health services utilization.*

Controlling for health status and other variables, in most of the literature the results indicate that utilization is higher in urban areas. This applies to physical health services as well as to mental health services. However, urban-rural differences are larger with respect to specialized services as compared to more general services. Furthermore they are more prevalent among some sub-populations as compared to other sub-populations. Significant interaction effects between urbanicity and population characteristics were found (Eggen et al., 1993; Pampalon, 1990; Lako et al., 1987; Leeflang et al., 1992), as well as differences in the explanatory value of independent variables (Fossett et al., 1989; Bellantuono et al., 1988).

Many authors find the conclusion that urbanicity matters sufficient and do not engage in thinking of mechanisms behind it. In spite of this, it can be contended that urbanicity is not a useful concept in utilization research. For example, an interesting 'smörgosbord' of definitions of rurality is presented by Krout (Krout, 1993), who subsequently decides not to use any definition at all.

Hoggart (1990) argues that 'the designation rural would have to identify locations with distinctive causal forces' (p.248). This, however, is not the case: 'causal forces are not distinctive in rural areas' (p.249). In his comment on one of the existing geographic classifications (ACORN) in the UK, Haynes (1991) emphasizes the importance of accessibility: 'What is needed is a division of rural areas not according to agricultural employment but by accessibility to health services'. However, also accessibility is only one aspect of geographic areas and it may well be that there are additional mechanisms to account for urban-rural variations.

In sum, a more informative question can be: *What aspects of locations could theoretically be distinctive causal forces for health service utilization?* Scrutinizing the literature offers some clues, including accessibility, attitudes, occupational constraints and social support. These mechanisms and their implications will be discussed first. After that we will pay attention to methodological implications.

3.1 Aspects of urbanicity

The most frequently mentioned reason for urban-rural disparities in health service utilization was formulated in terms of **accessibility**. Most authors in this bibliography leave it with this conclusion. Several authors have taken a closer look at availability and it seems that at least two aspects can be discerned: service mix and distance. Similar aspects were already mentioned by Andersen and Newman in 1973, who discerned access and structure as important aspects of the environment. Several authors, not included in this review, have discussed various operationalizations of access (Thouez et al., 1988; Joseph et al., 1984) (not in bibliography). The reason why these studies are not included in the bibliography is that they concentrate on rural accessibility. They are, however, useful for urban-rural variations as well and it is surprising to see that very little use is made of them in the studies that were reviewed in this bibliography. As was shown above, this is particularly true for population based studies.

The first aspect acknowledged in the literature is **service mix** (Bay et al., 1989; Dor et al., 1990; Fossett et al., 1989; Burgess et al., 1992). In these studies it is argued that the composition of the available set of services was an important factor. Apparently utilization of one service can sometimes be substituted by utilization of another. This implies the available set of services and the *use* of these services should be subject of study instead of utilization of separate services. Pescosolido's (1992) (not in bibliography) suggestion to

construct a more sophisticated type of dependent variable. The choice of seeking professional care should not be studied in isolation from other, related choices. If that would be the case 'the critical dynamic relationship among individuals and their networks and the larger structures that form and shape them are downplayed, even dismissed (p. 1102).' Pescosolido does not analyse separate choices to seek care, but rather the **pattern** of coping (help seeking) behavior within an episode of illness. Some people choose only to ask their family for help, others visit the doctor and yet others do both. 'It is through contact with others that individuals deal with situations of medical uncertainty and find ways to solve emotional and physical problems. (...) Individuals in social networks are more than an influence on help seeking, they *are* caregivers and advisors, part of a "therapy managing group"' (p. 1113, emphasis in original). The dependent variable should therefore not be the isolated choice of visiting a doctor, but the total process that is triggered by a health problem (episode of illness). This pattern may include both informal and formal care. Such an approach offers the advantage that, first, the level of utilization, second, the fragmentation of utilization and third, substitution effects between different types of care can be analysed simultaneously. An example of substitution effects is provided by Van Sonsbeek (1984) (not in bibliography) who found a trade-off between consultations at the GP's practice and home visits by GPs, dependent on travel time (controlling for health status variables, age and sex). Also Verbrugge (1987) (not in bibliography) has shown that a trade-off between formal and informal care occurs frequently and in many countries this substitution is part of government policy. According to Pescosolido, concentrating on patterns of care will lead to a 'more refined understanding of the role of social factors in the process of coping with illness (Pescosolido, 1992, p.1127)'. The literature in this bibliography provides only one example in which informal and formal care utilization are considered together (Clark, 1992).

The second aspect of availability is of course the **distance** to services (Fine et al., 1987; Haynes, 1991; Burgess et al., 1992; Sytema, 1991). Distance decay effects have indeed been shown to exist in many types of consumer behaviour. Though common sense suggests that absolute distance is important, there may be more to it. Also the relative distance, the distance people actually travel for care in relation to distances to all of the alternative other care site choices. Indeed the distance variable should be treated with caution because it can be measured and interpreted in many different ways (Gesler et al., 1988) (not in bibliography). In addition, it may not be the distance between residence and health facility that matters, but rather the distance between worksite and health facility. In other words people's action space

should be taken into account. Gesler et al., 1988, point out the importance of interaction effects between relative location, distance, population characteristics and daily-activity spaces. Concerning population characteristics spatial segregation is an important factor causing interactions. Indeed, 'disaggregation of respondents according to specific behavioural characteristics, together with detailed knowledge of local facilities, seems to be essential in this type of 'distance decay' research if facile observations are to be avoided.' (Joseph et al., 1984) (not in bibliography). Haynes', 1991 study for example shows that utilization differences are particularly found among people in rural areas who do not have a car at their disposal.

It has been frequently supposed that **attitudinal** differences are part of the explanation, including social control and stigmatization (Perenboom et al., 1988; Burgess et al., 1992; Keatinge, 1988; Sytema, 1991). Rural residents are simply less inclined to visit a doctor. Two factors indicate that the difference may not be in attitudes but in circumstances. Attitudes may be the same in rural and urban areas and while attitudes are the same perceived prestige and social control may be the causal factors. In a qualitative study Beukema (Beukema, 1993) (not in the bibliography) found that one of the reasons for *not* consulting a doctor may be his prestigious position in society. This was mainly a reason for not seeing the doctor among elderly patients. Urban-rural comparisons could not be made in this study, but if doctor's prestige matters, it is likely to matter more in small communities.

Another suggestion, related to **occupation** was made by two authors who studied utilization in an agricultural setting as compared to a town. It was supposed that farmers will have more difficulties leaving their work than employees (Keatinge, 1988; Eggen et al., 1993), both because of the occupational obligations of farming itself as well as the fact that are free entrepreneurs who have to bear the costs of absence themselves.

Social support has also frequently been supposed to be an explanation for urban rural variations (Bowling et al., 1991a; Clark, 1992; Thornicroft et al., 1993; Sommers, 1989). It has been suggested in many studies that rural residents are more inclined to take care of the needy than urban residents. Strangely enough, however, there is evidence (in the US) that older residents of large cities are most likely to live with adult children (Lee et al., 1990). Furthermore, large city elderly and farm residents are more likely than small-city or rural non-farm residents to live near their children. Therefore, 'elderly rural parents certainly have no advantage over their urban counterparts and are, in some respects, disadvantaged in terms of proximity to children,

especially in comparison to large city residents (Lee et al., 1990). In addition, urban-rural differences found with respect to perceived social support by elderly appeared to be non-significant (Lee, 1993).

3.2 Research methodology

In most cases urban-rural variations in health services utilization are analysed using multivariate linear or logistic regression techniques. Two objections can be made against this approach. These objections are based on, first, the fact that help seeking behavior has a processual character and, second, that different levels of analysis are involved.

Differences in health service utilization may emerge in various stages of the help seeking process. For our purposes these stages are adequately described by Sarafino (Sarafino, 1990). First there can be differences in the appraisal of illness, i.e. the time a person takes to interpret a symptom as a sign of illness. There can, secondly, be differences in the time taken until deciding to seek medical attention. Thirdly there can be differences in the time after deciding to seek medical care until actually going to use that care. The addition of a fourth stage, not mentioned by Sarafino (ibid), is appropriate for our purposes. After entry into the medical care system it has to be decided whether to stay there or to leave. The difference between the third and fourth stage is crucial for understanding health service utilization and for analysing it in a proper manner. The third stage refers to what can be called primary utilization, the fourth stage to secondary utilization. These concepts are related but should not be confused with the concepts of primary *care* and secondary *care*.

In **primary** utilization the patient is the most important decision maker. Studies in this category focus on the dichotomy users versus non-users. After having perceived a health problem it is the patient who decides to contact a health care provider. So the base-line model includes only the patient. Such a model can be made more complex by including family and provider variables. The primary utilization model can for instance be used for initial use of GP services in health care systems where the GP filters access to other services.

For **secondary** utilization the situation is different. The decision to contact a doctor a second or third time for the same problem is highly dependent on the outcomes of the patient-provider interaction of the first visit. The same is true for subsequent visits to other care providers for which referral is obtained at the first visit and similarly for the prescription of drugs or any other thing that

happens *during* doctor/patient contact or that is the result of that. Whether or not a clear distinction can be easily made between secondary and primary utilization (without asking the patient or provider him/herself) is dependent on the health care system. For example in the Netherlands hospital admissions without GP referral only take place in cases of emergency, whereas in the US and France referral is not a prerequisite for hospitalization. In the latter countries it is therefore much more difficult to make out if we are dealing with primary or secondary utilization.

The current review shows that the distinction between primary and secondary utilization is hardly ever appreciated. Many individual based utilization studies use data on individuals who have already entered the health care system, without taking the characteristics of the provider into account. It is often insufficiently realized that different actors are involved, at different levels and that this should be analytically accounted for.

This means that more than one level of analysis is involved in health services utilization research. Recent developments in research methodology make it possible to deal with such problems adequately. Several authors have successfully applied **multilevel modelling** in geographical questions on health and to a more limited extent on health care (Duncan et al., 1993; Jones et al., 1994b; Duncan et al., 1994b; Korff et al., 1992; Duncan et al., 1994c; Duncan et al., 1994a; Jones, 1993; Jones et al., 1994a).

Conceptualizing the use of health services as a multilevel problem has another advantage in emphasizing that we are talking about people in situations. As is the case with research on health differences the importance of *interaction effects* between individual characteristics and environmental characteristics is often overlooked in health services research (Verheij, 1995). This may well be the reason why empirical studies usually find a very limited over-all main effect of situational variables on the use of services. For some people the environment may have an effect, while this effect is absent or in the opposite direction for others. Distance, for example, is probably more important for visiting the doctor for people who are not-so-ill than for people who are severely ill and more for people without a car than for those who have. Travel time may be a more important constraint for unemployed people than for employed people.

Above it is also contended that help seeking behavior has a **processual character**. This too has been insufficiently realized. The use of services should be modelled as an event that takes place in time (Béland, 1988) (not in bibliography). It is thereby the propensity to use a service in the course of time that should serve as the dependent variable. Event history analysis

would then be the best approach to such data. 'It may be time to put less energy into replicating utilization studies that yield low percentages of explained variances and more energy into using methods that oblige one to see utilization as a pattern of events that are generated *through time*. More efficient models that parametrize this process of generating events may stem from such research' (Béland, 1988, p.308).

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1. PHYSICAL HEALTH: MORBIDITY

1.1 general

1

BARBERGER-GATEAU, P., CHASLERIE, A., DARTIGUES, J.-F.,
COMMENGES, D., GAGNON, M., SALAMON, R.

Health measures correlates in a French elderly community population: the PAQUID study.

Journal of Gerontology: Social Sciences; 47, 1992, no. 2, p. S88-S95.

YEAR(S) OF DATA : 1988-1989.
DEPENDENT VARIABLES : health measures of dependency: ADL, IADL, mobility, Rosow scale, self-perceived health and relative health.
INDEPENDENT VARIABLES : age, sex, education, joint pain, dyspnea, hearing impairment, visual impairment, Mini-Mental State (MMS), depression, place of residence.
POPULATION : France, Gironde; 2,792 community (excluding homes for retired persons, care families and nursing homes) residents, age ≥ 65 years, in 37 parishes.
CLASSIFICATION : urban $\geq 2,000$ inhabitants.
rural $< 2,000$ inhabitants.
RESULTS : People in rural settings tend to be more dependent than in urban settings, mainly for IADL, but controlled for the other variables, there is no significant correlation for each health measure with rural setting.

PAQUID is an epidemiologic prospective study of mental and functional aging. A sample of 4,050 community-dwelling individuals, age ≥ 65 years, was randomly selected from 37 parishes of Gironde, France, after stratification by age, sex, and size of urban unit; 68.9 percent agreed to participate. Baseline information was obtained from an interview. Health measures included ADL, IADL, mobility, Rosow scale, and two subjective health assessments. Depressive symptomatology was assessed by the CES-D scale and cognitive functioning by Folstein's MMS. Dependence rates vary from 9.7 percent to 71.9 percent according to the indicator under consideration. Cross-sectional correlations with dependence are significant for age, sex, education, rural setting, joint pain, dyspnea, hearing and visual impairment, MMS score, and depression. In logistic regressions, only dyspnea, MMS score, and depression are significantly correlated with dependence, whichever the indicator.

2

DIDERICHSEN, F., JANLERT, U.

Effects of economic change on male morbidity in neighbouring industrial and rural municipalities in northern Sweden.

Journal of Epidemiology and Community Health; 46, 1992, no. 6, p. 605-607.

YEAR(S) OF DATA : 1984.

PHYSICAL HEALTH: MORBIDITY

- DEPENDENT VARIABLES : prevalence of mental symptoms, cardiopulmonary symptoms, pain in muscles and joints.
- INDEPENDENT VARIABLES : age, occupation, unemployment, childhood deprivation, early retirement, single living, migration, birthplace.
- POPULATION : Sweden, northern part; 1,989 men born between 1915 and 1924.
- CLASSIFICATION : industrial = Kiruna.
rural = Pajala.
- RESULTS : Prevalence of all three groups of symptoms was higher in those born in the rural community.

The aim of this study was to investigate the health effects of economic changes in a rural and industrial community. This was a historical cohort study with retrospective information on exposure and information on health outcome from a mailed questionnaire (response rate 82.5%). Participants included all men born in a rural community in northern Sweden and a random sample of men born in a neighbouring industrial community 1915-1924 and alive in 1984. Morbidity was higher in the cohort born in the rural municipality in which more profound changes in the socioeconomic structure had occurred. Even when taking such factors as childhood deprivation, migration, socioeconomic status, early retirement, unemployment, and single living into consideration, most of the differences in morbidity in the two municipalities still remained. However, the changes in employment conditions alone do not appear to explain the differences in morbidity that were found. The higher morbidity in the rural community indicates a health effect of the profound economic changes in that community but this difference cannot be explained by crude indicators of exposure to migration, unemployment, and other indicators of economic change.

3

KROUT, J.A.

Rural versus urban differences in health dependence among the elderly population.

International Journal of Aging and Human Development; 28, 1989, no. 2, p. 141-156.

- YEAR(S) OF DATA : ?.
- DEPENDENT VARIABLES : health dependency score, self-assessed health.
- INDEPENDENT VARIABLES : degree of urbanization, age, sex, race, living arrangement, marital status, income, education, home ownership, car ownership, length of residence in community, service awareness.
- POPULATION : USA, western New York; 600 community dwelling people, age ≥ 65 years.
- CLASSIFICATION : nonmetropolitan rural = <2,500.
nonmetropolitan urban = >2,500.
metropolitan noncentral city,
metropolitan central city.
- RESULTS : health dependency: non-metropolitan urban more healthy than rural and metropolitan;
adjusted for other variables: no significant relation.
self-assessed health: no significant residence differences; adjusted for other variables:
no significant impact of residence.

This article examines data on rural versus urban differences in health dependency for a random sample of 600 western New York elderly people residing in a range of community

settings from farm areas to a metropolitan central city. Data were collected via personal interviews; health dependency was operationalized as an index of 9 criteria measures. The nonmetropolitan elderly population is found to be less health dependent, as are the elderly who are younger, white, married, and have higher incomes. However, the rural/urban variable is not a significant predictor of health dependency when included in a multiple-regression analysis. These findings do not support the rural elderly health disadvantage argument and serve to illustrate some of the shortcomings of existing research on this topic.

4
MACKENBACH, J.P.
Inequalities in health in The Netherlands according to age, gender, marital status, level of education, degree of urbanization, and region.
European Journal of Public Health; 3, 1993, no. 2, p. 112-118.

YEAR(S) OF DATA : 1981-1985.
DEPENDENT VARIABLES : perceived general health, prevalence of chronic conditions, mortality.
INDEPENDENT VARIABLES : age, gender, marital status, level of education, degree of urbanization and region.
POPULATION : The Netherlands; a non specified (but large) number of non-institutionalized persons.
CLASSIFICATION : rural municipalities, urbanized rural municipalities, small- and medium sized towns, large towns.
RESULTS : There is a linear relationship between the dependent variables and urbanization. People are worse off in large cities. Compared to other independent variables, urbanization does not seem to be very important though.

Variations were analyzed in perceived general health, prevalence of chronic conditions, and mortality associated with six sociodemographic characteristics: age, gender, marital status, level of education, degree of urbanization and region. Nationally representative data from the Netherlands were used. The Index of Dissimilarity (the proportion of the number of cases of ill-health in the whole population which has to be redistributed to achieve complete equality) was used to summarize the degree of variation in these health measures. Age was associated with the highest degree of variation in all three health measures. The rank order of the other background characteristics differed slightly among health measures, but on the whole gender, marital status and level of education appeared to be of equal importance. Degree of urbanization and region were less important, although not negligible. Improvements in the health status of groups having high rates of health problems could contribute substantially to further reduction of the burden of ill-health in the population as a whole. The results suggest that such interventions should not be limited to one dimension of inequality only, and that, at least in the Netherlands, inequalities by gender, marital status and level of education deserve equal attention from health policy makers. Examples of specific factors and mechanisms involved in these inequalities are given, and possible strategies for reduction of these inequalities are discussed.

- INDEPENDENT VARIABLES : deprivation score (car non-ownership, unemployment, occupational class, not owner occupied household, overcrowding, no exclusive use of bath or shower), urban/rural setting.
- POPULATION : England, Northumberland; 18,930 singleton infants born between 1985 and 1990, and 9,055 schoolchildren, age 5-8½ years.
- CLASSIFICATION : large towns = towns with >20,000 population.
small towns = 5,000-20,000 population.
rural = rest.
- RESULTS : adjusted for deprivation score: higher proportion of low birthweight babies and lower mean height of schoolchildren in large and small towns than in rural areas;
adjusted for car non-ownership only: more low birthweight cases in large and small towns than in rural areas, lower mean height in large towns than in small towns and rural areas.

Proportions of low birthweight babies and mean heights of schoolchildren were compared between rural and urban areas at different levels of social deprivation. The subjects were 18,930 singleton infants delivered alive during January 1985 to September 1990 and resident in Northumberland, in October 1990, and 9,055 children aged 5 to 8½ years attending Northumberland schools in the winter of 1989-1990. Inequalities in birth weight and height exist in all urban and rural settings between deprived and affluent areas. There is substantial disadvantage to living in urban areas compared with rural areas which results from social or environmental factors unrelated to current levels of deprivation.

7

THORSON, J.A., POWELL, F.C.

Rural and urban elderly construe health differently.

Journal of Psychology; 126, 1992, no. 3, p. 251-260.

- YEAR(S) OF DATA : ? (after 1990).
- DEPENDENT VARIABLES : health attitude.
- INDEPENDENT VARIABLES : area of residence.
- POPULATION : USA, Nebraska; 396 people, age ≥65 years.
- CLASSIFICATION : urban = Douglas County, 416,444 population, 1,246 population per square mile.
rural = Sandhills counties, 11,206 population, 1.3 population per square mile.
- RESULTS : Few differences were found that could be attributed to area of residence, but factor analysis of the attitudes toward health items indicated that respondents in rural areas have different perceptions of health in general and of health care services than respondents in urban areas.

196 elderly adults (mean age 73.85 years) living in the metropolitan Omaha area and 200 elderly adults (mean age 76.64 years) living in the rural Sandhills counties of central and western Nebraska completed an instrument to assess health satisfaction, health behaviors, and attitudes toward health care. Few intergroup differences were found that could be attributed to the area of residence. However, factor analysis and item analysis of the attitudes toward health items indicated that older respondents in rural areas may have very different perceptions of health in general and of health care services in particular than those of elderly urban residents.

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8

COOK, G.

Health and social inequities in Ireland.

Social Science & Medicine; 31, 1990, no. 3, p. 285-290.

1.2 cancer

9

BAQUET, C.R., HORM, J.W., GIBBS, T., GREENWALD, P.

Socioeconomic factors and cancer incidence among blacks and whites.

Journal of the National Cancer Institute; 83, 1991, no. 8, p. 551-557, 526, 527.

YEAR(S) OF DATA : 1978-1982.

DEPENDENT VARIABLES : incidence of cancer at all sites combined and seven major cancer sites: lung and bronchus, stomach, colon, rectum and rectosigmoid, female breast, cervix uteri, and prostate gland.

INDEPENDENT VARIABLES : age, race, education, income, population density.

POPULATION : USA, metropolitan areas of San Francisco-Oakland, Detroit, Atlanta; 4,592,177 persons, age ≥ 25 years.

CLASSIFICATION : high population density = 'inner/central city walk-up apartment areas' = 1 quartile.
medium population density = middle 2 quartiles.
low population density = 'suburban detached home, bedroom communities' = 1 quartile.

RESULTS : adjusted for all other variables:
cancer incidence of all sites combined, colon excluding rectum and female breast increased significantly with increasing population density for both blacks and whites;
for whites, but not for blacks: increasing cancer incidence of stomach, rectum and rectosigmoid, and prostate gland with increasing population density.

Findings from previous studies suggest that differences in socioeconomic status may be responsible for some, if not all, of the elevated incidence of cancer among blacks as compared with whites. Using incidence data from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program, this hypothesis was tested by correlating white and black cancer incidence rates in three US metropolitan areas between 1978 and 1982. The study analyzed data on the incidence of cancer at all sites combined (greater than 100 cancer sites) and at seven major sites separately. As in other studies, income and educational levels served as surrogates for socioeconomic status. The present study also used census-tract data on population density as a surrogate factor. Each of these measures of socioeconomic status was analyzed independently. Before correlation with census-tract data, age-adjusted data on cancer incidence showed statistically significant elevated risks among blacks for cancer at all sites combined and at four of the seven separate sites; whites showed an elevated risk for cancer at two sites. When age-adjusted incidence data were correlated with socioeconomic status, the comparative black-white risks changed: Whites showed an elevated risk of cancer at all sites combined and at three of the seven separate sites; blacks maintained their elevated risk at three sites.

10

DOLL, Sir R.

Urban and rural factors in the aetiology of cancer.

International Journal of Cancer; 47, 1991, no. 6, p. 803-810.

YEAR(S) OF DATA : 1950-1982.
 DEPENDENT VARIABLES : various types of cancer incidence.
 INDEPENDENT VARIABLES : sex, country, urban/rural area.
 POPULATION : New South Wales in Australia, Slovakia in Czechoslovakia, Denmark, England and Wales, Calvados/Doubs in France, Saarland in Germany, Szabolcs in Hungary, Miyagi in Japan, Norway, Cluj in Romania, Vaud in Switzerland, USA.
 CLASSIFICATION : different from country to country.
 RESULTS : 23 out of 26 types of cancer were more common in towns than in rural areas in all countries.

The incidence of cancer, or the mortality attributed to it, has been compared in rural and urban residents in 13 populations. In each case, the incidence (or mortality) has been higher in the urban areas in each sex, the ratios varying from a minimum of 1.03 to 1 in men in Miyagi (Japan) to 1.63 to 1 in men in Denmark. Examination of 26 separate types of cancer showed that 23 tended to be more common in urban areas, one (myeloma) to be evenly distributed, and two (cancers of the lip and eye) to be more common in the countryside. The urban excess was greatest for cancers of the bladder, larynx, liver, lung, mouth and pharynx, and oesophagus, and least for leukaemia and non-Hodgkin's lymphoma. It is concluded that differences in personal behaviour (cigarette smoking, alcohol consumption, sexual promiscuity, exposure to ultraviolet light, type of diet, and family size) are the principal factors responsible for the urban excess. Other factors include general atmospheric pollution, occupational hazards, genetic differences in susceptibility, and artefacts of diagnosis and recording. The rural excess was marked for cancer of the lip in both sexes, but less marked and clearly evident only in men for cancer of the eye. Three-quarters of eye cancers are melanomas and the excess incidence in rural areas provides some weak support for the idea that exposure to sunlight contributes to the production of the disease.

11

FRIIS, S., STORM, H.H.

Urban-rural variation in cancer incidence in Denmark 1943-1987.

European Journal of Cancer; 29A, 1993, no. 4, p. 538-544.

YEAR(S) OF DATA : 1943-1987.
 DEPENDENT VARIABLES : incidence of cancer of various sites.
 INDEPENDENT VARIABLES : age, sex, year, place of residence.
 POPULATION : Denmark; whole population.
 CLASSIFICATION : capital area = Copenhagen, Frederiksberg and Gentofte.
 urban = large cities = municipalities >100,000 population.
 capital suburbs.
 provincial towns.
 rural = municipalities <10,000 population in built-up areas.
 RESULTS : In the period 1983-1987 higher incidence in the capital area than in rural for: buccal cavity and pharynx, digestive organs and

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peritoneum, respiratory system, female breast, male genital organs, urinary system, skin, secondary and unspecified sites, other specified sites (only men) and all sites combined. Incidence of cancer of the lip in men higher in rural areas than in the capital area. Throughout the period 1943-1987, higher incidence in the capital than in rural areas for cancers at all sites combined, but the excess decreased slightly over time.

Urban and rural cancer incidence in Denmark in 1943-1987 was analyzed. A consistent urban excess was found for all sites combined for individuals of each sex, irrespective of age at diagnosis. The capital:rural incidence ratio was 1.42 for men and 1.25 for women, and these ratios were not affected to any great extent using another definition of urban areas. Urban:rural ratios were highest for cancers of the respiratory, urinary and upper digestive tracts. The differences cannot be explained by tobacco and alcohol consumption alone. Other risk factors linked to urbanization may contribute importantly to the "urban factor".

12

GREENBERG, R.S., STEVENS, J.A., WHITAKER, J.P.

Cancer incidence rates among blacks in urban and rural Georgia, 1978-82.

American Journal of Public Health; 75, 1985, no. 6, p. 683-684.

YEAR(S) OF DATA : 1978-1982.
DEPENDENT VARIABLES : incidence of several types of cancer.
INDEPENDENT VARIABLES : age, sex, race, urban/rural residence.
POPULATION : USA, Georgia; counties with 1,687,906 urban residents and 50,799 rural residents.
CLASSIFICATION : urban = Atlanta.
rural = 10 contiguous counties.
RESULTS : Overall age adjusted incidence rates were higher for urban blacks than for rural blacks. Higher age adjusted incidence figures were found in urban areas for lung and prostate cancers among black males and pancreatic cancers among black females.

The records of the Atlanta Cancer Surveillance Center were reviewed for all incident cases of cancer diagnosed among Black residents of the catchment areas during 1978-1982. The age-adjusted overall cancer incidence rates for urban Blacks were greater than those for rural Blacks. The largest urban excess was found for cancers of the buccal cavity and pharynx. Urban residence also was associated with lung and prostate cancers among males, and pancreatic cancers among females.

13

HOWE, H.L., KELLER, J.E., LEHNHERR, M.

Relation between population density and cancer incidence, Illinois, 1986-1990.

American Journal of Epidemiology; 138, 1993, no. 1, p. 29-36.

YEAR(S) OF DATA : 1986-1990.
DEPENDENT VARIABLES : cancer incidence.

INDEPENDENT VARIABLES : composition of counties according to population density, age, sex and race.
 POPULATION : USA, Illinois; 102 counties, all residents.
 CLASSIFICATION : four groups according to population density:
 rural = 11.8-105.8 persons/square mile.
 small urban = 115.5-487.2 persons/square mile.
 suburban = 531.3-1,955.0 persons/square mile.
 urban = 5,484.0 persons/square mile.
 RESULTS : Monotonically increasing and statistically significant cancer incidence trends across all race-sex groups were found for cancers of the esophagus, liver, lung, female breast and cervix, male prostate, nervous system, non-Hodgkin's lymphomas, and all cancers combined.

The authors used incidence data for 1986 through 1990 from the Illinois State Cancer Registry, a large, population-based incidence registry, to identify race-specific, urban-rural trends in cancer rates. Using population density, they categorized an urbanization gradient into four groups. Five-year, average annual age-adjusted, site-specific incidence rates were calculated for all sex-race strata within each population density group. Significant cancer incidence trends across all race-sex groups were found for many types of cancer, and for all cancers combined. No trend was observed for blacks that was not also seen for whites; however, significant trends for cancer of the pancreas and Hodgkin's disease were seen for whites but not for blacks. Colon cancer in males was the only sex-specific trend in cancer that can occur in both sexes. Analytic studies for sites with consistent urban-rural trends across all race-sex groups may be fruitful in identifying the aspect of population density, or other unmeasured factor, that contribute to these trends.

14

NASCA, P.C., MAHONEY, M.C., WOLFGANG, P.E.

Population density and cancer incidence differentials in New York State, 1978-82.

Cancer Causes and Control; 3, 1992, no. 1, p. 7-15.

YEAR(S) OF DATA : 1978-1982.
 DEPENDENT VARIABLES : standardized incidence ratios (SIR) of cancer.
 INDEPENDENT VARIABLES : sex, population density.
 POPULATION : USA, New York State, exclusive of New York City; 10,486,433 population.
 CLASSIFICATION : five population density quintiles:
 I = rural (52.5 - 186.5 persons/square mile).
 II = towns on outskirts of urban areas and towns containing large villages (187.3 - 1,147.8 persons/square mile).
 III = suburbs (1,168.2 - 2,972.2 persons/square mile).
 IV = small cities, villages, and towns surrounding large cities (2,980.0 - 5,371.2 persons/square mile).
 V = urban (5,491.1 - 16,225.2 persons/square mile).
 RESULTS : All cancer cases combined: highest SIR in quintile IV and V (urban), lowest in II and I (rural).
 Significant linear relationship between increasing population density and SIR:
 for both males and females: cancers of the buccal cavity and pharynx, esophagus, stomach, lung;

YEAR(S) OF DATA : 1986-1988.
 DEPENDENT VARIABLES : cancer incidence.
 INDEPENDENT VARIABLES : rural/urban, sex.
 POPULATION : The Netherlands; cancer incidence figures of rural, urban and intermediate municipalities.
 CLASSIFICATION : urban = towns with >50,000 population.
 rural = agrarian and small towns <5,000 population.
 intermediate = other.
 RESULTS : significant:
 cancer of all sites: urban males more risk than rural males;
 cancer of the respiratory tract: in urban higher incidence than in rural for both males and females.

Cancer incidence in the mid-southern part of the province of Limburg (The Netherlands) was analyzed for urban-rural differences. All municipalities were classified according to degree of urbanization. Data on cancer incidence (1986-1988) were obtained from the cancer registry of the Comprehensive Cancer Limburg. By means of the direct standardization method the influence of differential age distributions was adjusted.

Statistical significant urban-rural risk ratios were found for cancer of all sites in males and for cancer of the respiratory tract in males and females.

17

ALEXANDER, F.E., RICKETTS, T.J., MCKINNEY, P.A., CARTWRIGHT, R.A.
 Community lifestyle characteristics and risk of acute lymphoblastic leukaemia in children.

Lancet; 336, 1990, no. 8729, p. 1461-1465.

Lancet; 337, 1991, no. 8737, p. 361.

YEAR(S) OF DATA : 1984-1988.
 DEPENDENT VARIABLES : incidence figures of electoral wards for acute lymphoblastic leukemia in children.
 INDEPENDENT VARIABLES : age, sex, socioeconomic status, commuting to work distance, urban/rural status, settlement type, distance to built-up area, settlement isolation.
 POPULATION : England and Wales; 438 cases of acute lymphoblastic leukemia in children, age 0-14 years.
 CLASSIFICATION : commuting to work distance: 0-3.3 km, 3.4-4.0 km, 4.1-5.6 km, 5.7-35.9 km.
 urban/rural status: 2 categories, see no. 36.
 settlement type: built-up, town, village, other.
 distance to built-up area: 4 categories, see no. 36.
 settlement isolation: built-up area, nearly towns/villages, isolated towns/villages.
 RESULTS : Highest incidence figures are found in towns and villages with higher socioeconomic status that are farthest away from urban conurbations.

Incidence data collected by two specialist registries were used to compare incidence rates at ward level with relevant ward characteristics derived from routine census and Ordnance Survey data for England and Wales. An excess risk of childhood acute lymphoblastic leukaemia was found for wards which are farthest from large urban centres. The excess was

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greatest for wards of higher socioeconomic status and for children aged 1-7 years (the childhood peak). These findings in general support the hypothesis that childhood leukaemia has an infectious aetiology.

18

ALEXANDER, F.E., RICKETTS, T.J., MCKINNEY, P.A., CARTWRIGHT, R.A.
Community lifestyle characteristics and incidence of Hodgkin's disease in young people.

International Journal of Cancer; 48, 1991, no. 1, p. 10-14.

YEAR(S) OF DATA : 1984-1988.
DEPENDENT VARIABLES : incidence of Hodgkin's disease.
INDEPENDENT VARIABLES : age, sex, urbanicity, socioeconomic status, distance to built-up area, commuting distance.
POPULATION : England and Wales; 486 people, age 0-24 years, in 3,270 electoral wards.
CLASSIFICATION : urban = regions that were defined as wholly or predominantly urban by the Office of Population Censuses and Surveys.
rural = all other areas.
Inner zones : within built-up area.
Inner-intermediate zones : <5 km from built up area.
Outer-intermediate zones : 5-20 km from built up area.
Outer zones : >20 km from built up area.
RESULTS : Controlling for urbanicity and socioeconomic status communities far from built-up areas have the lowest risk. Cases away from built-up areas are more likely to be clustered.

Disease incidence rates for Hodgkin's disease (HD) at ages 0 to 24 from a specialist tumour registry have been regressed against relevant electoral ward characteristics derived from routine census and Ordnance Survey data for England and Wales. Proximity to built-up areas and higher socio-economic status (SES) emerge as significant risk factors. The relative risks are 1.21 (95% CI: 1.01-1.46) for high SES wards and 1.29 (1.05-1.58) for "inner zone" wards. No association of disease risk with distance travelled to work was apparent. Regions far from built-up areas have a lower overall incidence and a shift, particularly for males, of the age distribution towards older ages. The distribution resembles the intermediate pattern for HD reported from European rural areas of low SES but never previously for high SES. Isolated areas also show an increased intensity of spatial clustering.

19

HEUDES, D., CARLI, P.M., BAILLY, F., MILAN, C., MUGNERET, F.,
PETRELLA, T.

Myeloproliferative disorders in the department of Cote d'Or between 1980 and 1986.

Nouvelle Revue Française d'Hématologie; 31, 1989, no. 5, p. 375-378.

YEAR(S) OF DATA : 1980-1986
DEPENDENT VARIABLES : prevalence of 4 types of myeloproliferative disorders (MPD).
INDEPENDENT VARIABLES : age, sex, degree of urbanization.

cancer

POPULATION : France, Côte d'Or; 117 patients with a MPD.
CLASSIFICATION : urban = area of Dijon.

small towns,
rural areas.

RESULTS : all MPD's: no significant difference.
the 4 separate MPD types: no influence of place of habitation.

By the registry of hematopoietic malignancies in Cote d'Or, France 177 cases of myeloproliferative disorders diagnosed between 1980 and 1986 were studied. Cases were divided into 4 groups: chronic myelogenous leukemia, idiopathic myelofibrosis, polycythemia vera, essential thrombocythemia. The global standardized rates based on the world population were 3.5 per 100,000 in men and 1.9 in women (sex ratio = 1.8). The mean age for myeloproliferative disorders was 61 +/- 16 years. Incidence was slightly higher in urban than in rural areas, but the difference was not significant. The most common means of detection were routine hemogram, fatigue and thrombosis. Five-year survival curves showed large differences in prognosis, from 30% for chronic myelogenous leukaemia to 83% for polycythaemia vera.

20

POTTIER, D., LAUNOY, G., CHERIE, L., CHUBERRE, C., GIGNOUX, M.
Le cancer de l'oesophage dans le département du Calvados. Facteurs d'inégalités géographiques et sociales.
Bulletin du Cancer; 76, 1989, no. 10, p. 1111-1119.

YEAR(S) OF DATA : 1978-1983.
DEPENDENT VARIABLES : incidence figures for cancer of the esophagus.
INDEPENDENT VARIABLES : age, sex, area, type of employment.
POPULATION : France, Province of Calvados; 620 people with oesophageal cancer in 35 cantons.

CLASSIFICATION : The 'Zone de peuplement industriel ou urbain'- classification was used.
urban = 'des Zones de peuplement industriel ou urbain (ZPIU)'.
rural = 'des communes n'appartenant pas à une UUR (Unités Urbaines de Résidence)'.
very rural = 'rural profond' = 'complément aux ZPIU'.

RESULTS : Age adjusted incidence rates are higher in rural areas. Controlling for the importance of the agricultural sector, level of education, rural residence, and importance of apple growing, only bad housing shows a significant correlation with age adjusted incidence of cancer of the esophagus. In addition, higher risks are found for people working in heavy industry, agriculture and building industry.

The Calvados Registry of Digestive Tract Tumours registered 620 cases (582 males and 38 females) of oesophageal cancer during a six-year period. The age-standardized incidence rate (world standard) was 29.6 per 100,000 for males and 1.2 for females. The sex-ratio was 25. The rural area was a high-risk region compared to the urban, the age standardized rate was 38.8 per 100,000 vs 26.1 for males. The cantons from Caen showed a low risk compared to the département as a whole, while certain clustered cantons showed a high risk. An important proportion of poor housing characterized those cantons. Agriculture, industry

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and building were high-risk sectors. The risk of oesophageal cancer is twelve times higher in manual workers, agricultural or other, than in those in management or craftsmen.

21

BOUSTRON, M.C., FAIVRE, J., MILAN, C., BEDENNE, L., HILLON, P., KLEPPING, C.

Primary liver cancer in Côte d'Or (France).

International Journal of Epidemiology; 17, 1988, no. 1, p. 21-26.

YEAR(S) OF DATA : 1976-1983.
DEPENDENT VARIABLES : incidence of primary liver cancer (PLC).
INDEPENDENT VARIABLES : age, sex, area of residence, alcohol consumption.
POPULATION : France, Côte d'Or; 247 cases of PLC
CLASSIFICATION : urban = industrial and urban living zones including some rural areas in the suburbs of towns.
rural = deep rural zones.
RESULTS : risk of PLC higher in urban areas for men; for women the incidence rates were similar.

The registry of digestive tract tumours established for the department of Côte d'Or was used to study the incidence and some of the characteristics of primary liver cancer (PLC) in this area. The annual age-standardized incidence rate was much higher for males than for females. As compared to other areas the Côte d'Or is in the intermediate incidence areas. The risk of PLC was higher in urban than in rural areas in men. There was no significant variation in PLC incidence over the eight years of the study. Alfafoetoprotein levels over 200 ng/ml were observed in only 48.9% of the cases. Alfafoetoprotein measurement has to be complemented by other investigations in screening of high-risk patients. Liver cirrhosis was present in 70.9% of the cases in which the information was available. The male:female ratio in the non-cirrhotic group was 1.5:1, very different to the 8.8:1 in the cirrhotic group. Cirrhosis was associated with excessive alcohol consumption in 92% of cases. The prevalence of serological markers of hepatitis B virus infection was investigated in 91 patients. Hepatitis Bs-antigen was found in 8.8% and evidence of past or present infection in 28.2%. In view of the prevalence of chronic alcoholism in patients with cirrhosis it is suggested that alcohol leads to an increased risk of cirrhosis followed by an increased incidence of PLC.

