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Paths of the vocational training graduates: Estimation of a multi-state model using a stationary Markov chain.

by

Benchekroun Bahia[*] , Zaaj Nawal[**]

Abstract:
Located at the hinge of education and employment, vocational training is supposed to provide profiles adapted to the labour market requirements. However, Moroccan graduates of vocational training often find it difficult to fit into the labour market. Indeed, according to the Ministry of Employment and Vocational Training, only 63% of the graduates in 2006 succeeded in integrating the working environment. Yet, this rate hides several realities and is likely to over-estimate integration since it does not take into account some crucial variables in the analysis of professional integration, namely the duration of employment, the precariousness of employment, etc.
Studies about the paths of vocational training graduates realized periodically (every two years) since 1987 by the Ministry of Employment and Vocational Training aim, by virtue of their longitudinal aspect, to analyze the stability and the evolution of these graduates employment as well as their behaviour. In other words, these studies seek to answer some questions about the dynamics of youth employment in the labour market.
This work aims to model the transitions of vocational training graduates using a retrospective calendar recalling their professional situation starting from the date of obtaining the diploma (2002) until the date of the survey (2006). Our model uses a transition process generated by a homogeneous, stationary and ergodic Markov chain for the graduates state space.
We propose to explain the transitions from one state to another, via a multivariate logistic link, through variables which can influence between-state transitions. This leads that the processual variables explain these transitions. To estimate the parameters of our model, we use an iterative method of unconstrained nonlinear optimization: Conjugate Gradient "CG". The stationarity of the Markov chain and the estimation of the transition matrix allow us to compute labour market indicators used to describe the behaviour of young graduates as well as their professional mobility.

Key words: labour market, transitions, vocational training, Markov chain, "CG" Method, Morocco.

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Introduction

Professional integration is a complicated temporal process, which constitute for several years a vital concern for companies. A cohort of graduates from the training system, integrate gradually labour market going through various states over the time: unemployment, access to precarious employment, additional trainings, etc (Huteau, 2007).

The problem of professional integration was studied very little in a country like Morocco. The rarity of the studies is explained by the scarcity of adequate data allowing to go beyond static results. The objective is to set up dynamic approaches which are supposed to identify separately the effects of the education and training system, and those relative to the various paths in the labour market.

Even when longitudinal data exists, their use remains too much limited to descriptive analyses in the case of Morocco.

Our study tries to shed some light on the dynamics of professional integration of the Moroccan vocational training graduates.

The inadequacy between the supply and the offer of employment generates problems of unemployment. These problems amplify continuously considering the increasing requirements of the companies regarding competences and skills from graduates in order to have a competitive advantage. Only graduates with these requirements are able to integrate professional environment.

It is within this framework that the studies of integration and graduates paths are realized regularly by the Ministry of Employment and Vocational Training.

The use of a graduates' representative sample interviewed four years after their graduation in 2002, allows an assessment of the difficulties of their integration according to variables that explain transitions from one state to another in the labour market. It is difficult to define what an inserted individual exactly means. However, the answer to this question can be articulated around two poles, a pole of the externality and the other of interiority (Jean Vincens, 1997). The first defines a state, and considers that once the graduate is in a situation of employment, he is inserted. This definition remains exogenous considering that is not interested in perception of the graduate with respect to his integration. Other authors see the integration from another angle, that of interiority. Only the individual is able to determine if he is inserted or not. In this case, the notion of integration will be centered on the graduate himself (Jean Vincens, 1997). However, this observation is to be taken carefully: The methods of information collecting should be suitable. Then, moving to a group of graduates will be more complicated considering the diversification of their answers.

This paper is organized as follows: a first section describes the database used and gives a number of indications of the integration. The second section proposes a micro-econometric assessment approach and an interpretation of the estimation results.

A third section gives an application of our method on graduates' data of 2002.

This paper ends with the main remarks and the prospects for future analyses.

I- Description and data analysis

This study concerns a sample of 5905 vocational training graduates in 2002, interviewed in 2006. This sample describes a heterogeneous population made up of all the graduates of 14 training

operators. This sample is obtained from a national database which covers 72% of the graduates in 2002.

For each graduate, a retrospective calendar records the professional situation corresponding to each quarter, along the four years following the graduation, which is equivalent to 16 quarters. Each quarter corresponds to a state occupied on the labour market.

We define 8 different states referring to the graduates answers: employment, unemployment of type 1 (individuals having already had a job), unemployment of type 2 (individuals having never had a job), training course, studies, military service, housewives and other non-specified states.

The longitudinal aspect of the Vocational Training Graduates Paths Survey, 2002, allows us to highlight graduates itineraries as well as their professional mobility.

Table 1: Employment episodes number

Employment episodes number	number	%
0	2134	37.41
1	3167	55.52
2	346	6.07
3	50	0.88
4 and more	7	0.12
Total	5704	100

Source: Vocational Training Graduates Paths Survey, 2002; Authors calculation

More than 60% of the graduates were employed at least only once during the four years following the graduation. It is also noticed that more than 70% of the graduates having never been employed, have at least known an unemployment episode, 86% of them knew exactly one episode of unemployment.

Table 2: Number of unemployment episodes of type2

Number of unemployment episodes of type2	number	%
0	1677	29 .62%
1	3414	60.31%
2	462	8.16%
3	94	1.66%
4 and more	14	0.24%
Total	5661	100%

Source: Vocational Training Graduates Paths Survey, 2002; Authors calculation

Tables 3 and 4 give us the number of transitions from state i to state j moving from one quarter to the next quarter, for males and females. Each entry of the table corresponds to the number of transitions from state i to state j for all graduates.

Table 3: Females transitions

	j							
i	**Employment**	**Unemployment1**	**Unemployment2**	**Training course**	**Studies**	**Military service**	**Housewife**	**other**
Employment	12320	412	0	20	10	0	26	2
Unemployment1	153	1428	0	20	0	0	13	4
Unemployment2	678	4	15652	491	92	0	142	43
Training course	465	26	816	2154	46	2	42	0
Studies	40	5	46	23	1182	0	14	0
Military service	0	1	0	0	1	12	1	0
Housewife	53	18	22	6	3	1	4682	3
Other	2	6	31	0	0	0	7	285

Source: Vocational Training Graduates Paths Survey, 2002; Authors calculation

Table 4: Males transitions

	j							
i	**Employment**	**Unemployment1**	**Unemployment2**	**Training course**	**Studies**	**Military service**	**Housewife**	**other**
Employment	18652	555	0	21	7	1	0	4
Unemployment1	284	1796	0	9	5	0	0	2
Unemployment2	1035	10	14765	459	110	1	2	31
Training course	563	18	782	2320	43	1	0	5
Studies	45	5	59	28	1334	0	0	0
Military service	2	1	0	0	0	45	0	0
Housewife	0	0	0	0	0	0	23	0
Other	11	2	23	1	1	2	0	346

Source: Vocational Training Graduates Paths Survey, 2002; Authors calculation

The concept of transition gives an idea about the process of integration and reintegration (Vernières, 1997), and informs us about the dynamics of the labour market by highlighting the most graduates marked transition states.
In order to compute the number of transitions from one state to another, we only keep coherent[1] and complete paths. The most significant number of transitions concern transition from an employment state to another. This number is more important for males than for females. Moreover the number of males' transitions from unemployment states (both type 1 and type 2) to employment state exceeds those operated by females. We note a lack of some transitions, for example the transition (studies to studies), this can be explained by the fact that the graduates who decide to resume their studies spend at least 6 months.

I-1-Paths

Initially, and in order to compare the graduates' paths, we used paths coding treatment (Espinasse, 1994). This method is likely to gum the states chronology since this later escapes to the calendars analysis. This coding method leads place to homogeneous groups (Checcaglini & Lemaire, 2001). Since the integration is a complex process which depends on the notion of the duration, (Fourcade, Vernières, &Paul, 1994), we cannot describe the professional integration dynamics without taking into account the duration spent in each state. With this intention, we use the works of Houzel and Levaillant, which adopt coding in two positions, the first position is reserved to the nature of the occupied state and the second position is reserved to the duration spent in this state. At this step we keep the states nomenclature already used and we distinguish three duration categories using (Houzel and Levaillant, 1995) categorisation.

B	Short duration	6 months and less
M	Medium duration	From 7 to 12 months
L	Long duration	More than 12 months

In our case, the calendar consists on quarter states information, thus the following coding is adopted:

B	Short duration	2 quarters and less
M	Medium duration	3 to 4 quarters
L	Long duration	More than 4 quarters

This regrouping gives several types of paths. They are not all well informed. We did not remove the paths which are not completely informed in spite of the fact they are not numerous, and this, in order to not underestimate some indicators.

[1] An incoherent path corresponds to an illogical transition, for example a transition from the state of "already worked" to a state of "never worked".

I-1-1 Mono-state paths

These paths include the graduate's paths with only one state during all the period of observation. The number of these graduates is 1644.This number is broken down between employment and unemployment without denying that 182 housewives have chosen or had not to be part in the labour market. 25 graduates have, in their turn, decided to continue their studies.

Ideal paths

The number of people who remained employed during four years after graduation is about 500, which accounts for 8.8% of the surveyed population. These graduates got a job immediately after their graduation. They succeeded to remain employed during the period of observation.

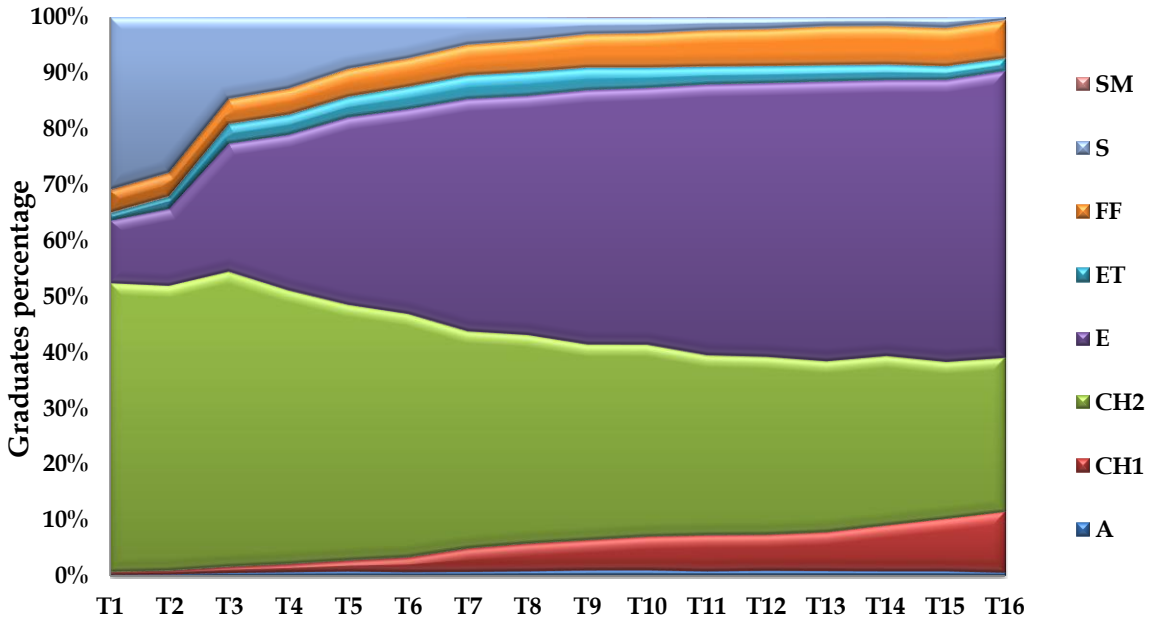
Unemployment paths

The number of people who never worked and who remained without employment throughout the path is about 921, which accounts for 15.6% of the surveyed population. According to the declarations of the graduates, 1627 of them, that is to say 27.5% never succeeded in finding a job, but are occupying other states except employment.

