Support to the Israeli Central Bureau of Statistics in Improving the Quality of Official Statistics

Component D: Methodological and geo-spatial tools for improving the quality and efficiency of field surveys

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Mandatory result

Optimization of field workload allocation using geo-spatial tools for managing field surveys in designated areas

If we simplify the MR:

1. **Optimization field workload allocation using geo-spatial tools**

2. **Using geo-spatial tools for managing field surveys in designated areas**

The ICBS and data sources used by it

The Central Bureau of Statistics

- Unit affiliated with the Prime Minister's Office

- An apolitical independent entity

- Statistics Ordinance [New Version] – 1972

- Public Advisory Council for Statistics

- Official statistics in accordance with the standards of international organizations (UN, IMF, OECD)

How are Data Collected?

Administrative Files

Surveys

Administrative Files

The CBS receives administrative files from state institutions:

- National Insurance Institute
- Local Authorities
- Israel Police

- Ministry of the Interior
- Universities
- And more….

The CBS processes and publishes the data that is obtained from these files as statistical summaries

Conducting Surveys

Sampling frames

CPR

BDR

Sampling Frames

- The Central Population Register (CPR): for sampling individuals and households

- Dwelling Register: for sampling dwelling units

Israel Central Population Register

🏠 Received: 3 times a year at ICBS, arrives coded

🏠 Source: Population & Immigration Authority

🏠 Geographical coverage: National

🏠 Description: 9,116,537 records

🏠 Addresses geocoded: 563,811 - 98.6% (to statistical area level)

Building and Dwelling Register (BDR)

🏠 Received: Annually, May-June

🏠 Source: 10 different suppliers (5 of them are localities and the rest are computer companies)

🏠 Geographical coverage quality defer by locality & supplier

🏠 Main use incentive (for the localities): property tax services

BDR Description

- 🏠 The register holds information for 1,214 localities

- 🏠 Description: 3,749,181records in 2015, contains information for dwelling and other land use.

- 🏠 Addresses geocoded: 3,160,220 – 92% (to statistical area level)

Sampling Frames and Geocode

After geocoding of each record in the sampling frames, field surveys are sampled, and then allocated for fieldwork

Survey's Management

Main field surveys

1. Labour Force Survey (sampled from BDR)

2. Household Expenditure Survey (sampled from BDR)

3. Social Survey (sampled from CPR)

4. Longitudinal Survey (Sampled from CPR in the first wave 2012)

The samples of these surveys are drawn separately for each survey

Interviewers and workload

➢ Most ICBS interviewers work on one survey

➢ The workload distribution thereby is <u>performed independently for each survey</u>

➢ Interviewers get paid by hours and get Km payment and time travel

➢ Mostly they work between 80-100 hours a month

Surveys Constrains

➢ Each survey has its own constraints created by its

  methodology:

  ➢ Data collection period

  ➢ Time span feasible for collection

  ➢ Reference period, and so on.

All this constrain make it difficult to create a workload

Survey Characteristics

|	constrains			
	Duration of investigation	**Length of interview**	**Workload**	**paper / laptop**
Labor Force	Two weeks	15 minutes	10 per week	Lap top
Household Expenditure	Three weeks Minimum 4 visits over 8 days of dairy filling in	Vary by stage of interviewing	16 per month	paper
Social	Three months	45 minutes	30 per month	Lap top
Longitudinal	One month Flexibility of 1 month	1 hour +	25 per month	Lap top

Field work operation organizational structure

Field work structure

- Israel is divided to 3 districts:
  - ○ Haifa: manages the north part of the country. About 30% of Israel's population (2.6 M)

  - ○ Jerusalem: manages the city of Jerusalem and its surroundings: About 12% of Israel's population

  - ○ Tel Aviv: The rest of the country
  - ○ ICBS employs approximately 350 field interviewers

Localities:	542
Population:	2,618,000
Area (SKM):	5,353
Distances:	
From Haifa south east	65KM
From Haifa north east	87.5 KM

