Career Finder Report

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This is your own personalized career matching report!

2 Methodology

2.1 Data

In order to construct and test our psychometric models and questionnaires, we've gathered publicly available data from the *Bureau of Labor Statistics*[1]. In addition to the BLS official website, this data can also be found neatly organized at *O'NET Online*[2].

Our data base consists in a set of 161 job characteristics, such as entry level of education, required skills, abilities and other competencies (rated from 0 to 1), as well as typical job activities, job hazards, and so on.

This information is currently available for 873 occupations, spread across 16 different career clusters, including Science, Technology, Engineering & Mathematics, Business Management & Administration, Government & Public Administration, and more.

2.2 Matching

One of our goals at Atlas Research© is to find the occupation that best fits you. Therefore, we assess your most important competencies and job preferences, and compare these with all 873 occupations in our data base. Then, we arrange your matches best to worst and estimate a compatibility score ranging from 1 to -1 (i.e. from 100% compatibility to 100% incompatibility).

To do so, we utilize the *K-Nearest Neighbors algorithm* (KNN). This fast and effective machine learning method compares a vector to a given matrix by successively measuring the Euclidean distances between them, which are defined as:

$$d(p,q) = \sqrt{\sum_{i=1}^{n} (p_i - q_i)^2},$$

where p is a vector with n components and q, one line of a comparison matrix. The algorithm then proceeds by sorting these distances from smallest (greatest similarity) to largest (lowest similarity), and returns the k smallest distances (i.e. the k "nearest neighbors").

Thus, after assessing your competencies and job preferences, we apply the KNN algorithm to your questionnaire results and produce a detailed list of careers that approximate your profile.

2.3 Factor Analysis

Now, to adequately capture your professional profile, we've developed a highly internally consistent psychometric questionnaire. And, in addition to being based on a reliable construct, this instrument is relatively short: instead of plowing through an enormous 161-item survey, you can find your best career matches by answering only 33 very simple questions! But how did we accomplish this?

The answer is: factor analysis. This psychometric procedure aims to explain relationships between different *observed* variables in terms of latent, *unobserved* variables, or factors. These factors, then, function as

[1] See https://www.bls.gov/data/home.htm.
[2] See https://www.onetonline.org/.

"groups" in which observed variables cluster together, according to how they correlate to one another. After we find the underlying factors, we analyze how strongly each variable is associated to them. We then reduce dimensionality by keeping a fraction of the original data base, that is: those variables which best represent each factor (the "purest" variables). Therefore, with a much, much smaller set of questionnaire items, we can assertively assess your professional profile and match you to your best possible career!

The details of our factor analysis procedures can be found in the appendix at end of this report.

3 Results

3.1 Top 5 Career Matches

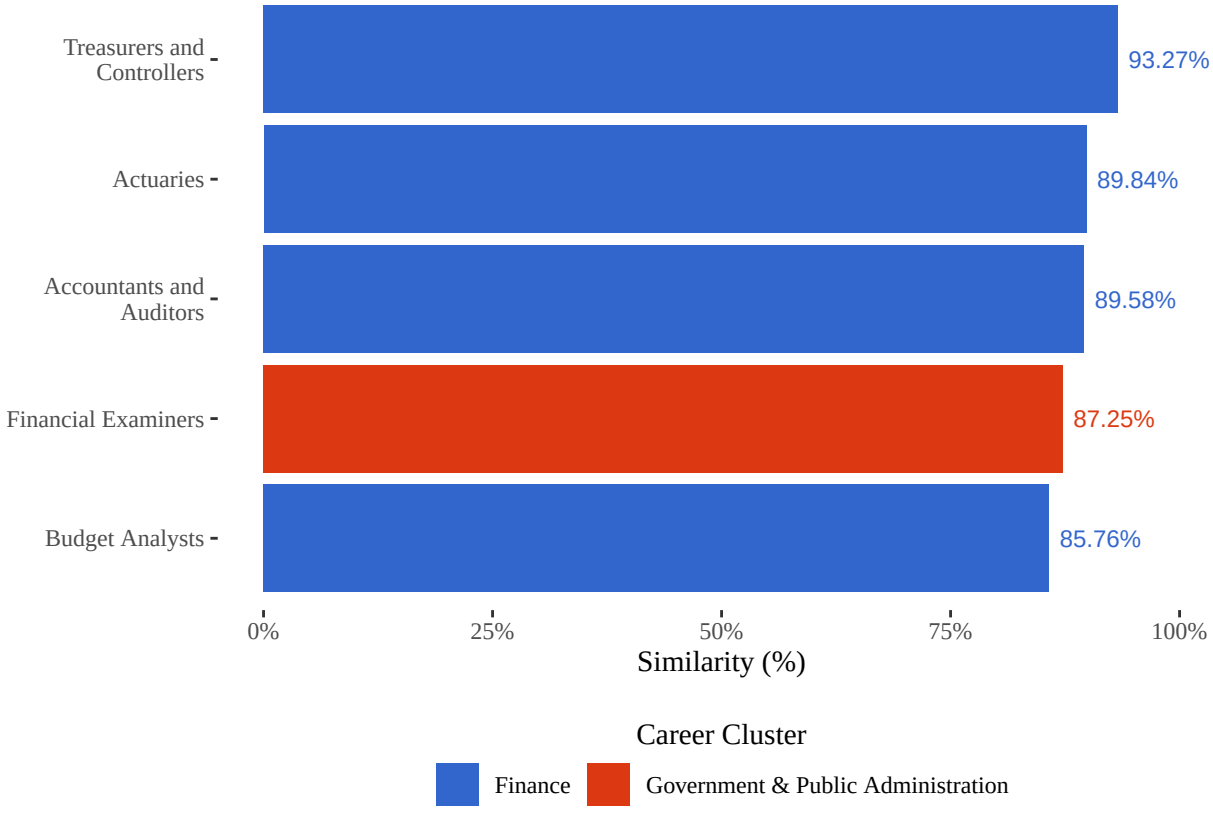
Dear, Martijn, these are the 5 careers that best approximate your competencies and job preferences:

Table 1: Top 5 Matches — Martijn

Occupation	Cluster	Compatibility
Treasurers and Controllers	Finance	93.27%
Actuaries	Finance	89.84%
Accountants and Auditors	Finance	89.58%
Financial Examiners	Government & Public Administration	87.25%
Budget Analysts	Finance	85.76%

We can analyze them graphically like so:

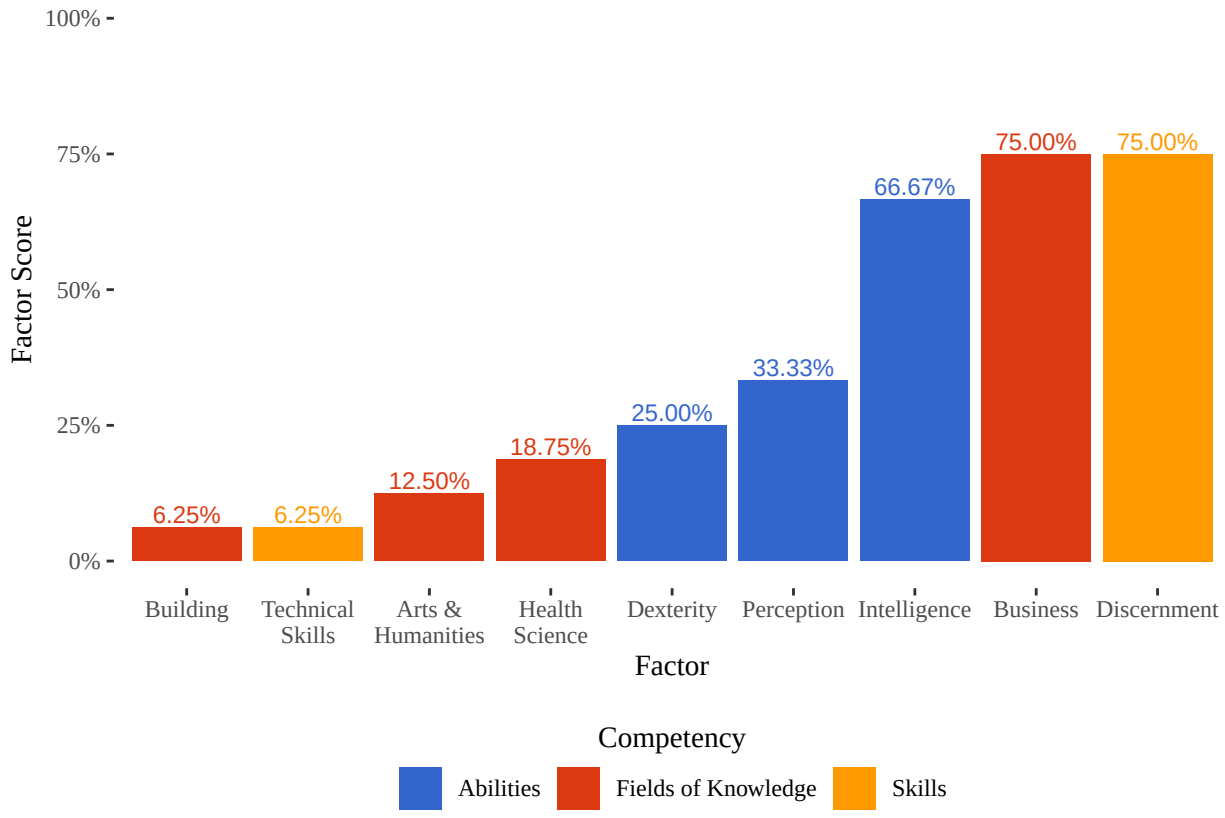
Figure 1: Top 5 Matches — Martijn



3.2 Factor Scores

We can also summarize your professional profile calculating factor scores. These measure how much you average at each of the factors in the questionnaire[3]. For instance, considering your competencies, we have:

Figure 2: Factor Scores — Martijn



[3]See Factor Analysis above.