22

BOYLE, P., HSIEH, C.-C., MAISONNEUVE, P., LA VECCHIA, C., MACFARLANE, G.J., WALKER, A.M., TRICHOPOULOS, D.

Epidemiology of pancreas cancer (1988).

International Journal of Pancreatology; 5, 1989, no. 4, p. 327-346.

YEAR(S) OF DATA : 1955-1985.
DEPENDENT VARIABLES : pancreas cancer incidence rates and mortality.
INDEPENDENT VARIABLES : age, sex, race, country, place of residence, tobacco smoking, alcohol consumption, coffee consumption, dietary factors, occupational factors, aspects of medical history.
POPULATION : several countries around the world. In 10 regions or countries urban/rural residence was classified: Miyagi in Japan; Slovakia; Saarland in Germany; Calvados in France; Doubs in France,

CLASSIFICATION : Szabolcs in Hungary; Norway; Cluj in Romania; England and Wales; New South Wales in Australia.
 : urban, rural.
 RESULTS : incidence rates among rural residents were equal or lower than rates among residents of urban areas, except for females of Szabolcs in Hungary.

The purpose of this article is to summarize the current status of the epidemiology of pancreas cancer, including both descriptive epidemiology and results from analytical epidemiology. Pancreas cancer is consistently reported to occur more frequently in men than in women, in blacks than in whites, and in urban rather than rural population groups. In some countries, the mortality rates continue to rise, whereas in others, declining levels of disease can be seen among members of younger birth cohorts. Although some of these patterns can be explained by variation in pancreas cancer risk factors, many cannot. Analytical studies consistently demonstrate that tobacco smoking increases the risk of cancer of the pancreas, and this appears, at the present time, to be the only clearly demonstrated risk factor for pancreatic cancer. Although the association with disease risk and coffee consumption, alcohol consumption, occupational exposures, diabetes, pancreatitis, and other factors requires clarification, it appears likely that the most fruitful research area in the coming years may involve exploration of pancreatic cancer risk and nutritional practices.

23

LAUNOY, G., COUTOUR, X. LE, GIGNOUX, M., POTTIER, D., DUGLEUX, G.

Influence of rural environment on diagnosis, treatment, and prognosis of colorectal cancer.

Journal of Epidemiology and Community Health; 46, 1992, no. 4, p. 365-367.

YEAR(S) OF DATA : 1978-1984.
 DEPENDENT VARIABLES : colorectal cancer history and survival.
 INDEPENDENT VARIABLES : age, sex, disease characteristics, place of residence.
 POPULATION : France, departement of Calvados; 1,331 colorectal cancers.
 CLASSIFICATION : The 'Zone de peuplement industriel ou urbain'-classification was used.
 RESULTS : For females, metastases were more common in the rural population. Inhabitants of rural areas were less frequently treated in specialised centres than urban inhabitants. A rural place of residence was a poor prognostic factor for survival among females, but not among males.

The aim of the study was to investigate the influence of rural environment on colorectal cancer history and survival in a well defined population. Patients with colorectal cancer diagnosed in the department of Calvados (France) were classified by place of residence (urban/rural) and information on clinical symptoms, tumour extension, treatment, and survival was collected. In both sexes, rural patients with colorectal cancers were treated less frequently in a specialised health care centre (40.0%) than patients from an urban population (53.4%). The difference was mainly but not entirely explained by distance from the specialised health care centre. In females in the rural population, cancers were diagnosed more frequently at the stage of severe clinical symptoms (22.1%) and metastases (18.8%) than they were in the urban population (15.5% and 12.3%). In addition among females a rural environment appeared to confer a worse prognosis (relative risk = 1.3). Findings suggest an

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inequality between rural and urban populations, especially for women. The loneliness of rural women leads to a delay in diagnosis and worse survival. In health education campaigns on colorectal cancer, efforts must be made to provide medical information to rural women in order to reduce the delay in diagnosis and improve survival.

24

POTTIER, D., LAUNOY, G., COUTOUR, X. LE, DUGLEUX, G., GIGNOUX, M.

Importance de la définition des zones urbaines dans l'étude des facteurs de risque de cancers.

Revue d'Epidémiologie et de Santé Publique; 37, 1989, no. 4, p. 391-395.

- YEAR(S) OF DATA : 1978-1984.
DEPENDENT VARIABLES : incidence and risk of colorectal cancer.
INDEPENDENT VARIABLES : sex, area type, classification of urban/rural.
POPULATION : France, Calvados; 589,260 inhabitants, all cases of colorectal cancer (n = 1,446).
CLASSIFICATION : 1) urban = 'l'unité urbaine' = conurbation $\geq 2,000$ inhabitants.
rural = rest.
2) 'la Zone de Peuplement Industriel ou Urbain' (ZPIU) = 'l'unité urbaine' + rural communities with some urban characteristics.
'rural profond' = rest.
3) urban = 'unités urbaines'.
'ZPIU en milieu rural' or 'ZPIU non urbaine'.
'rural profond'.
RESULTS : 1) in urban higher incidence and risk than in rural, especially among men.
2) in 'ZPIU' higher incidence and risk than in 'rural profond', especially among men.
3) men: in 'ZPIU non urbaine' much higher incidence and risk than in 'rural profond'; in urban incidence and risk were slightly higher than in 'ZPIU non urbaine'.
women: no significant differences between 'ZPIU non urbaine' and 'rural profond'; in urban higher incidence and risk than in 'ZPIU non urbaine' or 'rural profond'.

All cases of colorectal cancer between 1978 and 1984 have been collected in the Registry of digestive tract tumours in the "Department" of Calvados in France, with the aim to study the effect of residential location on cancer incidence. The risk-ratio was different in males and in females and between different types of urban areas. Using the urban category of "Zone de Peuplement Industriel ou Urbain" (ZPIU) increased the observed risk-ratio (1.6 for males, 1.2 for females), and enabled definition of homogeneous populations. The improved classification allowed a more discriminating analysis of the effect of residential location on risk of cancer in both sexes.

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relative risk while no other occupation was significantly associated with breast cancer. Social or occupational factors did not explain the rural/urban difference in risk seen in this study.

27

POLEDNAK, A.P., FLANNERY, J.T., JANERICH, D.T.

Cervical cancer rates by population size of towns: implications for cancer control programs.

Journal of Community Health; 16, 1991, no. 6, p. 315-323.

YEAR(S) OF DATA : 1982-1987.
DEPENDENT VARIABLES : standardized incidence ratios (SIRs) for invasive and in situ cervical cancer, ratio of in situ/invasive cancer.
INDEPENDENT VARIABLES : number of women age 15+ years, marital status, fertility, poverty prevalence, town size.
POPULATION : USA, Connecticut; total population size of all 148 towns with $\geq 2,500$ people.
CLASSIFICATION : total population size of the town of residence:
2,500-4,999,
5,000-9,999,
10,000-24,999,
25,000-49,999,
50,000+.
RESULTS : invasive cervical cancer: lowest SIR in towns 5,000-24,999 population, highest SIR in towns $\geq 50,000$ population.
in situ cancer: lowest SIR in towns 10,000-24,999 population, highest SIR in subgroup $\geq 100,000$ population.
ratio in situ/invasive cancer: lowest in towns 2,500-4,999 population, highest in towns 5,000-9,999 population.
multiple regression analysis: population size was not a significant predictor of the SIRs.

Incidence rates and standardized incidence ratios (SIRs) for invasive and in situ cervical cancers diagnosed in 1982-1987 were analyzed according to total population size of 148 towns in Connecticut. Previous studies have not considered socioeconomic or sociodemographic variables in analyzing cervical cancer rates in urban-rural or population density groups. In multiple regression analyses, increases in SIRs for invasive and in situ cancer from medium-sized to large towns were explained by differences in poverty prevalence or other socio-demographic variables.

28

SCHRIJVERS, C.T., STRONKS, K., MHEEN, D.H. VAN DE, COEBERGH, J.-W., MACKENBACH, J.P.

Validation of cancer prevalence data from a postal survey by comparison with cancer registry records.

American Journal of Epidemiology; 139, 1994, no. 4, p. 408-414.

29

BARNES, N., CARTWRIGHT, R.A., O'BRIEN, C., ROBERTS, B.,
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Variation in lymphoma incidence within Yorkshire Health Region.
British Journal of Cancer; 55, 1987, no. 1, p. 81-84.

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Incidence of cancers of the brain, the lymphatic tissues, and of leukemia and
the use of pesticides among Quebec's rural farm population, 1982-1983.
Geographia Medica; 19, 1989, p. 213-232.

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Étude de l'incidence de la leucémie lymphoïde chronique dans le
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Nouvelle Revue Française d'Hématologie; 28, 1986, no. 1, p. 23-26.

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Haematopoietic malignancies in Côte d'Or (France): a population based
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British Journal of Cancer; 53, 1986, no. 6, p. 811-815.

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CARLI, P.M., BAILLY, F., TAVERNIER, C., MILAN, C., HEUDES, D.,
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Multiple myeloma: epidemiological features in a well-defined population in
Burgundy, France.
International Journal of Epidemiology; 18, 1989, no. 2, p. 330-333.

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Epidemiology of oral cancer in Connecticut, 1935 to 1985.
Cancer; 65, 1990, no. 12, p. 2796-2802.

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MOUTET, J.P., ARVEUX, P., KURDI, E., HILLON, P., FAIVRE, J.
Incidence, diagnostic, traitement et pronostic du cancer du pancréas:
évolution en Côte-d'Or de 1976 à 1985.
Bulletin du Cancer; 78, 1991, no. 4, p. 323-330.

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Incidence des tumeurs coliques et rectales en fonction du caractère urbain et
rural de la zone de résidence, dans le département de l'Isère (1979-1985),
France.
Revue d'Epidémiologie et de Santé Publique; 39, 1991, no. 1, p. 17-23.

37

PIENKOWSKI, P., CABARROT, P., BRIANT-VINCENS, D., ESCOURROU, J.,
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Incidence du cancer colo-rectal dans le département de la Haute-Garonne.
Bilan de deux années d'enregistrement (1982-1983).
Gastroentérologie Clinique et Biologique; 10, 1986, no. 6-7, p. 497-503.

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Évolution de l'incidence du cancer colo-rectal dans le département de la
Côte-d'Or entre 1976 et 1985.
Gastroentérologie Clinique et Biologique; 13, 1989, no. 11, p. 860-864.

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Epidemiological evidence for distinguishing subsites of colorectal cancer.
Journal of Epidemiology and Community Health; 43, 1989, no. 4, p. 356-361.

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Zur Epidemiologie bösartiger Neubildungen des Atmungs- und oberen
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Laryngologie, Rhinologie, Otologie; 69, 1990, no. 3, p. 123-130.

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SWOBODA, H., FRIEDL, H.-P.

Incidence of cancer of the respiratory and upper digestive tract in urban and rural eastern Austria.

European Journal of Cancer; 27, 1991, no. 1, p. 83-85.

42

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Le cancer du sein dans le département de la Côte-d'Or (1982-1987). Registre bourguignon de pathologie gynécologique.

Bulletin de Cancer; 77, 1990, no. 1, p. 5-14.

43

KOCH, M., JENKINS, H., GAEDKE, H.

Risk factors of ovarian cancer of epithelial origin: a case control study.

Cancer Detection and Prevention; 13, 1988, no. 2, p. 131-136.

1.3 circulatory system

44

BARTON, S.N., COOMBS, D.W., MILLER, H.L., HUGHES, G.H., CUTTER, G.
Comparison of hypertension prevalence and control in 5,237 rural and urban Alabama residents.

Southern Medical Journal; 80, 1987, no. 10, p. 1220-1223.

YEAR(S) OF DATA : 1980-1981.

DEPENDENT VARIABLES : prevalence of hypertension, prevalence of uncontrolled hypertension, percentage of treated hypertensives.

INDEPENDENT VARIABLES : age, sex, race, area.

POPULATION : USA, Alabama; 5,237 residents.

CLASSIFICATION : urban = City of Birmingham.

rural = medically underserved rural area of east Alabama.

RESULTS : Higher percentages of hypertension among rural women compared to urban women. Lower percentages of hypertension among rural men compared to urban men. Percentage of uncontrolled hypertension was higher for urban white and black men as well as for urban white women as compared to their rural counterparts. Blood pressure control was better in the rural group.

Selected urban and rural Alabama populations were compared by age, sex, and race on the prevalence of hypertension and uncontrolled hypertension and the percentage of treated hypertensives with controlled blood pressure. The following results were found: (1) Rural women had a significantly higher prevalence of hypertension than Birmingham women. (2) The prevalence of uncontrolled hypertension was higher for urban white men than for their rural counterparts. (3) The prevalence of uncontrolled hypertension was higher for rural black

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women aged 30 to 39 than for the same age group of urban black women. (4) Rural dwellers generally had much better blood pressure control than urban, though this was not manifested evenly across groups. Significant differences were found for white men and women of all ages combined and in three of four age groups. Reasons for the urban-rural differences are unclear, but the rural area surveyed was served by nurse practitioner clinics that strongly emphasized patient education.

45

STAESSEN, J., AMERY, A., BERNARD, A., BRUAUX, P., BUCHET, J.P., BULPITT, C.J., CLAEYS, F., PLAEN, P. DE, DUCOFFRE, G., FAGARD, R., LAUWERYS, R.R., LIJNEN, P., NICK, L., SAINT REMY, A., ROELS, H., RONDIA, D., SARTOR, F., THIJS, L.

Blood pressure, the prevalence of cardiovascular diseases, and exposure to cadmium: a population study.

American Journal of Epidemiology; 134, 1991, no. 3, p. 257-267.

YEAR(S) OF DATA : 1985-1989.
DEPENDENT VARIABLES : cadmium levels in blood and urine, systolic pressure, diastolic pressure, prevalence of hypertension, presence of cardiovascular diseases.
INDEPENDENT VARIABLES : age, sex, alcohol intake, smoking habits, body mass, pulse rate, sodium:potassium ratio, exposure to cadmium and other heavy metals, cadmium and lead levels in blood, cadmium level in urine, use of contraceptive pill, urban/rural district.
POPULATION : Belgium, four districts; 2,086 subjects, age 20-88 years.
CLASSIFICATION : urban = Liège and Charleroi.
rural = Noorderkempen and Hechtel-Eksel.
RESULTS : Blood and urinary cadmium levels were higher in the rural districts than in the urban districts.
Among women higher diastolic bloodpressure in urban than in rural. Only in the urban districts, a high exposure to cadmium was associated with an elevation of systolic pressure.
Cardiovascular diseases: no urban/rural results.

In a population study conducted from 1985 to 1989 in Belgium, the authors investigated whether exposure to cadmium is associated with blood pressure elevation and with an increased prevalence of cardiovascular diseases. The participants, aged 20-88 years, constituted a random sample of the households living in two low exposure areas (n = 803) and two high exposure areas (n = 1,283). For each exposure level, an urban and a rural district were selected. The cadmium levels in blood and urine were significantly raised in the two high exposure areas compared with the two low exposure areas. Systolic pressure was similar in the two rural areas, but in the urban area with high exposure systolic pressure was 5 mmHg higher than in the control town. Diastolic pressure was similar in the four districts and the same was true for the prevalence of hypertension and of other cardiovascular diseases. Adjustment of systolic pressure for blood and urinary cadmium did not remove the difference in systolic pressure between both urban areas, suggesting that it was not related to the cadmium burden on the environment. Further analyses in individual subjects showed that neither blood pressure nor the presence of cardiovascular diseases were significantly and positively correlated with blood and urinary cadmium.

46

THOMAS, S.P., GROER, M.W.

Relationship of demographic, life-style, and stress variables to blood pressure in adolescents.

Nursing Research; 35, 1986, no. 3, p. 169-172.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : systolic and diastolic blood pressure.
INDEPENDENT VARIABLES : age, sex, race, residence, height, weight, body mass index, dietary practices, smoking habits, minutes of aerobic exercise per week, stress factors, family history of heart disease, diabetes, hypertension and stroke.
POPULATION : USA, Tennessee; 323 freshman high school students, mean age 15.5 years.
CLASSIFICATION : urban, suburban, rural.
RESULTS : systolic: urban significantly higher than suburban and rural.
diastolic: no significant difference.

The purpose of this study was to examine the relationship of selected anthropometric, demographic, life-style, and stress factors to blood pressure of freshman high school students. Significant predictors of higher systolic pressure in the regression analysis were age, gender, body mass index, and urban residence. Urban subjects also had poorer health habits. Significant predictors of diastolic pressure were body mass index, smoking, and lack of regular exercise. Gender differences in amount and types of stressors were independent of geographic location. Males and females exhibited different dietary and exercise patterns; males exercised more, but had less healthy eating habits.

47

WEILER, P.G., LUBBEN, J.E., CHI, I.

Hypertension in elderly people in a preventive health program.

American Journal of Preventive Medicine; 5, 1989, no. 4, p. 216-224.

YEAR(S) OF DATA : 1985-1986.
DEPENDENT VARIABLES : prevalence, degree and awareness of 2 types of hypertension.
INDEPENDENT VARIABLES : age, sex, race, marital status, family size, area of residence.
POPULATION : USA, California; 5,242 PHCAP participants, age ≥ 60 years.
CLASSIFICATION : urban = counties with major urban center $>250,000$.
semirural = counties with major urban center 50,000-250,000.
rural = counties with major urban center $<50,000$.
RESULTS : in urban higher prevalence and higher degree than in rural; in semirural less awareness than in rural or urban.
multivariate analysis: urban higher prevalence than rural, but in rural relatively more systolic hypertension; in semirural less awareness than in rural or urban.

Control of hypertension is increasingly being recognized as a significant component of any preventive health care program for the elderly because of the high prevalence of hypertension in this group and its impact on health, particularly cardiovascular diseases. This study evaluates the hypertension screening component in one of the oldest and largest

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health promotion programs for the elderly in the USA, the Preventive Health Care for the Aging Program (PHCAP) in California. Findings show that 26.7% of PHCAP participants had hypertensive readings on examination. Of these, 20% had mild hypertension, 5.6% moderate, and 1.1% severe hypertension. Urban participants were more likely than rural participants to have hypertension. Of those with severe hypertension, living alone was a significant factor when controlling for other variables. Overall, 40.2% of the hypertensive patients were not aware of their hypertension, and whites and Hispanics were less aware than blacks of their hypertensive status. Men were also less aware than women.

48

ALFREDSSON, L., HAMMAR, N., HOGSTEDT, C.

Incidence of myocardial infarction and mortality from specific causes among bus drivers in Sweden.

International Journal of Epidemiology; 22, 1993, no. 1, p. 57-61.

YEAR(S) OF DATA : 1971-1986.
DEPENDENT VARIABLES : 1) mortality from myocardial infarction (MI) and other diseases;
2) incidence of MI.
INDEPENDENT VARIABLES : age, county, occupation, socioeconomic group, calendar year.
POPULATION : Sweden; all (n = 9,446) male bus drivers from 1970 and 1975,
age 30-79 years, compared with other working men.
CLASSIFICATION : 1) urban = counties of Stockholm, Göteborg & Bohus,
Malmöhus.
rural = two regions in the northern and southern parts of
Sweden.
2) urban = Stockholm county.
rural = four other counties.
RESULTS : mortality: in Stockholm county and Göteborg & Bohus county
higher mortality from MI and ischaemic heart disease among bus
drivers than among other employed men;
incidence of MI (adjusted for age, calendar year and
socioeconomic group): in urban higher incidence rate among
men working as bus drivers in the 55-64 year age group,
compared to other occupationally stable men in the urban
region.

Previous studies have indicated that urban bus drivers have an increased risk of coronary heart disease. In the present investigation two separate studies were carried out. In the first study the mortality from myocardial infarction (MI), as well as from other causes for all male bus drivers in Sweden, was investigated and compared to those of other employed men over a 15-year period. A 50% increase in mortality from MI was observed among drivers in Stockholm and Göteborg and Bohus counties. No increased mortality from lung cancer, any cancer (all sites combined), or from all causes combined was observed for these drivers. For bus drivers in the predominantly rural areas no excess mortality from MI, or any other cause, was observed. In the second study the incidence of MI among male bus drivers, as compared with other employed men, was studied in five Swedish counties by case referent methods. An increased incidence of first events of MI, was observed for bus drivers in Stockholm county. According to these results, urban bus drivers thus have an increased risk of developing MI. The findings also suggest that factors in the work environment of urban bus drivers may contribute to this increased risk. Factors of possible importance are job strain, irregular working hours, a sedentary job, automobile exhaust fumes, and noise.

49

TIKKANEN, J., HEINONEN, O.P.

Risk factors for conal malformations of the heart.

European Journal of Epidemiology; 8, 1992, no. 1, p. 48-57.

YEAR(S) OF DATA : 1982-1983.
 DEPENDENT VARIABLES : Conal malformations in newborns.
 INDEPENDENT VARIABLES : age, maternal smoking, alcohol consumption, coffee consumption, tea consumption, drug consumption, exposure to chemicals, exposure to dust, illnesses, place of residence.
 POPULATION : Finland; all infants born during 1982 and 1983 with a congenital cardiovascular malformation (n = 90) and 756 controls.
 CLASSIFICATION : urban = towns >50,000 inhabitants.
 rural = communities ≤50,000 inhabitants.
 RESULTS : Place of residence is not a risk factor for conal malformations.

The possible effect of environmental factors during early pregnancy on the occurrence of conal malformations (CAS) in the offspring was studied in 90 cases and 756 controls. The cases represented all CAS-infants with anomalies such as transposition, Tetralogy of Fallot and truncus arteriosus verified in Finland during 1982 and 1983. Controls were randomly selected from all babies born in the same period. Case and control mothers were interviewed by midwives using a structured questionnaire approximately three months after delivery. Maternal alcohol consumption during the first trimester was more prevalent among CAS-mothers than controls, as was maternal upper respiratory infection. Maternal exposure to dyes, lacquers or paints at work during the first trimester showed an adjusted relative odds ratio of 2.9 (95% confidence interval 1.2-7.5) in logistic regression analysis. The risk of CAS was equal in urban and rural areas and not associated with maternal blood group, smoking, or coffee, tea, acetylsalicylic acid or diazepam consumption. Maternal exposures to plastic raw materials, disinfectants, pesticides, microwave-ovens or video display terminals at work were not factors associated with the risk of conal malformations.

50

VIKARI, J., ÅKERBLUM, H.K., NIKKARI, T., SEPPÄNEN, A., UHARI, M., PESONEN, E., DAHL, M., LÄHDE, P.L., PIETIKÄINEN, M., SUONINEN, P.
 Atherosclerosis precursors in Finnish children and adolescents. IV. Serum lipids in newborns, children and adolescents.
 Acta Paediatrica Scandinavica. Supplementum; 318, 1985, p. 103-109.

YEAR(S) OF DATA : 1980-1981.
 DEPENDENT VARIABLES : concentration of LDL-cholesterol, HDL-cholesterol and triglyceride.
 INDEPENDENT VARIABLES : age, sex, stage of sexual development, area, West/East, urban/rural.
 POPULATION : Finland; 3,596 children and adolescents, age 3, 6, 9, 12, 15 and 18 years and 630 newborns.
 CLASSIFICATION : urban = Helsinki, Kuopio, Oulu, Tampere and Turku.
 rural = their rural surroundings.
 RESULTS : LDL-cholesterol and total cholesterol concentrations lower in urban than in rural children and adolescents.
 No significant differences in newborns.

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A multicentre study on atherosclerosis precursors in children and adolescents in Finland was carried out in five urban and twelve rural areas in the autumn of 1980 and spring of 1981. Serum lipids, i.e. cholesterol (TC), HDL-cholesterol (HDL-C) and triglyceride (TG) concentrations were determined and LDL-cholesterol (LDL-C) was calculated in 630 newborns and 3,596 children aged 3, 6, 9, 12, 15 and 18 years. Newborn boys had lower mean TC, HDL-C and LDL-C values than the girls. During puberty, TC mean values decreased, more so in boys. The serum levels of HDL-C also decreased, especially in boys, and after passing puberty boys had lower mean HDL-C levels than girls. The HDL-C/TC ratio was similar in all age groups (0.29). The mean TG value increased with age. During sexual maturation, TG levels increased, more clearly in boys. There were no regional differences in serum lipid concentrations in the newborns, but in 3- to 18-year-old children the mean TC, LDL-C and TG values were lower in western than in eastern Finland. Mean TC and LDL-C values were lower in urban than in rural areas, but there was no difference in TG concentrations.

51

PASCHALIS, C., POLYCHRONOPOULOS, P., MAKRIS, N., KONDAKIS, X., PAPAPETROPOULOS, T.

Prevalence rate of cerebrovascular disease in the rural population of northwest Peloponnese, Greece. A direct epidemiological study. *European Neurology*; 29, 1989, no. 4, p. 186-188.

1.4 diabetes

52

PATTERSON, C.C., WAUGH, N.R.

Urban/rural and deprivation differences in incidence and clustering of childhood diabetes in Scotland.

International Journal of Epidemiology; 21, 1992, no. 1, p. 108-117.

YEAR(S) OF DATA : 1977-1983.
DEPENDENT VARIABLES : incidence and clustering of diabetes mellitus.
INDEPENDENT VARIABLES : age, sex, deprivation category, postcode area, urban/rural class of postcode sector.
POPULATION : Scotland; 2,183 children, age <19 years with a diagnosis of diabetes mellitus.
CLASSIFICATION : urban = postcode sectors with >50% of their area designed as 'locality'.
rural = postcode sectors with <10% of their area designed as 'locality'.
mixed = remaining sectors.
RESULTS : In urban lower incidence than in rural or mixed postcode sectors, but adjusted for all other factors, there was no significant urban/rural difference. No clustering of cases in specific urban or rural postcode sectors.

Scottish hospital discharges were monitored during the period 1977-1983 for new cases of diabetes mellitus in children aged ≤ 18 years. The postcode sector at the time of admission was available for 2,125 (97%) of the 2,183 cases, and was used as the basis for a small-area

analysis of urban/rural and socioeconomic differences in incidence and to test for clustering. Incidence rates standardized for age and sex showed important differences between the 16 Scottish postcode areas. At the sector level, the standardized rate was 20% lower in urban sectors compared to rural sectors, but this could be explained by area to area differences and by socioeconomic effects within areas. In contrast, significant socioeconomic differences in incidence were evident within areas which could not be explained by urban/rural effects, the children in deprived sectors having 80% of the risk of those in other sectors. Rates were particularly low among children in deprived urban sectors. Nevertheless, significant variations in incidence remained between the areas which could not be explained by either rural/urban or socioeconomic differences, indicating the existence of other important factors. Tests for clustering of cases both within postcodes sectors and across adjacent postcode sectors were also performed. Although clusters could be identified, they were no more common than would be expected by chance. Tests for space-time clustering were also negative.

53

KING, H., DIXON, J., SENATOR, G., SCHOONEVELDT, M., ZIMMET, P.
Type 1 (insulin-dependent) diabetes in Tasmania: prevalence and apparent regional differences.
Diabetologia; 31, 1988, no. 2, p. 93-97.

YEAR(S) OF DATA : 1984.
DEPENDENT VARIABLES : prevalence of Type 1 (insulin-dependent) diabetes, seasonality of onset (commencement of insulin treatment).
INDEPENDENT VARIABLES : age, sex, urban/rural region.
POPULATION : Australia, Tasmania; 442 diabetic subjects, age at onset <30 years.
CLASSIFICATION : urban = region with >30,000 persons.
rural = rest.
RESULTS : Higher prevalence in urban than in rural for all ages and the age groups 10-19 and 0-29 years.
There was a significant ($p < 0.1$) seasonal trend in the rural, but not in the urban group.

The results of a cross-sectional study of Type 1 (insulin-dependent) diabetes in the total population of Tasmania (Australia) are described. Prevalence fell in both sexes from the third decade of life. A statistically significant excess in prevalence was found in the urban, as compared with the rural, sector of the community. The urban relative risk was greatest in subjects aged 10-19 years. According to reported month of onset there was a suggestion of seasonal trend in the rural, but not in the urban subjects.

54

WAUGH, N.R.
Insulin-dependent diabetes in a Scottish region: incidence and urban/rural differences.
Journal of Epidemiology and Community Health; 40, 1986, no. 3, p. 240-243.

YEAR(S) OF DATA : 1980-1983.
DEPENDENT VARIABLES : incidence of insulin-dependent diabetes mellitus.
INDEPENDENT VARIABLES : age, sex, degree of urbanization, social class.

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- POPULATION** : Scotland, Tayside Region; all children (n = ?) in this region, age 0-19 years.
- CLASSIFICATION** : U/R (urban/rural) code 1: not relevant in Tayside.
U/R code 2 = situated in a continuous urban block of 100,000-999,999 population.
U/R code 3 = situated in a continuous urban block of 10,000-99,999 population.
U/R code 4 = situated in a continuous urban block of 1,000-9,999 population.
U/R code 5 = situated in a rural area or in a continuous urban block of less than 1,000 population.
urban = U/R codes 2, 3.
rural = U/R codes 4, 5.
city = U/R code 2 = conurbation of Dundee City.
town and country = U/R codes 3, 4, 5.
- RESULTS** : Rural rates were higher than urban, mainly among younger children (age 0-9 years).
Higher incidence in town and country for children of age 5-9 years and 15-19 years than in city.

Incidence of insulin-dependent diabetes mellitus in the 0-18 year age group was studied in Tayside Region, Scotland, for the years 1980 to 1983. The mean annual rate of 21.7 per 100,000 is high in international terms and suggests that the rise in incidence observed in Scotland in the 1970s has continued. Rural rates were significantly higher than the urban rates.

55

PATTERSON, C.C., SMITH, P.G., WEBB, J., HEASMAN, M.A., MANN, J.I.
Geographical variation in the incidence of diabetes mellitus in Scottish children during the period 1977-1983.
Diabetes Medicine; 5, 1988, no. 2, p. 160-165.

56

HAMMAN, R.F., GAY, E.C., CRUICKSHANKS, K.J., COOK, M., LEZOTTE, D.C., KLINGENSMITH, G.J., CHASE, H.P.
Colorado IDDM Registry. Incidence and validation of IDDM in children aged 0-17 yr.
Diabetes Care; 13, 1990, no. 5, p. 499-506.

1.5 digestive system

57

PINCHBECK, B.R., KIRDEIKIS, J., THOMSON, A.B.R.
Inflammatory bowel disease in northern Alberta. An epidemiologic study.
Journal of Clinical Gastroenterology; 10, 1988, no. 5, p. 505-515.

digestive system

YEAR(S) OF DATA : 1977-1981.
DEPENDENT VARIABLES : prevalence of Crohn's disease and ulcerative colitis.
INDEPENDENT VARIABLES : age group, sex, year of diagnosis, migration pattern, location of residence.
POPULATION : Canada, northern Alberta; 1,716 patients with Crohn's disease or ulcerative colitis in a population of 1,295,360 people.
CLASSIFICATION : urban = Edmonton (532,246 population).
rural = all other census divisions.
RESULTS : Prevalence of Crohn's disease was higher in urban than in rural areas.
Ulcerative colitis: no significant differences.

The Medical Record departments of the five teaching hospitals in Edmonton, plus the 37 community hospitals in the eight census districts of the northern half of the province of Alberta, Canada, were contacted, and a search was made of all patients with a discharge diagnosis of Crohn's disease or ulcerative colitis. Also, the patient records of all gastroenterologists in Edmonton were reviewed to discover patients with Crohn's disease or ulcerative colitis who had never been hospitalized within these census areas. There were 1,716 (70.9%) patients analyzed in this study. The factorial analysis of disease prevalence per 10⁵ population revealed that significant differences were found for location of residence, age, and sex. The prevalence of Crohn's disease was higher in urban than in rural areas and in females than in males, whereas the prevalence of ulcerative colitis was unaffected by these variables. The peak prevalence of Crohn's disease was below age 29 years in males and females, and the prevalence in young women at this age was approximately twice that in males. The highest prevalence of Crohn's disease was in urban females aged 20-39 years, with similar prevalence rates in urban males and rural females, and with the lowest prevalence rates in rural males. In conclusion, the demonstration of an age, location of residence, or effect of sex on the prevalence of inflammatory bowel disease requires multiple factorial analyses.

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EKBOM, A., HELMICK, C., ZACK, M., ADAMI, H.-O.

The epidemiology of inflammatory bowel disease: a large, population-based study in Sweden.

Gastroenterology; 100, 1991, no. 2, p. 350-358.

YEAR(S) OF DATA : 1965-1983.
DEPENDENT VARIABLES : incidence of ulcerative colitis (UC) and Crohn's disease.
INDEPENDENT VARIABLES : age, sex, year of diagnosis, positive histopathology, urban/rural residence at diagnosis.
POPULATION : Sweden, central part; all persons with ulcerative colitis (n = 2,509) or Crohn's disease (n = 1,469) in a population of about 1.3 million.
CLASSIFICATION : urban = county with 2/3 of residents living in towns of $\geq 20,000$ inhabitants.
rural = other counties.
RESULTS : For both diseases the age-adjusted incidence rates are higher in urban than in rural counties.

Previous population-based incidence studies of inflammatory bowel disease are limited by small numbers, short duration, or inadequate case-finding. To address these problems, all persons with confirmed ulcerative colitis or Crohn's disease were identified in the Uppsala

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Health Care Region from 1965 to 1983. Incidence rates for ulcerative colitis and Crohn's disease were higher in urban than in rural areas. The annual incidence rate of ulcerative colitis increased from less than 7 per 100,000 to more than 12 per 100,000 during the study period, while the rate for Crohn's disease remained between 5 and 7 per 100,000. The increase in the incidence of ulcerative colitis was the result of a marked increase in the number of patients with ulcerative proctitis. Analyses by 5-year birth cohorts suggest that those born from 1945 through 1954 were at higher risk for ulcerative colitis and Crohn's disease, and that this effect was accounted for by those born in the first half of the year. The seasonality in the cohort effect, combined with the urban preponderance of disease, suggests that environmental causes may be involved in Crohn's disease and ulcerative colitis.

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EKBOM, A., HELMICK, C., ZACK, M., ADAMI, H.-O.

Ulcerative proctitis in central Sweden 1965-1983. A population-based epidemiological study.

Digestive Diseases and Sciences; 36, 1991, no. 1, p. 97-102.

YEAR(S) OF DATA : 1965-1983.
DEPENDENT VARIABLES : incidence of ulcerative proctitis.
INDEPENDENT VARIABLES : age, sex, year, urban/rural county.
POPULATION : Sweden, six counties in the central part; 1,065 patients with ulcerative proctitis in a population of 1.3 million inhabitants.
CLASSIFICATION : urban = three counties in which two-thirds or more of the population live in communities >20,000 inhabitants.
rural = the remaining three counties.
RESULTS : Annual age-adjusted urban incidence rates consistently exceeded rural rates throughout the period.

In an epidemiological study of inflammatory bowel disease in the Uppsala Health Care Region (central Sweden), 1,065 cases of ulcerative proctitis were diagnosed from 1965 through 1983. Males predominated, with the male to female ratio 1.4:1. Annual incidence rates were higher in urban than in rural counties. The annual incidence rates increased threefold from 2.8 per 10⁵ to 6.6 per 10⁵ during the period, affecting all age groups over 14 years of age, in both rural and urban areas and in both sexes. Differences in temporal trends and certain other epidemiological characteristics between ulcerative proctitis and extensive ulcerative colitis suggest that ulcerative proctitis is a specific disease whose etiology differs from that of extensive ulcerative colitis.

60

KILDEBO, S., BRECKAN, R., NORDGAARD, K., BURHOL, P.G., JORDE, R.

The incidence of Crohn's disease in northern Norway from 1983 to 1986.

Scandinavian Journal of Gastroenterology; 24, 1989, no. 10, p. 1265-1270.

61

CHATRENET, P., MILAN, C., ARVEUX, P., PIARD, F., DUSSEYRE-GUION, L., FAIVRE, J.

Les polypes hyperplasiques colo-rectaux dans la population du département de la Côte-d'Or, entre 1976 et 1985.

Bulletin du Cancer; 78, 1991, no. 3, p. 229-235.

62

SHIVANANDA, S., PEÑA, A.S., MAYBERRY, J.F., RUITENBERG, E.J., HOEDEMAEKER, P.J.

Epidemiology of proctocolitis in the region of Leiden, The Netherlands. A population study from 1979 to 1983.

Scandinavian Journal of Gastroenterology; 22, 1987, no. 8, p. 993-1002.

63

SIBBALD, C.J., SHARP, J.C.

Campylobacter infection in urban and rural populations in Scotland.

Journal of Hygiene; 95, 1985, no. 1, p. 87-93.

64

THOMPSON, J.S., CAHOON, F.E., HODGE, D.S.

Rate of Campylobacter spp. isolation in three regions of Ontario, Canada, from 1978 to 1985.

Journal of Clinical Microbiology; 24, 1986, no. 5, p. 876-888.

65

TORFS, C.P., CURRY, C.J.R., BATESON, T.F., HONORÉ, L.H.

A population-based study of congenital diaphragmatic hernia.

Teratology; 46, 1992, no. 6, p. 555-565.

1.6 multiple sclerosis

66

LAUER, K., FIRNHABER, W.

Epidemiological investigations into multiple sclerosis in Southern Hesse: IV. The influence of urban and rural environment on disease risk.

Acta Neurologica Scandinavica; 72, 1985, no. 4, p. 403-406.

YEAR(S) OF DATA : ?.

PHYSICAL HEALTH: MORBIDITY

DEPENDENT VARIABLES : prevalence of patients with probable or definite multiple sclerosis.
INDEPENDENT VARIABLES : age, sex, residences since birth.
POPULATION : West Germany, Hessen; 388 MS patients, general population data.
CLASSIFICATION : urban = cities >50,000 population, characterized by heavy industry and services.
semi-rural = towns 5,000-50,000 population with mixed pattern of small industry, services and agriculture.
rural = communities <5,000 inhabitants, mainly agriculture and craft, some small industry.
RESULTS : highest prevalence in rural, lowest in semi-rural.

Residence during childhood and at disease onset in urban, semirural and rural communities respectively was investigated in an epidemiological group of MS patients in Southern Hesse (West Germany). Patients originated more frequently from small rural communities and less frequently from provincial towns than did the general population. However, residences at disease onset corresponded to the distribution of the general population. While results are generally in accord with other European results, they contrast with the US results of G. W. Beebe et al (1967) who found a higher risk for those born in urban areas.

67

LONG, K.A., WEINERT, C.

Descriptions and perceptions of health among rural and urban adults with multiple sclerosis.

Research in Nursing and Health; 15, 1992, no. 5, p. 335-342.

YEAR(S) OF DATA : 1987 (?).
DEPENDENT VARIABLES : physical and mental health, physical and psychosocial ability, social support, 'what it means to be healthy'.
INDEPENDENT VARIABLES : age, gender, education, income, length of illness, place of residence.
POPULATION : USA, 42 states; 316 white adults, age 30-71 years, with multiple sclerosis, living together with spouses.
CLASSIFICATION : urban = residents in or near a city with >30,000 population.
small town = <5,000 population.
rural = living on farm/ranch or within or near a town with <30,000 population.
RESULTS : no significant differences.

