

Statistics and Indicators on the Labour Market in the eEconomy

Project assessment

Indicators on telework

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Identification

Project title: Statistical Indicators on the Labour Market in the eEconomy
project Number: IST-2000-31099 *Project acronym:* STILE
Sub-project Indicators on Telework (*Work Package 5*)
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List of partners collaborating on indicators on telework (work package 5)

<i>Partner</i>	<i>Country</i>
Higher Institute of Labour Studies (HIVA)	Belgium
Cork Teleworking Centre (CTC)	Ireland
Institute for Employment Studies (IES)	United Kingdom
Istituto di Ricerche Economiche e Sociali (IRES)	Italy
Institute of Sociology – Hungarian Academy of Sciences (ISB)	Hungary
Central Statistical Office (CSO)	Ireland
Joanne H. Pratt Associates	USA

The logo for Part B consists of a black square with the word 'Part' in white text above a large white letter 'B'.

Outside assessment

1. Indicators on telework

1.1 Objectives

The overall goal of the STILE project is develop indicators that can be used to monitor trends in the new forms of work that are facilitated by Information and Communication Technologies (ICT). The seven work packages within STILE have similar objectives, each focusing on a different aspect of the problem as a whole. For example, work package 4 seeks indicators to measure the use of ICT and its consequences in organisational surveys. Work package 5 assesses specifically how questions can be added to labour force surveys to capture 'telework' or 'eWork'. The outcome of work package 5 is a module, the outcome of work package 4 is a digital toolkit with questions. Both are flexible instruments that can be used creatively to construct questionnaires tailor-made to the needs of the various target groups such as statistical institutes, the European statistical system or research groups. This assessment uses work package 5 to illustrate the process with which each of the work packages was carried out. The reader is referred to the two *Special Project Progress Reports* (May 2002 and October 2002) which provide additional details on the working process. In this outside *Project Assessment: Indicators on Telework*, the success of the approach is evaluated in terms of its effectiveness, efficiency and relevance.

1.2 Challenges

The specific objective of work package 5 was to *identify indicators to monitor eWork in employee surveys*. The wording of the objective itself calls attention to several of the problems in measuring new patterns of work. First, there is no agreed-upon definition either for eWork or for the commonly used term *telework*. Second, ICT offers opportunities to the self-employed who engage in the workforce. Because they have different characteristics and behaviours, they must be distinguished from employees to avoid misleading interpretations.

The third challenge of the study was to add new indicators without losing the continuity of existing surveys. A transition is occurring away from the long-time focus on industrial age work whose indicators have been incorporated in national surveys as the 'gold standard'. Nevertheless trend lines from the LFS and other surveys conducted periodically are widely used to monitor the labour force and anticipate policy issues. It would not be feasible to introduce discontinuities in those labour trends.

2. Effectiveness

2.1 Initiating the project

The team for this project consisted of STILE participants from Belgium, Ireland, Hungary, Italy, the United Kingdom (UK) and the United States (US). The members worked together with a high degree of effectiveness. Work was started by asking four questions:

- What is the definition of telework?
- Who should be surveyed?
- Which characteristics should be measured?
- How should the survey be carried out?

As the outcome of extensive email conversations the team developed a matrix of five major topics:

- detection of telework;
- characterisation and typology of teleworkers;
- social/labour relations;
- indicators for quality of work;
- comparison of teleworkers and non-teleworkers.

All partners contributed to generate a list of subtopics with accompanying variables. Variables were assigned degrees of relevance. Eleven variables were considered 'indispensable'; 15 of 'high importance' and 21 of 'medium priority'. None of the suggested items was considered to be of 'low priority'. This assessment allowed the consortium to reach consensus on a limited list of indicators that are indispensable within the context of all kinds of telework research.

2.2 Opportunities to enlarge the project scope

The challenge of honing the very long list of priority indicators into a number that feasibly could be included in a survey module was mitigated by an unexpected opportunity. At the project kick-off Ireland was just completing the instrument for the Quarterly National Household Survey (QNHS) to be fielded in the 3rd quarter of 2002. If the team could meet their deadlines, the representatives of the national statistical office would try to add a few telework questions. The full modules could be developed at a more leisurely pace, but there was a window of just three months or so to finalise the key filter variables. Were there two or three questions - the most that could be added to the core survey - that would define telework? If so, then it would be possible to cross-tabulate the many variables in the QNHS to generate a set of tables describing the characteristics of teleworkers. This was the *piggyback* strategy developed by Pratt that has provided so much relevant data on telecommuting from on-going national US surveys, including the labour force survey.¹ This was also in line with the use of ad hoc modules used by Eurostat for the Community Labour Force Surveys.