Haifa Survey District

NAHARIYYA

QIRYAT
HAIFA ATTA

NAZARETH

UMM
AL-FAHM

HADERA

KM
0   5   10   20
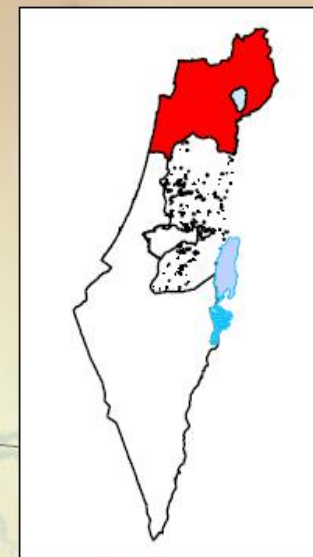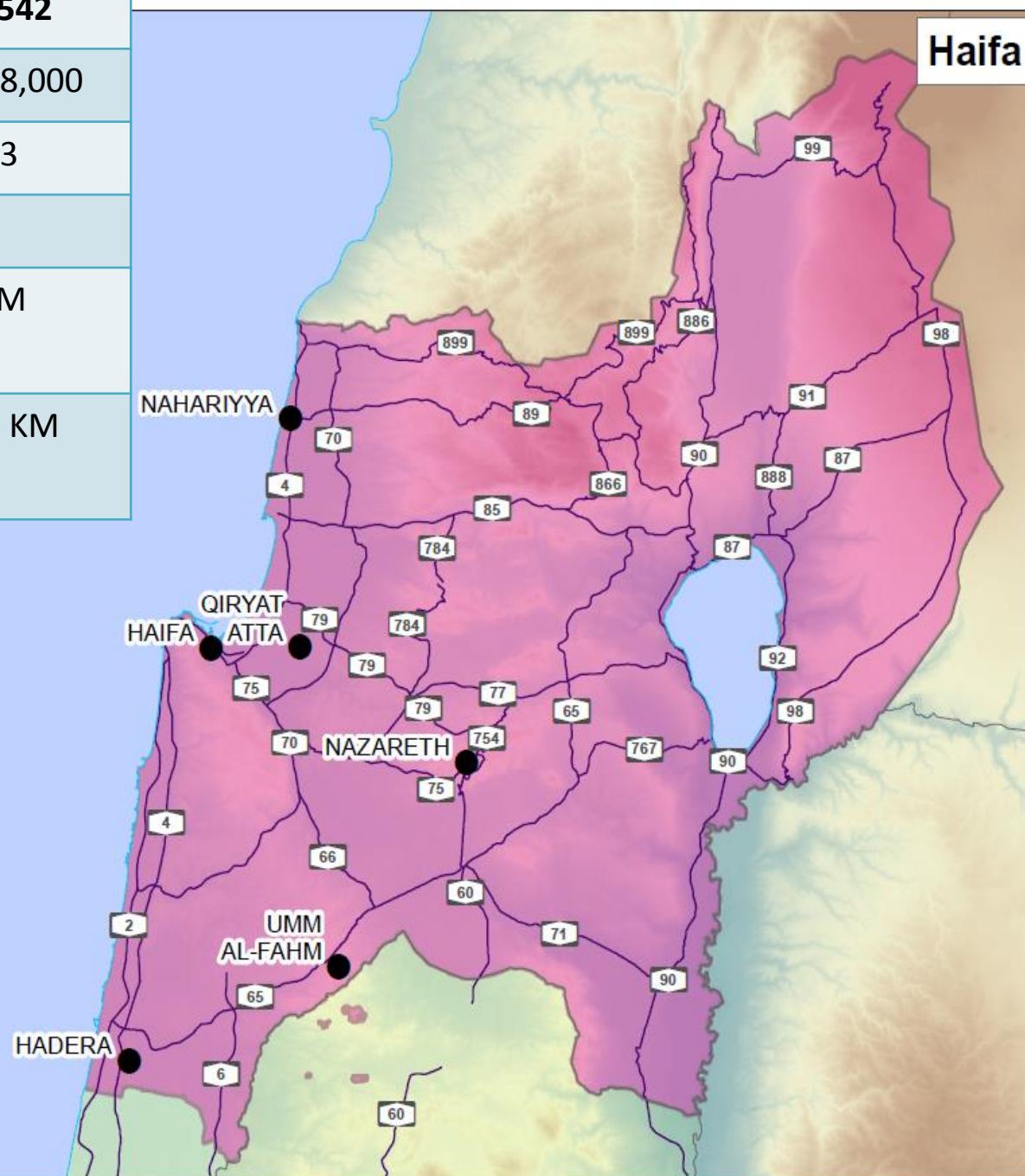
Jerusalem Survey District