The purpose of this study was to compare the health descriptions and perceptions of rural- and urban-residing adults with multiple sclerosis (MS). Data were obtained from 361 adults (aged 30-71 years) who responded to a mail survey that included an open-ended question on the meaning of health and standardized self-report measures of physical health, mental health, and disability and social support. Health perceptions and descriptions of this chronically ill population were not significantly affected by their place of residence. It appeared that having MS had an effect on the description and perception of health which overrode differences related to place of residence.

68

HADER, W.J., ELLIOT, M., EBERS, G.C.
Epidemiology of multiple sclerosis in London and Middlesex County, Ontario, Canada.
Neurology; 38, 1988, no. 4, p. 617-621.

69

MILONAS, I., TSOUNIS, S., LOGOTHETIS, I.
Epidemiology of multiple sclerosis in northern Greece.
Acta Neurologica Scandinavica; 81, 1990, no. 1, p. 43-47.

70

LARSEN, J.P., RIISE, T., NYLAND, H., KVÅLE, G., AARLI, J.A.
Clustering of multiple sclerosis in the county of Hordaland, Western Norway.
Acta Neurologica Scandinavica; 71, 1985, no. 5, p. 390-395.

1.7 Parkinson's disease

71

KOLLER, W.C., VETERE-OVERFIELD, B., GRAY, C., ALEXANDER, C.,
CHIN, T., DOLEZAL, J., HASSANEIN, R.E.S, TANNER, C.
Environmental risk factors in Parkinson's disease.
Neurology; 40, 1990, no. 8, p. 1218-1221.

YEAR(S) OF DATA : ?
DEPENDENT VARIABLES : prevalence of Parkinson's disease (PD).
INDEPENDENT VARIABLES : number of years living in a rural versus urban environment,
source of drinking water, occupation, exposure to
herbicide/pesticide, age, gender.
POPULATION : USA, state of Kansas; 150 PD patients and 150 controls, age
39-84 years.
CLASSIFICATION : rural = town <2,500 people.
urban = rest.
RESULTS : multiple logistic regression:
significant positive association of the number of years of rural
residence with parkinsonism.

To investigate possible risk factors for Parkinson's disease (PD) was conducted a case-control study of 150 PD patients and 150 age- and sex-matched controls. Demographic data were collected including lifetime histories of places of residence, source of drinking water, and occupations such as farming. Subjects completed a detailed questionnaire regarding herbicide/pesticide exposure. Rural living and drinking well water were significantly increased in the PD patients. This was observed regardless of age at disease onset. Drinking well water was dependent on rural living. There were no significant differences between cases and controls for farming or any measure of exposure to herbicides or pesticides.

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RAJPUT, A.H., UITTI, R.J., STERN, W., LAVERTY, W.

Early onset Parkinson's disease in Saskatchewan - environmental considerations for etiology.

Canadian Journal of Neurological Sciences; 13, 1986, no. 4, p. 312-316.

YEAR(S) OF DATA : 1968-1985.
DEPENDENT VARIABLES : prevalence of early onset idiopathic Parkinson's Disease (EPD).
INDEPENDENT VARIABLES : age, sex, ethnic background, occupation, birthplace, residence and source of drinking water during the first 15 years of life.
POPULATION : Canada, Saskatchewan; 21 EPD patients born between 1904 and 1962.
CLASSIFICATION : urban = cities and towns.
rural = villages, hamlets and farms = community with ≤ 169 persons.
RESULTS : There is a predisposition to EPD in those raised in rural communities.

The cause of idiopathic Parkinson's Disease (PD) is not known but it is believed to be related to some environmental agent(s). Given a long preclinical interval and onset of symptomatology around age 60 years, it becomes impossible to identify and analyze all prior environmental factors satisfactorily. To circumvent these difficulties, the childhood environment was evaluated in those PD patients whose symptoms began at age 40 years or earlier. There were 21 early onset idiopathic Parkinson's Disease (EPD) patients who were born and raised in the province of Saskatchewan, Canada. Nineteen of these 21 patients spent the first 15 years of life exclusively in rural communities in Saskatchewan. Detailed population analysis indicates a strong predisposition to EPD in those raised in rural areas ($p = 0.0154$). All but one case utilized exclusively well water for the first 15 years of life. It is concluded that rural Saskatchewan environments contribute to EPD and that well water used in childhood should be considered as a potential vehicle for the etiological agent.

73

VIERGE, P., MARAVIC, C.V., FRIEDRICH, H.-J.

Life-style and dietary factors early and late in Parkinson's disease.

Canadian Journal of Neurological Sciences; 19, 1992, no. 2, p. 170-173.

YEAR(S) OF DATA : 1989-1990.
DEPENDENT VARIABLES : being a Parkinson patient.
INDEPENDENT VARIABLES : place of residence (past and present), age, dietary habits (past and present), past mushroom consumption, food preferences, childhood water supply.
POPULATION : Germany, Lübeck; 71 Parkinson disease patients diagnosed as such before the age of 65 and 103 controls.
CLASSIFICATION : urban = large towns ($\geq 50,000$ inhabitants),
small towns (5,000-50,000 inhabitants).
rural = villages $< 5,000$ inhabitants.
RESULTS : Living in villages or small towns during primary school time was significantly more frequent among patients.

This study investigated features of life-style and dietary habits early and late in life of patients with idiopathic Parkinson's disease (IPD). Living in villages during primary school time was

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more frequent among IPD patients, and in the urban environment patients had lived less frequently in larger-sized towns. Mushroom harvesting during childhood was more frequent among patients. No difference between patients and controls was found in childhood water supply, habits of fishing in the countryside or at the seaside, and eating such fish. Actual food preference in patients was greater for almonds and plums, while no difference was found in the actual intake of mushrooms, peanuts, oil-dressed salad, fish and animal offals. This study did not indicate a higher consumption of foods known to harbour heavy metals and pesticides in IPD patients either long before or during the disease. Reduced consumption of foodstuffs rich in vitamin E, as reported previously for premorbid patients, is no longer observed in patients with overt disease.

74

GRANIERI, E., CARRERAS, M., CASETTA, I., GOVONI, V., TOLA, M.R., PAOLINO, E., MONETTI, V.C., BASTIANI, P. DE
Parkinson's disease in Ferrara, Italy, 1967 through 1987.
Archives of Neurology; 48, 1991, no. 8, p. 854-857.

75

ZAYED, J., DUCIC, S., CAMPANELLA, G., PANISSET, J.C., ANDRÉ, P., MASSON, H., ROY, M.
Facteurs environnementaux dans l'étiologie de la maladie de Parkinson.
Canadian Journal of Neurological Sciences; 17, 1990, no. 3, p. 286-291.

1.8 musculoskeletal system

76

BAUDOIN, C., FARDELLONE, P., POTARD, V., SEBERT, J.L.
Fractures of the proximal femur in Picardy, France, in 1987.
Osteoporosis International; 3, 1993, no. 1, p. 43-49.

YEAR(S) OF DATA : 1987.
DEPENDENT VARIABLES : incidence rates of hip fractures, length of hospitalisation.
INDEPENDENT VARIABLES : incidence rates: age, sex, degree of urbanisation.
length of hospitalisation: age, sex, fracture site.
POPULATION : France, Picardy region; 1,178 patients with hip fractures, age ≥ 20 years.
CLASSIFICATION : urban = cities >5,000 inhabitants.
semi-rural = towns 500-5,000 inhabitants.
rural = villages <500 inhabitants.
RESULTS : incidence: urban greater than semi-rural and rural, semi-rural greater than rural (age- and sex- adjusted).
length of hospitalisation: no results.

During 1987, 1,178 hip fractures were recorded in the 28 clinical centres, public and private, of the Picardy region (1.8 million inhabitants). Patients under 20 years and those with metastatic cancer and myelomatous fractures were excluded. The crude incidence rate per 10,000 person years was 13.4 for women and 5.4 for men (female/male ratio 2.6). These

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incidences are among the lowest recorded in Northern Europe. Women with trochanteric fractures were older than those with cervical ones, but no difference was observed for men. After adjusting for age and sex, the incidence of hip fracture was greater in urban (10.5 per 10,000 person years) and semi-rural areas (8.2) than in rural areas (5.3). The mean bed-days per patient (+/- SD) was 21.6 +/- 16.0 (quartiles: 13-17-26 days); no difference was observed between sex or age classes. Data in different countries, mostly European, were compared with the Picardy region.

77

FINSEN, V., BENUM, P.

Changing incidence of hip fractures in rural and urban areas of central Norway. *Clinical Orthopedics and Related Research*; 1987, no. 218, p. 104-110.

YEAR(S) OF DATA : 1972-1973 and 1983-1984.
DEPENDENT VARIABLES : incidence of trochanteric and cervical hip fractures.
INDEPENDENT VARIABLES : age, sex, degree of urbanization.
POPULATION : Norway, North and South Trøndelag; 101,739 people of age ≥ 50 years, in municipalities served by four hospitals.
CLASSIFICATION : urban = city of Trondheim.
rural = municipalities where >20% of the working population were engaged in agriculture, forestry or fishing.
semirural = remaining municipalities.
RESULTS : highest incidence in urban areas, lowest incidence in rural areas, intermediate in semirural areas; most marked for cervical fractures and for women.

The incidence of hip fractures in central Norway is reported for the periods of 1972-1973 and 1983-1984. The incidence of hip fracture for women had increased by approximately 22% in the intervening period. The region under investigation was subdivided into urban, semirural, and rural areas. The incidence was highest in the urban areas and lowest in the rural areas during both periods. This was most marked for cervical fractures and for women. The increase in incidence was the same in the urban and rural populations. A possible reason for the lower incidence of hip fractures in rural communities is that a more physically active life-style may protect against osteoporosis and fracture.

78

JÓNSSON, B., GÄRDSSELL, P., JOHNELL, O., REDLUND-JOHNELL, I., SERNBO, I.

Differences in fracture pattern between an urban and a rural population: a comparative population-based study in southern Sweden.

Osteoporosis International; 2, 1992, no. 6, p. 269-273.

YEAR(S) OF DATA : 1988.
DEPENDENT VARIABLES : incidence of hip fractures.
INDEPENDENT VARIABLES : age, sex, place of residence.
POPULATION : Sweden, Malmö and Sjöbo; 1,268 persons, age 40, 50, 60, 70 or 80 years.

CLASSIFICATION : urban = city of Malmö, 236,000, residents.
 rural = Sjöbo, 15,000, residents.
 RESULTS : total population and women age 70 years:
 urban significantly higher prevalence than rural.

Differences in the incidence of hip fractures have been reported between urban and rural areas. In this population-based study the characteristics of fracture patterns between the city of Malmö in the south of Sweden, and the nearby rural district of Sjöbo were compared. A total of 782 individuals in Malmö and 486 in Sjöbo were invited to participate. Fracture history for all invited was registered. The odds ratio for fracture was higher in Malmö, particularly for women over 70 years. More than half of the urban women aged 70 had a history of a fracture. A fourfold increase in fracture prevalence between the ages of 60 and 70 years was observed in women in Malmö, whereas the prevalence doubled in Sjöbo. The differences in fracture patterns between these urban and rural communities may be explained by different lifestyles.

79

LARSSON, S., ELIASSON, P., HANSSON, L.-I.

Hip fractures in northern Sweden 1973-1984. A comparison of rural and urban populations.

Acta Orthopaedica Scandinavica; 60, 1989, no. 5, p. 567-571.

YEAR(S) OF DATA : three periods between 1973-1984.
 DEPENDENT VARIABLES : hip-fracture incidence.
 INDEPENDENT VARIABLES : age, sex, population density, year.
 POPULATION : Sweden, counties of Norrbotten and Västerbotten; all (3,644)
 cervical or trochanteric fractures in patients, age ≥ 50 years.
 CLASSIFICATION : urban = Umeå and Luleå, together 150,000 inhabitants.
 rural = mountain area, 95,500 inhabitants.
 area between urban and rural areas.
 RESULTS : significant:
 age-adjusted incidence rates increased more in urban and became higher than in rural.

The hip-fracture incidence in persons of age 50 years and older in the two northernmost counties of Sweden was studied during three periods between 1973 and 1984. The mean age rose from 75 to 78 years, and the annual number of fractures increased from 511 to 754. Half of this increase could be attributed to demographic aging. For persons 80 years and older, the fracture incidence in 1983/84 was higher ($p < .01$) than the fracture incidence in 1973/74. The women/men ratio was approximately 2:1 during the survey. The crude fracture incidence rate rose from 4.4 to 5.8 fractures per 1,000 women of age 50 years and older; the corresponding figures for men were 2.3 and 3.4. Comparison of a rural mountain population with the population of the cities Umeå and Luleå revealed a lower age-adjusted hip-fracture incidence rate in the rural area during the final part of the study ($p < .001$). In the rural population, there was no change in age-specific incidence during the survey, while in the two cities the age-specific incidence in person of age 75 years and older was higher in 1983/84 compared with 1973/74.

80

MANNIUS, S., MELLSTRÖM, D., ODÉN, A., RUNDGREN, A., ZETTERBERG, C.

Incidence of hip fracture in Western Sweden 1974-1982: Comparison of rural and urban populations.

Acta Orthopaedica Scandinavica; 58, 1987, no. 1, p. 38-42.

YEAR(S) OF DATA : 1974-1982.
DEPENDENT VARIABLES : incidence of hip fractures.
INDEPENDENT VARIABLES : age, sex, year, place of residence.
POPULATION : Sweden, Skaraborg and Göteborg; 3,030 patients with fresh hip fractures (= all fracture patients in the region).
CLASSIFICATION : urban = Göteborg (440,000 inhabitants).
rural = Skaraborg County (270,448 inhabitants, largest cities <46,000 inhabitants).
RESULTS : In urban higher incidence than in rural (1981).
In urban higher increase of fractures in women ≥ 50 years than in urban.
Relative increase in trochanteric hip fractures in rural but not in urban.
Trochanteric fractures in rural were relatively more frequent in older age groups in women than trochanteric fractures in urban.

Several epidemiological studies in northern Europe have shown that fractures in the elderly exceed the expected increase in the aging populations. In this study the incidence of hip fracture in the rural county of Skaraborg and the city of Göteborg in Sweden were compared. After adjustment for age changes in the population, the incidence of hip fracture in Skaraborg County was lower than in Göteborg during the period 1974-1984. The non-age-related increase in the incidence of fractures found in Göteborg was not confirmed in the rural area.

81

SERNBO, I., JOHNNELL, O., ANDERSSON, T.

Differences in the incidence of hip fracture. Comparison of an urban and a rural population in southern Sweden.

Acta Orthopaedica Scandinavica; 59, 1988, no. 4, p. 382-385.

YEAR(S) OF DATA : 1981-1984.
DEPENDENT VARIABLES : incidence of hip fractures, destination of patients, cause of trauma.
INDEPENDENT VARIABLES : age, sex, area of residence, origin of patients.
POPULATION : Sweden, southern part; 2,185 patients with hip fractures.
CLASSIFICATION : urban = city of Malmö (1,487 inhabitants/km²).
rural = Ystad Hospital, which serves Ystad (50 inhabitants/km²), Skurup and Sjöbo.
RESULTS : lower incidence among rural women, age ≥ 65 years, and rural men, age ≥ 80 years, compared with the urban population.
female patients in urban area came more often from a geriatric hospital ward and less often from an old people's home than in rural.

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urban patients stayed longer at the acute orthopedic ward than rural patients.
higher rate of urban patients were discharged to geriatric hospitals than rural patients.
in rural more uncertain causes of trauma than in urban.

The incidence of hip fracture from 1981 to 1984 inclusive in the urban population of the city of Malmö was compared with three rural municipalities around the city of Ystad in southern Sweden. A higher incidence of hip fracture was found in the city of Malmö, especially among women. Patients with a hip fracture in Malmö had a lower mean age. Female patients in Malmö lived more often alone or in institutions.

82

CORNELISSEN, P.G.J., RASKER, J.J., VALKENBURG, H.A.

The arthritis sufferer and the community: a comparison of arthritis sufferers in rural and urban areas.

Annals of the Rheumatic Diseases; 47, 1988, no. 2, p. 150-156.

- YEAR(S) OF DATA : ?.
- DEPENDENT VARIABLES : activities, problems, needs and satisfaction of patients with rheumatoid arthritis or osteoarthritis.
- INDEPENDENT VARIABLES : age, sex, marital status, social situation, car ownership, age of housing, distances to public transport and supermarket, functional capacities.
- POPULATION : The Netherlands, region of Enschede; 202 patients with arthritis and 203 controls.
- CLASSIFICATION : urban = city >100,000 inhabitants (Enschede).
rural = village where $\geq 20\%$ of the population work in agriculture or an urbanised rural community with <20,000 population without an explicit regional service function.
- RESULTS : Rural patients more frequently went out of their homes, walked longer without resting, went more frequently to public places (pharmacy, bank, post office), went less frequently to the hospital, went out more frequently to see their friends and relatives and were more content than urban patients.

One hundred and two rural patients and 100 urban patients with rheumatoid arthritis and osteoarthritis and 203 age and sex matched controls were visited in their homes to evaluate their problems, needs, and expectations. Although one would expect disability to affect the mobility of a person, it was found that rural patients were more mobile than their urban counterparts despite the same degree of functional disability. They were more content with their lot, even though their circumstances were less favourable. Both groups of patients had little contact with their general practitioners, social workers, or district nurses, and lacked information about their disease and the availability of financial grants or home adaptations. The main problem for the individual patient was not pain, but the frustration of being unable to do things they used to do and of dependency on others.

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THOUEZ, J.-P., JOLY, M.-F., RANNOU, A., BUSSIÈRE, Y., BOURBEAU, R.
Geographical variations of motor-vehicle injuries in Quebec, 1983-1988.
Social Science & Medicine; 33, 1991, no. 4, p. 415-421.

YEAR(S) OF DATA : 1983-1988.
DEPENDENT VARIABLES : average motor vehicle morbidity in regions.
INDEPENDENT VARIABLES : age, sex, population density, urban/rural region of accident.
POPULATION : Canada, province of Quebec; 2,818 severe cases and 18,494 non-severe cases.
CLASSIFICATION : urban = region >1,000 inhabitants and >400 inhabitants/km².
rural = other regions.
RESULTS : Nonsevere accidents are more frequent in urban areas. Severe accidents are more frequent in rural areas.

Motor vehicle accident data from the auto insurance registry of Quebec for 1983-1988 are used to evaluate the geographical distribution of risk factors in accidents. Over the 97 Municipalites Regionales de Comte (MRCs), more nonsevere accidents were recorded in urban MRCs and more severe accidents in rural MRCs. Morbidity was higher in urban MRCs for women and in rural MRCs for men. MRCs with rates of severe or nonsevere accidents that were twice that of Quebec as a whole were identified using a standard morbidity ratio. A logit regression model was used to evaluate demographic characteristics of driver and passenger and place of accident (region, density) in association with high risk zones. In both models for the severely and nonseverely injured, women and people age 65+ were low-risk groups for accidents. The population of age 16-24 is most at risk.

84

FALCH, J.A., KAASTAD, T.S., BØHLER, G., ESPELAND, J., SUNDSVOLD, O.-J.
Secular increase and geographical differences in hip fracture incidence in Norway.
Bone; 14, 1993, no. 4, p. 643-645.

85

JARNLO, G.-B., JAKOBSSON, B., CEDER, L., THORNGREN, K.G.
Hip fracture incidence in Lund, Sweden, 1966-1986.
Acta Orthopaedica Scandinavica; 60, 1989, no. 3, p. 278-282.

86

MADHOK, R., MELTON, L.J. 3d., ATKINSON, E.J., O'FALLON, W.M., LEWALLEN, D.G.
Urban vs rural increase in hip fracture incidence. Age and sex of 901 cases 1980-89 in Olmsted County, U.S.A.
Acta Orthopaedica Scandinavica; 64, 1993, no. 5, p. 543-548.

87

HALL, A.J., BARKER, D.J.P.

Perthes' disease in Yorkshire.

Journal of Bone and Joint Surgery. British Volume; 71-B, 1989, no. 2,

p. 229-233.

88

RYAN, M.D., NACHEMSON, A.

Thoracic adolescent idiopathic scoliosis: perinatal and environmental aspects in a Swedish population and their relationship to curve severity.

Journal of Pediatric Orthopedics; 7, 1987, no. 1, p. 72-77.

1.9 respiratory system

89

HEINONEN, O.P., HORSMANHEIMO, M., VOHLONEN, I., TERHO, E.O.

Prevalence of allergic symptoms in rural and urban populations.

European Journal of Respiratory Diseases. Supplement; 152, 1987, p. 64-69.

YEAR(S) OF DATA : 1980.

DEPENDENT VARIABLES : allergic symptoms, prevalence of provoking factors.

INDEPENDENT VARIABLES : age, sex, place of residence.

POPULATION : Finland, eastern part; 1,195 farmers and 1,200 urban citizens.

CLASSIFICATION : urban = municipality of Varkaus (industry).

rural = municipality of Leppävirta (farming).

RESULTS : controlling for sex and age, no significant difference between urban and rural sample was found in prevalence of symptoms.

large differences were observed in the extent to which various factors were reported to provoke allergic symptoms.

in the urban sample these factors were more often related to living conditions.

in the rural sample they were more work-related.

In order to compare the prevalences of common allergic symptoms identical postal questionnaires were sent to all farmers of a rural municipality in eastern Finland and to a sample of similar size in the adjacent urban municipality. To investigate the validity of the survey random subsamples of each study group participated in health examinations. In both the rural and urban populations subjects most frequently suffered from allergic rhinitis. The proportions of individuals with any one of the five allergic symptoms recorded did not differ significantly in the two populations. Asthma was somewhat more frequent among the urban than among the rural population. This difference could be due to the difference in smoking habits. The factors reported to provoke allergic symptoms were significantly different in the two groups. In the rural population the provoking factors were mostly work-related, whereas in the urban population these factors were related to living conditions.

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90

POPP, W., ZWICK, H., STEYRER, K., RAUSCHER, H., WANKE, T.
Sensitization to aeroallergens depends on environmental factors.
Allergy; 44, 1989, no. 8, p. 572-575.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : incidence of clinically manifest respiratory allergies and subclinical sensitization to aeroallergens.
INDEPENDENT VARIABLES : area, smoking habits.
POPULATION : Austria; 362 male subjects, age 15-28 years, who underwent routine venipuncture for exclusion of venereal diseases.
CLASSIFICATION : urban = Vienna, Linz ('polluted area').
rural = 'far from large town or major industries' or 'unpolluted area'.
RESULTS : incidence of clinically manifest allergies: no significant differences.
sensitization: specific IgE to each of the investigated allergens were found more often in urban than in rural, especially IgE to house dust mite; in urban more often positive Phadiatop multi RAST found than in rural.

Respiratory allergies and subclinical sensitization to aeroallergens were investigated in 129 rural and in 222 urban probands in Austria. The incidence of respiratory allergies was not significantly higher among the urban population. Sensitization to aeroallergens was investigated with Phadezym RAST (house dust mite, Cladosporium, orchard grass, birch pollens) and the Phadiatop multi RAST and found to be significantly more frequent in polluted than in unpolluted areas. Allergen-specific IgE was detected in 37.8% of urban probands and in 25.6% of rural probands with Phadezym RAST and a positive Phadiatop multi RAST was found in 43.7% versus 32.6%.

91

RIJCKEN, B., SCHOUTEN, J.P., WEISS, S.T., SPEIZER, F.E.,
LENDE, R. VAN DER

The relationship of nonspecific bronchial responsiveness to respiratory symptoms in a random population sample.

American Review of Respiratory Disease; 136, 1987, no. 1, p. 62-68.

YEAR(S) OF DATA : 1967-1984.
DEPENDENT VARIABLES : prevalence of respiratory symptoms, prevalence of positive histamine threshold tests ($PC_{10} \leq 16$ mg/ml).
INDEPENDENT VARIABLES : age, sex, smoking habits, histamine threshold values, area of residence.
POPULATION : the Netherlands, Vlaardingen and Vlagtwedde; 1,905 persons, age ≥ 14 years.
CLASSIFICATION : urban = Vlaardingen.
rural = Vlagtwedde.
RESULTS : no significant differences.

The relationship of airway responsiveness to respiratory symptom prevalence has been studied in a cross-sectional analysis of a random subpopulation from a large-scale population study on chronic obstructive pulmonary disease (COPD) being conducted in the Netherlands.

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SPINACI, S., AROSSA, W., BUGIANI, M., NATALE, P., BUCCA, C.,
CANDUSSIO, G. DE

The effects of air pollution on the respiratory health of children: a
cross-sectional study.

Pediatric Pulmonology; 1, 1985, no. 5, p. 262-266.

- YEAR(S) OF DATA : 1980-1981.
- DEPENDENT VARIABLES : prevalence of respiratory symptoms (cough, bronchial secretions, wheezing, shortness of breath, asthma, acute respiratory illness, respiratory troubles in the first two years of life), lung function (FVC, FEV₁, FEF_{25-75%}, V_{max50%}).
- FVC = forced vital capacity
FEV₁ = forced expiratory volume in 1 second
FEF_{25-75%} = forced expiratory flow between 25 and 75% of FVC
V_{max50%} = maximal expiratory flow at 50% of FVC
- INDEPENDENT VARIABLES : age, sex, height, socioeconomic status (father's total years of education), active and passive smoking, central heating, type of stove, exhaust hood use, concentrations of pollutants, geographic area.
- POPULATION : Italy, area of Turin; 2,385 school children, mean age 11 years.
- CLASSIFICATION : urban central Turin (UC),
urban peripheral Turin (UP),
suburban area (SU).
- RESULTS : Prevalence of bronchial secretions higher in urban than in suburban. Prevalence of asthma lower in urban than in suburban.
Lower FEV₁ and forced airflow rates in urban than in suburban.

To investigate the effects of air pollution on the respiratory health of children, a comparative study was undertaken of 2,385 school children who lived in central urban, peripheral urban, and suburban areas in the area of Turin, Italy. Pollutant concentrations in central and peripheral urban areas were above commonly accepted safety levels for respiratory health, while concentrations in the suburban area were within acceptable limits. Results showed that children from both urban areas had lessened pulmonary function and a higher prevalence of bronchial secretion with common colds than did those from the suburban area. These differences persisted after corrections for exposure to indoor pollutants, active or passive smoking, socioeconomic status, and sex. Parental cigarette smoking was related to a fall in FEV₁ and an increased incidence of acute respiratory illnesses and chronic cough in children. Although boys had higher lung volumes and lower air flow, regression analysis showed no significant influence of the interactions "sex-geographic area" and "sex-smoking" on lung function. It was concluded that air pollution has a significant effect on the respiratory health of children.

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VIEGI, G., PAOLETTI, P., CARROZZI, L., VELLUTINI, M., DIVIGGIANO, E.,
DI PEDE, C., PISTELLI, G., GIUTINI, G., LEBOWITZ, M.D.

Prevalence rates of respiratory symptoms in Italian general population
samples exposed to different levels of air pollution.

Environmental Health Perspectives; 94, 1991, p. 95-99.

respiratory system

YEAR(S) OF DATA : 1980-1982 and 1985-1988.
DEPENDENT VARIABLES : prevalence of 13 different types of respiratory symptoms and diseases.
INDEPENDENT VARIABLES : age, sex, education, zone of residence, smoking habits, lifetime cigarette consumption (pack-years), exposure, familial history for respiratory/allergic disorders and other risk factors.
POPULATION : Italy, areas of Pisa and the Po Delta; 6,206 people, age 8-64 years.
CLASSIFICATION : urban = southeast part and southwest part of Pisa and Cascina (suburbs of Pisa).
rural = Po Delta.
RESULTS : significant:
higher prevalence of all the respiratory symptoms and diseases in urban than in rural, except current asthma.
multiple logistic regression:
urban residence significantly associated with all respiratory symptoms except chronic phlegm.

Two general population samples living in the unpolluted, rural area of the Po Delta (northern Italy) and in the urban area of Pisa (central Italy) are surveyed. Each subject filled out a standardized interviewer-administered questionnaire. The Pisa sample was divided into three groups according to their residence in the urban-suburban areas and to outdoor air pollution exposure (automobile exhaust only or industrial fumes as well). Significantly higher prevalence rates of all the respiratory symptoms and diseases were found in Pisa compared with the rural Po Delta. In particular, rhinitis and wheezing symptoms were higher in all the three urban zones; chronic cough and phlegm were higher in the zone with the automobile exhaust and the additional industrial exposure. Current smoking was more frequent in the Po Delta, but the urban smokers had a higher lifetime cigarette consumption. Childhood respiratory trouble and recurrent respiratory illnesses were evenly distributed. Exposure to parental smoking in childhood and lower educational level were more frequent in Po Delta, whereas familial history of respiratory/allergic disorders and work and indoor exposures were more often reported in the city. Multiple logistic regression models estimating independently the role of the various risk factors showed significant odds ratios associated with residence in Pisa for all the symptoms but chronic phlegm. In conclusion, these preliminary analyses indicate an urban factor related to the rates of respiratory symptoms and diseases in Italy in the 1980s.

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GERGEN, P.J., MULLALLY, D.I., EVANS, R. 3d.

National survey of prevalence of asthma among children in the United States, 1976 to 1980.

Pediatrics; 81, 1988, no. 1, p. 1-7.

YEAR(S) OF DATA : 1976-1980.
DEPENDENT VARIABLES : prevalence of asthma.
INDEPENDENT VARIABLES : age, sex, race, socioeconomic factors, place of residence (urban/rural), region, atopic state, skin test reactivity, cigarette smoking, perceived health.
POPULATION : USA; 7,399 children and adolescents, age 3-17 years.
CLASSIFICATION : urban = towns >2,500 people.
rural = rest.
RESULTS : in urban areas higher prevalence of asthma than in rural areas.

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The trend in the prevalence of reported asthma was determined from data collected by the National Center for Health Statistics. The reported prevalence of ever having asthma increased among 6- to 11-year-old children between the first (1971 to 1974) and second (1976 to 1980) National Health and Nutrition Examination Surveys NHANES. The epidemiology of asthma among children and adolescents 3 to 17 years of age in the United States was examined using data collected in the second National Health and Nutrition Examination Survey. In this article, asthma is defined as current disease diagnosed by a physician and/or frequent trouble with wheezing during the past 12 months, not counting colds or the flu. Asthma was reported for 6.7% of youths overall and was higher in black than white children, boys than girls, and urban than rural areas. Asthmatic children had a higher prevalence of other allergies and of allergen skin test reactivity than nonasthmatic children. Most asthmatics had their first asthmatic episode before their third birthday. No effect of socioeconomic status on the prevalence of asthma was noted.

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GERSTMAN, B.B., BOSCO, L.A., TOMITA, D.K., GROSS, T.P., SHAW, M.M.
Prevalence and treatment of asthma in the Michigan Medicaid patient population younger than 45 years, 1980-1986.
Journal of Allergy and Clinical Immunology; 83, 1989, no. 6, p. 1032-1039.

YEAR(S) OF DATA : 1980-1986.
DEPENDENT VARIABLES : prevalence of asthma and prevalence of drug use by asthmatic patients and the number of prescriptions per case.
INDEPENDENT VARIABLES : age, sex, race, place of residence.
POPULATION : USA, Michigan; 767,780 Medicaid patients younger than 45 years that had used at least one service in a year.
CLASSIFICATION : urban = Metropolitan Statistical Area.
rural = non-Metropolitan Statistical Area.
RESULTS : Higher prevalence of asthma in urban residents, but this may also be due to more black patients in the urban area sample. In this study the relation between drug use and place of residence was not analyzed.

The prevalence and outpatient treatment of asthma were studied in the Michigan Medicaid patient population by use of computerized physician, hospital, and pharmacy reimbursement data to mark and track asthma-related medical transactions. In this paper asthma cases were defined as patients with evidence of at least two diagnoses and prescription drug transactions consistent with asthma. More than 52,000 cases were thus identified. The period prevalence of asthma was estimated on a year-by-year basis. The prevalence of asthma in the population increased from 2.0 per 100 Medicaid patients in 1980 to 2.8 per 100 Medicaid patients in 1986. Prevalence decreased with age until the age of 20 years and increased thereafter, and was higher in male children than in female children. In contrast, asthma was more prevalent in female adults than in male adults. Prevalence was higher in black subjects than in other races and higher in Metropolitan Statistical Areas than in non-Metropolitan Statistical Areas. The total number of reimbursements for antiasthma medications increased from 60,000 per year to 120,000 per year, and the average number of antiasthma prescriptions per Michigan Medicaid asthma case increased at the rate of 6.6% per year during the study interval. Changes in the preferred types of asthma treatment consistent with changes that have occurred in the general population were observed. These data suggest that the relative and absolute occurrence of asthma and asthma treatment in the Michigan Medicaid population is increasing.

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LUNDBÄCK, B., NYSTRÖM, L., ROSENHALL, L., STJERNBERG, N.

Obstructive lung disease in northern Sweden: respiratory symptoms assessed in a postal survey.

European Respiratory Journal; 4, 1991, no. 3, p. 257-266.

YEAR(S) OF DATA : 1985-1986.
 DEPENDENT VARIABLES : prevalence of respiratory symptoms.
 INDEPENDENT VARIABLES : age, sex, smoking habits, population density, inland/coastal region.
 POPULATION : Sweden, Norrbotten; 6,610 adults, age 35-36, 50-51 and 65-66 years.
 CLASSIFICATION : towns,
 densely populated areas,
 sparsely populated areas.
 RESULTS : only a positive correlation between population density and self-reported chronic bronchitis.

The prevalence of respiratory symptoms in 6,610 adults (3,372 men and 3,238 women), living in selected areas of Norrbotten, northern Sweden, were assessed in a postal survey. Response rates were identical in men and women, and at least one respiratory symptom was reported by 41% of each sex. 22% reported sputum production, and 14% reported wheezing. Despite differences in smoking habits and in the different age groups, the prevalence of symptoms did not differ between the sexes, or between urban and rural areas. Symptoms were as common in people living in the rural interior as in the industrialized coastal area. Results of this postal survey indicate that the prevalence of asthma may be higher in northern Sweden than has been reported from the south of Sweden.

98

TZONOU, A., MARAGOUDAKIS, G., TRICHOPOULOS, D., ZAVITSANOS, X., DIMOPOULOU, I., TOUPADAKI, N., KREMASTINOY, J.

Urban living, tobacco smoking, and chronic obstructive pulmonary disease: a study in Athens.

Epidemiology; 3, 1992, no. 1, p. 57-60.

YEAR(S) OF DATA : 1984.
 DEPENDENT VARIABLES : incidence of chronic obstructive pulmonary disease (COPD).
 INDEPENDENT VARIABLES : age, sex, years of schooling, marital status, number of children, past residence, smoking habits.
 POPULATION : Greece, Athens; 110 patients with COPD and 400 control patients, age 50-59 years.
 CLASSIFICATION : urban = >100,000 population (4 cities in Greece).
 rural = rest of Greece.
 RESULTS : multiple logistic regression ($p < 0.10$):
 past residence in an urban area increases the risk of COPD.

The relation of urban living and tobacco smoking to the development of chronic obstructive pulmonary disease was analyzed. The study was based on 110 incident cases of chronic obstructive pulmonary disease between 50 and 60 years of age who were permanent

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residents of Athens and 400 control patients hospitalized for traumatic and orthopedic conditions in the same hospitals at the same time. All subjects were interviewed about their smoking habits, place of birth, history of past residence, and years of schooling. We found that subjects with more education have a reduced risk of developing chronic obstructive pulmonary disease, with 4 additional years of schooling corresponding to a 30% reduction of risk. Those who have lived all their lives in urban areas (mostly in Athens) have a twofold greater risk of chronic obstructive pulmonary disease compared with people who have lived exclusively or partly in rural areas before settling in Athens. Smokers have a 10-fold relative risk of developing chronic obstructive pulmonary disease, and this risk is strongly dependent on the number of cigarettes consumed per day. The findings of the present study suggest that air pollution, or another aspect of the urban environment, can be an important contributor to the development of chronic obstructive pulmonary disease.

99

JESSEN, M., JANZON, L.

Prevalence of non-allergic nasal complaints in an urban and a rural population in Sweden.

Allergy; 44, 1989, no. 8, p. 582-587.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : prevalence of non-allergic nasal complaints:
nasal obstruction, sneezing and discharge.
INDEPENDENT VARIABLES : age, sex, smoking habits, prevalence of migraine, reason of
previous surgery, heredity for allergy.
POPULATION : Sweden, Malmö and Emmaboda; 1,469 persons, age 16-82
years.
CLASSIFICATION : urban = city of Malmö.
rural = parish of Emmaboda.
RESULTS : no significant differences.

By questionnaire, 1,469 randomly selected persons between 16 and 82 years of age were asked whether they had suffered from such nasal complaints as obstruction, sneezing and discharge, at least during the previous 6 months. Seventy-five per cent answered the questionnaire. No difference was found between the populations of Malmö and Emmaboda regarding the prevalence of symptoms. 21% suffered from non-allergic nasal complaints, and 5% from allergic nasal complaints. The prevalence of non-allergic nasal complaints was highest in the 20-30-year age group, and lowest in the 50-60-year age group. Contributory factors were of greater importance among the younger individuals than among the more elderly.

100

BAKKE, P.S., BASTE, V., GULSVIK, A.

Bronchial responsiveness in a Norwegian community.

American Review of Respiratory Disease; 143, 1991, no. 2, p. 317-322.

YEAR(S) OF DATA : 1985, 1987, 1988.
DEPENDENT VARIABLES : prevalence of bronchial responsiveness to methacholine (PC₂₀
measurements).

INDEPENDENT VARIABLES : age, sex, smoking habits, area of residence, occupational airborne exposure (AE), airway caliber (FEV₁), level of lung function, allergy.

POPULATION : Norway, Hordaland; 490 people, age 18-73 years.

CLASSIFICATION : urban = municipality of Bergen.
rural = 11 surrounding municipalities.

RESULTS : bronchial responsiveness (PC₂₀ ≤8 mg/ml) more prevalent in rural than in urban.

Bronchial responsiveness to methacholine was examined in a Norwegian general population sample 18 to 73 years of age. Altogether, 20 and 6% of the sample had PC₂₀ less than or equal to 32 mg/ml and PC₂₀ less than or equal to 8 mg/ml, respectively. The relationship of bronchial responsiveness to the following potential predictors were examined: sex, age, smoking habits, airway caliber (FEV₁), FEV₁ percent predicted (%FEV₁), urban-rural area of residence, occupational airborne exposure in present job, and total serum IgE. After adjusting for age and FEV₁, the odds ratio for PC₂₀ less than or equal to 32 mg/ml was higher for men than for women in smokers and in ex-smokers, but did not vary by sex in nonsmokers. Irrespective of smoking status the sex- and FEV₁-adjusted odds ratio for PC₂₀ less than or equal to 32 mg/ml fell with increasing age. Also FEV₁ and %FEV₁ were predictors of PC₂₀ less than or equal to 32 mg/ml after adjusting for sex and age irrespective of smoking status. Bronchial responsiveness (PC₂₀ less than or equal to 8 mg/ml) was more prevalent in rural than in urban areas. In this general population the following variables were independent predictors of bronchial responsiveness: male sex, younger age, smoking, level of airway caliber, level of pulmonary function, and rural area of residence.

101

CORBO, G.M., FORASTIERE, F., DELL'ORCO, V., PISTELLI, R., AGABITI, N., STEFANIS, B. DE, CIAPPI, G., PERUCCI, C.A.
Effects of environment on atopic status and respiratory disorders in children.
Journal of Allergy and Clinical Immunology; 92, 1993, no. 4, p. 616-623.

