Analysis of cost and quality indicators of day activity service programmes in Sweden

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ABSTRACT
Several countries provide day activity programmes for people with intellectual disabilities. Little is known about the quality of these programmes or about their effectiveness in providing vocational training. In this study, we analysed the distribution across Swedish municipalities of the cost per user and how this is related to five structure quality and one outcome quality variables. We observed that the expenditure per attendee varies considerably between different municipalities. Statistical analysis was used to study to what extent expenditure per user correlates with supply-side factors, (political) demand-side factors and quality indicators. This indicated that the variation of expenditure is not explained by supply-side factors only. The local tax base and other local economic and/or political circumstances are statistically significant covariates, in spite of the entitlement legislation that gives eligible persons right to services of equal quality independent of such location-specific factors. We also found that municipalities that conduct regular user surveys find reasons to, on average, spend more per user. Finally, we found that the probability for transitions to employment at a regular workplace is higher in municipalities where as an annual routine, a review is made of whether each participant can be offered an internship or work.

1. Introduction
Sweden, as several other European countries, gives people with intellectual disabilities legal entitlements to occupational and training activities in day activity programmes. The content of these services may vary considerably, from work-like structured occupation to social meeting places with few scheduled activities. Little is known about how the participants’ quality of life is affected or about the effectiveness of these programmes in providing vocational training. In this study, we analysed the variation and determinants of costs per user and some quality indicators across municipalities.

Using longitudinal data over the period 2004–2012, Hultkrantz, Värja, and Larsson Tholén (2016) analysed economic and political determinants of the Swedish municipalities’ expenditure per user for day activities (DAs henceforth). It was found that the intended equality of the quality of these services independent of location has not been achieved. The budget allocation decisions by municipalities were found to be, among others, positively related to changes in the local tax base and negatively related to changes of the share of votes for left-wing parties. The present study took the analysis a
few steps further by introducing a number of explicit quality indicators that are available for one year, 2012.

A common distinction of quality measures in health care is made between quality of, respectively, outcomes, structure and processes (Mainz 2003). In the case of DAs, the main outcomes would be first how well they contribute to the participants’ quality of life, second whether and how well they prepare for transition to (possibly sheltered and/or subsidized) employment. Structure indicators can concern how the programmes are organized, for instance, whether specific routines are implemented, for instance, a routine to regularly conduct user surveys among participants or for evaluation of possibilities to organize an internship or on-the-job training for each participant. Process indicators record performed activities. The latter concept can include activities that are not prescribed by formal routines (and therefore captured by structural indicators), but obviously, the distinction between process and structure indicators is vague.

Around 55% of the Swedish municipalities regularly conduct user surveys among DA programme attendees (NBHW 2013). These surveys often focus on quality of life-related aspects of the programmes as to whether they provide activities that are felt as meaningful, whether participants are treated respectfully, and so on. The survey designs vary a lot, so it is not possible to compare results across municipalities. However, to improve the control of the quality of services, efforts have been undertaken at the national level to develop quality indicators that are comparable (NBHW & SALAR 2007). Comparisons based on such indicators have gradually evolved, and from 2012, indicators are available for support provided under the Act Concerning Support and Service for Persons with Certain Functional Impairments with the Swedish acronym LSS. This is an entitlement law intended to secure equality in living conditions and community participation for individuals with functional impairments (NBHW 2013).

The structure and process features can, if effective, be expected to affect quality in two ways; either by raising outcome quality per unit of expenditure or by revealing outcome quality deficiencies that motivate additional spending. In the first case, when cost efficiency is improved, expenditure per user will stay constant or fall. In the second case, expenditure per user will rise. The purpose of this study was to analyse the cross-sectional variation of the municipality-level average cost per user and how it is related to some of these quality indicators. A further purpose was to investigate whether successful vocational training, measured as the probability of a transition to employment at a regular workplace, can be explained by economic factors and quality indicators. From a previous survey to all municipalities, NBHW (2008) reported that more than half of the municipalities had not had any such transition during a five-year period. Also, in most cases where there had been such transitions, they involved only one or a few persons. For these aims, we estimated two statistical cross-sectional models using data from 233 to 252 municipalities in 2012. The first is an OLS model of average expenditure per participant and the second, a Probit model of the probability that there was at least one transition from a day programme to employment during a year. Explanatory variables in both models were five structure quality indicators and one outcome quality indicator. In addition, we used political and economic variables, including population size and county-level fixed effects, as covariates.