Localities:	147
Population:	1,237,000
Area (SKM):	775
Distances:	
From Jerusalem south	47KM
From Jerusalem west	32.5 KM
From Jerusalem north	70 KM
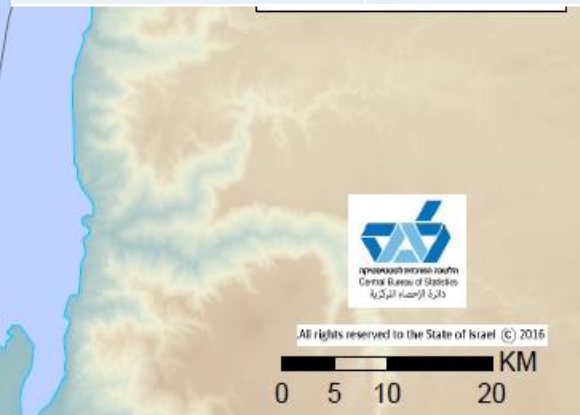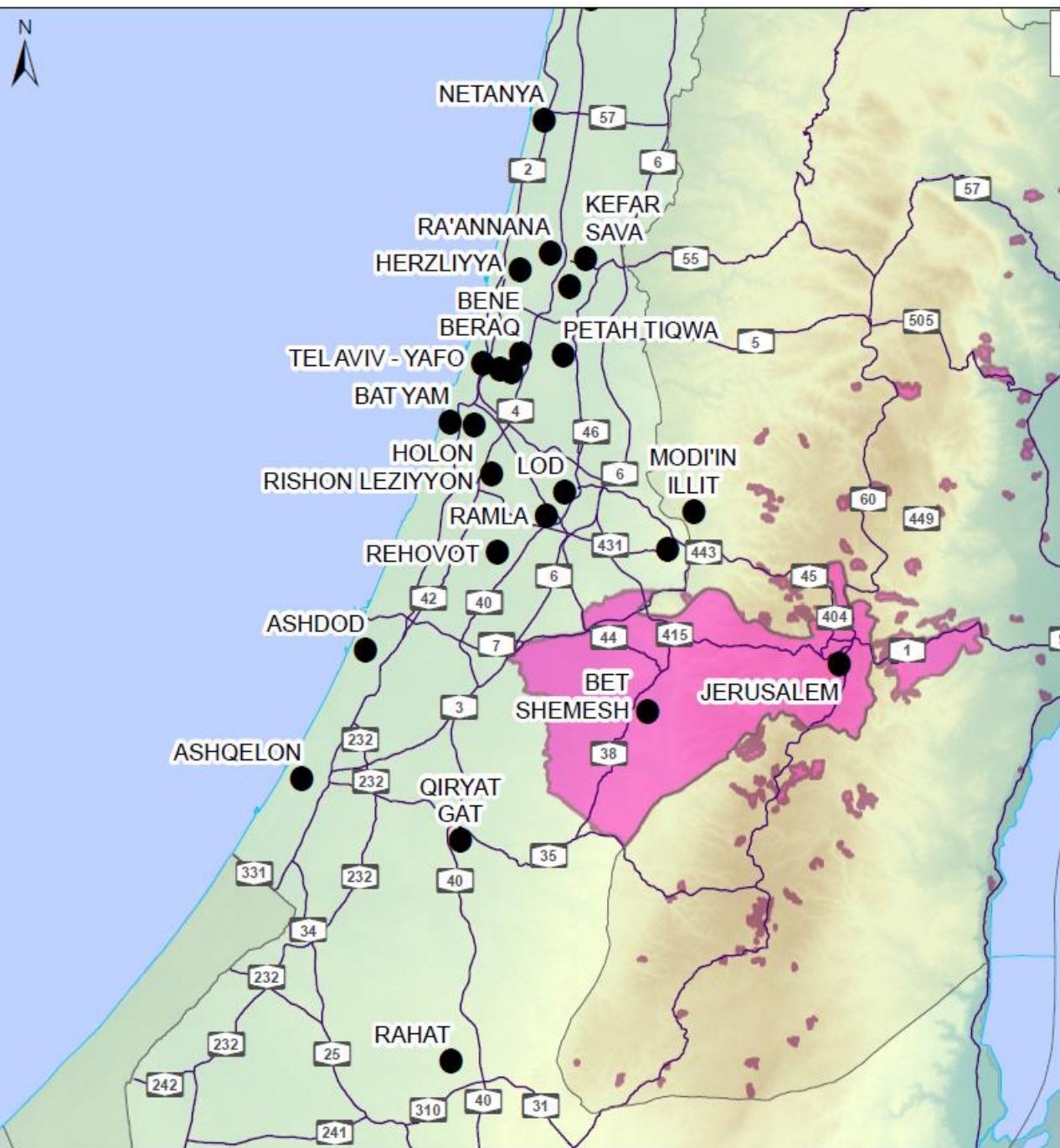
