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Deliverable D2.4

Standardised costing template for selected costing approaches: criminal justice and education

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1 Introduction

Mental disorders are known for their wide impact on the capabilities and social behaviour of those diagnosed, their significant others, as well as on the society as a whole. Interventions in mental health care may generate costs and benefits that spill over to sectors outside the health care sector, such as the education sector and the (criminal) justice system. Due to currently lacking internationally comparable measurement and valuation methods of services in both the education and (criminal) justice sector for mental disorders, work package 2 (WP2) of PECUNIA (ProgrammE in Costing, resource use measurement and outcome valuation for Use in multi-sectoral National and International health economic evaluAtions) focuses on the development of these methods for the education and (criminal) justice sectors. The first aim of WP2 was to establish harmonised item descriptions in these two sectors for the six participating PECUNIA countries (Austria, Germany, Hungary, the Netherlands, Spain and United Kingdom) for mental disorders (O2.1) as part of Horizontal Activities (HAs) 1 and 2 (HA1: Identification, HA2: Definition).

Further, a module for a standardized multi-sectoral service and resource-use measurement (RUM) instrument for the education and (criminal) justice sectors was created ensuring cross-country comparability and transferability (O2.2) as part of HA3 (Measurement). In line with the final objective of WP2 (O2.3), based on the identified item lists and their descriptions and compatible with the developed RUM modules, standardized WP2 costing templates were developed (O2.3) as part of HA4 (Valuation), corresponding to deliverable 2.4 (D2.4).

In line with the PECUNIA care atom (developed by P1-MUW and P7-Psicost, presented e.g. at the 2nd PECUNIA Progress Meeting in Basel in M19), reflecting the most common/specific resource categories within the PECUNIA sectors, the costing templates developed as part of WP2 (by P4-UM) focus on the valuation of tangible resource non-health consequences. The WP2 costing templates hence cover items (HA1/HA2) in the (criminal) justice sector; all items identified (HA1/HA2) for the education sector are 'services', which, per care atom, are covered by the WP1 service costing templates (see D1.4) developed by P1-MUW. Note though that the WP1 service costing templates were reviewed by P4-UM who provided feedback from a WP2 perspective with regards to the transferability of WP1 valuation approach to services outside the health and social care sectors, specifically the education sector.

The (criminal) justice sector contains, next to services, tangible consequences (e.g. vandalism). For the valuation of the (criminal) justice items, i.e. non-tangible resource consequences (cf. care atom, Simon, König et al. (2019)). This deliverable (D2.4) presents the activities and results related to O2.3, i.e. the development of the WP2 costing templates for the (criminal) justice sector.

In the final year 3 of PECUNIA, the developed WP2 unit cost template will be applied in the PECUNIA countries to develop country-specific unit costs, which will eventually be included in a multi-sectoral unit cost compendium (D1.5-D4.5).

2 Description of Activities

Based on 1) input from the findings of the scoping review on costing methods conducted in year 1 (M10; by P1-MUW) incorporated into the harmonization strategy 'valuation' (HA4) developed for WPs1-4 in year 2 (M18; by P1-MUW) that followed 2) the PECUNIA care atom (D7.1 by P1-MUW and P7-Psicost), 3) the findings from the HAs 1-3 (by P2-UKE, by P7-Psicost, by P4-UM and P9-UnivBris, supported by P1-MUW)