I-1-2 Composite paths

The composite paths or the multi-states paths reveal at least two different states. The number of graduates who knew this kind of paths is about 4261, and their paths are very heterogeneous. Graduates who succeeded in getting a job after short unemployment duration (3months to 6 months), are about 330 graduates, that is to say 5.6% of the whole of the surveyed graduates. The appendix 5 gives an exhaustive description of paths typology.

Figure 1: Graduates percentage in each state per quarter



Source: Vocational Training Graduates Paths Survey, 2002; Authors calculation

It is clear, according to the figure above, that the number of unemployed having never worked exceeds the number of unemployed having already worked for each quarter. We also note a clear stagnation since the 13th quarter among graduates who never worked. It is the same for the number of graduates having a job, we likely note a non significant increase in this number since the 9th quarter.

II- Methodology

We present now a statistical model allowing the estimation of the transition probabilities given specific characteristics. Transitions from one state to another are not predictable, but we can guess their occurrence probability, from their stochastic character.

We assume that the transition process within the states space is generated by a homogeneous and stationary Markov chain. This supposes that transitions from one state to another depends only on previous states via the immediate preceding state. The distribution of the probability function of the transition process remains identical for any transition in the time lasting 16 quarters. Moreover, it is supposed that the individuals (graduates) belong to an independent sample and are identically distributed (iid) i.e. the individuals are independent from each other and they can be described using the same population probability law.

The analysis cannot be complete considering the censured duration on the right of the observation period. In other words, the observation period is lower than the period of final integration, consequently some variables are badly observed. Duration models bring an answer to these kinds of problems.

Indeed, since we wish to explain the professional transitions on the labour market or to estimate the probability that a given individual moves from one state to another, the need of the examination of some factors effect remains inescapable. These factors are gathered in three types of variables (Eckert & Hanchane, 1997):

Archaeological variables

Those variables refer to previous individuals characteristics: Gender, parents' socio-demographic characteristics, characteristics acquired by the individuals in the training system like education, etc.

Processual variables

These variables are the result of graduates occupation of some states on the labour market such as the number of unemployment episodes and the professional integration delay.

Structural variables

These variables try to take into account economic conjuncture effects and the labour market structural changes. However, it should be noted that it is difficult to choose the variables likely to translate the effect of these structural changes.

According to tables 3 and 4, we remark that a few transitions are observed for some states (studies, housewives, etc.). It seems legitimate, in order to insure that estimations in the adopted model are valid, to aggregate the eight states in three states: Employment, Unemployment and Inactivity. This last state includes training course, studies, military service, housewives and other non-specified states. Unemployment includes unemployment of type1 and type2.

We note in this case the state space Ω= {E, CH, O} while E, CH, O indicate respectively employment, unemployment and inactivity. The parameter time belongs to the set T= {T_1, T_2,… T_{16}}, T_i constitutes the i^{th} quarter.
Each person's labour path is generated by a homogenous and stationary Markov chain with a stochastic transition matrix:

$$\boldsymbol{\theta} = \begin{bmatrix} \theta_{EE} & \theta_{ECH} & \theta_{EO} \\ \theta_{CHE} & \theta_{CHCH} & \theta_{CHO} \\ \theta_{OE} & \theta_{OCH} & \theta_{OO} \end{bmatrix}$$

Moreover, from the structure of the retrospective calendar, this matrix is ergodic. In other words, it consists on only one equivalence class and inter-state transitions are valid in all directions. There exists a stationary distribution $\pi = (\pi_i)_{i\in E}$ that satisfies the usual conditions $\pi = \pi\underline{\theta}$ and $\sum_{i=1}^{i=3} \pi_i = 1$
The expression of this vector is given by:

$$\pi_E = \frac{\mathrm{Num_E}(\theta)}{Den(\theta)} = \frac{\theta_{\mathrm{OE}}\theta_{\mathrm{CHE}} + \theta_{\mathrm{CHE}}\theta_{\mathrm{OCH}} + \theta_{\mathrm{OE}}\theta_{\mathrm{CHO}}}{\mathrm{Den}(\theta)}$$

$$\pi_{\mathrm{CH}} = \frac{\mathrm{Num_{CH}}(\theta)}{Den(\theta)} = \frac{\theta_{\mathrm{OE}}\theta_{\mathrm{ECH}} + \theta_{\mathrm{ECH}}\theta_{\mathrm{OCH}} + \theta_{\mathrm{EO}}\theta_{\mathrm{OCH}}}{\mathrm{Den}(\theta)}$$

$$\pi_{\mathrm{O}} = \frac{\mathrm{Num_O}(\theta)}{Den(\theta)} = \frac{\theta_{\mathrm{ECH}}\theta_{\mathrm{CHO}} + \theta_{\mathrm{EO}}\theta_{\mathrm{CHE}} + \theta_{\mathrm{EO}}\theta_{\mathrm{CHO}}}{\mathrm{Den}(\theta)}$$

With Den (θ) = $\mathrm{Num_E}(\theta) + \mathrm{Num_{CH}}(\theta) + \mathrm{Num_O}(\theta)$

II-1-Modeling

In order to detect the determinants of graduates transitions in the labour market, we propose a micro-econometric approach which relates each graduate chain to his characteristics via a multivariate logistic link. The choice of this approach was adopted by (Alvarez, Giocchii, & Konwar, 2008).
We propose 6 correspondences explaining the inter-states transitions by variables which we will clarify below:

$$Y_{ECH} := \beta_{ECH}^{(0)} + \beta_{ECH}^{(1)}\mathrm{X1} + \beta_{ECH}^{(2)}\mathrm{X2} + \beta_{ECH}^{(3)}\mathrm{X3} + \beta_{ECH}^{(4)}\mathrm{X4} + \beta_{ECH}^{(5)}\mathrm{X5} + \beta_{ECH}^{(6)}\mathrm{X6}$$

$$Y_{EO} := \beta_{EO}^{(0)} + \beta_{EO}^{(1)}\mathrm{X1} + \beta_{EO}^{(2)}\mathrm{X2} + \beta_{EO}^{(3)}\mathrm{X3} + \beta_{EO}^{(4)}\mathrm{X4} + \beta_{EO}^{(5)}\mathrm{X5} + \beta_{EO}^{(6)}\mathrm{X6}$$

$$Y_{CHE} := \beta_{CHE}^{(0)} + \beta_{CHE}^{(1)}\mathrm{X1} + \beta_{CHE}^{(2)}\mathrm{X2} + \beta_{CHE}^{(3)}\mathrm{X3} + \beta_{CHE}^{(4)}\mathrm{X4} + \beta_{CHE}^{(5)}\mathrm{X5} + \beta_{CHE}^{(6)}\mathrm{X6}$$

$$y_{CHO} := \beta_{CHO}^{(0)} + \beta_{CHO}^{(1)}\mathrm{X1} + \beta_{CHO}^{(2)}\mathrm{X2} + \beta_{CHO}^{(3)}\mathrm{X3} + \beta_{CHO}^{(4)}\mathrm{X4} + \beta_{CHO}^{(5)}\mathrm{X5} + \beta_{CHO}^{(6)}\mathrm{X6}$$

$$y_{OE} := \beta_{OE}^{(0)} + \beta_{OE}^{(1)}\mathrm{X1} + \beta_{OE}^{(2)}\mathrm{X2} + \beta_{OE}^{(3)}\mathrm{X3} + \beta_{OE}^{(4)}\mathrm{X4} + \beta_{OE}^{(5)}\mathrm{X5} + \beta_{OE}^{(6)}\mathrm{X6}$$

$$y_{OCH} := \beta_{OCH}^{(0)} + \beta_{OCH}^{(1)}\mathrm{X1} + \beta_{OCH}^{(2)}\mathrm{X2} + \beta_{OCH}^{(3)}\mathrm{X3} + \beta_{OCH}^{(4)}\mathrm{X4} + \beta_{OCH}^{(5)}\mathrm{X5} + \beta_{OCH}^{(6)}\mathrm{X6}$$

These transitions are related to the probabilities of transition via a multivariate logistic link:

$$Y_{ECH} := Ln(\frac{\theta_{ECH}}{\theta_{EE}})$$

$$Y_{EO} := Ln\left(\frac{\theta_{EO}}{\theta_{EE}}\right)$$

$$Y_{CHE} := Ln\left(\frac{\theta_{CHE}}{\theta_{EE}}\right)$$

$$Y_{CHO} := Ln\left(\frac{\theta_{CHO}}{\theta_{EE}}\right)$$

$$Y_{OE} := Ln\left(\frac{\theta_{OE}}{\theta_{EE}}\right)$$

$$Y_{OCH} := Ln(\frac{\theta_{OCH}}{\theta_{EE}})$$

To deduce transition matrix elements we use the following inverse mapping:

$$\theta_{EE} = \frac{1}{1+e^{YECH}+e^{YEO}} \qquad \theta_{ECH} = \frac{e^{YECH}}{1+e^{YECH}+e^{YEO}} \qquad \theta_{EO} = \frac{e^{YEO}}{1+e^{YECH}+e^{YEO}}$$

$$\theta_{CHE} = \frac{e^{YCHE}}{1+e^{YCHE}+e^{YCHO}} \quad \theta_{CHCH} = \frac{1}{1+e^{YCHE}+e^{YCHO}} \qquad \theta_{CHO} = \frac{e^{YCHO}}{1+e^{YCHE}+e^{YCHO}}$$

$$\theta_{OE} = \frac{e^{YOE}}{1+e^{YOE}+e^{YOCH}} \quad \theta_{OCH} = \frac{e^{YOCH}}{1+e^{YOE}+e^{YOCH}} \qquad \theta_{OO} = \frac{1}{1+e^{YOE}+e^{YOCH}}$$

II-2-maximum likelihood

The contribution of each individual in the global likelihood is the product of the transition probabilities which depend on the parameters to be estimated and the selected explanatory variables:

$$L_i = \theta_{E_1E_2}\theta_{E_2E_3}\theta_{E_3E_4} \dots \theta_{E_{15}E_{16}}$$

The maximization of this product is equivalent to maximising the sum of the individuals' contributions logarithms:

$$l(\beta) = \sum_{i=1}^{5905} \log (L_i)$$

We estimate the parameters by maximizing the likelihood function in two steps: The first step consists in initializing the parameters β and the second phase consists in computing the parameters with an iterative method.