Tel Aviv Survey District
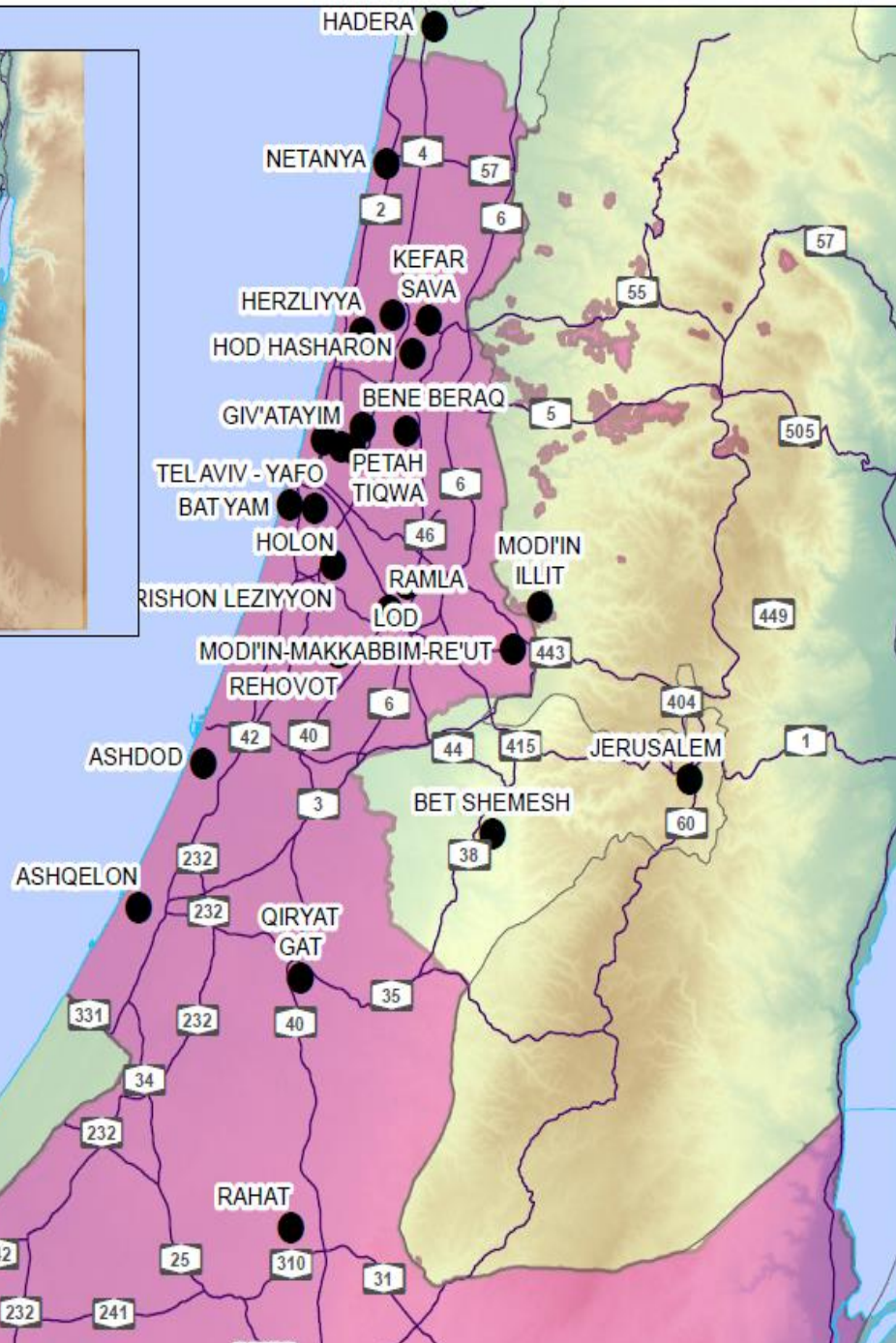
Localities:	516
Population:	4,376,000
Area (SKM):	15,702
Distances:	
From TLV south	161 km
From TLV east	138 km
From TLV north	39.5 km