The outline of the paper is as follows. The next section provides a background on the provision of day activity programmes for under the LSS Act in Sweden. The third section presents method and data with special consideration of the quality indicators and the econometric models. The final three sections report the results of the statistical analysis followed by a discussion and conclusions.

2. Day activity programmes for persons with intellectual disabilities in Sweden

In this section, we give some institutional background on DAs in Sweden, starting with the legislative framework and the cost-equalization systems. We then provide descriptive statistics and review previous work in order to evaluate and improve the quality of DAs.
2.1. Legislation and content

As part of a package of handicap and psychiatric reforms in the mid-1990s, the LSS Act was implemented for the purpose of securing equality in living conditions and community participation for individuals with functional impairments. The LSS Act contains ten action areas, the most important being housing with special services for adults and DAs. Individuals with an intellectual disability or autism spectrum disorder, and individuals with a significant and permanent intellectual impairment occurring from brain damage in adulthood are entitled to apply for DAs. People with physical disabilities or mental illness are not entitled to apply if they do not have any of the previously mentioned diagnoses as well. The municipalities are entrusted with the main responsibility for assessing the need and providing these services.

DAs vary from basic chores in groups to individual placements. The basis is traditional activities conducted in groups at special premises, for instance, doing simpler contract work, textile and wooden handicrafts, café or restaurant activities; and work in gardens, agriculture or forestry. The DAs may also include training and rehabilitation activities. Some group activities, for instance, theatre performances, target different subgroups (e.g. persons with intellectual disabilities, young persons with Asperger’s syndrome, etc.). Activities in small groups are sometimes located at other municipal or private workplaces, such as in cafés, shops or daycare centres for dogs. There are also individual placements, in which a person has his or her activity located at an external workplace. All but a few municipalities offer activities at least 6 hours a day on all weekdays (NBHW 2008).

DAs are supposed to provide individuals working life participation both directly and indirectly as vocational training. However, in spite of quite generous subsidies for employers that hire persons with intellectual impairment or autism spectrum disorder, transitions from DAs to employment at a regular or even sheltered workplace are rare (NBHW 2008).

2.2. Quantity, cost and quality

There were over 32,000 individuals (0.33% of the total population) participating in DAs in all Swedish municipalities, which makes this the LSS measure with the highest number of users. The lion’s share of the clients (>30,000) were individuals with an intellectual disability or autism spectrum disorder. Most were in the ages 23–64, and there was a slight majority of male participants. The number of users of DAs has increased by 50% since 2004. (NBHW 2014).

The total cost of DAs in 2012 was 6.50 billion SEK (0.69 billion Euros; 0.17% of GDP). The annual cost of DAs per user was 203,200 SEK (21,436 Euros; 50% of GDP/capita) (NBHW 2012). Figure 1 shows the distribution of this average across municipalities. The spread is quite large from less than 100,000 SEK up to almost 400,000 SEK. As can be seen, the distribution is skewed with a ‘fat’ right tail. The reasons for this are not obvious. However, a pairwise comparison of the upper decile with the lower decile of the means of all explanatory variables used in this study reveals significant differences with respect to several of these variables.7

LSS services are part of a broad set of social services provided by the 290 formally self-governed and self-funded municipalities. LSS makes all municipalities obliged to fulfil specific rights of any of their citizens who belong to at least one of three previously mentioned person circuits. However, the National Board of Health and Welfare has noticed a range of quality-related issues in the provision of DAs (NBHW 2011). Therefore, 81 comparable quality indicators8 of various ‘prerequisites for good quality’ in provision of LSS services were developed (NBHW 2013). Out of these 81 indicators, 31 are based on an authority (i.e. municipality-wide) perspective and can therefore be used for comparisons across municipalities. Out of these, we have used five structure quality indicators and one outcome quality indicator in this study, to be described below.

A fundamental quality–cost trade-off in provision of DAs concerns the degree to which activities are adapted to individuals. In general, common group activities are less personnel intensive than activities that require individual supervision. Also, adaptation of the workplace for each individual
may be costly and activities at another place than the regular localities may require additional trans-
port arrangements. Finally, sub-contracting of large-scale simple work tasks that bring additional rev-
enues and therefore reduce total cost can possibly confine the scope for adaptation of activities to
the needs and wishes of each individual.