The work process was greatly facilitated by several factors. First, the partners quickly agreed that the definition of telework should be derived and for that purpose three data items were needed. They are the work location, use of ICT and frequency of work at the distant location.

Second, Hungary as well as Ireland offered to add questions to its upcoming quarterly labour force survey, without waiting for a pilot. These generous offers from the members of the statistical bureaus in the two countries meant that the proposed questions could be tested in the real context of representative samples of the populations of Hungary and Ireland. These tests were a valuable complement to tests carried out with the small samples of 200 teleworkers as originally planned. The small samples could be used to carefully test and refine the questions but also, incidence figures could be collected. The large LFS samples would provide the ability

¹ The piggybacking strategy was developed in the US by Joanne H. Pratt. Several questions on work at home are added to existing government surveys. The methodology is a cost/effective way to obtain information about a small, emerging work pattern without disrupting the continuity of survey series.

to cross-tabulate work at distant locations with other variables. That meant that the piggy-backing strategy could be fully tested.

2.3 Team strategy

As indicated, the group soon realised that it would be unwise to define the term telework. For reasons discussed in the *Recommendations for the introduction of an ad hoc module on telework in the Labour Force Surveys* doing so would limit the relevance of the work package 5 recommendations to the diverse community of potential data users. Instead the partners concluded that telework could be any occupation (1) located at home and/or other locations distant from the employer (2) involving the use of ICT and (3) performed at a distance with a minimal frequency/intensity. The key indicators for telework could be obtained by adopting the following strategy:

- derive the definition of telework from objective criteria;
- ask three essential questions that would permit defining telework:
 - location where work takes place;
 - use of ICT;
 - frequency/intensity of teleworking;
- piggyback questions on existing surveys such as the LFS.

The choice of ICT as an essential indicator illustrates the underlying political agendas that make it impossible to agree on an absolute definition of telework. In this instance STILE is part of the Information Society Program of the European Union. Therefore, ICT was included as a necessary criterion that distinguishes telework. In contrast, the early surveys of telework in the US were funded by the US Department of Transportation. As a result, working at home as a substitute for commuting trips to work was the essential indicator. In the early 1980's ICT was not included as a criterion in the US partly because teleworking with computers was rare and partly because of the policy issue. It did not matter if employees worked at home 'on a yellow pad' without any technology at all. The elimination of one commuting round trip to their employer's location was the defining variable.

The outstanding contribution of STILE has been to isolate broad criteria that serve all approaches, allowing each user to put emphasis on one or another aspect. Excellent teamwork facilitated the process by which the consortium members assessed and agreed upon three core characteristics that provide the basis for all definitions of interest to various policy makers.

2.4 Building on prior work

1. The EMERGENCE contribution

STILE work on measuring telework builds on the results of the EMERGENCE survey. This was a companywide employers' survey where different forms of eWork, which is defined here as ICT-mediated distance work, were made visible. STILE focused on the findings of the survey related to the individual forms of eWork (in contrast to the collective forms, such as call center work or relocation of company units) that made it evident that telework is more than telehomework. The EMERGENCE contribution revealed the importance of defining indicators that would include the 'multi-locals'. They are individuals who work in more than one location such as a salesman spending half a day teleworking at home and half a day on travel or an accountant who might divide his time working part of the day at the organisation but also at a client's place of business.

2. The US contribution

The author of this assessment developed the 'piggyback' method in the US in the 1980's when it became evident that it would not be possible to fund the full module on work at home

that she had proposed as a supplement to the monthly labour force survey, the Current Population Survey (CPS). She found that it was relatively easy to have one to three or four questions added to ongoing surveys simply by pointing out that new patterns of work must be monitored so as to provide the data that policy makers would need in the future. This proved to be a highly successful strategy that led to work-at-home questions being added to six or more federal surveys and to various regional and local surveys with topics whose primary focus ranged from housing to transportation. Adopted for the STILE project, the piggyback method allowed for 'constructing a very flexible module, which enables comparisons in time and... between different member states'.²

3. Other labour force surveys of work at home

The fact that the UK, US and Austria had previously added questions on work at home to their labour force surveys gave the STILE project a head start in developing the wording of actual survey questions. Instead of starting completely from scratch, those tested questions indicated the direction the team should take in order to achieve the desired objectives.