Initialization

We estimate the transition probabilities non-parametrically by computing the ratio of all transitions operated from state i to the state j relative to the number of transitions which start in origin state i, $\hat{\theta}_{ij}^{(0)} = \#\ (i \longrightarrow j)\ '\#i)$

The initial estimators for the intercept are: $\widehat{\beta}_{ij}^{(0)} = \ln\left(\frac{\hat{\theta}_{ij}^{(0)}}{\hat{\theta}_{ii}^{(0)}}\right)$,The other coefficients are initialized with the value $0 : \beta_{ij} = 0$

Updates

Among panoply of nonlinear optimization methods, we adopt the iterative method: Conjugate Gradient "CG" to calculate the parameters β. This method is applied to solve the different types of nonlinear unconstrained optimization problems in engineering fields and nonlinear regression. (Shewchuk, 1994). Cornelius Lanczos and Magnus Hestenes were the first to use this method.
The conjugate gradient method requires a memory capacity which is not relatively enormous, and is characterized by strong properties of global and local convergence (Hager & Zhang, 2005).
The conjugate gradient method is based on the search for successive directions that are similar to an ellipse axes.
Three various formulas of directions research are implemented: Fletcher-Reeves, Polak-Ribiere or Beale-Sorenson. In our case, we propose to apply the first formula.

II-application

II-1-model 1

We propose to test the effect of the following archaeological variables:

Variables	Variable type	Values intervals
Gender (X1)	Categorical	1: Females, 0: Males
Age(X2)	Continuous	Min=18, Max=52
Education level[1] (X3)	Categorical	1 : Specialized Technician ,0 : otherwise
Education level[2](X4)	Categorical	1: Specialization , 0: otherwise
Marital status(X5)	Categorical	1 : Married ,0 : otherwise
Residential area(X6)	Categorical	1 : Urban, 0 : rural

Table5: Maximum likelihood estimators: (Model1)

	ECH	EO	CHE	CHO	OE	OCH
Cte	-3.204	-4.730	-2.115	-2.528	-1.456	-1.264
	-12.357	-15.262	-8.222	-9.379	-5.649	-5.054
X1	0.163	0.042	0.078	0.042	0.027	0.044
	4.413	*1.176	2.114	*1.140	*0.635	*1.152
X2	0.107	0.129	0.064	0.070	0.040	0.037
	14.503	17.540	9.277	10.185	6.051	5.579
X3	0.008	0.113	0.011	0.012	0.009	0.009
	*0.292	3.658	*0.144	*0.167	*0.309	*0.136
X4	0.145	0.142	0.082	0.081	0.047	0.047
	3.078	2 .990	*1.766	*1.772	*1 .186	*1.027
X5	-0.193	-0.236	-0.124	-0.135	-0.080	-0.075
	-3.567	-4.300	-2.274	-2.482	*-1.580	*-1.429
X6	0.338	1.352	0.398	0.670	0.392	0.268
	1.970	5.635	2.185	3.377	2.092	*1.534

While utilizing the archaeological variables, we realize that several variables are not significant for some transitions. Although the variable age is significant for all transitions, we realize that the transitions are favourable in all directions, this can be due partly to the relatively average length of the observation period.

From that arises the question of the impact of the individual variables on vocational training graduates paths. Are the graduates' paths determined only by the intrinsic characteristics effect of the individuals?

From this consideration we are compelled to include other variables that are processual variables.

II-2-Model 2

In this model, we propose to test the effect of 3 processual variables (X4, X5 and X6) which are built from the retrospective calendar:

Variables	**Variable type**	**Values intervals**
Gender (X1)	Categorical	1 :Females ,0 :Males
Training sector[1] (X2)	Categorical	1 :Services, 0 :Industry and agriculture
Training sector[2](X3)	Categorical	1:Industry ,0 :Agriculture and services
Professional integration delay(X4)	Continuous	Min=0 months ,Max=48 months
Unemployment duration per unemployment episode X5)	Continuous	Min=0,Max=25 months
Unemployment episode number(X6)	Continuous	Min =0, Max=7

Table 6: Maximum likelihood estimators (Model2)

	ECH	EO	CHE	CHO	OE	OCH
Cte	-2.164	-3.895	-1.371	-1.826	-1.035	-0.782
	-20.517	-28.400	-13.541	-16.686	-10.053	-7 .769
X1	0.379	0.738	0.357	0.413	0.227	0.243
	9.576	17.577	9.197	10 .459	5.803	6.370
X2	0.723	1.370	0.649	0.794	0.450	0.433
	7.109	10.605	6.527	7.434	4.445	4.468
X3	0.492	0.897	0.429	0.579	0.355	0.282
	4.801	6.893	4.275	5.375	3.472	2 .882
X4	0.013	0.017	0.007	0.021	0.011	-0.005
	8.828	11.239	4.826	14.597	7.877	-3.229
X5	0.004	0.004	-0.014	-0.017	-0.007	-0.002
	2.788	2.373	-9.558	-12.204	-5.194	*-1.446
X6	0.727	1.455	0.725	0.643	0.279	0.476
	23.662	45.235	26.245	22.696	10.597	18.928

It is clear, according to the preceding table, that the introduction of the processual variables gives significant results. It is noticed that the more the professional integration delay is long, the less we attend to transitions from inactivity to unemployment. This can be explained by the fact that the graduate in this case gives up employment search. Which leads us to argue that skills of graduates who spend more time to fit into the labour market after graduation aren't solicited by recruiters, not to mention that the abilities of these graduates decrease while awaiting the integration into the labour market.

It appears that the labour market sanctions the graduates with long unemployment episode. It seems that Moroccan labour market functions through the signals which transmit employment researchers. Thus, the more graduates accumulate long duration's unemployment, the more they have difficulties to reintegrate the labour market.

II-3-Labour market indicators

In order to describe labour market dynamics and to visualize graduates' behaviour, some labour market indicators allow us to have an idea about individuals' experience in the labour market. It should be noted that in addition to the non significance of the estimates of the parameters resulting from the model including the archaeological variables, these last variables seem not to determine transitions inter-states transitions. In the case of the data of the graduates of class 2002, the probabilities of transition inter-states remain identical. We retain estimation results rising from the model including the processual variables.

$$\underline{\theta} = \begin{bmatrix} 0.41 & 0.29 & 0.30 \\ 0.33 & 0.35 & 0.32 \\ 0.31 & 0.35 & 0.34 \end{bmatrix}$$

Activity rate: A=$\pi_E + \pi_{CH}$ Measure the proportion of the graduates in the job market who are already employed or who are looking for a job.

Unemployment rate: $CH = \pi_{CH}/(\pi_{CH} + \pi_E)$. It is the proportion of the graduates who do not work and who are looking for a job.

Inertia: I=1/3trace[($\underline{\theta}$)] It measures the remaining of the occupied state

Give-up rate: Ab = $\theta_{CHO}/(\theta_{CHCH} + \theta_{CHO})$. Probability that while being unemployed, a graduate goes to inactivity before finding a job.

Average durations unemployement, **employement** and **out of the Labour market :** $\overline{E} = (1 - \theta_{EE})^{-1}$; $\overline{CH} = (1 - \theta_{CHCH})^{-1}$; $\overline{O} = (1 - \theta_{OO})^{-1}$.For a Markov chain, if T_i is the time spent in a state i (Baldi, Priouret, & Mazliak, 1998), then T_i follows a geometrical law of parameter 1-P (i,i); with P(i, i) is the probabilty of tansition of state i to this same state. That makes it possible to calculate the average duration (here in quarters) in each state given the transition probabilities

Net Outflow : $F_S = \pi_E\theta_{EO} - \pi_O\theta_{OE}$ The difference between the proportion of the graduates who leave employment towards inactivity and that of the inactive graduates who succeed in getting a job.

Reliability: R = $\theta_{EO}/(1-\theta_{EE})$ The probability that a graduate moves from inactivity to employment before becoming unemployed.

Table 7: Labour market indicators

A	**CH**	**I**	**Ab**	$\overline{E}$	$\overline{CH}$	$\overline{O}$	F_S	**R**
0.62	0.48	0.37	0.48	1.7	1.5 4	1.52	0.06	0.5

For illustration, in the table 7 we exhibit labour indicators. Activity rate is about 62% and unemployment rate is about 48%.The average employment spell last for about 5 months while average duration of unemployment is about 4 months, in the other hand the job reliability is about 50%. We notice that the give up rate is estimated at 48%.

Conclusion

In this study we tried to examine the effect of some factors on the transition probabilities from one state to another on the labour market. It arises that the processual variables explain transitions in the labour market. The introduction of some archaeological variables did not give significant results in our case. That leads us to enrich our model by introducing other variables taking into account unobserved heterogeneity.

The relaxation of some assumptions relating to the Markov chain can contribute to the improvement of the model. In our model the explanatory variables taken into account in the two models are

constant in time, the introduction of dynamic variables which detect the evolution of the behaviour of the graduates in time will be able to contribute to the explanation of the transitions.