3. Method

In the statistical analysis, correlations between a selection of these quality indicators and cost were
investigated. There were several reasons for expecting a positive relation between cost and overall
quality. For instance, individual placements with activities that are adapted to meet individual capa-
bilities and preferences will normally require more assistance and supervision than a common
meeting place with few organized activities. However, costs per user may also vary for many other
reasons, for instance, because of economies of scale. Hence, confounding and/or reverse causality
issues may arise. Given that quality indicators are available only for one year, our empirical strategy
was to do regression analysis with the same economic and political variables that were included in
the panel-data study of Hultkrantz, Värja, and Larsson Tholén (2016). In addition, we included muni-
cipality population size and county-level-fixed effects to further control for structural differences
between the municipalities that may affect cost. The results from this analysis was interpreted as a
reduced-form equation that, as explained below, can be derived from a simple model of demand
and supply for a latent comprehensive quality variable.

As already stated, there was one direct indicator of outcome quality related to transitions to
employment at a regular work place. We did a separate Probit-model analysis for this variable to
determine to what extent the other quality indicators were associated with the probability for
such a transition.

3.1. Basic economic model

Suppressing time-indices, let the latent demand and supply for the quality, in terms of quality of life
enjoyed by LSS clients, of DAs per user in municipality $i$ be $D_i$ and $S_i$. In equilibrium (i.e. after adjust-
ment to exogenous shocks), quality demanded and quality supplied will be equal, so then we have
$D_i(Cost_i, x_i^D) = S_i(Cost_i, x_i^S)$, where $Cost_i$ is the ‘equilibrium’ expenditure per user, $x_i^D$ and $x_i^S$
are demand and supply shifters, respectively.
Now, assuming that all demand and supply shifters are known (i.e. there are no confounding variables), we get the following basic reduced-form expression for the equilibrium expenditure per user for municipality $i$:

$$\text{Cost}_i = p(x^D_i, x^S_i).$$  \hspace{1cm} (1)

One way to control for unknown demand and supply shifters is to, as in Hultkrantz, Värja, and Larsson Tholén (2016), estimate a fixed-effects model with panel data. However, since the quality indicators that were the focus of the present study were only available for one year, this was not feasible here. Instead, we used county-level-fixed effects and municipality population size to capture such potential confounders.

### 3.2. Quality indicators

By introducing quality indicators in Equation (1), we investigated how expenditure per user was affected by the various quality features. This would reveal whether there was a cost-quality trade-off to the introduction of processes that have been identified as potentially quality improving. A higher level of a structure quality indicator could be expected to be associated with either a higher expenditure per user (higher quality is more costly) or a lower expenditure per user (higher process quality is more cost efficient). The latter case is clearly a win-win, given that the structure is effective in giving higher quality. Also, it is of interest to see whether measures, such as user surveys, that are not likely to be very costly per se have substantial cost effects, which then may indicate that this measure has indirect quality-enhancing effects, for instance, by being followed by specific programmes or adoptions for individual clients that raise the total cost.

The quality indicators available were collected by the National Board of Health and Welfare in a survey among all municipalities regarding the situation in 2012 (NBHW 2013). There were in total 31 indicators covering structure, process and outcome quality features, as presented in Table 1.

Based on relevance and statistical properties (some variables take the value of either zero or unity for almost all municipalities), we selected the five process variables and one outcome variable that are marked by bold letters in Table 1 for our analysis. These variables are whether (i) there is a written and managerially determined routine to offer every participant an individual plan (the variable Individual plan below), (ii) there has been made at least one study on the participants’ perception of the LSS activities in the municipality/district during a period of two years (User survey); (iii) there has been made a follow-up of all who have received a decision on eligibility to daily activities (Monitoring); (iv) there is an overall plan for staff development (Competence plan); and (v) there is a written and managerially determined routine for doing (at least annually) reviews of possibilities for job or internship to persons involved in daily activities (Job routine). Finally, we had an outcome indicator, which denotes whether there was any transition to work during a one-year period (Work).

Figure 2 shows the shares of municipalities having these routines. Individual plans for the participants are made in two-thirds of the municipalities and more than half make regular user surveys. However, just around 15% have a routine for doing regular reviews of possibilities for a job or internship and a similar low share of municipalities have done a follow-up of eligibility decisions.