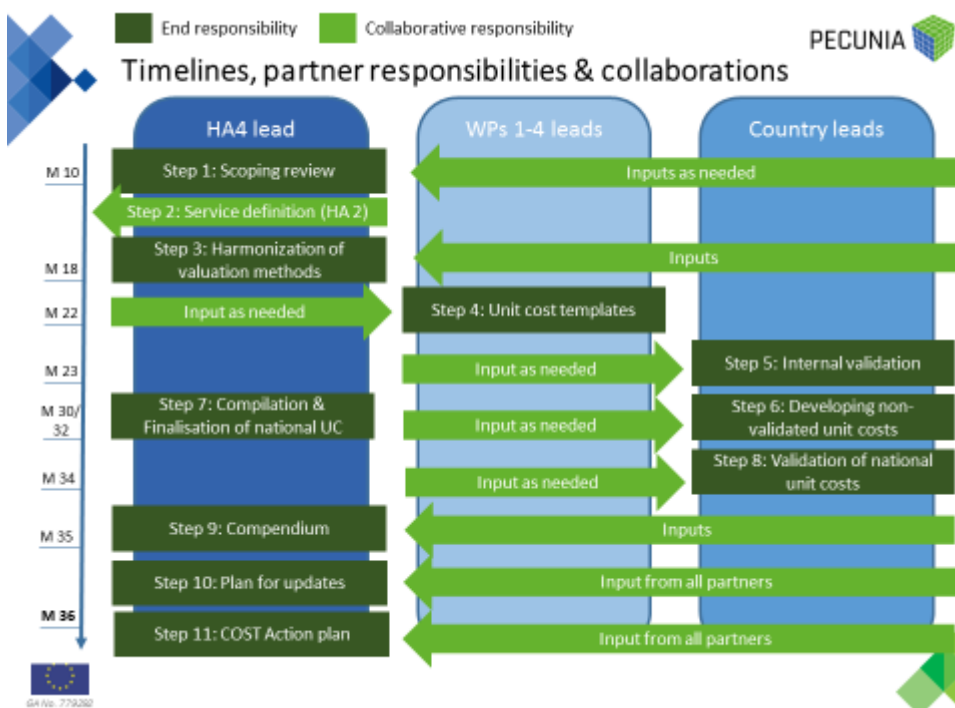
and joint TCs (telephone conferences) with the HA4 leads (P1-MUW), a WP2-specific unit costing template was developed by P4-UM (M19-M24).

In the TC on 22 October 2019, WP2 lead (P4-UM) and HA4 lead (P1-MUW) discussed the WP2 draft costing templates. In the TC on 29 October 2019, HA4 lead (P1-MUW) discussed the transferability of WP1 service costing templates to other sectors, including the education sector and (criminal) justice sector covered by WP2. All aforementioned resulted in two costing templates for costing tangible consequences in the criminal justice sector (D2.4).

Two rounds of WPs1-4 harmonization were conducted by HA4 (P1-MUW) in the end of October 2019 and beginning of December 2019, mostly including formatting changes and inclusion of e.g. a harmonized unit cost description module. In line with the steps outlined in the HA4 strategy applicable to WPs1-4 (**Figure 1**), the following activities in the WP2 unit cost template development were part of the WP2 work in year 2 (**Sections 2.1 and 2.2**).

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Figure 1: HA4 timelines, partner responsibilities and collaborations



2.1 WP2 unit cost template development (until October 2019; M22)

Based on the WP2-related items identified as part of HA1 (by P2-UKE) and relevant descriptions developed as part of HA2 (by P7-Psicost) as well as in accordance with the RUM module developed as part of HA3 (by P4-UM and P9-UnivBris supported by P1-MUW), costing templates for the (criminal) justice sector were developed by P4-UM (M19-M22). As explored above, the valuation of services identified in HA1/HA2 for the education sector are covered with the WP1 costing templates.

The **WP2 costing templates for the valuation of non-tangible resource consequences** were developed by P4-UM as WP2 lead based on internal face-to-face team meetings (M19-M22). In line with the illustrative unit cost worksheet provided by HA4 as part of the HA4 harmonization strategy (P1-MUW, M18), the WP2 costing templates were developed in a Microsoft Excel (2013) worksheet.

The WP2 costing templates focus on the **calculating the cost of material damage**, i.e. the cost of repairing/replacing the damaged property. Costs of material damage are considered tangible consequence occurring in the criminal justice sector. Examples of costs of material damage are car-vandalism, graffiti, or damaging public property. Internal discussions within the P4-UM team led to the conclusion that for the “tangible consequences” unit costing template, a top-down costing method is best-fit. This method aims to calculate the total costs of the item at the organizational/national level and to disaggregate the total costs to the separate units of resource use items. The top-down costing approach is suitable for cost calculation of relatively homogeneous cost units.

For the validation of the WP2 costing templates, **the item “car vandalism”** was chosen based on its transferability to other countries. Car vandalism is defined as the intentional act to damage a car. The actual cost would potentially be comprised of service costs (personnel) + cost of materials + suffering of victims (quality of life) and might or might not be partially or fully covered by the offender. Therefore, this template should be used to calculate material damage, as service costs can be calculated using the service templates. However, this is difficult as it requires a lot of additional information, which patients are unlikely to be able to provide (e.g. who repaired the car and how long it took). Therefore, it was suggested by P4-UM, based on internal discussion, to use insurance claims data as being the most feasible alternative option. Law enforcement (police, lawyer, court) costs should be excluded as these costs will be covered in the services template, so including these may therefore lead to double counting.