4. Linking with other STILE work packages

The STILE work package 2 concurrently examined the extent to which the various national LFSs can be used to highlight new ICT-mediated work patterns. This effort was linked closely to work package 5 as well as to other work packages in the overall STILE research. The inter-relationships of the teams undertaking the two projects, and particularly the fact that a joint meeting was held to discuss the common issues of work package 2 and 5, resulted in an effective collaboration. Work package 2 has been an important input for work package 5 because it researched existing questions on eWork. In addition, work package 2 identified existing LFS indicators that can be combined with a telework module. At the same time the work of work package 5 has been an important input for work package 2 because it offered a derived approach of a telework definition. Also the idea to develop a module has enabled and steered the exploration of LFSs in work package 2.

The discussion on the definition of telework and the idea of a module has also been an important input for work package 4. In this work package the focus was on indicators for the use of ICT in organisations and the resulting impacts on organisations and the labour market. As telework is a consequence of these organisational changes the work in work package 4 is partly complementary to the 'employee' approach in work package 5. The work package 4 digital toolkit gives the user an overview of relevant establishment survey questions on the usage of ICT. Work package 5 gives an overview of relevant indicators on 'ICT-mediated distance work' that are to be translated into questions for employee surveys.

2.5 Tests and trials

Four pilots were conducted with samples for each of about 200, composed of teleworkers and non-teleworkers. It is important to recognise that the core of the project was to develop an instrument, not to collect new data on the spread of telework. As discussed in the work package 5 report, information from the small pilots was used, as planned, to reveal various problems in terms of what worked and what did not. The small samples were intentionally non-representative because the intent was to ensure that they included a variety of persons performing their work at multiple locations at the time of the surveys. The pilots, therefore, do not allow drawing conclusions on the spread of telework and care should be taken that they are not mistakenly used for that purpose.

However, a bonus that was unforeseen in the planning of the study was being able to collect data on one large representative sample of a national population, that is, by adding STILE

2 Special Project Progress Report, STILE-2000-IST-31099, May 2002.

questions to the Irish labour force survey. This meant that the strategy of cross-tabulating data to further the understanding of distant work could also be tested.

When cross-tabulated the Irish data was consistent both with SIBIS and US findings. That is, teleworkers are non-farm, well educated managers and professionals who telework on a regular or occasional basis. Women with young children have the highest rate of participation in working at home. The Families survey contributes the additional information that telework is not a substitute for childcare.

Hungary also tested core questions on their LFS. However, the incidence of telework in Hungary turned out to be very small. Responses suggested that there was some confusion about the intent of the questions, which may have resulted in an undercount of teleworkers. The Hungarian LFS provided extremely valuable insights into the types of questions and phrasing that work well - and excellent details of those that do not.

Together the four pilots and particularly the Irish survey proved the validity of the STILE approach in actual practice.

2.6 Lessons learned

Whether asked in the labour force surveys or in the small pilots, objective questions work well. For example, respondents had no difficulty providing the various places where they worked and the equipment they used.

Asking 'value judgements' does not work well. Words such as 'regularly,' 'frequently,' and 'possibly' could be interpreted in many ways. For example, does 'frequently' indicate working at home every day, twice a week or monthly? The data analyst has no way of knowing what scale the respondent used in answering the question.

The third point is that it cannot be assumed that researchers' models of work organisation will be understood by respondents. Although 'core task' has meaning to researchers attempting to model organisational processes, such terms as core task, consultation, etc. were confusing to respondents. That is also true for the term 'telework' as such: every time it is discussed, the problem of the definition is the first to deal with. At the final user group in Rome, for example, when the question arose once again as to who is a teleworker and who is not - after so much time spent on the issue - a member of one of the user groups pointed out that individuals each carry in their minds implicit definitions that still play tricks on us in the discussion! The broad variety of telework forms makes it very risky to assume that the respondent defines telework in the same way as the researcher. (Many people who occasionally work at home using ICT do not think of themselves as 'teleworking'.)