### 3.3. Econometric models

All variables that were used in the empirical analysis are presented in Table 2. As demand-side shifters in our statistical analysis, we used the LSS cost-equalization grant/payment (Grant), average taxable income of residents (Tax base), the municipality income tax rate (Tax rate) and the share of voters voting for the two socialist parties (the Social Democrats and the Left Party) in the elections for the municipality assembly (Left).
The LSS cost-equalization scheme compensates or charges municipalities based on the structural cost for activities under LSS. The scheme is state-financially neutral, implying that some municipalities pay a fee, while others receive a grant. The amount that a municipality receives or pays is the sum of a number of cost components, where each component is proportional to the number of users eligible for a specific LSS service. For example, the cost components for DAs and housing represent 18% and 60% of the total cost, respectively, and vary with the number of users of each of these services (NBHW 2014). Because of this proportionality, we did not expect that the size of the fee/grant (received or paid) should affect the cost of DAs per user. Also, given that the LSS Act entitles eligible individual to equal quality of services irrespective of location, we conjectured that both Tax base and the Tax rate have a zero effect on the cost per user for DAs. The variable Left was included to capture differences in political preferences across municipalities, and was also expected to have no effect on the amount spent per user.

As potential supply shifters, we used the total number of DAs users in the municipality (No. of users) and the local unemployment rate (Unempl). The number of users was expected to be negatively related to the cost per user because of economies of scale. The unemployment rate would

| Table 1. Quality indicators surveyed in NBHW (2013) (Indicators used in the models in bold, for motivation of the selection of indicators, see note 10). |
|---|
| Coherence and coordination |
| - Internal coordination. Updated routines for coordination with: |
| - Social work units for children & youth |
| - Welfare support |
| - Homeless |
| - Addiction treatment |
| - Social psychiatry |
| - Violence in close relationships |
| - Care of elderly |
| - External coordination. Agreements for cooperation with: |
| - Job centre |
| - Social insurance board |
| - County council Departments of Children habilitation |
| - Adult habilitation |
| - Children psychiatry |
| - Adult psychiatry |
| Individual plans |
| - There is a routine for offering individual plans. |
| - There is a routine for documenting that an individual plan has been offered. |
| - Information on LSS is available on the web in alternative formats ‘Easy language’ |
| - Sign language |
| - Audio |
| Text file |
| Information at the social work department available in: |
| - Audio |
| - Daisy |
| - Sign language |
| Control |
| - Decisions on housing are followed up. |
| - Decisions on DAs are followed up. |
| Self-determination and integrity |
| - User surveys are conducted. |
| - Habilitation fees are paid to the clients. |
| - At least one previous user has started to work at a regular or sheltered work place during the last year. |
| - There is routine for reviewing users’ possibilities for a job or internship. |
| Competence of case workers |
| - Proportion of LSS administration time conducted by case workers with a university degree. |
| - Proportion of LSS administration time conducted by case workers with an updated developmental plan. |
| - There is an overall plan for development of staff’s competence |

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As potential supply shifters, we used the total number of DAs users in the municipality (No. of users) and the local unemployment rate (Unempl). The number of users was expected to be negatively related to the cost per user because of economies of scale. The unemployment rate
can have competing effects. On the one hand, a high unemployment rate can affect the opportunities to find simple-task jobs for DA users because of competition with labour-market programmes. On the other hand, participants in such programmes are sometimes assigned as assistants to DA programmes, which therefore would reduce the cost of DAs. For further motivation and discussion of these variables, see Hultkrantz, Värja, and Larsson Tholén (2016). Here, we used county-level-fixed effects and the size of the municipality population ($Pop_i$) to control for omitted variables. There are 21 counties in Sweden. The reason for including county effects was the finding by Birkelöf (2008) that total LSS expenditure per user is influenced by interactions between municipalities within the same county.

Summing up, the following estimation equation was used for the relation between the cost per user and the explanatory variables:

$$Cost_i = \alpha + \delta_1 \times Individual\ plan_i + \delta_2 \times User\ survey_i + \delta_3 \times Monitoring_i + \delta_4 \times Competence\ plan$$

$$+ \delta_5 \times Job\ routine_i + \beta_1 \times Income_i + \beta_2 \times Tax\ base_i + \beta_3 \times Tax\ rate_i + \beta_4 \times Grant_i + \beta_5 \times Unempl_i$$

$$+ \beta_6 \times No.\ of\ users_i + \beta_7 \times Left_i + \beta_8 \times Pop_i + \delta_i + \epsilon_i.$$

(2)

In a second analysis, a Probit model was used to estimate the probability that a municipality reports at least one transition during a year from DAs to employment. This gave the following estimation equation:

$$Prob(Work_i = 1) = \alpha + \theta_1 \times Individual\ plan_i + \theta_2 \times User\ survey_i + \theta_3 \times Monitoring_i + \theta_4 \times Competence\ plan$$

$$+ \theta_5 \times Job\ routine_i + \gamma_1 \times Income_i + \gamma_2 \times Tax\ base_i + \gamma_3 \times Tax\ rate_i + \gamma_4 \times Grant_i$$

$$+ \gamma_5 \times Unempl_i + \gamma_6 \times No.\ of\ users_i + \gamma_7 \times Left_i + \gamma_8 \times Pop_i + \delta_i + \epsilon_i.$$