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Appendix 1: Graduates breakdown by education level

Level	Number	Percentage
Qualification	2231	37.8
Specialization	1173	19.9
Technician	1880	31.8
Specialized technician	621	10.5
Total	5905	100

Appendix 2: Graduates breakdown by gender

	Number	%
Females	2885	49
Males	3020	51
Total	5905	100

Appendix 3: Graduates breakdown by age bracket

Age bracket	Females	Males	%	Total
Less than 20 years	17	22	0.7	39
21-25	1310	1211	42.7	2521
26-30	1394	1646	51.5	3040
More than 30 years	164	141	5.2	305
Total	2885	3020	100	5905

Appendix 4: Graduates breakdown by marital status

marital status	Number	%
Single	4956	84
Married(e)	907	15
Others	42	1
Total	5905	100

Appendix 5: paths typology

Paths	Number	%
A	13	0.22
AC	9	0.15
ACCH2LACEL	1	0.02
ALCH2CEMCH1CEM	1	0.02
ALEC	2	0.03
ALEL	1	0.02
ALSCEC	1	0.02
ALSML	1	0.02
AM	1	0.02
CH1	1	0.02
CH1CEC	1	0.02
CH1CECCH1CEL	1	0.02
CH1CECCH1L	1	0.02
CH1CEL	4	0.07
CH1CELCH1CEL	1	0.02
CH1CELCH1M	1	0.02
CH1CELCH1MEL	1	0.02
CH1CELEL	1	0.02
CH1CETLEL	1	0.02
CH1CSCECCH1MELCH1C	1	0.02
CH1CSCEL	1	0.02
CH1CSMEL	1	0.02
CH1LEC	1	0.02
CH1LECCH1L	1	0.02
CH1LEL	6	0.10
CH1LELCH1C	1	0.02
CH1LEMCH1CETM	1	0.02
CH1LEMCH1L	2	0.03
CH1LFFM	1	0.02
CH1MEL	3	0.05
CH1MELCH1L	1	0.02
CH1MFFLCH1C	1	0.02
CH1MSCCH1CFFL	1	0.02
CH2	921	15.60
CH2C	1	0.02
CH2CACCH2CACCH2CACCH2CACCH2M	1	0.02
CH2CACCH2CACCH2L	1	0.02
CH2CACCH2CACCH2LACCH2M	1	0.02
CH2CACCH2LACCH2CACCH2C	1	0.02
CH2CACCH2MACCH2L	1	0.02

CH2CACCH2MAMCH2CACCH2M	1	0.02
CH2CALCH1C	1	0.02
CH2CALCH2CEM	1	0.02
CH2CALETL	1	0.02
CH2CALFFC	1	0.02
CH2CAMCH2CAMCH2CACCH2M	1	0.02
CH2CAMCH2L	3	0.05
CH2CAMCH2MACEL	1	0.02
CH2CAMCH2MELCH1C	1	0.02
CH2CCH1L	1	0.02
CH2CCH2C	4	0.07
CH2CCH2CEL	1	0.02
CH2CCH2CSCEMCH1MEL	1	0.02
CH2CCH2L	1	0.02
CH2CCH2M	1	0.02
CH2CEC	1	0.02
CH2CECCH1CECCH1MECCH1MEM	1	0.02
CH2CECCH1CECCH1MEL	1	0.02
CH2CECCH1CEL	5	0.08
CH2CECCH1CELCH1CEM	1	0.02
CH2CECCH1CELCH1M	1	0.02
CH2CECCH1CEMCH1CEL	1	0.02
CH2CECCH1CEMCH1MEL	1	0.02
CH2CECCH1L	7	0.12
CH2CECCH1LEC	1	0.02
CH2CECCH1MALCH1C	1	0.02
CH2CECCH1MECCH1L	1	0.02
CH2CECCH1MEL	1	0.02
CH2CECCH1MELCH1C	1	0.02
CH2CECCH1MEMCH1CEL	1	0.02
CH2CECCH1MEMCH1MEM	1	0.02
CH2CECCH2CEL	1	0.02
CH2CECCH2CEMCH1MECCH1M	1	0.02
CH2CECCH2LEL	1	0.02
CH2CECSCELCH1MEMCH1C	1	0.02
CH2CEL	185	3.13
CH2CELALCH1C	1	0.02
CH2CELCH1C	11	0.19
CH2CELCH1CEC	1	0.02
CH2CELCH1CEL	4	0.07
CH2CELCH1CELCH1CEM	1	0.02
CH2CELCH1CEMCH1CECCH1C	1	0.02
CH2CELCH1CEMCH1CEM	1	0.02
CH2CELCH1CETCCH1M	1	0.02
CH2CELCH1CFFMCH1C	1	0.02

CH2CELCH1CSMCH1M	1	0.02
CH2CELCH1L	16	0.27
CH2CELCH1LEC	1	0.02
CH2CELCH1LEM	1	0.02
CH2CELCH1M	7	0.12
CH2CELCH1MECCH1M	1	0.02
CH2CELCH1MEL	4	0.07
CH2CELCH1MELCH1C	1	0.02
CH2CELCH1MEM	1	0.02
CH2CELCH1MEMCH1C	1	0.02
CH2CELCH2LETCCH1C	1	0.02
CH2CELCH2MEL	1	0.02
CH2CELEM	3	0.05
CH2CELETMCH1CEM	1	0.02
CH2CELSCETL	1	0.02
CH2CELSMEMSCEC	1	0.02
CH2CEMCH1CALCH1C	1	0.02
CH2CEMCH1CECCH1CEM	1	0.02
CH2CEMCH1CECCH1L	1	0.02
CH2CEMCH1CECCH1MECCH1C	1	0.02
CH2CEMCH1CEL	3	0.05
CH2CEMCH1CELCH1MEC	1	0.02
CH2CEMCH1CEMCH1M	1	0.02
CH2CEMCH1CFFL	1	0.02
CH2CEMCH1CSCCH1CELCH1CSCCH1C	1	0.02
CH2CEMCH1CSCEMCH1M	1	0.02
CH2CEMCH1L	9	0.15
CH2CEMCH1LEC	1	0.02
CH2CEMCH1LEL	1	0.02
CH2CEMCH1LEM	4	0.07
CH2CEMCH1LEMCH1M	1	0.02
CH2CEMCH1LFFM	1	0.02
CH2CEMCH1MALCH1C	1	0.02
CH2CEMCH1MALCH2C	1	0.02
CH2CEMCH1MECCH1CEM	1	0.02
CH2CEMCH1MECCH1M	1	0.02
CH2CEMCH1MEL	7	0.12
CH2CEMCH1MELCH1C	1	0.02
CH2CEMCH1MEMCH1C	1	0.02
CH2CEMCH1MEMCH1M	1	0.02
CH2CEMCH1MFFCCH1MFFC	1	0.02
CH2CEMCH1MSCEMCH1M	1	0.02
CH2CEMCH1MSMCH1M	1	0.02
CH2CEMCH2CEL	1	0.02
CH2CEMCH2CELCH1C	1	0.02

CH2CEMCH2MEL	1	0.02
CH2CEMSCCH1L	1	0.02
CH2CEMSMLCH1M	1	0.02
CH2CETCCH2CEL	1	0.02
CH2CETCCH2CELCH1M	1	0.02
CH2CETCCH2CSCCH2CELCH1MEC	1	0.02
CH2CETCECCH1CECCH1L	1	0.02
CH2CETCEL	2	0.03
CH2CETCELCH1CEMCH1C	1	0.02
CH2CETCSCCH2L	1	0.02
CH2CETL	11	0.19
CH2CETLCH2C	2	0.03
CH2CETLCH2CACCH2CEC	1	0.02
CH2CETLCH2CEL	2	0.03
CH2CETLCH2CEM	2	0.03
CH2CETLCH2CETC	1	0.02
CH2CETLCH2CETL	2	0.03
CH2CETLCH2CSCCH2CEC	1	0.02
CH2CETLCH2CSLEC	1	0.02
CH2CETLCH2L	4	0.07
CH2CETLCH2LEC	1	0.02
CH2CETLCH2LECCH1C	1	0.02
CH2CETLCH2M	2	0.03
CH2CETLCH2MSCCH2C	1	0.02
CH2CETLECCH1CEM	2	0.03
CH2CETLECCH1CSCECCH1C	1	0.02
CH2CETLECSCECCH1C	1	0.02
CH2CETLEL	10	0.17
CH2CETLEM	1	0.02
CH2CETLEMCH1CSCCH1C	1	0.02
CH2CETLFFL	1	0.02
CH2CETLFFMEC	1	0.02
CH2CETLSC	1	0.02
CH2CETLSCCH2C	1	0.02
CH2CETLSCCH2CECEC	1	0.02
CH2CETLSCCH2L	1	0.02
CH2CETLSCCH2M	1	0.02
CH2CETLSCEL	1	0.02
CH2CETLSCEM	1	0.02
CH2CETLSLEC	1	0.02
CH2CETLSMCH2M	1	0.02
CH2CETLSMEC	1	0.02
CH2CETMCH2L	4	0.07
CH2CETMCH2LECCH1CEM	1	0.02
CH2CETMCH2LEM	1	0.02

CH2CETMCH2LSCCH2C	1	0.02
CH2CETMEL	2	0.03
CH2CETMELCH1C	1	0.02
CH2CETMFFL	2	0.03
CH2CETMSCCH2MEL	1	0.02
CH2CETMSCCH2MSMCH2M	1	0.02
CH2CFFL	12	0.20
CH2CSCALSML	1	0.02
CH2CSCCH2CECCH1MECCH1MEM	1	0.02
CH2CSCCH2CEL	10	0.17
CH2CSCCH2CELCH1C	2	0.03
CH2CSCCH2CELCH1CEMCH1C	1	0.02
CH2CSCCH2CELCH1L	1	0.02
CH2CSCCH2CELCH1M	3	0.05
CH2CSCCH2CELCH1MEM	1	0.02
CH2CSCCH2CEMCH1LEM	1	0.02
CH2CSCCH2CEMCH1MEL	1	0.02
CH2CSCCH2CETL	1	0.02
CH2CSCCH2CETMCH2CSCCH2CEC	1	0.02
CH2CSCCH2CSCCH2CEL	3	0.05
CH2CSCCH2CSCCH2CELEC	1	0.02
CH2CSCCH2CSCCH2CEMCH1M	1	0.02
CH2CSCCH2CSCCH2CSCCH2CEL	1	0.02
CH2CSCCH2CSCCH2CSCCH2CSMETCCH2M	1	0.02
CH2CSCCH2CSCCH2CSMCH2MSCCH2C	1	0.02
CH2CSCCH2CSCCH2L	1	0.02
CH2CSCCH2CSCCH2LSC	1	0.02
CH2CSCCH2CSCCH2MEMCH1C	1	0.02
CH2CSCCH2CSCCH2MSCELCH1C	1	0.02
CH2CSCCH2CSCECCH1LEC	1	0.02
CH2CSCCH2CSCEL	1	0.02
CH2CSCCH2CSCEMSCEM	1	0.02
CH2CSCCH2CSMCH2CEL	1	0.02
CH2CSCCH2CSMCH2L	1	0.02
CH2CSCCH2CSMEL	1	0.02
CH2CSCCH2L	21	0.36
CH2CSCCH2LEC	1	0.02
CH2CSCCH2LECCH1CCH2C	1	0.02
CH2CSCCH2LEL	1	0.02
CH2CSCCH2LELCH2C	1	0.02
CH2CSCCH2LEM	2	0.03
CH2CSCCH2LETC	1	0.02
CH2CSCCH2LETM	1	0.02
CH2CSCCH2LFFL	1	0.02
CH2CSCCH2LSCCH2L	1	0.02