The pilot tests emphatically confirmed that deriving definitions, the chosen strategy, allows constructing various useful typologies of telework such as those proposed by STILE and by Ireland. Again, because the definition of telework was derived, these typologies could be compared with a typology published by Austria and presented at the same European user group meeting in Rome (March 2003).

A fourth important lesson refers to the implementation of a module. It has become clear that a module must guarantee the continuity of the carrier questionnaire. The composition of the module and the specific wordings of the questions need to be adapted to the questionnaire to which the module is attached.

2.7 Nested questions as an effective tool

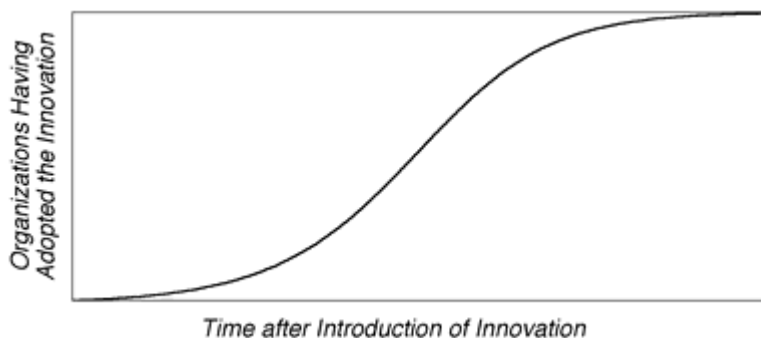
The work package 5 group process consisted of three steps:

- 1) defining concepts;
- 2) identifying indicators for each concept and making a selection; and
- 3) developing measurement/questions for every indicator.

Discussions of national differences that arose during the group discussions and in the pilot test results highlighted an underlying problem in the effort to agree on questions that would allow comparison of eWork across national boundaries:

Adoption of new technologies - and new ways of working - tends to follow the Standard Bass curve for the diffusion of innovations into society over time shown in Figure 1. The diffusion curve is useful for comparing different rates of change. It applies to telework as well as to the adoption of technologies such as use of PCs and broadband connectivity. For example, in the US teleworking during the normal business day has reached a plateau at about 10 percent of the employed workforce. The incidence of teleworking in other countries falls at different places along the diffusion curve but does not yet appear to have plateaued. Adoption of broadband in the US is somewhere on the steep part of the curve while mobile phone use is substantially lower on the curve than, for example, Finland and Italy.

Figure 1. Standard Bass curve for the diffusion of innovations over time



Source: www.useit.com/alertbox/basscurves.html

It is crucial to have comparable indicators so that eWork can be compared not only at different stages of its diffusion but also across language and cultural boundaries. It is less important to have identical questions than it is to have comparable indicators. To allow comparisons among countries that are at different stages along the diffusion curve, the STILE project developed the 'nested questions' strategy. Figure 2 illustrates a sequencing of questions that identifies first, the presence or absence of use of ICT, and then continues to probe for more detailed information only from respondents who use ICT. In level two, questions can be asked such as 'Does the employer or the employee provide the ICT?', 'How frequently is ICT used in your tasks?' and 'Are you linked to your employer when you telework?'. The third level goes into more detail asking questions of interest to the survey sponsor.

Figure 2. ICT use

1st Level	Basic question (from LFS) that identifies the use or non-use of ICT
2nd Level	Who provides ICT?
3rd Level	Type of Internet access
2nd Level	Frequency/intensity of use
2nd Level	Function link
3rd Level	With whom

The technique of the nested questions means also that questions can be more or less elaborated according to policy or scientific needs for greater or less detail. Although not all questions are asked (policy needs may differ; the incidence of ICT users too low, etc.) comparisons can always be made at some level of the nested questions. For example, if there is a very low incidence of ICT use, comparisons would be made only on Level 1, which asks the basic question of whether or not ICT is used. That one question provides the data needed to compare use of ICT (incidence) among any chosen groups. Thus, aggregated information, referring to the indicators of the telework concept, should always be comparable in time and space.