102

CROCKETT, A.J., ALPERS, J.H.
A profile of respiratory symptoms in urban and rural South Australian school children.
Journal of Paediatrics and Child Health; 28, 1992, no. 1, p. 36-42.

103

ÅBERG, N.
Asthma and allergic rhinitis in Swedish conscripts.
Clinical and Experimental Allergy; 19, 1989, no. 1, p. 59-63.

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104

BRUCE, I.N., HARLAND, R.W., McBRIDE, N.A., MACMAHON, J.
Trends in the prevalence of asthma and dyspnoea in first year university students, 1972-89.
Quarterly Journal of Medicine; 86, 1993, no. 7, p. 425-430.

105

CHARPIN, D., KLEISBAUER, J.P., LANTEAUME, A., VERVLOET, D.,
LAGIER, F., CHARPIN, J.
Existe-t-il un facteur urbain dans l'asthme et l'allergie?
Revue des Maladies Respiratoires; 5, 1988, no. 2, p. 109-114.

106

REBOULLET, V., GAUTHIER, C., RANFAING, J.
Caractères épidémiologiques comparés d'une série homogène de pneumopathies aiguës communes recrutées en centre hospitalier général (CHG).
Revue des Maladies Respiratoires; 9, 1992, no. 4, p. 449-453.

107

GERGEN, P.J., TURKELTAUB, P.C., KOVAR, M.G.
The prevalence of allergic skin test reactivity to eight common aeroallergens in the U.S. population: results from the second National Health and Nutrition Examination Survey.
Journal of Allergy and Clinical Immunology; 80, 1987, no. 5, p. 669-679.

108

HILT, B., LIEN, J.T., LUND-LARSEN, P.G., LUND, K., LANGÅRD, S.
Asbestos-related findings in chest radiographs of the male population of the county of Telemark, Norway - a cross-sectional study.
Scandinavian Journal of Work Environment and Health; 12, 1986, no. 6, p. 567-573.

1.10 sexually transmitted diseases

109

KARON, J.M., BERKELMAN, R.L.
The geographic and ethnic diversity of AIDS incidence trends in homosexual/bisexual men in the United States.

Journal of Acquired Immune Deficiency Syndromes; 4, 1991, no. 12,
p. 1179-1189.

YEAR(S) OF DATA : 1983-1991.
 DEPENDENT VARIABLES : AIDS incidence trends.
 INDEPENDENT VARIABLES : year, race, ethnicity, residence at time of diagnosis.
 POPULATION : USA; all AIDS cases among MSWM (men who report sex with men) not using intravenous drugs.
 CLASSIFICATION : New York City, Los Angeles, San Francisco.
 other MSAs with $\geq 1,000,000$ population,
 MSAs with 50,000-999,999 population,
 rural = $<50,000$ population.
 RESULTS : Greatest increase in small MSAs and rural areas, smallest increase in New York City, Los Angeles and San Francisco.

Geographic and racial/ethnic variation in acquired immune deficiency syndrome (AIDS) incidence in homosexual and bisexual men not using i.v. drugs were examined in the United States. The AIDS incidence in these men has continued to increase in the United States. Incidence increased much less rapidly after 1986 in the three metropolitan statistical areas (MSAs) with the most cases, New York City, San Francisco, and Los Angeles, and may have reached a plateau in these areas. There have been similar changes in incidence (but later in time) in all other MSAs with a population of at least 1,000,000 combined, with more tendency toward a plateau in whites than in non-whites. In contrast, incidence increased linearly through 1989 in MSAs with a population less than 1,000,000 and in rural areas, with no change in trend after 1986. Changes in human immunodeficiency virus (HIV) infection incidence before 1985, better therapy and medical care, and migration all contributed to these changes in incidence, as may have changes in reporting.

110

SELIK, R.M., CASTRO, K.G., PAPPALIOANOU, M.

Racial/ethnic differences in the risk of AIDS in the United States.

American Journal of Public Health; 78, 1988, no. 12, p. 1539-1545.

YEAR(S) OF DATA : 1981-1988.
 DEPENDENT VARIABLES : cumulative incidence and relative risk of AIDS.
 INDEPENDENT VARIABLES : age, sex, racial/ethnic group, history of intravenous-drug abuse, exposure category, blood transfusion, undetermined means of acquiring HIV infection, region, population size.
 POPULATION : USA; all residents.
 CLASSIFICATION : central cities of SMSAs $>2,000,000$ population,
 suburbs of SMSAs $>2,000,000$ population,
 SMSAs 1,000,001-2,000,000 population,
 SMSAs 500,001-1,000,000 population,
 SMSAs 250,001-500,000 population,
 SMSAs 50,000-250,000 population,
 outside SMSAs = $<50,000$ population.
 RESULTS : The cumulative incidence of AIDS was correlated with the population of SMSAs. In the 16 SMSAs with $>2,000,000$ inhabitants, the cumulative incidence of AIDS was higher in the central cities than in the suburbs. In the suburbs, but not in the

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central cities, the risk in Blacks and Hispanics were higher than the risk in Whites.

The variation in the risk of AIDS was analyzed in US Blacks, Hispanics, and other racial/ethnic groups relative to that in Whites (non-Hispanic) by geographic area and mode of acquiring HIV infection, based on data reported between June 1, 1981 and January 18, 1988 to the Centers for Disease Control and 1980 US census data. Relative risks (RRs) in Blacks and Hispanics were highest in the northeast region, and higher in suburbs than in central cities of metropolitan areas. RRs in Blacks and Hispanics were greatest for AIDS directly or indirectly associated with intravenous-drug abuse by heterosexuals and were also high for AIDS associated with male bisexuality, suggesting that these behaviors may be more prevalent in Blacks and Hispanics than in Whites.

111

WHYTE, B.M., CARR, J.C.

Comparison of AIDS in women in rural and urban Georgia.

Southern Medical Journal; 85, 1992, no. 6, p. 571-578.

YEAR(S) OF DATA : 1983-1990.
DEPENDENT VARIABLES : incidence and prevalence of AIDS, mode of HIV transmission, probability of survival.
INDEPENDENT VARIABLES : age, race, year of report, geographic region of residence.
POPULATION : USA, Georgia; all 308 cases of AIDS in female residents, age ≥ 13 years.
CLASSIFICATION : metro Atlanta = eight counties approximating metropolitan Atlanta (2.5 million).
other areas = remaining Georgia counties.
RESULTS : Incidence in metro Atlanta was slightly larger than in other areas. The cumulative rate of AIDS was higher in metro Atlanta than in other areas. No significant differences in mode of HIV transmission. Median survival in metro Atlanta greater than in other areas.

Through 1990, 308 cases of AIDS had been reported in female residents (aged ≥ 13 years) of Georgia, USA; 77 were white and 228 black. The mean age of the white women was greater than that of the black women. Blacks represented 74% and 76% of all cases in women in metro Atlanta and other areas respectively. Of the 308 cases, 178 were related to intravenous (IV) drug use (99 metro Atlanta, 79 other areas), including 104 women who were intravenous drug users and 74 who were sexual partners of IV drug users. These proportions were similar in the two regions. Among cases related to IV drug use, 85 women in metro Atlanta and 69 women elsewhere in the state were black. The cumulative rate of AIDS in women in metro Atlanta (14.4/100,000) was twice that of women in the rest of the state (6.7/100,000). The rate for AIDS cases related to IV drug use in black women (27.8/100,000 population) was 19 times that in white women (1.5/100,000). The median survival of all women was significantly greater in metro Atlanta than in other areas (400 and 296 days respectively), with a difference also in those reported only with *Pneumocystis carinii* pneumonia (466 and 373 days respectively).

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One of every 476 women (2.1 per 1,000) giving birth in Massachusetts, USA, was positive for HIV antibody by immunofluorescence assay or enzyme-linked immunosorbent assay, both confirmed by immunoblot (Western blot) testing. The prevalence of HIV infection varied according to the type and location of the maternity hospitals; rates of seropositivity were highest in inner-city hospitals (8.0 per 1000), lower in mixed urban and suburban hospitals (2.5 per 1000), and lowest in suburban and rural hospitals (0.9 per 1000).

114

WASSER, S.C., GWINN, M., FLEMING, P.

Urban-nonurban distribution of HIV infection in childbearing women in the United States.

Journal of Acquired Immune Deficiency Syndromes; 6, 1993, no. 9, p. 1035-1042.

YEAR(S) OF DATA : 1989.
DEPENDENT VARIABLES : prevalence of HIV.
INDEPENDENT VARIABLES : place of residence (urban/rural, state), age, sex, race.
POPULATION : USA, 35 states; health districts.
CLASSIFICATION : urban = health districts with $\geq 75\%$ of population in urban areas as defined by 1990 census.
nonurban = other.
RESULTS : Prevalence was higher in urban areas than in nonurban areas.

Women account for an increasing proportion of AIDS cases in the USA, and the number reported from small cities and rural areas is growing. To better describe the geographic characteristics of the human immunodeficiency virus (HIV) epidemic in women, data were analyzed for 1,670,305 newborn specimens tested for maternal antibody to HIV-1 in 35 states in 1989. To provide comparable geographic units for analysis, seroprevalence rates were calculated for state-designated health districts, which are groups of counties defined for the planning and delivery of health services. Health districts with $\geq 75\%$ of the population residing in urban areas as defined by the 1990 census were considered urban. Prevalence of HIV infection ranged from 0 to 12.2 per 1,000, with the highest rates found in urban health districts, primarily those on the East coast; however, high rates were also found in some nonurban districts, particularly in the South. Rates among black women were three to 35 times higher than in white women in nine states, regardless of urbanicity.

115

WINTER, L., GOLDY, A.S., BAER, C.

Prevalence and epidemiologic correlates of Chlamydia trachomatis in rural and urban populations.

Sexually Transmitted Diseases; 17, 1990, no. 1, p. 30-36.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : prevalence of chlamydial infection.
INDEPENDENT VARIABLES : age, sex, race, use of contraceptives, reason for visit, number of sexual partners, clinical characteristics, location of clinic.
POPULATION : USA, Pennsylvania; 889 women, age 13-63 years, making routine visits.

sexually transmitted diseases

CLASSIFICATION : urban = two clinics in areas with <10,000 population.
rural = two clinics in towns with 25,000-100,000 population.

RESULTS : no difference in prevalence between rural and urban clinics;
age, contraceptive method, and gonococcal infection were predictors in urban but not in rural;
mucopurulent exudate and cervical ectropion were predictors in rural but not in urban.

In two rural and two urban family planning clinics in central Pennsylvania, USA, the authors screened 889 women making routine visits for Chlamydia trachomatis using the Chlamydiazyme immunoassay method. Chlamydia trachomatis antigens were detected in 11.2% of the women; no differences were found in prevalence between urban and rural clinics. Among 21 clinical characteristics and seven risk factors, younger age (younger than 25 years), oral contraceptive use, gonococcal infection, mucopurulent exudate, abnormal vaginal discharge, and cervical ectropion were associated with chlamydial infection. Logistic regression revealed that age alone was independently associated with infection. The authors found that screening criteria derived from other epidemiologic studies generally did not predict the presence of Chlamydia trachomatis in the present sample.

116

DESENCLOS, J.-C.A., GARRITY, D., WROTEN, J.
Pediatric gonococcal infection, Florida, 1984 to 1988.
American Journal of Public Health; 82, 1992, no. 3, p. 426-428.

YEAR(S) OF DATA : 1984-1988.
DEPENDENT VARIABLES : incidence of pediatric gonococcal (GC) infection.
INDEPENDENT VARIABLES : age, sex, race, county of residence.
POPULATION : USA, Florida; all GC infection cases in children, age 1 month to 12 years.
CLASSIFICATION : metropolitan = county with at least one city of $\geq 50,000$ residents.
nonmetropolitan = county without a city of $\geq 50,000$ residents.
RESULTS : The incidence was higher in nonmetropolitan counties than in metropolitan counties.

Florida pediatric gonococcal infection surveillance data were collected between 1984 and 1988. The incidence rate was 11 per 100,000 per year for the age group 1 month through 9 years. Incidence rates were higher for females, other-than-Whites, and residents of rural counties than for males, Whites, and residents of urban counties. The ratio of pediatric gonococcal infection cases in children younger than 10 years per 1,000 adult male gonococcal infection cases, a substitute measure for the proportion of males that may have perpetrated child sexual abuse, was higher for residents of nonmetropolitan counties than for residents of metropolitan counties.

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SALLERAS, L., BRUGUERA, M., VIDAL, J., TABERNER, J.L., PLANS, P.,
BAYAS, J.M., PUMAROLA, T., JIMENEZ DE ANTA, M.T., RODÉS, J.
Prevalence of hepatitis B markers in the population of Catalonia (Spain).
Rationale for universal vaccination of adolescents.

PHYSICAL HEALTH: MORBIDITY

YEAR(S) OF DATA : 1985-1986, 1989.
DEPENDENT VARIABLES : prevalence of hepatitis B markers.
INDEPENDENT VARIABLES : age, sex, social class and educational level of adult or child's father, place of birth (in/outside Catalonia), habitat.
POPULATION : Spain, Catalonia; 966 schoolchildren, age 6-7 years, 10-11 years, 13-14 years, and 600 adults, age ≥ 15 years.
CLASSIFICATION : urban = towns with $\geq 10,000$ inhabitants.
rural = villages with $< 10,000$ inhabitants.
RESULTS : schoolchildren: no urban/rural results;
adults: higher prevalence in urban than in rural.

The prevalence of hepatitis B markers was determined in a representative sample of the general population of Catalonia, Spain. HBsAg was found in 0.5% of schoolchildren (age < 15 years) and in 1.7% of adults (age ≥ 15 years), and anti HBs in 1.6% and 18%, respectively. Age-specific prevalence for both markers showed a low risk for hepatitis B before puberty, and a progressive rise since adolescence. Prevalence of hepatitis B markers was significantly higher among subjects with a lower level of education, residing in an urban area and born outside Catalonia, but in the stratified analysis, a statistical significant difference was only maintained in the prevalence of HBV markers between those who live in urban and rural areas, and between those who were born outside Catalonia and in Catalonia.

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BURKE, D.S., BRUNDAGE, J.F., HERBOLD, J.R., BERNER, W., GARDNER, L.I., GUNZENHAUSER, J.D., VOSKOVITCH, J., REDFIELD, R.R.

Human immunodeficiency virus infections among civilian applicants for United States military service, October 1985 to March 1986. Demographic factors associated with seropositivity.

New England Journal of Medicine; 317, 1987, no. 3, p. 131-136.

119

BREMOND, A., MAMELLE, N., LAUMON, B., AKNIN, D.

Dépistage des condylomes plans du col utérin dans le département du Rhône.

Revue d'Epidémiologie et de Santé Publique; 36, 1988, no. 3, p. 209-215.

120

LEE, C.B., BRUNHAM, R.C., SHERMAN, E., HARDING, G.K.M.

Epidemiology of an outbreak of infectious syphilis in Manitoba.

American Journal of Epidemiology; 125, 1987, no. 2, p. 277-283.

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- DEPENDENT VARIABLES : incidence of measles, number of years reporting measles.
INDEPENDENT VARIABLES : age, race/ethnicity, vaccination status, poverty, year, county, population, population density.
POPULATION : USA; all 3,137 US counties.
CLASSIFICATION : population : $\geq 1,000,000$,
250,000-999,999,
10,000-249,999,
<10,000.
population density : $\geq 3,000$ per square mile,
1,000-2,999 per square mile,
100-999 per square mile,
<100 per square mile.
- RESULTS : Increasing mean annual measles incidence rates and increasing number of years reporting measles with increasing county population and county population density.

The objective of the study was to describe the geographic distribution of measles cases in the United States by county for the 10-year period from 1980 through 1989. Data from the 1980 and 1990 US censuses were used to produce demographic profiles for each of the 3,137 counties. Outcome variables examined included mean annual incidence and number of years reporting measles, with use of Spearman's rank correlation coefficients to examine the association between the demographic and the two outcome variables. A total of 56,775 measles cases were reported during the decade. Of the nation's counties, 1,690 (53.9%) did not report any cases; only 17 (0.5%) reported measles in all 10 years. Counties reporting measles more frequently during the decade had higher median populations, population densities, and percentage of Hispanic and black populations than those counties reporting less frequently. Population size, population density, and percentage of Hispanic population were associated with number of years reporting measles and mean annual incidence rate. Measles cases in counties reporting measles every year predominantly occurred in unvaccinated preschoolers; cases in counties reporting less frequently predominantly occurred in vaccinated school-aged children.

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MURPHY, T.V., GRANOFF, D.M., PIERSON, L.M., PASTOR, P., WHITE, K.E., CLEMENTS, J.F., OSTERHOLM, M.T.

Invasive Haemophilus influenzae type b disease in children less than 5 years of age in Minnesota and in Dallas County, Texas, 1983-1984.

Journal of Infectious Diseases; 165, 1992, Suppl. 1, p. S7-S10.

- YEAR(S) OF DATA : 1983-1984.
DEPENDENT VARIABLES : incidence of invasive Haemophilus influenzae type b (Hib), characteristics of cases, day care attendance.
INDEPENDENT VARIABLES : age, sex, race, ethnicity, location (Minnesota/Dallas County and urban/rural).
POPULATION : USA, Minnesota and Dallas County; 733 cases of invasive Hib among children <5 years of age.
(Urban/rural comparison only for 394 whites in Minnesota.)
CLASSIFICATION : urban = Dallas County and areas in Minnesota with a center of >100,000 population.
rural = areas in Minnesota without a center of >100,000 population.

other

RESULTS : The incidence of Hib disease was higher for white children in urban Minnesota than in rural Minnesota. The difference was present only for diseases not involving the central nervous system. The proportion with diagnosis meningitis was lower in urban Minnesota than in rural. Lower rates of day care attendance were observed for whites from rural Minnesota than from urban Minnesota.

During 1983 and 1984, 733 cases of invasive Haemophilus influenzae type b (Hib) disease in children <5 years of age were identified in Minnesota and in Dallas County, Texas. The overall incidence of disease was lower in Minnesota than in Dallas County. Among urban residents, the rates of disease for whites were similar in the two areas. A higher rate of disease among whites in urban Minnesota compared with rural Minnesota resulted from an increased rate of cases for diagnoses other than meningitis. Local practices might have affected the rate of certain diagnoses, since ascertainment of Hib disease other than meningitis is more dependent on diagnostic practices than is diagnosis of meningitis. The data suggest that the incidence of invasive Hib disease is influenced by the racial composition of the population, the rates of disease in specific subgroups, and possibly by local medical practices.

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BORMAN, B., CRYER, C.

The prevalence of anencephalus and spina bifida in New Zealand.
Journal of Paediatrics and Child Health; 29, 1993, no. 4, p. 282-288.

YEAR(S) OF DATA : 1978-1982.
DEPENDENT VARIABLES : prevalence of anencephalus and spina bifida.
INDEPENDENT VARIABLES : sex of birth, maternal/paternal age, ethnic origin and country of birth, social class, parity, nuptiality, season of conception, maternal place of residence.
POPULATION : New Zealand; 205 births with anencephalus and 247 with spina bifida.
CLASSIFICATION : urban, rural.
RESULTS : No significant differences.

This paper reports the results from a study of the relationships between various risk factors and the prevalence of anencephalus and spina bifida in New Zealand during 1978-1982, using case data obtained from multiple sources and a national cohort of births as the denominator. The rates of anencephalus and spina bifida in New Zealand were 0.78 per 1,000 and 0.94 per 1,000 total births, respectively. The rate of both neural tube defects (NTD) was high among female infants and low among births to women born in countries other than the British Isles and New Zealand. The rate of anencephalus showed a distinct north-south gradient, but there was no evidence of effects for maternal or paternal age, parity, urban-rural place of residence, nuptiality, social class or season of birth in the prevalence of either NTD in New Zealand.

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HYTÖNEN, M., HONKANEN, R., ASKO-SELJAVAARA, S.

Incidence of burns requiring hospitalization in Finland in 1980.
Annales Chirurgiae et Gynaecologiae; 76, 1987, no. 4, p. 218-221.

PHYSICAL HEALTH: MORBIDITY

YEAR(S) OF DATA : 1980.
DEPENDENT VARIABLES : incidence of burns, hospital days due to burns.
INDEPENDENT VARIABLES : age, sex, external cause, place of residence.
POPULATION : Finland; 1.296 patients who had burn injury and had come to the hospital via an emergency post.
CLASSIFICATION : urban, rural.
RESULTS : Higher incidence in rural than in urban, especially among adults, age 35-44 and ≥ 65 years. Lower incidence in rural than in urban among children, age ≤ 4 years.
Hospital days: no urban/rural results.

In 1980 there were 1.296 emergency hospitalizations for burn injuries in Finland, averaging 27 per 10^5 inhabitants. The incidence varied from 20 to 58 per 10^5 by central hospital district, 70% of the patients were men. The incidence was higher among men than women at all ages. High risk population groups were children aged ≤ 4 years and men aged ≥ 80 years. The incidence was higher in rural than in urban areas. That was true especially among the elderly, whereas the opposite was true among small children. Most (59%) of the burns were caused by hot substances. Open fire caused 16%. The treatment of burns accounted for a total of 23.327 hospital days. The average duration of the emergency hospital stay was 14.3 days.

126

PAOLINO, E., GOVONI, V., TOLA, M.R., CASETTA, I., GRANIERI, E.
Incidence of the Guillain-Barré syndrome in Ferrara, northern Italy, 1981-1987.

Neuroepidemiology; 10, 1991, no. 3, p. 105-111.

Neuroepidemiology; 12, 1993, no. 1, p. 58-60.

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LARSEN, J.P., KVÅLE, G., NYLAND, H.
Epidemiology of the Guillain-Barré syndrome in the county of Hordaland, Western Norway.

Acta Neurologica Scandinavica; 71, 1985, no. 1, p. 43-47.

128

FARLEY, T.A., GILLESPIE, S., RASOULPOUR, M., TOLENTINO, N.,
HADLER, J.L., HURWITZ, E.

Epidemiology of a cluster of Henoch-Schonlein purpura.

American Journal of Diseases of Children; 143, 1989, no. 7, p. 798-803.

American Journal of Diseases of Children; 144, 1990, no. 6, p. 620.

129

CACCIAPUOTI, B., VELLUCCI, A., CICERONI, L., PINTO, A., TAGGI, F.
Prevalence of leptospirosis in man. Pilot survey.

European Journal of Epidemiology; 3, 1987, no. 2, p. 137-142.

other

130

OTEO, J.A., MARTINEZ DE ARTOLA, V., CASAS, J., LOZANO, A.,
FERNANDEZ CALVO, J.L., GRANDIVAL, R.

Epidemiology and prevalence of seropositivity against *Borrelia burgdorferi*
antigen in La Rioja, Spain.

Revue d'Epidémiologie et de Santé Publique; 40, 1992, no. 2, p. 85-92.

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ARZOUNI, J.P., LAVERAN, M., BEYTOUT, J., RAMOUSSE, O., RAOULT, D.

Comparison of western blot and microimmunofluorescence as tools for Lyme
disease seroepidemiology.

European Journal of Epidemiology; 9, 1993, no. 3, p. 269-273.

132

BROWNLIE, B.E.W., WELLS, J.E.

The epidemiology of thyrotoxicosis in New Zealand: incidence and
geographical distribution in north Canterbury, 1983-1985.

Clinical Endocrinology; 33, 1990, no. 2, p. 249-259.

133

BRAATHEN, L.R., BOTTEN, G., BJERKEDAL, T.

Prevalence of psoriasis in Norway.

Acta Dermato-Venereologica; Suppl. 142, 1989, p. 5-8.

2. PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

2.1 general

134

ANDRÉANI, S., MIZRAHI, A., TONNELIER, F.

Geographical disparities in health economics: the case of France.

World Health Statistics Quarterly; 40, 1987, no. 4, p. 304-312.

YEAR(S) OF DATA : 1969-1983.
DEPENDENT VARIABLES : GP-expenditure, specialist expenditure, prescription expenditure, total medical expenditure.
INDEPENDENT VARIABLES : age, sex, département.
POPULATION : France; 96 départements.
CLASSIFICATION : Paris;
départements with town >200,000 population;
départements with town 100,000-200,000 population;
départements with town 50,000-100,000 population;
départements with town 10,000-50,000 population;
rural = rest.
RESULTS : GP expenditure: increases with community size.
specialist expenditure: increases with community size.
prescriptions: little variation.
total expenditure: highest in 100,000-200,000, then in Paris, then in >200,000.

This article presents the main results of the health geography research conducted in France by 'centre de recherche, d'étude et de documentation en économie de la santé (CREDES).

135

BUTLER, J.A., WINTER, W.D., SINGER, J.D., WENGER, M.

Medical care use and expenditure among children and youth in the United States: analysis of a national probability sample.

Pediatrics; 76, 1985, no. 4, p. 495-507.

YEAR(S) OF DATA : 1980-1981.
DEPENDENT VARIABLES : presence of regular sources of care, frequency of medical care visits, health insurance coverage, expenditures for medical care.
INDEPENDENT VARIABLES : age, race/ethnicity, poverty status, region, population density.
POPULATION : USA; 5,662 children, age 0-18 years.
CLASSIFICATION : SMSA central city,
SMSA non-central city,
urban non-SMSA,
rural areas.
RESULTS : Children residing in SMSA central city were less likely to have received any medical care than those residing in suburban areas, smaller cities or rural areas. Mean number of visits was highest in SMSA non-central cities. Parents in rural areas were more apt to pay all charges out-of-pocket than in other areas.

general

Lack of any health insurance was most likely in rural areas, least likely in SMSA non-central cities. Average total medical care charges were smallest in non-SMSA areas.

Recent patterns of access as reflected in the presence of regular care sources, health care use, health insurance coverage, and expenditures for medical care are described and analyzed using the subsample of all children 0 to 18 years of age from the 1980 National Medical Care Utilization and Expenditure Survey. Data from the survey indicate that in 1980, 92% of US children and youth had a regular care source and the same percentage were covered by some form of public or private health insurance. However, use rates and patterns of expenditure continued to differ dramatically according to family background factors, particularly race, ethnicity, poverty status, and population density. These differences are analyzed and comparative data are presented for groups of children from various sociodemographic groups. Minority-group and near-poor children were found to be at highest risk for limited utilization of services and inadequate insurance coverage.

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DOR, A., HOLAHAN, J.

Urban-rural differences in Medicare physician expenditures.

Inquiry; 27, 1990, no. 4, p. 307-318.

YEAR(S) OF DATA : 1985.
DEPENDENT VARIABLES : expenditures per enrollee for various physician service sites, types and specialties.
INDEPENDENT VARIABLES : age, sex, race, mortality, charge index, percentage of enrollees with supplementary insurance, area assignment rate, income, number of GPs and specialists per 1000, hospital volume, percentage of HMO patients, number of hospital based doctors, area.
POPULATION : USA; Medicare expenditure per enrollee in Metropolitan Statistical Areas (MSA) (n = 298) and non-MSAs (n = 44) of each state.
CLASSIFICATION : large urban = Metropolitan statistical areas with >999,999 residents.
medium urban = Metropolitan statistical areas with \geq 50,000 and <999,999 residents.
small urban = Metropolitan statistical areas with less than 50,000 residents.
rural = non Metropolitan statistical areas.
RESULTS : Expenditures are lower in rural areas as compared to all urban areas taken together, except for general and family practice services and general surgery. For these services expenditure was higher in rural areas.
Taking the other independent variables into account, expenditure appeared to be particularly higher in large urban areas. Greater availability of physician specialists and higher hospital admission rates in urban areas are the major factors that contribute to the urban-rural expenditure gap.

Policymakers have long been concerned with urban-rural disparities in access to health care. These disparities may be particularly severe in the case of the elderly and others covered by Medicare. The total volume of physician services provided to rural beneficiaries is more than

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40% lower than the volume of physician services provided to urban beneficiaries. This difference is fairly consistent across all types of care and sites of care. In an econometric analysis, the factors were investigated that may explain these differences in utilization. The results indicate that variations in demographic and economic characteristics are not the major reasons for the urban-rural gap. Differences in hospital and physician (particularly specialist) availability appear to be the main factors.

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HAYNES, R.

Inequalities in health and health service use: evidence from the General Household Survey.

Social Science & Medicine; 33, 1991, no. 4, p. 361-368.

YEAR(S) OF DATA : 1982.
DEPENDENT VARIABLES : self-reported acute and chronic morbidity, contacts with GP, attendance at outpatient clinics, inpatient stays in hospital, standardized mortality ratios.
INDEPENDENT VARIABLES : age, sex, social class, socio-economic group, tenure and car availability, region, degree of urbanization (ACORN classification).
POPULATION : Great Britain; 26,000 individuals.
CLASSIFICATION : ACORN classification:
1) areas of young and growing population,
2) areas of older settlement,
3) rural areas beyond influence large centres,
4) urban council estates,
5) areas in Scotland suffering from acute social disadvantage,
6) areas of multi-occupancy in inner areas of large cities,
7) areas of established high status (suburban).
RESULTS : significant:
lower morbidity and mortality in high status resorts;
lower mortality in rural areas; higher morbidity and mortality in urban council estates; more doctor consultations in rural areas;
more outpatient attendance and inpatient stays in urban areas.

The General Household Survey data file for 1982 was examined to identify variations in self-reported morbidity and health service use between socio-economic groups and geographical areas in England, Scotland and Wales. Both acute and chronic morbidity varied with socio-economic status. Morbidity was more strongly related to housing tenure and car availability than to occupational class. A north-west to south-east gradient in sickness was observed, although morbidity was comparatively low in Scotland and comparatively high in Wales. The highest age-adjusted morbidity ratios were for females in multiple occupancy inner city areas. Service use rates in relation to reported sickness showed little systematic variation. There was an indication that lack of car transport was an inhibiting factor for the sick in rural areas.

138

PERENBOOM, R.J., LAKO, C.J., SCHOUTEN, E.G.

Health status and medical consumption of rural and urban elderly.

Comprehensive Gerontology. Section B, Behavioural, Social and Applied Sciences; 2, 1988, no. 3, p. 124-128.

YEAR(S) OF DATA : 1976 and 1982.
DEPENDENT VARIABLES : perceived health, activities of daily living, number of chronic diseases, use of medical services.
INDEPENDENT VARIABLES : age, gender, urbanization, social contacts, social participation, community care, marital status, income.
POPULATION : The Netherlands; elderly, age ≥ 55 years, living independently. 1976: n = 5,384; 1982: n = 4,283.
CLASSIFICATION : urban = municipalities $\geq 100,000$ inhabitants.
rural = area in which the main villages have $< 5,000$ inhabitants.
RESULTS : Rural elderly are healthier. Rural elderly use less medical services (hospital, dentist, hospital outpatient care, chiroprapist) controlling for income, social contacts, social participation and community care. Additionally controlling for health results in higher use of home help services in rural areas.

Health status and medical consumption by the elderly seem to be dependent on the place of residence. Several studies have shown that rural elderly are less healthy, but make less use of health services than urban elderly. In this study it has been found that in Holland differences in health and use of health services between both groups are very small, but also that rural elderly have a better health than urban elderly and that these rural elderly make less use of health services. Explanations for this phenomenon cannot be found in differences in income, social contacts, social participation or care delivery systems. Possible explanations are sought in the urbanization of the rural areas. The small differences might be due to the operationalization of the concept urbanization.

2.2 prevention

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CARREL, R., JOSS, E., UTINGER, B., VUILLE, J.C.

Erfahrungen und Ansichten von Eltern über die ambulante präventive ärztliche Versorgung im Säuglings- und Kleinkindesalter.

Helvetica Paediatrica Acta; 42, 1987, no. 5-6, p. 387-395.

YEAR(S) OF DATA : 1981.
DEPENDENT VARIABLES : utilization of outpatient preventive medical care for small children.
INDEPENDENT VARIABLES : area of residence.
POPULATION : Switzerland, canton of Bern; 376 families having a two year old child.
CLASSIFICATION : urban = two municipalities in 'the city'.
rural = three municipalities in 'the country'.
RESULTS : more use of paediatrician in 'the city' and subsequently more full medical examinations, more use of family doctor in 'the country'.

In the canton of Bern, Switzerland, 376 families having a two-year-old child were asked about their experience and opinion concerning their child's outpatient preventive and curative medical care. Half the sample resides in two urban areas ("the city") and half the sample

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resides in three non-urban ("the country") locations with no practising paediatrician at the time of the interview. In the urban areas, all but 4.6% of the parents took their children to a paediatrician for the first vaccinations at three months. Nearly all the paediatricians used this opportunity to fully examine the child. In the rural areas, 59% of the families had their children vaccinated by the family doctor, 38% of whom used the occasion to fully examine the child. The other 41% brought the child to the nearest city in order to visit a paediatrician. A majority of parents (80%) in all sampled areas expressed a desire for regular well-baby examinations by a physician. The well-baby clinics staffed by nurses are used significantly more frequently by country parents than by urban parents. In the country, there is no difference between those families using a paediatrician and those using a family doctor. The data suggest that the clinics are a supplement, and not a replacement, for the preventive care given by a physician.

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SZILAGYI, P.G., RODEWALD, L.E., HUMISTON, S.G., RAUBERTAS, R.F., COVE, L.A., DOANE, C.B., LIND, P.H., TOBIN, M.S., ROGHMANN, K.J., HALL, C.B.

Missed opportunities for childhood vaccinations in office practices and the effect on vaccination status.

Pediatrics; 91, 1993, no. 1, p. 1-7.

Pediatrics; 91, 1993, no. 3, p. 545.

YEAR(S) OF DATA : 1988-1991.
DEPENDENT VARIABLES : prevalence of undervaccination, undervaccination time, number of missed opportunities (MOs).
INDEPENDENT VARIABLES : age, sex, type of health insurance, number of MOs, visit type, site.
POPULATION : USA, area of Rochester; 7 practices, 1,124 children, age 9 to 32 months.
CLASSIFICATION : urban = Rochester (1,000,000 population).
 suburban = 1 mile from the Rochester city limit.
 rural = surrounding counties.
RESULTS : Lowest undervaccination rates, lowest percentage of MOs, and least contribution of MOs to undervaccination time in suburban practice.

To determine the rate of childhood under-vaccination, rate and types of missed opportunities (MOs) for vaccinations, and the contribution of MOs to the undervaccination of preschool-age children, the authors conducted a retrospective medical chart review in seven primary care settings in the Rochester area in New York State. The random sample included 1,124 children having birth dates between March 15, 1988, and September 15, 1989. The main outcome measures were cumulative undervaccination rate, defined as the proportion of patients from each practice who were ever >60 days past-due for a vaccination by 12, 18, or 24 months of age; undervaccination time, defined as the median number of months during which children were undervaccinated; number of MOs; visit types and conditions associated with the MOs; and the duration of undervaccination time attributable to MOs. The cumulative undervaccination rate by 12 months was at least 20% in each practice except for the suburban practice, where it was 4%. The frequency of MOs varied from a high of 1.8 MO per patient per year at the rural private practice to a low of 0.3 MO per patient per year at the suburban practice. More than one quarter of MOs occurred during either health supervision or follow-up visits in all practices. In 28% of visits during which an MO occurred, patients had

no fever or acute illness. Missed opportunities contributed 13% of the total undervaccination time in the suburban practice, 27% in the clinic, and more than 40% in the other practices.

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FINE, M.A., SWIFT, C.F., BECK, S.

An empirically-based assessment of early intervention service provision and utilization.

Psychological Reports; 60, 1987, no. 3, Pt 1, p. 811-821.

YEAR(S) OF DATA : 1982-1983.
DEPENDENT VARIABLES : percentage of children involved in early intervention services.
INDEPENDENT VARIABLES : age in 2 groups: 0-2 years and 3-4 years, degree of urbanization.
POPULATION : USA, Ohio; 377 early intervention programs for 58,904 handicapped and 'at risk' children, age ≤ 4 years.
CLASSIFICATION : urban areas,
semiurban areas,
rural areas,
as defined by the US Census criteria.
RESULTS : handicapped children: urban much more than semiurban,
semiurban more than rural.
children at risk, age 0-2 years: urban much more than semiurban
or rural; age 3-4 years: semi-urban less than urban or rural.

The provision of early intervention services for young children was studied. 377 programs in Ohio were evaluated, using face-to-face or telephone interviews with providers, who were questioned with respect to the number of young handicapped and at-risk children participating, the types of services provided to children and their parents, and budget information. Younger children (0-2 years) and those from rural areas were less frequently involved than older children from urban and semiurban areas. While a wide range of services was provided to children and their parents, there was considerable variability in the proportion of programs providing these services. Public sources of funding provided the bulk of support for early intervention services, while private sources provided supplementary, but decreasing, support for services.

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LEESE, G.P., AHMED, S., NEWTON, R.W., JUNG, R.T., ELLINGFORD, A.,
BAINES, P., ROXBURGH, S., COLEIRO, J.

Use of mobile screening unit for diabetic retinopathy in rural and urban areas.

British Medical Journal; 306, 1993, no. 6871, p. 187-189.

YEAR(S) OF DATA : 1990-1991(?).
DEPENDENT VARIABLES : prevalence of previously unknown advanced retinopathy, use of eye screening, need for laser photocoagulation.
INDEPENDENT VARIABLES : age, deprivation score, duration of diabetes, type of diabetic care, treatment, population density.
POPULATION : Scotland, Tayside region; 961 diabetic patients in rural areas,
1,225 in urban areas.
CLASSIFICATION : urban,

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RESULTS : rural.
: significant:
prevalence of advanced retinopathy higher in rural than in urban;
more rural patients than urban patients required urgent laser
photocoagulation; proportion of the population screened higher
in rural than in urban areas.

The objectives of this study were to compare the effectiveness of a mobile screening unit with a non-mydratic polaroid camera in detecting diabetic retinopathy in rural and urban areas and to estimate the cost of the service. A mobile eye screening unit has been operating in Tayside region, Scotland, since 1990. 961 patients in rural areas and 1,225 in urban areas presented for screening. Compared with diabetic patients in urban areas, those in rural areas were less likely to attend a hospital based diabetic clinic, less likely to be receiving insulin, more likely to have advanced (maculopathy or proliferative retinopathy) diabetic retinopathy, and more likely to require urgent laser photocoagulation for previously unrecognised retinopathy. The screening programme cost 10 pounds per patient screened and 1,000 pounds per patient requiring laser treatment. The mobile diabetic eye screening programme detected a greater prevalence of advanced retinopathy in diabetic patients living in rural areas. Patients in rural areas were also more likely to need urgent laser photocoagulation. Present screening procedures seem to be less effective in rural areas and rural patients may benefit more from mobile screening units than urban patients.

143

LIFF, J.M., CHOW, W.-H., GREENBERG, R.S.

Rural-urban differences in stage at diagnosis. Possible relationship to cancer screening.

Cancer; 67, 1991, no. 5, p. 1454-1459.

YEAR(S) OF DATA : 1978-1985.
DEPENDENT VARIABLES : stage of the disease at diagnosis for various malignancies.
INDEPENDENT VARIABLES : age, sex, race, year of diagnosis, place of residence.
POPULATION : USA, Georgia; all (n = 37,899) newly diagnosed patients between 1978-1985.
CLASSIFICATION : urban = metropolitan Atlanta, 1,687,905 residents.
rural = ten neighboring rural counties, 98,519 residents.
RESULTS : Rural patients were twice as likely to have unstaged cancers.
Rural patients tended to have more advanced diseases at diagnosis than urban patients. There was an excess of nonlocalized malignancies in rural areas which was higher for blacks than for whites, controlled for age and sex.