CH2CSCCH2LSCCH2M	2	0.03
CH2CSCCH2LSLCH2C	1	0.02
CH2CSCCH2LSM	1	0.02
CH2CSCCH2MEL	4	0.07
CH2CSCCH2MELCH1C	1	0.02
CH2CSCCH2MELCH1M	1	0.02
CH2CSCCH2METLCH2C	1	0.02
CH2CSCCH2MSCCH2CEL	1	0.02
CH2CSCCH2MSCCH2CELCH1C	1	0.02
CH2CSCCH2MSCCH2CSCCH2M	1	0.02
CH2CSCCH2MSCCH2L	1	0.02
CH2CSCCH2MSCCH2LECCH1C	1	0.02
CH2CSCCH2MSCCH2MEM	1	0.02
CH2CSCCH2MSCEL	1	0.02
CH2CSCECCH1CECCH1CECCH1CEM	1	0.02
CH2CSCECCH1CELCH1C	1	0.02
CH2CSCECCH1L	2	0.03
CH2CSCECCH1LEM	1	0.02
CH2CSCECETLCH1M	1	0.02
CH2CSCECSCEL	1	0.02
CH2CSCEL	22	0.37
CH2CSCELACEC	1	0.02
CH2CSCELCH1C	1	0.02
CH2CSCELCH1CEL	1	0.02
CH2CSCELCH1L	3	0.05
CH2CSCELCH1M	1	0.02
CH2CSCEMCH1CEL	2	0.03
CH2CSCEMCH1CEMCH1CEM	1	0.02
CH2CSCEMCH1CSCCH1MEM	1	0.02
CH2CSCEMCH1CSCEL	1	0.02
CH2CSCEMCH1L	3	0.05
CH2CSCEMCH1MEL	3	0.05
CH2CSCEMCH2LEC	1	0.02
CH2CSCEMCH2MEM	1	0.02
CH2CSCEMETCCH1CECCH1M	1	0.02
CH2CSCEMETCCH1CECCH1MECCH1CSCCH1C	1	0.02
CH2CSCEMSCELCH1C	1	0.02
CH2CSCETL	1	0.02
CH2CSCETLCH2C	1	0.02
CH2CSCETLCH2L	1	0.02
CH2CSCETMEL	1	0.02
CH2CSCFFL	1	0.02
CH2CSCSCCH2CSCCH2L	1	0.02
CH2CSLCH2CSMCH2M	1	0.02
CH2CSLCH2L	5	0.08

CH2CSLCH2MEL	1	0.02
CH2CSLCH2MSCCH2M	1	0.02
CH2CSLEL	10	0.17
CH2CSLEMCH1MEC	1	0.02
CH2CSLFFMEL	1	0.02
CH2CSMCH1CEL	1	0.02
CH2CSMCH2CEL	5	0.08
CH2CSMCH2CSCCH2L	1	0.02
CH2CSMCH2CSCEL	1	0.02
CH2CSMCH2CSMCH2L	4	0.07
CH2CSMCH2CSMCH2M	1	0.02
CH2CSMCH2CSMEL	2	0.03
CH2CSMCH2L	14	0.24
CH2CSMCH2LEC	1	0.02
CH2CSMCH2LEL	2	0.03
CH2CSMCH2LEM	1	0.02
CH2CSMCH2LSC	2	0.03
CH2CSMCH2LSCCH2CSCEC	1	0.02
CH2CSMCH2LSCCH2L	1	0.02
CH2CSMCH2LSCEC	1	0.02
CH2CSMCH2LSMCH2M	1	0.02
CH2CSMCH2LSMEC	1	0.02
CH2CSMCH2MAMCH2M	1	0.02
CH2CSMCH2MECCH1L	1	0.02
CH2CSMCH2MEL	1	0.02
CH2CSMCH2METLCH2C	1	0.02
CH2CSMCH2MSCEL	2	0.03
CH2CSMCH2MSLCH2C	1	0.02
CH2CSMCH2MSLEC	1	0.02
CH2CSMCH2MSMCH2M	2	0.03
CH2CSMEC	1	0.02
CH2CSMEL	46	0.78
CH2CSMELCH1C	2	0.03
CH2CSMELCH1CEC	1	0.02
CH2CSMELCH1CEM	1	0.02
CH2CSMELFFM	1	0.02
CH2CSMEMCH2CEL	1	0.02
CH2CSMEMETLCH1C	1	0.02
CH2L	6	0.10
CH2LACCH2C	1	0.02
CH2LACCH2M	1	0.02
CH2LAL	6	0.10
CH2LALCH2C	1	0.02
CH2LALCH2M	1	0.02
CH2LALFFC	3	0.05

CH2LAMAC	1	0.02
CH2LAMCH2C	2	0.03
CH2LAMCH2L	1	0.02
CH2LCH1C	4	0.07
CH2LCH1CCH2C	1	0.02
CH2LCH1CCH2L	2	0.03
CH2LCH1CECCH1M	1	0.02
CH2LCH1CEM	1	0.02
CH2LCH1MEC	2	0.03
CH2LCH2C	3	0.05
CH2LCH2CEL	1	0.02
CH2LCH2CFFL	1	0.02
CH2LCH2L	2	0.03
CH2LCH2LEC	1	0.02
CH2LCH2M	1	0.02
CH2LCH2MEC	1	0.02
CH2LCH2MEM	1	0.02
CH2LCH2MSC	1	0.02
CH2LEC	90	1.52
CH2LECCH1C	5	0.08
CH2LECCH1L	6	0.10
CH2LECCH1LEC	2	0.03
CH2LECCH1LEM	1	0.02
CH2LECCH1M	2	0.03
CH2LECCH1MEM	1	0.02
CH2LECCH2C	1	0.02
CH2LECCH2MCH1L	1	0.02
CH2LECCH2MEM	1	0.02
CH2LECEL	1	0.02
CH2LEL	290	4.91
CH2LELCH1C	23	0.39
CH2LELCH1CCH2C	1	0.02
CH2LELCH1CEC	1	0.02
CH2LELCH1CEM	2	0.03
CH2LELCH1L	6	0.10
CH2LELCH1M	19	0.32
CH2LELCH1MEM	1	0.02
CH2LELCH2CCH1C	2	0.03
CH2LELSCCH1M	1	0.02
CH2LEM	52	0.88
CH2LEMALCH1C	1	0.02
CH2LEMCH1C	6	0.10
CH2LEMCH1CCH2C	1	0.02
CH2LEMCH1CECCH1C	3	0.05
CH2LEMCH1L	11	0.19

CH2LEMCH1LEC	1	0.02
CH2LEMCH1M	4	0.07
CH2LEMCH1MEC	1	0.02
CH2LEMCH1MECCH1C	1	0.02
CH2LEMCH1MEM	3	0.05
CH2LEMCH2LCH1C	1	0.02
CH2LEMETL	1	0.02
CH2LEMSCCH1CECCH1C	1	0.02
CH2LEMSMECCH2C	1	0.02
CH2LETC	2	0.03
CH2LETCCH2C	2	0.03
CH2LETCCH2CEL	1	0.02
CH2LETL	18	0.30
CH2LETLCH2C	5	0.08
CH2LETLCH2CAC	1	0.02
CH2LETLCH2CEC	2	0.03
CH2LETLCH2L	2	0.03
CH2LETLCH2M	3	0.05
CH2LETLEC	3	0.05
CH2LETLEM	1	0.02
CH2LETLSCCH2C	2	0.03
CH2LETLSCCH2M	1	0.02
CH2LETLSCEC	1	0.02
CH2LETLSMEC	1	0.02
CH2LETM	2	0.03
CH2LETMCH2C	1	0.02
CH2LETMCH2CEL	2	0.03
CH2LETMCH2CEM	2	0.03
CH2LETMCH2L	2	0.03
CH2LETMCH2LEC	1	0.02
CH2LETMCH2M	1	0.02
CH2LETMEC	1	0.02
CH2LETMECSCCH1M	1	0.02
CH2LETMEL	2	0.03
CH2LETMEMETCCH1C	1	0.02
CH2LETMFFL	1	0.02
CH2LETMSMEM	1	0.02
CH2LFFC	4	0.07
CH2LFFCCH2M	1	0.02
CH2LFFCEC	1	0.02
CH2LFFL	40	0.68
CH2LFFLCH1C	1	0.02
CH2LFFLCH2C	1	0.02
CH2LFFLEC	1	0.02
CH2LFFM	9	0.15

CH2LFFMCH2C	1	0.02
CH2LSC	3	0.05
CH2LSCCH1CSC	1	0.02
CH2LSCCH1CSCEC	1	0.02
CH2LSCCH2C	2	0.03
CH2LSCCH2CCH2M	1	0.02
CH2LSCCH2CEC	1	0.02
CH2LSCCH2CEMCH1M	1	0.02
CH2LSCCH2CSCCH2CEL	1	0.02
CH2LSCCH2CSCCH2CEM	1	0.02
CH2LSCCH2CSCCH2CSC	1	0.02
CH2LSCCH2L	4	0.07
CH2LSCCH2LSC	1	0.02
CH2LSCCH2LSCCH2C	1	0.02
CH2LSCCH2M	2	0.03
CH2LSCCH2MSCCH2C	1	0.02
CH2LSCCH2MSCCH2MEC	1	0.02
CH2LSCCH2MSCEC	2	0.03
CH2LSCEC	11	0.19
CH2LSCECCH1L	1	0.02
CH2LSCEL	6	0.10
CH2LSCELCH1C	1	0.02
CH2LSCELCH1M	1	0.02
CH2LSCEM	1	0.02
CH2LSCETL	2	0.03
CH2LSCFFC	1	0.02
CH2LSL	3	0.05
CH2LSLCH2C	3	0.05
CH2LSLCH2CSCFFM	1	0.02
CH2LSLCH2L	2	0.03
CH2LSLCH2M	1	0.02
CH2LSLEC	3	0.05
CH2LSLEL	1	0.02
CH2LSLEM	2	0.03
CH2LSM	1	0.02
CH2LSMCH2C	1	0.02
CH2LSMCH2CSCEC	1	0.02
CH2LSMCH2CSMEC	2	0.03
CH2LSMCH2L	8	0.14
CH2LSMCH2LSC	1	0.02
CH2LSMCH2LSCEC	1	0.02
CH2LSMEC	2	0.03
CH2LSMECCH1M	1	0.02
CH2LSMEL	6	0.10
CH2LSMEM	2	0.03