3. Efficiency

3.1 Preparing for 'buy in' of indicators by user groups

The purpose of the STILE program is to develop materials that will be *used*. This goal represents a challenge for work package 5 because distance work is still quite a new concept. Adopting the telework indicators requires the national statistical staff and Eurostat to 'buy-in' to the importance of adding distance work as a topic for the LFS surveys that they oversee. The process of gaining support for adding indicators to the LFS was done very efficiently by involving representatives of user groups in the actual development and testing of the indicators in three different ways:

- 1) Two countries, Hungary and Ireland, had representatives from statistical offices participating directly as full members of the project team. Their contributions have been valuable input throughout the project.
- 2) National user group meetings were held in each of the participating countries. At those meetings users took full advantage of the opportunity to (1) prioritise the list of proposed indicators, (2) discuss how questions could be added to the LFS surveys and (3) contribute to the planning of the pilot tests. The active participation of the users meant that the indicators and recommended 'best practices' adopted in the final work package 5 publication, *Recommendations for the introduction of an ad hoc module on telework in the Labour Force Surveys*, were 'theirs' rather than items thrust upon them.

European user group meetings with team members were held in Ghent, Belgium and Rome, Italy. Those were attended by staff from the National Statistical Institutes (NSI) of the participating countries such as the NSI of the UK, Istat from Italy, and NSI from Hungary and Austria. They had responsibility for applying the 'best practices' to be recommended as an outcome of the STILE project studies. There was good representation at most of the user group meetings. In Ghent representatives from Eurostat and OECD were also able to attend. Individuals from the national statistical offices or Eurostat who were unable to attend were contacted afterwards to collect their comments. In Ghent and Rome representatives from the different national user groups, from statistics institutes and research groups, were also invited and attended the meeting.

3.2 Communication for efficient collaboration

The majority of the work carried out by the team was done in an exchange of emails. Except in minor instances in which the topic being discussed was of interest to only a few people, all documents, comments and so forth were circulated to all team members. That meant there was excellent communication on the complex issues being addressed.

Two types of face-to-face meetings facilitated the work:

First, project team meetings held in Kinsale, Ireland, Iphofen, Germany and Rome, Italy brought together all STILE participants in several-day forums in which each of the work package topics was presented and discussed. Discussing and presenting the results in these forums attended by the whole consortium has facilitated linkages between work packages. Second, team members also attended the meetings held for the user groups so they were able to hear in both prepared presentations and in informal discussions, issues that were of interest or concern to prospective users of the indicators.

The efficiency and effectiveness of the team can be attributed to several factors that contributed to an excellent working collaboration:

- 1) First and most important, representatives of national statistical bureaus were invited to participate fully as members of the project team. Particularly key was inviting the representatives to meetings in Rome, Kinsale and Iphofen and including each of those who attended in both the scheduled meetings and in the spontaneous social events before and after. That meant that issues could freely be discussed when together, which built trust and rapport. Informal exchange of ideas continued via email throughout the project. It appeared that statistical staff felt completely welcomed and free to convey the internal constraints of their own bureaus when asked to add questions to the LFS. As a result, they provided the opportunity to fully test the work package 5 methodology and, more critically, are more likely to incorporate the recommended three or four key questions onto LFS surveys for which they have responsibility.
- 2) Team members respect each other's points of view and like each other personally. That meant that ideas could be expressed in meetings and discussed. The atmosphere was one of reaching the best result, rather than one of competing to 'win points'. That was also true in editing each of the work products and final recommendations and report.
- 3) Having precedents for the work shortened the group discussions. Telework indicators had been added to labour force surveys and data collected in several countries. For example, the team had the British, American and Austrian experiences as guides. That helped focus attention on which indicators produced useful data and, importantly, ways to avoid problems. Further, the project also tested its on-going work and outcome with other relevant projects, in particular, the EMERGENCE, SIBIS, e-LIVING and FAMILIES projects. Experience with those studies - EMERGENCE in particular - shaped the input of team members.
- 4) Skilled leadership of the project by HIVA and IRES greatly facilitated the process of developing strategies, resolving differences of opinion and achieving an excellent recommended methodology for monitoring ICT-mediated distant work. The flexibility that management showed in facilitating substitution of Ireland's Quarterly National Household Survey for the planned 200-person pilot survey is just one example of ways that the project leaders managed the project so as to achieve an effective and efficient outcome.
- 5) Finally, the very active involvement and commitment of everyone, which was obvious in the excellent preparations that the team carried out for every meeting, the fact that deadlines were met and that there were also very lively email conversations all the time and in particular at crucial decision making moments.