The stage at diagnosis was examined for various malignancies identifiable through screening to determine whether rural-urban differences exist in Georgia. Data were obtained from a population-based cancer registry which registers all incident cancers among residents of metropolitan Atlanta and ten neighboring rural counties. All black and white patients with a first primary invasive malignancy newly diagnosed between 1978 and 1985 were included in this study. Residents of the rural area were more likely to have unstaged cancers (18.3%) as were urban residents (9.6%). Among patients with known stage at diagnosis, rural patients tended to have more advanced disease than urban patients. The relative excess of nonlocalized malignancies in rural Georgia was 21% for whites and 37% for blacks. The rural excess of nonlocalized prostate cancer among black patients was especially pronounced.

prevention

Differences in access to or utilization of early detection methods may contribute to the rural-urban differential in the extent of disease at diagnosis.

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NATTINGER, A.B., GOTTLIEB, M.S., VEUM, J., YAHNKE, D., GOODWIN, J.S.

Geographic variation in the use of breast-conserving treatment for breast cancer.

New England Journal of Medicine; 326, 1992, no. 17, p. 1102-1107.

YEAR(S) OF DATA : 1986.
DEPENDENT VARIABLES : use of breast-conserving surgery in proportion to all breast surgery.
INDEPENDENT VARIABLES : race, presence of axillary metastases, geographic region, size of the Metropolitan Area in which the hospital was located and other hospital characteristics.
POPULATION : USA; 36,982 women who had local or regional breast cancer and underwent either mastectomy or breast-conserving treatment, age 65-79 years.
CLASSIFICATION : Metropolitan areas >1,000,000 population.
Metropolitan areas 100,000 - 1,000,000 population.
Metropolitan areas <100,000 population.
rural = Nonmetropolitan areas.
RESULTS : lowest rate of breast-conserving surgery in rural areas and metropolitan areas with <100,000 population, highest rate in metropolitan areas with >1,000,000 population.

In the past decade there has been an increase in the use of treatment designed to conserve the breast for women with breast cancer. The extent to which such treatment has been adopted in various regions of the country and whether characteristics of hospitals and patients predict its use is not known, however. National data on Medicare claims were used for inpatient care provided in 1986 to study 36,982 women, age 65 to 79 years, who had local or regional breast cancer and underwent either mastectomy or breast-conserving treatment (local excision, quadrantectomy, or subtotal mastectomy). Information about the hospitals at which these women were treated was obtained from an American Hospital Association survey. Of the 36,982 women, 12.1 percent had breast-conserving surgery and 87.9 percent had a mastectomy. The frequency of breast-conserving surgery ranged from 3.5 percent to 21.2 percent in various states. The highest rate of use was in the Middle Atlantic states and New England, and the lowest was in the East South Central states and the West South Central states. Breast-conserving treatment was used more often in urban than in rural areas, in teaching hospitals than in nonteaching hospitals, in large hospitals than in small hospitals, and in hospitals with on-site radiation therapy or geriatric services than in others. Most of the geographic variation persisted after adjustment for the characteristics of hospitals and patients for which data were available.

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BRYANT, H., MAH, Z.

Breast cancer screening attitudes and behaviors of rural and urban women.
Preventive Medicine; 21, 1992, no. 4, p. 405-418.

YEAR(S) OF DATA : 1991.
DEPENDENT VARIABLES : knowledge on breast cancer, experience, attitudes on breast cancer, attitudes on mammographs, contact with physician, attitudes on clinical breast exam and breast self-examination, mammogram practices, mammogram plans.
INDEPENDENT VARIABLES : age, place of residence, education, income, marital status.
POPULATION : Canada, Alberta; 538 rural women, 735 urban women, age 40-74 years, without personal history of breast cancer.
CLASSIFICATION : urban = Edmonton and Calgary.
rural = living between 1 and 3 hour drive from Edmonton or Calgary.
RESULTS : Rural women were less likely to have had clinical breast examinations in spite of the fact that there was no difference in the frequency of contacts with physicians. Also, rural women were less likely to have been taught breast self-examination. They held more pessimistic views about the prognosis of breast cancer. Rural women were less likely to have had mammograms and were less likely to have plans in this respect. These last two differences remained when controlling for age, education, and marital status.
On knowledge and experience rural and urban women did not differ.

This study was carried out to assess the breast cancer knowledge, attitudes, and awareness of women age 40 to 74 in Alberta, a Canadian province of 2.4 million people. The analysis compares the attributes of 538 rural women, defined as those living between 1 and 3 hours drive from the major cities in Alberta, and 735 urban women who lived in one of these two cities. Rural women were found to have the same basic knowledge of breast cancer or perceptions of barriers to mammography, but had more negative attitudes about breast cancer itself. Despite their similar access to physician care, they were less likely to have had a recent clinical breast examination or mammogram. These differences remained when adjustment was made for demographic background variables.

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DUELBERG, S.I.

Preventive health behavior among black and white women in urban and rural areas.
Social Science & Medicine; 34, 1992, no. 2, p. 191-198.

YEAR(S) OF DATA : 1985.
DEPENDENT VARIABLES : 5 variables of preventive health behavior: exercise, favorable weight, non-smoking, use of Pap test and breast exam.
INDEPENDENT VARIABLES : age, marital status, race, education, residence, income.
POPULATION : USA; 19,027 female respondents.
CLASSIFICATION : urban = metropolitan area.
rural = non-metropolitan area.

RESULTS : significant (multiple regression, $p < 0.01$):
 in urban there are more favourable weights, more smokers and
 there are more women who received breast exams than in rural;
 among black women more use of Pap test in urban than in rural.

The relationship of race to preventive health behavior among women is examined using data from the 1985 National Health Interview Survey. Black women are less likely to engage in primary prevention behaviors such as exercising, non-smoking and maintaining a favorable weight. However, black women are more likely to engage in secondary prevention behaviors such as receiving a Pap test or a breast exam. These findings are surprising as they indicate a change in secondary prevention behavior among black women. The racial differences in exercising, maintaining a favorable weight and receiving a Pap test or a breast exam cannot fully be explained by the differing levels of socio-economic status, measured by education and income. However, the higher percentage of smoking among black women is due to their lower levels of education. Urban/rural residence modifies the effect of race on smoking and receiving a Pap test. Black women in metropolitan areas are most likely to be smokers. Almost no difference exists between white women in urban and rural areas concerning their likelihood of receiving a Pap test. Black women in urban areas are much more likely to be screened for cervical cancer than black women in rural areas.

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CALLE, E.E., FLANDERS, W.D., THUN, M.J., MARTIN, L.M.
 Demographic predictors of mammography and Pap smear screening in US
 women.
 American Journal of Public Health; 83, 1993, no. 1, p. 53-60.

YEAR(S) OF DATA : 1987.
 DEPENDENT VARIABLES : underuse of both PAP smear screening and mammography.
 INDEPENDENT VARIABLES : age, race, income, education, marital status, employment,
 region, type of area.
 POPULATION : USA; 12,868 women, age ≥ 18 years, from the National Health
 Interview Survey Cancer Control Supplement.
 CLASSIFICATION : central city,
 other metropolitan statistical area,
 non-metropolitan statistical area.
 RESULTS : more underuse in rural (nonmetropolitan) areas when controlled
 for other independents.

Proven screening technologies exist for both breast and cervical cancer, but they are underused by many women. The effect of demographic characteristics on the underuse of mammography and Pap smear screening was evaluated. Responses from 12,252 women who participated in the 1987 National Health Interview Survey Cancer Control Supplement were analyzed. Demographic profiles were produced to target severely underserved groups of women. Low income was a strong predictor of mammography underuse, as was Hispanic ethnicity and other race, low educational attainment, age greater than 65 years, and residence in a rural area. A strong predictor of never having had a Pap smear was never having been married; however, the importance of this characteristic is difficult to interpret in the absence of data on sexual activity. Hispanic women and women of other races of all ages and all income levels underused Pap smear screening, as did older women, particularly older black women.

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PALM, B.T., KANT, A.C., BOSCH, W.J. VAN DEN, VOOIJS, G.P.,
WEEL, C. VAN

Preliminary results of a general practice based call system for cervical cancer screening in The Netherlands.

British Journal of General Practice; 43, 1993, no. 377, p. 503-506.

YEAR(S) OF DATA : 1990.
DEPENDENT VARIABLES : attendance rates for cervical cancer screening.
INDEPENDENT VARIABLES : age, location, invitation from general practitioner or national screening programme.
POPULATION : The Netherlands, region of Nijmegen; 1.616 women, age 35-54 years, invited by nine general practices and 10.387 women invited by the national call system (= control group).
CLASSIFICATION : urban = Nijmegen.
rural = communities near Nijmegen.
RESULTS : Higher attendance rates in the rural group than in the urban group. In both areas the attendance rate among women invited by general practices was higher than among those invited by the national screening programme for each age group.

A study was undertaken in the region of Nijmegen, in the Netherlands, to compare the attendance rate following a call system for cervical cancer screening organized by general practitioners, with the attendance rate resulting from the Dutch national call system. Women are invited for screening on a three yearly basis and in 1990 1,616 women were identified by nine practices as being in the appropriate age group (35 to 54 years) to attend for cervical cancer screening while 10,387 women were identified by the national call system. The attendance rate among the 1,101 women in the rural general practices was 58%, compared with 49% of 4,154 women in the matched group receiving an invitation from the national call system. The attendance rate among the 515 women in the urban general practices was 55%, compared with 41% of 6,233 women in the matched group receiving an invitation from the national call system. Invitations from general practitioners resulted in similar percentages of women in all age groups attending for cervical cancer screening. It is concluded that a general practice based call system for cervical screening produces a higher attendance rate than the national call system.

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TOPO, P., KLAUKKA, T., HEMMINKI, E., UUTELA, A.

Use of hormone replacement therapy in 1976-89 by 45-64 year old Finnish women.

Journal of Epidemiology and Community Health; 45, 1991, no. 4, p. 277-280.

YEAR(S) OF DATA : 1976, 1978-1980, 1987, 1989.
DEPENDENT VARIABLES : use of hormone replacement therapy (HRT).
INDEPENDENT VARIABLES : age, education, year, area of residence.
POPULATION : Finland; 16.413 women, age 45-64 years.
CLASSIFICATION : urban = Helsinki metropolitan area.
other towns,
rural areas.

prevention

RESULTS : HRT use was more common in towns than in rural areas and most common in the capital area. Urban-rural difference became smaller in 1989.

The aim of this study was to describe changes in the use of hormone replacement therapy (HRT) in Finland during the period 1976-1989. The study involved four separate cross sectional population surveys in the years 1976, 1978-1980, 1987, and 1989. Sales figures of hormones in 1981-1989 were used. Participants were national samples of non-institutionalized Finnish women 45-64 years of age. Participation rates ranged from 85% to 96%. Current reported hormone use in the surveys of 1976, 1978-1980, and 1987 was assessed, together with reported hormone use in the last month in the 1989 survey. During the study period the proportion of HRT users increased fivefold. In 1989, 20% of women reported current use of HRT, and the highest rate of use was found among 50-54 year old women in the Helsinki area. In 1976, users were mainly women around the age of menopause, those living in the capital area, and those having a rather high level of education. By 1989 use had spread to postmenopausal women, those in rural areas, and those with less education.

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DUBAY, L.C.

Comparison of rural and urban skilled nursing facility benefit use.

Health Care Financing Review; 14, 1993, no. 4, p. 25-37.

YEAR(S) OF DATA : 1987.
DEPENDENT VARIABLES : use of skilled nursing facilities (nursing home admissions, swing-bed admissions, length of stay).
INDEPENDENT VARIABLES : age, sex, race, diagnosis, place of residence (state, urban/rural area) of enrollee.
POPULATION : USA; all Medicare enrollees (number not given).
CLASSIFICATION : urban = large MSAs (>1,000,000 population); mediumsize MSAs (250,000 - 1,000,000 population); small MSAs (<250,000 population).
rural = urbanized adjacent and non-adjacent to MSA; less urbanized adjacent and non-adjacent to MSA; thinly populated adjacent and non-adjacent to MSA.
RESULTS : all admissions: admission rates higher in rural than in urban; highest admission rates in thinly populated counties that are not adjacent to an MSA.
nursing home admissions: in rural fewer admissions than in urban; lowest admission rates in the most rural counties.
swing-bed admissions: as the rural areas become increasingly rural, swing-bed admission rates increase dramatically.
length of stay: in rural shorter than in urban, especially nursing home admissions.
Use rates for hip fracture and degenerative nervous system disorders were lower in rural than in urban areas. Rural admission rates are much higher than urban admission rates for rehabilitation and other factors relating to health status.

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In this article, differences in use of Medicare's skilled nursing facility (SNF) benefit in rural and urban areas in the United States are examined. Using SNF benefit bills from 1987, the study finds that there appear to be systematic differences by residential location both in the level of use of the benefit and in whether enrollees are admitted to nursing homes and hospital swing beds. Rural Medicare enrollees use the SNF benefit at a rate that is 15% higher than the rate for urban enrollees. The swing-bed program appears to play a critical role in providing access to post-acute care for the rural elderly. In rural areas, almost 29 percent of all SNF benefit admissions are to swing beds.

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DUBAY, L.C.

Explaining urban-rural differences in the use of skilled nursing facility benefit. Medical Care; 31, 1993, no. 2, p. 111-129.

YEAR(S) OF DATA : 1987.
DEPENDENT VARIABLES : admissions per 1,000 medicare enrollees to Specialized Nursing Facilities (SNF) in groups of counties.
INDEPENDENT VARIABLES : nursing home market characteristics, supply of alternative sources of professional care, state policies affecting the nursing home industry, characteristics of the elderly, hospital use variables, residential location, region.
POPULATION : USA; 732 nursing home market areas.
CLASSIFICATION : large metropolitan areas = $\geq 1,000,000$ population.
small and medium sized metropolitan areas = $< 1,000,000$ population.
rural areas = nonmetropolitan countries.
RESULTS : Use rates are higher in large metropolitan areas and rural areas, controlling for the other independent variables. For rural areas this favorable position is also due to the presence of hospital swing beds. Among urban areas there are large differences in use rates.

In this study, Medicare skilled nursing Facility (SNF) bills of 1987 were used to examine differences in urban and rural use of the SNF benefit. Using multivariate techniques, the analysis found that Medicare enrollees living in nonmetropolitan and large metropolitan areas used the SNF benefit at a rate 20% and 17% higher than enrollees living in small and medium-sized metropolitan areas, respectively. In nonmetropolitan areas the swing-bed program plays a major role in assuring access to the SNF benefit. Without the swing-bed program, rural enrollees would use the SNF benefit at a rate comparable to that of enrollees in small and medium-sized metropolitan areas. The importance of the swing-bed program cannot be underscored, because relative to urban enrollees, rural enrollees disproportionately live in nursing home markets that are not amenable to serving Medicare patients.

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FOSSETT, J.W., PETERSON, J.A., RING, M.C.

Public sector primary care and Medicaid: trading accessibility for mainstreaming.

Journal of Health Politics, Policy and Law; 14, 1989, no. 2, p. 309-325.

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- YEAR(S) OF DATA : 1985.
- DEPENDENT VARIABLES : 1) public sector share, total primary care billings;
2) primary care services per medicaid enrollee.
- INDEPENDENT VARIABLES : medicaid clientele segregation factor score, commuting centre factor score, GP charges, availability of primary care from primary physicians, availability of private hospital outpatient facilities, area type.
- POPULATION : USA, Illinois; 29 urban counties and 57 rural counties.
- CLASSIFICATION : urban = counties included in a Standard Metropolitan Statistical Area or containing a city of more than 25,000 population.
rural = other counties.
- RESULTS : 1) Urban: public sector share increases with segregation score and availability of primary care physicians; Rural: public sector share decreases with availability primary care physicians.
2) Urban: primary care services increase with commuting centre score, private hospital outpatient facilities and public sector share; Rural: primary care services increase with commuting centre score, GP charges and availability of primary care physicians.

Facilities operated by nonprofit and public agencies have become increasingly important sources of primary care for Medicaid patients. These facilities are particularly important sources of care in segregated, competitive urban areas, where they are more geographically accessible than many private physicians and expand the availability of care to Medicaid patients rather than substituting for care provided by private physicians. In rural areas, in contrast, the availability of care from public facilities appears to reduce the level of care Medicaid patients receive from private physicians in the counties where these facilities are located. Findings suggest that policymakers can expand urban Medicaid patients' access to care by spending on public care, but at the cost of increasing the segregation of Medicaid patients into a two-tier system of care.

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MAINOUS, A.G. III., BERTOLINO, J.G., HARRELL, P.L.

Physician extenders: who is using them?

Family Medicine; 24, 1992, no. 3, p. 201-204.

- YEAR(S) OF DATA : 1990.
- DEPENDENT VARIABLES : use of and satisfaction with physician extenders (nurse practitioners and physician assistants).
- INDEPENDENT VARIABLES : age, sex, income, education, self-assessment of health, distance traveled for care, insurance, race, residence.
- POPULATION : USA, Kentucky; 687 persons, age ≥ 18 years, random sample.
- CLASSIFICATION : urban = county that is part of a Metropolitan Statistical Area.
rural = other counties.
- RESULTS : no significant difference between rural and urban.

The purpose of this research was to determine the proportion of adults who have received health care from physician extenders. This study used the subject population of the 1990 Kentucky Health Survey, a probability survey of all households in Kentucky. Study personnel contacted subjects using random digit telephone dialing. Subjects were then interviewed to

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ascertain whether subjects had received health care from physician extenders and whether they were satisfied with that care. Of 687 participating persons, 25% had received care from physician extenders during the previous two years, primarily for minor problems and routine checkups. More than 90% of these subjects reported satisfaction with the care they received. Users of physician extenders did not differ from nonusers with respect to income, education, insurance status, self-assessment of health status, or rural versus urban location. Men used physician extenders more frequently than women.

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KENNEY, G.M.

Rural and urban differentials in Medicare home health use.

Health Care Financing Review; 14, 1993, no. 4, p. 39-57.

- YEAR(S) OF DATA : 1983-1987.
- DEPENDENT VARIABLES : home health use rate, visits per user, type of home health service.
- INDEPENDENT VARIABLES : age, sex, race, place of residence of enrollee (state, urban/rural area), primary diagnosis.
- POPULATION : USA; all Medicare enrollees (number not given).
- CLASSIFICATION : urban = metropolitan counties = large core (>1,000,000 population) + large fringe (>1,000,000 population) + mediumsize (250,000 - 1,000,000 population) + small (<250,000 population).
rural = non-metropolitan counties = urbanized adjacent and non-adjacent to MSA + less urbanized adjacent and non-adjacent to MSA + thinly populated adjacent and non-adjacent to MSA.
- RESULTS : Home health use rates were higher in urban areas. The gap between urban and rural use rates narrowed from 1983 to 1987. In 1987, rural home health users received more visits on average than urban users. Rural home health users received more skilled nursing visits and home health visits, and received fewer therapeutic or medical social service visits on average than the urban users. Urban home health users are more likely to have a primary diagnosis of hip and bone fracture and less likely to be diabetes or hypertension cases than rural users.

This article addresses whether the use of Medicare home health services differs systematically for urban and rural beneficiaries. It draws on Medicare data bases from 1983, 1985, and 1987, including the Health Insurance Skeleton Write-Off (HISKEW) files and the Home Health Agency (HHA) 40-percent Bill Skeleton files. It presents background information on urban and rural beneficiaries and contrasts the use rates, visit levels and profiles, episodes of home health use, and primary diagnoses in urban and rural areas. The results point to higher home health use rates in urban areas and to a narrowing of the urban-rural use differential from 1983-1987.

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KENNEY, G.M., DUBAY, L.C.

Explaining area variation in the use of Medicare home health services.

Medical Care; 30, 1992, no. 1, p. 43-57.

YEAR(S) OF DATA : 1985.
DEPENDENT VARIABLES : home health users per 1,000 medicare enrollees, visits per user.
INDEPENDENT VARIABLES : hospital use variables, nursing home market variables, (home) health market variables, elderly characteristics, region, degree of urbanization, January temperature.
POPULATION : USA; 300 Metropolitan Statistical Areas for urban areas and 43 aggregated non MSA areas to represent rural areas.
CLASSIFICATION : large metropolitan area, rural location, rural population density.
RESULTS : in large metropolitan area more home health users and visits than in rural locations controlled for all other variables. no relationship with rural population density.

This study examines the determinants of area-level variation in Medicare home health use in 1985 for the entire United States, using data from Medicare Home Health Bills, the Medicare/Medicaid Automated Certification System, the Medicare Provider Analysis and Review Files, and other sources. Weighted two-stage least squares regression was used to analyze variation in the number of home health users per 1,000 enrollees and the average number of visits received per user. The data were aggregated to the Metropolitan Statistical Area and the rural part of the state, resulting in 343 units of analysis. According to the study's results, higher proportions of Medicare enrollees use home health services in areas with fewer nursing home beds per enrollee, higher hospital discharge rates, and shorter mean lengths of stay, higher Medicare reimbursement ceilings for skilled nursing home health visits, and more home health agencies per enrollee. Other things being equal, beneficiaries in New England are 40% more likely to use home health services than their counterparts in other regions with similar climates. The average number of visits received by home health users appears to be higher in areas where there are more agencies per enrollee and a higher share of agencies that are proprietary. There also appear to be large regional differences in the number of visits received per user. The results imply that constrained access to nursing home beds is leading to higher levels of Medicare home health use and that there may be further savings from the substitution of home health services for hospital days. This study shows that Medicare reimbursement ceilings may constrain use and that access may be a problem for beneficiaries in areas with fewer agencies per enrollee. The study also points to significant regional variation in the proportion of beneficiaries who use home health services, even with controls for many different explanatory variables.

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NYMAN, J.A., SEN, A., CHAN, B.Y., COMMINS, P.P.

Urban/rural differences in home health patients and services.

Gerontologist; 31, 1991, no. 4, p. 457-466.

YEAR(S) OF DATA : 1986-1989.
DEPENDENT VARIABLES : average number of home health care patients, their health status and the average number of visits (7 types).

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- INDEPENDENT VARIABLES : age, sex, area, socio-economic variables, death rate, supply characteristics.
- POPULATION : USA, Wisconsin; all home health care patients in all 71 counties.
- CLASSIFICATION : 3 definitions of 'urban':
1) urban = Milwaukee/Racine/Kenosha primary metropolitan area (6 counties);
2) urban = Milwaukee metropolitan area plus Green Bay and Madison (8 counties);
3) urban = all MSAs in the state (19 counties).
rural = rest of Wisconsin.
- RESULTS : Definition 3) shows the sharpest distinctions between urban and rural. Significant ($p < 0.01$):
average percentage of elderly (age ≥ 65 years) receiving some home health care at some time during 1988 higher in an MSA county than in a non-MSA county;
rural patients: more diabetes, cardiovascular diseases, sensory/communication disorders, nursing care problems, problems in the nursing actions and IADL categories, but less ADL problems than urban patients;
urban patients receive about twice as many visits for home health aide and physical therapy than rural patients.

Using data from the Wisconsin Annual Survey of Home Health Agencies, urban/rural differences for home health care patients were analyzed. Findings indicate that urban dwellers are more likely to be home health patients than are rural residents. Urban home health patients are more apt to be nonelderly, male, and have "other conditions" as their primary diagnosis. They are likely to be more physically dependent and to receive home care longer. Urban home health patients are more typical of long-term care patients, whereas rural patients may be better described as recipients of postacute care, often recovering from diabetes and heart attacks. Possible problems with rural access to home health care are discussed.

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BOWLING, A., FARQUHAR, M., BROWNE, P.

Use of services in old age: data from three surveys of elderly people.
Social Science & Medicine; 33, 1991, no. 6, p. 689-700.

- YEAR(S) OF DATA : 1987-1989.
- DEPENDENT VARIABLES : use of district nursing services, home help services, meals on wheels, GP services, social services.
- INDEPENDENT VARIABLES : age, sex, household size, marital status, social network and support, and health status.
- POPULATION : England, London and Essex; 1,415 elderly people, age ≥ 65 years.
- CLASSIFICATION : urban = City and Hackney in inner London.
semi-rural = Braintree in Essex.
- RESULTS : utilization of health and social services higher in the urban area.

It has been suggested that home sharers, particularly spouses, act as substitutes for formal health and social care provision. This hypothesis was investigated in relation to three independent samples of elderly people, using comparable methodology in London (urban)

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and Essex (semi-rural). Utilization of health and social services was found to be higher in the urban area, and it increased with age. Marital status was not associated with service use nor with contact with general practitioners in any age group or area. The social network variables analysed had little or no predictive ability in relation to recency of contact with general practitioners. Household size was associated with total use of health and social services, and social services in particular. The multivariate analysis confirmed that household size was a strong predictor of use of home help and meals on wheels services. Functional status was the best predictor of use of district nursing services.

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CLARK, D.O.

Residence differences in formal and informal long-term care.

Gerontologist; 32, 1992, no. 2, p. 227-233.

YEAR(S) OF DATA : 1982.
DEPENDENT VARIABLES : recieved formal and informal in-home care.
INDEPENDENT VARIABLES : age, gender, race, education, income, marital status, disability (ADL, IADL), area of residence.
POPULATION : USA; national sample of 6,088 disabled persons, age ≥ 65 years.
CLASSIFICATION : metropolitan:
1. cities >250,000 inhabitants;
2. suburbs <30 miles from large cities;
3. open country, >30 miles from a large city.
non-metropolitan:
1. towns <50,000 inhabitants;
2. unincorporated open country, non-farm;
3. unincorporated open country, farm.
urban = cities, suburbs, towns.
rural = rest
RESULTS : Disabled residents of rural areas received less formal assistance than their urban counterparts (both ADL and IADL), but more informal assistance in IADL.
ADL = activity of daily living.
IADL = instrumental activity of daily living.

This study, using a large, representative sample of 6,088 noninstitutionalized disabled older persons in the United States, found that urban residents were much more likely than rural residents to receive formal assistance in every ADL and IADL considered. Rural residents were more likely to receive informal assistance and to receive two-thirds more person days of informal assistance per week. No residence differences in unmet need for care were identified.

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FORDYCE, I.D., HUNTER, D.J.

Rural-urban variations in service provision for elderly people.

Journal of the Royal College of General Practitioners; 37, 1987, no. 296, p. 109-111.

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

- YEAR(S) OF DATA : ?.
- DEPENDENT VARIABLES : knowledge and receipt of services, perceived need of services, ability to cope with personal care, visits by services, perceived need for help, sources of help with daily tasks.
- INDEPENDENT VARIABLES : urban/rural area.
- POPULATION : Scotland, Dundee and north Grampian; 997 people, age ≥ 75 years living at home.
- CLASSIFICATION : urban = Dundee (medium sized regional centre).
rural = north Grampian (agricultural).
- RESULTS : significant:
in rural more knowledge of service from district nurse and more contacts with district nurse service, health visitors and meals-on-wheels than in urban; among non-recipients need for chiropody higher in urban than in rural; difficulty in getting about outside the house more common in urban than in rural; disabled in urban received fewer visits than the rural disabled; greater help in rural area with respect to cooking and getting out; perceived need with domestic tasks a little higher in the urban area.

Findings reported from a survey of 997 people aged 75 years and over living at home in a rural and an urban area in Scotland showed that the two areas were similar in overall levels of support and in levels of perceived need. The rural area enjoyed rather more generous support from district nurses and health visitors than the urban area, a finding which challenges the widely-held view that rural areas suffer from lower levels of support and have higher levels of felt need. The few differences between the areas that did emerge were not necessarily a consequence of location; other explanations may be found in the operating styles of the services, and in the amount and type of informal support to be found in the two areas. Overall, the findings question the validity of a simple urban-rural dichotomy in studies of elderly people.

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KROUT, J.A., CUTLER, S.J., COWARD, R.T.

Correlates of senior center participation: a national analysis.

Gerontologist; 30, 1990, no. 1, p. 72-79.

- YEAR(S) OF DATA : 1984.
- DEPENDENT VARIABLES : use of senior centres in the last 12 months.
- INDEPENDENT VARIABLES : age, sex, race, education, income, living arrangement, health, ADL/IADL difficulties, social interaction, place of residence.
- POPULATION : USA; national sample of 13,737 persons, age ≥ 60 years.
- CLASSIFICATION : SMSA-central cities,
SMSA-not central cities,
non-SMSA-nonfarm areas,
non-SMSA-farm areas.
- RESULTS : bivariate: lower participation in non-SMSA-farm and somewhat lower in SMSA-central cities than in other areas/cities.
multivariate: higher participation in SMSA-not central city and non-SMSA-nonfarm.

This article presents results of a logit regression analysis of the correlates of senior center participation for a national sample of 13,737 elders in the United States from the Supplement

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on Aging of the 1984 National Health Interview Survey. Significant characteristics were higher levels of social interaction, decreasing income, living alone, fewer ADL-IADL difficulties, being female, and living in SMSA-not central cities and rural nonfarm areas. Curvilinear relationships between center use and age and education were found. Race, self-reported health status, and residence in urban and rural farm areas were nonsignificant when the other variables were controlled.

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LEE, H.J.

Comparison of selected health behavior variables in elderly women with osteoarthritis in different environments.

Arthritis Care Research; 6, 1993, no. 1, p. 31-37.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : perceived health, functional status, use of health care facilities.
INDEPENDENT VARIABLES : degree of urbanization, social support, hardiness, socio-demographic variables.
POPULATION : USA; 45 women, age 65-75 years.
CLASSIFICATION : urban = cities >50,000 & distance home-hospital <30 min.
rural = cities <49,999 & " " " 31-59 min.
frontier = towns <2,500 & " " " >60 min.
RESULTS : perceived health: frontier somewhat better than urban or rural.
functional status: frontier a lot better than urban.
use of health care facilities: urban much more than rural or frontier, rural more than frontier.

Hardiness, social support, perceived health, functional independence, and use of health care facilities were compared in this study of 45 elderly women with osteoarthritis living in three different environments: urban, rural, and frontier. All participants were between the ages of 65 and 75 years and were living in their own homes. Statistical differences were found between groups in overall perceived health and functional independence; the frontier sample perceived their health as better and themselves as more functionally independent than the rural or the urban sample. No statistical differences were found in levels of hardiness or perceived social support between the three groups. Use of health care facilities varied among participant groups by environmental context; the urban group made more use of facilities than the rural or frontier group, and the rural group used more facilities than the frontier group.

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LEE, G.R., DWYER, J.W., COWARD, R.T.

Residential location and proximity to children among impaired elderly parents.

Rural Sociology; 55, 1990, no. 4, p. 579-589.

YEAR(S) OF DATA : 1982.
DEPENDENT VARIABLES : living in one household with child, having a child at less than 30 minutes distance.
INDEPENDENT VARIABLES : age, gender, marital status, number of living children, ADL difficulties, urbanization.
POPULATION : USA; 4,848 elderly parents who reported difficulty performing at least one activity of daily living.

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

- CLASSIFICATION : large city = population $\geq 50,000$.
small city = population 2,500 to 49,999.
rural nonfarm = population $< 2,500$.
rural farm = population $< 2,500$ and dependent on farming.
- RESULTS : Older residents of large cities are most likely to live with children and large-city and farm residents are more likely than small-city or rural nonfarm residents to live near children.

Adult children's proximity to their impaired, elderly parents ($n = 4,848$) is examined in terms of how it affects their ability to provide care, based on interview data drawn from a nationally representative sample of noninstitutionalized elders who have difficulty performing one or more activities of daily living (ADLs). Six characteristics constituted the independent variables: age, gender, marital status, number of living children, number of ADLs performed with difficulty, and place of residence (large or small city, rural farm or nonfarm). Proximity of children was measured as two dependent variables: co-residence, or nearby (within a 30-minute drive). Results show that respondents in large cities were more likely to maintain co-residence with their children. Those from large cities and farms were more likely to live near their children. Contrary to popular belief, elderly rural parents have no advantage over urban elderly parents with respect to closer-knit family systems brought about by closer proximity of the children. Having fewer health and human services in rural areas also disadvantages the impaired elderly living there.

2.4 primary medical care

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EGGEN, P., MÆLAND, J.G., SKJÆRVEN, R.

Use of primary medical care: does place of residence play a role?

Scandinavian Journal of Primary Health Care; 11, 1993, no. 1, p. 31-37.

- YEAR(S) OF DATA : 1988.
- DEPENDENT VARIABLES : total numbers of contacts with the primary medical care, reason for contact, type of contact.
- INDEPENDENT VARIABLES : age, sex, place of residence.
- POPULATION : Norway, Førde; 2,762 patient-practice contacts.
- CLASSIFICATION : semi-urban = Førde, 6,300 population.
rural = surrounding area, 2,000 population.
- RESULTS : Semi-urban women have higher contact rates than rural women. No difference among men. Rural residents ≥ 50 had more direct contacts with a doctor than semi-urban residents ≥ 50 . This trend is reversed for younger respondents. Rural residents were more apt to use indirect contacts than semi-urban residents. The rural population was more apt to use primary care contacts for control- or other reasons. For new problems there was no effect of place of residence.

The present paper is based on a prospective study of the use of primary health care in the municipality of Førde, Norway, in 1988. The population of about 8,300 was divided into two groups: semi-urban and rural. There were differences in the use of primary medical care between the two groups. The empirical study showed higher total contact rates for the rural women than for the semi-urban women, and virtually no difference among the men. Higher age and female gender were associated with more use of all types of and all reasons for

contact. In multivariate analyses, a number of interaction effects between age, sex, and place of residence were demonstrated.

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JEANGROS, C., HAUSSER, D.

La population consultante en milieu ambulatoire.

Sozial- und Praeventivmedizin; 35, 1990, no. 1, p. 24-33.

YEAR(S) OF DATA : 1987.
DEPENDENT VARIABLES : contact frequencies with general practice, internal medicine, pediatrics, gynaecologists, psychiatrists.
INDEPENDENT VARIABLES : age, sex, place of residence.
POPULATION : Switzerland, cantons of Vaud and Fribourg; registration of 17,901 contacts by physicians in private practice (n = 191) and in hospitals (n = 35).
CLASSIFICATION : 'grandes villes' = Lausanne, Fribourg.
'villes' = urban centres >10,000 inhabitants.
'campagne' = rest of the cantons of Vaud and Fribourg.
RESULTS : more contacts and more home visits with GP's and internal medicine in the 'campagne'; in 'villes' more contacts with specialists.

A study on ambulatory medical care has been conducted in the cantons of Vaud and Fribourg, Switzerland, in february-march 1987. The characteristics of patients visiting a private doctor and those of outpatients in hospitals are described. At private offices women >15 years consult more often than men; children (0-4 years) and elderly are the groups of population who consult most. In ambulatory services of hospitals, men are more present than women; children aged <4 years and adults aged 15 to 39 years use most these services. Use of ambulatory care varies with regions and days of the week. In urban regions, people have more medical visits. On Thursdays and weekends, there are less consultations but they are more often urgent.

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PAMPALON, R.

Le recours aux services des professionnels de la santé: une analyse géographique au Québec.

Cahiers de Sociologie et de Démographie Médicales; 30, 1990, no. 2,

p. 253-267.

YEAR(S) OF DATA : 1988.
DEPENDENT VARIABLES : utilization of health care professionals.
INDEPENDENT VARIABLES : age, sex, region, perceived health, physician density, degree of urbanization.
POPULATION : Canada, Quebec; Enquête Santé Québec.
CLASSIFICATION : métropoles,
capitales régionales,
agglomérations et villes,
rural.

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

RESULTS : utilization of health care professionals increases with degree of urbanization; poor people use more services everywhere and rich people in the urban areas.

Nearly one quarter of the people surveyed in Quebec, Canada, have seen a health professional during two weeks in 1988. One third of these visits have been to general practitioners. Females have paid more visits than males, widows more than married people, the elderly more than the young. Moreover, two groups have had a higher demand: the poor, wherever they are, and the rich in the big cities and metropolitan areas. When grouped into homogeneous areas, the growth of demand is correlated with available services and perceived illness or ailments. When a group increases its demand for services, which are nearly free of charge, the consumption level of the group goes beyond need, and the availability of services becomes increasingly the main determinant.

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BRITT, H., MILES, D.A., BRIDGES-WEBB, C., NEARY, S., CHARLES, J., TRAYNOR, V.

A comparison of country and metropolitan general practice.

Medical Journal of Australia; 159 Supplement, 1993, p. S9-64.

YEAR(S) OF DATA : 1990-1991.
DEPENDENT VARIABLES : workload, reasons for encounter (RFEs), treated morbidity, prescriptions, other treatments, referrals, admissions, tests.
INDEPENDENT VARIABLES : urbanicity of general practices.
POPULATION : Australia, New South Wales/Victoria/ Queensland; 231 general practitioners.
CLASSIFICATION : metropolitan areas = Brisbane, Melbourne, Sydney.
large country towns = >15.000 population
medium country towns = 5.000 - 15.000 population.
small country towns = <5.000 population.
RESULTS : RFEs relating to the respiratory, cardiovascular, psychological and female genital systems were presented less often in country areas, while those related to the reproductive system were more common. No over-all differences in prescription were observed, only for specific drugs. Referrals were made less often in small country towns. The rate of hospital and nursing home admissions was higher in country areas than in metropolitan areas. Tests were requested more often in country towns but in small country towns lower rates were observed.

The objective of this study was to provide a description of country general practice in Australia, and to determine the extent to which country and metropolitan general practice differ in terms of the characteristics of the practitioners, the morbidity managed, treatments provided and the availability of support services. Each general practitioner (GP) recorded for two one-week periods separated by an interval of six months, between October 1990 and October 1991. Participants were drawn from a list of medical practitioners in Queensland, New South Wales and Victoria who provided more than 1.500 general practice Medicare items of service during the previous year. The sample was stratified within States by population of postcode, into metropolitan areas and three country strata: small country towns, medium country towns and large country towns. The total country sample is referred to as "country areas". The variables studied included: GP characteristics; practice isolation factors; patient age, sex and status to the practice; patient reasons for encounter (up to three per

encounter); problems managed (up to four); drugs prescribed and other treatments provided (up to four per problem); tests and investigations ordered and referrals made at these encounters; and planned follow-up. Country GPs recorded significant more encounters per week than metropolitan GPs and there were few 'part time' GPs and far more 'busy' GPs in country areas. Country GPs recorded proportionally fewer home visits than metropolitan GPs. GPs in small and medium towns recorded relatively fewer surgery encounters than other participants, but were more likely to undertake hospital work and do more of it. A similar difference was noted in procedural work recorded. Metropolitan GPs recorded more RFEs than those in the country. There was no significant difference in the number of problems managed at encounters in country and metropolitan areas. Encounters involving a respiratory problem, those including a cardiovascular problem and those in which problems of the female genital system arose were relatively less frequent in country areas than in metropolitan areas. Encounters involving a problem associated with the skin and those with at least one problem in the pregnancy and family planning area were more common in country areas. Significant differences were found in the relative rate (per 100 encounters) of management of some individual problems. No significant differences were found in prescribing rates per 100 encounters or per 100 problems managed in country and metropolitan areas, but a greater proportion of encounters in metropolitan areas resulted in a prescription than in country areas. Prescription rates in small country towns were significantly lower than those in medium and large country towns. Counselling was less frequently recorded in country areas, particularly in small and medium country towns. There was no difference between the country and the metropolitan areas in the relative frequency of encounters resulting in a referral to a specialist, but the rate in small country towns was significantly lower than in medium and large country towns and metropolitan areas. The rate of hospital and nursing home admissions in country areas was double that of metropolitan areas, steadily decreasing with increased population. Admission of children was far more likely in country areas. A test or investigation was ordered at a significantly greater proportion of country encounters than metropolitan encounters, but there were significant differences among country strata, medium country towns having higher order rates than metropolitan areas and small country towns having significantly lower rates than all other strata.