(3)

4. Data

The data set was based on official statistical sources and from a survey to all municipalities on quality indicators. Descriptive statistics are displayed in Table 3.
There are 290 municipalities in Sweden. However, for the quality indicators collected by a survey to all municipalities, the three metropolitan cities in Sweden (Stockholm, Göteborg and Malmö) were asked to submit data on district level. Since we did not have data on the covariates at this level for these three municipalities, we could not include them in the regressions. Furthermore, due to non-responses in this survey, there were missing values on the quality measures, leaving us with 233 to 252 observations.\(^{13}\) Two municipalities were also excluded from the sample because of misspecification of the cost per user.\(^{14}\)

As can be seen in Table 3, there was a considerable variation in the Cost variable. The Tax base variable varied by a factor of two between the minimum and the maximum. The Left variable ranged from 7% to 80%. Tables A1 and A2 in the Appendix show the correlation coefficients divided on two sets of data: the quality indicators and the control variables, respectively. It can be noted that the correlations between the quality indicators are low, so there does not seem to be a clustering in ‘high-quality’ and ‘low-quality’ groups as judged from these variables.
5. Results

5.1. How is expenditure per user related to structure and process quality?

Figure 3 compares the average cost per user of municipalities with each of the five structure quality features. There are marked differences in the average cost per user between municipalities with and without User Survey, Competence Plan, and Job Routine. However, to draw conclusions on the relation between costs and these quality indicators, we need to account for the influence of other cost determinants, which was done in the regression analysis.

In the first statistical analysis, an equation of determinants of the DAs expenditure per user was estimated. The results from OLS estimation of this model with all five structure quality-indicator variables or just some of them are reported in Table 4. There was no indication of high multicollinearity between these variables, but still it turned out that the effect of one of the variables (Competence plan) was significant only when some of the other indicator variables were not present.

![Figure 3](image-url)  
Figure 3. Box plot of averages and spreads (50% and 95% confidence intervals, and outliers) of cost per user by indicator. Source: NBHW (2013). Note: 1 = Yes, 0 = No.

### Table 3. Summary statistics 2012: Means, min, max and standard deviations.

| Variables   | (1) | (2)       | (3)       | (4)       | (5) | (6) |
|-------------|-----|-----------|-----------|-----------|-----|-----|
| N           | 252 | 182,516.255 | 63,809.902 | 175,400 | 54,567 | 400,404 |
| Cost        | 252 | 257,211 | 33,909,909 | 249,550 | 210,400 | 490,500 |
| Tax base    | 252 | 131 | 1075 | 56.5 | -2843 | 4641 |
| Tax rate    | 252 | 102 | 112.239 | 59 | 742 |
| Grant       | 252 | 0.070 | 0.022 | .069 | 0.022 | 0.148 |
| No. of users| 252 | 29,152 | 30,859,240 | 16,589 | 2794 | 202,625 |
| Unempl.     | 252 | 0.406 | 0.121 | .389 | 0.072 | 0.795 |
The results for the economic explanatory variables were mainly the same as in the panel-data study of Hultkrantz, Värja, and Larsson Tholén (2016). The coefficients of Tax base and Fee/Grant were positive and significant supporting the conclusion of the previous study that the variation of expenditure per user to some extent can be explained by income variation. Also, the per capita No. of users reduces cost, suggesting the presence of economies of scale. Unlike in the panel-data model, Unemployment got significantly negative coefficients. Finally, Population received significantly positive coefficients.

For the quality indicator variables, the results showed that municipalities that regularly conduct User surveys have, on average, higher cost per user. Also, having a Competence plan seems to be associated with higher costs, significantly so when either User survey or Job routine is excluded. For the Individual plan and Monitoring variables, we found no evidence that they increase costs, in fact, the coefficients were negative but insignificant. Finally, it was not clear that municipalities with a Job routine in place had any relation to a higher cost.