4. Relevance

4.1 Derived definitions meet data needs of diverse users

- 1) As discussed above, involving users in meetings during development of the telework questions ensured that the project would result in an outcome relevant to users of quite diverse interests. For example, in some user groups academics and other researchers formed the majority. The strategy of derived definitions combined with the nested questions approach means that questions in which they were particularly interested, namely quality of the working life, could easily be added without losing comparability. The strategy also addressed the concerns of other user groups consisting predominantly of statisticians who were concerned about maintaining the continuity of the national labour force surveys. The strategy allows considerable flexibility for providing data now and in the future that will meet policy-makers' needs. The recommended module does not 'lock in' definitions and topics that may be of concern at the present time. Its flexibility will make it relevant not only now but in the future.
- 2) Another decision also helped insure relevance of the indicators. The first European User Group meeting was held in connection with a much broader event, the biennial Labour Market Statistics Conference.³ Presenting the STILE project both formally and informally in that forum resulted in additional contributions from the 150 attendees from academic and statistical organisations. This gave the opportunity for representatives from user groups, the conference speakers, Eurostat, OECD and the European Commission (DG Employ) to exchange ideas with project team members early enough in the project (May 2002) to influence development of relevant indicators.

4.2 The 2-pronged strategy provides flexibility for users

- 1) With the many invited suggestions for eWork topics added to those generated by the project team, it is not surprising that a very long list of questions resulted. An important factor that makes this project truly relevant is the two-pronged strategy decided upon. A *core set of about six module questions* using the three indicators was agreed upon. They can be used to identify and, at the time of analysis, are sufficient to define telework using a broad range of possible criteria. In addition, a *best practices eWork module* was developed that includes a wide range of topics related to distance work (telework or eWork).
- 2) The final deliverable for the work package 5 is the report titled *Recommendations for the introduction of an ad hoc module on telework in the Labour Force Surveys*. It is written to guide persons in developing their surveys on distance work (telework or eWork). The work is conceived as a library of relevant ICT indicators that are to be put together creatively and translated into questions that fit into the basic questionnaire. Best practice questions are provided that will help both those who want to use tested questions in their surveys and others who prefer to write their own questions. Detailed examples of how the data can be used to define telework broadly or narrowly depending on the objectives of a survey should be very valuable in clarifying how to measure new patterns of multi-locational work.

Because the *Recommendations* document is posted on the Internet it should be widely accessible. In addition, the team is developing an easy-to-read extra edition of the project's Newsletter to distribute broadly to target groups. The working title of this edition is 'All you have to know when you want to measure eWork'.

4.3 Indicators can provide data that meets policy makers' needs

Having developed a highly cost/effective methodology for monitoring telework, producing the raw data is not the end objective. The value of the STILE contribution is to provide findings

³ Special Project Progress Report, STILE-2000-IST-31099, October 2002.

that are relevant to various user groups. Judging from experience both in Europe and the US, it is certain that users will be particularly interested in the following information:

1. Users want counts of teleworkers

As shown in the work package 5 *Recommendations*, various counts, ranging from 3.6% to 13.3% of employed persons can be derived from an LFS data set - in this case Ireland - depending on how narrowly the term is defined.

2. Users want trends

The recommended strategy of adding as few as three questions to core surveys year after year means that trends in distant work can be monitored. It is critical, however, to maintain continuity by avoiding 'tweaking' the questions. Although there may be exceptions, it is preferable to maintain the original phrasing,

3. Policy makers want details

The LFS provides the counts or incidence of teleworkers and their employment characteristics. Using the recommended work package 5 guidelines, the indicators should be added to other surveys to learn more details about teleworkers. Appropriate surveys to examine include:

- Household survey on ICT usage;
- European survey on working conditions;
- Eurobarometer;
- Population and Household Census;
- E-living Survey.

4.4 User groups

The fact that user groups were so intimately involved in developing the recommendations suggests that they will act as an important means of endorsement and dissemination. They also will raise awareness that the recommendations are available as a tool to help in understanding distance work.