Two costing templates were developed by P4-UM for WP2. The first one is the unit costing worksheet („Tangible consequences WP2“), the second one is the data collection sheet (“Data collection WP2”). Both worksheets consist of different modules, covering general instructions and cell-specific instructions. The tangible consequences WP2 worksheet consists of three modules. Module 1 addresses basic information (item name, item category, sector, recommended unit of measurement, method of unit cost calculation, and perspective of unit cost calculation). Module 2 addresses the basic unit cost information (unit cost year, currency and country). Module 3 addresses data inputs necessary for the unit cost calculation and results (annual number of incidents, total cost attributed to the annual number of incidents, and the average cost per incident). A formula included in the Excel worksheet divides the total costs by the total incidents to calculate the unit costs per incident automatically.

2.2 Internal validation of WP2 unit cost templates (until November 2019; M23)

As per HA4 harmonization strategy (by P1-MUW, HA4 lead), country-level validation of the WP2 costing templates took place in November 2019 (M23).

For the validation of the WP2 items (HA1/HA2), the item selection for the pilot-test was executed in internal face-to-face team meetings by P4-UM. For the education sector (for which the WP1 costing templates are applicable), the service “attending special education school” was suggested for the country-level validation based on its transferability to other countries (defined as education services provided in the special education school, as a day care facility, for students with mental or physical disabilities; definition



provided by P4-UM, developed during the HA2 phase). In line with the relevant WP2 RUM module, the unit of measurement was defined as unit cost per student per school day. For findings on the country-level validation of the costing templates for the valuation of the service provided by the education sector, see D1.4.

On 7 November 2019, the HA4 lead (P1-MUW) shared the final version of the WPs1-4 costing templates with the relevant PECUNIA country leads (P4-UM for The Netherlands, P9-UnivBris for United Kingdom, P2-UKE for Germany, P1-MUW for Austria, and P3-CUB for Hungary). Spain was excluded for the validation, as P6-SESCS will be in charge of WP6-Validation next year. P4-UM Was responsible for the WP2 costing template validation. P1-MUW was responsible for the overall country level validation. The purpose of the validation and pilot-test was to check the feasibility in the WPs1-4 costing templates across these countries.

Detailed instructions on how to complete the WP2 costing templates were included in the worksheets (excel file), as mentioned in section 2.1. Within one month the country leads validated the template and returned the completed documents via email to P4-UM who also supported during the process if needed. The emails furthermore included a short summary of the findings, i.e. issues that came up during the validation; suggestions for improvements; documentation of the data sources and calculated unit cost estimates. P1-MUW (HA4 lead) was also included in the email. On 5 December 2019, during a consortium-wide TC, the results of the WP2 costing template validation were presented by country and then discussed. The findings are summarised in **table 2**. WP2 lead P4-UM was contacted by other country leads in order to assist for completing the excel sheet (for example to discuss uncertainties or for clarification reasons). P1-MUW reached out to P4-UM to clarify whether or not expert costs are supposed to be included in the total costs. Furthermore, P9-UnivBris mentioned that national data per incidence was available, as is supposed to be calculated in the sheet. No details about the total costs nor about the total incidents were publicly available. Other partners did not need any help with completing the excel sheet and did not mention any suggestions for improvement. However, based on the country-level validation, both WP2 costing templates did not need any alteration.

As can be seen in table 1, the item for the (criminal) justice sector was identified as “vandalism”, and was not coded by the DESDE classification system. Vandalism is a tangible consequence and is therefore not applicable for a DESDE classification, as this system is only suited to classify services.

