NORWEGIAN SELF-EMPLOYED FARMERS AND WORK-RELATED STRESSORS

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• Between 1959 to 2011:
  - The number of farms has decreased from 198,000 to 45,500
  - The average number of hectares per farm has increased from 50 to 219
• Necessary investments have caused an increase in debt among Norwegian farmers
• Income per man-year of labor has decreased since the 1980s
• The total work load that includes both work at the farm and off-farm work, has increased

Aim of this study:

To analyze how certain characteristics of farming is associated with self-reported level of work stressors and mental complaints, and to analyze how the level of stressors explain the association between farm characteristics and mental complaints.
Methods

• A random sample of 7,500 self-employed farmers was invited to participate in a postal survey in 2012, and the response rate was 40%.

• Excluded female farmers (392 farmers) and 299 was excluded because of missing values.

• Final sample size: n=2276

• Statistical analyses: Structural Equation Modeling (SEM) and path analysis to find the relationships between seven independent and three dependent variables.
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Methods

• **The seven independent variables:**
  - age, education, annual household income from agriculture and forestry and the proportion of income from farming
  - number of hectares operated, annual workload at the farm, and plans to increase production in the next five years

• **The three dependent variables:**
  - individual stressors
  - community stressors
  - mental complaints
Age
Education
Income from agriculture and forestry
Proportion of income from agriculture
Number of hectares operated
Annual workload at the farm
Plans to increase the production

Individual stressors
Community stressors

Mental complaints
### Standarized path constructs of direct (DE), indirect (IE), and total effects (TE) among variables

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Community Stressors $R^2 = 5.8%$</th>
<th>Individual stressors $R^2 = 39%$</th>
<th>Mental complaints $R^2 = 34.6%$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
<td><strong>DE</strong></td>
<td><strong>IE</strong></td>
<td><strong>TE</strong></td>
</tr>
<tr>
<td><strong>DE</strong></td>
<td><strong>DE</strong></td>
<td><strong>IE</strong></td>
<td><strong>TE</strong></td>
</tr>
<tr>
<td>Individual stressors</td>
<td>.607*</td>
<td>-</td>
<td>.607*</td>
</tr>
<tr>
<td>Community Stressors</td>
<td>.423*</td>
<td>.047</td>
<td>.257*</td>
</tr>
<tr>
<td>Age</td>
<td>.074*</td>
<td>-.315*</td>
<td>-.283*</td>
</tr>
<tr>
<td>Education</td>
<td>-.057*</td>
<td>.045</td>
<td>-.024*</td>
</tr>
<tr>
<td>Annual income – agriculture and forestry</td>
<td>-.042</td>
<td>-.135*</td>
<td>-.018</td>
</tr>
<tr>
<td>Proportion of income from farming</td>
<td>-.047</td>
<td>-.083</td>
<td>-.020</td>
</tr>
<tr>
<td>Number of hectares operated</td>
<td>-.038</td>
<td>.093*</td>
<td>-.016</td>
</tr>
<tr>
<td>Annual workload</td>
<td>.193*</td>
<td>.308*</td>
<td>.081*</td>
</tr>
<tr>
<td>Production increase</td>
<td>-.156*</td>
<td>.068</td>
<td>-.066*</td>
</tr>
</tbody>
</table>

*Significant at the 0.05 level.
CONCLUSION AND IMPLICATIONS

• Farm characteristics such as annual workload and increase in the number of hectares operated on, increase the risk of both community stressors, individual stressors and mental complaints, and individual stressors respectively among self-employed male farmers.

• An increase in workload also increase the risk of mental complaints, and seems to be mainly mediated by the increase in individual stressors.

• Farm characteristics such as income from agriculture and the farmer’s education level are associated with less mental complaints. The statistical effect of income is mainly mediated by the reduction in individual stressors.
CONCLUSION AND IMPLICATIONS

• In Norway, there are an intention to increase the effectivity within agriculture, and to run a modernization of Norwegian agriculture

• That could include structural changes where the work load and the mean number of hectares, or other indicators of the size of production, as a consequence will increase

• Within new regulations and innovations to fulfil such objectives, we underline the important of also having in mind how occupational health within agriculture should be promoted, and the prevalence of stressors and their stress symptoms should be prevented