5. Preparing for the future

Telework is evolving. In the immediate future users will need to know more about the impact of new technologies on telework. The derived definition approach with nested questions means that surveyors are prepared to anticipate evolving trends such as teleworking in multiple locations, the increasing use of the Internet in both Western and Eastern Europe (although at different diffusion rates) and increase in broadband availability. The recommendations make possible comparisons in time and space.

The following cautions are central guidelines for future exercises of measuring telework:

- derive telework definitions so data can be compared across localities and over time;
- piggybacked questions must fit the context and sequence of surveys;
- assume not every question is appropriate in every country or context, but basic questions enable comparisons;
- use nested questions so that comparisons can always be made at least on the first level;
- reports of data must include sample, filters used and routing of questions to avoid misinterpretations.

Comparative data from the US experience

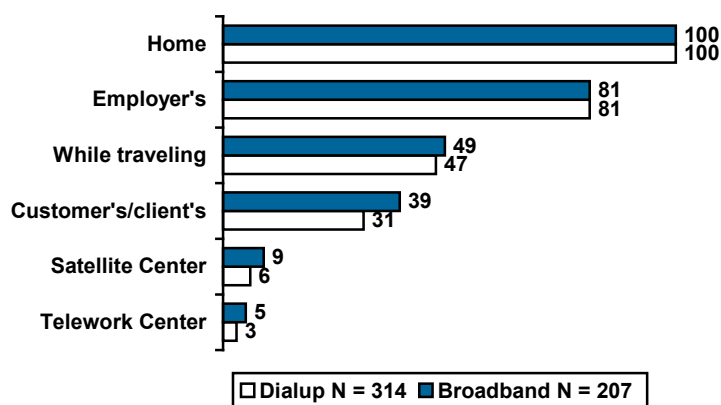
The 2003 *Teleworking Comes of Age with Broadband* research compares teleworkers who have broadband Internet connectivity with those who use the slower dialup. The study was conducted by Joanne H. Pratt, Joanne H. Pratt Associates, for the International Telework Association and Council (ITAC). Selected data are provided to illustrate the impact of ICT - that teleworkers having high speed 'always on' broadband service work more flexibly and productively.

The following text and figures are taken from *Teleworking Comes of Age with Broadband*.⁴

1. Working from anywhere

By definition, all employees in the study, 100%, work some of their time at home during normal business hours (Figure A). But many work at more than one location. For example 81% also work some of their time at their employer's place of business. Others divide their time between working at home and at a satellite center, or work both at home and while travelling.

Figure A. Multiple locations of work, percent of employees



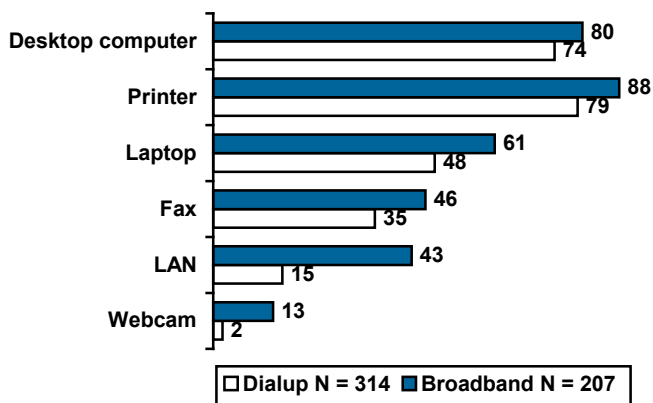
2. Home office equipment

Today most teleworkers are well furnished with basic office equipment such as computers and printers at home as well as at their employer's workplace (Figure B). That means that employees "... can be sitting at home and it's like being in the office". Significantly more of the

⁴ Pratt Joanne H. (2003), *Teleworking Comes of Age with Broadband, Telework America Survey 2002*, International Telework Association & Council (ITAC).

broadband users have available a desktop computer (80% BB vs. 74% DU) and/or laptop (61% BB vs. 48% DU), printer and fax.