CH2LSMETL	1	0.02
CH2MAC	1	0.02
CH2MACCH2LEL	1	0.02
CH2MACCH2MACCH2L	2	0.03
CH2MAL	2	0.03
CH2MALAC	1	0.02
CH2MALAMEC	1	0.02
CH2MALCH2C	1	0.02
CH2MALEC	1	0.02
CH2MAMCH2CACCH2CFFM	1	0.02
CH2MAMCH2CACCH2MACFFC	1	0.02
CH2MAMCH2CACEMEC	1	0.02
CH2MAMCH2CAMCH2M	1	0.02
CH2MAMCH2L	1	0.02
CH2MAMCH2MAMCH2M	1	0.02
CH2MCH1LEL	1	0.02
CH2MCH1MEL	1	0.02
CH2MCH2C	1	0.02
CH2MCH2CEL	2	0.03
CH2MCH2L	1	0.02
CH2MCH2LEC	1	0.02
CH2MCH2LETMCH2M	1	0.02
CH2MCH2LFFL	1	0.02
CH2MCH2M	1	0.02
CH2MCH2MCH1LCH2C	1	0.02
CH2MCH2MEL	1	0.02
CH2MECCH1CECCH1L	1	0.02
CH2MECCH1CEL	1	0.02
CH2MECCH1L	2	0.03
CH2MECCH1LEM	1	0.02
CH2MECCH1MECCH1M	1	0.02
CH2MECCH1MEL	1	0.02
CH2MEL	166	2.81
CH2MELCH1C	6	0.10
CH2MELCH1CEL	4	0.07
CH2MELCH1CEM	5	0.08
CH2MELCH1CEMCH1C	1	0.02
CH2MELCH1L	16	0.27
CH2MELCH1M	8	0.14
CH2MELCH1MEL	1	0.02
CH2MELCH1MEM	1	0.02
CH2MELCH2C	1	0.02
CH2MELCH2CEMCH1C	1	0.02
CH2MELSCCH1L	1	0.02
CH2MELSCCH1M	1	0.02

CH2MEMCH1CCH2MCH1C	1	0.02
CH2MEMCH1CECAMEC	1	0.02
CH2MEMCH1CECCH1CECCH1MECCH1C	1	0.02
CH2MEMCH1CECCH1CEL	1	0.02
CH2MEMCH1CECCH1M	1	0.02
CH2MEMCH1CECSCEMCH1C	1	0.02
CH2MEMCH1CEL	3	0.05
CH2MEMCH1CELCH1C	1	0.02
CH2MEMCH1CEMCH1M	1	0.02
CH2MEMCH1L	13	0.22
CH2MEMCH1LAMCH1C	1	0.02
CH2MEMCH1LEC	2	0.03
CH2MEMCH1LEM	4	0.07
CH2MEMCH1LFFM	1	0.02
CH2MEMCH1MCH2CCH1CECCH1C	1	0.02
CH2MEMCH1MECCH1M	1	0.02
CH2MEMCH1MEL	6	0.10
CH2MEMCH1MEMCH1M	2	0.03
CH2MEMCH1MFFLCH1C	1	0.02
CH2MEMCH2MEL	1	0.02
CH2MEMCH2MELCH1C	1	0.02
CH2MEMCH2MEMCH2CEC	1	0.02
CH2MEMEL	1	0.02
CH2MEMFFL	1	0.02
CH2MEMFFLCH1C	1	0.02
CH2METCCH2CELCH1M	2	0.03
CH2METL	6	0.10
CH2METLCH2CETL	1	0.02
CH2METLCH2L	2	0.03
CH2METMCH2MEL	1	0.02
CH2METMECEMCH1CEM	1	0.02
CH2METMEL	1	0.02
CH2MFFL	29	0.49
CH2MFFLCH2M	1	0.02
CH2MSCCH2CEL	7	0.12
CH2MSCCH2CEMCH1L	1	0.02
CH2MSCCH2CEMCH1MEM	1	0.02
CH2MSCCH2CETL	1	0.02
CH2MSCCH2CSCCH2CEL	2	0.03
CH2MSCCH2CSCCH2L	2	0.03
CH2MSCCH2CSCCH2MCH1CEM	1	0.02
CH2MSCCH2CSCEL	3	0.05
CH2MSCCH2CSCELCH2MCH1C	1	0.02
CH2MSCCH2CSCETLCH2C	1	0.02
CH2MSCCH2L	14	0.24

CH2MSCCH2LEC	2	0.03
CH2MSCCH2LEL	2	0.03
CH2MSCCH2LEMCH1C	1	0.02
CH2MSCCH2LSCCH2L	1	0.02
CH2MSCCH2MECCH1L	1	0.02
CH2MSCCH2MEL	2	0.03
CH2MSCCH2MELCH1C	1	0.02
CH2MSCCH2MFFL	1	0.02
CH2MSCCH2MSCCH2CSCCH2M	1	0.02
CH2MSCCH2MSCCH2CSCEC	1	0.02
CH2MSCCH2MSCCH2L	4	0.07
CH2MSCCH2MSCCH2MSC	1	0.02
CH2MSCCH2MSCETLCH2C	1	0.02
CH2MSCCH2MSLCH2C	1	0.02
CH2MSCCH2MSMEM	1	0.02
CH2MSCECCH1LEC	1	0.02
CH2MSCEL	21	0.36
CH2MSCELCH1CEM	1	0.02
CH2MSCELCH1M	1	0.02
CH2MSCELCH1MEC	1	0.02
CH2MSCEMCH1CEL	1	0.02
CH2MSCEMCH1MEC	1	0.02
CH2MSCEMCH1MEL	1	0.02
CH2MSCFFL	1	0.02
CH2MSLCH1C	1	0.02
CH2MSLCH2C	1	0.02
CH2MSLCH2CEL	1	0.02
CH2MSLCH2CSCCH2M	1	0.02
CH2MSLCH2CSMCH2C	1	0.02
CH2MSLCH2L	8	0.14
CH2MSLCH2MEC	1	0.02
CH2MSLCH2METC	2	0.03
CH2MSLEC	1	0.02
CH2MSLEL	6	0.10
CH2MSLEM	1	0.02
CH2MSLETC	1	0.02
CH2MSLETL	1	0.02
CH2MSMCH2CAL	1	0.02
CH2MSMCH2CCH2MSM	1	0.02
CH2MSMCH2CEL	4	0.07
CH2MSMCH2CSCCH2L	2	0.03
CH2MSMCH2CSCEL	1	0.02
CH2MSMCH2CSLEC	1	0.02
CH2MSMCH2CSMCH2M	1	0.02
CH2MSMCH2CSMCH2MEC	1	0.02

CH2MSMCH2CSMEM	1	0.02
CH2MSMCH2L	27	0.46
CH2MSMCH2LACCH2C	1	0.02
CH2MSMCH2LEC	3	0.05
CH2MSMCH2LEM	2	0.03
CH2MSMCH2LSC	1	0.02
CH2MSMCH2LSM	1	0.02
CH2MSMCH2MEL	5	0.08
CH2MSMCH2MEMCH1M	1	0.02
CH2MSMCH2MSCCH2CEC	1	0.02
CH2MSMCH2MSCCH2L	1	0.02
CH2MSMCH2MSCCH2M	2	0.03
CH2MSMCH2MSLEC	2	0.03
CH2MSMCH2MSMCH2C	1	0.02
CH2MSMCH2MSMCH2M	1	0.02
CH2MSMCH2MSMEC	1	0.02
CH2MSMECEL	1	0.02
CH2MSMEL	36	0.61
CH2MSMELCH1CEC	1	0.02
CH2MSMELETMCH1C	1	0.02
CH2MSMELSMCH1C	1	0.02
CH2MSMEMCH1CEM	1	0.02
CH2MSMEMCH1L	2	0.03
CH2MSMEMCH1MEM	1	0.02
CH2MSMETL	1	0.02
CH2MSMFFL	1	0.02
E	500	8.47
EC	2	0.03
ECCH1CECCH1CECCH1CECCH1CECCH1CECCH1CECCH1CEC	1	0.02
ECCH1CECCH1CELCH1M	1	0.02
ECCH1CEL	3	0.05
ECCH1CELCH1C	1	0.02
ECCH1CEMCH1CECCH1CEC	1	0.02
ECCH1CEMCH1CELCH1CEC	1	0.02
ECCH1CEMCH1MEM	1	0.02
ECCH1L	9	0.15
ECCH1LACCH1L	1	0.02
ECCH1LECCH1L	1	0.02
ECCH1LEL	2	0.03
ECCH1LETL	1	0.02
ECCH1LETMECCH1MEC	1	0.02
ECCH1LSCCH1L	1	0.02
ECCH1MECCH1CEL	1	0.02
ECCH1MECCH1MEM	1	0.02
ECCH1MECCH2MEL	1	0.02

ECCH1MEL	1	0.02
ECCH1MELCH1MEC	1	0.02
ECCH1MEMCH1CEL	1	0.02
ECCH1MEMCH1L	2	0.03
ECCH1MEMCH1MEC	1	0.02
ECCH1MEMCH1MEM	1	0.02
ECCH1MSLSMLCH1C	1	0.02
ECCH1MSMEMCH1CEC	1	0.02
ECCH2LCH1C	1	0.02
ECEC	4	0.07
ECEL	3	0.05
ECETLELCH1C	1	0.02
ECETLSCCH1C	1	0.02
ECETMCH2LSM	1	0.02
ECSCCH1CEL	1	0.02
ECSCCH2LEC	1	0.02
ECSCETLEL	1	0.02
EL	14	0.24
ELALEC	1	0.02
ELCH1C	10	0.17
ELCH1CEC	2	0.03
ELCH1CEL	5	0.08
ELCH1CELCH1C	2	0.03
ELCH1CEM	1	0.02
ELCH1CEMCH1C	1	0.02
ELCH1CEMCH1L	1	0.02
ELCH1L	24	0.41
ELCH1LEC	3	0.05
ELCH1LECCH1C	1	0.02
ELCH1LEL	1	0.02
ELCH1LEM	1	0.02
ELCH1LEMCH1C	1	0.02
ELCH1M	2	0.03
ELCH1MALEC	1	0.02
ELCH1MECCH1CEC	1	0.02
ELCH1MEL	7	0.12
ELCH1MELCH1C	1	0.02
ELCH1MELCH1M	1	0.02
ELCH1MEM	1	0.02
ELCH1MEMCH1C	1	0.02
ELCH1MEMCH1M	2	0.03
ELCH1MSCEL	1	0.02
ELCH2CEL	2	0.03
ELEC	3	0.05
ELEL	1	0.02