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LEEFLANG, R.L.I., KLEIN-HESSELINK, D.J., SPRUIT, I.P.

Health effects of unemployment-I. Long-term unemployed men in a rural and an urban setting.

Social Science & Medicine; 34, 1992, no. 4, p. 341-350.

YEAR(S) OF DATA : 1983-1987.
 DEPENDENT VARIABLES : depressive symptoms, physical symptoms, chronic conditions, physician consult, prescribed drugs, being under treatment.
 INDEPENDENT VARIABLES : age, having a partner, educational level, having dependent children, current income, income loss, cannot provide for dwelling costs, expected financial problems, number of worries, partner finds unemployment problematic, number of friends, confidantes, loneliness, problems making friends, duration of unemployment, re-employment changes, chance to remain unemployed, number of disadvantages.
 POPULATION : The Netherlands; 796 employed and unemployed people 30-50 years of age.
 CLASSIFICATION : urban = Randstad Holland.
 rural = Province of Zeeland.

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

RESULTS : For urban unemployed the perceived size of the social network is important in explaining health differences, while for rural unemployed it is stigmatization that is important. Ill health can be better explained for the rural unemployed than for the urban unemployed.

Between 1983 and 1987 employed and long-term unemployed men in Randstad Holland and Province of Zeeland, between 30 and 50 years old, have been interviewed. The main topics of the study were the independent health effects of unemployment, the factors related to these health effects and socio-cultural differences. Independent effects on the health status (perceived somatic and depressive complaints and self reported chronic disease) have been found to exist among both the rural and the urban unemployed. There is no clear effect of unemployment on health care use, but regional differences in health care use among rural and urban unemployed have been found. Between the urban and rural unemployed there are more similarities than differences in the factors and models explaining ill-health. The most important factors are: loneliness, disadvantageous consequences of unemployment, money worries and ill-health prior to job loss (health selection at the labour market). One important difference is that among the urban unemployed the perceived size of the network is an explanatory factor, but among the rural unemployed perceived stigmatization is more important. In general, ill-health can be better explained for the rural unemployed than for the unemployed in Randstad Holland.

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LAKO, C.J., CLUITMANS, R., FREDRIX, L., VASBINDER, L.

Health status and medical consumption of the elderly in urban and rural areas in The Netherlands; a secondary analysis of CBS-data.

Zeitschrift für Altersforschung; 43, 1988, no. 4, p. 207-212.

YEAR(S) OF DATA : 1982.
DEPENDENT VARIABLES : perceived health, number of: chronic disorders, problems with activities of daily living, mental complaints, paid visits to general practitioners and physicians.
INDEPENDENT VARIABLES : age, sex, degree of urbanization.
POPULATION : The Netherlands, north, west and south-west; 4,283 persons, age ≥ 55 years.
CLASSIFICATION : urban = cities in the west.
rural = communities in the north and south-west.
RESULTS : significant differences:
women aged ≥ 75 years in urban feel healthier than in rural;
men in urban have more mental complaints than in rural; in urban more paid visits than in rural.

Data of the life situation survey of the Central Bureau of Statistics (CBS) of 1982 have been analyzed. This secondary analysis has been carried out to study differences in health and medical consumption between urban and rural elderly of age ≥ 55 years. It has been found that there are no differences in the prevalence of chronic disorders. More mental complaints have been found among male urban elderly compared to male rural elderly. The same relationship, although not significant, exists for women. For women it has been found that urban elderly feel less healthy than rural elderly. Male urban elderly aged 55-74 year pay more visits to the general practitioner than rural elderly of the same age. The same holds for women aged ≥ 75 year who also pay more visits to the physician.

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VUORINEN, H.S., MÄKELÄ, M., TUOMIKOSKI, H., FLOMAN, P.

Core-periphery differences in children's health and use of general practitioner services in Finland from 1964 to 1987.

Social Science & Medicine; 33, 1991, no. 9, p. 1023-1028.

- YEAR(S) OF DATA : 1964, 1968, 1976, 1987.
- DEPENDENT VARIABLES : restricted activity days, chronic conditions, number of physician contacts.
- INDEPENDENT VARIABLES : age, sex, place of residence,
- POPULATION : Finland; children under 15 years of age.
1964: n = 3,838; 1968: n = 3,759; 1976: n = 2,057; 1987: n = 1,219.
- CLASSIFICATION : core = less than 3 kilometers from nearest physician's office in urban municipalities in the national core (= southern part).
periphery = more than 3 kilometers from nearest physician's office in rural municipalities in the national periphery (= rest of Finland).
- RESULTS : The core-periphery difference in the number of restricted activity days for young children increased over time (less in periphery). The core-periphery difference in physician contacts remained constant for both younger and older children (less in periphery).

The aim of this study was to investigate the development of core-periphery differences in children's health and use of health services. The study material was obtained from the national health and social security interview survey carried out in 1964, 1968, 1976 and 1987. Age standardized prevalence of chronic diseases, number of restricted-activity days and physician contacts were presented for two age groups: 0-6-year-olds and 7-14-year-olds. The prevalence of chronic diseases was quite similar in the core and periphery in 1976 and 1987, but the number of restricted-activity days throughout the study period (1964-1987) was significantly higher in the core than in the periphery. The higher frequency of physician contacts in the core in comparison with the periphery was spectacular.

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MAINOUS, A.G. III., HUESTON, W.J.

Factors influencing the use of primary care physicians and public health departments for childhood immunization.

Journal of the Kentucky Medical Association; 91, 1993, no. 9, p. 395-398.

- YEAR(S) OF DATA : 1992.
- DEPENDENT VARIABLES : use of public health departments or primary care physicians for childhood immunization.
- INDEPENDENT VARIABLES : age, gender, race, education, poverty status, residence.
- POPULATION : USA, Kentucky; 97 households who had children under age 5 living at home.
- CLASSIFICATION : urban = MSA county.
rural = non-MSA county.
- RESULTS : logistic regression:
urban residents much more likely than rural individuals to use primary care physicians for childhood immunizations.

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

The purpose of this study was to examine factors influencing the use of primary care physicians and public health departments for childhood immunization for patients in urban and rural areas. A telephone survey employing probability sampling (random digit dialing) was conducted to obtain data from a sample of adults (≥ 18 years) living in Kentucky. Data are from 97 households with children under age 5 living in the home. The majority of the respondents (95%) reported that their children had received immunizations. The primary locations for receipt of immunizations were the health department (51%) and a primary care physician's office (37%). 65% of those who used the health department for childhood immunizations reported that they did so for financial reasons. Individuals who received immunizations from the health department were more likely than those who received them at a primary care physician's office to have incomes at or below the poverty level and live in a rural area. The results of a logistic regression computed on use of the health department or primary care physician for immunizations indicated urban/rural residence as the only significant predictor, with urban residents 3.7 times more likely than rural residents to receive immunizations from a primary care physician. These results suggest that many families in rural areas have primary care physicians, but use the health department for their routine childhood immunizations. The results support previous data which indicate that delivery of childhood immunizations by primary care physicians is less available to rural than urban individuals.

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BLANCQUAERT, I.R., ZVAGULIS, I., GRAY-DONALD, K., PLESS, I.B.

Referral patterns for children with chronic diseases.

Pediatrics; 90, 1992, no. 1, p. 71-74.

YEAR(S) OF DATA : 1988.
DEPENDENT VARIABLES : type of referral of general practitioners and pediatricians.
INDEPENDENT VARIABLES : place of residence.
POPULATION : Canada, province of Quebec; 331 pediatricians and 423 general practitioners.
CLASSIFICATION : urban, rural.
RESULTS : Urban GPs and pediatricians made more referrals to university hospital specialists than rural GPs and pediatricians. Rural GPs and pediatricians assumed patient care more often than urban GPs. In urban areas referrals for all aspects of care occurred more often.

A sample of 1,377 physicians in the province of Quebec were surveyed by mailed questionnaire to study to what extent primary care physicians are involved in the long-term care of children with chronic disorders. The sample included all pediatricians practicing in the province and a stratified random sample of general practitioners. A response rate of 81% was achieved. Referral patterns were studied for asthma, congenital heart disease, and diabetes. Although pediatricians referred their patients less frequently than general practitioners, referral patterns depended mainly on the clinical condition. "No routine referral" was the most popular management strategy for asthma, whereas for congenital heart disease and diabetes more than 20% of physicians referred their patients for all aspects of care. Rural physicians tended to assume patient care to a greater extent than did urban physicians. Most pediatricians referred patients directly to subspecialists practicing in tertiary care centers, whereas general practitioners often sent patients to pediatricians practicing elsewhere, or to other specialists. These data suggest that the availability of medical resources in the community and accessibility to tertiary care centers also influence physicians' involvement in the long-term care of these children.

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KOSTRABA, J.N., GAY, E.C., REWERS, M., CHASE, H.P.,
KLINGENSMITH, G.J., HAMMAN, R.F.

Increasing trend of outpatient management of children with newly diagnosed
IDDM. Colorado IDDM Registry, 1978-1988.
Diabetes Care; 15, 1992, no. 1, p. 95-100.

YEAR(S) OF DATA : 1978-1988.
DEPENDENT VARIABLES : outpatient and inpatient care at insulin-dependent diabetes
mellitus (IDDM) diagnosis.
INDEPENDENT VARIABLES : age at diagnosis, sex, ethnicity/race, year of diagnosis,
residence at time of diagnosis, physician group.
POPULATION : USA, Colorado; 1,182 children with newly diagnosed IDDM, age
<18 years.
CLASSIFICATION : urban = counties in the Front Range of Colorado.
rural = remaining counties.
RESULTS : In rural areas a smaller proportion of residents were treated as
outpatients compared with those living in urban areas.

The objective of this study was to examine the management of newly diagnosed insulin-
dependent diabetes mellitus (IDDM) in Colorado over time and to determine the prevalence
of outpatient care at IDDM diagnosis on a statewide basis. The Colorado IDDM Registry was
used to assess medical care at the diagnosis of IDDM in 1,182 patients less than 18 years of
age between 1978 and 1988. Treatment of IDDM at diagnosis (outpatient vs. inpatient) did
not differ by age, sex, or ethnicity/race. Patients living in rural counties were less likely to
have been treated as outpatients at diagnosis than those living in urban counties. Physicians
at specialized diabetes clinics (e.g., The Barbara Davis Center for Childhood Diabetes and
The Childrens Hospital) were more likely to treat newly diagnosed children in an outpatient
setting than physicians not affiliated with these clinics. The relatively new practice of
outpatient care at diagnosis of IDDM increased between 1978 and 1988 in Colorado, in both
specialized diabetes clinics and physicians' practices not affiliated with specialized clinics.

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SEIDEL, J.S., HENDERSON, D.P., WARD, P., WAYLAND, B.W., NESS, B.

Pediatric prehospital care in urban and rural areas.

Pediatrics; 88, 1991, no. 4, p. 681-690.

YEAR(S) OF DATA : 1984.
DEPENDENT VARIABLES : pediatric prehospital care calls: characteristics of patients,
complaints, assessment, drugs and procedures, time of calls.
INDEPENDENT VARIABLES : degree of urbanization, region.
POPULATION : USA, California; 10,493 pediatric prehospital care runs from 4
Emergency Medical Services agencies, calls with patients \leq 18
years.
CLASSIFICATION : urban = population of >2,500.
rural = communities with a population of \leq 2,500.
RESULTS : few rural-urban differences:
EMS more used for trauma in rural areas;
fewer calls for children <5 years in rural areas;
more violent acts in urban areas.

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

Data from 10,493 prehospital care reports in 11 counties of California (four emergency medical services systems in rural and urban areas) were collected and analyzed. Comparison of urban and rural data found few significant differences in parameters analyzed. Use of the emergency medical services system by pediatric patients increased with age, but 12.5% of all calls were for children <2 years old. Calls for medical problems were most common for patients younger than 5 years of age; trauma was a more common complaint in rural areas (64%). Frequency of vital sign assessment differed by region, as did hospital contact. Complete assessment of young pediatric patients, with a full set of vital signs and neurologic assessment, was rarely performed. Advanced life support providers were often on the scene, but advanced life support treatments and procedures were infrequently used.

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STRIPE, S.C., SUSMAN, J.

A rural-urban comparison of prehospital emergency medical services in Nebraska.

Journal of the American Board of Family Practice; 4, 1991, no. 5, p. 313-318.

YEAR(S) OF DATA : 1988-1989.
DEPENDENT VARIABLES : characteristics of emergency medical services (EMS) runs.
INDEPENDENT VARIABLES : urban/rural location.
POPULATION : USA, Nebraska; 482 rural runs and 3586 urban runs.
CLASSIFICATION : urban = Lancaster County, 211,600 population.
rural = Richardson County, 10,200 population.
RESULTS : There is a considerable difference in type of illness between the urban and rural runs and time to final destination is longer in the rural area.

The provision of emergency medical services (EMS) in the rural USA presents a unique challenge. While rural and urban EMS outcomes have been compared, differing urban-rural population characteristics and roles for rural ambulance teams can confound such comparisons.

A year-long study of the prehospital EMS was conducted in rural Richardson County, Nebraska. Data were collected on the age, sex, and race of patients, response time, transport distance, medical problems encountered, and treatment rendered enroute. These data were compared with those from an urban Lancaster County comparison group and statistical data from the Nebraska State Health Department. In Richardson County, 70 percent of calls involved the elderly, whereas 38 percent of the urban calls and 36 percent of the Nebraska State calls involved the elderly. The rural ambulance service was more likely to provide for routine transfers, to involve patients with fractures and cardiorespiratory and neurologic problems, and twice as likely to result in hospital admission than was the urban ambulance service. The frequency with which advanced life support measures were applied in the rural area was similar to that in the urban area. The rural area response times were equivalent to the urban area response times after the rural area long-distance transfers were excluded. The location of service in the rural area was more likely to be the hospital or nursing home, whereas the urban location was more likely to be a home, on a highway, or in a public setting.

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

RESULTS : rural = villages within 20 km. distance from these cities.
: national: higher referral rate in urban areas, difference decreases over time;
regional:
referrals: same conclusion;
prescription: more deliveries of non-specific medicine in urban areas; no significant difference for specific medicines.

Referral and prescription rates differ considerably between urban and rural regions. In the Netherlands these differences have decreased between 1974 and 1984, but the number of referrals in urban districts was still greater than in rural regions in 1984.

Urban/rural differences in referral rate and prescription could neither be explained by differences in sex-age distributions nor by type or size of the general practices.

It is suggested that rural inhabitants may be less inclined to complain than people living in an urbanized region.

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BOUMA, J., POEL, F. VAN DE, SCHAUB, R.M.H., UITENBROEK, D.

Differences in total tooth extraction between an urban and a rural area in the Netherlands.

Community Dentistry and Oral Epidemiology; 14, 1986, no. 3, p. 181-183.

YEAR(S) OF DATA : 1982-1983.
DEPENDENT VARIABLES : frequency of total tooth extraction.
INDEPENDENT VARIABLES : age, sex, education, insurance, area.
POPULATION : The Netherlands, Groningen; all dentists in the urban and rural area and 282 patients, age ≥ 20 years, who received total tooth extraction during 1 year.
CLASSIFICATION : urban = city of Groningen (165.000 inhabitants).
rural = about 50 km to the east of Groningen (150.000 inhabitants).
RESULTS : Higher frequency of total tooth extraction in rural than in urban. People living in the rural area were more often symptomatic attenders and less often regular attenders than those in the urban area.

Differences in total tooth loss between a rural and an urban area in the province of Groningen, the Netherlands, have been studied. Patients who participated in this study were those who received total tooth extraction during the calendar year 1982 (urban area) and 1983 (rural area). During the year, in the urban area 137 cases of total tooth extraction were recorded; in the rural area this was 237. This frequency is equivalent to 109 and 226 total tooth extractions per 100,000 inhabitants, respectively. The age and sex distribution of the rural and urban population could not account for this difference. The rural population had a lower educational level and more people insured in a State Health Scheme, which is related to income. The frequency of symptomatic attenders was highest in the rural area among those who were insured in a State Health Scheme. It is concluded that differences in numbers of total extractions between the rural and urban areas cannot be explained entirely by differences in population characteristics.

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HUNT, N., SILVERMAN, H.A.

Use of dental services in 1980.

Health Care Financing Review; 9, 1987, no. 1, p. 31-42.

YEAR(S) OF DATA : 1980.
 DEPENDENT VARIABLES : number and percent of persons using dental services, number of visits per user, type of services used, charges for dental services, sources of payment.
 INDEPENDENT VARIABLES : age, sex, ethnicity/race, education, family income, type of coverage, geographic region, type of community.
 POPULATION : USA; 17,900 noninstitutionalized persons.
 CLASSIFICATION : SMSA: central city, remainder.
 outside SMSA: urban, rural.
 RESULTS : Users in rural areas outside SMSAs had lowest charges per visit and total charges. Further no significant differences between SMSAs and non-SMSAs.

In this article, the use of dental services by the civilian noninstitutionalized population of the USA in 1980 is described. Data are presented on the extent to which this population is insured for dental expenses, their use of dental services, the charges incurred, and the sources of payment for these services. The use of dental services increased with income and education. Black non-Hispanics made the least use of dental services among the ethnicity/race categories examined. Persons in the South trailed residents of other census regions in the use of dental services.

2.5 secondary care

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BAY, K.S., MAHER, M., LEE, S.J.K.

Utilization of hospital services by cardiovascular patients, Alberta, Canada.

American Journal of Public Health; 79, 1989, no. 6, p. 759-764.

YEAR(S) OF DATA : 1971-1986.
 DEPENDENT VARIABLES : utilization rates by cardiovascular patients (CV DRGs); number of discharges per 1,000 person-years, patient-days per 1,000 person-years, costs per person-year; choice of hospital.
 INDEPENDENT VARIABLES : year, origin of patients.
 POPULATION : Canada, province of Alberta; all cardiovascular patients in 123 general acute care hospitals.
 CLASSIFICATION : metropolitan, suburban, rural areas.
 RESULTS : Rural discharge rates were about twice those of the metropolitan areas, suburban rates were slightly higher than metropolitan rates.

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

Rural residents used hospital beds much more than metropolitan residents (per capita), resulting in higher per capita CV costs for rural residents.

Strong increasing tendency for those in rural and suburban areas to depend on metropolitan hospital CV services. Metropolitan and suburban hospitals increased their allocation of CV resources to rural patients.

CV = cardiovascular disorders

DRGs = diagnosis related groups

Hospital utilization by cardiovascular patients, associated hospital expenditures, and the per capita cost of treating cardiovascular diseases in Alberta between 1971 and 1986 was studied. Expressed in constant 1984 Canadian dollars, the estimated total hospital cost increased from \$84 million in 1971 to \$131 million in 1986; during this period the Province of Alberta spent about \$51 Canadian per resident each year for cardiovascular hospital services. Rural residents consumed a higher volume of resources per capita than their urban counterparts. A patient origin-destination analysis indicated an increasing dependence of rural patients on urban hospitals for secondary or tertiary care, underscoring the effects of medical technology on referral patterns.

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FRISS, L., FRIEDMAN, B., DEMAKIS, J.

Geographic differences in the use of veterans administration hospitals.

Social Science & Medicine; 28, 1989, no. 4, p. 347-354, lit.opgn.

YEAR(S) OF DATA : 1983.
DEPENDENT VARIABLES : bed days per thousand, admissions per thousand.
INDEPENDENT VARIABLES : community variables among which population density, medical need variables, community alternative sources of care, sociodemographic characteristics, provider availability.
POPULATION : USA; 205 Community Hospital Service Areas, 122 Primary Service Areas of VA Hospitals.
CLASSIFICATION : density: continous variable, no further information.
RESULTS : no significant relationships of density with hospital use indicators both in Community Hospitals and VA Hospitals.

This study contrasts the determinants of community hospital utilization with Veterans Administration (VA) hospital utilization using traditional planning variables. The comparisons had some expected and some unanticipated findings. Regional differences in non-VA hospital admissions and bed days are fairly well explained by measures of medical need, provider supply, community alternatives, and sociodemographic characteristics (other than those used as proxies for case mix). Regional variations in the VA are explained less well by the same classes of variables and the unexplained differences between the two systems do not correspond geographically. This suggests that the two systems have different reasons for regional variation. Contrary to expectation, when other predictors are held constant, excess bed capacity in the area does not correlate with lower VA utilization.

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HOLMBERG, S., THORNGREN, K.G.

Rehabilitation after femoral neck fracture. 3053 patients followed for 6 years.

Acta Orthopaedica Scandinavica; 56, 1985, no. 4, p. 305-308.

- YEAR(S) OF DATA : 1975-1983.
 DEPENDENT VARIABLES : consumption of acute and rehabilitation resources after femoral neck fracture.
 INDEPENDENT VARIABLES : degree of urbanization, type of settlement before treatment, type of treatment unit, number of years after treatment.
 POPULATION : Sweden, Stockholm County; 3,053 patients who were treated for femoral neck fracture in 1975-1977.
 CLASSIFICATION : urban = central city of Stockholm.
 rural = rest of Stockholm County.
 RESULTS : use of rehabilitation resources: until 2 years after treatment
 urban more than rural.
 use of acute resources: no significant differences.

The rehabilitation of 3,053 consecutive patients with femoral neck fractures from Stockholm County was followed up for 6 years. Of the patients 79 per cent were admitted from home. The majority of these patients returned home within 6 months, but patients from the central city did so more slowly than patients from rural areas, and with increased secondary rehabilitation measures. Patients treated in general surgical units stayed longer and utilized more secondary rehabilitation resources than those treated in orthopaedic units. At 1 year most differences were equalized.

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LONG, M.J., FISHER, J.C., DREACHSLIN, J.L.

A comparison of the resource intensity of inpatients in urban and rural nonteaching hospitals.

International Journal of Health Services; 18, 1988, no. 2, p. 323-333,

- YEAR(S) OF DATA : 1982.
 DEPENDENT VARIABLES : patient distribution by major diagnostic category, patient distribution by Diagnosis Related Group, patient distribution by stage of disease, length of stay, severity index.
 INDEPENDENT VARIABLES : urbanization.
 POPULATION : USA; 116,721 pediatric (age ≤ 17) discharges of 130 urban hospitals and 54,073 pediatric discharges from 97 rural hospitals (Medicare patients only).
 CLASSIFICATION : urban = metropolitan areas.
 rural = all other areas.
 RESULTS : No difference between urban and rural hospitals in distribution of discharges according to Diagnosis Related Groups (DRG) and Major Diagnostic Category, nor in disease severity, nor in length of stay. The explanatory power of DRGs on length of stay, severity and charges is a little better for urban than for rural hospitals.

This study compares the pediatric population of urban hospitals in the United States without a pediatric residency program with that of rural hospitals in terms of major diagnostic category,

PHYSICAL HEALTH: HEALTH SERVICE UTILIZATION

DRG, disease severity, length of stay, and charges. It also compares the capacity of DRGs to explain the variation in resource consumption in urban and rural hospitals. A sample of 116,721 discharges from 130 urban hospitals and a sample of 54,073 discharges from 97 rural hospitals are used in this work. Results indicate that there is no difference in the patient populations of these two hospital groups. The results also indicate that DRGs explain only 50 percent of the variance in the resource variables, but this obtains equally for both populations.

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PIANOSI, P., FELDMAN, W., ROBSON, M.G., MCGILLIVRAY, D.
Inappropriate use of antibiotics in croup at three types of hospital.
Canadian Medical Association Journal; 134, 1986, no. 4, p. 357-359.

YEAR(S) OF DATA : 1971-1983.
DEPENDENT VARIABLES : total and inappropriate antibiotic use in cases of croup.
INDEPENDENT VARIABLES : age, type and place of hospital, case type, category and age of physician.
POPULATION : Canada, Ontario; 487 children with croup in three hospitals.
CLASSIFICATION : Ottawa (CHEO),
Peterborough (urban general hospital),
Arnprior (rural community hospital).
RESULTS : Overall rate of use of antibiotics in croup was lower at CHEO than at the other two hospitals. Highest proportion of inappropriately treated cases in the rural community, lowest proportion in CHEO.

Despite recent suggestions that bacterial infection is an increasingly important cause of serious croup, most authorities still consider croup a viral disease in which antibiotic therapy is unnecessary. To assess the frequency of antibiotic use in croup among children in hospital, records were reviewed at three types of hospital in Ontario, Canada. Children with evidence of a concurrent infection that might be bacterial were considered to have received antibiotics appropriately. Whereas only 6% of cases at a university-affiliated children's hospital were inappropriately treated with antibiotics, the proportions at a small rural community hospital and a general hospital in a medium-sized city were 63% and 38%. Possible reasons for these differences are discussed.

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PETERSON, M.G., HOLLENBERG, J.P., SZATROWSKI, T.P., JOHANSON, N.A., MANCUSO, C.A., CHARLSON, M.E.
Geographic variations in the rates of elective total hip and knee arthroplasties among Medicare beneficiaries in the United States.
Journal of Bone and Joint Surgery. American Volume; 74-A, 1992, no. 10, p. 1530-1539.

YEAR(S) OF DATA : 1988.
DEPENDENT VARIABLES : rates of total hip arthroplasty and total knee arthroplasty.
INDEPENDENT VARIABLES : age, sex, number of surgeons, state, population density.
POPULATION : USA; all 10,401,670 records in the 1988 Medicare Provider Analysis and Review files.

3. MENTAL HEALTH: MORBIDITY

3.1 adults/all age groups: depression

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NOLL, G.A., DUBINSKY, M.

Prevalence and predictors of depression in a suburban county.

Journal of Community Psychology; 13, 1985, no. 1, p. 13-19.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : Center of Epidemiological Studies Depression scale (CES-D).
INDEPENDENT VARIABLES : age, sex, education, marital status, occupation, income, hours of work, support.
POPULATION : USA, Illinois; 936 adults in a suburban county, age ≥ 18 years.
CLASSIFICATION : suburban = DuPage county.
RESULTS : Results were compared with studies in urban and rural areas using the same instruments.
Rate of depression in the suburban county markedly less than in rural or urban counties, probably due to greater affluence in the suburban area.

In a telephone survey, the Center for Epidemiologic Studies Depression Scale was administered to 936 suburban residents in Illinois to investigate the prevalence and predictors of depression in a suburban county. The prevalence of depression was lower than that estimated for either rural or urban populations. It is suggested that differences in affluence probably accounted for much of the observed discrepancy. While the prevalence of depression among women was twice that of men, gender was not a major predictor of depression because the variance accounted for by gender was largely accounted for by other, more powerful predictors. Age was the strongest predictor, with younger people being more depressed. Social support (as assessed by marital status and perceived availability of friends and relatives) and SES were also major predictors of depression. Depressed persons were more likely than nondepressed persons to report having seen a mental health professional in the previous year and to indicate that they would be more willing to seek help from a mental health professional if they had a future emotional problem.

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MADIANOS, M.G., STEFANIS, C.N.

Changes in the prevalence of symptoms of depression and depression across Greece.

Social Psychiatry and Psychiatric Epidemiology; 27, 1992, no. 5, p. 211-219.

YEAR(S) OF DATA : 1978 and 1984.
DEPENDENT VARIABLES : prevalence of symptoms of depression.
INDEPENDENT VARIABLES : age, sex, marital status, employment, socio-economic status, residence, health, hospitalization, use of psychotropic medicine, drinking, family history of drug use.
POPULATION : Greece; 4,083 + 3,706 persons, age 18-64 years.
CLASSIFICATION : Greater Athens area,
Greater Thessaloniki area,

rest of urban areas,
semi-urban-rural areas.

RESULTS

: significant (multiple regression):
in Athens higher prevalence than in other areas.

This paper reports the regional prevalence of symptoms of depression and clinical depressive episodes in Greece in the years 1978 and 1984. Surveys of 4,083 adults in 1978 and 3,706 in 1984 on psychosocial issues and health were carried out in four geographical areas: the Greater Athens area, the Greater Thessaloniki area, the rest of the urban areas, and rural areas. Within the 6 year period a substantial increase in the prevalence of symptoms of depression in all geographic areas was observed, with the Athenian respondents expressing a higher number of symptoms of depression than their counterparts from the other areas. The prevalence of current major depressive episodes increased in 1984 in Athens and in the rural areas only. It is suggested that economic instability between 1978 and 1984 probably contributed to the changes in the rates of depressive disorders.

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CROWELL, B.A., GEORGE, L.K., BLAZER, D., LANDERMAN, R.

Psychosocial risk factors and urban/rural differences in the prevalence of major depression.

British Journal of Psychiatry; 149, 1986, p. 307-314.

YEAR(S) OF DATA : 1982-1983.

DEPENDENT VARIABLES : major depression (DIS/DSM-III diagnosis).

INDEPENDENT VARIABLES : age, sex, race, socioeconomic status, mother with small children, stressful life events, availability of confidant, marital status, place of residence.

POPULATION : USA, North Carolina; 3,798 adult community residents, age ≥ 18 years.

CLASSIFICATION : urban = Durham County.
rural = Franklin, Granville, Vance, and Warren Counties.

RESULTS : Current major depression was nearly three times more common in the urban than in the rural residents. Rural residence decreased the risk of major depression for people between 18 and 44 years of age, and most significantly for women. For ages ≥ 45 no significant differences were found. The relationship between major depression and place of residence is the same for white and non-white residents. Rural residence appears to be a buffer against major depression. Younger residents in urban areas appeared to be at greater risk of major depression, while in rural areas the older residents were at greater risk, controlling for the other independent variables.
DIS = Diagnostic Interview Schedule

As part of a research project to examine the prevalence of psychiatric disorders, risk factors associated with the onset of mental illness, and health service utilization for psychiatric morbidity, a health survey was used to interview 3,798 adult community residents in a region of North Carolina. Current major depression was more common in the urban than in the rural counties; rural residence decreased the risk of major depression for some, but not all, demographic subgroups. The risk of major depression was decreased for young rural residents, compared with their urban age peers, and rural residence was found to be more protective for young women than for young men.

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HENDRICKS, J., TURNER, H.B.

Social dimensions of mental illness among rural elderly populations.
International Journal of Aging and Human Development; 26, 1988, no. 3,
p. 169-190.

YEAR(S) OF DATA : 1984.
DEPENDENT VARIABLES : CES-Depression Scale (6 items).
INDEPENDENT VARIABLES : sex, education, family, race, income, age, educational level,
place of residence, Physical Health Index (PHI).
POPULATION : USA, Kentucky; 743 persons, age \geq 18 years, random sample.
CLASSIFICATION : self-perceived rurality verified with actual county.
RESULTS : higher depression scores in rural areas;
disappear when controlled for health conditions.

Despite growing concern with rural elderly populations, little attention has focused on their mental health, ways it may correlate with physical health, or how rural mental health patterns compare to urban. Popular wisdom contends that elderly people in general, and rural elderly persons in particular, are at increased risk for mental illness. This article examines these questions. Analysis of data gathered in a statewide random poll in Kentucky indicates that while physical health tends to be poorer among rural populations, when health is held constant there is actually an inverse relationship between age and depression. Therefore, rural elderly persons are no more likely to be depressed than their urban counterparts despite harsher living conditions.

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NEFF, J.A., HUSAINI, B.A.

Urbanicity, race, and psychological distress.
Journal of Community Psychology; 15, 1987, no. 4, p. 520-536.

YEAR(S) OF DATA : 1977-1983.
DEPENDENT VARIABLES : depressive symptoms, psychophysiological symptoms, general well-being.
INDEPENDENT VARIABLES : age, sex, race, income, education, marital status, degree of urbanization, employment status, length of residence.
POPULATION : USA, Tennessee; 1,507 respondents, age 18-60 years.
CLASSIFICATION : urban = metropolitan Nashville.
rural = non-metropolitan and non-suburban areas.
RESULTS : More depression symptoms in rural areas and among blacks. Psychophysiological symptoms and general wellbeing better among blacks. Urban-rural differences were specific to black participants. Rural blacks had more depressive symptoms compared to urban blacks, but were better off regarding psychosociologic symptoms and general wellbeing.

Data from random samples of rural and urban black and white residents of Tennessee are presented that address depressive symptoms, psychophysiological symptoms, and general well-being. Measures employed include the Center for Epidemiologic Studies Depression Scale and the Health Opinion Survey. After demographic controls, significant urban-rural differences were found only on depressive symptoms, with greater distress in rural areas. Black participants had significantly higher depression scores than white respondents, though

race differences were reversed on psychophysiologic symptoms and general well-being. Interaction effects were striking. Urban-rural differences were specific to black participants: rural black residents had higher depressive symptom scores than urban black residents. These differences were reversed on psychophysiologic symptoms and well-being. Race differences were specific to the rural sample.

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NEFF, J.A., HUSAINI, B.A.

Stress-buffer properties of alcohol consumption: the role of urbanicity and religious identification.

Journal of Health and Social Behavior; 26, 1985, no. 3, p. 207-222.

YEAR(S) OF DATA : 1977 (rural data) and 1980-1983 (urban data).
DEPENDENT VARIABLES : psychological distress (CES-D).
INDEPENDENT VARIABLES : age, sex, income, education, marital status, ethnicity, urbanicity, life change events, religious orientation, drinking pattern.
POPULATION : USA, Tennessee; 1,174 adults, age 18-70 years.
CLASSIFICATION : urban = Nashville (metropolitan county with 500,000 inhabitants).
rural = counties surrounding Nashville.
RESULTS : CES-D: no significant differences between rural and urban.
Rural: significant buffer effect of alcohol use on the relation between life events and psychological distress.
Urban: no significant buffer effect.

Previous rural studies have indicated that life events are most strongly related to psychological distress, particularly depression, among abstainers and heavy drinkers, and least strongly among moderate drinkers. In attempting to generalize these findings to urban populations, interviews assessing drinking behavior, life change events, psychological distress, demographic variables, and religious identification were conducted in 1977 with 554 rural white adults, and between 1980 and 1983 with urban adults in Tennessee. Analyses of covariance revealed that life event and drinking pattern interaction was significant only for rural residents, though some evidence of the use of alcohol as a stress-buffer among urban whites. An association between life events and depressive symptomatology among urban blacks was noted. Religious identification could not account for the specificity of buffer effects to rural communities.

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AMATO, P.R., ZUO, J.

Rural poverty, urban poverty, and psychological well-being.

Sociological Quarterly; 33, 1992, no. 2, p. 229-240.

YEAR(S) OF DATA : 1987-1988.
DEPENDENT VARIABLES : happiness (one item scale), depression scale score (CES-D), perceived health (one item scale).
INDEPENDENT VARIABLES : sex, age, ethnicity, unemployment, family status, years of education, family income and degree of urbanization.
POPULATION : USA; 2,000 individuals living below the poverty line.

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CLASSIFICATION : urban = standard metropolitan statistical areas (SMSAs) >1,000,000 inhabitants.
rural = counties where largest SMSA ≤20,000 people.
intermediate group = rest.

RESULTS : significant:
happiness: whites happier in urban than rural, African Americans happier in rural than urban;
depression: white males, single men without children and married women without children more depressed in rural than urban, African American males more depressed in urban than rural.
perceived health: in urban higher level of perceived health than in rural.

The psychological well-being of the US rural and urban poor is compared using data from the 1987/88 National Survey of Families & Households. Analysis indicates that the urban poor are higher in perceived health than their rural counterparts, although there are no differences in happiness or depression. There are significant interactions between rural/urban poverty and sex, race, and family status. The psychological well-being of poor African Americans is higher in rural than urban areas, whereas the opposite is true for poor whites. This trend is especially pronounced for depression among males. In addition, single men without children have especially high depression scores in rural areas whereas married women without children have low depression scores in urban areas. Results are interpreted in terms of the environmental quality of inner-city neighborhoods and attitudes toward poverty in urban and rural communities.

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GAMINDE, I., URIA, M., PADRO, D., QUEREJETA, I., OZAMIZ, A.

Depression in three populations in the Basque country - a comparison with Britain.

Social Psychiatry and Psychiatric Epidemiology; 28, 1993, no. 5, p. 243-251.

3.2 adults/all age groups: psychiatric disorders

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HODIAMONT, P.P., SIJBEN, A.E., KOETER, M.W., OLDEHINKEL, A.J.

Psychiatrische problematiek en urbanisatiegraad.

Tijdschrift voor Psychiatrie; 34, 1992, no. 6, p. 426-438.

YEAR(S) OF DATA : ?.

DEPENDENT VARIABLES : General Health Questionnaire (GHQ), Present State Examination (PSE).

INDEPENDENT VARIABLES : 'demographic variables', among which political denomination, degree of urbanization and religion, further no specification.

POPULATION : The Netherlands, region Nijmegen; 3,232 persons (18-65 years) for GHQ, 465 for PSE.

CLASSIFICATION : urban = Nijmegen.
rural = 29 other municipalities in region Nijmegen.

adults/all age groups: psychiatric disorders

RESULTS : in urban prevalence of psychiatric cases nearly three times higher than in rural (controlled for demographic variables).

The Health Area Survey Nijmegen interviewed 3,232 residents (aged 18-64) in a Dutch region, encompassing one major city (Nijmegen) and ten villages. Subjects completed the General Health Questionnaire.

The prevalence of PSE cases estimated with logistic regression was nearly three times more common in the urban than in the rural communities. This fact could not be explained in terms of selective non-responses, confounding variables or response sets. To unravel the relationship between degree of urbanization and psychiatric caseness, a longitudinal survey is imperative.

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ROMANS-CLARKSON, S.E., WALTON, V.A., HERBISON, G.P., MULLEN, P.E.

Psychiatric morbidity among women in urban and rural New Zealand: psycho-social correlates.

British Journal of Psychiatry; 156, 1990, p. 84-91.

YEAR(S) OF DATA : 1985-1986.
DEPENDENT VARIABLES : three measures of psychiatric morbidity: GHQ-28 scores, total PSE scores, PSE case (ID 5+) rates.
INDEPENDENT VARIABLES : age, marital status, socio-economic status, employment status, residence, health, health behaviour, abuse variables, social network factors and other factors.
POPULATION : New Zealand, province of Otago; 2,000 women, age ≥ 18 years.
CLASSIFICATION : urban = city of Dunedin (105,000 population).
rural = two agricultural electorates; towns $\geq 1,000$ population were removed from the rural sample.
RESULTS : none of the measures showed a significant urban-rural difference;
age, marital status (not married) and unemployment were associated with PSE case for urban but not for rural women;
GHQ = General Health Questionnaire
PSE = Present State Examination
ID = Index of Definition

A random community survey into psychiatric disorder among women age ≥ 18 years in rural and urban New Zealand found urban women to be more often at age extremes, not married, better educated, in more paid employment, and to have better household and child-care facilities. There were no overall urban-rural differences in the GHQ-28 score, total PSE score or PSE case rates. A multiple regression found the same three factors accounted for most of the explained variance in both the rural and the urban total PSE scores: these were the quality of social networks, difficulties with alcohol, and the past experience of childhood sexual abuse. Low socioeconomic status, poor physical health, and adult experiences of sexual and physical abuse were also associated with increased psychiatric morbidity in both samples. Other individual sociodemographic items were correlated with psychiatric morbidity for the rural or urban sample only.

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ROMANS-CLARKSON, S.E., WALTON, V.A., HERBISON, G.P., MULLEN, P.E.

Social networks and psychiatric morbidity in New Zealand women.
Australian and New Zealand Journal of Psychiatry; 26, 1992, no. 3, p. 485-492.