5.2. What affects the probability to leave DA for employment?

The Probit-model results are shown in Table 5. The table presents results with all structure variables included. 17

The results can easily be summarized. The Job routine variable had significant positive coefficients. The marginal effect from a Job routine was 0.179 (standard error = 0.08 and p-value = .026), which can

| Table 4. OLS results. |
|-----------------------|
|                       |
| **User survey**       |
| 0.078*                |
| (0.07)                |
| **User survey**       |
| 0.080**               |
| (0.03)                |
| **Competence plan**   |
| 0.055                 |
| (0.12)                |
| **Job routine**       |
| 0.055                 |
| (0.17)                |
| **Individual plan**   |
| −0.059                |
| (0.16)                |
| **Monitoring**        |
| −0.080                |
| (0.18)                |
| **Tax base**          |
| 0.477**               |
| (0.05)                |
| **Tax rate**          |
| 3.478                 |
| (0.26)                |
| **Grant**             |
| 14.445***             |
| (0.00)                |
| **No. of users**      |
| −0.367***             |
| (0.00)                |
| **Unempl.**           |
| −3.198**              |
| (0.03)                |
| **Left**              |
| −0.214                |
| (0.40)                |
| **Population**        |
| 0.389***              |
| (0.00)                |
| **Constant**          |
| 3.642                 |
| (0.28)                |

Note: Dependent variable: Expenditure for LSS daily activities per person. The table presents the unstandardized coefficients. Robust standard errors are used and p-values are presented in parentheses. *,**,*** indicate 10%, 5% and 1% significance levels. All 31 combinations that include between one and five of the structure quality variables were estimated but only five are shown here. Job routine is significant at the 10% level in models that also include Plan, or both Plan and Monitoring. Competence plan is insignificant if estimated together with Job routine and User survey or Job routine, User survey and Monitoring. Survey is insignificant if estimated together with Competence plan and Monitoring.
be interpreted in the following way: If a municipality goes from not having a routine for annually reviewing possibilities for job or internship to persons involved in daily activities to having such a routine, this is correlated with a 17.9% increase in the probability of having at least one transition to employment or sheltered employment. None of the coefficients of other indicator variables was significant.

6. Discussion

Detailed information regarding, for example, the level of intellectual disabilities, autism and the presence of behavioural problems about the users is lacking. However, it has been concluded that the costs of DAs is related to the type of DA (NBHW 2011). These types vary from basic chores in groups to individual placements, and individual external placements are, compared to group activities, lower cost activities. It has also been recognized that the younger generation DA users have higher demands and expectations regarding the DA content. To meet these higher expectations, the activities need to be individualized which leads to higher costs (NBHW 2011). In the younger generation, there is also, compared to the older generation, a new group of disorders, the neuropsychiatric disorders, which also demand other types of content, organization and support (NBHW 2011). Some differences between municipality costs may be due to such reasons. However, although there may be much variation in individual characteristics that affects the expenditure needs for each individual user, it can be noticed that 40% of the variation in the average cost per user across municipalities was explained by the variables of the estimated models shown in Table 4.

Table 5. Probit-model results.

|                          | Full model     |
|--------------------------|----------------|
| User survey              | 0.078          |
|                          | (0.72)         |
| Competence plan          | 0.092          |
|                          | (0.65)         |
| Job routine              | 0.617**        |
|                          | (0.03)         |
| Individual plan          | -0.053         |
|                          | (0.80)         |
| Monitoring               | 0.016          |
|                          | (0.96)         |
| Tax base                 | -0.901         |
|                          | (0.56)         |
| Tax rate                 | 11.282         |
|                          | (0.55)         |
| Grant                    | -18.009        |
|                          | (0.35)         |
| No. of users             | 0.464          |
|                          | (0.31)         |
| Unempl.                  | -3.906         |
|                          | (0.61)         |
| Policy                   | 0.059          |
|                          | (0.96)         |
| Population               | 0.124          |
|                          | (0.80)         |
| Constant                 | 4.696          |
|                          | (0.03)         |
| N                        | 233            |
| Log pseudolikelihood     | -119.98601     |
| Wald chi²                | 79.43          |
| Prob > chi²              | 0.0000         |

Note: Dependent variable: Transition to work. The table presents the unstandardized coefficients. Robust standard errors are used and p-values are presented in parentheses. *, **, *** indicate 10%, 5% and 1% significance levels.
Equity of quality of services, independent of location, for persons eligible for DA programmes is required by the LSS legislation. As in the panel-data analysis conducted in a companion paper (Hultkrantz, Värja, and Larsson Tholén 2016), we have found that variables that reflect differences in local government revenues (Tax base and Fee/Grant) are positively associated with expenditure per user. Also, there are economies of scale, which therefore leaves municipalities with few users per capita at disadvantage. The reason for the negative association with Unemployment is unclear, one possibility being that municipality-provided labour-market programmes for unemployed may crowd out work-like individual placements of LSS clients. However, according to the results reported here, unemployment had no relationship with the probability to leave for employment.