Map labels:
HADERA
NETANYA
KEFAR SAVA
HERZLIYYA
HOD HASHARON
GIV'ATAYIM
BENE BERAQ
PETAH TIQWA
TEL AVIV - YAFO
BAT YAM
HOLON
RISHON LEZIYYON
RAMLA
LOD
MODI'IN ILLIT
MODI'IN-MAKKABBIM-RE'UT
REHOVOT
ASHDOD
BET SHEMESH
JERUSALEM
ASHQELON
QIRYAT GAT
RAHAT

The Goal: To improve efficiency & effectiveness of the field operation

1. An interviewer will work on more than one survey

2. The multi survey work load enable more efficient enumeration area (EA) that will be closer to the interviewers' house

The expected outcome

- Due to responsibility for a limited EA, the interviewer will be more familiar with the field and the population, thus resulting in more accurate and efficient work

- Due to reducing travel time and road the interviewers work will be more effective

The parameters to measure effectiveness and efficiency

Short Term parameters:

- Increase in the number of sampled unit per interviewer (yearly work load)

- Increase in the full questionnaire per day

Long term parameters:

- Reduction in travel costs

- Reduction in the number of interviewers working in each district

Creating EA's in ICBS

Using existing continua's geographical infrastructure

Pros:

- Stability: Using infrastructure that is as stable and rarely changing.
- Unification: Providing the same infrastructure field allocation & managing and monitoring.
- Information: Possible usage of other ICBS data sources that can help managing the field operation.

Todays' situation the story of Karmiel

Karmiel is a small city in the north part of Israel.

Karmiel Story
the numbers

- 3 interviewers worked on

- 3 different surveys

- on the same night

- in the same street

- in the city of Karmiel.

- Each interviewer collected one questionnaire.

SIMULATION OF PAYMENT

From	To	Distance (one way) in KM	Travel time in MIN
Tiberias	Karmiel	39	50
Rosh Pina		34	30
Haifa		43	45
TOTAL (Round Trip)		232	4.5 H

Simulation - payment

We paid:

- Travel distance: 232KM * 1.4NIS = 325NIS

- Travel time: 4.5H * 40NIS = 180NIS for travel time

- **Total of 505NIS**

- If one interviewer is sent to Karmiel on the same night with a workload that combines the 3 surveys into one workload:

- **Max payment is NIS 180**.

- **Total Cost Reduction of NIS 325**

Karmiels' numbers for 2015
(In the 4 main surveys)

- 12 interviewers worked in the city

- There were 174 intercity trips to Karmiel (one way)

- Cost of the intercity kilometers: 13,500 NIS

- Cost of travel time: 7,200 NIS

Total payment 21,700 NIS

Using the new allocation by EA

- An interviewer's yearly workload will be 270–330 interviewees

- In Karmiel alone, there were 259 interviewees

- One interviewer lives in Karmiel

- If the interviewer who lives in Karmiel would be assigned to the 259 interviewees from the four core surveys, we would save about:

  21,700 NIS just on surveying the city of Karmiel

Thanks for your attention