ELEM	1	0.02
ELETCCH1CCH2CCH1M	1	0.02
ELETLEC	1	0.02
ELETMEL	1	0.02
ELFFL	1	0.02
ELFFLCH1C	3	0.05
ELFFM	1	0.02
ELSCEL	1	0.02
ELSMEL	2	0.03
EMAL	1	0.02
EMCH1CECCH1MEL	1	0.02
EMCH1CEL	1	0.02
EMCH1CELCH1L	1	0.02
EMCH1CSCCH1CELCH1C	1	0.02
EMCH1L	8	0.14
EMCH1LEC	1	0.02
EMCH1LEL	2	0.03
EMCH1LFFC	1	0.02
EMCH1LFFMCH1M	1	0.02
EMCH1MECCH1CEL	1	0.02
EMCH1MEL	2	0.03
EMCH1MELCH1CEC	1	0.02
EMCH1MEMCH1CEC	1	0.02
EMCH2MEMCH2CEM	1	0.02
EMEC	7	0.12
EMFFLCH1C	2	0.03
EMSCELSCEM	1	0.02
EMSLCH1CSCCH1CSCCH1CECCH1C	1	0.02
ET	25	0.42
ETC	1	0.02
ETCCH2CETCCH2CEL	1	0.02
ETCCH2L	1	0.02
ETCCH2LEL	1	0.02
ETCCH2MELCH1L	1	0.02
ETCCH2METL	1	0.02
ETCECCH2MEL	1	0.02
ETCEL	2	0.03
ETCSCEL	1	0.02
ETCSCELCH1L	1	0.02
ETCSCETLSCETL	1	0.02
ETCSLEL	1	0.02
ETCSMEL	1	0.02
ETCSMELCH1L	1	0.02
ETLCH2CSM	1	0.02
ETLCH2L	2	0.03

ETLCH2M	1	0.02
ETLCH2MEL	2	0.03
ETLEC	2	0.03
ETLECCH1CEMCH1C	1	0.02
ETLEL	6	0.10
ETLEM	2	0.03
ETLEMCH1CECCH1C	1	0.02
ETLFFL	2	0.03
ETLSC	2	0.03
ETLSCCH2CSCEM	1	0.02
ETLSLCH2C	1	0.02
ETLSMCH2M	1	0.02
ETLSMELCH1C	1	0.02
ETMCH2L	2	0.03
ETMCH2MEL	1	0.02
ETMECCH1L	1	0.02
ETMEL	4	0.07
ETMFFL	2	0.03
ETMSCEL	1	0.02
ETMSCETL	1	0.02
ETMSLFFMSCEC	1	0.02
FF	182	3.08
FFC	17	0.29
FFCALFFC	1	0.02
FFCEL	3	0.05
FFCELCH1C	1	0.02
FFCELCH1L	1	0.02
FFCELCH1M	1	0.02
FFCELFFCSCFFCSCCH1C	1	0.02
FFCETMFFL	1	0.02
FFL	1	0.02
FFLCH2C	2	0.03
FFLEC	1	0.02
FFLEL	14	0.24
FFLELCH1C	3	0.05
FFLELCH1L	1	0.02
FFLELCH1M	4	0.07
FFLEM	1	0.02
FFLETCFFL	1	0.02
FFLETL	1	0.02
FFLETM	1	0.02
FFLFFL	2	0.03
FFLSCFFL	1	0.02
FFLSMCFFL	1	0.02
FFM	3	0.05

FFMALFFC	1	0.02
FFMEL	5	0.08
FFMELCH1C	1	0.02
FFMELCH1L	3	0.05
FFMELCH1M	3	0.05
FFMSCFFLELCH1C	1	0.02
S	2	0.03
SC	1	0.02
SCACEMCH1LEC	1	0.02
SCALEC	1	0.02
SCALEL	1	0.02
SCALEMSCCH1C	1	0.02
SCCH1CEMCH1L	1	0.02
SCCH1LEL	1	0.02
SCCH1LSCETL	1	0.02
SCCH1MEMSCEM	1	0.02
SCCH2CECCH1CEL	1	0.02
SCCH2CEL	46	0.78
SCCH2CELCH1C	2	0.03
SCCH2CELCH1CECCH1C	1	0.02
SCCH2CELCH1CECCH2C	1	0.02
SCCH2CELCH1CEL	3	0.05
SCCH2CELCH1CEM	2	0.03
SCCH2CELCH1CEMCH1C	1	0.02
SCCH2CELCH1CFFLCH1C	1	0.02
SCCH2CELCH1L	11	0.19
SCCH2CELCH1M	1	0.02
SCCH2CEMCH1CECCH1L	1	0.02
SCCH2CEMCH1LECCH1C	1	0.02
SCCH2CEMCH1MEL	3	0.05
SCCH2CEMCH1MEMCH1C	1	0.02
SCCH2CEMCH1MEMCH1CEC	1	0.02
SCCH2CEMCH1MEMCH1M	1	0.02
SCCH2CEMSCCH1CELCH1M	1	0.02
SCCH2CETL	3	0.05
SCCH2CETMELCH2CCH1C	1	0.02
SCCH2CFFLCH2C	1	0.02
SCCH2CFFLSL	1	0.02
SCCH2CSCCH2CEL	43	0.73
SCCH2CSCCH2CFFL	1	0.02
SCCH2CSCCH2CSCCH2CSCCH2L	1	0.02
SCCH2CSCCH2CSCCH2L	1	0.02
SCCH2CSCCH2CSCCH2LEC	1	0.02
SCCH2CSCCH2CSCCH2MSCCH2C	1	0.02
SCCH2CSCCH2CSCEL	3	0.05

SCCH2CSCCH2CSCETMCH2C	1	0.02
SCCH2CSCCH2CSLEM	1	0.02
SCCH2CSCCH2CSMFFMCH2C	1	0.02
SCCH2CSCCH2L	14	0.24
SCCH2CSCCH2LEC	2	0.03
SCCH2CSCCH2LETC	1	0.02
SCCH2CSCCH2LSMETC	1	0.02
SCCH2CSCCH2MEL	3	0.05
SCCH2CSCCH2MEMCH1M	1	0.02
SCCH2CSCCH2MSCCH2L	2	0.03
SCCH2CSCCH2MSCCH2LSCCH2C	1	0.02
SCCH2CSCCH2MSMCH2CEC	1	0.02
SCCH2CSCECCH1L	1	0.02
SCCH2CSCECSLCH1C	1	0.02
SCCH2CSCEL	24	0.41
SCCH2CSCELEM	1	0.02
SCCH2CSCEMCH1CEL	1	0.02
SCCH2CSCEMSCCH1CEMCH1M	1	0.02
SCCH2CSMEL	9	0.15
SCCH2CSMEMSCEM	1	0.02
SCCH2L	213	3.61
SCCH2LCH1CEL	1	0.02
SCCH2LCH2MEC	1	0.02
SCCH2LEC	25	0.42
SCCH2LECCH1M	1	0.02
SCCH2LECSCCH1CEC	1	0.02
SCCH2LEL	79	1.34
SCCH2LELCH1C	4	0.07
SCCH2LELCH1M	2	0.03
SCCH2LELFFC	1	0.02
SCCH2LELFFM	1	0.02
SCCH2LEM	13	0.22
SCCH2LEMCH1C	2	0.03
SCCH2LEMCH1M	3	0.05
SCCH2LEMCH1MEM	1	0.02
SCCH2LEMSCCH1C	1	0.02
SCCH2LETC	1	0.02
SCCH2LETCCH2C	1	0.02
SCCH2LETL	2	0.03
SCCH2LETM	2	0.03
SCCH2LETMCH2M	1	0.02
SCCH2LETMEM	1	0.02
SCCH2LFFC	3	0.05
SCCH2LFFCCH2M	1	0.02
SCCH2LFFL	7	0.12

SCCH2LFFLAC	1	0.02
SCCH2LFFLCH2C	1	0.02
SCCH2LFFM	4	0.07
SCCH2LFFMCH2L	1	0.02
SCCH2LFFMCH2M	2	0.03
SCCH2LSC	1	0.02
SCCH2LSCCH2L	5	0.08
SCCH2LSCCH2MEC	1	0.02
SCCH2LSCCH2MFFL	1	0.02
SCCH2LSCEC	3	0.05
SCCH2LSCEL	2	0.03
SCCH2LSCFFLCH2C	1	0.02
SCCH2LSCFFMCH2M	1	0.02
SCCH2LSLCH2C	1	0.02
SCCH2LSLETC	1	0.02
SCCH2LSMCH2CEC	1	0.02
SCCH2LSMCH2L	2	0.03
SCCH2MAL	2	0.03
SCCH2MECCH1L	3	0.05
SCCH2MECCH1LCH1CECCH1C	1	0.02
SCCH2MECCH1LECCH1M	1	0.02
SCCH2MECCH1MECCH1M	1	0.02
SCCH2MECCH2LEC	1	0.02
SCCH2MEL	64	1.08
SCCH2MELCH1C	5	0.08
SCCH2MELCH1L	2	0.03
SCCH2MELCH1M	8	0.14
SCCH2MELCH2CEC	1	0.02
SCCH2MELFFLCH1C	1	0.02
SCCH2MELFFM	1	0.02
SCCH2MELSCCH1C	1	0.02
SCCH2MEMCH1CEL	1	0.02
SCCH2MEMCH1CEM	1	0.02
SCCH2MEMCH1L	1	0.02
SCCH2MEMCH1LEC	2	0.03
SCCH2MEMCH1MEL	3	0.05
SCCH2METL	6	0.10
SCCH2METLCH2CFFC	1	0.02
SCCH2METLSCFFC	1	0.02
SCCH2METMCH2LSCEC	1	0.02
SCCH2METMCH2MEMCH1C	1	0.02
SCCH2METMEL	1	0.02
SCCH2MFFL	7	0.12
SCCH2MFFLCH2C	2	0.03
SCCH2MSCCH2CECFFMCH1C	1	0.02