Turning to the quality indicators, it was found that the 56% of municipalities that regularly make user surveys on average spend more per user. Since it is unlikely that the cost of making a user survey per se is high, we conjecture that the reason for the higher average cost per user is that these surveys are used to improve the quality of DAs. Measurement of user satisfaction by user surveys is a core ingredient in most modern quality management systems and has been shown to be associated with high-quality performance.18

It was also found that having a competence plan, that is, a plan for development of the competence of all staff, based on the needs and targets of the organization and a review of the individuals' education and competence, is associated with a higher cost. This implies that this indicator measures process-quality features with real effects, that is, not just fulfilment of a formal requirement. Municipalities with a comprehensive plan for all staff also spend more on competence-enhancing activities.

According to the LSS Act, anyone who has been granted an LSS service can request an individual plan that presents the approved and planned measures. This plan shall be formulated in consultation with the individual who is to receive support. A survey conducted among all municipalities in 2003 (NBHW 2003) showed that only 6.5% of all LSS clients had such an individual plan. However, it was also found that most users still had some kind of habilitation plan initiated by the professional administrators in the municipality. Thus, having a routine for offering an individual plan is a means for clients' participation but may not necessarily affect the number of habilitation plans made. Whatever the effects are, our results show that having such a routine does not raise costs. The reason could be either that such a routine does not substantially increase the share of users who request an individual plan or that user participation in the habilitation planning does not lead to substantially more expensive DAs.

Finally, the results show a significantly positive effect of the Job routine variable in the Probit equation. This is important, as only 42% of the municipalities had experienced any such transition during the most recent 12-month period. It is therefore encouraging that there are effective routines that improve the likelihood of transitions.19 Also, it is not clear from the statistical analysis that such routines raise the cost per user.

7. Conclusions

The results for the economic and political variables were with some exception in accordance with those found in a previous panel-data study by Hultkrantz, Värja, and Larsson Tholén (2016), demonstrating that the variation of expenditure per user is not entirely due to supply-side unit-cost differences. Thus, equalization has not yet been achieved of the quality of life-enhancing activities for persons with intellectual disabilities or autism spectrum disorder that are provided under the LSS act. These results therefore confirm that such equalization is difficult to achieve even with designated legislation and cost-equalization measures.

However, a reason that differences between localities are sustained could be the lack of common indicators that make the quality of services provided by 290 self-governed municipalities commensurable. Such indicators, aiming for measurement of 'prerequisites for good quality', have recently been collected by the Swedish National Board of Health and Welfare. The main focus of this study was on how some of these indicators were related to the expenditure per user and to the probability
for transitions of DA users to employment. Our main findings from the statistical analysis were that regular user surveys seem to raise service quality and that having a routine that annually examines whether each participant can be offered an internship or work is associated with higher probabilities for transitions from the day activity programme to employment at a regular workplace.

Notes

1. NBHW (2007) and Lövgren, Markström, and Sauer (2013) observe a lack of research regarding daily activities.

2. Structure denotes the attribute of the setting in which care occurs. Process denotes what is actually done in giving and receiving care. Outcomes denote the effects of care on the patients (Mainz 2003, p. 525; Donabedian [1966] 2005). This typology is discussed in relation to quality in social-work practice in Blom and Morén (2012).

3. There is a large literature on how to measure quality of life for people with intellectual disability. Recent reviews are Bertelli and Brown (2006) and Browns, Hatton, and Emerson (2013). In Sweden, Eklund (2009) measures quality of life among participants in daily activities among persons with mental illness (most with schizophrenia).

4. Some reported studies are from the municipalities of Karlskoga (Gustafsson 2002; Jonsson 2013) and Kramfors, Sollefteå, Timrå, Örnsköldsvik and Ange (Rönnbäck 2013).

5. Of the quality indicators, the only significant difference that was found was between the means where that the lower cost decile had a lower share of municipalities that had a competence plan.

6. The VIF test is under 1.5 for all the indicator variables.

7. These difficulties for people with intellectual disabilities to obtain paid work are internationally recognized (Campionbell 2012; Lövgren, Markström, and Sauer 2013; McClinchev et al. 2013).