YEAR(S) OF DATA : ?
DEPENDENT VARIABLES : psychiatric morbidity, physical health, social network characteristics.
INDEPENDENT VARIABLES : age, marital status, socioeconomic status, employment status, social network characteristics, urban/rural residence.
POPULATION : New Zealand; 1,516 women who completed postal questionnaire (GHQ-scores), 314 women who completed oral interview (PSE-scores), age ≥ 18 years.
CLASSIFICATION : urban, rural.
RESULTS : Availability and adequacy of social networks is negatively related to mental and physical health. Rural women had higher social network adequacy scores than urban women, but no differences were observed in the availability of social networks.

A random community survey of rural and urban women in New Zealand revealed higher rates of psychiatric morbidity in subjects who reported poorer social support. Substantial differences in social networks were found between demographic subgroups. Rural women described better than expected social relationships, giving some support to the pastoral ideal of well integrated rural communities. Women in part-time employment also described better social networks. Elderly, low socio-economic, and widowed, separated and divorced women had poorer social relationships. Child care responsibilities were associated with better attachment and social integration. It is suggested that normative values for social network measures for each demographic subgroup will need to be established before the clinical significance of deviations from the norm can be meaningfully evaluated. Also, the mechanisms linking social networks to health may vary in different subgroups.

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STEFÁNSSON, J.G., LÍNDAL, E., BJÖRNSSON, J.K., GUÐMUNDSDÓTTIR, Á.

Lifetime prevalence of specific mental disorders among people born in Iceland in 1931.

Acta Psychiatrica Scandinavica; 84, 1991, no. 2, p. 142-149.

YEAR(S) OF DATA : 1986-1988.
DEPENDENT VARIABLES : lifetime prevalence rates of 37 Diagnostic Interview Schedule version III (DIS/DSM-III) disorders.
INDEPENDENT VARIABLES : sex, marital status, residence.
POPULATION : Iceland; 1,087 people, age 55-57 years.
CLASSIFICATION : urban = Reykjavík and the adjoining towns.
rural = other areas, including several small towns.
RESULTS : possibly significant:
Prevalence of alcohol abuse without dependence was higher in rural than in urban. Rate of alcohol dependence without alcohol

adults/all age groups: psychiatric disorders

abuse higher in urban than in rural. Prevalence of panic disorder higher in urban than in rural. Further no significant differences.

The lifetime prevalence rates are presented for mental disorders in a random sample of people born in Iceland in 1931, interviewed at the age of 55-57 years. The diagnoses are made according to DSM-III. The most common diagnoses were alcohol abuse and dependence, generalized anxiety disorder, phobic disorders, dysthymic disorder and major depressive episode. Disorders more common in men were antisocial personality, alcohol abuse and alcohol dependence. Disorders more common among women were major depressive episode and generalized anxiety disorder. Alcohol dependence was more prevalent in the urban area, but alcohol abuse was more prevalent among those living in rural areas. Widowed, separated and divorced people had most of the highest prevalences: tobacco use disorder, alcohol abuse and dependence, dysthymia and generalized anxiety disorder. Except for a very high rate of alcohol abuse and dependence and a low rate of substance abuse disorders, the prevalence rates are similar to those obtained in North American studies. The DSM-III criteria for alcohol abuse or dependence may be less applicable to Iceland than to North America, because of differences in what is culturally regarded as acceptable use of alcohol.

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BLAZER, D., GEORGE, L.K., LANDERMAN, R., PENNYBACKER, M., MELVILLE, M.L., WOODBURY, M., MANTON, K.G., JORDAN, K., LOCKE, B. Psychiatric disorders. A rural/urban comparison.

Archives of General Psychiatry; 42, 1985, no. 7, p. 651-656.

erratum in Archives of General Psychiatry; 43, 1986, no. 12, p. 1142.

YEAR(S) OF DATA : 1982-1983.
DEPENDENT VARIABLES : prevalence (last six months) of major depressive episode, dysthymia, schizophrenia and/or schizophreniform disorder, alcohol abuse/dependence, obsessive-compulsive disorder, agoraphobia, antisocial personality disorder and cognitive deficit.
INDEPENDENT VARIABLES : age, sex, race, education, marital status and whether or not the respondent has recently moved, place of residence.
POPULATION : USA, Piedmont of North Carolina; 3,921 non-institutionalized adults, age ≥ 18 years.
CLASSIFICATION : see no. 108
RESULTS : Bivariate analyses show more depressive symptoms, less cognitive deficits, less alcohol abuse/dependence, and more drug abuse/dependence in urban areas. Controlling for age, sex, race, education, marital status and whether or not the respondent has recently moved, significantly and meaningfully higher prevalence of major depressive episodes and schizophreniform disorders were found in urban areas. A lower prevalence was found for dysthymia in urban areas.

Urban/rural differences in the prevalence of nine psychiatric disorders were studied from a community survey of 3,921 adults living in the Piedmont of North Carolina. Crude comparisons disclosed that major depressive episodes and drug abuse and/or dependence were more common in the urban county, whereas alcohol abuse/dependence was more common in the rural area. When prevalence for these disorders was stratified for age, sex,

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race, and education (factors that may confound urban/rural comparisons), a number of significant differences were identified, such as higher prevalence of major depression in female and white subjects and higher prevalence of alcohol abuse/dependence in the less educated persons. A logistic-regression analysis was used to determine if significant urban/rural differences persisted when these potential confounders were controlled. Major depressive disorders were found to be twice as frequent in the urban county in this controlled analysis.

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BLAZER, D., CROWELL, B.A., GEORGE, L.K.

Alcohol abuse and dependence in the rural South.

Archives of General Psychiatry; 44, 1987, no. 8, p. 736-740.

YEAR(S) OF DATA : ?
DEPENDENT VARIABLES : prevalence of Diagnostic Interview Schedule (DIS)-DSM-III alcohol abuse or dependence.
INDEPENDENT VARIABLES : age, sex, race, marital status, socioeconomic status, availability of confidant, recent life event perceived as stressful, current major depression, current antisocial personality disorder, residence.
POPULATION : USA, North Carolina; 3,798 adults, age ≥ 18 years, living in the Piedmont.
CLASSIFICATION : urban = Durham County (152,785 population, 502.5 population per square mile).
rural = counties of Granville, Vance, Warren and Franklin (117,078 population, 81.1 population per square mile).
RESULTS : In rural higher prevalence than in urban, especially among the nonwhite male population, age 25-64 years.
Multiple logistic regression: rural residence is a significant predictor of current alcohol problems among nonwhites but not among whites.

Urban-rural differences in the prevalence of Diagnostic Interview Schedule (DIS)-DSM-III alcohol abuse or dependence were studied from a community survey (part of the Epidemiologic Catchment Area program) of 3,921 adults living in the Piedmont of North Carolina, USA. Bivariate analyses disclosed that current alcohol-related problems were more common in the rural area. In a logistic regression analysis that controlled for potential confounders, including age, sex, race, socioeconomic status, and the DIS-DSM-III diagnoses of major depression and antisocial personality disorder, the elevated odds of alcohol abuse or dependence in the rural area remained significant for the interactive variable "rural blacks" (relative risk, 2.88). Factors leading to urban-rural differences in psychiatric disorders, such as current alcohol abuse or dependence, are therefore more complex than can be explained by geographic boundaries alone.

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WIDERLÖV, B., BORGÅ, P., CULLBERG, J., STEFANSSON, C.G.,
LINDQVIST, G.

Epidemiology of long-term functional psychosis in three different areas in Stockholm County.

Acta Psychiatrica Scandinavica; 80, 1989, no. 1, p. 40-46.

YEAR(S) OF DATA : 1984.
DEPENDENT VARIABLES : prevalence of different types of long-term functional psychosis (LFP): schizophrenic disorder, paranoia, major affective disorder with psychotic features, other psychotic disorders.
INDEPENDENT VARIABLES : age, sex, marital status, area type.
POPULATION : Sweden, Stockholm County; 302 people with LFP, age 18-64 years.
CLASSIFICATION : urban = south central Stockholm, 11,686 inhabitants.
rural = outer archipelago, 18,719 inhabitants.
suburban = rest of Stockholm County, 49,009 inhabitants.
RESULTS : significant:
total LFP and schizophrenia: rural less than urban or suburban, mainly due to the females.

This study was the first in a series investigating different aspects of living conditions and care utilization in a total population with long-term functional psychoses (LFP). The study cohort (n = 302) was defined as people that: were aged 18-64 years, were affected by a nonorganic psychosis continuously during at least 6 months, showed psychotic features or residual symptoms during 1984, and had their home address in the study area during 1984. The study area consists of one rural and one suburban municipality, and one urban parish. The LFP concept used shows a high interrater reliability. The one-year prevalence in the rural, suburban and urban areas was 3.4, 5.6 and 6.6 per 1,000 respectively, thus producing a gradient from the rural to the urban areas. The prevalence of schizophrenia (DSM-III) was 2.6, 3.8 and 5.0 per 1,000 respectively. The other diagnoses covered by the LFP concept (paranoia, major affective disorder with psychotic features, and psychotic disorder not elsewhere classified) showed no clear urban-rural pattern. The prevalence of schizophrenia was higher among males, while for paranoia the prevalence was higher among females.

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DAVIES, M.A., BROMET, E.J., SCHULZ, S.C., DUNN, L.O.,
MORGENSTERN, M.

Community adjustment of chronic schizophrenic patients in urban and rural settings.

Hospital and Community Psychiatry; 40, 1989, no. 8, p. 824-830.

YEAR(S) OF DATA : 1978-1980.
DEPENDENT VARIABLES : scores on measures of psychopathology, social adjustment, global functioning.
INDEPENDENT VARIABLES : age, sex, race, area, marital history, employment status, education, age of first hospitalization, relation problems in adolescence, environmental conditions.
POPULATION : USA, Pennsylvania; 124 chronic schizophrenic patients in two community mental health center aftercare clinics.
CLASSIFICATION : urban = Pittsburgh.
rural = Beaver County, major residential center <25,000 population.
RESULTS : Urban patients showed more symptomatology than rural patients on the measures of anxiety-depression and withdrawal-retardation; Urban patients were more likely to report

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substandard physical conditions, less practical support from home operators, less aversive neighborhood conditions and reported more congruence with housemates.

The influence of environmental conditions on the community adjustment of chronic schizophrenic patients who live in boarding homes and other residential facilities was studied using data from medical records and interviews with patients. 78 patients living in Pittsburgh, Pennsylvania, and 46 patients living in an rural area were included in the study. Compared with rural patients, urban patients were more likely to live in substandard dwellings and to receive less practical support from the home operator. Patients in Pittsburgh showed significantly more psychopathology, functioned more poorly in relationships with others, and had poorer global functioning than rural patients. Except for the physical condition of patients' dwellings, all the environmental conditions measured in this study were significantly associated with some measures of community adjustment regardless of geographic setting.

3.3 adults/all age groups: other

202

HARDING, L., SEWEL, J.

Psychological health and employment status in an island community.

Journal of Occupational and Organizational Psychology; 65, 1992, no. 4, p. 269-275.

YEAR(S) OF DATA : 1987.
DEPENDENT VARIABLES : General Health Questionnaire (GHQ), 12 items.
INDEPENDENT VARIABLES : gender, employment status.
POPULATION : Scotland, West Isle; 616 individuals, age 20-60 years.
CLASSIFICATION : figures for West Isle are compared with studies in urban regions.
RESULTS : employed men and women: no difference in GHQ between West Isle and urban regions.
unemployed men and women: lower GHQ in West Isle compared to urban regions.

This study focusses on the relationship between psychological health and employment status in a rural island community by means of a structured questionnaire administered to 616 adults (52% women). Measures included the General Health Questionnaire. Comparisons were made between different groups (unemployed, nonemployed, self-employed, and employed) within and between the island population and more urban populations reported in other studies. Within the island, differences are reported between men and women. For men psychological health varied, especially between the employed and the unemployed. For women no such comparable differences emerged. Although differences found in the island population were of the same kind reported from urban populations, they were much less pronounced. It is argued that the relationship between psychological health and employment status can be modified by and is better understood through reference to the local social and community context.

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PALISI, B.J., RANSFORD, H.E.

Effects of urbanism, race, and class on happiness and physical health.
Sociological Spectrum; 7, 1986, no. 3, p. 271-295.

YEAR(S) OF DATA : 1972-1983.
DEPENDENT VARIABLES : happiness, self reported health.
INDEPENDENT VARIABLES : age, gender, race, education, urbanism, unemployment, neighborhood fear.
POPULATION : USA; 15,000 non-institutionalized adults.
CLASSIFICATION : most urban = central city of the 12 largest SMSA's, central city of the remaining 100 largest SMSA's, suburbs of 112 largest SMSA's, rural = other counties.
RESULTS : happiness: whites happier in rural areas; blacks: no significant relationships. health: lower educated healthier in urban areas (both black and white). Neighborhood fear and unemployment did not have a significantly stronger effect on health or happiness in the central city, low educated black situation.

The joint effects of urbanism, race, and socioeconomic status on self-reported health and happiness are studied. Relationships of "neighborhood fear" and unemployment with health and happiness are also studied within different urban/rural race-class categories. It is hypothesized that: (1) lower socioeconomic status (SES) blacks residing in central cities will report the poorest health and lowest happiness, and (2) "neighborhood fear" and unemployment will be most strongly related to health and happiness among central city lower SES blacks. Analysis of pooled data from the 1972-1983 National Opinion Research Center General Social Surveys indicates that urbanism has a modest negative relationship to happiness, but low SES urban blacks are not uniquely low in happiness. Contrary to the central city hypothesis, neighborhood fear is most strongly related to health among suburban blacks with less than high school or high school graduation attainment. A relative deprivation explanation is advanced. Unemployment negatively relates to the happiness of whites and blacks in a variety of urban SES-race categories.

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SWARTZ, M., LANDERMAN, R., BLAZER, D., GEORGE, L.K.

Somatization symptoms in the community: a rural/urban comparison.
Psychosomatics; 30, 1989, no. 1, p. 44-53.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : somatization symptoms measured through Diagnostic Interview Schedule (DIS).
INDEPENDENT VARIABLES : age, sex, race, education, marital status, total health care utilization, medical hospitalization, urban/rural residence.
POPULATION : USA, Piedmont of North-Carolina; 3,798 non-institutionalized community residents, age \geq 18 years.
CLASSIFICATION : urban = Durham.
rural = Granville county, Vance county, Warren county and Franklin county.

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RESULTS : Somatization is more common among urban residents, especially for women and high school graduates this urban/rural difference is apparent.

Somatization is conceptualized as a bodily or somatic expression of psychic distress. Unexplained somatic symptomatology was assessed by use of the National Institute of Mental Health Diagnostic Interview Schedule among community respondents in the Piedmont of North Carolina participating in the Epidemiologic Catchment Area program. Previous literature by A.J. Barsky and G.L. Klerman suggests that somatization is associated with rural residence, less education, lower socioeconomic class, and particular ethnicities. Through use of a multiple regression analysis, lifetime unexplained somatic-symptom counts were regressed on urban residence and other sociodemographic variables. Somatization was more common among urban residents. The urban/rural differences were greatest among women and high school graduates. Somatization was also associated with being aged 45-64 years, and being separated, widowed, or divorced; it was not associated with race. Overall, somatization was also associated with less education.

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BIGBEE, J.L.

Stressful life events and illness occurrence in rural versus urban women.

Journal of Community Health Nursing; 7, 1990, no. 2, p. 105-113.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : number and intensity of stressful life events, illness occurrence.
INDEPENDENT VARIABLES : place of residence, life event scores.
POPULATION : USA, Wyoming; 157 women, age 18-50 years, in two communities.
CLASSIFICATION : urban = community $\geq 2,500$ persons.
rural = community $< 2,500$ persons.
RESULTS : No difference in life event scores and number of stressful life events.
Overall seriousness of illness reported by rural women was less than that of the urban women ($p = 0.052$).
In the rural sample, number of life events and total life event scores were the stress indicators most strongly associated with illness, while in the urban sample, negative life events scores and number of life events were most strongly associated with illness.

Stressful life events and illness occurrence were examined in a sample of urban and rural women in Wyoming. Modified versions of Norbeck's Life Experiences Survey (LES) for Women and Wyler's Seriousness of Illness Scale were used. The results indicated no significant urban-rural differences in the number or intensity of stressful life events. A strong positive correlation between stressful life events and illness occurrence, particularly in relation to the total number of events experienced, was found.

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DIAZ-FERNÁNDEZ, F., GESTAL-OTERO, J.J.

The influence of habitat on the prevalence of mental handicap.

International Journal of Epidemiology; 16, 1987, no. 1, p. 52-56.

adults/all age groups: other

YEAR(S) OF DATA : 1983.
DEPENDENT VARIABLES : prevalence of severe mental deficiency (IQ <50), prospects of integration.
INDEPENDENT VARIABLES : aetiological diagnosis, associated disorders, antenatal and perinatal care, locality, district, province, environment (urban/rural, coastal/inland).
POPULATION CLASSIFICATION : Spain, Galicia; 13,636 mentally handicapped people (IQ ≤85).
CLASSIFICATION : urban,
rural.
RESULTS : Higher prevalence rates in rural than in urban. Among rural mentally handicapped relatively more CNC infections, goitre, 'other' aetiologies, unexplained aetiologies, epilepsy, multiple handicaps, and relatively less endogenous diagnoses, Down's Syndrome, antenatal traumatism, cerebral anoxia, 'other' associated disorders and less ante- and perinatal care received than among urban mentally handicapped.
Those residing in urban areas have better prospects of adaptation to their school and family environments, whereas adaptation in the occupational sphere is more feasible in rural areas.

The influence of habitat on the frequency and characteristics of mental handicap in Galicia has been studied by means of a survey of registered mentally handicapped people. Higher prevalence is observed in rural, inland, mountainous, isolated and socioeconomically and culturally depressed areas with low population density, high migration rates and a high degree of endogamy. In these areas the prevalence of severe deficiency among the mentally handicapped is also higher due to CNS infections, cranial traumatism and goitre and to the infrequent use of birth control methods. The expectation of rehabilitation in these areas is nihil, though in some cases occupational adaptation is possible.

3.4 children/adolescents

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ZAHNER, G.E.P., JACOBS, J.H., FREEMAN, D.H. Jr., TRAINOR, K.F.
Rural-urban child psychopathology in a northeastern U.S. state: 1986-1989.
Journal of the American Academy of Child and Adolescent Psychiatry; 32, 1993, no. 2, p. 378-387.

YEAR(S) OF DATA : 1986-1989.
DEPENDENT VARIABLES : Child Behavior Checklist (CBCL) and Teacher's Report Form (TRF) scale scores.
INDEPENDENT VARIABLES : sex, age, number of children 0-17 years old in residence, race/ethnicity, religion, social class, residential move in last year, unemployment of breadwinner, degree of urbanization, family characteristics et al.
POPULATION CLASSIFICATION : USA, Connecticut; 2,519 children. age 6-11 years.
CLASSIFICATION : large city = New Haven, 126,000 population.
small city = 100% = urban = 20,000-40,000.
suburban fringe = 1-99% urban.
rural = 0% urban.
RESULTS : unadjusted:

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CBCL total scores: no significant differences for boys; in cities much higher total rate of disturbance for girls than in suburban or rural.

TRF total scores: same conclusions.
adjusted for mobility and cultural/economic differences: no significant variation.

Parent and teacher symptom reports from two epidemiological surveys of 2,519 children in Connecticut were used to study urban-rural differences in childhood psychopathology. Parents and teachers of girls in cities reported elevated total disturbance and social withdrawal. Parents of urban girls also reported higher rates of behavioral disturbance. For boys, urban excesses were primarily observed in emotional disturbance. Urban-rural variation was largely associated with cultural and economic differences between sites and not with urbanization per se. Findings suggest that some assumptions about urban-rural differences in specific forms of psychopathology, such as delinquency, should be reevaluated.

208

LARSSON, B., MELIN, L.

Prevalence and short-term stability of depressive symptoms in schoolchildren.
Acta Psychiatrica Scandinavica; 85, 1992, no. 1, p. 17-22.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : Depressive symptoms measured with the Children's Depression Inventory (CDI).
INDEPENDENT VARIABLES : age, sex, location.
POPULATION : Sweden; 417 Swedish schoolchildren, age 8-13 years, from 4 rural and 4 urban schools.
CLASSIFICATION : urban,
rural.
RESULTS : no significant difference in depressive symptoms between rural and urban areas.

The study examined the prevalence of depressive symptoms in a sample of 471 schoolchildren aged 8-13 years from urban and rural areas in Sweden. Children self-reported their experience of depressive symptoms on a Swedish version of the Children's Depression Inventory (CDI). Short-term stability of children's depressive symptoms was evaluated for a 6- to 9-week period. In addition, the children's satisfaction with their school, home and leisure time was assessed. Results indicated that the prevalence of depressive symptoms was related to neither location (urban versus rural) nor age. Although girls experienced significantly more depressive symptoms than boys, the clinical importance of this difference is negligible. Approximately 1% of the schoolchildren reported severe suicidal thoughts. Children's depression was negatively associated with their home and school satisfaction and leisure interest. A cut-off score of 13 on the CDI could identify the upper 10% of the children in the school sample as depressed and, at the follow-up, 44% of these children continued to be depressed. The total CDI mean scores obtained in this study were lower than those reported in comparative surveys in Anglo-Saxon countries.

209

SZATMARI, P., OFFORD, D.R., BOYLE, M.H.

Ontario Child Health Study: prevalence of attention deficit disorder with hyperactivity.

Journal of Child Psychology and Psychiatry and Allied Disciplines; 30, 1989, no. 2, p. 219-230.

YEAR(S) OF DATA : 1982-1983.
 DEPENDENT VARIABLES : prevalence of attention deficit disorder with hyperactivity (ADDH).
 INDEPENDENT VARIABLES : age, sex, urban-rural residence.
 POPULATION : Canada, Ontario; 2,722 children, age 4-16 years.
 CLASSIFICATION : urban area = >25,000 population.
 rural or small urban area = ≤25,000 population.
 RESULTS : significant (p <0.02):
 in urban higher prevalence than in rural, but when the weighted data were used, the difference was not significant.

The objective of this article is to present data from the Ontario Child Health Study on the prevalence of attention deficit disorder with hyperactivity (ADDH). The overall prevalence of ADDH was 9.0% in boys and 3.3% in girls. There were no significant differences in the prevalence of ADDH by age or urban-rural residence, but the disorder was significantly less common in girls than in boys. The prevalence of various subtypes of ADDH was also explored: attention deficit with and without hyperactivity, situational versus pervasive ADDH, and ADDH with and without other disorders.

210

STEFFENBURG, S., GILLBERG, C.

Autism and autistic-like conditions in Swedish rural and urban areas: a population study.

British Journal of Psychiatry; 149, 1986, p. 81-87.

YEAR(S) OF DATA : 1984-1985.
 DEPENDENT VARIABLES : prevalence of infantile autism (IA) and autistic-like conditions (AC), intellectual levels (IQs).
 INDEPENDENT VARIABLES : year of birth, sex, residence, social class.
 POPULATION : Sweden, Gothenburg and Bohuslän; 78,413 children, age <10 years.
 CLASSIFICATION : urban = city of Gothenburg.
 rural = county of Bohuslän.
 RESULTS : significant?:
 IA and AC: in urban higher prevalence than in rural;
 IQ: no results.

The total population of children under 10 years in one Swedish urban area and one rural area was screened for infantile autism (IA) and autistic-like conditions (AC). A total prevalence of 6.6 per 10,000 was found, which is somewhat higher than in previous similar studies of the same region. Infantile autism accounted for two-thirds of the cases. Boys far outnumbered girls, but this was entirely accounted for by the IA group. The preponderance of autistic boys was less pronounced among the severely mentally retarded children. Mental retardation was seen in almost 90% of cases and only one child had an IQ exceeding 100;

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clinical and laboratory signs of brain dysfunction were also found in a majority of cases. There was no obvious or significant social-class bias in either the IA or the AC group.

211

WELLESLEY, D.G., HOCKEY, K.A., MONTGOMERY, P.D., STANLEY, F.J.
Prevalence of intellectual handicap in Western Australia: a community study.
Medical Journal of Australia; 156, 1992, no. 2, p. 94-96, 100, 102.

YEAR(S) OF DATA : 1982-1983 (?).
DEPENDENT VARIABLES : prevalence of intellectual handicap and associated handicaps.
INDEPENDENT VARIABLES : sex, place of birth, area of residence.
POPULATION : Australia, Western Australia; 1,602 children in birth cohorts 1967-1976 with an IQ of less than 70, age 6, 10, 16 years.
CLASSIFICATION : urban,
rural.
RESULTS : Birth-prevalence of intellectual handicap is significantly higher in rural areas compared to urban areas (9.9 per 1,000 at time of birth, compared with 6.5). Also the prevalence of associated handicaps was higher in rural areas, especially cerebral palsy and hearing loss.

The objective of this study was to produce comprehensive community based data on individuals with intellectual handicap, the level of retardation, associated handicaps and demographic data. Multiple sources of ascertainment were used to identify all children in birth cohorts, 1967-1976 inclusive, who had an IQ <70. In all, 1,602 children, age 6-16 years, fitted the study criteria. The prevalence of intellectual handicap was found to be 8.9 per 1,000 live male births and 6.3 per 1,000 live female births with an overall rate of 7.6. The figures for mild, moderate, severe and profound retardation were 3.0, 2.4, 1.0 and 0.6 per 1,000, respectively, with 0.8 per 1,000 with an unknown IQ. Cerebral palsy occurred in 20% and epilepsy in 13% in addition to intellectual handicap. There was a significantly higher rate among those from rural compared with urban areas: 9.9 versus 6.5 per 1,000 live births, respectively.

212

McGEE, R., STANTON, W., FEEHAN, M.
Big cities, small towns and adolescent mental health in New Zealand.
Australian and New Zealand Journal of Psychiatry; 25, 1991, no. 3, p. 338-342.

YEAR(S) OF DATA : 1987-1988.
DEPENDENT VARIABLES : mental health: prevalence of DSM-III disorders, poor social competence, family adversity, help-seeking, Revised Behavior Problem Checklist score, "feeling bad" scale.
INDEPENDENT VARIABLES : population density.
POPULATION : New Zealand; 962 adolescents, age 15 years, enrolled in the Dunedin Multidisciplinary Health and Development Study.
CLASSIFICATION : 4 groups differing in population size:
group 1 = cities of Auckland, Wellington, Christchurch, Hamilton.

group 2 = Dunedin, population 105,000.
 group 3 = main urban, 30,000-70,000.
 group 4 = secondary urban/rural, <30,000.

RESULTS : only a significant positive correlation between population density and frequency and intensity of "feeling bad".

The relationship between measures of mental health and residential locations with differing population densities was examined in a large sample of New Zealand adolescents. There were no significant differences across residential locations in the prevalence of DSM-III disorders, poor social competence and level of help-seeking behaviours. Adolescents from larger population centres reported more life event stresses. Those adolescents who experienced more frequent changes of residence were at risk for mental health problems.

213

ADCOCK, A.G., NAGY, S., SIMPSON, J.A.

Selected risk factors in adolescent suicide attempts.

Adolescence; 26, 1991, no. 104, p. 817-828.

YEAR(S) OF DATA : 1988.

DEPENDENT VARIABLES : stress, depression, attempted suicide, knowledge of signs of potential suicide.

INDEPENDENT VARIABLES : gender, ethnicity, locale, participation in sexual intercourse and use of alcohol.

POPULATION : USA, Alabama; 3,803 8th and 10th grade public high school students.

CLASSIFICATION : urban = district with town >50,000 inhabitants.
 intermediate = district with town 10,000-50,000 inh.
 rural = districts without town >10,000 inhabitants.

RESULTS : Stress, depression and attempted suicide: no significant differences. Urban students had more knowledge of signs of potential suicide than rural students.

This study examined stress, depression, attempted suicide, and knowledge of common signs of potential suicide in Alabama adolescents. A modified version of the National Adolescent Student Health Survey was administered to 3,803 public school Grade 8 and Grade 10 students during the fall of 1988. The incidence of stress, depression, and attempted suicide was analyzed by gender, ethnicity, locale (urban versus rural), participation in sexual intercourse and use of alcohol. Chi-square tests were used to determine if there were significant differences between groups. The findings indicated that females were at greater risk than were males. Both males and females who engaged in sexual intercourse and alcohol consumption were at greater risk than were abstainers. When analyzed by ethnicity, white adolescents who engaged in these behaviors were at significantly greater risk than were those who abstained; differences were not as pronounced for black youth. Comparisons on the knowledge scale indicated that females scored better than males, whites scored better than blacks, and urban students scored better than rural students. The data suggest that many adolescents are having difficulty coping with stress and depression, and that those who are engaging in various types of risk-taking behavior are at greater risk for depression and suicide.

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LEWIS, G., DAVID, A., ANDRÉASSON, S., ALLEBECK, P.

Schizophrenia and city life.

Lancet; 340, 1992, no. 8812, p. 137-140.

Lancet; 340, 1992 no. 8818, p. 558-559.

YEAR(S) OF DATA : 1970-1983.
DEPENDENT VARIABLES : incidence of schizophrenia and other psychoses.
INDEPENDENT VARIABLES : family finances, parental divorce, family history, psychiatric diagnosis at conscription (neurosis, personality disorder, alcoholism), cannabis use, run away from home, no. of friends, feeling nervous, place of upbringing.
POPULATION : Sweden; 49,191 male conscripts, age 18-19 years.
CLASSIFICATION : urban = area of Stockholm, Göteborg, Malmö.
towns >50,000 population,
towns <50,000 population,
country areas.
RESULTS : schizophrenia:
adjusted for all factors: highest rate in the cities, lowest rate in country areas (p = 0.06).
other psychoses: crude incidence higher in cities and towns >50,000 population than in towns <50,000 population and country areas, but adjusted for other factors, no significant differences.

Prevalence of schizophrenia and rates of first admission to hospital for this disorder are higher in urban compared with rural areas. The "geographical drift" hypothesis (ie, most schizophrenics tend to drift into city areas because of their illness or its prodrome) has remained largely unchallenged. The association between place of upbringing and the incidence of schizophrenia was investigated with data from a cohort of 49,191 male Swedish conscripts linked to the Swedish National Register of Psychiatric Care. The incidence of schizophrenia higher among men brought up in cities than in those who had had a rural upbringing. The association persisted despite adjustment for all other factors associated with city life. This finding cannot be explained by the widely held notion that people with schizophrenia drift into cities at the beginning of their illness. Undetermined environmental factors found in cities increase the risk of schizophrenia.

215

GILLBERG, C., STEFFENBURG, S., BÖRJESSON, B., ANDERSSON, L.

Infantile autism in children of immigrant parents. A population-based study from Goteborg, Sweden.

British Journal of Psychiatry; 150, 1987, p. 856-858.

216

WELLESLEY, D.G., HOCKEY, K.A., STANLEY, F.J.

The aetiology of intellectual disability in Western Australia: a community-based study.

Developmental Medicine and Child Neurology; 33, 1991, no. 11, p. 963-973.

217

ACHENBACH, T.M., HOWELL, C.T., QUAY, H.C., CONNERS, C.K.
National survey of problems and competencies among four- to sixteen-year-olds: parents' reports for normative and clinical samples.
Monographs of the Society for Research in Child Development; 56, 1991, no. 3,
p. 1-131.

3.5 elderly

218

BOWLING, A., FARQUHAR, M.
Associations with social networks, social support, health status and psychiatric morbidity in three samples of elderly people.
Social Psychiatry and Psychiatric Epidemiology; 26, 1991, no. 3, p. 115-126.

YEAR(S) OF DATA : 1987-1989.
DEPENDENT VARIABLES : psychiatric morbidity
INDEPENDENT VARIABLES : age, sex, health status, social network variables.
POPULATION : England, London and Essex; 1,415 elderly (≥ 65 years) persons,
2 samples in London, 1 sample in Essex.
CLASSIFICATION : urban = City and Hackney (inner London).
semi-rural = Braintree (Essex).
RESULTS : Rural respondents were less likely to have a high score on psychiatric morbidity (GHQ). Rural respondents were more likely to be involved in social activities and had larger social networks. They were also less likely to report health problems and problems with functional ability. The model to explain psychiatric morbidity appeared to be strongest in the urban area.

The effects of social network structure, support, and physical health status on psychiatric morbidity were investigated among 1,415 people over retirement age who took part in three independent but comparable surveys in London (urban area) and Essex (semirural area). Multivariate analysis showed that the model explained between 14% and 29% of the variation in psychiatric morbidity in the three samples. Poor health status was a more powerful predictor of psychiatric morbidity than the social network variables. Age and sex contributed little to the model. The model was strongest among the two inner-city samples.

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BOWLING, A., FARQUHAR, M., BROWNE, P.
Life satisfaction and associations with social network and support variables in three samples of elderly people.
International Journal of Geriatric Psychiatry; 6, 1991, no. 8, p. 549-566.

YEAR(S) OF DATA : 1987-1989.
DEPENDENT VARIABLES : life satisfaction scores.

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INDEPENDENT VARIABLES : age, area, sex, health status, psychiatric status, social activities, network characteristics, loneliness, support structures.
POPULATION : see no. 217.
CLASSIFICATION : see no. 217.
RESULTS : Health status is a stronger predictor of life-satisfaction in urban than in rural areas.

Social network type, health status, and their effects on life satisfaction among 1,415 elderly people (aged ≥ 65 years) were examined from 2 communities (urban versus semi-rural) who responded to survey questionnaires. The percentages of the total variation in overall life satisfaction that were explained by the model ranged from 22 to 33% between the samples. The most variation was explained among urban-dwellers aged 85+ years. Although most of the variance was not explained, health status was a more powerful predictor of life satisfaction among respondents living in the urban, but not the semi-rural area.

220

JOUKAMAA, M., SAARIJÄRVI, S., SALOKANGAS, R.K.R.
The TURVA project: retirement and adaptation in old age.
Zeitschrift für Gerontologie; 26, 1993, no. 3, p. 170-175.

YEAR(S) OF DATA : 1982, 1986, 1990-1992.
DEPENDENT VARIABLES : General Health Questionnaire, 36 items.
INDEPENDENT VARIABLES : gender, occupational status, place of domicile.
POPULATION : Finland, area of Turku; 389 individuals born in 1920, still living in 1982.
CLASSIFICATION : urban = Turku (industrial city with 150,000 inhabitants).
rural = two rural communities near Turku.
RESULTS : no difference between rural and urban areas in 1982, 1986 and 1990-1992.

The TURVA project is a longitudinal, prospective follow-up study in Finland dealing with psychosocial adaptation to retirement and, subsequently, to old age. The initial sample consisted of 389 62-year-old individuals drawn from the city of Turku and a number of smaller municipalities surrounding Turku in 1982. The subjects were examined thoroughly and have been followed-up at 4 and 8 years so far. A developmental approach to the individual's adaptation to new life situations was adopted as the theoretical framework for the study. The first results of the project support the developmental theory when explaining the subject's adaptation in the early years of old age: Psychosocial adjustment can be understood on the basis of the subject's previous life. Preceding somatic and mental health were associated with the individual's actual psychosocial situation before retirement age. Retirement from work seems not to be a stressful event; on the contrary, it was most often experienced as a positive change. Later adaptation was not so clearly associated with the initial health status.

221

REITZES, D.C., MUTRAN, E., POPE, H.
Location and well-being among retired men.
Journal of Gerontology: Social Sciences; 46, 1991, no. 4, p. S195-203.

YEAR(S) OF DATA : 1981.

elderly

DEPENDENT VARIABLES : well-being according to Affect Balance Scale.
INDEPENDENT VARIABLES : functional limitations (poor health), length of residence, total family assets (in US \$), education, being married, number of dependent persons, financial support, personal support, extent of network, participation in formal organizations, involvement in informal activities, involvement in recreational activities.

POPULATION : USA; national sample of 1,654 retired men age 60 to 74 years. 537 central city, 534 suburban, 583 nonmetropolitan.

CLASSIFICATION : central city = municipality or city \geq 50,000 population (i.e. the core of standard metropolitan statistical areas).
suburban = Standard Metropolitan Statistical Area minus central city.
nonmetropolitan = all areas outside SMSA's.

RESULTS : Retired suburban men with poor health have lower well-being than retired central city men with poor health, controlling for other variables in the model. But this is the only direct locational effect that was found. The participation and activity variables exert a positive influence on well-being, however. There appears to be a significant influence of location on informal and recreational activities, controlling for other variables. Non urban residents participate more in informal activities than city residents. Non-metropolitan residents participate less often in recreational activities.

Data from a national sample of retired men in the United States aged 60 to 74 years enabled the exploration of the influence of a diverse set of variables on well-being. The findings include: (a) location produces differences in well-being, with retired men living in suburbs having the highest mean well-being scores; (b) poor health reduces the well-being of retired men in the suburbs to a greater extent than in the central cities; and (c) suburban location also indirectly influences well-being by way of its effect on informal activities.

222

MATTILA, V., JOUKAMAA, M., SALOKANGAS, R.K.R.

Mental health in the population approaching retirement age in relation to physical health, functional ability and creativity: Findings of the TURVA project. *Acta Psychiatrica Scandinavica*; 77, 1988, no. 1, p. 42-51.

YEAR(S) OF DATA : 1982.
DEPENDENT VARIABLES : physical health, mental health, functional ability, creativity.
INDEPENDENT VARIABLES : age, sex, physical health, mental health, functional ability.
POPULATION : Finland, area of Turku; 339 individuals born in 1920 still alive in 1982.
CLASSIFICATION : urban = city of Turku.
rural = area surrounding Turku.
RESULTS : no urban/rural difference in perceived health, nor in physician-assessed physical illness; no urban/rural difference in frequency of psychiatric cases.

A random sample of 171 adults born in 1920 and living in Turku, Finland, and a corresponding sample of 168 persons living in the neighborhood of the city underwent a structured interview and a physical examination and completed questionnaires. There was

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considerable discrepancy between the subjects' subjective working disability and the frequency of evident and handicapping physical illnesses found by the physician. This difference was largely explained in terms of mental problems. Dissatisfaction with life was more common in subjects receiving a disability pension and in those classified as psychiatric cases than in others.

223

CARPINIELLO, B., CARTA, M.G., RUDAS, N.

Depression among elderly people: a psychosocial study of urban and rural populations.

Acta Psychiatrica Scandinavica; 80, 1989, no. 5, p. 445-450.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : prevalence of depression as evaluated with: Present State Examination (PSE), Social Adjustment Scale (SAS), Beck Depression Inventory (BDI).
INDEPENDENT VARIABLES : age, sex, marital status, education, residence.
POPULATION : Italy, Sardinia; 317 individuals, age ≥ 65 years.
CLASSIFICATION : urban = city of Cagliari.
rural = 2 small villages (Ilbono, Ales).
RESULTS : higher prevalence of depression in urban areas.

Interview, scale, and inventory data are used to investigate the role of social factors in causing depression among 317 elderly living in both rural and urban areas of Sardinia, Italy. Results confirm emerging trends of a higher prevalence of depression in urban areas and among elderly women. Widowhood strongly associates with depression in both settings; lower education correlates with depression only in urban areas. The impact of financial difficulty on depression is especially strong in cities. Physical health also associates with depression, independently of the existence of a confidant. The findings are discussed using a frame of reference.

224

PRESTON, D.B., CRAWFORD, C.O.

A study of community differences in stress among the elderly: implications for community health nursing.