3 Results

The validated WP1 unit costing templates (i.e. “WP2 tangible consequences” and “WP2 data collection” worksheets), developed by P4-UM from M19-M23 can be used by researchers who aim to develop unit costs in the (criminal) justice sector , such as unit costs for the tangible consequences of (different types of) vandalism. For the latter, it is recommended to use the collect national available data via the top-down costing method, based on the developed “tangible consequences” unit cost template. If this is not feasible due to e.g. non-availability of such national-level data, it is possible to calculate the average costs per incidence (of car vandalism) based on claims data. Claims data can be collected from different insurance companies based on the WP2 data collection template. It is also feasible to calculate costs of other types of vandalism (e.g. public property). WP2 lead P4-UM was not contacted by other country leads in order to assist for completing the excel sheet (for example to discuss uncertainties or for clarification reasons). No suggestions for improvement were made by any of the country leads, therefore the WP2 costing template “tangible consequences” did not need any alteration based on the country validation. The final version of the validated WP2 costing templates are shown in Figure 2 and 3.



Table 1: Links between HA1-4 for WP2 costing templates

Item name <i>HA1</i>	DESDE 2.0 PECUNIA code <i>HA2</i>	Recommended unit of measurement in line with PECUNIA RUM <i>HA3</i>	Costing approach <i>HA4</i>	Sector
(car) vandalism	n/a (not a service) ¹	Costs per incidence	Top-down	SJ*

Source: Own compilation by P4-UM.

*SJ = Sector of (criminal) Justice

¹Vandalism is a tangible consequence and is therefore not applicable for a DESDE classification, as this system is only suited to classify services

Table 2: Country-level validation of WP2 costing templates – Criminal Justice

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Figure 2: Screenshot from sheet “Tangible consequences (WP2)” (D2.4). Source: own compilation by P4-UM

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Figure 3: Screenshot from sheet “Data collection WP2” (D2.4). Source: own compilation by P4-UM

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4 Conclusions

The WP2 unit cost template “tangible consequences” developed by P4-UM was designed and proved valid for estimating unit costs across countries based on a first pilot-test in five PECUNIA countries. The strength of the current template is that, together with the data collection sheet, it provides a standardized template to calculate unit costs both from a bottom-up and a top-down costing approach. The WP2 costing templates enable countries with lacking national data to calculate the unit costs based on a harmonized methodology. The limitation of the current template is that both templates were developed based on internal discussion within the P4-UM team, and that currently no specific literature is available to further substantiate its methodological foundation. However, the internal discussion was led by a varied group of researchers with expertise in different fields (e.g. HTA, public health, policy and economics).

Based on the WP2 unit cost templates “tangible consequences”, country leads (P4-UM for The Netherlands, P9-UnivBris for United Kingdom, P2-UKE for Germany, P1-MUW for Austria, and P3-CUB for Hungary) will develop national unit costs for a selected number of services in year 3 (by M32). External validation of the developed unit costs will be sought via several channels: 1) with regards to the general methodology via presentation of selected results (valuation approaches, unit cost calculation) at relevant international conferences by WPs1-4 leads or as publication in a scientific peer-reviewed journal; 2) as proposed by the Scientific Advisory Board (SAB) in May 2019 at the SAB meeting, external feedback may also be sought from the potential end-users of the costing templates, e.g. national health insurances and ministries, which will have to be organized by the country leads; 3) a comparative evaluation of PECUNIA unit costs against existing national/regional unit costs as well as other publicly available relevant estimates is foreseen to be conducted by the country leads on a convenience sample of the developed unit costs to determine e.g. the variability in the calculated estimates; 4) as part of the PECUNIA validation in year 3 (WP6), led by P6-SESCS.

Country-level unit cost estimates from WPs1-4 will be included in an electronic PECUNIA compendium (D1.5, D2.5, D3.5 and D4.5, due in M36).



Annex 1: Additional metadata information

Attachment file name	
Digital Object Identifier (DOI) of current version if available	
Access right	<input type="checkbox"/> Open Access <input type="checkbox"/> Embargoed Access <input type="checkbox"/> Restricted Access <input type="checkbox"/> Closed Access
Uploaded to Zenodo	<input type="checkbox"/> yes <input type="checkbox"/> no
<u>License type</u> if open access	<input type="checkbox"/> Creative Commons Attribution Share-Alike 4.0 <input type="checkbox"/> Creative Commons Attribution 4.0 <input type="checkbox"/> Creative Commons Attribution-NoDerivatives <input type="checkbox"/> Creative Commons Attribution-NonCommercial 4.0 <input type="checkbox"/> Creative Commons Attribution-NonCommercial-NoDerivatives