SCCH2MSCCH2CEL	1	0.02
SCCH2MSCCH2CFFMCH2M	1	0.02
SCCH2MSCCH2CSMCH2C	1	0.02
SCCH2MSCCH2L	9	0.15
SCCH2MSCCH2LEC	1	0.02
SCCH2MSCCH2LSC	1	0.02
SCCH2MSCCH2LSCCH2C	1	0.02
SCCH2MSCCH2MSCCH2M	1	0.02
SCCH2MSCECCH1L	1	0.02
SCCH2MSCEL	21	0.36
SCCH2MSCELEC	1	0.02
SCCH2MSCEMCH1L	1	0.02
SCCH2MSLCH2C	1	0.02
SCCH2MSLEL	1	0.02
SCCH2MSLEM	1	0.02
SCCH2MSLETMSCEC	1	0.02
SCCH2MSMCH2LCH1CCH2C	1	0.02
SCCH2MSMCH2LEC	1	0.02
SCCH2MSMEL	2	0.03
SCECCH1CECCH1MECCH1L	1	0.02
SCECCH1CECFFLEC	1	0.02
SCECCH1CEL	1	0.02
SCECCH1CEMCH1LEC	1	0.02
SCECCH1CEMCH2LCH1C	1	0.02
SCECCH1CSCCH1CSCCH1CECCH1C	1	0.02
SCECCH1L	3	0.05
SCECCH1LEC	1	0.02
SCECCH1LECCH1L	1	0.02
SCECCH1LEMCH1CECCH1C	1	0.02
SCECCH1MEL	2	0.03
SCECCH1MEMCH1L	1	0.02
SCECCH1MEMCH1MECCH1C	1	0.02
SCECCH1MSMECCH1M	1	0.02
SCECFFCELCH1L	1	0.02
SCECSCECCH1MECCH1M	1	0.02
SCECSLEL	1	0.02
SCEL	211	3.57
SCELCH1C	10	0.17
SCELCH1CEC	1	0.02
SCELCH1CECCH1C	1	0.02
SCELCH1CEL	6	0.10
SCELCH1CELCH1M	1	0.02
SCELCH1CEM	2	0.03
SCELCH1L	16	0.27
SCELCH1LEC	2	0.03

SCELCH1LECCH1M	1	0.02
SCELCH1LEMCH1C	1	0.02
SCELCH1M	11	0.19
SCELCH1MEL	4	0.07
SCELCH1MEM	1	0.02
SCELCH1MEMCH1C	1	0.02
SCELCH1MEMCH1M	1	0.02
SCELCH2CEL	1	0.02
SCELCH2CEMSCCH1C	1	0.02
SCELFFC	1	0.02
SCELFFL	2	0.03
SCELFFLCH1C	2	0.03
SCELFFMCH1C	1	0.02
SCELSCEM	1	0.02
SCEMCH1CEL	8	0.14
SCEMCH1CELCH1C	1	0.02
SCEMCH1CELCH1CEM	1	0.02
SCEMCH1CEMCH1CEL	1	0.02
SCEMCH1CEMCH1CEMCH1CEC	1	0.02
SCEMCH1CFFLCH1C	1	0.02
SCEMCH1L	10	0.17
SCEMCH1LECCH1L	1	0.02
SCEMCH1LECCH1M	2	0.03
SCEMCH1LEM	1	0.02
SCEMCH1LEMCH1M	1	0.02
SCEMCH1MECCH1L	1	0.02
SCEMCH1MECCH1M	1	0.02
SCEMCH1MEL	4	0.07
SCEMCH1MELCH1M	1	0.02
SCEMCH1MEMCH1CEC	1	0.02
SCEMCH1MEMCH1CECCH1C	1	0.02
SCEMCH1MEMCH1MSC	1	0.02
SCEMCH1MFFLCH1C	1	0.02
SCEMCH2CEL	1	0.02
SCEMETL	1	0.02
SCEMETLCH1C	1	0.02
SCEMETLEC	1	0.02
SCEMETMCH1LEC	1	0.02
SCEMETMSMCH1C	1	0.02
SCEMFFLCH1C	1	0.02
SCEMSCEL	2	0.03
SCETCEL	2	0.03
SCETL	9	0.15
SCETLCH2C	2	0.03
SCETLCH2CECCH1M	1	0.02

SCETLCH2CEL	1	0.02
SCETLCH2METC	1	0.02
SCETLEC	1	0.02
SCETLECCH1C	1	0.02
SCETLEL	11	0.19
SCETLELCH1C	1	0.02
SCETLELCH1M	1	0.02
SCETLFFL	1	0.02
SCETLSC	1	0.02
SCETLSCCH2L	1	0.02
SCETLSCCH2MEC	1	0.02
SCETLSCELCH1M	1	0.02
SCETLSCETCCH2C	1	0.02
SCETLSLCH2C	1	0.02
SCETLSMCH2C	1	0.02
SCETLSMCH2M	1	0.02
SCETLSMETC	1	0.02
SCETMCH2MELCH1C	1	0.02
SCETMECCH1L	1	0.02
SCETMEL	2	0.03
SCETMEMCH1CEMCH1C	1	0.02
SCETMFFL	1	0.02
SCETMSMEL	1	0.02
SCFFCEMCH1CEL	1	0.02
SCFFL	11	0.19
SCFFLCH2C	2	0.03
SCFFLCH2M	1	0.02
SCFFLEC	1	0.02
SCFFMELSCCH1C	1	0.02
SCSCEL	1	0.02
SCSLEL	1	0.02
SCSMLEC	1	0.02
SCSMLETMECCH1C	1	0.02
SLALCH2C	1	0.02
SLCH1LEMCH1C	1	0.02
SLCH2C	2	0.03
SLCH2CEL	3	0.05
SLCH2CELEM	1	0.02
SLCH2CEM	1	0.02
SLCH2L	23	0.39
SLCH2LEC	2	0.03
SLCH2LEM	1	0.02
SLCH2LETC	1	0.02
SLCH2LSC	1	0.02
SLCH2LSCEC	1	0.02

SLCH2LSM	1	0.02
SLCH2M	1	0.02
SLCH2MEL	3	0.05
SLCH2MEM	1	0.02
SLCH2METL	1	0.02
SLCH2MSCCH2MSCCH2C	1	0.02
SLCH2MSL	1	0.02
SLCH2MSLCH2C	1	0.02
SLEC	5	0.08
SLECCH1CEMCH1M	1	0.02
SLECCH2LCH1C	1	0.02
SLEL	46	0.78
SLELFFM	1	0.02
SLEM	2	0.03
SLEMCH1L	2	0.03
SLEMCH2MEM	1	0.02
SLEMSLEC	1	0.02
SLETCCH2L	1	0.02
SLETCECCH1L	1	0.02
SLETCSCECCH1CSCCH1C	1	0.02
SLETLCH2C	2	0.03
SLETMCH2L	1	0.02
SLFFC	2	0.03
SLFFL	3	0.05
SMCAC	1	0.02
SMCH1LECCH1C	1	0.02
SMCH1MEMCH1CEM	1	0.02
SMCH2CEL	12	0.20
SMCH2CELCH1L	1	0.02
SMCH2CELCH1M	1	0.02
SMCH2CSCCH2CETL	1	0.02
SMCH2CSCCH2L	5	0.08
SMCH2CSCEL	8	0.14
SMCH2CSCETL	1	0.02
SMCH2CSCFFL	1	0.02
SMCH2CSLCH2L	1	0.02
SMCH2CSMCH2L	3	0.05
SMCH2CSMCH2MEM	1	0.02
SMCH2CSMCH2MSCCH2C	1	0.02
SMCH2CSMEL	1	0.02
SMCH2CSMEMCH1CEM	1	0.02
SMCH2L	82	1.39
SMCH2LCH1LCH2C	1	0.02
SMCH2LCH1MEC	1	0.02
SMCH2LCH2L	1	0.02

SMCH2LEC	15	0.25
SMCH2LECCH1CEC	1	0.02
SMCH2LECCH1M	1	0.02
SMCH2LEL	22	0.37
SMCH2LELCH1C	1	0.02
SMCH2LEM	6	0.10
SMCH2LETL	2	0.03
SMCH2LETMSCCH2C	1	0.02
SMCH2LFFL	3	0.05
SMCH2LSCCH2L	1	0.02
SMCH2LSM	1	0.02
SMCH2LSMCH2C	2	0.03
SMCH2LSMCH2L	1	0.02
SMCH2LSMCH2M	1	0.02
SMCH2LSMCH2MEC	1	0.02
SMCH2LSMEC	1	0.02
SMCH2MECCH1L	1	0.02
SMCH2MEL	32	0.54
SMCH2MELCH1C	1	0.02
SMCH2MELCH1CCH2C	1	0.02
SMCH2MELCH1L	1	0.02
SMCH2MEMCH1MEC	1	0.02
SMCH2MEMCH1MEM	1	0.02
SMCH2METL	1	0.02
SMCH2METMCH2L	1	0.02
SMCH2MFFL	2	0.03
SMCH2MSCCH2CEL	1	0.02
SMCH2MSCEL	4	0.07
SMCH2MSLCH2M	2	0.03
SMCH2MSLEC	1	0.02
SMCH2MSLFFM	1	0.02
SMCH2MSMCH2L	4	0.07
SMCH2MSMEL	2	0.03
SMCH2MSMEMCH1C	1	0.02
SMCH2MSML	1	0.02
SMECCH1CECCH1L	1	0.02
SMECCH1MECCH1M	1	0.02
SMEL	190	3.22
SMELCH1C	1	0.02
SMELCH1CEC	1	0.02
SMELCH1CEL	3	0.05
SMELCH1L	4	0.07
SMELCH1M	9	0.15
SMELCH1MEC	1	0.02
SMELCH1MEM	1	0.02

SMELCH2LCH1C	1	0.02
SMELSMEM	1	0.02
SMEMCH1CEMCH1L	1	0.02
SMEMCH1L	5	0.08
SMEMCH1LECCH1M	1	0.02
SMEMCH1LEMCH1C	1	0.02
SMEMCH2CEL	1	0.02
SMEMCH2LCH1C	1	0.02
SMEMSCEL	1	0.02
SMETL	2	0.03
SMETLCH2C	1	0.02
SMETLCH2MEC	1	0.02
SMETLEL	1	0.02
SMETLEMCH1C	1	0.02
SMETLFFL	1	0.02
SMETLSCCH2C	1	0.02
SMETLSLETC	1	0.02
SMETMCH2L	1	0.02
SMFFL	3	0.05
SMFFLCH2C	1	0.02
SMFFLCH2CAC	1	0.02
SMLEMSCEM	1	0.02
Total	5905	100