Public Health Nursing; 7, 1990, no. 4, p. 229-235.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : sources of stress.
INDEPENDENT VARIABLES : age, sex, race, marital status, employment, frailty, 3 community characteristics: metropolitan status of county, population size of community, population change.
POPULATION : USA, 6 states (Maine, New Hampshire, New Jersey, Pennsylvania, Vermont, West-Virginia); 900 noninstitutionalized persons, age ≥ 65 years, from 18 minor civil divisions (MCDs).
CLASSIFICATION : metropolitan status:
metropolitan = urban = SMSAs of $<1,000,000$ persons.
nonmetropolitan = rural.
population size of community:

elderly

≥ 20,000 persons,
2,500-19,999 persons,
<2,500 persons.

RESULTS

: Elderly living in metropolitan communities of 2,000 to 19,999 persons experienced more stress with finances and health than elderly in nonmetropolitan communities of the same size. Respondents from metropolitan communities with declining populations experienced more stress with family and friends, whereas those in metropolitan communities with stable populations experienced more financial stress.

Stressful states are linked to physical and mental health. An important dimension of emotional stress is community environment. Communities can produce stress in individuals but can also provide the coping resources that help modify these stressors. Differences in stress responses were examined among a random sample of 900 elderly living in nine metropolitan and nine non-metropolitan, randomly chosen communities in six northeastern states of the USA. Respondents were asked if, in the past year, they had experienced anything upsetting or stressful in their lives connected with family and friends, their health, and their finances. The findings support the existence of community differences in stress responses for these elderly respondents, and show evidence of a link between community structure and individual behaviors.

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BOERSMA, F., GROOTHOFF, J.W., EEFSTING, J.A.

Het dementiesyndroom in de praktijk van 15 huisartsen: een oriënterend prevalentie-onderzoek in de regio Zwolle.

Tijdschrift voor Gerontologie en Geriatrie; 20, 1989, p. 153-157, lit.opgn.

YEAR(S) OF DATA : 1987
DEPENDENT VARIABLES : prevalence of dementia as assessed by the GP following Hughes' Clinical Dementia Rating.
INDEPENDENT VARIABLES : urban/rural.
POPULATION : The Netherlands, region of Zwolle; independently living elderly, ≥65 years, n = 1,052, randomly drawn from 15 general practitioners lists.
CLASSIFICATION : urban = city of Zwolle.
rural = surrounding rural municipalities within 15 kilometers.
RESULTS : rural more than urban.

A pilot investigation in 1987 among 15 general practitioners in the region of Zwolle has been carried out in order to obtain an indication as to the prevalence of the dementia syndrome among noninstitutionalized elderly people. According to the general practitioner -on the basis of the Clinical Dementia Rating- 4.4% of the population of people of 65 years and older display the symptoms of dementia. There is a remarkable difference in the prevalence rate between urban (2.8%) and rural (5.7%) populations. The most obvious explanation for this difference is that in rural areas there is more informal care and a larger degree of tolerance of demented elderly people, which helps prevent institutionalization. This assumption is supported by an identical difference in the admission rate to nursing homes. As a person becomes older, the chance that he/she will suffer from the dementia syndrome increases, although the increase is not a steady one. Despite the well-recognized necessity for thorough medical examination of demented elderly people, it is only carried out to a small degree.

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HUBBLE, J.P., VENKATESH, R., HASSANEIN, R.E.S., GRAY, C., KOLLER, W.C.

Personality and depression in Parkinson's disease.

Journal of Nervous and Mental Diseases; 181, 1993, no. 11, p. 657-662.

227

ROCCA, W.A., BONAIUTO, S., LIPPI, A., LUCIANI, P., TURTÙ, F., CAVARZERAN, F., AMADUCCI, L.

Prevalence of clinically diagnosed Alzheimer's disease and other dementing disorders: a door-to-door survey in Appignano, Macerata Province, Italy.

Neurology; 40, 1990, no. 4, p. 626-631.

228

PRINCE, M., CULLEN, M., MANN, A.

Risk factors for Alzheimer's disease and dementia: a case-control study based on the MRC elderly hypertension trial.

Neurology; 44, 1994, no. 1, p. 97-104.

4. MENTAL HEALTH: HEALTH SERVICE UTILIZATION

4.1 demand for mental health services

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OFFORD, D.R., BOYLE, M.H., SZATMARI, P., RAE-GRANT, N.I., LINKS, P.S., CADMAN, D.T., BYLES, J.A., CRAWFORD, J.W., BLUM, H.M., BYRNE, C., THOMAS, H., WOODWARD, C.A.

Ontario Child Health Study. II. Six-month prevalence of disorder and rates of service utilization.

Archives of General Psychiatry; 44, 1987, no. 9, p. 832-836.

- YEAR(S) OF DATA : ?.
- DEPENDENT VARIABLES : prevalence of various disorders: consultation with mental health service, social service, or judiciary service. Consultation with ambulatory medical care service. Whether child has received special education for handicapped, mentally retarded, disturbed or other groups.
- INDEPENDENT VARIABLES : age, sex, region, area of residence.
- POPULATION : Canada, Ontario; 1,648 urban children and 1,031 rural children, age 4-16 years.
- CLASSIFICATION : urban = areas with population >25,000.
rural = areas with population ≤25,000.
- RESULTS : A significantly higher prevalence of hyperactivity and having more than one disorder was found in urban areas.
A higher service utilization in urban areas was found for ambulatory care services, special education. The magnitude of the difference between children with disorders and children without disorders was found to be considerably smaller in rural areas for all types of service use.

The six-month prevalence of four child psychiatric disorders (conduct disorder, hyperactivity, emotional disorder, and somatization) and patterns of service utilization for mental health and social services, ambulatory medical care and special education by different regions of Ontario, urban-rural residence, and age and sex groupings were studied. Among children of age 4 to 16 years, the overall six-month prevalence rate of one or more of these disorders was 18.1%. The prevalences of hyperactivity and one or more disorders were significantly higher in urban areas than rural areas. The utilization data indicated that children with these psychiatric disorders, compared with children without these disorders, were almost four times more likely to have received mental health or social services in the six months preceding this study. However, five of six of these children had not received these specialized services in this period. Over 50% of the children in Ontario had received ambulatory medical care in the last six months. Over 15% of the children in the province had received special education services at some time thus far in their school careers.

MENTAL HEALTH: HEALTH SERVICE UTILIZATION

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COHEN, P., HESSELBART, C.S.

Demographic factors in the use of children's mental health services.
American Journal of Public Health; 83, 1993, no. 1, p. 49-52.

- YEAR(S) OF DATA : 1975 (original sample), 1983, 1985, 1986 (follow ups).
DEPENDENT VARIABLES : presence of at least one severe psychiatric disorder (Diagnostic Interview Schedule for Children), consultation at mental health service, treatment at mental health service.
INDEPENDENT VARIABLES : age, sex, race, income, urbanicity.
POPULATION : USA, two New York counties; a random sample of 760 children, age 11-21 years.
CLASSIFICATION : urban = large towns and cities.
rural = rural areas, small towns, suburban areas.
RESULTS : Children in small towns and suburban areas seemed to be less ill than those in rural areas, large towns and cities. Rural children are less likely to use mental health services. Controlling for sex, urbanicity, income and age, urban children were more likely to have a psychiatric disorder and to use mental health services. Additionally controlling for diagnostic differences this is still true.

This study was designed to (1) determine mental health service use by children of varying age, sex, socioeconomic status, and urbanicity of residence; (2) compare the prevalence of mental disorder in children in these groups; and (3) determine the extent to which differences in service use are consonant with the prevalence differences. Data on psychiatric diagnoses and service use were taken from a random longitudinal sample of 760 children in two New York counties. Information was gathered by interviews of mothers and of youth aged 12 to 21 years. Significant lags in mental health service use were found for youth 18 to 21 years of age, for those living in rural and semirural areas, and for those in middle-income families. To some extent, these service use differences paralleled differences in diagnostic rates. However, when diagnostic differences were controlled, the same patterns of service use inequalities were present.

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CHENG, T.L., SAVAGEAU, J.A., SATTLER, A.L., DEWITT, T.G.

Confidentiality in health care. A survey of knowledge, perceptions, and attitudes among high school students.
JAMA; 269, 1993, no. 11, p. 1404-1407.

- YEAR(S) OF DATA : 1992.
DEPENDENT VARIABLES : 64 items regarding knowledge, perceptions and attitudes towards confidentiality in health care.
INDEPENDENT VARIABLES : gender, grade, race, location of school.
POPULATION : USA, Massachusetts; 1,295 9th to 12th grade high school children.
CLASSIFICATION : urban = high school C in Worcester with a school-based health center serving a large population of poor students.
suburban = high school B in an upper-middle-class suburb of Worcester.
rural = high school A in a working-class community.

RESULTS : Rural and suburban students were more likely to have confidential concerns but not to seek care if parents, friends or teachers might find out.

The objective of this study was to assess adolescent knowledge, perceptions, and attitudes about health care confidentiality. During a 4-week period in the spring of 1992, a survey of 9th to 12th-grade students in three public high schools in central Massachusetts was conducted. A total of 1,295 students (87%) completed the survey: 58% had health concerns that they wished to keep private from their parents, and 69% from friends and classmates; 25% reported that they would forgo health care in some situations if their parents might find out. There were differences in response by gender, race, and school. About one third were aware of a right to confidentiality for specific health issues. Of those with a regular source of care, 86% would go to their regular physician for a physical illness, while only 57% would go there for questions about pregnancy, the acquired immunodeficiency syndrome, or substance abuse that they wished to keep private. 68% had concerns about the privacy of a school health center.

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SLATER, M.A., BLACK, P.B.

Urban-rural differences in the delivery of community services: Wisconsin as a case in point.

Mental Retardation; 24, 1986, no. 3, p. 153-161.

YEAR(S) OF DATA : ?.
DEPENDENT VARIABLES : number and duration of provided community services, extent of individual habilitation programming.
INDEPENDENT VARIABLES : level of retardation, location, demographic characteristics.
POPULATION : USA, Wisconsin; 60 adults, age ≥ 20 years, with developmental disabilities living in eight community residential facilities.
CLASSIFICATION : urban county,
rural county.
RESULTS : number: in urban significantly more use of training, counseling, recreation and transportation services than in rural.
duration: provided day services significantly longer in urban than in rural.
extent: no significant differences.

The variability in the nature of services provided to 60 adults with developmental disabilities residing in 8 community facilities within 1 progressively rated state (Wisconsin) was surveyed. 58 persons had a primary diagnosis of mental retardation, which ranged from mild to profound, and 2 persons had cerebral palsy. 27 adults had secondary diagnoses such as emotional disturbances, epilepsy, or physical impairments. A survey on demographic data, client disability characteristics, past and present service characteristics, planned services, and required but not rendered services was completed by trained personnel who visited the facilities. Results show that although the majority of clients had previously lived in institutional settings, these same individuals were currently participating in a number of different community services. Needs differentiated by setting, severity level, and degree of individual program planning were noted. Basic services such as medical/dental care and training were judged as being inadequate to meet the needs of more than 20% of the residents.

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SOMMERS, I.

Geographic location and mental health services utilization among the chronically mentally ill.

Community Mental Health Journal; 25, 1989, no. 2, p. 132-144.

- YEAR(S) OF DATA : ?.
- DEPENDENT VARIABLES : use of 5 categories of mental health services:
1) routine mental health, 2) psychosocial, 3) crisis, 4) residential and 5) family support services.
- INDEPENDENT VARIABLES : age, sex, race, education, marital status, geographic location, employment, level of family involvement, need characteristics, availability and accessibility of needed services which were not received.
- POPULATION CLASSIFICATION : USA, 16 states; 1,053 Community Support Program clients.
urban = community >50,000.
suburban = " 10,000-50,000.
rural = " <10,000.
- RESULTS : 1), 3) and 4): comparable rates; 2): rural less than suburban or urban; 5) urban more than suburban and rural.
multiple regression analysis: significant positive relations between use of 3), 4) and rural residence, 2) and suburban residence; significant negative relation between use of 5) and suburban/rural residence.

This study examined the relationship between geographic location and use of mental health services using data collected on 1,053 Community Support Program (CSP) clients in 16 states of the USA. Multiple regression analyses revealed that geographic location (i.e., urban, suburban, rural) influences mental health services utilization even when service availability and accessibility, socio-demographic and need factors are controlled. The results do not support the assumption that rural residence has uniformly negative effects on service use. Rural CSP clients, for example, were more likely to use crisis and supportive housing services than urban patients. Findings suggest that models of service utilization must be carefully specified with regard to residential location.

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SEIVEWRIGHT, H., TYRER, P., CASEY, P., SEIVEWRIGHT, N.

A three-year follow-up of psychiatric morbidity in urban and rural primary care.

Psychological Medicine; 21, 1991, no. 2, p. 495-503.

- YEAR(S) OF DATA : ?.
- DEPENDENT VARIABLES : number of consultations for psychiatric problems, number of consultations for non-psychiatric problems, number of psychiatric outpatient appointments, (non-) psychiatric hospital admittance, admittance to psychiatric day care, psychotropic drug use, use of additional psychiatric care.
- INDEPENDENT VARIABLES : urban/rural, personality status.
- POPULATION : England, Nottinghamshire; 301 patients with psychiatric morbidity in one urban and one rural general practice.
- CLASSIFICATION : urban = inner city practice in East Nottingham.
rural = rural practice outside Nottingham.

general

RESULTS : Urban practice shows greater morbidity, more contacts with all levels of the psychiatric service, and more psychotropic drugs. Among urban patients there were more with personality disorders, more alcohol abusers, more schizophrenic patients. Over-all urban patients were more severely ill. The number of consultations with the general practitioner for psychiatric illness was no higher in the urban group and consultations for medical illness were higher in the rural practice.

Follow-up by examination of medical and psychiatric records was carried out on 357 patients with conspicuous psychiatric morbidity in two general practices three years after clinical and personality assessment using structured interview schedules. One practice was in an inner-city area (East Nottingham) and the other was in an entirely rural area in East Nottinghamshire. Full follow-up data over the 3-year period was available for 301 patients (84.3%). After three years patients with personality disorder and those in the urban practice had greater morbidity, more contacts with all levels of the psychiatric service and more psychotropic drugs, particularly benzodiazepines. Despite this increased morbidity, the number of consultations with the general practitioner for psychiatric illness was no higher in the urban group and those for medical illness were significantly higher in the rural one.

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BORGÅ, P., WIDERLÖV, B., CULLBERG, J., STEFANSSON, C.G.

Patterns of care among people with long-term functional psychosis in three different areas of Stockholm County.

Acta Psychiatrica Scandinavica; 83, 1991, no. 3, p. 223-233.

YEAR(S) OF DATA : 1984.
DEPENDENT VARIABLES : utilization of psychiatric inpatient and outpatient care, somatic care, primary health care, social welfare support, medications.
INDEPENDENT VARIABLES : sex, area type, diagnosis, illness duration.
POPULATION : Sweden, Stockholm County; 302 persons with long-term functional psychosis, age 18-64 years.
CLASSIFICATION : urban = city centre of Stockholm.
rural = outer archipelago.
suburban = rest of Stockholm County.
RESULTS : psychiatric inpatient care: urban more admissions to psychiatric care than rural; suburban highest, urban lowest rate of compulsory admission; urban more inpatient days than suburban or rural;
psychiatric outpatient care: in urban lower proportion had contact than in rural or suburban;
primary health care: urban less contacts than suburban or rural;
medications: urban much more use of antipsychotic depot drugs than rural, suburban somewhat more than rural; urban more use of antiparkinsonian medications than suburban or rural.

This study of long-term functionally psychotic people in Stockholm County describes the psychiatric and somatic care provided as well as social welfare support and medication in a total cohort. This group included all non-organic cases of psychosis aged 18-64 years. The group was found still to be very dependent on institutional care, with an average of 75 days of psychiatric inpatient care. Males spent twice as long as females as inpatients, and people from the city of Stockholm spent a longer time than those from the other areas. Antipsychotic

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medication increased from the rural to the urban area. The diagnosis of schizophrenia and early age at onset were each per se associated with higher likelihood of inpatient treatment and depot medication. Medication with antipsychotic drugs was shown to increase with illness duration.

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THORNICROFT, G., BISOFFI, G., DE SALVIA, D., TANSELLA, M.

Urban-rural differences in the associations between social deprivation and psychiatric service utilization in schizophrenia and all diagnoses: a case-register study in Northern Italy.

Psychological Medicine; 23, 1993, no. 2, p. 487-496.

YEAR(S) OF DATA : 1983, 1986, 1989 for utilization; 1981 for census data.
DEPENDENT VARIABLES : psychiatric service utilization rates for schizophrenia and all diagnoses, (data on the level of catchment areas).
INDEPENDENT VARIABLES : aggregate data (census districts): aged over 65, living alone, under 5 years, unemployment, dependent, sex, unmarried, urbanization.
POPULATION : Italy, South Verona and Portogruaro; aggregate data.
CLASSIFICATION : urban = South Verona, 987.5 inh/km²
rural = Portogruaro, 141.8 inh/km².
RESULTS : Independent variables have strong predictive associations in the urban area, but not in the rural area.

Service utilization measures from the psychiatric case registers for urban South-Verona and rural Portogruaro in North East Italy for the period 1983-1989 were used to identify associations with socio-demographic variables from the 1981 census in schizophrenia and related disorders as well as in all diagnoses. The patterns of service use were broadly similar, except that Portogruaro has significantly more community contacts, and has about twice the treated incidence and prevalence of schizophrenia. Data showed that unmarried and unemployed people were more likely to live alone in the urban than in the rural area. In the urban area the most strongly associated predictor variables, both for schizophrenia and all diagnoses, are: living alone, unemployment, percentage of the total population who are dependents and the percentage who are divorced, separated or widowed. In contrast, in the rural area there were no consistent associations between census and service use variables. Stepwise multiple regression models using three census predictor variables accounted for over 85% of the variance in South-Verona utilization rates. The results indicate that the strongly predictive associations previously described in England hold in urban South-Verona, but not in rural Portogruaro, and may be related to the effect of cities in clustering seriously disabled psychiatric patients in areas of low-cost housing where they live in relative social isolation.

237

MATTILA, V., JOUKAMAA, M., SALOKANGAS, R.K.R.

Mental health in the population approaching retirement age: preliminary findings of the TURVA project.

Acta Psychiatrica Scandinavica; 75, 1987, no. 2, p. 195-201.

YEAR(S) OF DATA : 1982.

general

DEPENDENT VARIABLES : self-perceived mental health, mental health as perceived by interviewer, drinking behaviour, health service utilization, General Health Questionnaire (GHQ) score.

INDEPENDENT VARIABLES : marital status, pensionary status, social status, gender, area.

POPULATION : Finland, area of Turku; 339 individuals born in 1920, still alive in 1982.

CLASSIFICATION : urban = city of Turku.
rural = municipalities near Turku.

RESULTS : self-perceived mental health slightly better in urban ($p < 0.10$); more alcohol abstainers in rural area; no difference in percentage with psychiatric treatment; more psychotropic drug users in urban; more mild symptoms in rural according to interviewer; no difference in GHQ.

Preliminary findings of a Finnish long-term prospective study on adjustment to retirement and old age are presented. A random sample of 200 individuals drawn from among Turku inhabitants born in 1920, and another sample consisting of 189 persons of the same age drawn from nearby rural municipalities, were interviewed using the 36-item version of Goldberg's General Health Questionnaire (GHQ). Relatively little mental disturbance was revealed in the interview, and no major differences occurred between the rural and the urban sample. Somewhat over one-third of both samples were probable psychiatric cases as defined according to the GHQ.

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GIFT, T.E., ZASTOWNY, T.R.

Psychiatric service utilization differences by sex and locale.

International Journal of Social Psychiatry; 36, 1990, no. 1, p. 11-17.

International Journal of Social Psychiatry; 36, 1990, no. 3, p. 240.

YEAR(S) OF DATA : 1987.

DEPENDENT VARIABLES : utilization (treated incidence and treated prevalence) of outpatient mental health services.

INDEPENDENT VARIABLES : sex, place of residence.

POPULATION : USA, New York State; all psychiatric patients, age ≥ 20 years in the northwest quadrant of Monroe County.

CLASSIFICATION : rural versus non-rural, based on population density, housing type and configuration and lifestyle. Not further specified.

RESULTS : Both treated incidence and treated prevalence are higher for women than for men in both rural and non-rural communities. No significant differences between rural and non-rural were found.

Underutilization of psychiatric services by men relative to women may reflect discrepancies between the male sex role in Western societies and the patient role. The authors hypothesize that this will be more important in a rural than a nonrural setting for two reasons. First, the relative lack of anonymity in a rural setting makes more evident incongruities between sex role conventions and actual behaviour. Second, because of the increased cultural heterogeneity of urban areas, traditional sex roles are less clearly delineated. These considerations suggest that the ratio of males to females receiving treatment in a rural setting should be lower than in a nonrural setting. It was found that a difference in service utilization by sex can not be shown as a function of locale.

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BURGESS, P.M., JOYCE, C.M., PATTISON, P.E., FINCH, S.J.

Social indicators and the prediction of psychiatric inpatient service utilisation.

Social Psychiatry and Psychiatric Epidemiology; 27, 1992, no. 2, p. 83-94.

- YEAR(S) OF DATA : 1986.
- DEPENDENT VARIABLES : utilization of psychiatric services (rate of persons admitted per year, rate of admissions per year, rate of occupied bed days per year).
- INDEPENDENT VARIABLES : 7 factors (after factor analysis): low SES, lone households, elderly widows, ethnicity, government supported, single adults, improvised homes, young unmarried, large households, distance to hospital, urbanicity.
- POPULATION CLASSIFICATION : Australia, Victoria; 7.199 Collection Districts.
: urban = metropolitan area of Melbourne.
: rural = non-metropolitan = rest of Victoria.
- RESULTS : The independent variable set was better able to predict utilization in the urban area than in the rural area. Although sets of predictor variables were similar between urban and rural areas, distance appeared to be important only in the rural area.

The relationship between social variables and psychiatric service utilization in Victoria, Australia, was investigated using a social indicators approach. Indicators were developed separately for the urban and rural areas of the state using 1986 census data. Principal components analysis was employed to reduce the data. Simple, unit weight indicators were developed and explained a considerable proportion of the variation in the rate of persons admitted to psychiatric facilities, the rate of admission episodes and the rate of occupied bed days for urban areas; a moderate amount of variation for these measures was accounted for by indicators developed for rural areas. The findings were considered in relation to both methodological issues and the role of other factors (e.g., accessibility and availability of psychiatric services) which may contribute to service use.

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SYTEMA, S.

Social indicators and psychiatric admission rates: a case-register study in the Netherlands.

Psychological Medicine; 21, 1991, no. 1, p. 177-184.

- YEAR(S) OF DATA : 1986-1987.
- DEPENDENT VARIABLES : risk of admission to mental hospitals, psychiatric units in general hospitals and the dependency clinic.
- INDEPENDENT VARIABLES : age, sex, marital status, diagnosis (schizophrenia, affective psychosis, neurosis, substance dependency), degree of urbanization, distance from facilities
- POPULATION : the Netherlands, province of Drenthe; all 1.429 people, age 20-65 years, admitted to the mental hospitals, psychiatric units in general hospitals and the dependency clinic.
- CLASSIFICATION : urban = four cities, 23.000-92.000 inhabitants.
: rural = rest of Drenthe.
- RESULTS : for each diagnostic category: higher risk of admission in urban than in rural.

Environmental as well as individual socio-demographic and illness characteristics are related to the risk of admission. This paper addresses the problem of the interrelationships of these factors to admission rates. Using the Groningen Psychiatric Case Register, admission rates (during 1986 and 1987) from 34 administrative areas in the province of Drenthe, the Netherlands, were calculated. Logit models were fitted in order to test the relationship between the relative risk of being admitted and sex, age, marital status, diagnosis, urbanization and distance from facilities. The effect of urbanization remains under the control of the other independent variables.

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GYLLENHAMMAR, C., LUNDIN, T., OTTO, U., WISTEDT, B.
The panorama of psychiatric emergencies in three different parts of Sweden.
European Archives of Psychiatry and Neurological Sciences; 237, 1988, no. 2,
p. 61-64.

YEAR(S) OF DATA : 1985.
DEPENDENT VARIABLES : number of psychiatric emergencies, admission rates to hospital.
INDEPENDENT VARIABLES : age, sex, degree of urbanization, number of social contacts, kind of mental illness.
POPULATION : Sweden, three catchment areas; 1,226 psychiatric emergency patients.
CLASSIFICATION : urban = Danderyd region in the north-east of Stockholm.
rural = Uppsala-Ulleraker region, Kristianstad region.
RESULTS : number of psychiatric emergencies: urban somewhat less than rural;
admission rates: no differences.

A total of 1,226 psychiatric emergencies from three socially different catchment areas in Sweden were analyzed. Data were obtained over 28 consecutive days at the beginning of 1985. Small differences were found between rural and urban catchment areas, which is probably due to a high degree of equality for both social and medical services throughout Sweden. Alcohol was shown to be the main problem for nearly 1/3 of the patients. A measure of the patients network of close relatives, yielded small differences between the diagnostic subgroups.

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KEATINGE, C.
Psychiatric admissions for alcoholism, neuroses and schizophrenia in rural and urban Ireland.
International Journal of Social Psychiatry; 34, 1988, no. 1, p. 58-69.

YEAR(S) OF DATA : 1978-1980.
DEPENDENT VARIABLES : incidence and prevalence figures of alcoholism, neuroses, schizophrenia, measured through first and total psychiatric hospital admission figures.
INDEPENDENT VARIABLES : age, sex, place of residence.
POPULATION : Ireland, two counties; aggregated data.
CLASSIFICATION : urban = one county, population 77,315.

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RESULTS

rural = one county, population 46,242.
: Age and sex adjusted incidence rates for alcoholism and schizophrenia showed no significant urban/rural difference. Concerning neuroses incidence rates were higher in the urban area. Urban males obtained treatment for alcoholism at a significantly younger age, though. Both urban males and females obtained treatment for schizophrenia at an earlier age than rural males and females. These differences may either be attributed to a later onset of the disorders or to a delay in hospital utilization for rural residents.
Total age and sex adjusted admission rates were higher in urban areas for neuroses and alcoholism. No significant difference was found for schizophrenia. For neuroses elderly and young urban males had a significantly higher prevalence in the urban area. The difference in prevalence of alcoholism is mainly due to the higher prevalence among young male adults in the urban area. Readmission rates were higher in urban areas.

A comparison of psychiatric admissions from two Irish representative urban and rural communities, indicated no significant intercommunity difference in incidence rates for alcoholism and schizophrenia but significantly higher urban first admissions for neuroses. Total admissions data indicated significantly higher urban readmission rates for alcoholism and neuroses. In contrast to earlier research, readmission rates for schizophrenia were equivalent in the urban and rural community. Several methodological issues were examined to clarify this divergent finding. A demographic comparison indicated rural schizophrenics were admitted at a later age and were more frequently readmitted.

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CONN, D.K., LEE, V., STEINGART, A., SILBERFELD, M.

Psychiatric services: a survey of nursing homes and homes for the aged in Ontario.

Canadian Journal of Psychiatry; 37, 1992, no. 8, p. 525-530.

YEAR(S) OF DATA : 1990 (?).
DEPENDENT VARIABLES : perceived availability of psychiatric services in nursing homes, need for more psychiatric services in nursing homes, nature of psychiatric services in nursing homes.
INDEPENDENT VARIABLES : medical or nursing director, region, population of local town, number of beds, type of home.
POPULATION : Canada, Ontario; 589 medical and nursing directors who responded to the survey.
CLASSIFICATION : larger towns = >200,000 population.
 towns = 50,000-200,000 population.
 rural = <50,000 population.
RESULTS : more psychiatric services available in larger towns; no difference in perceived need for more psychiatric services; nature of psychiatric services: no results reported regarding population size.

A survey was conducted to determine perceptions and attitudes of psychiatric services available to nursing homes and homes for the aged in Ontario. A questionnaire was sent to medical and nursing directors separately. 36.8% of responders reported that the nursing

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INDEPENDENT VARIABLES : population density, number of principals, number of patients per doctor, health centre or not.

POPULATION : Great Britain, different parts; doctors practising in two urban (101 practices) and two rural (167 practices) Family Practitioner Committee (FPC) areas.

CLASSIFICATION : urban = FPC area with 21.4/24.8 persons/ha.
rural = FPC area with 1.6/1.7 persons/ha.

RESULTS : in urban significantly higher rates than in rural.
multiple regression: tranquillizer prescribing increased with number of principals per practice in urban areas, but decreased in rural areas.

The association between tranquilliser prescribing and urban-rural location is investigated using data from general practices in two urban and two rural Family Practitioner Committee areas. Findings indicate that in general, doctors in urban practices were more likely to prescribe tranquillizers than those in rural practices. However, the number of principals in the practices had an effect on tranquillizer prescribing which differed according to the urban-rural designation: in urban practices, tranquillizer prescribing increased with increasing number of principals, but the reverse was true in rural practices.

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HOLM, M., OLESEN, F.

Factors affecting prescription of psychotropic drugs in general practice.
Scandinavian Journal of Primary Health Care; 6, 1988, no. 3, p. 169-173,

YEAR(S) OF DATA : 1985.

DEPENDENT VARIABLES : number of defined daily doses (DDD) psychotropic drugs per 1,000 patients per day.

INDEPENDENT VARIABLES : GP's age, GP's sex, nr. of GPs per practice, practice size, practice location.

POPULATION : Denmark, county of Aarhus; 227 GPs, 4,180 prescriptions, 3,765 patients, age \geq 16 years.

CLASSIFICATION : urban = GP practices in Aarhus, Randers, Silkeborg.
rural = GP practices in other parts of the county.

RESULTS : Psychotropic drugs are more often prescribed in urban areas than in rural areas, independent of patient's age and sex and GP/practice related characteristics.

During one week in November 1985, 227 general practitioners (GPs) in the county of Aarhus, Denmark, recorded all their prescriptions of psychotropic drugs, amounting to 4,180 prescriptions for 3,756 patients. There was great variation in the rate of prescribing among the GPs. The median number of prescribed defined daily doses per 1,000 registered patients per day was 84, and the corresponding median number of prescriptions per 1,000 patients per week was 14. There was a significantly lower rate of prescribing of psychotropic drugs by rural/small town GPs, comparing with GPs in the three major cities, after correction for differences in patients' age and sex. There were no differences in rate of prescribing among GPs in relation to size and type of practice, nor to the age and sex of the GP.

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TANSELLA, M., MICCIOLO, R.

Trends in the prescription of antidepressants in urban and rural general practices.

Journal of Affective Disorders; 24, 1992, no. 2, p. 117-125.

YEAR(S) OF DATA : 1983-1988.
 DEPENDENT VARIABLES : antidepressant drug prescriptions (in terms of Defined Daily Doses) by all GPs, per capita, between 1983-1988.
 INDEPENDENT VARIABLES : population density, number of pharmacies/1000 population, number of GPs/1000 population, proportion of females, proportion of people aged 60 and over.
 POPULATION : Italy, area of Verona; 29 administrative districts.
 CLASSIFICATION : urban/rural continuum according to population density.
 RESULTS : Controlling for the other independent variables, there is no correlation between population density and antidepressant drug prescription.

Antidepressant drug (AD) prescriptions written in the period 1983-1988 by all general practitioners working in Verona were analyzed. The data were provided by a local drug information system and calculated as Defined Daily Dose (DDD). The area was divided in 25 districts, classified on the urban-rural continuum according to population density. Two indices of service provision and two demographic measures were also used in the analysis. An increase in the levels of prescription of AD was observed over the 6 years. No correlation was found between DDD/1000 inhabitants/day rate and population density. This was confirmed using multiple regression analysis, which showed that only the proportion of women in the population was significantly associated with AD prescription. Harmonic analysis of the seasonal variation in prescription showed a moderate degree of seasonality in all districts. When using multiple correlation analysis the seasonality was correlated only with the number of pharmacies available in each district.

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WILLIAMS, P., BELLANTUONO, C., FIORIO, R., TANSELLA, M.

Psychotropic drug use in Italy: national trends and regional differences.

Psychological Medicine; 16, 1986, no. 4, p. 841-850.

YEAR(S) OF DATA : 1983-1984.
 DEPENDENT VARIABLES : use of antidepressants, neuroleptics, tranquillizers and hypnotics.
 INDEPENDENT VARIABLES : proportion of population aged ≥ 60 years, region, health service provision, population density, proportion of population living in 'Comuni' $\leq 5,000$.
 POPULATION : Italy; a representative sample of retail pharmacies. (n = ?)
 CLASSIFICATION : two indices of the urban-rural continuum: see the last two independent variables.
 RESULTS : multiple regression:
 only a significant positive relation between use of tranquillizers/hypnotics and population density and a negative relation between use of tranquillizers/hypnotics and the proportion of population living in small 'Comuni'.

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Regional differences in psychotropic drug sales in Italy were examined. Marked differences were found and, in general, levels of use were higher in North/Central Italy than in the South. Factors influencing regional differences were explored using regression analysis. Regional NHS expenditure (excluding that on drugs) was found to influence strongly the sales of all categories of psychotropic drug, whereas there was also a marked urban-rural difference in the sales of tranquilizers.

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BELLANTUONO, C., FIORIO, R., WILLIAMS, P., ARREGHINI, E., CASON, G.

Urban-rural differences in psychotropic drug prescribing in northern Italy. European Archives of Psychiatry and Neurological Sciences; 237, 1988, no. 6, p. 347-350.

YEAR(S) OF DATA : 1986.
DEPENDENT VARIABLES : percentages of psychotropic drug prescriptions.
INDEPENDENT VARIABLES : age, sex, population density, educational level, marital status, occupational status and three health-related variables.
POPULATION : Italy, Verona and Chiavenna; 3 general practices in Verona (275 patients), 3 general practices in Chiavenna (455 patients).
CLASSIFICATION : urban = Verona (270,000 inhabitants).
rural = Chiavenna (3,000 inhabitants).
RESULTS : urban more than rural.
factors influencing psychotropic prescribing more numerous and complex in urban than in rural.

Urban-rural differences in psychotropic drug prescribing were examined by comparing data from general practices in two contrasting areas of northern Italy: Chiavenna and Verona. Patients attending the urban doctors were more likely to be prescribed a psychotropic drug than their rural counterparts. The authors also explored urban-rural differences in factors influencing psychotropic prescribing. Such influences were more numerous and complex in the urban than the rural setting.

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HUXLEY, P., MOHAMAD, H., KORER, J., JACOB, C.

Psychiatric morbidity in social workers' clients. A comparison between an inner-city area and a small town.

Social Psychiatry and Psychiatric Epidemiology; 28, 1993, no. 1, p. 28-31.

YEAR(S) OF DATA : 1992 (?).
DEPENDENT VARIABLES : psychiatric morbidity, type of intervention by social workers, success of intervention.
INDEPENDENT VARIABLES : place of residence of social workers.
POPULATION : England, northern part; 59 small-town cases, 105 inner city cases.
CLASSIFICATION : inner city.
small town = 31,000 population.
RESULTS : The rate of psychiatric disorder in the small town was lower than that in the inner-city. Small town social workers were more likely

treatment

to be dealing with social isolation and with housing problems. Small town workers were more successful in dealing with problems of social isolation and marital problems.

The rate of psychiatric disorder in a social services sample in a small town was compared to the rate in an inner-city sample in the North of England. Nearly 40% of respondents in the small town had a positive General Health Questionnaire score and 37% had case status (ID greater than 5) on the Present State Examination. Most of these were cases of neurotic depression and were generally recognized as such by the social workers. The type of intervention undertaken by social workers differed in the two settings. Small-town social workers were more likely to offer advice, guidance, exploration and mobilization of resources. The small-town social workers were more likely to have success in helping their clients with problems of social isolation and marital disharmony than their inner-city counterparts. Mental illness problems, however, showed less improvement than in the inner-city sample, with over one-third of the small-town cases remaining unwell throughout the 12-month follow-up. Both previous psychiatric history and current depression were indicators of a poor outcome. The findings provide further support for the argument that unless there is close collaboration between social workers, the medical profession, and health care teams, people who present their problems to social services are unlikely to have their mental health problems addressed adequately.

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ROSENBERG, E.E., STEINERT, Y.E.

Psychosocial problems: what help do rural and urban patients want from their family physicians?

Canadian Medical Association Journal; 136, 1987, no. 2, p. 137-141.

YEAR(S) OF DATA : 1984.
DEPENDENT VARIABLES : Desired level of involvement of family physician in psychosocial problems (life-cycle, psychologic, interpersonal, physical, work related).
INDEPENDENT VARIABLES : age, sex, marital status, socioeconomic status, length of time physician known, age of eldest child, language spoken at home, place of residence.
POPULATION : Canada, Dalhousie and Val-d'Or; 399 patients, age ≥ 14 years, from 10 rural family physicians (in comparison with 375 patients from Montreal in a earlier study).
CLASSIFICATION : urban = Montreal.
rural = Dalhousie and Val-d'Or.
RESULTS : In both the rural and the urban area only the age of the eldest child and the language makes a difference in what people want from their family physician, controlling for sex, marital status and socioeconomic status. No difference between urban and rural populations was found.

A total of 399 patients of family physicians in two rural Canadian towns were surveyed to determine what help with thirty psychosocial problems they wanted from their physicians. The patients completed a self-administered questionnaire in which they could choose from four levels of physician involvement: no involvement, knowledge of the problem but no help, knowledge of the problem and referral to a specialist, and treatment by the physician. Half of the patients wanted help with life-cycle problems, and over half desired treatment for sleeping problems, anxiety and depression. However, one half of the patients desired no help for

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interpersonal problems, and more than 50% wished to see a specialist for help in coping with a physical illness and long-term pain. English-speaking patients wanted significantly more physician involvement than did French-speaking patients. The results were similar to those of an earlier study of urban patients.

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VERHAAK, P.F.

Analysis of referrals of mental health problems by general practitioners.

British Journal of General Practice; 43, 1993, no. 370, p. 203-208.

- YEAR(S) OF DATA : 1987-1988.
- DEPENDENT VARIABLES : 1) referral ratios by general practitioners, 2) preference for kind of mental health institution/specialist by general practitioners for referral.
- INDEPENDENT VARIABLES : 1): age of general practitioner, practice area, type of practice, task perception, task performance, perception of psychosocial nature, estimate of % of symptoms not entirely physical, patient characteristics; 2): regular appointments with specialty, evaluation of specialty, practice area of general practitioner, type of practice.
- POPULATION CLASSIFICATION : The Netherlands; 127 general practitioners.
: large city,
urban,
suburban,
rural.
- RESULTS : 1) referral ratio increases with the degree of urbanization;
2) practice area did not have an effect on any of the preferences.

Referrals from general practice to specialist services form the subject of this study in the Netherlands. Data were collected from April 1987 to April 1988 within the framework of the National survey of morbidity and interventions in general practice, conducted by the Netherlands Institute of Primary Health Care (NIVEL). Using a large database of doctor-patient contacts, the proportion of mental health disorders resulting in a referral and the characteristics of the patient and general practitioner that are involved in such a referral have been determined. In addition, the type of mental health institution or specialist to which referrals were directed and the characteristics influencing this choice were examined. Only 6% of patients presenting with a psychiatric disorder during surgery hours were referred to specialist care. Younger patients, male patients and patients with severe diagnoses had a greater probability of being referred. The percentage of patients referred was lower in rural areas than in urban areas. Doctors with a limited task perception regarding mental treatment tended to refer more often. Although the diagnosis did have any relationship with the institutions to which patients were referred (psychotic conditions to psychiatric services and social/material problems to social workers), the most prevalent diagnoses (neurotic conditions and relationship problems) seemed to be more or less randomly distributed over the various possibilities. Preferences appeared to be related to the existence of regular meetings between general practitioners and specialists and a positive evaluation by general practitioners of the institution concerned.

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