8. The measurement date was 21 November 2012. Some indicators refer to the 12-month period preceding this date.

9. The measurement date was 21 November 2012. Some indicators refer to the 12-month period preceding this date.

10. All 13 indicators for Coordination and all 7 indicators for Information about LSS (see Table 1) were tried in preliminary estimations but skipped because results for these were considered difficult to interpret. The related regression coefficients were not significant, neither when all variables were introduced separately nor when they were aggregated. This possibly reflects that coordination and information activities of various kinds are organized differently in the municipalities. Formal routines for internal coordination are not always needed when, as especially in small municipalities, the same administrator is responsible for multiple action areas. For Individual plan, we used the main question; most municipalities that have an individual plan routine also have a routine for documenting that such a plan has been offered. The indicator variable on payment of habilitation fees was skipped since 89% of all municipalities make such payments. The variable on case workers with a university degree was likewise deemed to be statistically uninformative as 95% responded yes.

11. ‘Work’ is defined as employment on the open labour market, employment with state grants (’lönebidragsanställning’), internship or sheltered employment (not funded as a LSS activity). Transitions to education are not included.

12. More precisely, the sum of the county and municipality tax rates.

13. Comparing the control variables over the response and non-response groups, the only significant difference between the two groups is the number of residents, where we have a lower average population in the non-response group. There is, however, no significant difference in the amount of LSS fee/grants per resident.

14. When these municipalities were contacted because they had stated very low costs, they acknowledged that something was wrong, but could not provide accurate cost measures.

15. The number of factorials including one to five of these variables are 31. Estimations were made for all these combinations. Table 4 shows the full equation and equations with one indicator at the time. There were some changes of significance of the variables in a few other combinations and these are reported in notes to Table 4.

16. The VIF test is under 1.5 for all the indicator variables.

17. We estimated all 31 possible combinations including one, two, three, four or all five structure quality indicator variables, with the number of observations ranging from 233 to 252 due to internal non-responses, but the results did not change.
18. For instance, Samson and Terziovski (1999), in a study of 1200 Australian and New Zealand manufacturing organizations, found ‘customer focus’ to be one of three Total Quality Management factors that proved to be strongly and positively related to performance.

19. Some examples of practices that seem to work (mostly based on ‘supported employment’ models) are presented in NBHW (2010).

Acknowledgements
We are grateful for comments from Linda Andersson, Mikael Svensson and participants at the Economics seminar at Örebro University.

Funding
This research has been funded by grants from Jan Wallander’s and Tom Hedelius’ Foundation, Tore Browald’s Foundation and the City of Örebro [grant number P2011-0186:1].

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### Appendix

**Table A1.** Correlations between quality indicators and the dependent variables.

|              | Cost | Work | User survey | Competence plan | Job routine | Individual plan |
|--------------|------|------|-------------|-----------------|-------------|-----------------|
| **Cost**     | 1.00 |      |             |                 |             |                 |
| **Work**     | 0.13*| 1.00 |             |                 |             |                 |
| **User survey** | 0.17*| 0.15*| 1.00        |                 |             |                 |
| **Competence plan** | 0.21*| 0.17*| 0.28*       | 1.00           |             |                 |
| **Job routine** | 0.06 | 0.24*| 0.15*       | 0.19*          | 1.00        |                 |
| **Individual plan** | −0.01| 0.02 | 0.23*       | 0.19*          | 0.08        | 1.00            |
| **Monitoring** | −0.02| −0.02| 0.05        | −0.06          | 0.04        | 0.10            |

Note: Stars indicate significance at the 5% level.

**Table A2:** Correlations between control variables and dependent variables.

|              | Cost | Work | Tax base | Tax rate | Grant | No. of users | Unempl. | Left |
|--------------|------|------|----------|----------|-------|--------------|---------|------|
| **Cost**     | 1.00 |      |          |          |       |              |         |      |
| **Work**     | 0.13*| 1.00 |          |          |       |              |         |      |
| **Tax base** | 0.46*| 0.20*| 1.00     |          |       |              |         |      |
| **Tax rate** | −0.19*| −0.31*| −0.52*   | 1.00     |       |              |         |      |
| **Grant**    | 0.01 | −0.11| −0.24*   | 0.33*    | 1.00  |              |         |      |
| **No. of users** | 0.20*| 0.36*| 0.33*    | −0.21*   | 0.23  | 1.00         |         |      |
| **Unempl.** | −0.41*| −0.07 | −0.63*   | 0.38*    | 0.30* | −0.01        | 1.00    |      |
| **Left**     | −0.34*| −0.21*| −0.47*   | 0.58*    | 0.32* | −0.13*       | 0.61*   | 1.00 |
| **Population** | 0.30*| 0.40*| 0.47*    | −0.43*   | 0.02  | 0.94         | −0.15*  | −0.27*|

Note: Stars indicate significance at the 5% level.