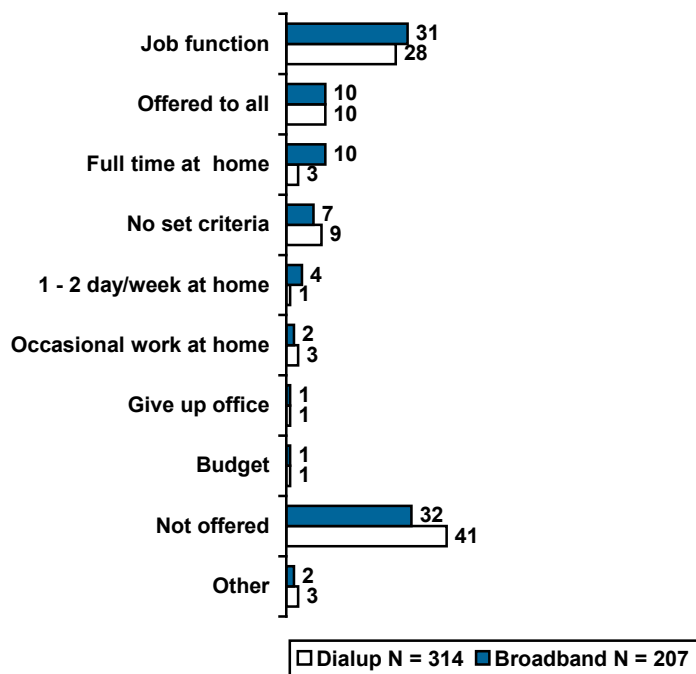
Figure B. Home office equipment, percent of employees



3. Online access

Employers offer Internet access to teleworking employees because their job function requires it, not because they work at home full time (Figure C). Broadband is justified as a tool to accomplish tasks.

Figure C. Main employer criteria for providing online access, percent of employees



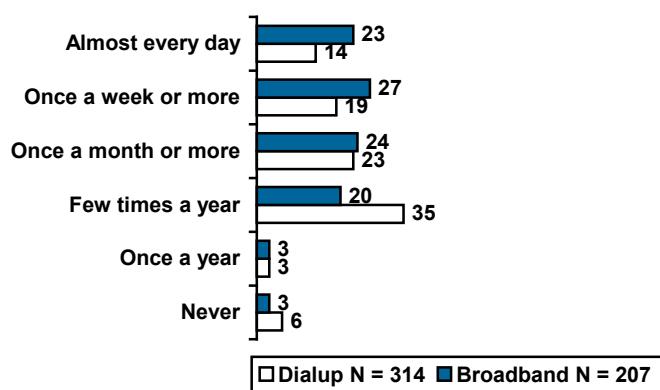
Source: National Federation of Independent Business

4. Frequency of teleworking

Do broadband teleworkers work at home more frequently? Yes, as shown in Figure D, they nearly double their average days teleworking. Twenty-three percent broadband (23%) com-

pared with 14% of dialup teleworkers work at home almost every day. Another 27% of broadband employees versus 19% of those with dialup work at home once a week or more. More than one-third of dialup users telework only a few times a year.

Figure D. Frequency of teleworking an entire workday at home, percent of employees



5. Virtual team activities

As shown in Figure E, compared with dialup users, those who have broadband engage more frequently in virtual team activities from their home offices. About 30% also have broadband when they work at their customers' site or while travelling. Significantly more employees equipped with broadband than with dialup online access carry out daily team activities such as accessing the Internet for information and research, exchanging large files, and working as a group.

Figure E. Virtual team activities: broadband vs. dialup, percent of employees engaging in activity daily

	Dialup	Broadband
» Access websites	61	75*
» Access Internet for information	54	71*
» Send large files	14	36*
» Use remote connection software	26	34*
» Do joint scheduling	20	30*
» Use groupware	17	27*
» Participate in telephone conferences	10	16*
» Use team project website	6	14*
» Work on same document	5	12*

* $p < .10$

6. Productivity

Employees say, based on their self-assessment, they are far more productive when they work with fast, always-on Internet access. Having broadband capability increased productivity for over half of the broadband employees (51%) compared with 37% of dialup employees. The magnitude of the increase is also significant: 33% for broadband compared with 29% for dialup.

Employees perceive that their employers evaluate their work in the same way, regardless of their speed of Internet connection (Figure F). About 65% say that employers are concerned with work quality, about 60% want to be sure that objectives are met and half of respondents

say their performance is judged by customer satisfaction. According to employees, their supervisors are much less concerned with the time spent working or seen in the office.

Figure F. Work evaluation, percent of employees

